

APPENDIX A

SAMPLE RAMP METERING MEMORANDUMS OF UNDERSTANDING



Memorandum of Understanding (MOU) between the City/County Association of Governments (C/CAG) of San Mateo County and the California Department of Transportation (Caltrans) District 04

For

The Implementation of a Ramp Metering Program in San Mateo County on US 101 from Santa Clara County Line to San Francisco County Line and on I-280 from I-380 to San Francisco County

This MOU is not an enforceable contract and no Caltrans/STATE funds or resources are encumbered as against this document. This MOU is a compilation of the policies and procedures intended to be followed by these separate parties working in a coordinated manner to accomplish a mutual goal jointly established in the course of performing their statutory and functional duties.

Caltrans and C/CAG have identified Ramp Metering as a cost effective approach to improve the operation of the road network with a resulting improvement in the overall mobility. Both parties agree to implement the Ramp Metering Program in San Mateo County as outlined below:

Goal

To provide consistent speed, predictable travel times, reduce overall delay for freeway travel by managing access at on-ramps during peak commute periods, and to minimize impacts resulting from the implementation of ramp metering on local street traffic.

Governance

C/CAG Board of Directors will act as the policy body for policy decisions with regard to implementation of ramp metering. The San Mateo County Ramp Metering Technical Committee (RMTC), with the approval of the C/CAG Executive Director, will provide guidance and make all technical decisions with regard to operational strategy and parameters of ramp metering, using guidelines consistent with San Mateo County Congestion Management Program (CMP) as well as regional transportation policies. The RMTC membership includes designated staff representatives from each city and the county, C/CAG, SMCTA, Caltrans, and MTC. See Attachment A.

- a. The approval of the C/CAG Ramp Metering Technical Committee (RMTC) will be required before any adjustments are made to the ramp metering parameters (times of operation, metering rates, etc.), except for short term modification in emergency situations for the purpose of incident management.
- b. The C/CAG Ramp Metering Technical Committee (RMTC), will continuously monitor and oversee the program.



Operating Principles

1. Ensure that queues from metered ramps do not impede operation of local streets and intersections or block access to private property.
2. Ensure that no communities are burdened with ramp delays that are disproportionate or excessive.
3. Ensure that if queues at metered ramps cannot accommodate within the constraints defined in items 1 and 2 above, metering rates will be set to green or at the demand rate during the time period necessary to eliminate the negative impact the metering light is having on the adjoining local roadway or intersection.
4. Coordinate freeway and arterial operations to ensure efficient operation of both facilities.
5. Provide high occupancy vehicles (HOVs) preferential lanes at on-ramps where feasible.

Operational Parameters

- a) Meters will be in operation morning and afternoon peak commute hours between Monday and Friday, except for the established State holidays. Metering rates will be set to contain metering queue within the on-ramp and the local street lanes specifically dedicated for the freeway entry.
- b) Prior to implementation, Caltrans will provide the RMTTC with an analysis of ramp metering rates, and queue lengths.
- c) Prior to implementation, RMTTC will review and approve Caltrans' proposal for initial metering rates.

Implementation Phasing

- Phase 1 - US 101 (from Santa Clara County line to Route 92)
- Phase 2 - US 101 (from Route 92 to San Francisco County line)
- Phase 3 - I-280 North (from I-380 to San Francisco County line)

Turning on of ramp meter signals will depend on physical readiness, including all necessary equipment, appropriate signing and striping, and notice to the public.

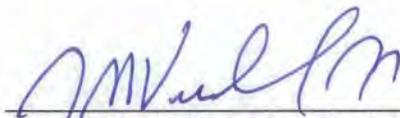
Capital Improvements

Caltrans and C/CAG will be responsible to program federal, state, and other available funds in the earliest years possible to finance capital projects to install metering equipment and other related improvements needed for ramp metering.

Monitoring and Maintenance



- An annual review of the program will be provided to C/CAG Board by staff and Caltrans.
- "Before" and "After" monitoring will be conducted by C/CAG, at no additional cost to the cities, at selected local street intersections near the metered on-ramps to monitor and assess any impacts of the program. RMTC will establish the level of effort as well as locations of monitoring that will be conducted.
- "Before and After" travel time survey will be conducted by Caltrans on the freeway system.
- The Ramp Metering Technical Committee (RMTC) will, on an on-going basis, review the monitoring data and recommend solutions to problems raised by any city, the County, or Caltrans.
- Caltrans will be responsible for maintenance and operation of all metering equipment.
- Caltrans will have the ability to make short-term spot decisions to change metering rates if required for safety reasons and will promptly notify the local jurisdictions impacted by such decision as well as RMTC. A pre-designated group of local jurisdictions contacts to be notified will be created prior to ramp meter signals are turned on.
- C/CAG, through the RMTC, will develop performance measures consistent with the above goal and principles to assess the effectiveness of metering.
- C/CAG, through the RMTC, will define a monitoring plan to periodically measure and calculate performance measures such as volume, speed, travel time, and delay on the freeway, on-ramps and adjacent streets and critical locations on the arterial network.
- Caltrans and C/CAG, through RMTC, will work together to fine-tune ramp metering and local traffic signal operations adjacent to the freeway.


James M. Vreeland Jr., Chairman
City/County Association of Governments
of San Mateo County


S. Sean Nozzari, Deputy District Director
California Department of Transportation
District 4, Traffic Operations

11/8/06
Date

11/8/06
Date

Approval as to form:


Miruni Soosaipillai, C/CAG Attorney



Attachment A
Ramp Metering Technical Committee (RMTC)
San Mateo County
2005

RAMP METERING TECHNICAL COMMITTEE SCOPE OF EFFORT

The San Mateo County Ramp Metering Technical Committee (RMTC) is responsible for the development of and recommendation on a Ramp Metering Program for San Mateo County. The Program will include four elements:

1. Ramp Metering Plan
2. Capital Improvements
3. Agreements
4. Monitoring

Ramp Metering Plan: Sample issues to be covered in the plan are:

- Additional analysis needed to predict traffic operations at specific locations of concern
 - Particular intersections need to be monitored
 - On-ramp configurations for metering (number of lanes, HOV by-pass lane, meter head locations, queue detector locations, etc.)
- Implementation phasing (i.e., US 101 between SR 92 and Santa Clara County line; US 101 Between SR 92 and SF County line; I-280 between I-380 and SF County line)
- Metering rates at each location
- Hours of metering operation
 - What to do during emergencies or incidents
 - Decision making process in terms of making changes to metering rates, metering hours, etc. in response to field conditions
 - Process for modification of the Ramp Metering Plan in the future

Capital Improvement: Capital improvement elements may include:

1. Install "spillback" detectors at the bottom of the on-ramps.
2. Install ramp metering hardware and software equipment.
3. Selection of specific on-ramps to be widened or modified.
4. Develop capital projects and construction documents for ramp widening/modification.
5. Identify available funding from countywide, regional, state, or federal sources.



Agreements:

Before metering is implemented, agreement(s) between C/CAG and Caltrans, as developed and recommended by the RMTC, need to be achieved. Such agreement(s) may include mutually agreed specific metering parameters, emergency procedures, and maintenance procedures, etc.

Monitoring:

The RMTC will recommend locations for traffic monitoring and process. It will also recommend if a before-and-after study should be conducted.

Ramp Metering Technical Committee (RMTC) COMPOSITION

RMTC consists of staff designated by each agency. Current members include:

C/CAG (Sandy Wong)	Caltrans (Alan S. Chow, Lester Lee)
MTC (Jeff Georgevich)	SMCTA (Jim McKim or Shahla Yazdy)
Atherton (Duncan Jones)	Belmont (Ray Davis)
Brisbane (Randy Breault)	Burlingame (Syed Murtuza)
Colma (Will Anderson or Rick Mao)	Daly City (Mo Sharma)
East Palo Alto (Fernando Bravo)	Foster City (Sue Lee)
Half Moon Bay (name)	Hillsborough (name)
Menlo Park (Rene Baile)	Millbrae (Khee Lim)
Pacifica (name)	Portola Valley (name)
Redwood City (Rich Haygood)	San Bruno (name)
San Carlos (Parviz Mokhtari)	San Mateo (Larry Patterson)
South San Francisco (Ray Razavi)	Woodside (name)
County of San Mateo (name)	

DESIRED OUTCOMES

The goals of the RMTC are to develop a Ramp Metering Program by working cooperatively and making decisions based on consensus. The Ramp Metering Program should fulfill the ramp metering objectives while ensuring acceptable level local traffic operations. It should balance local, countywide, and regional transportation objectives.

Once the Ramp Metering Program is developed, if C/CAG Board decides to implement metering, it is expected that the RMTC will continue to act as the body to make recommendations regarding implementation and monitoring, on an on-going basis as needed.



Date: January 20, 2009
 Current Meeting: February 5, 2009
 Board Meeting: February 5, 2009

BOARD MEMORANDUM

TO: Santa Clara Valley Transportation Authority
 Board of Directors

THROUGH: General Manager, Michael T. Burns

FROM: Chief CMA Officer, John Ristow

SUBJECT: Memorandum of Understanding to Implement Ramp Metering in Santa Clara County

Policy-Related Action: Yes

Government Code Section 84308 Applies: No

ACTION ITEM

RECOMMENDATION:

Request that the VTA Board of Directors authorize the General Manager to execute a Memorandum of Understanding (MOU) between Santa Clara Valley Transportation Authority (VTA) and California Department of Transportation (Caltrans) defining the management, maintenance, and operations of ramp metering systems in Santa Clara County.

BACKGROUND:

At its April 3, 2008 meeting, the VTA Board of Directors approved an authorization for the General Manager to execute a funding agreement for \$2,051,000 with the Metropolitan Transportation Commission (MTC) that specifies the roles and responsibilities to implement ramp metering in three corridors in Santa Clara County:

- Southbound SR 85 between Almaden Expressway and Cottle Road
- Northbound and Southbound SR 87 between US 101 and SR 85
- Southbound US 101 between Embarcadero Road and De La Cruz Boulevard

Since VTA Board approval, VTA staff has been working closely with stakeholders along the above listed subject corridors to develop ramp metering timing plans. The stakeholders have expressed a strong desire to develop an MOU that defines the roles and responsibilities for VTA and Caltrans to manage, maintain, and operate freeway metering systems in Santa Clara County.

DISCUSSION:

The MOU is based upon a recently approved MOU between City/County Association of Governments of San Mateo County (C/CAG) and Caltrans for ramp metering. The MOU between VTA and Caltrans is divided into seven sections plus a separate attachment defining the scope of effort for the Systems Operations and Management Working Group (SOMWG). The seven sections are as follows:

- **Goal:**

This section defines the ultimate of goal of ramp metering. The goal is to provide consistent and predictable travel times to reduce overall delay for freeway travel by managing access at on-ramps during peak commute periods, and to minimize impacts on local street traffic resulting from the implementation of ramp metering.

- **Governance:**

This section defines the roles for the Caltrans, VTA Board of Directors, VTA Technical Advisory Committee, and SOMWG. The roles of each party are highlighted as follows:

§ Caltrans is owner and operator of ramp metering facilities and through the subject MOU will work cooperatively with governing bodies as defined in the subject MOU to implement, operate, and maintain the ramp metering systems in Santa Clara County.

§ The VTA Board of Directors will act as the policy body for policy decisions with regard to implementation of ramp metering.

§ The VTA TAC will continue to appoint members to the SOMWG which will include designated staff representatives from the cities and towns of Santa Clara County, and Santa Clara County, as well as ex-officio membership by Caltrans and VTA

§ The VTA Technical Advisory Committee (TAC) through the SOMWG and Caltrans District 4 Operations will provide guidance on operational strategies for ramp meter consistent with Caltrans and local transportation policies and will recommend polices for adoption by the VTA Board of Directors as appropriate.

- **Operating Principles:**

This section defines the overall principles how ramp meter will be operated in Santa Clara County. Ramp meters will be operated to ensure that queues from the ramp meter do not impede local arterial operations, and communities are burdened with ramp delays that are disproportionate or excessive. Ramp metering locations will also promote the provision for high occupancy vehicle (HOV) preferential treatment at on-ramps, where feasible.

- **Operating Parameters:**

This section defines the days and hours of operations for ramp metering implementation, and describes the review and oversight provided by the VTA TAC and SOMWG regarding ramp metering plan implementation.

- **Implementation Phasing:**

This section lists the potential freeway routes where ramp metering may be implemented in the future. The listed routes in the subject MOU are not listed in any implementation order.

- **Capital Improvements:**

This section defines who is responsible for seeking financing for installation of metering equipment, and other related improvements. Both VTA and Caltrans will be responsible for this task.

- **Monitoring and Maintenance:**

This section defines how the ramp metering systems will be monitored, maintained, and operated in Santa Clara County. This section specifies the following:

- Ø VTA TAC's, SOMWG's, and Caltran's roles and responsibilities for management, maintenance, and operations of ramp meters.
- Ø Caltrans response times to operational concerns raised by local agencies.
- Ø Types of monitoring programs (e.g., "Before" and "After" studies for new implementations and occasional monitoring after implementation to name two examples of monitoring).
- Ø Frequency of the SOMWG meetings.

The ultimate goal of the MOU is the development of a Ramp Metering Program by working cooperatively and making decisions based on consensus through the VTA TAC and SOMWG. The Ramp Metering Program should balance local and regional transportation objectives.

ALTERNATIVES:

Future ramp metering within Santa Clara County could be implemented without an MOU in place, which is the existing standard for the existing metering system in Santa Clara County however; the staff recommendation follows the successful model implemented in San Mateo County.

FISCAL IMPACT:

There is no direct fiscal impact as a result of this action. VTA staff costs associated with management of regional Intelligent Transportation Systems (ITS) is included as part of the Congestion Management Program (CMP) work program and the Adopted FY09 CMP Fund Operating Budget. Funding for the costs associated with the implementation of the ramp metering have been provided through a grant from MTC.

STANDING COMMITTEE DISCUSSION/RECOMMENDATION:

The Congestion Management Program and Planning (CMPP) Committee heard this item on January 15, 2009 and unanimously recommended VTA Board authorization of the General

Manager to execute a Memorandum of Understanding between VTA and Caltrans defining the management, maintenance, and operations of ramp metering systems in Santa Clara County. The following are key comments or questions from CMPP:

- A question was asked about measures to ensure cooperation from Caltrans on issues arising from local agencies. VTA staff indicated that language covering this topic is included in the MOU. The Governance section of the MOU (on page 1 of 7) describes VTA's Technical Advisory Committee (TAC) and TAC's Systems Operations and Management Working Groups to be responsible for assisting in the resolution of disagreements between local agencies and Caltrans. Also, the fifth bullet on page 4 of 7 of the MOU spells out turnaround times for initial Caltrans response to ramp metering operational issues.
- A question was asked related to the third bullet on page 4 of 7 of the MOU. The question was if any ramp metering equipment is installed outside of Caltrans' Right-of-Way (ROW). VTA staffed replied that all ramp metering equipment has been and will be installed within Caltrans' ROW.

Prepared by: David Kobayashi



**Memorandum of Understanding (MOU) between the Santa Clara Valley
Transportation Authority (VTA) and the California Department of
Transportation (Caltrans) District 04
For
The Ramp Metering Program in Santa Clara County**

This MOU is a compilation of the policies and procedures intended to be followed by the above named parties working in a coordinated manner to accomplish a mutual goal jointly established in the course of performing their statutory and functional duties.

Ramp Metering has been identified to be a cost effective approach in Santa Clara County to improve the operation of the roadway network with a resulting improvement in the overall mobility.

Both parties agree to implement the Ramp Metering Program in Santa Clara County as outlined below:

Goal

To provide consistent and predictable travel times to minimize overall corridor delay by managing access at on-ramps during peak commute periods, and to minimize impacts on local street traffic resulting from the implementation of ramp metering.

Governance

The VTA Technical Advisory Committee (TAC) through the System Operations & Management Working Group (SOMWG) and Caltrans District 4 Operations will provide guidance on operational strategies for ramp metering consistent with Caltrans and local transportation policies . The VTA TAC will recommend polices for adoption by the VTA Board of Directors as appropriate. The VTA TAC will continue the current practice to appoint members to the SOMWG which will include staff representatives from the cities and towns of Santa Clara County and from Santa Clara County, as well as ex-officio members from Caltrans and VTA. The SOM working group shall continue to report to the VTA TAC (See Attachment A).

Local agencies are encouraged to directly communicate with Caltrans regarding ramp metering operational issues and to request for assist to resolve these issues. If these operational issues cannot be resolved amicably between the local agency and Caltrans, the VTA TAC shall be responsible to resolve the disagreements.

The SOMWG shall be responsible for recommendations to the VTA TAC to improve the corridor operations, for changes to metering rates, and for changes to metering hours. Caltrans can modify the ramp metering rates, implementation by time of day, and hours of operations for a short term in emergency situations or for special events (e.g. sporting events, festivals, etc.) for the purpose of incident management. The SOMWG will continuously monitor and oversee the ramp metering program.

Operating Principles

1. Ensure that queues from metered ramps do not impede operation of local streets and intersections or block access to private property.
2. Ensure that no communities are burdened with ramp delays that are disproportionate or excessive.
3. Ensure that if queues at metered ramps cannot be accommodated within the constraints defined in items 1 and 2 above, metering rates will be set to green or at the demand rate during the time period necessary to eliminate the negative impact the metering light is having on the adjoining local roadway or intersection. Some ramp metering locations in Santa Clara County may have queues that extend beyond the physical on-ramp; however, these queues should not block or interfere with local through traffic operations. In these instances, each location should be examined on a case-by-case basis by Caltrans and the local agency. Operational problems that cannot be corrected by existing equipment would be candidates for future operational improvements.
4. Ensure efficient operations of ramp meters considering freeway and arterial operations.
5. Promote the provision of high occupancy vehicle (HOV) preferential lanes at on-ramps where feasible.
6. Ensure that ramp metering does not cause excessive divergence of traffic on local streets.

Operational Parameters

- a) Meters will be in operation either the morning or afternoon peak commute hours, or both, starting on Monday and through Friday, except for certain major holidays and in the case of major incidents. Metering rates will be set to contain metered queues within the on-ramp to the extent possible and the local street lanes specifically dedicated for freeway entry to the extent possible.
- b) Metering rate will be based on real-time traffic volumes on the freeway mainline, taking into account the available storage on the on-ramp, and a range of rates defined in ramp metering plans or tables in the ramp metering controller unit.
- c) Prior to implementation of ramp metering on future corridors, Caltrans will provide the SOMWG with an analysis of the subject corridor with ramp metering, including but not limited to information on metering rates and queue lengths at the proposed metered on-ramps.
- d) Prior to implementation, review and concurrence on the initial metering rates and plan to be implemented will be sought from the SOMWG and SOMWG will make recommendations to the VTA TAC.
- e) Prior to implementation, Caltrans Public Information Office (PIO) shall prepare a press release and coordinate with the local agency's traffic engineer and/or other responsible person with the local agency.
- f) A week prior to ramp metering turn-on, the following actions will be taken by Caltrans staff:
 - Temporary signs will be posted at each metered on-ramp, with the date of activation and info phone line posted.



- Each ramp metering location will rest in “green” during the proposed metered peak period.

Implementation Phasing

Listed below are potential freeway routes, where ramp metering may be implemented. This list of locations is subject to change over time as funds become available or a shift in priorities occurs.

- SR 87 (from US 101 to SR 85)
- SR 85 (from Almaden Expressway to Cottle Road)
- SR 85 (from US 101 north to Almaden Expressway)
- US 101 (from Embarcadero Road to De la Cruz Boulevard – Trimble Road)
- I-880 Southbound (from SR 237 to Old Bayshore Road)
- I-880 Northbound (from SR 82-The Alameda to Montague Expressway)
- SR 17 (from I-280 to SR 9)
- I-680 (from Alameda County Line to US 101)
- I-280 (from US 101 to SR 17)
- I-280 (from Highway 17 to Magdalena Road)
- US 101 (from Blossom Hill Road to Tennant Avenue)
- US 101 (from Tennant Avenue to Monterey Road)
- SR 237 (from Calaveras Boulevard to SR 85)

The above listed freeway routes are not listed in implementation order.

Turning on of ramp meter signals will depend on physical readiness, including the working order of equipment, appropriate signing and striping, and notice to the public.

Capital Improvements

Caltrans and VTA will be responsible to identify and acquire federal, state, and other available funds in the earliest years possible to finance the installation of metering equipment and other related improvements in support of ramp metering.

Monitoring and Maintenance

- Meetings regarding ramp metering operations in Santa Clara County with the SOMWG shall be held as needed. At these meetings, Caltrans staff shall provide a status report on the operations of ramp metering in Santa Clara County. The status report will include a list of operational issues that were reported by the local agencies and how operational issues were resolved.
- A review of the program will be provided to the VTA Board of Directors by VTA and Caltrans staff if requested by the VTA TAC, or VTA Board of Directors.
- “Before” and “after” monitoring will be conducted by VTA, at no additional cost to the local agencies, at selected local street intersections near the metered on-ramps to monitor and

assess the effects of the program. The SOMWG will establish the level of effort as well as locations of monitoring that will be conducted.

- “Before and after” travel time survey will be conducted by Caltrans on the freeway system.
- The SOMWG will, on an on-going basis, review the monitoring data and recommend solutions to issues determined to be related to ramp metering raised by the cities and towns of the County, the County of Santa Clara, Caltrans, or VTA.
- Caltrans will be responsible for maintenance and operation of all metering equipment within Caltrans Right-of-Way (ROW).
- Caltrans will have the ability to make short-term spot decisions to change metering rates if required for safety reasons and will promptly notify the local jurisdictions impacted by such decisions as well as the SOMWG and the VTA TAC. A pre-designated list of local jurisdiction contacts to be notified will be maintained by VTA and Caltrans staff.
- Caltrans shall respond to requests to modify ramp metering rates from local agencies with the following specified turn around times:
 - Within 24 to 48 hours to initially diagnose the operational issue.
 - Within one month to collect traffic volume, collect occupancy, develop modified ramp metering plans, and implement these plans.

A work task related to the modification of ramp metering plans does not include the design and construction of physical improvements such as additional on-ramp lanes (either mixed flow or High Occupancy Vehicle (HOV)), etc. If the turn around times are not met or the operational issue is still not resolved, the VTA ATC per its authority as described in the Governance section of this MOU has the authority to resolve disputes between the local agency and Caltrans and approve changes to the operations.

- Caltrans and VTA, through the SOMWG, will develop performance measures consistent with the above goal and principles to assess the effectiveness of metering.
- Caltrans and VTA, through the SOMWG, will define a monitoring plan to periodically measure and calculate performance measures such as on-ramp volumes, on-ramp delays, on-ramp queues with the intent to determine if queues impact local street operations, freeway mainline speed, freeway mainline densities, freeway mainline travel time, and Volume-to-Capacity ratios as determined by the project partners.
- Caltrans and VTA, through the SOMWG, will work together to fine-tune ramp metering and monitor the nearest local traffic signal to the ramp metering operations.
- If the ramp metering implementation or ramp metering plan modification does not perform as expected (e.g., exclusive delays and queues impact traffic operations on the local arterial), Caltrans shall consider other options such as metering at “demand”, changing upstream and downstream ramp metering rates, delaying the startup of metering, and implementing a steady “green” (if other measures fail to address the operational issue).



Michael Burns, General Manager
Santa Clara Valley Transportation Authority

Bijan Sartipi, District Director
California Department of Transportation
District 4

Date

Date

Approval as to form:

Approval as to form and procedure:

VTA General Counsel

Attorney
California Department of Transportation

Date

Date



Attachment A
VTA Systems Operations & Management Working Group (SOMWG)
Ramp Metering in Santa Clara County
2008

VTA SOMWG SCOPE OF EFFORT

The SOMWG shall report to the VTA Technical Advisory Committee (TAC). The VTA TAC shall appoint members to the SOMWG, and members are responsible for the development of recommendations related to the Ramp Metering Program for Santa Clara County. The Program will include four elements:

1. Ramp Metering Plan
2. Capital Improvements related to implementing ramp metering
3. Agreements related to implementing ramp metering
4. Monitoring related to implementing ramp metering

Ramp Metering Plan: Sample issues to be covered in the plan are:

- Analysis to project traffic operations at specific locations of concern
- Intersections to be monitored
- On-ramp configurations for metering (number of lanes, HOV preferential (by-pass) lane, queue detector locations, etc.). Design and configuration of ramp metering shall comply with the latest Caltrans - Ramp Meter Design Manual.
- Implementation phasing (e.g., Northbound SR 87, Southbound SR 87, Southbound SR 85 from Almaden Expressway to Cottle Road, Southbound US 101 from Embarcadero Road to De la Cruz Boulevard – Trimble Road)
- Metering rates at each location
- Hours of metering operation
- What to do during emergencies or incidents
- Decision making process in terms of making changes to metering rates, metering hours, etc., in response to field conditions
- Process for modification of the Ramp Metering Plan in the future

Capital Improvement: Capital improvement elements may include:

1. Installation of “spillback” (End of Queue) detectors at local street entrance to the on-ramps.
2. Installation of ramp metering hardware and software equipment.
3. Selection of specific on-ramps to be widened or modified for added storage and on-ramp operations, and possible Local Street widening for storage.
4. Development of capital projects and construction documents for ramp widening/modification.



5. Identification of available funding from state or local sources.

Agreements:

Before future metering is implemented, a ramp metering plan or strategy between VTA and Caltrans, as developed and recommended by the SOMWG, may need to be achieved. Such a plan or strategy may include specific metering parameters, incident response procedures, and maintenance procedures.

Monitoring:

The SOMWG will recommend locations for monitoring. The SOMWG will also identify whether a before-and-after study should be conducted.

DESIRED OUTCOMES

The goal is the development of a Ramp Metering Program by working cooperatively and making decisions based on consensus through the SOMWG. The Ramp Metering Program should balance local and regional transportation objectives.

Once the Ramp Metering Program is developed, it is expected that the VTA TAC and the SOMWG will act as the body to make recommendations regarding ramp metering implementation and monitoring, on an on-going basis as needed.

APPENDIX B

SAMPLE MAINTENANCE AGREEMENTS

FREEWAY MAINTENANCE AGREEMENT

THIS AGREEMENT, made and entered into in duplicate, effective this 5th, day of October, 2004, is by and between the State of California, acting by and through the Department of Transportation, hereinafter referred to as "STATE," and the City of Vacaville, hereinafter referred to as "CITY".

WITNESSETH:

WHEREAS, on June 23, 2004, State Cooperative Agreement No. 4-1897-C was executed between CITY and STATE for certain adjustments of the local street and road system, including reconstruction of the interchange at State Highway Route 80 and Leisure Town Road; and

WHEREAS, the parties hereto mutually desire to clarify the division of maintenance responsibility, upon completion of construction under said Cooperative Agreement, as to separation structures, local CITY streets, or portions thereof, and landscaped areas lying within or outside the freeway limits; and

WHEREAS, under Section III, Article 26, of the abovementioned Cooperative Agreement, CITY will resume control and maintenance over each of the relocated or reconstructed CITY streets except on those portions thereof adopted as a part of the freeway proper.

NOW THEREFORE, IT IS AGREED:

1. Exhibit "A" consists of plan drawings that delineate the areas within STATE right of way which are the responsibility of CITY to maintain in accordance with this Agreement.

When a planned future improvement has been constructed or a minor revision has been effected within the limits of the freeway herein described, which affects the parties division of maintenance responsibility as described herein, STATE will provide a new dated and revised Exhibit "A," affecting such changes, which will be made a part hereof by an amendment to this Agreement when executed by both parties, which will thereafter supersede the attached original Exhibit A² and which will then become part of this Agreement.

2. LEISURE TOWN ROAD VEHICULAR OVERCROSSING

STATE will maintain, at STATE expense, the entire structure of any vehicular overcrossing below the deck except as hereinafter provided. CITY will maintain, at CITY expense, community identifiers at bridge abutments, the deck and surfacing (and shall perform such work as may be necessary to ensure an impervious and/or otherwise suitable surface) and all portions of the structure above the bridge deck, including, but without limitation, lighting installations, as well as all traffic service facilities (signals, signs, pavement markings, rails, etc.) that may be required for the benefit or control of CITY street traffic.

STATE will maintain and operate the traffic control signals and safety lighting at the ramp terminals as installed within STATE's right of way and pay thirty-three and one-third percent (33.33%) of the total costs, including electrical energy costs. CITY shall reimburse STATE for CITY's proportionate share of said costs, such share to be an amount equal to sixty-six and two-thirds percent (66.67%) of the total costs, including electrical energy costs.

CITY will maintain, at CITY expense, drainage ditch as shown on Exhibit "A".

Screening shall be placed at such locations (as shall be determined by STATE), on STATE freeway overpasses on which pedestrians are allowed (as directed by Sect. 92.6 of the Streets and Highways Code). All screens installed under this program will be maintained by STATE (at STATE expense).

CITY shall not enter the roadway of State Highway Route 80 unless expressly provided for in a separate encroachment permit obtained from STATE.

3. RETAINING WALLS

Responsibility for debris removal, cleaning and painting to keep retaining wall structure as shown on Exhibit "A" free of debris, dirt and graffiti shall lie with CITY and not with STATE. Modification or alteration of the exterior surface of the retaining wall by CITY will not be permitted.

4. LANDSCAPED AREAS ADJACENT TO CROSSING STRUCTURES

Responsibility for the maintenance of any plantings or other types of roadside development lying outside of the area reserved for exclusive freeway use shall lie with CITY and not with STATE.

5. INTERCHANGE OPERATION

It is STATE's responsibility to provide efficient operation of freeway interchanges, including ramp connections to local streets and roads. The maintenance and energy costs of safety lighting, traffic signals or other necessary electrically operated traffic control devices placed at ramp connections to CITY streets and roads shall be shared between STATE and CITY, as specified in Section 2 hereinabove. Timing of traffic signals shall be the sole responsibility of STATE.

6. LEGAL RELATIONS AND RESPONSIBILITIES:

- A. Nothing in the provisions of this Agreement is intended to create duties or obligations to or rights in third parties not parties to this contract or affect the legal liability of either party to the contract by imposing any standard of care with respect to the maintenance of STATE highways different from the standard of care imposed by law.

- B. It is understood and agreed that neither STATE nor any officer or employee thereof is responsible for any damage or liability occurring by reason of anything done or omitted to be done by CITY under or in connection with any work authority or jurisdiction delegated to CITY under this Agreement. It is understood and agreed that, pursuant to Government Code section 895.4, CITY shall defend, indemnify and save harmless STATE and all of its officers and employees from all claims, suits or actions of every name, kind and description brought for or on account of injuries to or death of any person or damage to property resulting from anything done or omitted to be done by CITY under or in connection with any work, authority or jurisdiction delegated to CITY under this Agreement.
- C. It is understood and agreed that neither CITY nor any officer or employee thereof is responsible for any damage or liability occurring by reason of anything done or omitted to be done by STATE under or in connection with any work, authority or jurisdiction delegated to STATE under this Agreement. It is understood and agreed that, pursuant to Government Code section 895.4, STATE shall defend, indemnify and save harmless CITY and all of its officers and employees from all claims, suits or actions of every name, kind and description brought for or on account of injuries to or death of any person or damage to property resulting from anything done or omitted to be done by STATE under or in connection with any work, authority or jurisdiction delegated to STATE under this Agreement.
7. EFFECTIVE DATE

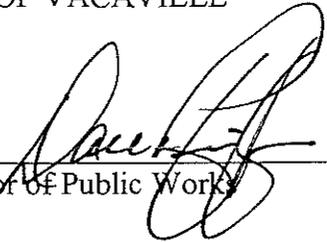
This Agreement shall be effective upon the date appearing on its face, it being understood and agreed, however, that, except as expressly provided in this Agreement, the execution of this Agreement shall not affect any pre-existing obligations of CITY to maintain designated areas pursuant to the terms of any pre-existing Freeway Agreement.

Solano 80 KP 47.5/49.1
(PM 29.5/30.5)

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

CITY OF VACAVILLE

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION



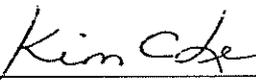
Director of Public Works

RANDELL IWASAKI
Director of Transportation (Interim)

Attest:



City Clerk

By  10/5/2004

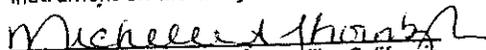
For BART DESAI Date
Deputy District Director
Maintenance

Approved as to form:



City Attorney

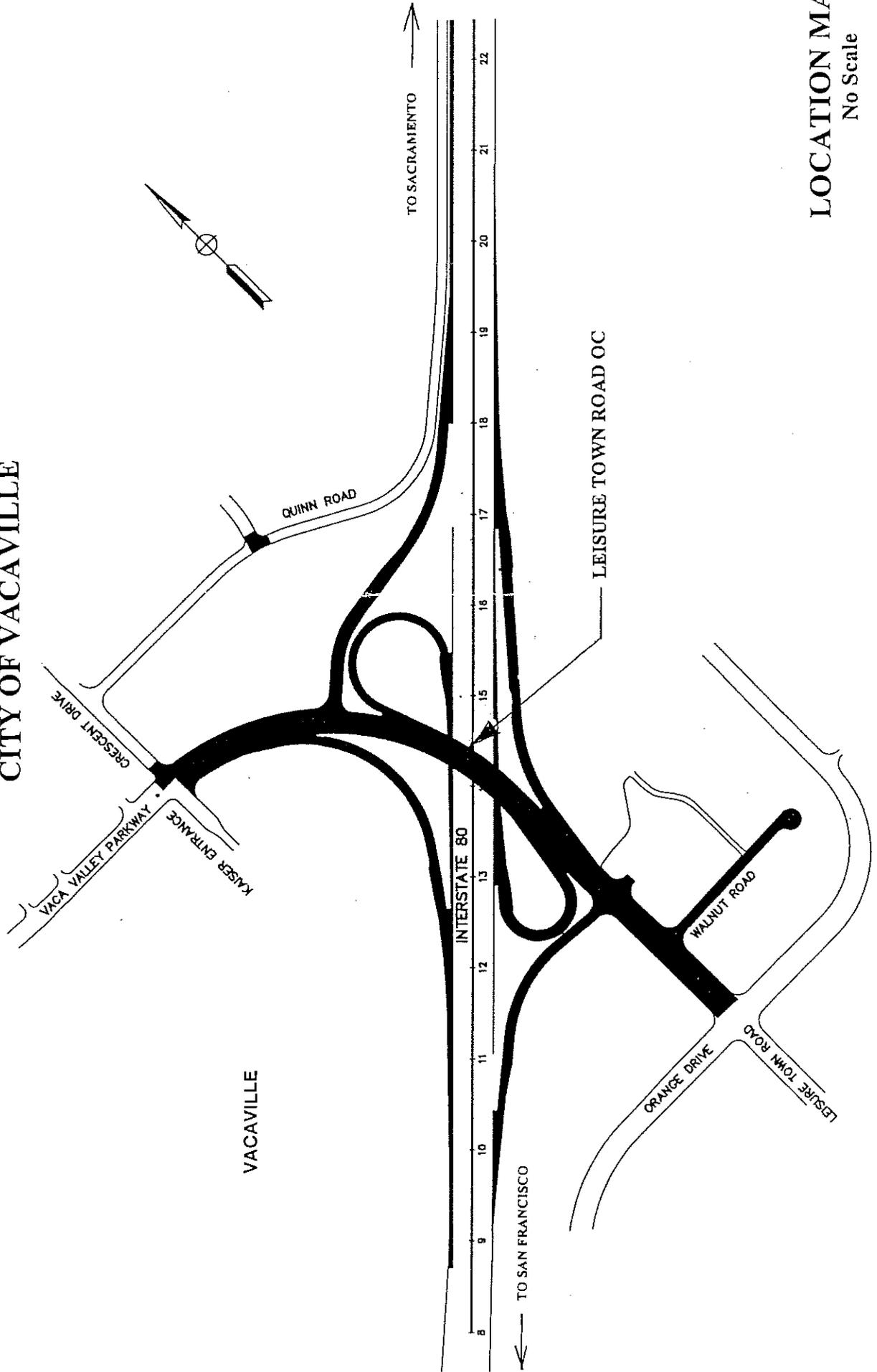
I hereby certify that the foregoing instrument is a true copy of the original instrument on file in my office.



City Clerk of the City of Vacaville, California

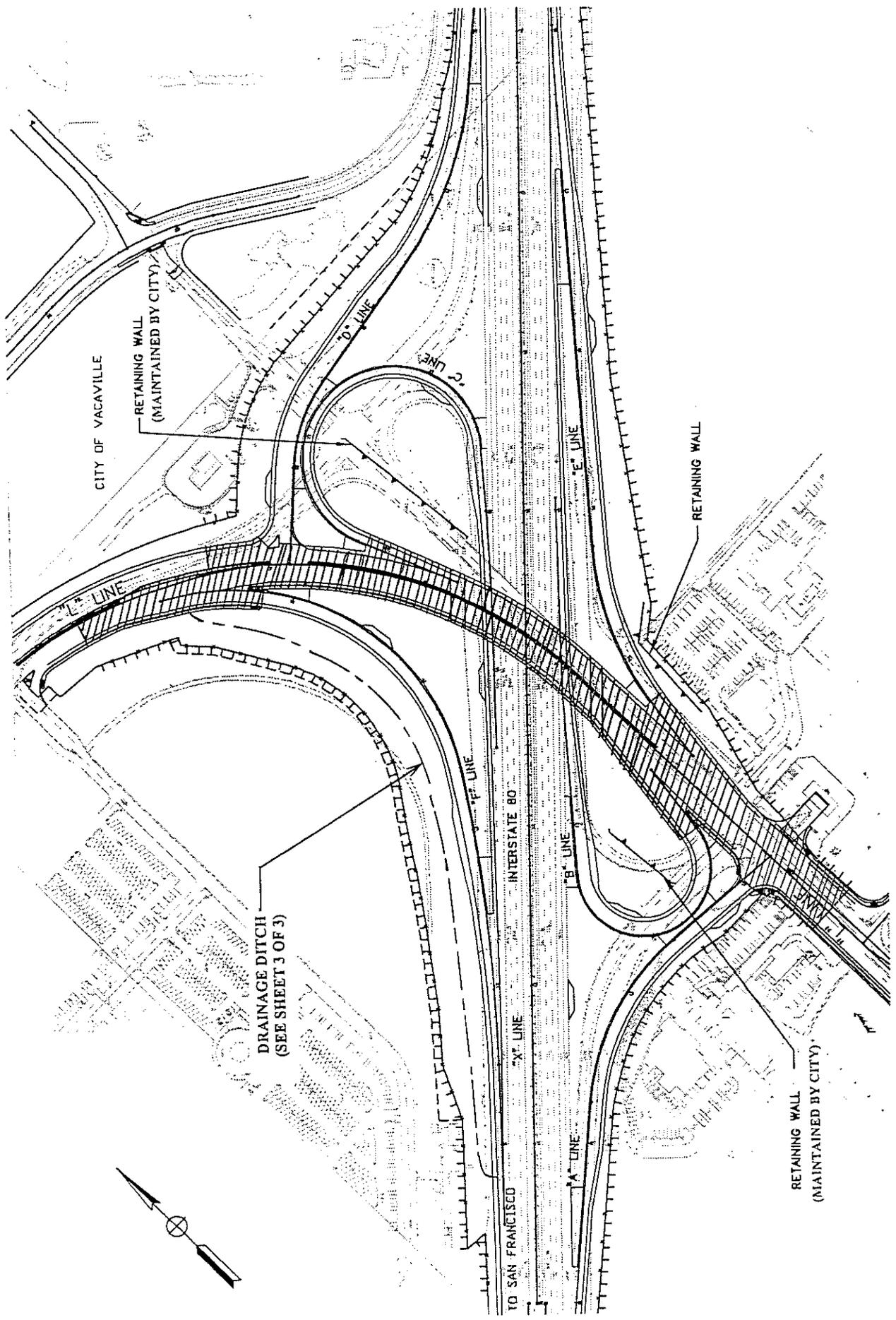
STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION
FREEWAY MAINTENANCE AGREEMENT

with the
CITY OF VACAVILLE



015986

LOCATION MAP
No Scale



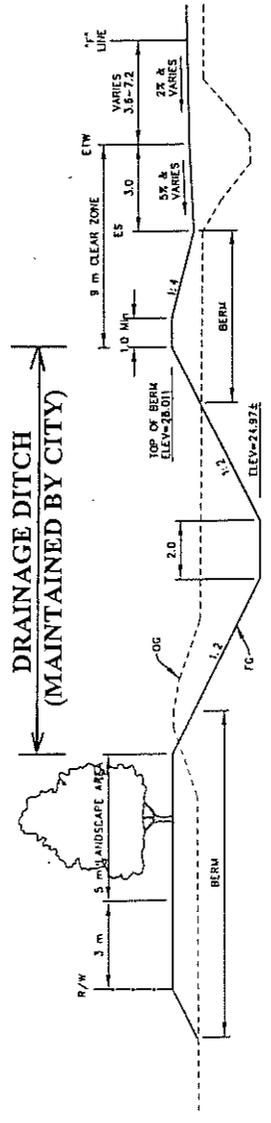
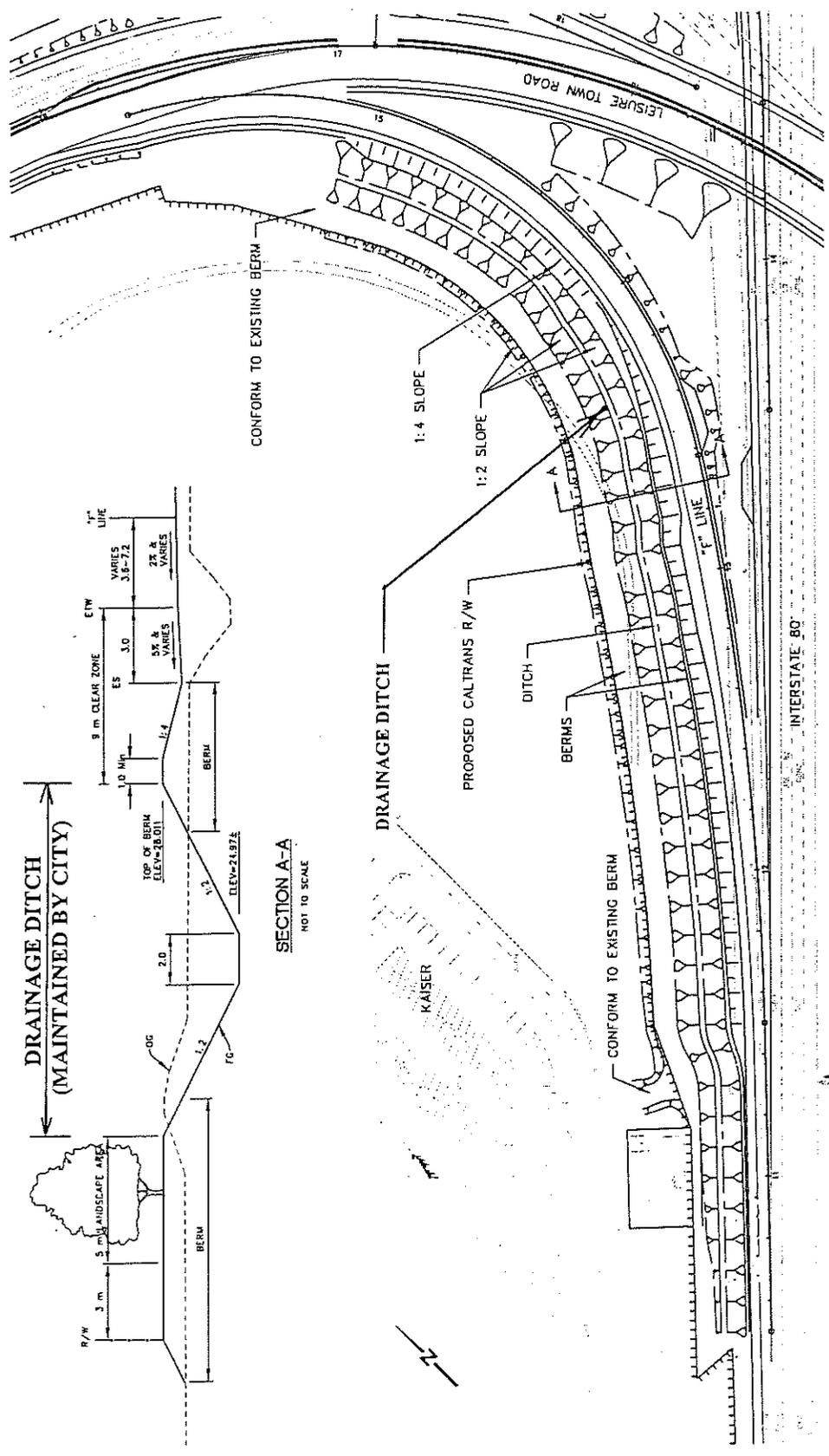
MAINTAINED BY CITY

FREeway MAINTENANCE AGREEMENT with THE CITY OF VACAVILLE

04-SOL-80

POST MILES 29.5/30.5

Date: 7/2004



SECTION A-A
NOT TO SCALE

RESOLUTION NO. 1997-63

**RESOLUTION AUTHORIZING THE DIRECTOR OF PUBLIC WORKS TO EXECUTE
MASTER, SUPPLEMENTAL, AND COOPERATIVE AGREEMENTS,
AS WELL AS AMENDMENTS TO THESE AGREEMENTS
WITH THE CALIFORNIA DEPARTMENT OF TRANSPORTATION**

WHEREAS, the Public Works Department has been successful in bringing in Federal, State, and regional grant funds totaling over \$9,000,000 over the past three years; and

WHEREAS, State and Federal grant funds require a general Master Agreement be signed and on file with the State of California Department of Transportation (Caltrans), a Supplemental Agreement for each individual project where funds are requested, and Cooperative Agreements covering the individual phases of each project; and

WHEREAS, Caltrans is currently requiring that the Master Agreement between Caltrans and the City of Vacaville be updated, and will not allow future reimbursements or allocations of funds until the general Master Agreement has been signed; and

WHEREAS, no local funding is tied to any of the agreements discussed, except those which have already been approved by the City Council.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Vacaville does hereby authorize the Director of Public Works to execute future Master, Supplemental, and Cooperative Agreements, as well as amendments to these agreements with the California Department of Transportation.

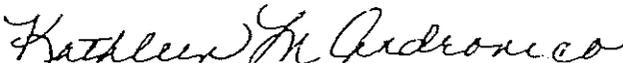
I HEREBY CERTIFY that the foregoing resolution was introduced and passed at a regular meeting of the City Council of the City of Vacaville, held on the 10th day of June 1997, by the following vote:

AYES: Councilmembers Clancy, Kimme, Slade, Vice-Mayor Augustine and Mayor Fleming

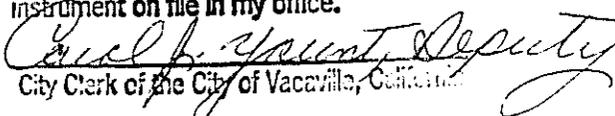
NOES: None

ABSENT: None

WITNESSETH


Kathleen M. Andronico, City Clerk

I hereby certify that the foregoing instrument is a true copy of the original instrument on file in my office.


City Clerk of the City of Vacaville, California

**FREEWAYMAINTENANCE AGREEMENT WITH
CITY/COUNTY OF _____**

THIS AGREEMENT is made and entered into in duplicate, effective this _____ day of _____, 200__, by and between the State of California, acting by and through its Department of Transportation, hereinafter referred to as "STATE and the City/County of _____, hereinafter referred to as "CITY"/ "COUNTY"; and collectively referred to as "PARTIES."

WITNESSETH:

- A. WHEREAS, on _____ a Freeway Agreement was executed between CITY/COUNTY and STATE, wherein the PARTIES consented to certain adjustments of the local street and road system required for the development of that portion of State Highway Route _____ within the jurisdictional limits of the CITY/COUNTY of _____ as a freeway; and
- B. WHEREAS, recent adjustments to said freeway have now been completed, or are nearing completion, and the PARTIES hereto mutually desire to clarify and revise the division of maintenance, as defined in section 27 of the California Streets and Highways Code, and their respective responsibilities as to separation structures and local CITY/COUNTY streets and roads, or portions thereof, and landscaped areas lying within or outside those modified freeway limits; and
- C. WHEREAS, pursuant to Section 1 of the above _____, 200__ Freeway Agreement, CITY/COUNTY has resumed or will resume control and maintenance over each of the affected relocated or reconstructed CITY/COUNTY streets, except for those portions adopted as a part of the freeway proper.

NOW THEREFORE, IT IS AGREED:

- 1. CITY/COUNTY agrees to continue their control and maintenance of each of the affected relocated or reconstructed CITY/COUNTY streets and roads as shown on that plan map attached hereto, marked Exhibit A, and made a part hereof by this reference.
- 2. STATE agrees to continue control and maintenance of those portions adopted as a part of SR ___ Freeway proper as shown Exhibit "A".
- 3. The PARTIES agree to share the maintenance responsibilities on individual infrastructure items as provided in Exhibit "C" attached and made a part of this Agreement by reference, as long as it is not in conflict with the terms of this Agreement. In case of a conflict, the terms of this Agreement shall prevail.
- 4. If there is mutual agreement on the change in the maintenance duties between PARTIES, the PARTIES can revise Exhibit "C" by a mutual written execution of Exhibit "A" & "B".

5. When another planned future improvement has been constructed and/or a minor revision has been effected within the limits of the freeway herein described which will affect the PARTIES' division of maintenance responsibility as described herein, STATE will provide a new dated and revised Exhibit "A," which will be made a part hereof by an amendment to this Agreement when executed by all PARTIES, which will thereafter supersede the attached original Exhibit A and become part of this Agreement.
6. CITY/COUNTY and STATE agree to accept their then respective operational and maintenance responsibilities and related associated costs thereof in the event jurisdictional boundaries of the PARTIES should change and Exhibit "A" is amended to reflect those changes.
7. CITY/COUNTY must obtain the necessary Encroachment Permits from STATE's District __ Encroachment Permit Office prior to entering STATE right of way to perform CITY/COUNTY maintenance responsibilities. This permit will be issued at no cost to CITY/COUNTY.
8. VEHICULAR AND PEDESTRIAN OVERCROSSINGS
 - A. STATE will maintain, at STATE expense, the entire structure of any STATE constructed vehicular and pedestrian overcrossings of SR __ below the deck surface except as hereinafter provided.
 - B. CITY/COUNTY will maintain, at CITY/COUNTY expense, the deck and/or surfacing and structural drainage system (and shall perform such work as may be necessary to ensure an impervious and/or otherwise suitable surface) and all portions of the structure above the bridge deck, including, but without limitation, lighting installations, as well as all traffic service facilities (sidewalks, signs, pavement markings, bridge rails, etc.) that may be required for the benefit or control of traffic using that overcrossing.
 - C. At such locations as shall be determined by STATE, screening shall be placed on STATE freeway overpasses on which pedestrians are allowed as directed by section 92.6 of the Streets and Highways Code. All screens installed under this program will be maintained by STATE, at STATE expense.
9. VEHICULAR AND PEDESTRIAN UNDERCROSSINGS
 - A. STATE will maintain the structure proper of all STATE-constructed vehicular and pedestrian undercrossings of STATE freeways while the roadway sections, including the traveled way, shoulders, curbs, sidewalks, wall surfaces (including eliminating graffiti), drainage installations, lighting installations and traffic service facilities that may be required for the benefit or control of traffic using that undercrossing will be maintained by CITY/COUNTY.

- B. CITY/COUNTY will request STATE's District Transportation Permit Engineer to issue the necessary Encroachment Permit for any proposed change in minimum vertical clearances between the traveled way portion of the underroadway surface and the Structure that results from modifications to the underroadway (except when said modifications are made by STATE). If the planned modifications will result in a reduction in the minimum clearance within the traveled way, an estimate of the clearance reduction must be provided to STATE's District Transportation Permit Engineer prior to starting work. Upon completion of that work, a clearance diagram will be furnished to STATE's District Transportation Permit Engineer that shows revised minimum clearances for all affected movements of traffic, both at the edges of the traveled way and at points of minimum clearance within the traveled way.

10. SOUNDWALLS

Responsibility for debris removal, cleaning and painting to keep CITY's/COUNTY's side of any sound wall structure free of debris, dirt and graffiti shall not lie with STATE.

11. LANDSCAPED AREAS ADJACENT TO CROSSING STRUCTURES

Responsibility for the maintenance of any plantings or other types of roadside development lying outside of the fenced right of way area reserved for exclusive freeway use shall lie with CITY/COUNTY and not with STATE.

12. INTERCHANGE OPERATON

It is STATE's responsibility to provide efficient operation of freeway interchanges, including ramp connections to local streets and roads.

13. BICYCLE PATHS

Except for bicycle paths constructed as permitted encroachments within STATE's right of way for which the permittee is solely responsible for all path improvements, STATE will maintain, at STATE expense, all fences, guardrailing, drainage facilities, slope and structural adequacy of any bicycle path located and constructed within STATE's right of way. CITY/COUNTY will maintain, at CITY/COUNTY expense, a safe facility for bicycle travel along the entire length of the path by providing sweeping and debris removal when necessary; and all signing and striping and pavement markings required for the direction and operation of that nonmotorized facility.

14. LEGAL RELATIONS AND RESPONSIBILITIES:

- A. Nothing within the provisions of this Agreement is intended to create duties or obligations to or rights in third parties not parties to this Agreement or to affect the legal liability of a PARTY to the Agreement by imposing any standard of care

with respect to the operation and maintenance of STATE highways and local facilities different from the standard of care imposed by law.

- B. Neither CITY/COUNTY nor any officer or employee thereof is responsible for any injury, damage or liability occurring by reason of anything done or omitted to be done by, under or in connection with any work, authority or jurisdiction conferred upon STATE arising under this Agreement. It is understood and agreed that STATE shall fully defend, indemnify and save harmless CITY/COUNTY and all of their officers and employees from all claims, suits or actions of every name, kind and description brought forth under, including, but not limited to, tortious, contractual, inverse condemnation and other theories or assertions of liability occurring by reason of anything done or omitted to be done by STATE under this Agreement.

- C. Neither STATE nor any officer or employee thereof is responsible for any injury, damage or liability occurring by reason of anything done or omitted to be done by CITY/COUNTY under or in connection with any work, authority or jurisdiction conferred upon CITY/COUNTY and arising under this Agreement. It is understood and agreed that CITY/COUNTY shall fully defend, indemnify and save harmless STATE and all of its officers and employees from all claims, suits or actions of every name, kind and description brought forth under, including, but not limited to, tortious, contractual, inverse condemnation or other theories or assertions of liability occurring by reason of anything done or omitted to be done by CITY/COUNTY under this Agreement.

D. INSURANCE:

CITY/COUNTY and their contractors shall maintain in force, during the term of this agreement, a policy of general liability insurance, including coverage of bodily injury liability and property damage liability, naming the State of California, its officers, agents and employees as the additional insured in an amount of \$1 million per person and \$2 million in aggregate. Coverage shall be evidenced by a certificate of Insurance in a form satisfactory to Department that shall be delivered to Department with a signed copy of this Agreement.

15. EFFECTIVE DATE

This Agreement shall be effective upon the date appearing on its face and shall remain in full force and effect until amended or terminated at any time upon mutual consent of the parties or until terminated by STATE for cause. It being understood and agreed, however, that the execution of this Freeway Maintenance Agreement shall not affect any pre-existing obligations of CITY/COUNTY to maintain other designated areas until a written notice from STATE has been issued that work in such areas, which CITY/COUNTY has agreed to maintain pursuant to the terms of a Freeway Agreement, has been completed.

The PARTIES are empowered by Street and Highways Code section 114 & 130 to enter into this Agreement and has delegated to the undersigned the authority to execute this Agreement on behalf of the respective agencies and covenants to have followed all the necessary legal requirements to validly execute this Agreement.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

CITY/COUNTY OF

**STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION**

BY _____
MAYOR

WILL KEMPTON
Director of Transportation

ATTEST:

BY _____
CITY/COUNTY Clerk

BY _____
Deputy District Director
Maintenance and Operations
District

APPROVED AS TO FORM:

BY _____
CITY/COUNTY Attorney

BY _____
**Legal Attorney
Department of Transportation

***Approval by STATE'S Attorney is not required unless changes are made to this form, in which case, the draft will be submitted to Headquarters for review and approval by STATE's Attorney as to form and procedures.*

EXHIBIT “A”

(Plan map showing SR ____Freeway proper and CITY/COUNTY road/facilities)

EXHIBIT “B”

(Individual maintenance items that are not provided for in the body of the Agreement.)

DEPARTMENT OF TRANSPORTATION

BOX 23660
OAKLAND, CA 94623-0660
(510) 286-4444
TDD (510) 286-4454



RECEIVED

AUG 10 1998
CITY OF FAIRFIELD

August 5, 1998

371.1

Mr. Charles J. Beck
Assistant Director of Public Works
City of Fairfield
1000 Webster Street
Fairfield, CA 94533-4883

Dear Mr. Beck:

Being transmitted is the fully executed Agreement for Maintenance of State Highways in the City of Fairfield.

Also attached is a sample billing form for use under this agreement. Bills should be sent to my attention at the following address:

Office of Maintenance Services
Department of Transportation, District 4
P.O. Box 23660
Oakland, CA 94623-0660

If you have any questions, please call me at (510) 286-5155.

Sincerely,

STANLEY NG
District Branch Chief
Office of Maintenance Services

Attachment

AGREEMENT FOR MAINTENANCE OF STATE HIGHWAYS IN THE CITY OF FAIRFIELD

This AGREEMENT is made effective this 1st day of July, 1998, by and between the State of California, acting by and through the Department of Transportation, hereinafter referred to as "STATE," and the City of Fairfield, hereinafter referred to as "CITY."

- I. The parties desire to provide that CITY perform particular maintenance functions on the State highways within the CITY as authorized in Section 130 of the Streets and Highways Code.
- II. This Agreement shall supersede any previous agreement for maintenance of the identified portion of the State highways in the City of Fairfield and/or amendments thereto with the CITY.
- III. The CITY shall perform such maintenance work as is specifically delegated to it, on the identified State highway routes, or portions thereof, all as hereinafter described under Exhibit A hereof or as said Exhibit may be subsequently modified with the consent of the parties hereto acting by and through their authorized representatives.
- IV. The degree or extent of maintenance work to be performed, and the standards therefore, shall be in accordance with the provisions of Section 27 of the Streets and Highways Code and the then current edition of the State Maintenance Manual (a copy of which has been provided to the CITY), or as may be prescribed from time to time by the District Director. "District Director," as used herein, means the District Director of the Department of Transportation assigned to the territory in which CITY is located, or an authorized representative.

The STATE reserves the option to inspect at random all areas of State highways maintained by the CITY. However, such random inspection does not preempt the CITY's maintenance responsibilities as specified in this Agreement.

An encroachment permit will be required for third parties when maintenance work is re-delegated. Such re-delegated work shall be performed at the same levels of service as specified herein and will be subject to the same random inspections as provided for work performed directly by CITY forces.

- V. The functions and levels of maintenance service delegated to the CITY in the attached Exhibit A, "Delegation of Maintenance," has been considered in setting authorized total dollar amounts. The CITY may perform additional work

if desired, but the STATE will not reimburse the CITY for any work in excess of the authorized dollar limits established herein.

- VI. A. The STATE will reimburse the CITY for the actual cost of all routine maintenance work performed by the CITY as delegated under Exhibit A to this Agreement. It is agreed that during any fiscal year, the maximum expenditure on any route shall not exceed the amount shown in Exhibit A to this Agreement unless such expenditure is revised by an amended Agreement or otherwise adjusted or modified as hereinafter provided for.
 - B. The expenditure per route for routine maintenance work, as referred to above, may be increased or decreased, redistributed between routes, or additional expenditures for specific projects may be made, when such adjustment of expenditures for routine maintenance or such specific work is authorized in writing by the District Director or his authorized representative and accepted by CITY as an amendment to Exhibit A.
 - C. Additional expenditures, or an adjustment of expenditures, once authorized shall apply during the fiscal year designated therein and shall not be deemed to permanently modify or change the basic maximum expenditure per route as hereinafter specified. An adjustment of any said maximum expenditure, either an increase or decrease, shall not affect other terms of the Agreement.
- VII. A new Exhibit A, "DELEGATION OF MAINTENANCE," will be provided annually by the STATE for the ensuing fiscal year, if necessary, to ensure an equitable annual cost allocation.
- VIII. A. The CITY will submit bills in a consistent periodic sequence (monthly, quarterly, semiannually, or annually). Bills less than \$500 shall not be submitted more than once each quarter. Bills must be submitted promptly following the close of STATE's fiscal year on each June 30 and should be coded according to the Caltrans HM Program Code as outlined in this Agreement. Bills submitted for periods prior to the last fiscal year will be deemed waived and will not be honored.
 - B. Maintenance services provided by contract or on a unit-rate basis with overhead costs included shall not have these above-mentioned charges added again. An actual handling charge by the CITY for the direct cost of processing this type of bill will be allowed.
- IX. Nothing in the provisions of this Agreement is intended to create duties or obligations to or rights in third parties not parties to this contract or to affect

the legal liability of either party to the contract by imposing any standard of care respecting the maintenance of State highways different from the standard of care imposed by law.

- X. It is understood and agreed that neither the STATE nor any officer or employee thereof is responsible for any damage or liability occurring by reason of anything done or omitted to be done by the CITY under or in connection with any work, authority or jurisdiction delegated to the CITY under this Agreement. It is understood and agreed that pursuant to Government Code Section 895.4 CITY shall defend, indemnify and save harmless the State of California, all officers and employees from all claims, suits or actions of every name, kind and description brought for or in account of injuries to or death of any person or damage to property resulting from anything done or omitted to be done by the CITY under or in connection with any work, authority or jurisdiction delegated to the CITY under this agreement.
- XI. It is understood and agreed that neither the CITY nor any officer or employee thereof is responsible for any damage or liability occurring by reason of anything done or omitted to be done by the STATE under or in connection with any work, authority or jurisdiction delegated to the STATE under this Agreement. It is understood and agreed that pursuant to Government Code Section 895.4 STATE shall defend, indemnify and save harmless the CITY, all officers and employees from all claims, suits or actions of every name, kind and description brought for or in account of injuries to or death of any person or damage to property resulting from anything done or omitted to be done by the STATE under or in connection with any work, authority or jurisdiction delegated to the STATE under this agreement.
- XII. STATE costs and expenses assumed under the terms of this Agreement are conditioned upon the passage of the annual State of California Budget by the Legislature, the allocation of funding by the California Transportation Commission as appropriate, and the encumbrance of funding to the District Office of STATE to pay the billings by CITY.
- XIII. This Agreement shall remain in full force and effect until amended by the mutual consent of the parties thereto or terminated by either party upon thirty (30) days notice to the other parties.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

CITY OF FAIRFIELD



Mayor

Attest:



Nancy Eichhorn, Deputy
City Clerk

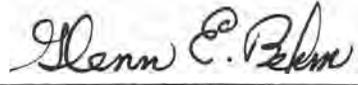
Approved as to form:

City Attorney

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

JAMES W. VAN LOBEN SELS
Director of Transportation

By

 7/20/98

GLENN E. BEHM Date
District Division Chief
Maintenance

EXHIBIT A

DELEGATION OF MAINTENANCE

The specific maintenance function indicated below (and on "EXHIBIT B") is hereby delegated to the CITY. This delegation of maintenance function set forth herein does not include areas and functions of which the control and maintenance rest with the local authority under the terms of Freeway Agreements and/or Freeway Maintenance Agreements.

Route No.	Length Miles	Description of Routing	Program Delegated	Maximum Annual Authorized Expenditure
12(a)	2.27	Rio Vista Road: from City limit near Russell road to City limit at Pennsylvania Avenue, a length of 2.27 miles.	None for Route 12(a)	
12(b)	0.00	Rio Vista Road: ramps at Jackson Street and at Webster Street	None for Route 12(b)	
80	9.83	Freeway: from City limit near lynch Road to City limit south of the west junction of the Route 12/80 separation, a length of 1.87 miles for this section; from City limit near Dittmer Road to City limit approximately 1.00 mile west of Suisun Valley Road, a length of 2.14 miles for this section; from City limit near Russell Road to City limit approximately 0.42 mile north of North Texas Street, a length of 5.82 miles for this section; a total length of 9.83 miles. (Footnotes 1, 2, 3, and 4)	HM2E	\$ 31,900.00
Total Authorized Route 80				\$ 31,900.00
680	4.01	Luther E. Gibson Freeway: from City limit approximately 1.71 miles south of Gold Hill Road to the Route 80/680 Separation, a length of 4.01 miles.	None for Route 680	
TOTAL AUTHORIZED AMOUNT				\$ 31,900.00

Footnotes:

1. See Exhibit B for limits of HM2E function delegated to CITY.
2. Billing and reimbursement shall be in accordance with Section II, Article (4), of Cooperative Agreement No. 10-845.
3. Upon execution of this Agreement, CITY may submit billing for HM2E function performed for the entire 1996/97 and 1997/98 fiscal years.
4. HM2E function delegated to CITY expires on January 1, 2013.

EXHIBIT A

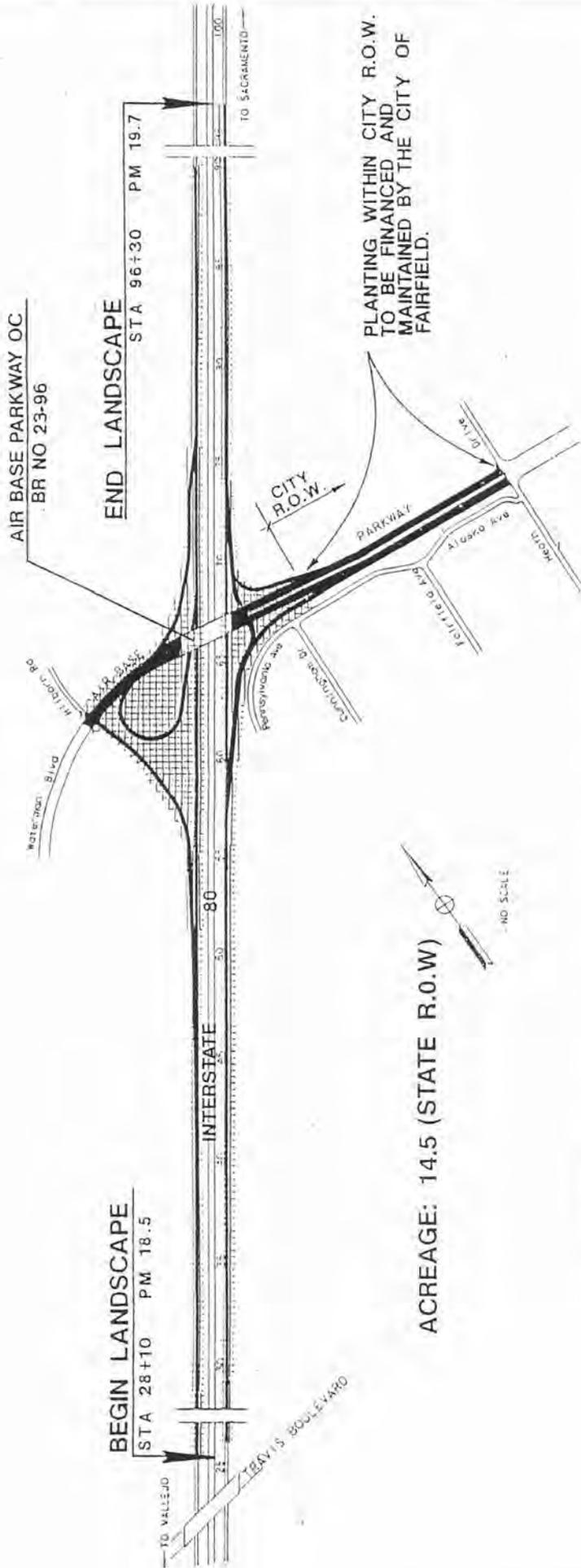
HM PROGRAM FUNCTIONS:

HM2E LANDSCAPING

This provides for watering, fertilizing, removal of shrubs, and control of weeds in planted areas. It also includes trimming, removal, and spraying of trees, replacement of plants, shrubs, and trees, and pest control in planted areas. The following problems are included:

1. Weed Control
2. Pruning/thinning/removing/replacing
3. Irrigation
4. Miscellaneous

F A I R F I E L D



BEGIN LANDSCAPE
STA 28+10 PM 18.5

END LANDSCAPE
STA 96+30 PM 19.7

ACREAGE: 14.5 (STATE R.O.W)

PLANTING WITHIN CITY R.O.W.
TO BE FINANCED AND
MAINTAINED BY THE CITY OF
FAIRFIELD.

LEGEND



AREA WITHIN STATE RIGHT OF WAY (EXCLUDING THE CENTER
MEDIAN ON I-80), TO BE MAINTAINED BY THE CITY OF FAIRFIELD
(LANDSCAPING ONLY)

STATE OF CALIFORNIA
BUSINESS AND TRANSPORTATION AGENCY
DEPARTMENT OF TRANSPORTATION

DISTRICT 4

IN FAIRFIELD AT AIRBASE PARKWAY I/C

R.O.W. RIGHT OF WAY

EXHIBIT B

CITY OF _____

State of California
 Department of Transportation
 Maintenance Services Branch
 Attn: Kim C. Le
 P. O. Box 23660
 Oakland, CA 94623-0660

MAINTENANCE OF STATE HIGHWAY ROUTE

Billing Period _____

State Route No. _____

Program	Operating Expenses	Salaries & Wages	Equipment Rental	TOTAL
HM1A,B Roadbed				
HM2C Roadside				
HM2D Litter & Debris				
HM2E Landscaping				
HM4M Traffic Guidance				
HM4K Electrical Traffic Signals				
HM4K Electrical Safety Lights				
TOTALS				

TOTAL CLAIMED _____

Signed _____

Title _____

DEPARTMENT OF TRANSPORTATION

BOX 23660
OAKLAND, CA 94623-0660
(510) 286-4444
TDD (510) 286-4454



RECEIVED

MAY 29 1998

CITY OF FAIRFIELD

May 26, 1998

371.1

Mr. Charles J. Beck
Assistant Director of Public Works
City of Fairfield
1000 Webster Street
Fairfield, CA 94533-4883

Dear Mr. Beck:

Being transmitted are four copies of the proposed Agreement for Maintenance of State Highways in the City of Fairfield. The proposed agreement contains revisions which address your previous comments.

Exhibit A has been revised to clearly indicate that work is only to be performed on Route 80. The above revision should also address your concerns about Section VI B. A reference is included in Exhibit A to Cooperative Agreement No. 10-845, which will address billing and reimbursement.

Upon execution of this agreement, the City may submit billing for past due work under this agreement. A note on Exhibit A has been added specifying this.

Because of the volume of bills we handle, we generally accept billings for total amounts under these types of agreements. We will only request backup for billings when the amount is unusually large. Since the City will be billing in equal quarterly amounts, we do not foresee requesting any backup for the City's billings.

Attached is a copy of sections from the Caltrans Maintenance Manual which are applicable to the City's work.

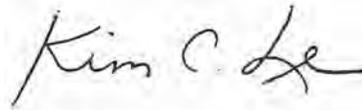
Please return the following to our office:

1. Three copies of the agreement with original signatures and the City's seal affixed.
2. An original or certified copy of the City's resolution authorizing entry into the agreement.

Mr. Beck
May 26, 1998
Page 2

After we receive the above, a fully executed agreement will be returned to you. If you have any questions, please call Mr. Stanley Ng at (510) 286-4459.

Sincerely,

A handwritten signature in black ink that reads "Kim C. Le". The signature is written in a cursive style with a large, sweeping "L" at the end.

KIM C. LE
District Branch Chief
Office of Maintenance Services

Attachment

AGENDA REPORT FOR CITY COUNCIL

MEETING DATE: July 7, 1998

TO: The Mayor and City Council

SUBJECT: Resolution Approving an Agreement for Maintenance of State Highways in the City of Fairfield (Maintenance of Landscaping at the Interstate Highway 80 / Air Base Parkway Interchange)

A) RECOMMENDED ACTION: Adopt Resolution.

ADVISORY BODY RECOMMENDATION: N/A

B) EXECUTIVE SUMMARY: The resolution approves an agreement for the City to maintain the landscaping within the Interstate Highway 80 / Air Base Parkway Interchange. The agreement provides for quarterly payments to the City for the landscape maintenance within the state right-of-way.

C) DISCUSSION: When Caltrans decided to reconstruct the Interstate Highway 80 / Air Base Parkway Interchange, Caltrans agreed to replace the sparse landscaping as it existed before the construction project. Because this Interchange is one of the gateways to Fairfield and Travis Air Force Base, the City requested that a higher level of landscaping be installed at the Interchange.

In September, 1991 Caltrans District 10 and the Fairfield City Council approved District Agreement No. 10-845 which provided for the installation of upgraded landscaping at the Interchange. Also, in addition to paying for the incremental cost of the landscaping, the City agreed to maintain the landscaping until January 1, 1996 to reimburse Caltrans for the costs of landscape architectural design and construction management for the project.

In July, 1995, the City of Fairfield was transferred from Caltrans District 10 to Caltrans District 4. Near the end of 1995, we began discussions with Caltrans District 4 regarding the previous agreement with District 10. The terms and conditions have now been agreed to by both parties.

The agreement provides for a maximum reimbursement of \$31,900 per fiscal year. This is adequate to perform the required maintenance activities. The City has been maintaining the interchange landscaping with a private contractor since January 1, 1996 at City expense. The agreement provides for the City to be compensated by Caltrans for previously incurred expenses.

PAGE 2

AGENDA REPORT TO CITY COUNCIL, No. 11

MEETING DATE: July 7, 1998

SUBJECT: Resolution Approving an Agreement for Maintenance of State Highways in the City of Fairfield (Maintenance of Landscaping at the Interstate Highway 80 / Air Base Parkway Interchange)

The maintenance agreement will allow the City to ensure that the landscaping within an important gateway to the City is continually maintained.

D) PUBLIC CONTACT: NA

E) FISCAL IMPACT: Caltrans will reimburse the City for landscape maintenance for a maximum of \$31,900 per fiscal year. The maximum reimbursement amount is indexed to a CTC inflation index. We expect \$31,000 in reimbursement for 1996 from Caltrans. That is adequate to cover the cost of maintenance by a private contractor and City maintenance supervision.

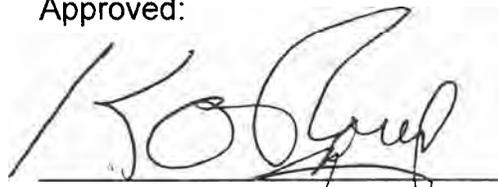
F) ALTERNATIVE COURSES OF ACTION: If the agreement is not approved, the City will terminate landscape maintenance of the interchange in which case the area would quickly become weed infested and deteriorate or, if the agreement is not approved, the City could continue to maintain the landscaping using General Fund money. If City Council has any questions concerning the agreement, action on the agreement can be postponed until questions can be addressed.

Prepared by:

Approved:



Ronald L. Hurlbut, Director
Public Works



Kevin O'Rourke, City Manager

Coordinated with: Caltrans, Fairfield City Attorney

Attachments: Agreement

INSTRUCTION PAGE

- 1.** Highlighted portions are instructions to the Agreement drafters.
- 2.** Use “mark up” function to allow for easy reviewing.
- 3.** Many options are provided or can be inserted and drafter needs to work with the District Maintenance Units to select the needed ones.
- 4.** In cases where Agreements need clauses which are not already provided for in this template, they can add them as required to suit their specific needs, in which case, the Agreement needs to be reviewed/approved by Headquarters Legal prior to.

**AGREEMENT FOR LANDSCAPE MAINTENANCE
WITHIN STATE HIGHWAY RIGHT OF WAY
ON ROUTE ___ WITHIN THE CITY/COUNTY OF _____**

THIS AGREEMENT is made and executed effective this ____ day of _____, by and between the State of California, acting through its Department of Transportation, hereinafter referred to as “STATE,” and the CITY/CONTY of _____, hereinafter referred to as “CITY/COUNTY,” together referred to as “PARTIES”.

WITNESSETH

RECITALS:

1. PARTIES desire to work together to allocate their respective obligations relative to newly constructed or revised improvements within STATE’s right of way by [choose as appropriate] a Cooperative Agreement (s) dated _____, Permit Number (s) _____.
2. This Agreement addresses CITY/COUNTY responsibility for the [list can include, but is not limited to, landscaping, planting, irrigation systems, hardscaping, mulches, control, litter and weed removal, Biofiltration Swales, Linear Radial Gross Solid Removal Devices, sidewalks, bike paths, and parking restriction signs] (collectively the “LANDSCAPING”) placed within State Highway right of way on State Route _____, as shown on Exhibit A, attached to and made a part of this Agreement. [If there are different MAINTENANCE responsibilities for each of the items in the List, group them together and name each group, e.g., LANDSCAPING, IMPROVEMENTS, SYSTEM, etc.]

Section I

In consideration of the mutual covenants and promises herein contained, CITY/COUNTY and STATE agree as follows:

- a) PARTIES have agreed to an allocation of maintenance responsibilities that includes, but is not limited to, inspection, providing emergency repair, replacement, & maintenance, (collectively hereinafter “MAINTAIN/MAINTENANCE”) of LANDSCAPING as shown on said Exhibit “A.”
- b) When a planned future improvement is constructed and/or a minor revision has been effected with STATE’s consent or initiation within the limits of the STATE’s right of way herein described which affects PARTIES’ Division of Maintenance’s responsibility as described herein, PARTIES will agree upon and provide a new dated and revised Exhibit “A” which will be made a part hereof by an amendment to this Agreement when executed and will thereafter supersede the attached original Exhibit “A” to thereafter become a part of this Agreement.

Section II

CITY/COUNTY agrees, at CITY/COUNTY expense, to do the following:

- a) CITY/COUNTY may install, or contract authorizing a licensed contractor with appropriate class of license in the State of California, to install {if relevant} and thereafter will MAINTAIN (section 27 of the Streets and Highways Code) LANDSCAPING conforming to those plans and specifications (PS&E) pre-approved by STATE.
- b) CITY/COUNTY will submit the final form of the PS&E, prepared, stamped and signed by a licensed landscape architect, for LANDSCAPING to STATE's District Permit Engineer for review and approval and will obtain and have in place a valid necessary encroachment permit prior to the start of any work within STATE'S right of way. All proposed LANDSCAPING must meet STATE's applicable standards.
- c) CITY/COUNTY shall ensure that LANDSCAPED areas designated on Exhibit "A" are provided with adequate scheduled routine MAINTENANCE necessary to MAINTAIN a neat and attractive appearance.
- d) An Encroachment Permit rider may be required for any changes to the scope of work allowed by this agreement prior to the start of any work within STATE's right of way.
- e) CITY/COUNTY contractors will be required to obtain an Encroachment Permit prior to the start of any work within STATE's right of way.
- f) To furnish electricity for irrigation system controls, water, and fertilizer necessary to sustain healthy plant growth in perpetuity.
- g) To replace unhealthy or dead plantings when observed within 30 days when notified by STATE that plant replacement is required.
- h) To prune shrubs, tree plantings, and trees to control extraneous growth and ensure STATE standard lines of sight to signs and corner sight distances are always maintained for the safety of the public.
- i) To MAINTAIN, repair and operate the irrigation systems in a manner that prevents water from flooding or spraying onto STATE highway, spraying parked and moving automobiles, spraying pedestrians on public sidewalks/bike paths, or leaving surface water that becomes a hazard to vehicular or pedestrian/bicyclist travel.
- j) To control weeds at a level acceptable to STATE. Any weed control performed by chemical weed sprays (herbicides) shall comply with all laws, rules, and

regulations established by the California Department of Food and Agriculture. All chemical spray operations shall be reported quarterly (form LA17) to the STATE to: the District Maintenance at (insert your address here).

k) To expeditiously repair any STATE facility damage ensuring from CITY'S LANDSCAPE (include IMPROVEMENTS, SYSTEM, if relevant) sign and presence and, activities, including, but not limited to, damaged caused by plants and plant roots and to reimburse LANDSCAPE presence and activities should STATE be required to cure a CITY/COUNTY default.

m) To remove LANDSCAPING (include IMPROVEMENTS, SYSTEM, if relevant) and appurtenances and restore STATE owned areas to a safe and attractive (include IMPROVEMENTS, SYSTEM, if relevant) condition acceptable to STATE in the event this Agreement is terminated as set forth herein.

l) To furnish electricity and MAINTAIN lighting system and controls for all street lighting systems installed by and for CITY/COUNTY.

m) To inspect LANDSCAPING (include IMPROVEMENTS, SYSTEM, if relevant) on a regular monthly or weekly basis to ensure the safe operation and condition of the LANDSCAPING.

n) To expeditiously MAINTAIN, replace, repair or remove from service any LANDSCAPING (include IMPROVEMENTS, SYSTEM, if relevant) system component that has become unsafe or unsightly.

o) To MAINTAIN all sidewalks/bike paths within the AGREEMENT limits of the STATE highway right of way, as shown on Exhibit A, at CITY/COUNTY expense. MAINTENANCE includes, but is not limited to, concrete repair, replacement and to grind or patch vertical variations in elevation of sidewalks/bike paths for an acceptable walking and riding surface, and the removal of dirt, debris, graffiti, weeds, and any deleterious item or material on or about sidewalks/bike paths or the LANDSCAPING (include IMPROVEMENTS, SYSTEM, if relevant) in an expeditious manner.

p) To MAINTAIN all parking or use restrictions signs encompassed within the area of the LANDSCAPING.

q) To allow random inspection of LANDSCAPING, (include IMPROVEMENTS, SYSTEM, if relevant), street lighting systems, sidewalks/bike paths and signs by a STATE representative.

r) To keep the entire landscaped area policed and free of litter and deleterious material.

s) All work by or on behalf of CITY/COUNTY will be done at no cost to STATE.

Section III

STATE agrees to do the following:

- a) Provide CITY/COUNTY with timely written notice of unsatisfactory conditions that require correction by CITY/COUNTY.
- b) Issue encroachment permits to CITY/COUNTY and CITY/COUNTY contractors at no cost to them.

Section IV

Legal Relations and Responsibilities:

- a) Nothing in the provisions of this Agreement is intended to create duties or obligations to or rights in third parties not parties to this Agreement, or affect the legal liability of either PARTY to this Agreement by imposing any standard of care respecting the design, construction and MAINTENANCE of these STATE highway improvements or CITY facilities different from the standard of care imposed by law.
- b) If during the term of this Agreement, COUNTY/CITY should cease to MAINTAIN the LANDSCAPING (include IMPROVEMENTS, SYSTEM, if relevant) to the satisfaction of STATE as provided by this Agreement, STATE may either undertake to perform that MAINTENANCE on behalf of CITY/COUNTY at CITY/COUNTY's expense or direct CITY/COUNTY to remove or itself remove LANDSCAPING (include IMPROVEMENTS, SYSTEM, if relevant) at CITY/COUNTY's sole expense and restore STATE's right of way to its prior or a safe operable condition. The CITY/COUNTY hereby agrees to pay said STATE expenses within thirty (30) days of receipt of billing by STATE. However, prior to STATE performing any MAINTENANCE or removing LANDSCAPING (include IMPROVEMENTS, SYSTEM, if relevant), STATE will provide written notice to CITY/COUNTY to cure the default and CITY/COUNTY will have thirty (30) days within which to effect that cure.

- c) Neither CITY/COUNTY nor any officer or employee thereof is responsible for any injury, damage or liability occurring by reason of anything done or omitted to be done by STATE under or in connection with any work, authority or jurisdiction arising under this Agreement. It is understood and agreed that STATE shall fully defend, indemnify and save harmless the CITY/COUNTY and all of its officers and employees from all claims, suits or actions of every name, kind and description brought forth under, including, but not limited to, tortious, contractual, inverse condemnation and other theories or assertions of liability occurring by reason of anything done or omitted to be done by STATE under this Agreement with the exception of those actions of STATE necessary to cure a noticed default on the part of CITY/COUNTY.
- d) Neither STATE nor any officer or employee thereof is responsible for any injury, damage or liability occurring by reason of anything done or omitted to be done by CITY/COUNTY under or in connection with any work, authority or jurisdiction arising under this Agreement. It is understood and agreed that CITY/COUNTY shall fully defend, indemnify and save harmless STATE and all of its officers and employees from all claims, suits or actions of every name, kind and description brought forth under, including, but not limited to, tortious, contractual, inverse condemnation or other theories or assertions of liability occurring by reason of anything done or omitted to be done by CITY/COUNTY under this Agreement.
- e) Insurance
CITY/COUNTY and their contractors shall maintain in force, during the term of this agreement, a policy of general liability insurance, including coverage of bodily injury liability and property damage liability, naming the State of California, its officers, agents and employees as the additional insured in an amount of \$1 million per person and \$2 million in aggregate. Coverage shall be evidenced by a certificate of Insurance in a form satisfactory to Department that shall be delivered to Department with a signed copy of this Agreement.
- f) Prevailing Wage Requirements
Workers employed in the performance of work contracted for by LOCAL AGENCY, and /or performed under encroachment permit, are covered by the prevailing wage provisions of the Labor Code in the same manner as are workers employed by STATE's contractors.

LOCAL AGENCY shall require its contractors to include prevailing wage requirements in all subcontracts entered into to perform the work mentioned in this agreement. All the LOCAL AGENCY's contracts with their contractors shall include a requirement that contractors and their subcontracts shall include prevailing wage requirements identical to those set forth in this Agreement.

- g) Termination
This Agreement may be terminated by timely mutual written consent by the PARTIES, and CITY/COUNTY's failure to comply with the provisions of this Agreement will be grounds for a Notice of Termination by STATE.

h) Term of Agreement

This Agreement shall become effective on the date first shown on its face sheet and shall remain in full force and effect until amended or terminated at any time upon mutual consent of the parties or until terminated by STATE for cause.

The PARTIES are empowered by Street and Highways Code section 114 & 130 to enter into this Agreement and has delegated to the undersigned the authority to execute this Agreement on behalf of the respective agencies and covenants to have followed all the necessary legal requirements to validly execute this Agreement.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

THE CITY/COUNTY OF

STATE OF CALIFORNIA
DEPARTMENT OF
TRANSPORTATION

By: _____
MAYOR

WILL KEMPTON
Director of Transportation

Attest:

By: _____
CITY/COUNTY Clerk

By: _____
Deputy District Director
Maintenance

By: _____
CITY/COUNTY Attorney

By: _____
**Attorney
Department of Transportation

***Approval by STATE'S Attorney is not required unless changes are made to this form, in which case, the draft will be submitted to Headquarters for review and approval by STATE's Attorney as to form and procedures.*

**AGREEMENT FOR MAINTENANCE OF LANDSCAPING
AT FOOTHILL ROAD OFF RAMP FROM
STATE HIGHWAY IN THE CITY OF PLEASANTON**

THIS AGREEMENT, hereinafter referred to as "Agreement," is made and entered into effective this 14 day of June, 1999, by and between the Department of Transportation, State of California, hereinafter referred to as "STATE," and the City of Pleasanton, hereinafter referred to as "CITY."

A. RECITALS

1. Improvements to property and roadside of CITY street, hereinafter referred to as "PROJECT," will be performed at Foothill Road and Dublin Canyon Road by forces under contract with CITY.
2. PROJECT, which is located within CITY's service area, is partially located within STATE's right of way at the Foothill Road eastbound off ramp, hereinafter referred to as "OFF RAMP," from Route 580, a freeway within the limits of the City of Pleasanton.
3. Those portions of PROJECT located within STATE's right of way, hereinafter referred to as "ENCROACHMENT," will be constructed by said forces under standard form Encroachment Permit No. 97-1965, to be issued by STATE.
4. Both parties hereto mutually desire to specify the extent of maintenance responsibility for ENCROACHMENT as between the two parties, in particular the maintenance functions to be performed by the CITY, and to specify the terms and conditions under which such work will be performed on STATE right of way.
5. As used herein, "CITY" shall also mean CITY's employees.

B. AGREEMENT

1. This Agreement shall supersede any previous agreement relating to maintenance of these ENCROACHMENT performed by CITY.
2. CITY shall perform such maintenance work as is specifically delegated to it all as hereinafter described under Section D hereof or as said section may be subsequently modified with the written consent of the parties hereto acting by and through their authorized representatives.
3. CITY shall maintain, at CITY expense, the ENCROACHMENT landscaping and vegetation, as shown on Exhibit A, attached to and made a part of this Agreement.

4. Rights granted to CITY under this Agreement are restricted to maintenance duties. Any other use or presence by CITY, including a contractor for CITY, will require that a separate encroachment permit be issued from STATE.
5. CITY shall not, at any time, use or permit the public to use ENCROACHMENT in any manner that will interfere with or impair the primary highway transportation use of STATE's right of way or other uses licensed by STATE.
6. Should CITY desire to reconstruct or further improve ENCROACHMENT, CITY shall obtain all necessary design approvals and a new additional encroachment permit from STATE.
7. CITY shall be responsible for all costs associated with relocating or protecting any elements of the ENCROACHMENT in the event that such action is required due to any work by STATE that would be necessary to expand, modify, maintain, or repair STATE's highway system. STATE shall provide sufficient notification to CITY prior to start of any such work.
8. STATE reserves its right to use all areas within STATE's right of way, including ENCROACHMENT, for future construction, reconstruction, expansion, modification, or maintenance purposes without restriction.
9. CITY will apply for a separate encroachment permit from STATE to maintain ENCROACHMENT.
10. STATE reserves the option to inspect, at random, all areas of ENCROACHMENT to assure conformance with standard STATE maintenance levels. Such inspection does not preempt or replace the CITY's maintenance responsibilities assumed under this Agreement.
11. CITY shall not enter the roadbed of OFF RAMP during maintenance of ENCROACHMENT, nor shall CITY enter or leave ENCROACHMENT via the roadbed of OFF RAMP, except as may be provided for in said separate encroachment permit to maintain ENCROACHMENT.
12. An encroachment permit from the STATE will be required for third parties if CITY re-delegates its maintenance work. Such re-delegated work shall be subject to the same requirements, inspections, and levels of service as specified herein for work performed directly by CITY forces.

C. MAINTENANCE DEFINED

1. Maintenance is defined in Section 27 of the Streets and Highway Code, in part, as follows:

- Sec. 27 (a) The preservation and keeping of rights-of-way, and each type of roadway, structure, safety convenience or device, planting, illumination equipment, and other facility, in the safe and useable condition to which it has been improved or constructed, but does not include reconstruction or other improvement.*
- (b) Operation of special safety conveniences and devices, and illuminating equipment.*
- (c) The special or emergency maintenance or repair necessitated by accidents or by storms or other weather conditions, slides, settlements, or other unusual or unexpected damage to a roadway, structure, or facility.*

D. MAINTENANCE FUNCTIONS

The various maintenance functions that are delegated to CITY, at CITY's sole expense, within the area of ENCROACHMENT are indicated below:

1. LANDSCAPING

CITY shall provide for maintenance and replacement of all vegetative material, including watering, fertilizing, plant replacement, weed control by hand and mechanical means, tree trimming and/or removal, chipping, and miscellaneous work such as pest control and inhibitor spray. Maintenance of the irrigation system is included.

2. LITTER/DEBRIS/GRAFFITI

CITY shall provide for removal of litter, debris, and graffiti from roadsides. Litter, debris, and graffiti includes, but is not limited to, all sand, paper, garbage, refuse, trimmings, and other natural or man-made intrusions resulting from public passage and access or acts of God.

E. LEGAL RESPONSIBILITIES

1. Nothing in the provisions of this Agreement is intended to create duties or obligations to or rights in third parties who are not parties to this Agreement or to affect the legal liability of either party to the Agreement by imposing any standard of care with respect to the maintenance of State highways or the ENCROACHMENT different from the standard of care imposed by law.
2. It is understood and agreed that neither STATE nor any officer or employee thereof is responsible for any damage or liability occurring by reason of anything done or omitted to be done by CITY under or in connection with any work authority or jurisdiction delegated to CITY under this Agreement. It is understood and agreed that, pursuant to Government Code Section 895.4, CITY shall defend, indemnify and save harmless STATE, and all STATE officers and employees from all claims, suits or actions of every name, kind and description brought for or on account of injuries to or death of any person or damage to property resulting from anything done or omitted to be done by CITY under or in connection with any work, authority or jurisdiction delegated to CITY under this Agreement.
3. It is understood and agreed that neither CITY nor any CITY officer or employee thereof is responsible for any damage or liability occurring by reason of anything done or omitted to be done by STATE under or in connection with any work, authority or jurisdiction delegated to STATE under this Agreement. It is understood and agreed that, pursuant to Government Code Section 895.4, STATE shall defend, indemnify and save harmless CITY, and all CITY officers and employees from all claims, suits or actions of every name, kind and description brought for or on account of injuries to or death of any person or damage to property resulting from anything done or omitted to be done by STATE under or in connection with any work, authority or jurisdiction delegated to STATE under this Agreement.

F. TERM OF AGREEMENT

This Agreement shall terminate only upon the mutual written agreement of the parties.

IN WITNESS WHEREOF, the parties hereto have set their hands and seals the day and year first above written.

CITY OF PLEASANTON

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

Deborah Acosta
City Manager

JOSE MEDINA
JAMES W. VAN LOBEN SELS
Director of Transportation

Attest:

By

Peggy Leyda
City Clerk

Glenn E. Behm
GLENN E. BEHM
District Division Chief
Maintenance

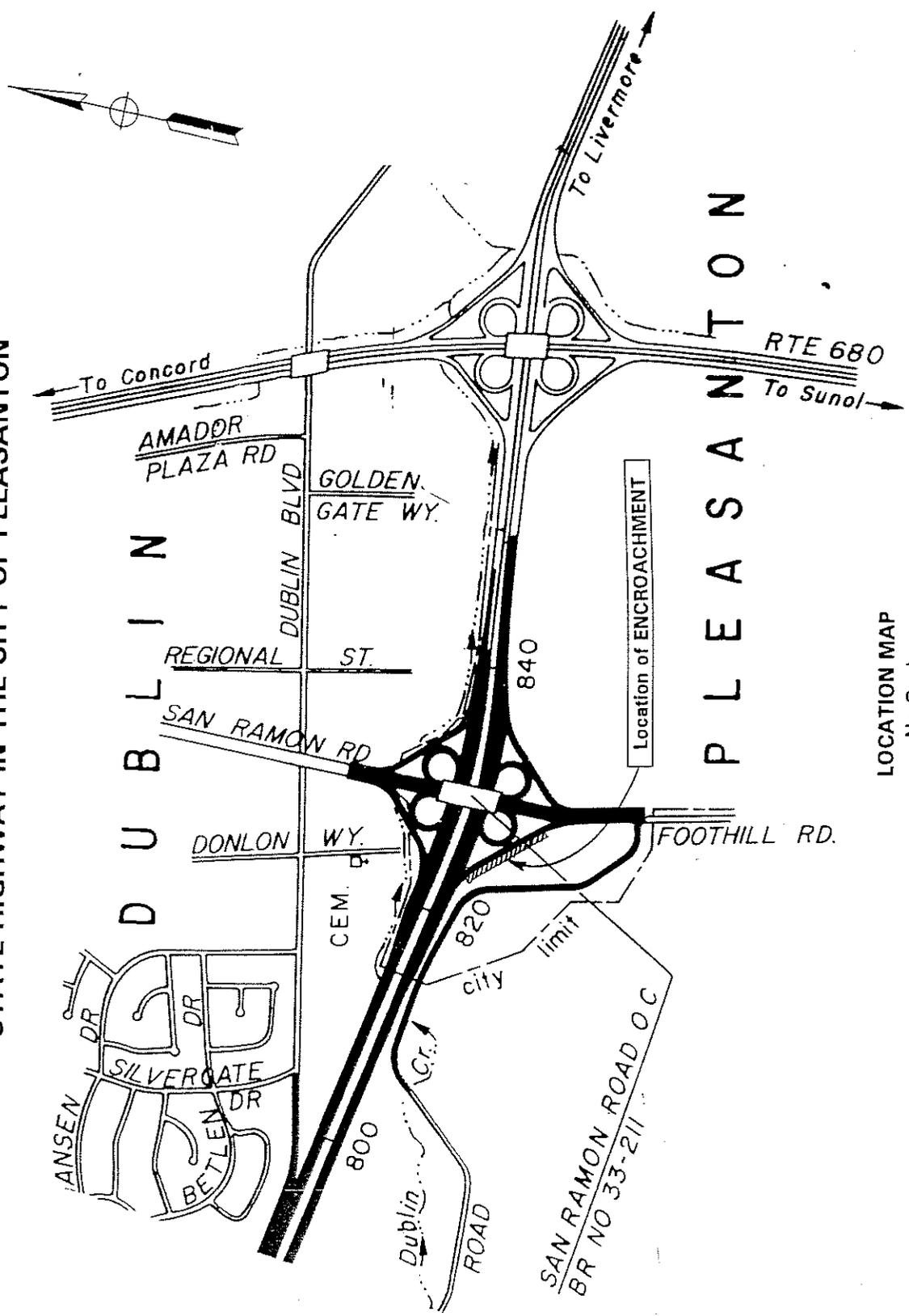
Approved as to form and procedure:

Michael Atwood
City Attorney

William P. B...
Attorney
Department of Transportation

DISTRICT	COUNTY	ROUTE	POST MILE
4	Ala	580	21.31

**AGREEMENT FOR MAINTENANCE OF LANDSCAPING
AT FOOTHILL ROAD OFF RAMP FROM
STATE HIGHWAY IN THE CITY OF PLEASANTON**



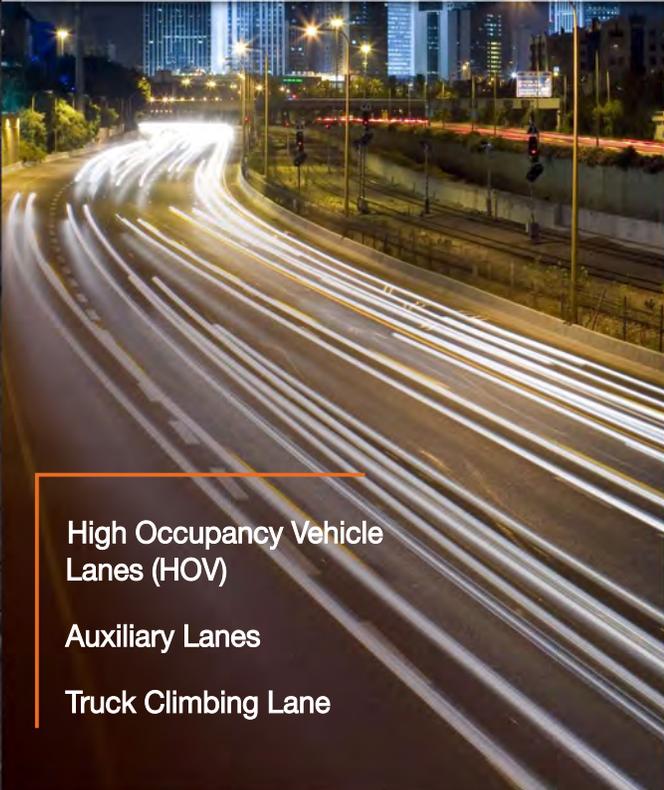
LOCATION MAP
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APPENDIX C

OPERATIONS IMPROVEMENT TOOLBOX AND FACT SHEETS

MAKING BETTER USE OF OUR ROADS AND OUR TIME

Freeway Lanes



High Occupancy Vehicle
Lanes (HOV)

Auxiliary Lanes

Truck Climbing Lane

Intelligent Transportation Systems (ITS)



ITS FIELD ELEMENTS

Ramp Meters

Closed Circuit Television
(CCTV) Cameras

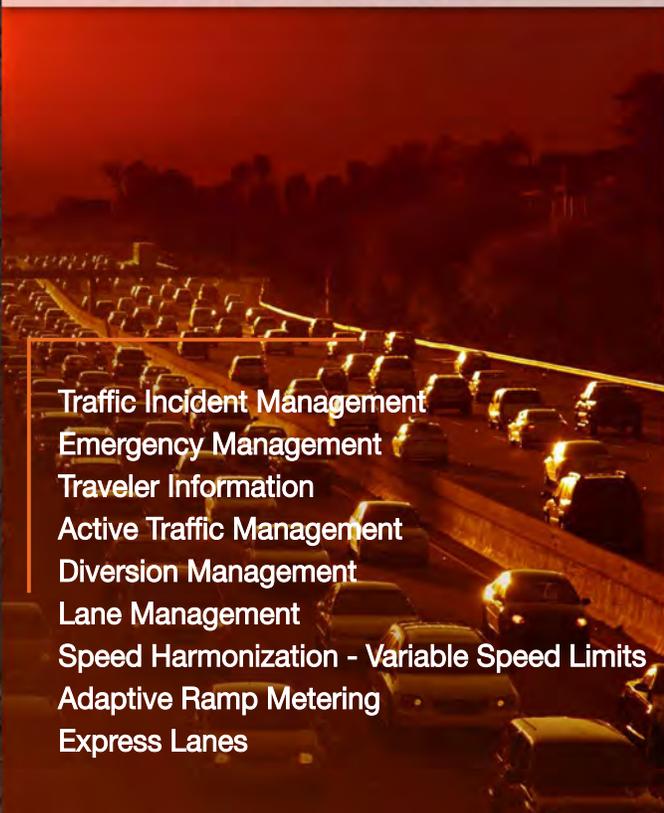
Vehicle Detection
Systems (VDS)

Changeable Message
Signs (CMS)

Highway Advisory
Radio (HAR)

Communications
Network

Operational Strategies



Traffic Incident Management

Emergency Management

Traveler Information

Active Traffic Management

Diversion Management

Lane Management

Speed Harmonization - Variable Speed Limits

Adaptive Ramp Metering

Express Lanes



STra

Solano Transportation Authority

solano transportation authority
one harbor center, suite 130
suisun city, california 94585

707.424.6075
www.solanolinks.com

CARD BRDG 14 MIN
BERVELEY 30 MIN
CONCORD 21 MIN



FACTS

I T S F I E L D E L E M E N T S

Connecting Intelligent Transportation Systems (ITS) field devices to a Transportation Management Center (TMC), allows operators to manage large sections of the highway, reducing delays, improving efficiency and saving millions of dollars in commuter time every year. Using ITS field devices together allows for optimal benefits in managing heavily congested highways.

Ramp Meters



[Read More](#)

Ramp Meters are traffic signals that are used to manage the flow of traffic entering the freeway, temporarily storing it on the ramps in order to maximize the freeway's capacity.

Closed Circuit Television (CCTV)



[Read More](#)

CCTV Cameras are video cameras located along highway corridors that display video to the TMC so that operators can monitor and verify incidents and congestion.

Vehicle Detection Systems (VDS)



[Read More](#)

VDS are devices that detect vehicle presence, count and speed. This data is gathered and combined with other information from ITS to better manage highways.

Changeable Message Signs



[Read More](#)

CMS are signs located along the highway to provide information to travelers about downstream corridor delays, traffic incidents, and estimated travel times.

Highway Advisory Radio (HAR)



[Read More](#)

Travelers can receive information about weather conditions, traffic delays, congestion, and construction from HAR. When HAR is active there are clearly marked signs identifying a specific radio station, usually low-powered AM, where bulletins are transmitted.

Communications Network



[Read More](#)

Communications network is a term that describes the method used for connecting ITS devices such as CCTV cameras, traffic monitoring stations and/or HAR to the TMC. Options for communication networks include microwave, fiber, leased lines or a combination of two or more of these technologies.

I T S F I E L D E L E M E N T S





F R E E W A Y L A N E S

High Occupancy Vehicle (HOV) Lanes

A lane reserved for vehicles with a driver and one or more passengers. Also known as carpool lanes, commuter lanes, diamond lanes, express lanes and transit lanes.

How it works: Commuters may enter and exit at designated hours during the day based on posted time of day operations.

FACTS

- HOV lanes can move at maximum freeway speed while carrying more people per lane than the parallel lanes that suffer delays from queuing at bottlenecks.
- The Bay Area HOV segments occupy 274.5 lane-miles out of a total of 2,868 direction miles of highway.
- HOV lane system construction is underway for I-80 between Red Top Road and Air Base Parkway. Additional HOV lanes are planned from Carquinez Bridge to SR 37.

Auxiliary Lanes

An additional lane on the freeway that connects entrance ramps and exit lanes of interchanges.

How it works: Auxiliary lanes parallel highway lanes providing a new lane in each direction where vehicles can accelerate or decelerate on to the freeway or main line roadway.

FACTS

- Auxiliary lanes improve traffic flow and reduce congestion by minimizing weaving when cars merge on and off of the freeway or main roadway.
- They enable local traffic to use the freeway for short distances without entering the main traffic flow, and offer a safety/accident reduction benefit.
- I-80/I-680/SR12 Interchange Auxiliary Lanes Project is still underway.
- Auxiliary Lanes are planned for I-780 at E 2nd to E 5th, I-80 from Travis Blvd. to Air Base Pkwy.

Truck Climbing Lane

A lane added in areas where trucks have a particularly difficult time climbing a grade, resulting in slowing of traffic.

How it works: Trucks travel at a slower pace in an added lane designated to allow for slower acceleration than cars.

FACTS

- Provides a place for trucks to safely gain speed while keeping the rest of the freeway traffic moving.
- Traffic exiting I-80 into westbound SR 12 had to ascent a long steep 6.7 percent uphill grade until the new 1.2 mile truck climbing lane opened at SR 12.
- Rush hour congestion is greatly eased by a truck climbing lane.
- Truck traffic exiting westbound I-80 on to westbound SR 12 had to ascent a long steep 6.7 percent uphill.

Variable Toll Lanes and Congestion Pricing

F R E E W A Y L A N E S





O P E R A T I O N A L S T R A T E G I E S

Traffic Incident Management

It is more effectively accomplished through involvement of a TMC with communications and a method for 1) detection of incidents (VDS, loops, 911 calls); 2) CCTV cameras to verify and monitor the incident; and 3) a way to communicate with travelers (HAR, CMS, 511); inform travelers of the incident so that they can avoid congestion created by a traffic incident, natural disaster or other non-recurring event.

FACTS

- Traffic incident management's primary goal is to move road users safely and quickly past the traffic incident, reducing the likelihood of secondary accidents.
- Traffic incidents cause between 53 and 58 percent of total delay in urban areas. (Texas Transportation Institute, Urban Mobility Report 2003, College Station, TX September 2003)
- TMC operators with CCTV camera access to a traffic incident can save millions per year by assisting police with valuable information for making deployment decisions – averting unnecessary resources (tow truck, fire truck, etc).
- Information from the freeways in the STA area are transmitted and coordinated at the regional TMC in Oakland.

Emergency Management

This includes coordination between transportation and public safety officials as well as other first responder disciplines that support incident management, disaster response, disaster preparedness, evacuation and reentry.

FACTS

- In order to assist in managing emergencies, traffic operators must use combined ITS elements such as: CCTV to verify incidents, CMS to send messages to travelers (i.e., sending child abduction information to a CMS for delivery to travelers), detection to determine road congestion and HAR for providing information to travelers for evacuation and reentry routing.
- Better communications between agencies and with the public during an emergency saves lives.
- Caltrans and CHP are co-located in the regional TMC in Oakland where information from these freeways would help in making both emergency management decisions and traffic incident management decisions.





Traveler Information Systems

Real time travel information is provided for commuters by using travel data gathered from 911 callers and other detection devices (VDS, loops). The information is put into the regional 511 System. TMC operators can verify using CCTV cameras and communicate with users/travelers through CMS, HAR and the 511 system via cell phone or on-line.

FACTS

- Traveler information is accessible via cell phones.
- If the user/traveler enters the start and end points, date and time of travel into the 511 system for the desired segment and route, the system will provide travel information for their route.
- ITS field equipment is not available in all locations to gather necessary data to provide travel time and route information.

Active Traffic Management

Recurrent and non-recurrent congestion based on prevailing traffic condition is automatically and dynamically managed.

FACTS

- Contra Costa and Alameda Counties are considering lane management, diversion management and variable speeds, all strategies of active traffic management.
- The system monitors travel data from the roadway; once travel speeds and traffic volumes reach a certain threshold – the system would **automatically** begin to adjust metering and manage lanes to smooth traffic flow.

Diversion Management

It is most commonly used during construction or for major incidents where traffic needs to be diverted from a specific area in order to continue to move road users safely and expeditiously past a traffic incident or construction.

FACTS

- Temporary traffic controls used in diversion management may include flashing yellow lights, warning signs, portable dynamic messages signs or other ITS devices.
- Potential for an automatic route generator to assess the quality of diversion routes that advises system managers of alternative routes.





O P E R A T I O N A L S T R A T E G I E S

Lane Management

Lane Management is a strategy of active traffic management and uses defined lanes to employ real time operational strategies. The TMC operators manage lanes in response to changing traffic conditions to preserve unimpeded traffic flow.

FACTS

- Speed harmonization – variable speed limits, dynamic merge control and dynamic rerouting through traveler information are all potential options for managing lanes.

Speed Harmonization (Variable Speed Limits)

Speed harmonization is a practice of modifying speeds during periods of congested corridor conditions to improve overall performance and reduce the likelihood of primary incidents.

FACTS

- The system automatically begins to reduce speeds incrementally across lanes along the freeway where the congestion is heaviest.
- Speed limit signs need to be within visual range for travelers.
- CCTV cameras should be installed to monitor the system.
- The expert system should be connected to a TMC - it is critical that the system be reliable and accurate.
- Contra Costa and Alameda Counties are considering lane management, diversion management and variable speeds, all strategies of active traffic management.

Adaptive Ramp Metering

Adaptive Ramp Metering systems use vehicle detectors to forecast when and where congestion will occur. Traditional ramp metering is responsive while adaptive ramp metering actually “adapts” to control upstream ramps through traffic signals at ramps in order to control congestion on the mainline.

FACTS

- The system forecasts bottlenecks and adjusts metering vehicle rates based on the forecasts.
- Adaptive ramp metering is automated and manages freeway onramps based on forecasting where congestion will occur by integrating more than one ramp meter in its automated response.

Express Lanes

High Occupancy Toll (HOT) lanes, often called express lanes, are a method to improve overall system efficiency while providing for a mechanism to fund future improvements; often referred to as congestion pricing.



[Read More](#)

O P E R A T I O N A L S T R A T E G I E S



Ramp Metering



Description

Ramp metering is the use of traffic signals at freeway on-ramps to control the rate of vehicles entering the freeway, temporarily storing it on the ramps. Using this technique for operational improvements helps to optimize freeway flow and minimize congestion.

Ramp metering is best used on freeway segments with high volume traffic to manage portal entries so that the freeway can be regulated during peak periods of congestion, typically AM and PM commuter hours. Ramp metering has been a proven operations strategy for improving overall freeway corridor performance and is not meant to work by itself or just in one location of a corridor.

Specific Locations and Conditions

1) I-780 between I-80 and I-680, 2) I-80 between I-780 and the Carquinez Bridge, 3) I-80 between I-780 and Highway 12 and 4) I-60 between I-80 and I-780 are the current corridor segments being considered for combined fiber, CCTV Cameras, CMS signs, detection and Ramp Meters. Exact locations are undetermined.

Cost

The cost of the detectors and ramp meter for each entry ranges from \$100 to \$250 thousand but does not include communications.

PROS

- Ramp metering reduces the number of acceleration – deceleration cycles and smoothes traffic flow anywhere from 2-55%.
- Main line peak period delay is reduced.
- Main line average speed can increase 13 -26%.
- Reduction in main line crashes by as much as 50%.
- Can improve travel time by 15-60%.
- Increases main line throughput.
- Emission reduction due to reduced delay.

CONS

- Wait times at on-ramps can cause significant back up on to arterials.
- Potential diversion of trips to local roads is sometimes frustrating to residents if the local roads are not designed to manage the additional vehicles.
- Metering favors longer through trips.
- On-going communication costs.
- Public acceptance needed before implementation.

Ramp Metering



FREQUENTLY ASKED QUESTIONS ABOUT RAMP METERING

Why use Ramp Metering?

Ramp metering has a proven record for reducing congestion, travel times and accidents. Without ramp meters, multiple cars try to merge simultaneously. Drivers on the freeway slow down to allow the cars to enter and these slower speeds quickly cause backups. They have been used successfully in the Bay area, additionally, they decrease traffic idling on the freeway resulting in fewer vehicle emissions overall.

How does ramp metering work?

They are essentially traffic signals that reduce disruption to the interstate traffic by controlling the flow of merging traffic and alleviating bottlenecks. Slowing down merging traffic reduces accidents that occur when vehicles merge onto the freeway.

Where has it been used in the Bay area?

- Since 2003 Ramp meters have operated on six EB onramps on Ala-580. Peak travel times were reduced by 60%.
- In Pleasanton from Foothill Rd. (west of I-680) to Greenville Road (west of Altamont Pass) decreased travel times by 33%.
- SM-101 from Route 92 to the Santa Clara County Line experienced a 30% reduction in peak period congestion.

Does ramp metering give any benefit to those who are slowed at freeway entrance ramps?

Accidents often occur when multiple vehicles merge on to the freeway at the same time. Ramp metering reduces accidents by up to 30%. A short wait on the ramp allows drivers to increase their average speed on the freeway and shorten their overall freeway travel times.

What are the challenges in successfully implementing Ramp Metering?

One of the single biggest challenges with ramp metering is the possibility for on-ramp traffic queues to extend and impede traffic on adjacent arterials. Typical tools to alleviate queue backup are good ramp metering timing, activation of queue detection, and ramp widening to provide storage.

In addition to the use of queue detectors, a written agreement between Caltrans and the local agencies on operating parameters will help outline procedures to mitigate potential negative impact. An existing MOU between Caltrans and San Mateo County should be used as an example of a best practice example and similar documents should be a key component of ramp metering implementation. ●

Closed Circuit Television Cameras



Description

CCTV Cameras are video cameras located along the freeway corridors that send video images to the Transportation Management Center where there are monitors and operators, who view them. The traffic images can be used to verify traffic accidents or congestion and can sometimes even assist in determining appropriate resources for incident clearance (i.e., fire trucks, ambulance, tow trucks, etc.).

CCTV cameras are affordable, effective, and are proven to provide valuable information that can save time. The preferable style includes pan, tilt, zoom (PTZ) features so that the operator can zoom in on a specific incident or, pan out for a view of the traffic queue. TMC operators can make a visual check of field conditions at a reported site. The operator can move the nearest camera to focus on the area of interest to verify the incident then check the nature of the incident and severity, make recommendations and finally, observe the progress of incident response and clearance. Cameras are often used to check the message displayed on changeable message signs.

CCTV cameras are most effective for use in traffic incident management if they are deployed along corridors or at intersections where there are high volumes of traffic or frequent incidents.

PROS

- Relatively inexpensive way to verify and monitor traffic congestion.
- Assists in traffic incident management by giving the operator visual of an accident. This allows the operator to make decisions regarding deployment of resources (maintenance vehicles, fire, etc.) before valuable resources are dispatched.

CONS

- Public opponents of CCTV point out the perceived loss of privacy when CCTV cameras are deployed along corridors that are adjacent to housing, apartments and businesses located nearby.
- Fiber communications lines are limited in the area but other forms of communication are used.

Closed Circuit Television Cameras



FREQUENTLY ASKED QUESTIONS ABOUT CLOSED CIRCUIT TELEVISIONS CAMERAS (CCTV)

Specific Locations and Conditions

Although there are currently over 500 CCTV cameras installed on the Bay Area freeway system, I-680 is the only freeway segment that has a substantial CCTV coverage in Solano County. I-80 has CCTV coverage from the Carquinez Bridge to SR 37.

Cost

CCTV cameras range from \$5,000 - \$15,000 each. The cost for purchase of the camera does not include the mounting of the device (i.e., concrete poles, light poles, etc...) or the communications. Mounting costs are based on whether the mounting option exists at the scene or if it has to be built. Communications costs depend on options available (i.e., microwave, hardwire, etc.). The total cost is substantially higher once these additional costs are added to the camera cost.

Are the CCTV cameras monitored 24/7?

Video images from the CCTV cameras are sent to the Oakland TMC where TMC operators and the California Highway Patrol have access to them 24 hours a day.

Do the CCTV cameras record accidents and if so, how is the video used by Traffic Management Centers (TMC's)?

Caltrans does not record or archive video images.

Can CCTV cameras be used for "spying" on public homes or, for recording vehicle speeds with license plates to issue citations to the public for speeding?

CCTV cameras are pointed away from private residences. Speeds cannot be legally documented using CCTV cameras for enforcement purposes unless there are posted signs advising the public that the signal is posted as an "enforcement signal".

What are the challenges in successfully implementing appropriate use of CCTV Cameras in the region?

The use of fiber is the preferred communications medium along freeway segments primarily for the transport of video images from CCTV cameras to the TMC in Oakland because it has the greatest data carrying capacity and longest transmission distance. Fiber communications are a challenge because there is sparse fiber coverage of the freeways in the County, but most of the CCTV cameras are communicated with using either a leased ISDN or ADN line. Funding is the main challenge. •

Changeable Message Signs (CMS)

TRAVEL TIME TO
SFO ARPT 8 MIN
SF DUNELN 21 MIN



Description

Changeable Message Signs (CMS) are signs located along the freeway that are connected to the Transportation Management Center (TMC). TMC operators use these signs to distribute timely information to commuters that can assist the traveler in preparing for what is ahead. CMS provide an effective method of broadcasting information about downstream corridor delays, traffic incidents, estimated travel times, tolling information, road closures, chain control, and amber alerts.

CMS are one of the traditional Intelligent Transportation System (ITS) elements deployed for use in Advanced Traffic Management System (ATMS) techniques. The use of CMS is an effective method of providing traveler information immediately to the motorist on the highway system. CMS are also used for Active Traffic Management strategies including lane management, route management, tolling lane management and traffic incident management.

The key to successful use of CMS is locating signs at decision points to assist the motorist in making an informed choice in their travel plans.



PROS

- CMS can help drivers make better route decisions or travel time decisions.
- CMS help alleviate driver stress by giving them information ahead of time about congestion or assessing traffic.
- Unlike radio broadcasts, CMS can be placed where they are most useful to drivers for alternative routing when the freeway is congested.

CONS

- Locating CMS adjacent to neighborhoods that view a CMS as a visual intrusion.

Changeable Message Signs (CMS)

TRAVEL TIME TO
SFO ARPT 8 MIN
SF DUNELN 21 MIN

FREQUENTLY ASKED QUESTIONS ABOUT CHANGEABLE MESSAGE SIGNS

CARD BRDG
BERKELEY
CONCORD

Specific Locations and Conditions

Caltrans has standards for the CMS sizes and types but a constraint with field deployments is the ability to communicate with the signs using either a leased or non-leased connection, roadway geometrics and distances to decision points.

Cost

CMS signs themselves are not cost prohibitive at \$47,000 - \$115,000 each for a stationary CMS and, \$15,000 to \$30,000 for a portable CMS. Caltrans has standards for mounting CMS that could cost another \$100,000 for the stationary CMS. These estimates do not consider the cost of operating the CMS or the cost of communications which, depends on availability of hardware or telephone lines in the desired location. Operating costs (including maintenance) tends to range around \$2,000 per year.

Where does the traffic time information come from and how often is it updated?

Data containing information about travel speeds is extracted from vehicle detection system (VDS) devices at or along the state highway system. That information is transmitted to the CMS for travelers. The information is updated at regular intervals.

Why are CMS better than radio broadcasts that I already depend on?

Unlike radio broadcasts, CMS can be placed strategically where they are most useful to drivers for making decisions.

How is it determined where to place the signs?

Locations for signs are chosen based on freeway structure for supporting safe lane transition and options available for travelers to make re-routing decisions. The key to successful use of CMS is locating the signs at decision points to assist motorists in making an informed choice in their travel plans. ●

Communications Network



Description

Communications Network is a technology neutral term used for the system or method in a region that delivers voice, data to Changeable Message Signs (CMS), images from Closed Circuit Television Cameras (CCTV) and connectivity of ITS field devices to the Transportation Management Center (TMC).

The use of fiber is the preferred communications network along freeway segments throughout the County. Fiber is used primarily for the transport of video images from CCTV cameras to the TMC in Oakland. Fiber provides the greatest data carrying capacity and longest transmission distance in comparison to other non-leased forms of communications media. However, there is limited coverage of the freeway system with a hardwired fiber network in the County.

Where fiber does not exist the communications network often include leased lines (phone) to transmit data to CMS and other ITS field devices. It is slower than fiber but, has been proven as an adequate option for communicating with ITS field devices.

Specific Locations and Conditions

Leased lines are used at locations where there are ITS field devices, including CCTV cameras, detection sensors and highway advisory radios.

PROS

- Fiber communications network allows for greater capacity of information to be exchanged, managed and controlled.
- The most cost effective time to build a fiber backbone for a communications network is in the construction phase of a highway.
- Obtaining communications links from a third party provider is a valid way of quickly obtaining communications connectivity to individual locations and/or complete network implementation.

CONS

- Fiber can be expensive to deploy to an already existing infrastructure.
- If fiber is inadvertently cut when basic maintenance is completed on a freeway or during an incident, the back-up system for communications can sometimes be a challenge until the fiber is repaired.
- Operations and maintenance of a fiber communications network requires skilled staff.
- Data rates for some fiber optic models can go up to 100 kbps.

Communications Network



FREQUENTLY ASKED QUESTIONS ABOUT COMMUNICATIONS NETWORK

Cost*

The cost of the communications network depends largely on the type. To install an all fiber communications network with in-ground conduit and a redundant backbone can sometimes be cost prohibitive. However, life cycle costs may be less overall with the fiber network than with an all microwave or mostly microwave network supplemented with one or two segments of fiber.

Why are fiber networks preferred?

Fiber networks are preferred because they have the lowest over all life cycle costs and offer the greatest data carrying capacity with the longest transmission distance in comparison to other non-leased forms of communications media.

How costly are fiber networks?

It depends on when and where the fiber network is installed. The cost of deploying conduit for fiber or copper cable is approximately \$250,000 - \$300,000 per mile. Agency owned spread spectrum wireless incremental costs are approximately \$6,000 per connected node. Leased lines vary in cost averaging \$1,000 - \$5,000 per year.

What maintenance is required for communications networks?

Maintenance costs vary depending on the type of communications system installed and how those systems are maintained. Industry standard costs add about 10% of the cost of deployment for maintenance. If the systems are leased much of the leased network may be insured and maintenance costs are provided as part of the lease. ●

Highway Advisory Radio (HAR)



Description

Highway Advisory Radio (HAR) is a service that provides roadway information. Drivers are alerted to tune their car radios to a specific channel, usually a low powered AM radio station, in order to receive transmitted information. The purpose of using HAR is to manage system efficiency and improve safety by providing information.

HAR are used for notifying motorists of roadway conditions. Low powered radios are accompanied by extinguishable message signs (EMS) which provide a pre-set message of the radio station to tune into for traffic information. HAR can be used in conjunction with other technologies that gather weather and roadway information such as Road Weather Information Systems (RWIS), Environmental Sensing Stations (ESS), Roadside Detection (RS-D) Closed Circuit Television (CCTV) and pavement sensors.

HAR can disseminate information about current roadway conditions, road closures, construction events, congestion, alternate routes, or any other valuable assistance for motorists.

HARs can be used during extreme weather conditions (chain control), or during incidents where the HAR can supplement the information with the use of Changeable Message Signs (advisories for using alternate routes).

PROS

- HAR is a cost effective way to communicate information within a defined radius to travelers about roadway conditions, construction or weather alerts.
- Since most people have radios in their cars, HAR is a low technology means of communicating with travelers.
- HAR can be used for managing event traffic, disseminating information for public safety or weather conditions.

CONS

- Information on HAR is only good if the message being delivered is updated frequently with current and accurate information. Thus, HAR has a high demand for employee resources.
- HAR has a limited radius for communication and effectiveness. Buildings and other stationary objects can impact the radio signal distance that information can be transmitted.
- HAR is most effective when used with CCTV cameras, CMS and other ITS elements as part of an overall traveler information system.

Highway Advisory Radio (HAR)



FREQUENTLY ASKED QUESTIONS ABOUT HIGHWAY ADVISORY RADIO

Specific Locations and Conditions

Two HARs have been deployed in Vallejo and Dixon.

Cost

HAR capital costs range between \$10,000 and \$25,000¹ at the low end but can be higher. The cost of a HAR sign can range between \$1,000 to \$5,000. Operations and maintenance costs range between 10% – 20% of the capital cost per year (i.e. in order to include replacement and operations costs if the HAR cost a total of \$20,000 for the HAR and sign, the annual cost for operations and maintenance is estimated at \$2,000 - \$4,000 annually.

How would messages be put on the radio station?

Radio messages can be recorded by a TMC operator using a simple telephone connection. Once a message is recorded, the EMS is turned on to alert travelers to tune into the appropriate radio station.

How would Highway Advisory Radio benefit the region?

HARs provide traveler information to a large group of travelers within a defined radius. HAR gives the ability to broadcast more information than a typical CMS in some cases. It can also provide timely information for special events or construction information that includes multiple pieces of information for a defined period of time.

What are the challenges in successfully implementing appropriate use of HAR in the region?

Caltrans HARs do not continuously broadcast messages when the situation does not require it. HAR can be labor intensive because recordings can become outdated as conditions change. Messages need to be updated in order to be relevant. ●

¹Capital cost for the HAR is for a 10-watt system. The cost includes the processor, antenna, transmitters, battery back-up, cabinet, rack mounting, lighting, mounts, connectors, cable, and license fee. Cost of the sign includes flashing beacons and variable message capability as well as the cost of the controller. <http://www.cflhd.gov/ttoolkit/fit/FactSheets/ITS/HAR.htm>

Vehicle Detection Systems (VDS)



Description

Video Detection Systems (VDS) is a technology neutral term used to describe a device that detects vehicle presence, count and speed. The device has three components: the transducer, a signal processing device, and a data processing device. The data may be transmitted to the Transportation Management Center (TMC) in Oakland and used, along with other Intelligent Transportation System (ITS) data collected, to manage congestion on highways.

There are two types of VDS, intrusive and non-intrusive. Intrusive detectors are embedded into the pavement surfaces while non-intrusive detectors are installed above the ground and can be mounted on lighting, freeway signs, over bridges or on existing structures with minimal cost for installation, maintenance or operation. The most common type of vehicle detection systems (VDS) in the area are inductive loops or “in ground loop detectors”. The most common non-intrusive VDS in the region are video detection cameras used with FasTrak, the electronic tolling system used for surveillance at tolling booths.

Specific Locations and Conditions

Inductive loops are installed throughout the freeway system. There are also FasTrak toll tag readers in Fairfield that provide valuable information to the 511 System for travel time information.

PROS

- Inductive loop detectors are a mature, proven system with very few policy issues.
- VDS can be installed with construction projects and maintained with roadway resurfacing with no hassle.
- Inductive loops are multi-functional, gather important data and are critical components of a successful freeway management system.

CONS

- Costs for ongoing calibration and maintenance of inductive loop VDS can be high, especially in areas where weather is inclement.
- Non-intrusive VDS have been plagued in the past with picking up glare, reflection, shadowing images that can be incorrectly read. Newer VDS have alternative solutions for these problems.

Vehicle Detection Systems (VDS)



FREQUENTLY ASKED QUESTIONS ABOUT VIDEO DETECTION SYSTEMS

Cost

Inductive loops are generally included in the cost of construction or resurfacing of the freeway. When selecting overhead technologies, such as video image processing the mounting location is critical and can be relatively expensive if existing structures are not readily available.

Why use VDS?

Reliable vehicle detection, whatever the technology choice, is a critical component of consistent traffic operations. Smoother traffic operations help reduce accidents, improve fuel mileage by maintaining consistent vehicle speeds and reduce emissions that contribute to pollution.

How do VDS work and how do they help manage traffic?

VDS are embedded directly in to the pavement surface and have cabinets which house hardware and software that detects and classifies vehicles. The processor in each cabinet collects the individual detections and forwards the information to the TMC in Oakland.

Can VDS be used for recording vehicle license plates to issue citations to the public for speeding?

Non-intrusive video camera VDS are used in the Bay Area at the tolling booth collection points as surveillance tools for monitoring and ticketing. If the FasTrak readers are not in a vehicle when it passes through the FasTrak lane, the VDS takes a picture of your license plate. The information is forwarded to security and a ticket is issued. ●

Express Lanes



Description

Express Lanes are designated highway lanes for High Occupancy Vehicles (HOV) including carpools, transit, vanpools, motorcycles and hybrid vehicles and only for solo drivers if a toll is paid. Tolls from solo drivers are collected electronically using a FasTrak® transponder. No tollbooths are necessary for the toll collection. Tolling fees may vary based on demand and level of congestion in the Express Lanes with lighter congestion requiring a lower fee and higher congestion equating to a higher fee. This practice is often referred to as congestion pricing for High Occupancy Toll (HOT) lanes. Information on price levels is communicated to motorists via a Changeable Message Sign, giving the solo driver enough time to decide whether the Express Lanes or general purpose lanes meet their specific needs.

Express Lanes may be created through construction of new lanes or by converting an existing HOV lane. Enforcement is conducted by the California Highway Patrol (CHP) through visual or electronic means. Toll revenue will pay for operating and maintenance cost of the toll facilities, transit service in the corridors and for expansion of HOV/Express Lane facilities in the corridor.

Specific Locations and Conditions

The Bay area's first Express Lane project is located on I-680 southbound over the Sunol Grade with an anticipated open date in 2010-2011. An additional project is identified on I-580 targeted to open 2010-2011 eastbound and 2012-2013 westbound. Projects that are operating in the U.S. include the Orange County SR 91 Express Lanes, San Diego I-15 Express Lanes, Seattle SR 167 Express Lanes, Minneapolis I 394 lanes, Denver I-25 Express Lanes and Utah I-15 Express Lanes. Similar projects are in the planning stage in Los Angeles County, Miami, Florida, and Virginia.

PROS

- Revenues from solo vehicle tolls can be used to support transit and other improvements in the corridor.
- Can improve the overall performance in the corridor.
- Can reduce congestion in general purpose lanes.

CONS

- Purpose of Express Lanes must be part of a public relations program.
- Requires modification to existing highways where space is constrained.
- New legislative or institutional arrangements will be needed to create a regional network of Express Lanes.

Express Lanes



FREQUENTLY ASKED QUESTIONS ABOUT EXPRESS

LANES FASTRAK
(NO CASH)
1-888-889-1515

\$2.00

Cost

Cost for the I-680 Express Lane project is estimated at \$40.5 million including construction and electronic toll system costs. It is estimated that it will generate \$5 million per year.

How do Express Lanes improve efficiency of HOV lanes? How are they different than HOV lanes?

HOV lanes are underused in comparison to their capacity. Express Lanes have been proven in many areas to provide improved reliability and reduced travel times for all travelers impacted by congestion. A “win-win”, Express Lanes, provide better efficiency on the highway system by reducing person hours of delay and vehicle hours of delay while at the same time, producing much needed funds to continue to address the region’s mobility and infrastructure challenges.

What happens if you can’t afford to use the Express Lanes, it doesn’t seem fair?

Studies show that travelers from all income groups and professions value having a reliable travel option for decreasing travel times when they need it most. Pricing policies can include fixed differences by vehicle type and variations by time of day or level of demand.

What are the challenges in successfully implementing appropriate use of Express in the region?

Public awareness is necessary as part of the planning and design of Express Lanes to gain public support. New institutional arrangements may be necessary among public agencies that use or share revenues from collecting tolls. ●