

**STATE OF CALIFORNIA  
DEPARTMENT OF TRANSPORTATION**



**TRANSPORTATION MANAGEMENT PLAN**  
*I-680 SUNOL GRADE SOUTHBOUND HOVLANE PROJECT*

*In Fremont, Alameda County  
From Grimmer Blvd. Undercrossing  
To Mission San Jose Separation  
EA No. 253791*

**PROJECT DEVELOPMENT - EAST  
OFFICE OF DESIGN ALAMEDA II  
DISTRICT 4  
April 17, 2008**

**This report was prepared by TE and the PE and reviewed by DTM TMP Coordinator, Shein Lin.  
The final version of this report shall be included in Caltrans R. E. file.**

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## 1.0 PROJECT DESCRIPTION

**I-680** between Route 84 in Alameda County and Route 237/**Calaveras** in Santa Clara County runs in the north-south direction. It serves as the main corridor for local and inter-regional commuter, commercial, and recreational traffic. In the a.m. peak hours on southbound **I-680** over the **Sunol** Grade, traffic congestion spans about 24 kilometers (15 miles from **Route 262/Mission** to **Sunol** Boulevard) for four or more hours. In the project area it traverses through flat, rolling, and steep terrain with most grades being moderate to steep.

Improvement on the Southbound **I-680** will take place in 3 phases with a separate project to construct sound walls for permanent noise mitigation. Phase I, which was complete, installed an auxiliary lane between **Automall** Parkway to **Mission Boulevard/Route 262**. Phase II, which was complete, constructed an interim HOV lane in the median. Phase III, this project, will widen the roadway for auxiliary lanes and standard width shoulders; in addition, it will widen over-crossings to accommodate freeway widening and install ramp-metering systems on the on-ramps. An AC overlay and slope/super elevation correction will also be done. Furthermore, Phase 3 will be divided into three contracts. The first contract is from **Grimmer Rd.** to **Mission Blvd./SR 238** (EA 253794). The second contract is from **Mission Blvd./SR 238** to **Stoneridge Drive** (EA 4A5204). The third contract is from **Calaveras Blvd./SR 237** to **Grimmer Road** (EA 253784).

### Auxiliary Lanes

Between <b>Washington Blvd</b> and <b>Automall Pkwy</b>	(Contract 1)
Between <b>Mission/Rte. 262</b> and <b>Scott Creek Road</b>	(Contract 3)
Between <b>Scott Creek Road</b> and <b>Jacklin Road</b>	(Contract 3)

### Structure Widening

<b>Calaveras Boulevard/Route 237</b> U.C.	(Contract 3)
<b>Jacklin Road</b> U.C.	(Contract 3)
<b>South D.W.R.</b> U.C.	(Contract 3)
<b>North D.W.R.</b> U.C.	(Contract 3)
<b>East Warren Avenue</b> U.C.	(Contract 3)
<b>Mission Blvd/Route 238</b>	(Contract 1)
<b>Vargas Road</b> U.C.	(Contract 2)
<b>Vargas Road Ramp</b> U.C.	(Contract 2)

### Ramp Metering Locations

<b>SB 680/Calaveras Blvd./SR 237</b> Diagonal	(Contract 3)
<b>SB680/Jacklin Road</b> Diagonal	(Contract 3)
<b>SB680/Scott Creek Road</b> Diagonal	(Contract 3)
<b>SB680/Mission Blvd./SR 262</b> Collector	(Contract 3)
<b>SB680/Automall Parkway</b> Diagonal	(Contract 1)
<b>SB680/Washington Boulevard</b> Diagonal	(Contract 1)
<b>SB680/Mission Blvd./SR 238</b> Diagonal	(Contract 1)

SB680/Vargas Road Diagonal	(Contract 2)
SB680/Sheridan Road Diagonal	(Contract 2)
SB680/Andrade Road Diagonal	(Contract 2)
SB680/Route 84 Diagonal	(Contract 2)
SB680/Sunol Boulevard Diagonal	(Contract 2)
SB680/Bernal Avenue Diagonal	(Contract 2)
SB680/Stoneridge Drive Diagonal	(Contract 2)

## 2.0 TRANSPORTATION MANAGEMENT PLAN SUMMARY

During construction activity of this project on SB I-680 from Route 84 to Route 237, temporary lane, ramp, and freeway closures will be performed in accordance with lane closure recommendations of the District Highway Operation Branch. The detour plans for the temporary closed southbound on/off ramps will direct traffic to the destinations utilizing the adjacent interchanges via northbound/local streets.

The Transportation Management Plan (TMP) is a specialized program tailored to prevent and mitigate the impacts of a construction project by applying a variety of techniques including *Motorist Information, Incident Management, Construction Strategies, and Public Information Strategies*. The major objectives of the TMP are to maintain efficient and safe movement of vehicles through the construction zone and to provide intensive public awareness of potential impacts on Interstate 680.

The TMP proposes a program of public information, motorist information, and an incident detection and response. The public information program will consist of media notification, telephone hotline, press release, and traveler information system (Internet). The motorist information program will notify drivers of freeway closures and detours using changeable message signs. The incident detection and response program will initiate a roving tow truck patrol that will alert the California Highway Patrol to accidents under the COZEPP program.

**TABLE 1**  
Roles and Responsibilities / Cost Estimate

	<b>Transportation Management Measure</b>	Responsible Agency	Action Required	Cost	Comments
1	FSP	CHP, MTC, Caltrans	Increase FSP coverage during shoulder and lane closures	\$25 K	
2	COZEEP	CHP Caltrans	Increase CHP presence during freeway closures	\$150 K	
3	Ground Mounted Signs	Caltrans	Provide warning information to motorists.	--	Included in PS&E
4	Changeable Message Signs	Contractor	Install portable CMSs announcing delays, detours, and upcoming construction. Message content and deployment supervised by RE.	\$50 K	Included in PS&E
5	Staging & Detours	Contractor	Establish detour routes, signing, truck routes.	--	Included in PS&E
6	Public Information	Caltrans	Brochures and Mailers, Press Release, Paid Advertising, Public Information Center/Kiosk Telephone Hotline, Internet E-mail	\$10 K	
7	Press releases	Caltrans	Provide project and construction information through media.	--	No additional cost
8	Highway Advisory Radio	Caltrans	Provide construction information to public by Highway Advisory Radio.	\$15K	No additional cost if included under communication strategy for I-680 improvement
9	Traveler Information System (optional)	Caltrans	Provide real time traffic information on Caltrans' website.	--	No addl. cost if included under comm. strategy for I-680 improvement
10	SSP12-220 Damages Clause	Contract Provision	Contractor pays for damages for late lane closure pick up.	--	Included in SSP. No addl. cost to Caltrans.
Total				<b>\$250K</b>	

### 3.0 TRANSPORTATION MANAGEMENT PLAN STRATEGIES

This section describes possible TMP strategies to mitigate construction-related traffic delays. The TMP strategies are of a general nature and mitigate the overall level of congestion. The strategies are grouped into four broad transportation management strategies:

- Motorist Information Strategies
- Incident Management
- Construction Strategies
- Public Information

Traffic management strategies that require action by the construction contractor are described briefly in the TMP and presented in detail in the project Technical Specifications. Traffic

management strategies that are to be implemented by Caltrans appear only in the TMP and are not included in the contract Technical Specifications.

### **3.1 Motorist Information**

The motorist information system provides advance notice regarding potential delays and/or available detours during construction throughout the project. The strategies include two measures: Changeable Message Signs (CMS), and Ground Mounted Signs.

#### **3.1.1 Changeable Message Signs (CMS)**

The function of Changeable Message Signs (CMS) is to alert drivers to changing travel conditions in the construction zone such as congestion and detours and improves their opportunity to change routes or adjust travel plans. CMS's can also be used to announce upcoming freeway or ramp closures. Messages should conform to Caltrans guidelines. For example, CMS use should be limited to real-time conditions such as an ongoing freeway closure. For advance notice of ramp closures and other events, it is recommended that a standard sign package be used. The Project Construction Manager (CM) is responsible for monitoring message content and CMS deployment. At least one portable CMS should be utilized for every lane closure or ramp closure. When traffic is detoured, additional CMS's shall be provided.

#### **3.1.2 Ground Mounted Signs**

Ground Mounted construction and warning signs provide information about immediate road hazards to motorists. Construction may provide input regarding numbers of signs needed.

### **3.2 Incident Management**

The incident detection and response system include the Freeway Service Patrol (FSP) and Construction Zone Enhanced Enforcement Program (COZEEP)

#### **3.2.1 Freeway Service Patrol**

Because there would be portions of the construction zone where there would be no shoulders, disabled vehicles would be unable to leave the travel way, increasing congestion and reducing freeway capacity. Once an incident is detected, a quick response is needed to remove disabled vehicles from the roadway. The Freeway Service Patrol (FSP) is a team of tow trucks that patrol Bay Area freeways and performs minor repairs to remove stranded vehicles and motorists from the freeway at no charge to the motorist.

The section of I-680 affected by construction is currently patrolled by a FSP operated by private tow truck operators under the auspices of Caltrans, the California Highway Patrol, and the Metropolitan Transportation Commission's Service Authority for Freeways and Expressways (SAFE). The FSP tow trucks patrol during morning and afternoon commute hours.

At several highway construction projects where shoulders have been closed, Caltrans has supplemented FSP coverage with more hours in the day. FSP coverage during morning and afternoon commute hours and could reduce tow truck response times and reduce delay associated with stalls and accidents. For example, it is estimated that vehicle stalls take a total of 15

minutes to clear, property damage accidents 40 minutes to clear, and injury accidents 65 minutes to clear.

A more aggressive incident management system could reduce response times by about five minutes from the above clearance times. The expanded FSP program would lower delay costs.

- Prior to the implementation of supplementary FSP coverage the following steps need to be taken:

Caltrans will supplement its agreement with MTC to include expansion of the FSP. The agreement between MTC and Caltrans will be included in the cooperative agreement for construction and include funding provisions.

The resident engineer shall contact the Caltrans FSP Supervisor as soon as the FSP funding has been secured. At this time the FSP supervisor can begin arranging tow contracts with the MTC.

### **3.2.2 Construction Zone Enhanced Enforcement Program (COZEEP)**

The program involves continuous presence of the California Highway Patrol (CHP) in the construction zone, provides enforcement of speed restriction, and faster incident response.

It is recommended that a COZEEP be established for the entire construction period. During freeway closures, CHP officers should be stationed at the beginning of detours. Enhanced enforcement would most likely be used during freeway closures but could be invoked at other times at the discretion of the CM. The CM would prepare a contract change order for each event requiring COZEEP. The total COZEEP cost, for each of the freeway closures, is \$1000/day/unit. The total COZEEP cost, including all lane closures, at the discretion of the RE, will be approximately \$150k.

### **3.3 Construction Strategies**

Construction strategies are implemented for projects regardless whether a TMP is prepared. One of the primary considerations in planning and staging construction projects is to minimize the impact of the construction activity on traffic circulation. The manner in which construction is staged is the first strategy employed to minimize disruption to traffic through the construction zone and of adjacent neighborhoods. One key feature of stage construction is scheduling work to minimize impacts to traffic, and another is the provision of alternate routes. These are accomplished by scheduling all work requiring lane closures to off-peak times, typically in the late night and early morning hours and by providing clearly marked detours whenever the freeway, local streets or freeway ramps are closed. In addition, the construction contracts would prohibit freeway closures and construction activity during heavy travel periods.

The strategies proposed as part of the TMP, supplement measures routinely adhered to during construction. Described here are descriptions of two other construction strategies implemented as part of the TMP that could supplement the project. The measures include a system of controls

on contractor operations and efforts to block views of construction activity from passing motorists.

In addition, the project contract general conditions and agreement sections include liquidated damages from contractors if schedule slippage occurs. If project work extends beyond the hours specified in the approved Lane Closure Charts, the general traffic delay caused by the late closure would be extended as would the cost of extending the implementation period of TMP measures.

Other controls on contractor operations to reduce construction-related congestion, like detour management, are written into construction contracts.

### **3.4 Public Information**

Alameda County CMA will provide Public Relations firm.

#### **3.4.1 Telephone Hotlines**

At a minimum, both hot line recordings should include a brief description of on going or imminent construction activity hours of impact and detours.

Telephone information **hotline** messages should be prepared announcing the following events:

- Start of construction
- Full or partial interchange closures
- Freeway closures
- Ramp closure

#### **3.4.2 Traveler Information System (Internet)**

The message provided through telephone **hotlines** should be posted on the Caltrans web site, in addition to real time traffic information.

#### **3.4.3 Press Release**

Project and construction information will be released to the press through Caltrans Public Information Office.

### **3.5 Contingency Plan**

The contractor will be required to submit a traffic control plan at least one week prior to any lane closure or freeway closure. The traffic control plan shall contain a detailed contingency plan to ensure opening of the freeway by the designated time. During construction activities requiring lane closure or freeway closure, the contractor shall provide appropriate personnel to monitor activities and make decisions regarding activation of contingency plans. As soon as it becomes evident during any construction activity that it will not be possible to complete that activity and remove the closure at the designated time, that activity shall be halted and postponed until a later date.

The contingency plan shall identify key operational decision points with a **timeline** listing the expected completion time of each critical path activity. Clearly defined trigger points shall be identified with each critical path activity to establish when the contingency plan will be activated. The plan will list and describe any and all standby equipment and secondary material suppliers, to be available to complete the operations in the event of equipment failure, unexpected loss of material, or unexpected uselessness of material.

A decision tree with clearly defined lines of communication and authority shall be provided in the contingency plan. The names, telephone numbers and pager numbers of the Contractor's Project Manager, City's Resident Engineer, Caltrans Permit **and/or** Construction Inspector, CHP Area Commander, and other applicable personnel shall be provided.

# Attachment A

## LANE CLOSURE CHARTS

Chart No. 1																									
Freeway/Expressway Lane Requirements																									
County: Alameda					Route/Direction: 680/Southbound					KP: 5.19/10.85					PM: 3.23/6.74										
Closure Limits: From 0.6 km N/O Mission Blvd./ Rte 238 UC to 0.2 km S/O Grimmer UC																									
FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	1	1	1	1																	3	3	2	2	1
Fridays	1	1	1	1																		3	3	2	2
Saturdays	1	1	1	1	1	2	2	3	3													3	3	3	2
Sundays	2	1	1	1	1	1	1	2	2	3														3	2

**Legend:**

- 1 Provide at least one through freeway lane open in direction of travel
- 2 Provide at least two adjacent through freeway lanes open in direction of travel
- 3 Provide at least three adjacent through freeway lanes open in direction of travel
- Work permitted within project right of way where shoulder or lane closure is not required.

REMARKS:

Chart No. 2																									
Freeway/Expressway Lane Requirements																									
County: Alameda					Route/Direction: 680/Northbound					KP: 5.19110.85					PM: 3.2316.74										
Closure Limits: From 0.2 km S/O Grimmer UC to 0.6 km N/O Mission Blvd./ Rte 238 UC																									
FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays	1	1	1	1	1																			2	2
Fridays	1	1	1	1	1																				2
Saturdays	2	1	1	1	1	1	2																		2
Sundays	2	1	1	1	1	1	1	2	2															2	1

**Legend:**

- 1 Provide at least one through freeway lane open in direction of travel
- 2 Provide at least two adjacent through freeway lanes open in direction of travel
- Work permitted within project right of way where shoulder or lane closure is not required.

REMARKS:

Chart No. 3																										
Complete Connector Closure Hours/Connector Lane Requirements																										
County: Alameda					Route/Direction: 680/Southbound										KP: 10.719					PM: 6.661						
Closure Limits: On the SB Rte 680 off-connector to Mission Blvd./Rte 238																										
FROM HOUR TO HOUR		24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays		C	C	C	C	C	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	C	C	C
Fridays		C	C	C	C	C	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	C	C
Saturdays		C	C	C	C	C	C	C	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	C
Sundays		C	C	C	C	C	C	C	C	C	N	N	N	N	N	N	N	N	N	N	N	N	N	C	C	C
Legend:																										
C		Connector may be closed completely																								
N		No work permitted.																								
REMARKS: See Detour No. 1																										

Chart No. 4																										
Complete Ramp Closure Hours/Ramp Lane Requirements																										
County: Alameda					Route/Direction: 680/Southbound										KP: 8.853					PM: 5.501						
Closure Limits: On the Washington Blvd. Off-ramp																										
FROM HOUR TO HOUR		24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays		C	C	C	C	C																		C	C	C
Fridays		C	C	C	C	C																		C	C	C
Saturdays		C	C	C	C	C	C	C	C	C														C	C	C
Sundays		C	C	C	C	C	C	C	C	C	C	C												C	C	C
Legend:																										
C		Ramp may be closed completely																								
		Work permitted within project right of way where shoulder or lane closure is not required.																								
REMARKS:																										

Chart No. 5																												
Complete Ramp Closure Hours/Ramp Lane Requirements																												
County: Alameda					Route/Direction: 680/Southbound										KP: 6.503					PM: 4.041								
Closure Limits: On the Durham Rd./Automall Pkwy off-ramp																												
FROM HOUR TO HOUR		24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
Mondays through Thursdays		C	C	C	C																					C	C	
Fridays		C	C	C	C																						C	
Saturdays		C	C	C	C	C	C	C																			C	
Sundays		C	C	C	C	C	C	C	C	C																	C	C
Legend:																												
<input type="checkbox"/> C		Ramp may be closed completely																										
<input type="checkbox"/>		Work permitted within project right of way where shoulder or lane closure is not required.																										
REMARKS:																												

Chart No. 6																														
Complete Ramp Closure Hours/Ramp Lane Requirements																														
County: Alameda					Route/Direction: 680/Southbound										KP: 10.285					PM: 6.391										
Closure Limits: On the Mission/Rte 238 on-ramp																														
FROM HOUR TO HOUR		24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24				
Mondays through Thursdays		C	C	C	C	C																					C	C	C	C
Fridays		C	C	C	C	C																					C	C	C	C
Saturdays		C	C	C	C	C	C	C	C																			C	C	C
Sundays		C	C	C	C	C	C	C	C	C																		C	C	C
Legend:																														
<input type="checkbox"/> C		Ramp may be closed completely																												
<input type="checkbox"/>		Work permitted within project right of way where shoulder or lane closure is not required.																												
REMARKS: See Detour No. 2																														

Chart No. 7																														
Complete Ramp Closure Hours/Ramp Lane Requirements																														
County: Alameda						Route/Direction: 680/Southbound						KP: 8.579						PM: 5.331												
Closure Limits: On the Washington Blvd. on-ramp																														
FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24					
Mondays through Thursdays	C	C	C	C	C																				C	C	C			
Fridays	C	C	C	C	C																					C	C	C		
Saturdays	C	C	C	C	C	C	C	C	C																	C	C	C	C	
Sundays	C	C	C	C	C	C	C	C	C	C																C	C	C	C	C
Legend:																														
C Ramp may be closed completely																														
Work permitted within project right of way where shoulder or lane closure is not required.																														
REMARKS: See Detour No. 3																														

Chart No. 8																														
Complete Ramp Closure Hours/Ramp Lane Requirements																														
County: Alameda						Route/Direction: 680/Southbound						KP: 6.197						PM: 3.851												
Closure Limits: On the Durham/Automall Pkwy on-ramp																														
FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24					
Mondays through Thursdays	C	C	C	C	C																					C	C	C		
Fridays	C	C	C	C	C																					C	C	C		
Saturdays	C	C	C	C	C	C	C	C																		C	C	C	C	
Sundays	C	C	C	C	C	C	C	C	C	C																C	C	C	C	C
Legend:																														
C Ramp may be closed completely																														
Work permitted within project right of way where shoulder or lane closure is not required.																														
REMARKS: See Detour No. 4																														

Chart No. 9																										
Complete Ramp Closure Hours/Ramp Lane Requirements																										
County: Alameda					Route/Direction: 680/Southbound					KP: 8.58					PM: 5.331											
Closure Limits: On the Washington Blvd. on-ramp weekend closure																										
FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Mondays through Thursdays	C	C	C	C	C																					
Fridays																								C	C	C
Saturdays	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
Sundays	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
Legend:																										
C Ramp may be closed completely																										
Work permitted within project right of way where shoulder or lane closure is not required.																										
REMARKS																										
1. Ramp shall be closed for cold plane operations only as directed by the Engineer																										
2. See DETOUR No. 5																										

Chart No. 10																										
Complete Ramp Closure Hours/Ramp Lane Requirements																										
County: Alameda					Route/Direction: 680/Southbound					KP: 8.86					PM: 5.501											
Closure Limits: On the Washington Blvd. off-ramp weekend closure																										
FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Mondays through Thursdays	C	C	C	C	C																					
Fridays																								C	C	C
Saturdays	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
Sundays	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	
Legend:																										
C Ramp may be closed completely																										
Work permitted within project right of way where shoulder or lane closure is not required.																										
REMARKS Ramp shall be closed for cold plane operations only as directed by the Engineer																										

Chart No. 11																										
Complete Ramp Closure Hours/Ramp Lane Requirements																										
County: Alameda						Route/Direction: 680/Southbound						KP: 6.833						PM: 4.041								
Closure Limits: On the Durham Rd./Automall Pkwy off-ramp weekend closure																										
FROM HOUR TO HOUR		24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays		C	C	C	C																					
Fridays																										C
Saturdays		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Sundays		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Legend:																										
C		Ramp may be closed completely																								
		Work permitted within project right of way where shoulder or lane closure is not required.																								
REMARKS Ramp shall be closed for cold plane operations only as directed by the Engineer																										

Chart No. 12																										
Complete Ramp Closure Hours/Ramp Lane Requirements																										
County: Alameda						Route/Direction: 680/Southbound						KP: 6.197						PM: 3.851								
Closure Limits: On the Durham Rd./Automall Pkwy on-ramp weekend closure																										
FROM HOUR TO HOUR		24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Mondays through Thursdays		C	C	C	C	C																				
Fridays																								C	C	C
Saturdays		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Sundays		C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
Legend:																										
C		Ramp may be closed completely																								
		Work permitted within project right of way where shoulder or lane closure is not required.																								
REMARKS																										
1. Ramp shall be closed for cold plane operations only as directed by the Engineer																										
2. See Detour No. 6																										

Chart No. 13																										
Complete Freeway/Expressway Closure Hours																										
County: Alameda					Route/Direction: 238/NB										KP: 0.0											
Closure Limits: At The I-680/238-Mission Blvd. I/C																										
FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
Mondays through Thursdays	C	C	C	C	C																			C	C	
Fridays	C	C	C	C	C																				C	
Saturdays	C	C	C	C	C	C	C																		C	
Sundays	C	C	C	C	C	C	C	C	C																C	C
Legend:																										
<input checked="" type="checkbox"/> Freeway or expressway may be closed completely.																										
<input type="checkbox"/> No complete freeway or expressway closure is permitted.																										
REMARKS: See Detour No. 5																										

Chart No. 14																											
Complete Freeway/Expressway Closure Hours																											
County: Alameda					Route/Direction: 238/SB										KP: 0.0												
Closure Limits: At The I-680/238-Mission Blvd. I/C																											
FROM HOUR TO HOUR	24	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
Mondays through Thursdays	C	C	C	C	C																				C	C	
Fridays	C	C	C	C	C																					C	
Saturdays	C	C	C	C	C	C	C																			C	
Sundays	C	C	C	C	C	C	C	C																		C	C
Legend:																											
<input checked="" type="checkbox"/> Freeway or expressway may be closed completely.																											
<input type="checkbox"/> No complete freeway or expressway closure is permitted.																											
REMARKS: See Detour No. 6																											

**ATTACHMENT B**

**CONTACT NOTIFICATION MATRIX**

<b>I-680 SUNOL GRADE SOUTHBOUND HOV LANE TMP Contact List</b>				Jan 29, 2008
<b>Organization</b>	<b>Contact</b>	<b>Title</b>	<b>Telephone</b>	<b>e-mail</b>
<b>California Highway Patrol</b>				
San Jose 2020 Junction Ave., San Jose, CA	Richard Shaw	Sergeant	(408) 467-5400	rshaw@chp.ca.gov
TMC	Mary Emery	Sergeant	(510) 286-6909	maemery@chp.ca.gov
<b>Caltrans District 4</b>				
<b>Corridor TMP Manager</b>				
Construction – CTM	Kamran Abolfazlian	Construction Eng.	(510) 450-2409	Kamran_Abolfazlian@dot.ca.gov
Construction RE				
Project Management	Emily Landin-Lowe	Project Manager	(510) 286-5124	Emily_Landin-low@dot.ca.gov
Highway Operations	Lance Hall (SCI) Peter Lau (Aia)	Senior Eng. Senior Eng.	(510) 286-6311 (510) 286-6157	Lance_Hall@dot.ca.gov Peter_Lau@dot.ca.gov
Public Information	Brigetta Smith	Public Affairs	(510) 286-5820	Brigetta_Smith@dot.ca.gov
District Traffic Management	Barry Loo	District 4 Traffic Manager	(510) 286-6910	Barry_Loo@dot.ca.gov
	Chan Newlander	Lane Closure Manager	(510) 286-6911	chan_newlander@dot.ca.gov
	Dale McCrossen	TMT Supervisor	(510) 286-4987	Dale_McCrossen@dot.ca.gov
	Shein Lin	DTM TMP Coordinator	(510) 286-4710	Shein_Lin@dot.ca.gov
Transportation Management Center	Cyrus Mashhoodi	Supervising TE	(510) 622-8817	Cyrus_Mashhoodi@dot.ca.gov
Transit Coordination	Becky Frank	CT Senior Planner	(510)-286-5536	Becky_Frank@dot.ca.gov
FSP	Kane Wong	FSP Program Coordinator	(510) 286-5917	Kane_Wong@dot.ca.gov

<b>City of Fremont</b>	Norm Hughes	City Engineer	(510) 284-4000	nhughes@ci.fremont.ca.us trafficengineering@ci.fremont.ca.us
<b>City of Milpitas</b>	Kunle Odumade	Traffic Engineer	(510) 494-4746	
	Jaime Rodriguez	Traffic Engineer	(408) 586-3335	Jrodriguez@ci.milpitas.ca.gov
	Greg Armendariz	City Engineer	(408) 586-3317	garmendariz@ci.milpitas.ca.gov
<b>Alameda Congestion Management Agency</b> 1333 Broadway Ste 220, Oakland, CA 94612	Dennis R. Fay	Executive Director	(510) 836-2560	dfay@accma.ca.gov
	Leo Scott	Hot Lane Integrator	(408) 000-0000	ffurger@accma.ca.gov
<b>TravInfo</b>	Ken Aparri	Operations Manager	(510) 286-6845	ken_aparri@travinfo.org
<b>Transit Opeators</b> Santa Clara Valley Transportation Authority (VTA)	Donald Smith	Chief Operation	(408) 952-8980	donald.smith@vta.org
	Bernice Alaniz	Deputy Director Marketing & Public Affairs	(408) 321-7539	bernice.alaniz@vta.org

**Attachment C**

**TMP BEES ITEMS/COSTS**

**I-680 SUNOL GRADE SOUTHBOUND HOV LANE PROJECT**

**TRANSPORTATION MANAGEMENT PLAN**

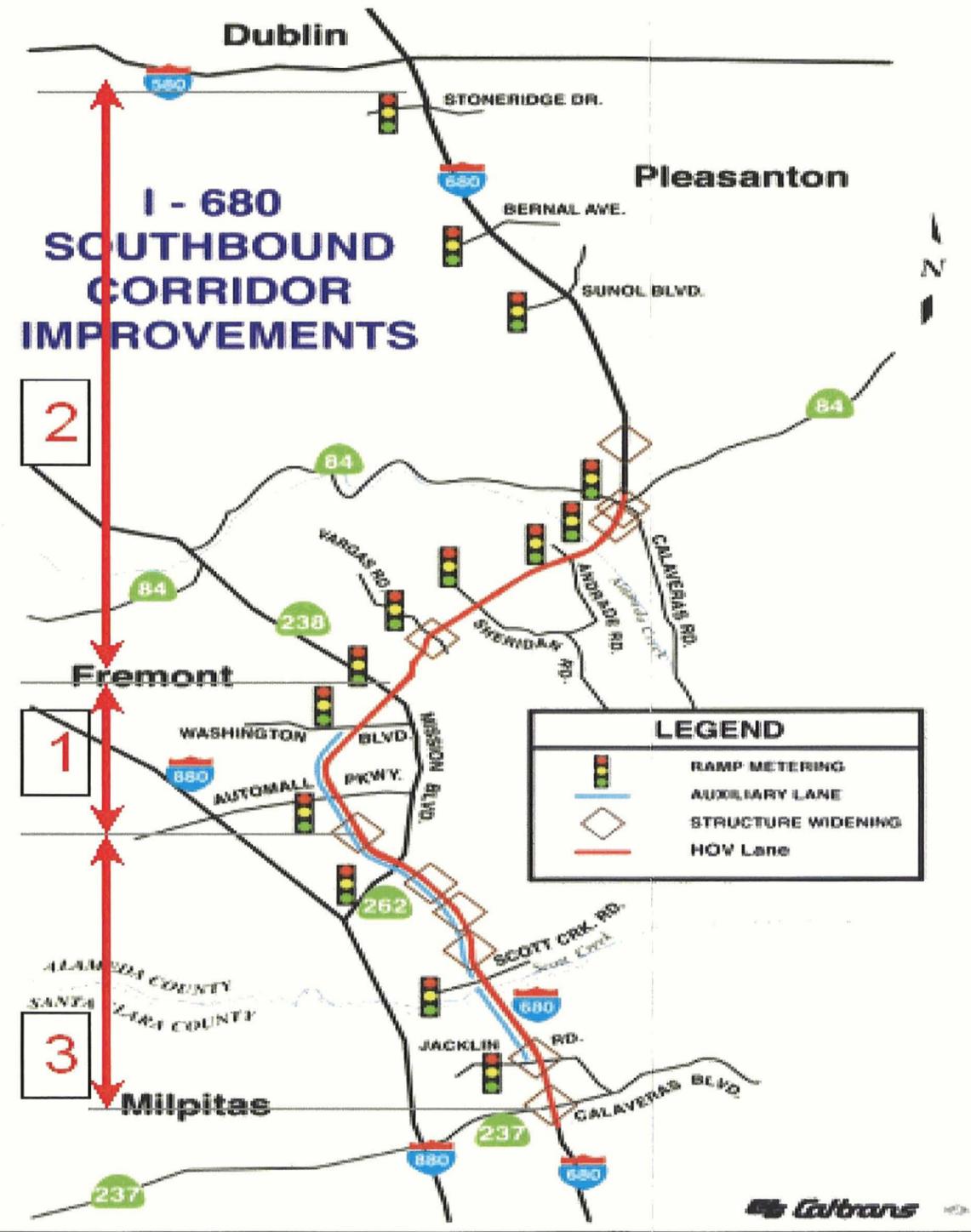
<b>Item Code</b>	<b>Description</b>	<b>Unit</b>	<b>Amount</b>
<b>066062</b>	<b>COZEEP (\$200,000 Tow Truck Service Patrol included with COZEEP in the State Furnished Material)</b>	<b>LS</b>	<b>\$150,000</b>
<b>066063</b>	<b>Traffic Management Plan (Public Information)</b>	<b>LS</b>	<b>\$10,000</b>
<b>066066</b>	<b>Public Transit Support</b>	<b>LS</b>	<b>25,000</b>
<b>066070</b>	<b>Maintain Traffic</b>	<b>LS</b>	<b>\$10,000</b>
<b>120090</b>	<b>Construction Area Sign</b>	<b>LS</b>	<b>\$25,000</b>
<b>120100</b>	<b>Traffic Control System</b>	<b>LS</b>	<b>\$250,000</b>
<b>128650</b>	<b>Portable Changeable message Sign</b>	<b>LS</b>	<b>\$47,500</b>
	<b>TOTAL TMP COSTS</b>		<b>\$ 517,500</b>

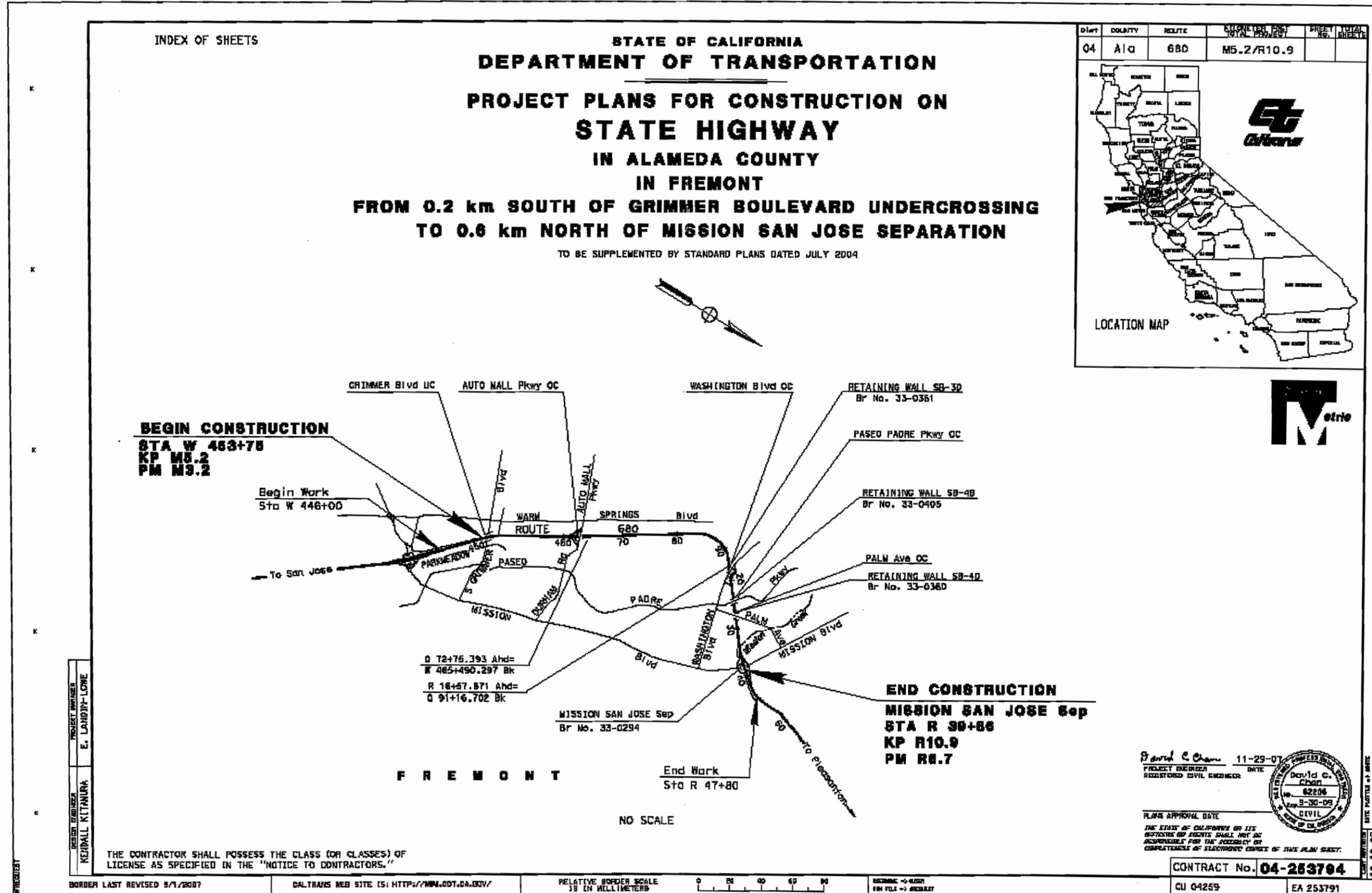
# I-680 HOV/HOT/ Rehabilitation

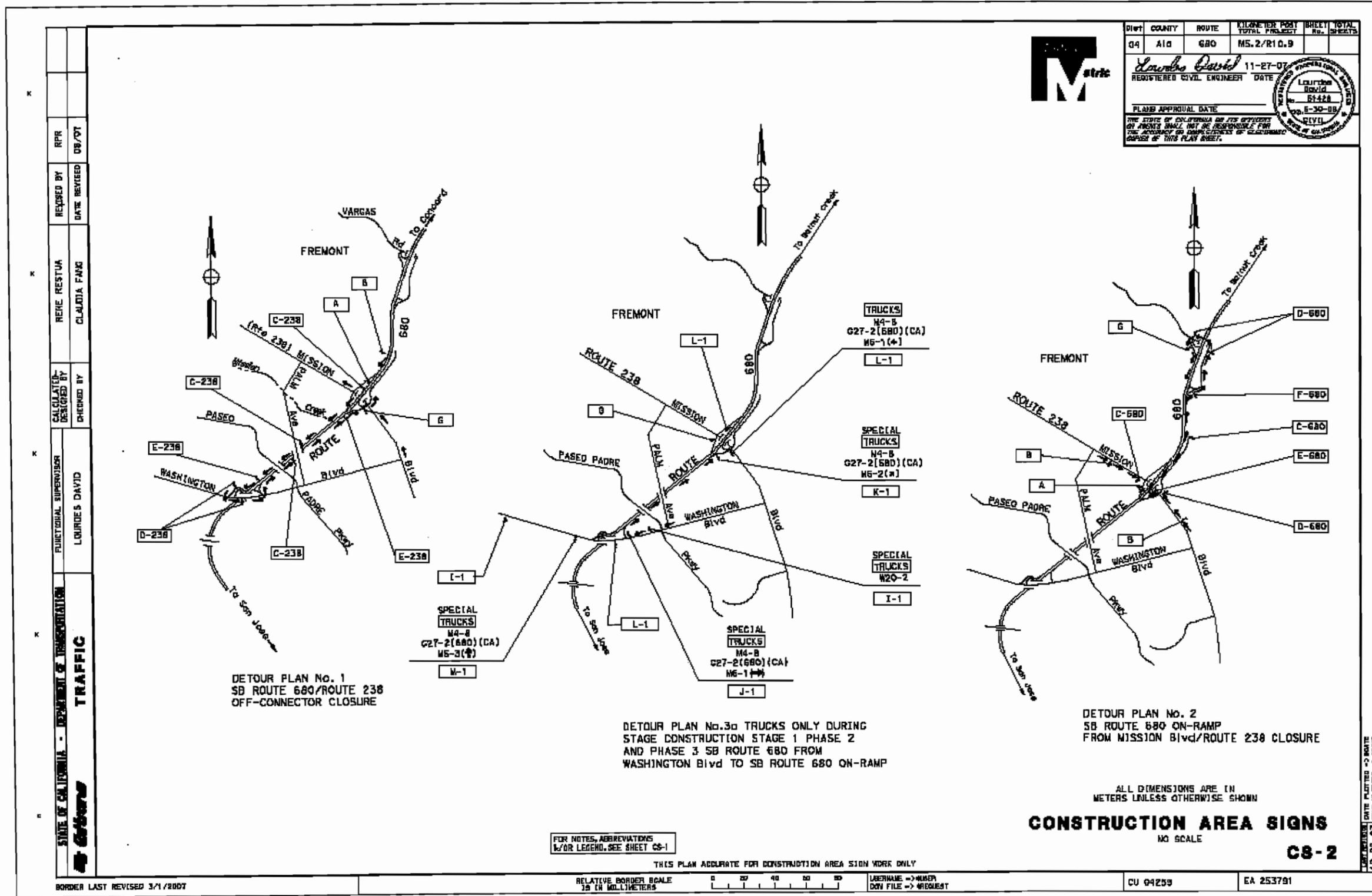
## Contracts

- 1- \$48 M
- 2- \$49 M
- 3- \$54 M

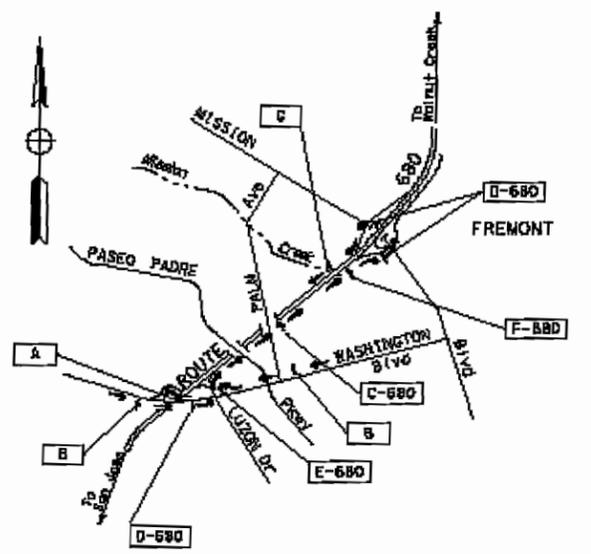
**Total \$151 M**



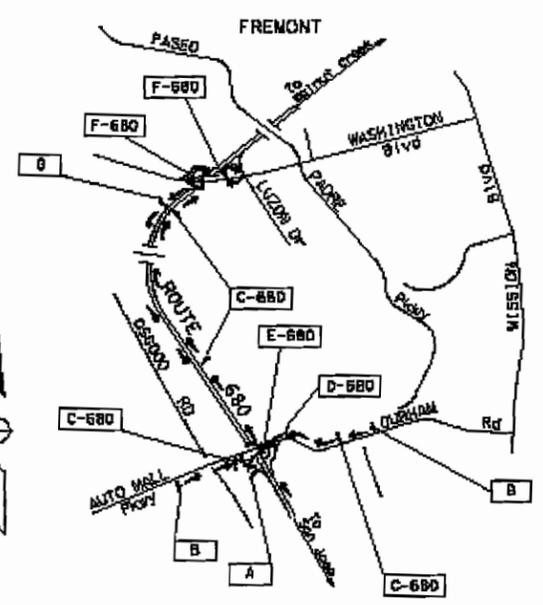




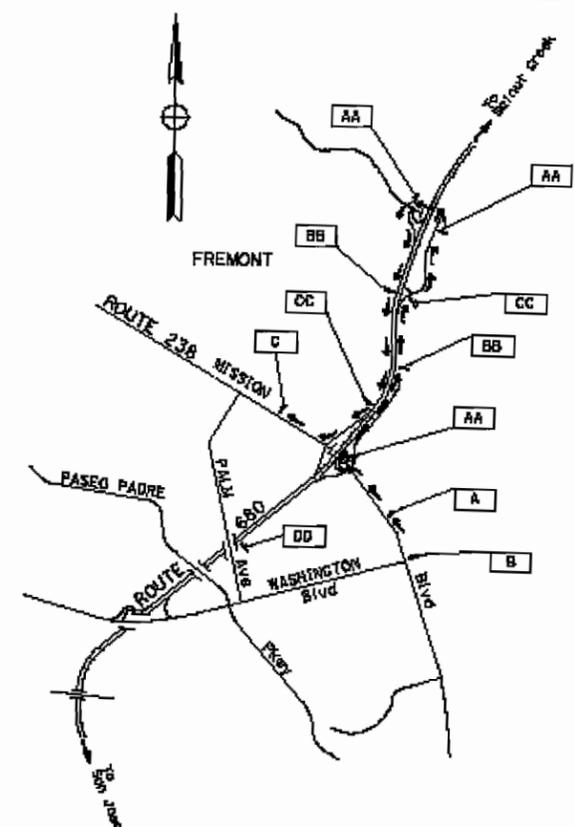
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 TRAFFIC  
 FUNCTIONAL SUPERVISOR: LORIDES DAVID  
 DESIGNED BY: HERRIE RESTUA  
 CHECKED BY: CLAUDIA FAYO  
 REVISED BY: RPR  
 DATE REVISED: 08/07



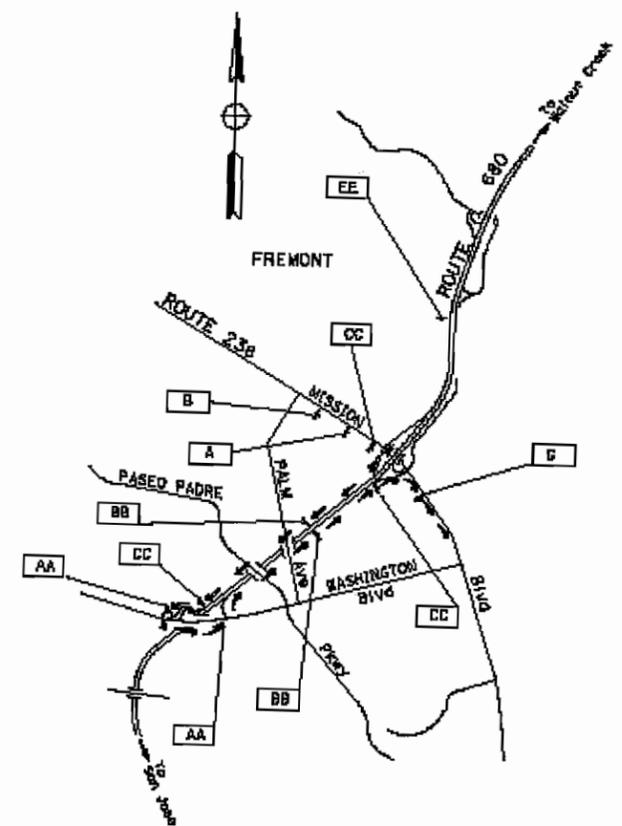
DETOUR PLAN No. 3  
 SB ROUTE 680 ON-RAMP  
 FROM WASHINGTON Blvd  
 CLOSURE



DETOUR PLAN No. 4  
 SB ROUTE 680 ON-RAMP  
 FROM DURHAM Rd/AUTO MALL PKWY  
 CLOSURE



DETOUR PLAN No. 5  
 NB MISSION Blvd/ROUTE 238 CLOSURE



DETOUR PLAN No. 5  
 SB MISSION Blvd/ROUTE 238 CLOSURE



DIST	COUNTY	ROUTE	KILOMETER POST TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
D4	Alb	680	MS.2/R1D.9		

REGISTERED CIVIL ENGINEER: *Louises David* 11-27-07  
 DATE: 8-30-08  
 LICENSE NO.: 51428  
 STATE OF CALIFORNIA

PLAN APPROVAL DATE: \_\_\_\_\_  
 THE STATE OF CALIFORNIA OR ITS OFFICIALS OR AGENCIES SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF INFORMATION SHOWN ON THIS PLAN SHEET.

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

**CONSTRUCTION AREA SIGNS**

NO SCALE

**CS-3**

THIS PLAN IS APPROPRIATE FOR CONSTRUCTION AREA SIGN WORK ONLY



DATE PLOTTED -> WHITE  
 12-08-07 TIME PLOTTED -> 8:06 AM

DJ 04259

EA 253791

BORDER LAST REVISED 3/1/2007

## Attachment G

### Traffic Specification

#### Maintaining Traffic

Maintaining traffic shall conform to the provisions in Sections 7-1.08, "Public Convenience," Section 7-1.09, "Public Safety," and Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications, "Public Safety" of these special provisions and these special provisions.

Closure is defined as the closure of a traffic lane or lanes, including shoulder, ramp or connector lanes, within a single traffic control system.

Closures shall conform to the provisions in "Traffic Control System for Lane Closure" of these special provisions.

All Contractor's vehicular traffic will be regulated when exiting and entering the work areas to and from Route 680 within the project limits as follows:

- A. The Contractor shall prepare and submit a Contractor's vehicular traffic plan 5 working days in advance of the start of work to the Engineer for review and approval.
- B. The Contractor shall make available acceleration and deceleration areas parallel with Route 680 traffic where construction vehicles are exiting and entering work areas. These locations shall be a minimum 3.3 meter wide paved area with a minimum distance of 500 meters, including taper, and must have clear line of sight for Route 680 traffic.
- C. The Contractor shall install all warning signs and traffic control devices as necessary and as ordered by the Engineer to inform the motorists of the movements of construction-related vehicles.
- D. All trucks entering or exiting center median without a lane closure in place shall not be allowed.

Failure to comply with these provisions and the approved Contractor's vehicular traffic plan will result in suspension of the work in that area by the Engineer. The work can be resumed only after corrections are made and approved by the Engineer.

Full compensation for the work involved in preparing and implementing the Contractor's vehicular traffic plan shall be considered as included in the contract lump sum price paid for traffic control system and no additional compensation will be allowed therefore.

In addition to the provisions set forth in "Public Safety" of these special provisions, whenever work, including the work of installing, maintaining, and removing temporary railing (Type K) is to be performed on the freeway within 1.8 m of the adjacent traffic lane, the adjacent traffic lane shall be closed.

Except as listed above, closure of adjacent traffic lane will not be required for grinding and grooving operations, and for installing, maintaining and removing traffic control devices.

At locations where falsework pavement lighting or pedestrian openings through falsework are designated, falsework lighting shall be installed in conformance with the provisions in Section 86-6.11, "Falsework Lighting," of the Standard Specifications.

Openings shall be provided through bridge falsework for the use of public traffic at each location where falsework is constructed over the streets or routes listed in the following table. The type, minimum width, height, and number of openings at each location, and the location and maximum spacing of falsework lighting, if required for each opening, shall conform to the requirements in the table. The width of vehicular openings shall be the clear width between temporary railings or other protective work. The spacing shown for falsework pavement lighting is the maximum distance center to center in meters between fixtures.

Mission San Jose Separation (at 238) (Widen)

	Number	Width	Height
Vehicle Openings	<u>1</u>	<u>19.2</u>	<u>4.6</u>
Pedestrian Openings	<u>1</u>	<u>1.7</u>	<u>4.6</u>
	Location	Spacing	
Falsework Pavement Lighting	<u>R and L with C Staggered ½ Space</u>	<u>7</u>	

(Width and Height in meters)  
(R = Right side of traffic. L = Left side of traffic)  
(C = Centered overhead)

The exact location of openings will be determined by the Engineer.

Closures are only allowed during the hours shown in the lane requirement charts included in this section "Maintaining Traffic," except for work required under Sections 7-1.08, "Public Convenience," and Section 7-1.09, "Public Safety."

The full width of the traveled way shall be open for use by public traffic when construction operations are not actively in progress.

Unless approved by the Engineer, the maximum length of a single stationary lane closure shall be 3 km.

Unless approved by the Engineer, not more than 1 separate stationary lane closures will be allowed at one time.

Concurrent stationary closures shall be spaced no closer than 3 km apart.

Local authorities shall be notified at least 5 business days before work begins. The Contractor shall cooperate with local authorities to handle traffic through the work area and shall make arrangements to keep the work area clear of parked vehicles.

Adjacent ramps, in the same direction of travel, servicing 2 consecutive local streets shall not be closed simultaneously unless directed by the Engineer.

C43(CA) (FRESH CONCRETE) sign shall be used at the beginning of the pavement slab replacement work area.

The sign shall be in place during the entire curing period.

SC6-4(CA) (RAMP CLOSED) sign shall be used to inform motorists of the temporary closing of a connector, entrance ramp or exit ramp for more than one business day.

The SC6-4(CA) signs shall be installed at least 7 days before closing the connector or ramp, but not more than 14 days before the connector or ramp closure. The Contractor shall notify the Engineer at least 2 business days before installing the SC6-4(CA) signs. The SC6-4(CA) signs shall be stationary mounted at locations shown on the plans and as directed by the Engineer.

Accurate information shall be maintained on the SC6-4(CA) signs. The SC6-4(CA) signs, when no longer required, shall be immediately covered or removed.

Personal vehicles of the Contractor's employees shall not be parked on the traveled way or shoulders including sections closed to public traffic.

Personal vehicles of the Contractor's employees shall not be parked within the right of way .

When work vehicles or equipment are parked on the shoulder within 1.8 m of a traffic lane, the shoulder area shall be closed as shown on the plans.

If minor deviations from the lane requirement charts are required, a written request shall be submitted to the Engineer at least 15 days before the proposed date of the closure. The Engineer may approve the deviations if there is no significant increase in the cost to the State and if the work can be expedited and better serve the public traffic. Designated legal holidays are: January 1st, the third Monday in February, the last Monday in May, July 4th, the first Monday in September, November 11th, Thanksgiving Day, and December 25th. When a designated legal holiday falls on a Sunday, the following Monday shall be a designated legal holiday. When November 11th falls on a Saturday, the preceding Friday shall be a designated legal holiday.

Special Days are: the third Monday in January, second Monday in February, March 31<sup>st</sup>, the second Monday in October, or any day on which major event, as determined by the Engineer, is scheduled.

Full compensation for furnishing, erecting, maintaining, and removing and disposing of the SC6-4(CA), W20-1, and C24(CA) signs shall be considered as included in the contract lump sum price paid for construction area signs and no additional compensation will be allowed therefor.

Erection and removal of falsework at locations where falsework openings are required shall be undertaken one location at a time. During falsework erection and removal, public traffic in the lanes over which falsework is being erected or removed shall be detoured or stopped as specified in this section, "Maintaining Traffic." Falsework erection shall include adjustments or removal of components that contribute to the horizontal stability of the falsework system. Falsework removal shall include lowering falsework, blowing sand from sand jacks, turning screws on screw jacks, and removing wedges.

The Contractor shall have necessary materials and equipment on the site to erect or remove the falsework over any one opening before detouring or stopping public traffic.

### **CLOSURE SCHEDULE**

By noon Monday, the Contractor shall submit a written schedule of planned closures for the following week period, defined as Sunday noon through the following Sunday noon. Closures involving work (temporary barrier placement and paving operations) that will reduce horizontal clearances, traveled way inclusive of shoulders, to 2 lanes or less shall be submitted not less than 25 days and not more than 125 days before the anticipated start of operation.

Closures involving work (pavement overlay, overhead sign installation, falsework and girder erection) that will reduce the vertical clearances available to the public, shall be submitted not less than 25 days and not more than 125 days before the anticipated start of operation.

The Closure Schedule shall show the locations and times of the proposed closures. The Closure Schedule request forms furnished by the Engineer shall be used. Closure Schedules submitted to the Engineer with incomplete or inaccurate information will be rejected and returned for correction and resubmittal. The Contractor will be notified of disapproved closures or closures that require coordination with other parties as a condition of approval.

Closure Schedule amendments, including adding additional closures, shall be submitted by noon to the Engineer, in writing, at least 3 business days in advance of a planned closure. Approval of Closure Schedule amendments will be at the discretion of the Engineer.

The Engineer shall be notified of cancelled closures 2 business days before the date of closure.

Closures that are cancelled due to unsuitable weather may be rescheduled at the discretion of the Engineer.

### **CONTINGENCY PLAN**

A detailed contingency plan shall be prepared for reopening closures to public traffic. If required by "Beginning of Work, Time of Completion and Liquidated Damages" of these special provisions, the contingency plan shall be submitted to the Engineer before work at the job site begins. Otherwise, the contingency plan shall be submitted to the Engineer within one business day of the Engineer's request.

### **LATE REOPENING OF CLOSURES**

If a closure is not reopened to public traffic by the specified time, work shall be suspended in conformance with the provisions in Section 8-1.05, "Temporary Suspension of Work," of the Standard Specifications. No further closures are to be made until the Engineer has accepted a work plan, submitted by the Contractor, that will insure that future closures will be reopened to public traffic at the specified time. The Engineer will have 2 business days to accept or reject the Contractor's proposed work plan. The Contractor will not be entitled to compensation for the suspension of work resulting from the late reopening of closures.

For each 10-minute interval, or fraction thereof past the time specified to reopen the closure, the Department will deduct \$ 3,500 per interval from moneys due or that may become due the Contractor under the contract.

### **COMPENSATION**

The Engineer shall be notified of delays in the Contractor's operations due to the following conditions, and if, in the opinion of the Engineer, the Contractor's controlling operation is delayed or interfered with by reason of those conditions, and the Contractor's loss due to that delay could not have been avoided by rescheduling the affected closure or by judicious handling of forces, equipment and plant, the delay will be considered a right of way delay and will be compensated in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications:

1. The Contractor's proposed Closure Schedule is denied and his planned closures are within the time frame allowed for closures in "Maintaining Traffic" of these special provisions, except that the Contractor will not be entitled to compensation for amendments to the Closure Schedule that are not approved.
2. The Contractor is denied a confirmed closure.

Should the Engineer direct the Contractor to remove a closure before the time designated in the approved Closure Schedule, delay to the Contractor's schedule due to removal of the closure will be considered a right of way delay and compensation for the delay will be determined in conformance with the provisions in Section 8-1.09, "Right of Way Delays," of the Standard Specifications.

### **TRAFFIC CONTROL SYSTEM FOR LANE CLOSURE**

A traffic control system shall consist of closing traffic lanes and ramps in conformance with the details shown on the plans, the provisions in Section 12, "Construction Area Traffic Control Devices," of the Standard Specifications, the provisions under "Maintaining Traffic" and "Construction Area Signs" of these special provisions, and these special provisions.

The provisions in this section will not relieve the Contractor of responsibility for providing additional devices or taking measures as may be necessary to comply with the provisions in Section 7-1.09, "Public Safety," of the Standard Specifications.

During traffic stripe operations and pavement marker placement operations using bituminous adhesive, traffic shall be controlled, at the option of the Contractor, with either stationary or moving lane closures. During other operations, traffic shall be controlled with stationary lane closures. Attention is directed to the provisions in Section 84-1.04, "Protection From Damage," and Section 85-1.06, "Placement," of the Standard Specifications.

If components in the traffic control system are displaced or cease to operate or function as specified, from any cause, during the progress of the work, the Contractor shall immediately repair the components to the original condition or replace the components and shall restore the components to the original location.

### **STATIONARY LANE CLOSURE**

When lane and ramp closures are made for work periods only, at the end of each work period, components of the traffic control system, except portable delineators placed along open trenches or excavation adjacent to the traveled way, shall be removed from the traveled way and shoulder. If the Contractor so elects, the components may be stored at selected central locations, designated by the Engineer within the limits of the highway right of way. Each vehicle used to place, maintain and remove components of a traffic control system on multilane highways shall be equipped with a Type II flashing arrow sign which shall be in operation when the vehicle is being used for placing, maintaining or removing the components. Vehicles equipped with Type II flashing arrow sign not involved in placing, maintaining or removing the components when operated within a stationary type lane closure shall only display the caution display mode. The sign shall be controllable by the operator of the vehicle while the vehicle is in motion. The flashing arrow sign shown on the plans shall not be used on the vehicles which are doing the placing, maintaining and removing of components of a traffic control system and shall be in place before a lane closure requiring the sign's use is completed.

The 500-m section of a lane closure, shown along lane lines between the 300-m lane closure tapers on the plans entitled "Traffic Control System for Lane Closures on Freeways and Expressways" and "Traffic Control System for Lane and Complete Closures on Freeways and Expressways" shall not be used.

The traffic cones shown to be placed transversely across closed traffic lanes and shoulders on the plans entitled "Traffic Control System for Lane Closures on Freeways and Expressways" and "Traffic Control System for Lane and Complete Closures on Freeways and Expressways" shall not be placed.

### **MOVING LANE CLOSURE**

Flashing arrow signs used in moving lane closures shall be truck-mounted. Changeable message signs used in moving lane closure operations shall conform to the provisions in Section 12-3.12, "Portable Changeable Message

Signs," of the Standard Specifications, except the signs shall be truck-mounted and the full operation height of the bottom of the sign may be less than 2.1 m above the ground, but should be as high as practicable.

Truck-mounted attenuators (TMA) for use in moving lane closures shall be any of the following approved models, or equal:

1. Hexfoam TMA Series 3000, Alpha 1000 TMA Series 1000, and Alpha 2001 TMA Series 2001, manufactured by Energy Absorption Systems, Inc., 35 East Wacker Drive, Suite 1100, Chicago, IL 60601:
  - 1.1. Northern California: Traffic Control Service, Inc., 8585 Thys Court, Sacramento, CA 95828, telephone (800) 884-8274, FAX (916) 387-9734
  - 1.2. Southern California: Traffic Control Service, Inc., 1818 E. Orangethorpe, Fullerton, CA 92831-5324, telephone (800) 222-8274, FAX (714) 526-9501
2. Cal T-001 Model 2 or Model 3, manufacturer and distributor: Hexcel Corporation, 11711 Dublin Boulevard, P.O. Box 2312, Dublin, CA 94568, telephone (925) 551-4900
3. Renco Rengard Model Nos. CAM 8-815 and RAM 8-815, manufacturer and distributor: Renco Inc., 1582 Pflugerville Loop Road, P.O. Box 730, Pflugerville, TX 78660-0730, telephone (800) 654-8182

Each TMA shall be individually identified with the manufacturer's name, address, TMA model number, and a specific serial number. The names and numbers shall each be a minimum 13 mm high and located on the left (street) side at the lower front corner. The TMA shall have a message next to the name and model number in 13 mm high letters which states, "The bottom of this TMA shall be 610 mm ± 910 mm above the ground at all points for proper impact performance." Any TMA which is damaged or appears to be in poor condition shall not be used unless recertified by the manufacturer. The Engineer shall be the sole judge as to whether used TMAs supplied under this contract need recertification. Each unit shall be certified by the manufacturer to meet the requirements for TMA in conformance with the standards established by the Transportation Laboratory.

Approvals for new TMA designs proposed as equal to the above approved models shall be in conformance with the procedures (including crash testing) established by the Transportation Laboratory. For information regarding submittal of new designs for evaluation contact: Transportation Laboratory, 5900 Folsom Boulevard, Sacramento, California 95819.

New TMAs proposed as equal to approved TMAs or approved TMAs determined by the Engineer to need recertification shall not be used until approved or recertified by the Transportation Laboratory.

## PAYMENT

The contract lump sum price paid for traffic control system shall include full compensation for furnishing all labor, materials (including signs), tools, equipment, and incidentals, and for doing all the work involved in placing, removing, storing, maintaining, moving to new locations, replacing and disposing of the components of the traffic control system shown on the plans, as specified in the Standard Specifications and these special provisions, and as directed by the Engineer.

The adjustment provisions in Section 4-1.03, "Changes," of the Standard Specifications shall not apply to the item of traffic control system. Adjustments in compensation for traffic control system will be made only for increased or decreased traffic control system required by changes ordered by the Engineer and will be made on the basis of the cost of the increased or decreased traffic control necessary. The adjustment will be made on a force account basis as provided in Section 9-1.03, "Force Account Payment," of the Standard Specifications for increased work and estimated on the same basis in the case of decreased work.

Traffic control system required by work which is classed as extra work, as provided in Section 4-1.03D of the Standard Specifications, will be paid for as a part of the extra work.