

Project Information

Project Name: **Yerba Buena Island (YBI) Ramp Improvements**
Sponsor: **San Francisco County Transportation Authority** TIP ID: **SF-070027** RTP ID: **230555**
Agency: **San Francisco County Transportation Authority** Mode: **STATE HIGHWAY** Sub Mode:
Project Type: **LOCAL I/C** Trans. System: **STATE HWY** Purpose: **MAINT/REHAB** County: **San Francisco**
Proj. Desc.: **San Francisco: On east side of the Yerba Buena Island Tunnel at SFOBB; Rehabilitate existing deficient bridges on the west side of the Island.**
RTP Title: **Reconstruct ramps on the east side of the San Francisco-Oakland Bay Bridge's Yerba Buena Island tunnel**

Step 1: Project Identification

- | | |
|---|------------|
| 1: Does this project have any federal funding? | Yes |
| 2: Does this project (or any phases of the project) require any federal action (such as federal authorization or approval for funding or environmental review) after December 14, 2010? | Yes |
| 3: Is the project exempt from both regional and project-level air quality conformity under 40 CFR 93.126?
Project Type Selected: None Applies | No |
| 4: Is the project exempt from regional air quality conformity under 40 CFR 93.127?
Project Type Selected: Interchange reconfiguration projects. | Yes |
| 5: Is the project exempt from regional air quality conformity under 40 CFR 93.128?
Project Type Selected: None Applies | No |
| 6: Does this project meet the definition of a "project of air quality concern" under 40 CFR 93.123(b)(1)?
Project Type Selected: None Applies | No |

Dates for Interagency Consultation

Requested Date of Interagency Consultation:
Meeting Date of PM2.5 consultation via Air Quality Conformity Task Force to determine POAQC:
Action Date of PM2.5 consultation via Air Quality Conformity Task Force to determine POAQC:

Dates for PM2.5 Hot-Spot Analysis

Meeting Date of PM2.5 consultation via Air Quality Conformity Task Force to determine review hot-spot analysis:
Action Date of PM2.5 consultation via Air Quality Conformity Task Force to determine review hot-spot analysis:

Project Assessment Form for PM_{2.5} Interagency Consultation

RTIP ID# <i>(required)</i> 230555					
TIP ID# <i>(required)</i> SF-070027					
Air Quality Conformity Task Force Consideration Date April 28, 2011					
<p>Project Description <i>(clearly describe project)</i> Yerba Buena Island (YBI) is located in the San Francisco Bay, approximately halfway between Oakland and San Francisco, and is accessible by vehicles only via the San Francisco-Oakland Bay Bridge (SFOBB), which is part of Interstate 80 (I 80). The SFOBB is a critical link in the interstate network, providing access between San Francisco and the East Bay. YBI and the SFOBB also provide access to Treasure Island (TI), which lies to the north of YBI. YBI and TI are accessed by on-and off-ramps located on the upper and lower decks of the SFOBB. The SFOBB and the associated on- and off-ramps provide the only land access to the active USCG facilities located on the southern side of YBI.</p> <p>The proposed project would replace the existing westbound on-ramp and the westbound off-ramp located on the eastern side of YBI with a new westbound on-ramp and a new westbound off-ramp that would improve the functional roles of the current ramps.</p> <p>Build alternatives have been proposed to address the geometric and operational deficiencies of the existing on and off-ramps and their effects on the SFOBB (I 80) mainline without degrading the mainline operation as compared to no action. This YBI Ramps Improvement Project is separate and independent of the SFOBB East Span Seismic Safety Project (ESSSP), which is currently under construction. Of the six ramps on YBI, the ESSSP will replace the eastbound on- and off ramps on the east side of YBI. The proposed new westbound ramps would improve operations and provide connections between YBI and the transition structure of the new SFOBB. The proposed project is located between Kilometer Post (KP) 12.3 and 13.2, Post Mile (PM) 7.6 and PM 8.1 starting at the east portal of the YBI tunnel and ending before the SFOBB Transition Structure.</p>					
Type of Project: Reconfigure existing interchange					
County San Francisco County		Narrative Location/Route & Postmiles The proposed project would be located along the SFOBB portion of I-80 between post-mile 7.7 and 8.1 beginning at the east portal of the YBI tunnel and ending at the east side of the Transition Structure portion of the SFOBB. Caltrans Projects – EA# 04-3A640K			
Lead Agency: San Francisco County Transportation Authority					
Contact Person Eric Cordoba, Project Manager, SFCTA		Phone# (415) 955-2904	Email eric@cordobaconsulting.com		Fax#
Federal Action for which Project-Level PM Conformity is Needed <i>(check appropriate box)</i>					
Categorical Exclusion (NEPA)	X	EA or Draft EIS	X	FONSI or Final EIS	PS&E or Construction
Scheduled Date of Federal Action: 2011					
NEPA Delegation – Project Type <i>(check appropriate box)</i>					
Exempt	Section 6004 – Categorical Exemption			Section 6005 – Non-Categorical Exemption	

PM_{2.5} Project Assessment Form for Interagency Consultation

Current Programming Dates <i>(as appropriate)</i>				
	PE/Environmental	ENG	ROW	CON
Start	2008	2009	2011	2012
End	2011	2011	2011	2014

Project Purpose and Need (Summary): *(please be brief)*

The purpose of the proposed project is to improve:

- Traffic safety for drivers using the westbound on- and off-ramps
- Geometric design of the westbound on- and off-ramps on the east side of YBI to and from I-80
- Traffic operation levels of service (LOS) on the westbound on- and off-ramps.

The proposed project is needed for the reasons listed below and explained in subsequent paragraphs:

- **Safety:** The accident rate for the on- and off-ramps is higher than the statewide rate for similar facilities.
- **Geometric Design:** The westbound on-ramp merge lengths and off-ramp deceleration lengths on the east side of YBI do not meet current Caltrans standards.
- **Operations:** Projections of 2035 traffic volumes indicate ramp operations at a failing LOS F on both the on- and off-ramps in both the morning and evening peak hours.

Surrounding Land Use/Traffic Generators *(especially effect on diesel traffic)*

YBI is surrounded by San Francisco Bay waters; the San Francisco mainland is approximately 3.22 kilometers to the west and Oakland is approximately 3.22 kilometers to the east. YBI is a natural island that is steeply sloped and highly vegetated. There are currently about 80 occupiable housing units out of about 105 housing units and 10 nonresidential buildings on YBI. Truck traffic is not anticipated to increase as a result of the proposed project. Future traffic volumes along the project segment of I-80 would increase the number of truck trips, but not anticipated to increase the percentage or change the types of trucks within the project area.

Project Assessment Form for PM_{2.5} Interagency Consultation

Brief summary of assumptions and methodology used for conducting analysis (please keep this concise – specifics may include date of when traffic counts were conducted, studies where truck percentages were derived)

A traffic forecast and operations report was prepared in 2008 – 2009 for the Yerba Buena Island Ramps Improvement Project. The forecast report was prepared to determine the future traffic volumes on the Bay Bridge and six on- and off-ramps to and from Yerba Buena Island in both eastbound and westbound directions. The data from the forecast report was the basis for the operations report, which analyzed the operational difference between the existing and projected Build and No Build Alternative in the year 2035. The future year for the proposed project is 2035, 20 years from the completion of the proposed project. Existing Bay Bridge ramp traffic volumes were collected by Fehr & Peers from May 4th (Sunday) to May 10th, (Saturday) 2008. Average traffic volumes for the three mid-week weekdays (Tuesday (May 6, 2008) to Thursday (May 8, 2008)) were selected for the forecast analysis. Future demand volumes for the Treasure Island were estimated based on the proposed land use program for the *Treasure Island and Yerba Buena Island Redevelopment Plan (TIYBIRP)* and was regarded as a full-build of the Treasure Island. Future demand volumes for the Bay Bridge were based on the MTC's travel forecasting model for the AM peak hour and San Francisco County Transportation Authority's (SFCTA) travel forecasting model for the PM peak hour. The analysis of traffic operations of the existing ramp configuration were completed using the methodologies described in the Highway Capacity Manual (HCM 2000). Ramp analysis was completed using methods from Chapter 25, Ramps and Ramp Junctions, of the HCM. Please also refer to http://www.dot.ca.gov/dist4/documents/ybi_ramps/appendix_h_ybi_traffic_forecast_and_operations_reports.pdf

Opening Year: If facility is a highway or street, Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility

Not a highway or street

RTP Horizon Year / Design Year: If facility is a highway or street, Build and No Build LOS, AADT, % and # trucks, truck AADT of proposed facility

Not a highway or street

PM_{2.5} Project Assessment Form for Interagency Consultation

Opening Year: If facility is an interchange(s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT

Existing LOS is LOS C and D; see attached Table 3.6-1 from the project's EIR.

Opening Year (2013/2014) LOS: Build is LOS A (AM & PM); No Build is LOS D (AM) and LOS C (PM), assuming no-build opening year is the same as existing ramp junction analysis. See attached Ramp Queue Analysis (CHS Consulting).

Existing AADT is shown in attached Figure 1 (CHS Consulting).

Opening Year (2013/2014) ramp AADT is not anticipated to increase substantially from existing (2008) to opening (2013/2014).

Specific truck data was not available; 2-5 percent is a typical assumption for this type of facility. For this project, 3.5 percent was assumed for existing, opening year, and 2035 build/no-build.

RTP Horizon Year / Design Year: If facility is an interchange (s) or intersection(s), Build and No Build cross-street AADT, % and # trucks, truck AADT

Horizon year (2035) LOS: No-Build is LOS D, E, and F for AM and PM; see attached Table 3.6-5 from the project's EIR. Build LOS is LOS D, E, and F for AM and PM with no ramp metering; see attached Table 3.6-6. With ramp metering, Build LOS improves to LOS C, D, and E; see attached Table 3.6-7.

2035 Build AADT is shown on attached Figure 3.6-4 of the project EIR.

2035 Build truck volumes and percentage is 233 total daily trucks at 3.5 percent; see attached table titled FULL BUILD OUT CONDITIONS.

Opening Year: If facility is a bus, rail or intermodal facility/terminal/transfer point, # of bus arrivals for Build and No Build, % and # of bus arrivals will be diesel buses

Not a bus, rail or intermodal facility/terminal/transfer point

RTP Horizon Year / Design Year: If facility is a bus, rail or intermodal facility/terminal/transfer point, # of bus arrivals for Build and No Build, % and # of bus arrivals will be diesel buses

Not a bus, rail or intermodal facility/terminal/transfer point

Describe potential traffic redistribution effects of congestion relief (*impact on other facilities*)

The proposed project would not redistribute traffic, but rather improve traffic operations on and off the SFOBB at YBI and improve traffic safety by increasing deceleration length for the westbound off-ramps and increasing merging distance for westbound on-ramps on the east side of YBI.

Project Assessment Form for PM_{2.5} Interagency Consultation

Comments/Explanation/Details *(please be brief)*

PM_{2.5} hot spot analyses are required for projects of air quality concern (POAQC) that are located in a national PM_{2.5} nonattainment area. The proposed project is located within a nonattainment area for federal PM_{2.5} standards. USEPA/FHWA PM Guidance defines POAQC as projects within a federally designated PM_{2.5} or PM₁₀ nonattainment or maintenance area that are funded or approved by FHWA or FTA, and are one of the following types of projects:

- New or expanded highway projects that have a significant number of or significant increase in diesel vehicles (the proposed project is not a new or expanded project; and has less than a significant number and increase in diesel vehicles, defined by PM guidance as 8 percent of the total AADT or more than 10,000 AADT, and 10 percent, respectively. At project buildout, there would be 233 total daily truck trips, which is 3.5 percent of the 2035 AADT(38,350)).
- Projects affecting intersections that are LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F, because of increased traffic volumes from a significant number of diesel vehicles related to the project (the project does not affect these conditions; the project does not generate new vehicle trips or alter truck percentage).
- New bus and rail terminals, and transfer points, that have a significant number of diesel vehicles congregating at a single location (the project is not a bus or rail facility);
- Expanded bus and rail terminals, and transfer points, that significantly increase the number of diesel vehicles congregating at a single location; and
- Projects in, or affecting locations, areas, or categories of sites that are identified in the PM_{2.5} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation (the proposed project is not located in or affecting the described condition).

Therefore, the project is would not be considered a POAQC. Therefore, the proposed project would not create or worsen an existing, PM2.5 violation.

YBI draft environmental document (DED) available at
<http://www.dot.ca.gov/dist4/envdocs.htm#ybiramps>

Application of Criteria for a Project of Air Quality Concern

Project Title: Yerba Buena Island Ramp Improvements Project

Project Summary for Air Quality Conformity Task Force Meeting: April 28, 2011

Description

- Project will replace and reconfigure the on- and off ramps from YBI to the San Francisco-Oakland Bay Bridge (SFOBB) of Interstate 80 (I 80) in San Francisco, CA.
- No change to I 80.
- Improves traffic safety for drivers using the westbound on- and off-ramps
- Improves geometric design of the westbound on- and off-ramps on the east side of YBI to and from SFOBB (I-80).
- Improves traffic operation levels of service (LOS) on the westbound on- and off-ramps.

Background

- NEPA process for Environmental Impact Statement (EIS) almost complete.
- Public review for EIS ends (April 11, 2011)
- No comments received on air quality thus far.
- Seeking air quality conformity determination on or before May 2011.
- Schedule based on deadline for TIP funding allocation

Not a Project of Air Quality Concern (40 CFR 93.123(b)(1))

(i) New or expanded highway projects with significant number/increase in diesel vehicles?

- Not a new or expanded highway project
- Interchange replacement—no additional lanes on replacement on- and off-ramps
- No change in traffic volume or truck percentages on replacement on- and off-ramps
-

(ii) Affects intersections at LOS D, E, or F with a significant number of diesel vehicles?

- Diesel vehicles represent 3.5% of on- and off-ramp traffic volume
- Existing ramps at LOS D, E, or F improve to LOS C, D, and E, and delays decrease (in 2035)
- No project changes to land use that would affect diesel traffic percentage

(iii) New bus and rail terminals and transfer points?—Not Applicable

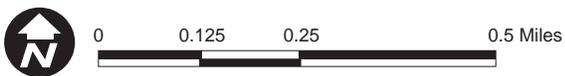
(iv) Expanded bus and rail terminals and transfer points?—Not Applicable

(v) Affects areas identified in PM₁₀ or PM_{2.5} implementation plan as site of violation?

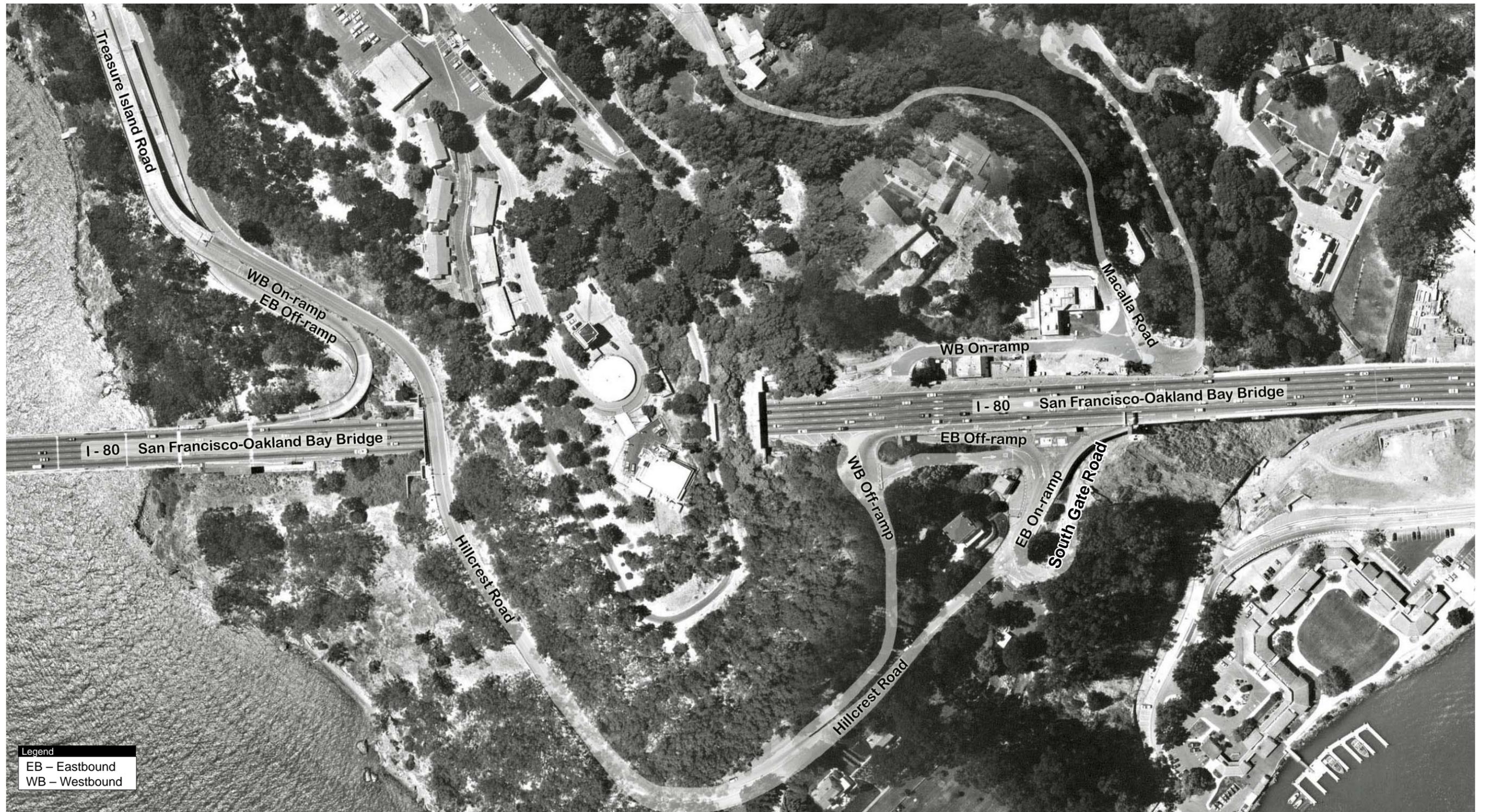
- No state implementation plan for PM_{2.5} (due by December 2012)
- Therefore, not identified in plan as an area of potential violation
- Nearest PM_{2.5} violations in 2006 and 2007 in San Francisco, 6.4 kilometers southwest



Source: Google, EDAW/AECOM 2009



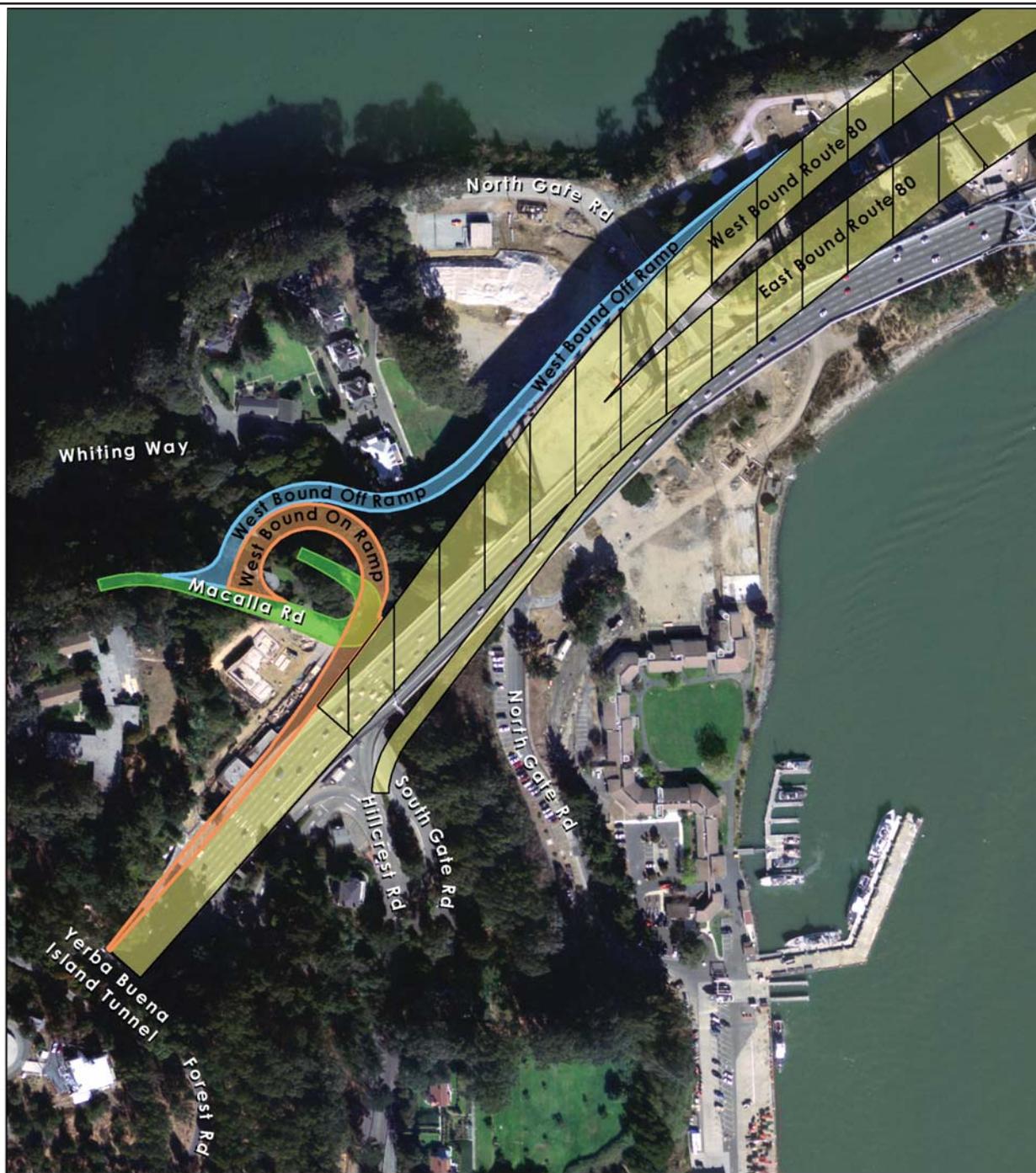
**Figure 1-2
Vicinity Map**



Source: AECOM Transportation 2007



Figure 1-3
Existing Ramp Layout



Alternative 2b Proposed Ramps

- Proposed Westbound Off-Ramp
- Proposed Westbound On-Ramp
- Proposed Macalla Road Improvements

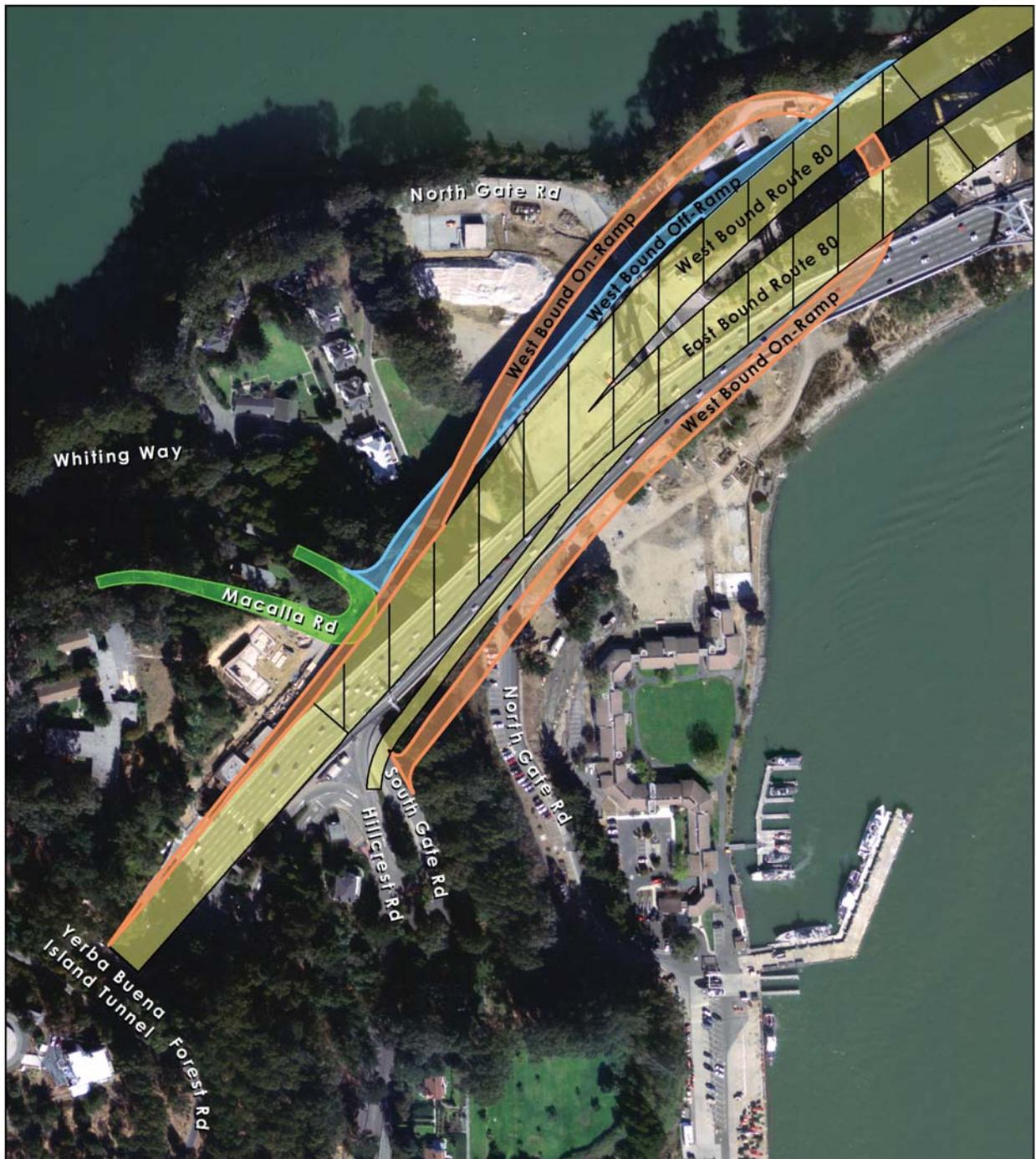
Separate Project Currently Under Construction

- San Francisco-Oakland Bay Bridge East Span Seismic Safety Project
- Transition Structure Portion of SFOBB

Source: Nima/USGS 2004; DMJM Harris, EDAW 5/09



Figure 2-1
Alternative 2b



Alternative 4 Proposed Ramps

- Proposed West Bound Off-Ramp
- Proposed West Bound On-Ramp
- Proposed Macalla Road Improvements

Separate Project Currently Under Construction

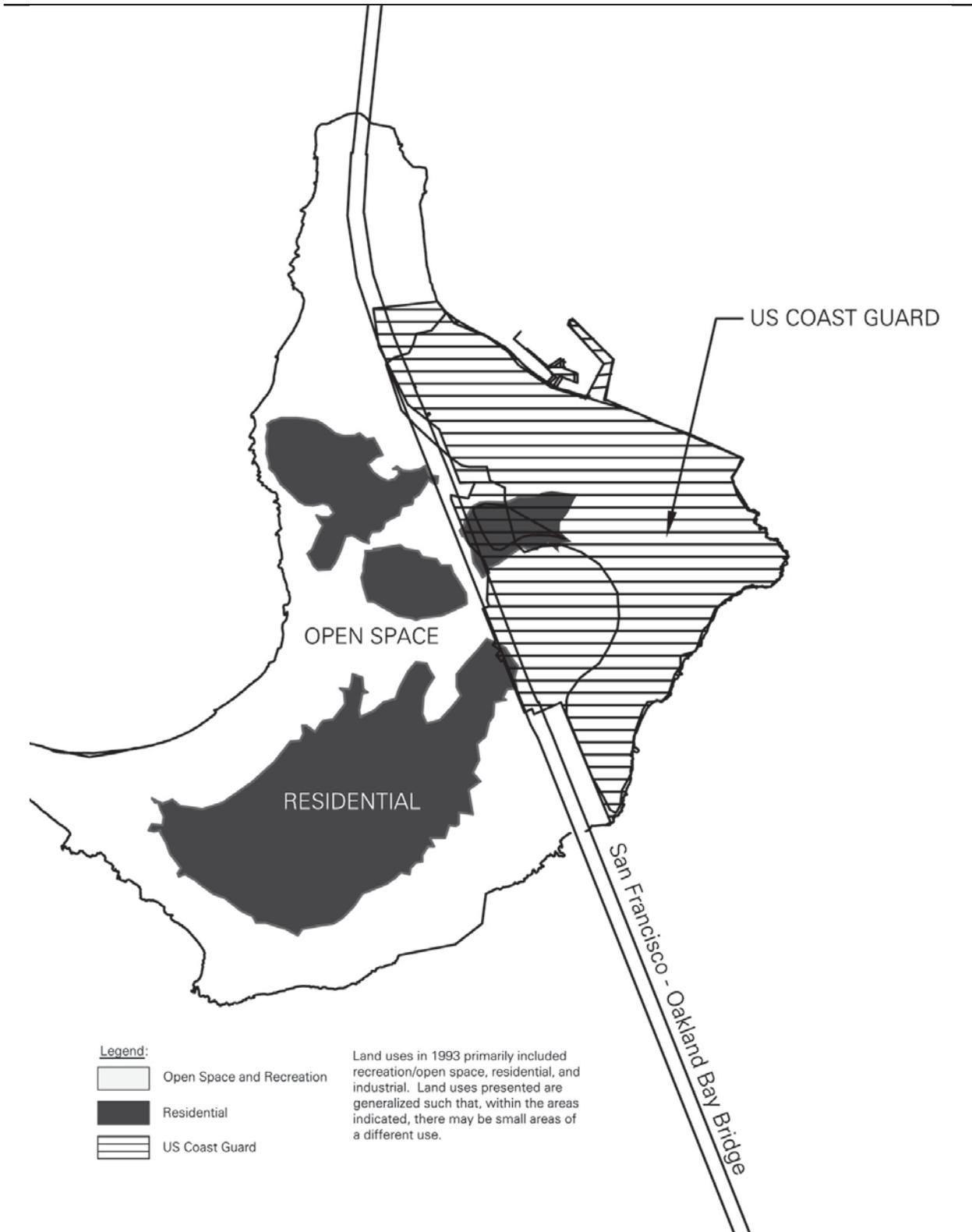
- San Francisco-Oakland Bay Bridge East Span Seismic Safety Project
- Transition Structure Portion of SFOBB

Source: Nima/USGS 2004; DMJM Harris, EDAW 5/09



Not To Scale

**Figure 2-2
Alternative 4**



Source: San Francisco Planning Department 2006

Not To Scale

**Figure 3A-1
Existing Land Uses**



A



B



C



D

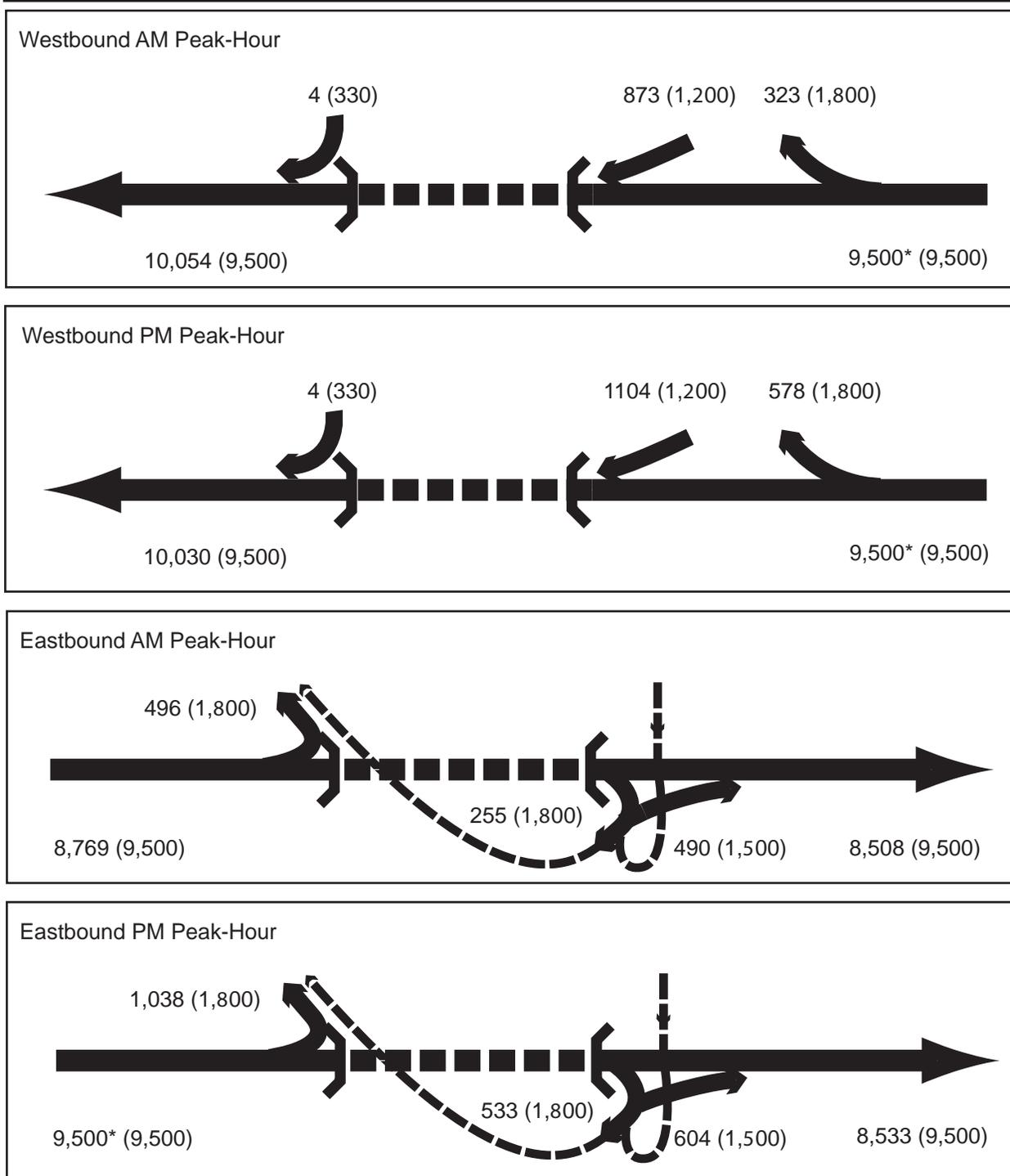


E



F

**Figure 3.7-1
Yerba Buena Island Image Types**



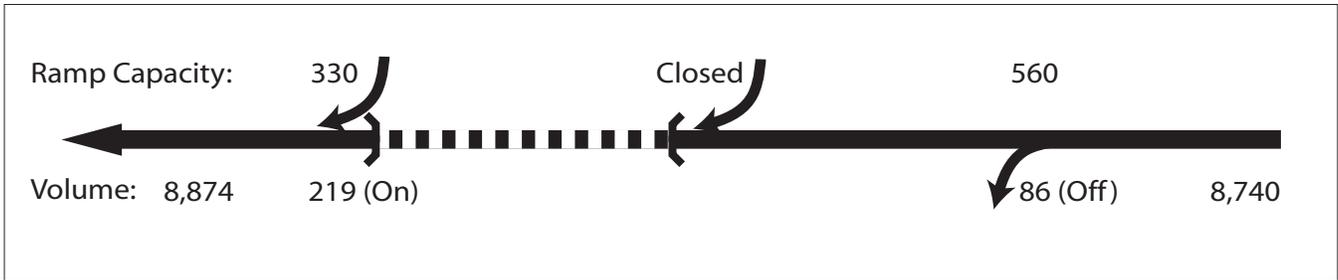
1. The demand volume and capacity are shown as xx (yy).
 2. In future scenario, there would be 4 bus trips to San Francisco and 9 bus trips from Oakland.
- * Constrained Volumes

Source: CHS Consulting Group:
YBI Ramps Traffic Operations Report, May, 2009

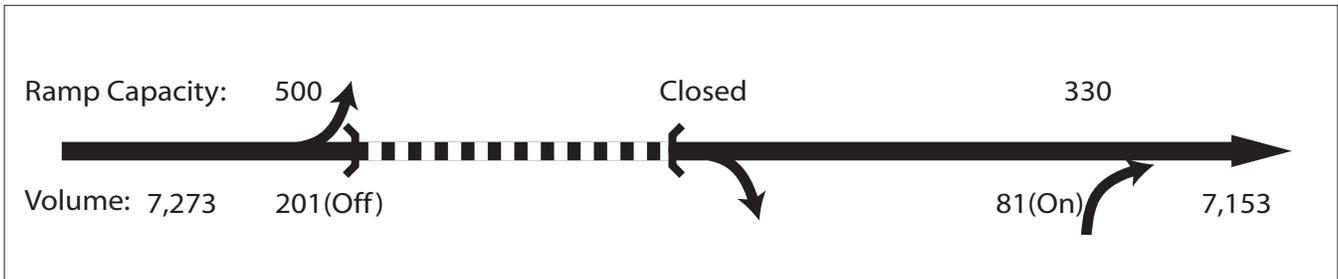
**Figure 3.6-4
Future (2035) Build Peak-Hour Volumes**

AM PEAK HOUR

Westbound

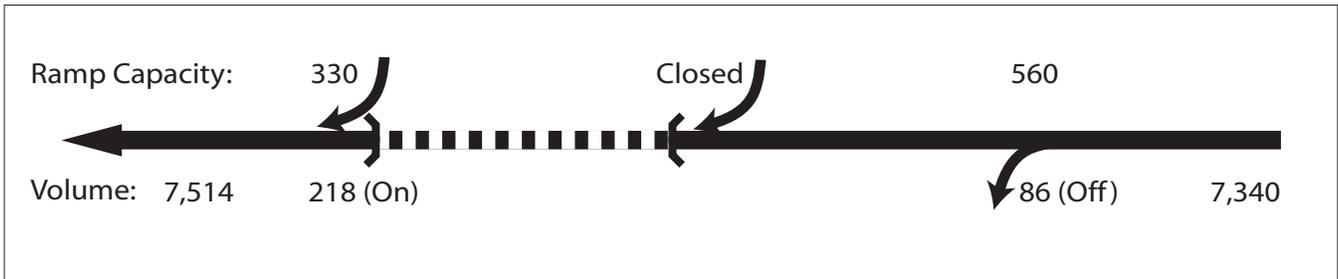


Eastbound



PM PEAK HOUR

Westbound



Eastbound

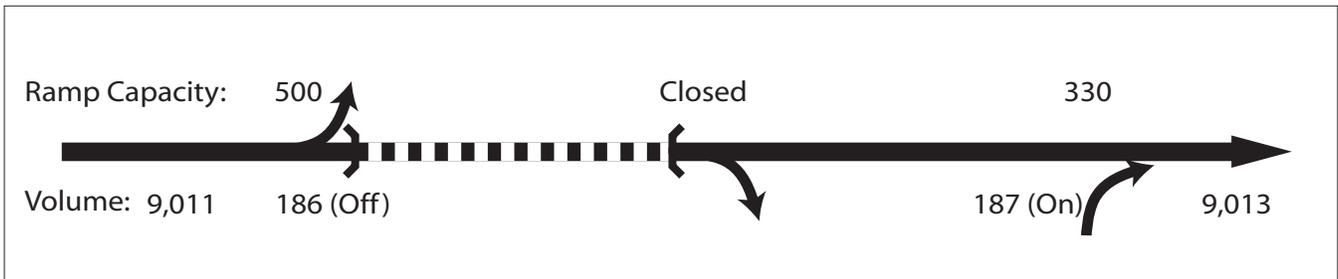


Table 3.6-1: Existing Ramp Junction Analysis

	Existing AM			Existing PM		
	LOS	Density	Speed	LOS	Density	Speed
Westbound						
Off-Ramp to TI (L)	D	28	65	C	25	65
On-Ramp from TI	D	31	56	D	27	59
On-Ramp from TI	D	31	58	D	28	61
Eastbound						
Off-Ramp to TI (L)	C	25	65	D	31	65
Off-Ramp to TI	C	25	62	D	30	59
On-Ramp from TI	D	27	61	D	34	56

- Notes:
1. TI represents Treasure Island.
 2. (L) represents the ramp is on the left-hand side of the freeway.
 3. LOS calculations are from the HCM analysis.

Table 3.6-5: 2035 Future No Build Condition Ramp Junction Analysis

	Future 2035 No Build AM			Future 2035 No Build PM		
	LOS	Density	Speed	LOS	Density	Speed
Westbound						
Off-Ramp to TI (L)	F	49	40	F	47	47
On-Ramp to TI	F	49	38	F	48	45
On-Ramp from TI	E	41	45	E	41	47
Eastbound						
Off-Ramp to TI (L)	D	34	50	E	37	50
Off-Ramp to TI	D	33	49	D	33	48
On-Ramp from TI	E	40	48	E	40	48

Source: CHS Consulting Group 2009b

- Notes:
1. TI represents Treasure Island.
 2. (L) represents the ramp is on the left-hand side of the freeway.
 3. Assumes no ramp metering.
 4. Speeds shown correspond to mainline speed at ramp junctions.

Table 3.6-6: Future 2035 Build Condition Ramp Junction Analysis - No Ramp Metering

	Future 2035 Build AM			Future 2035 Build PM		
	LOS	Density	Speed	LOS	Density	Speed
Westbound						
Off-Ramp to TI (R)	F	53	36	F	49	46
On-Ramp from TI	F	45	42	E	45	47
On-Ramp from TI	E	40	47	E	40	47
Eastbound						
Off-Ramp	D	34	50	E	37	50
Off-Ramp to TI	D	33	49	D	33	48
On-Ramp from TI	E	40	48	E	40	48

Source: CHS Consulting Group 2009b

- Notes:
1. TI = Treasure Island.
 2. (R) = The ramp is on the right side of the freeway.

3. This analysis assumes no ramp metering.

Table 3.6-7: Future 2035 Build Condition Ramp Junction Analysis - With Metering

	Future 2035 Build AM			Future 2035 Build PM		
	LOS	Density	Speed	LOS	Density	Speed
<i>Westbound</i>						
Off-Ramp to TI (R)	E	35	47	E	35	50
On-Ramp from TI	C	40	48	C	40	49
On-Ramp from TI	C	40	46.6	C	40	47.7
<i>Eastbound</i>						
Off-Ramp	D	34	50	E	37	50
Off-Ramp to TI	D	33	49	D	33	48
On-Ramp from TI	E	40	48	E	40	48

Source: CHS Consulting Group 2009b

Notes: 1. TI = Treasure Island.

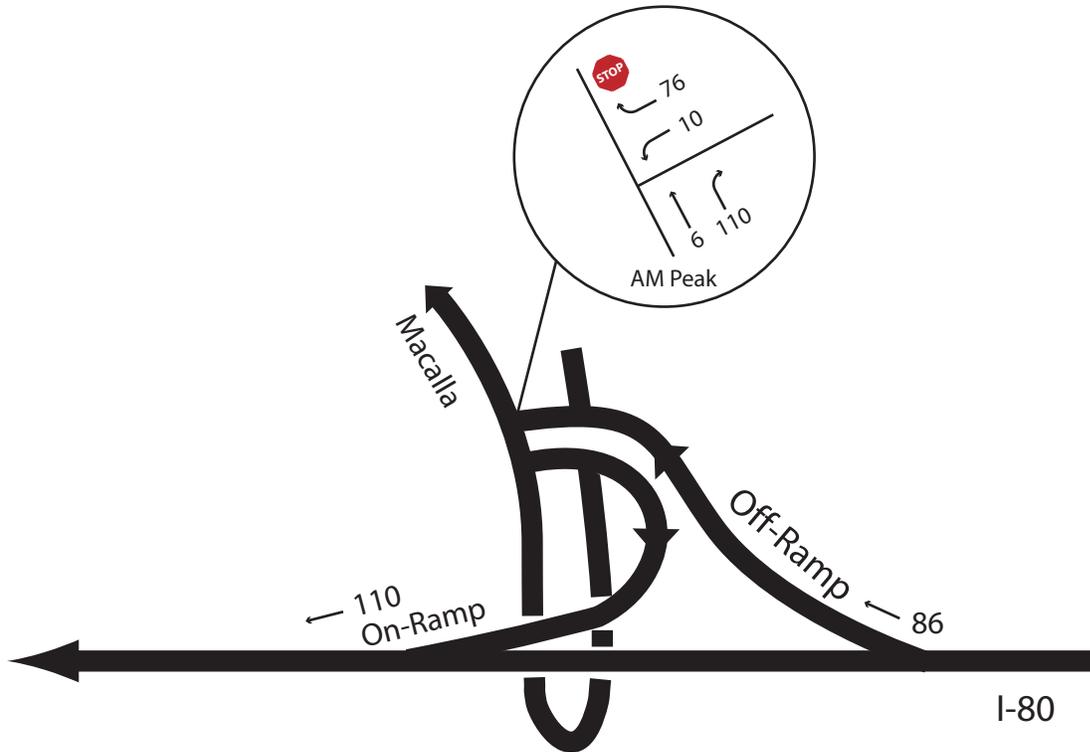
2. (R) = The ramp is on the right side of the freeway.

FULL BUILD OUT
CONDITIONS

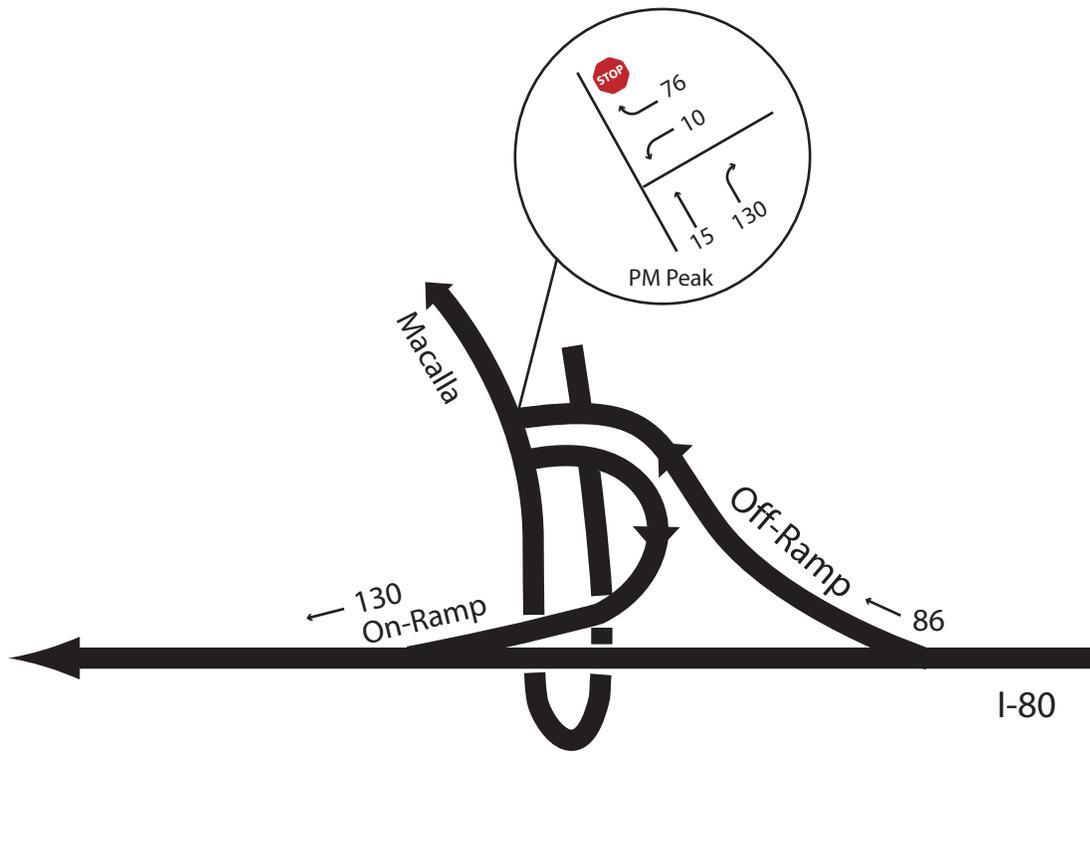
ROAD SEGMENT: **Macalla Road, between Westbound Off-Ramp and Treasure Island Road**

VEHICLE TYPE & FHWA CLASS	VEHICLES	TOTAL DAILY TRUCKS	ESAL - 20 YEAR CONSTANTS	TOTAL 20 YEAR ESAL
2 Axle Trucks (F4,F5)	3.07%	201	1,380	276,749
3 Axle Trucks (F6)	0.30%	19	3,680	71,056
4 Axle Trucks (F7,F8)	0.20%	13	5,880	75,690
5&6 Axle Trucks (F9-F13)	0.00%	0	13,780	0
GROSS TOTAL	3.56%	233		423,495
TOTAL PER LANE		233		423,495

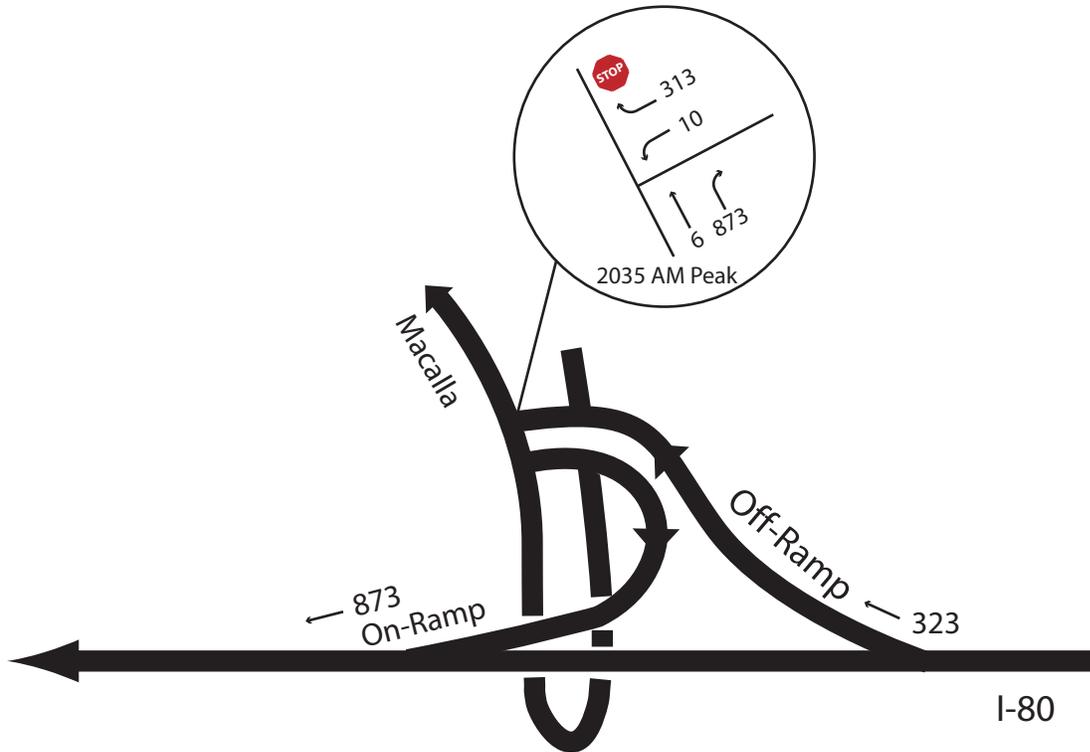
Macalla/Ramp Intersection Implementation Year AM Peak Hour Volume



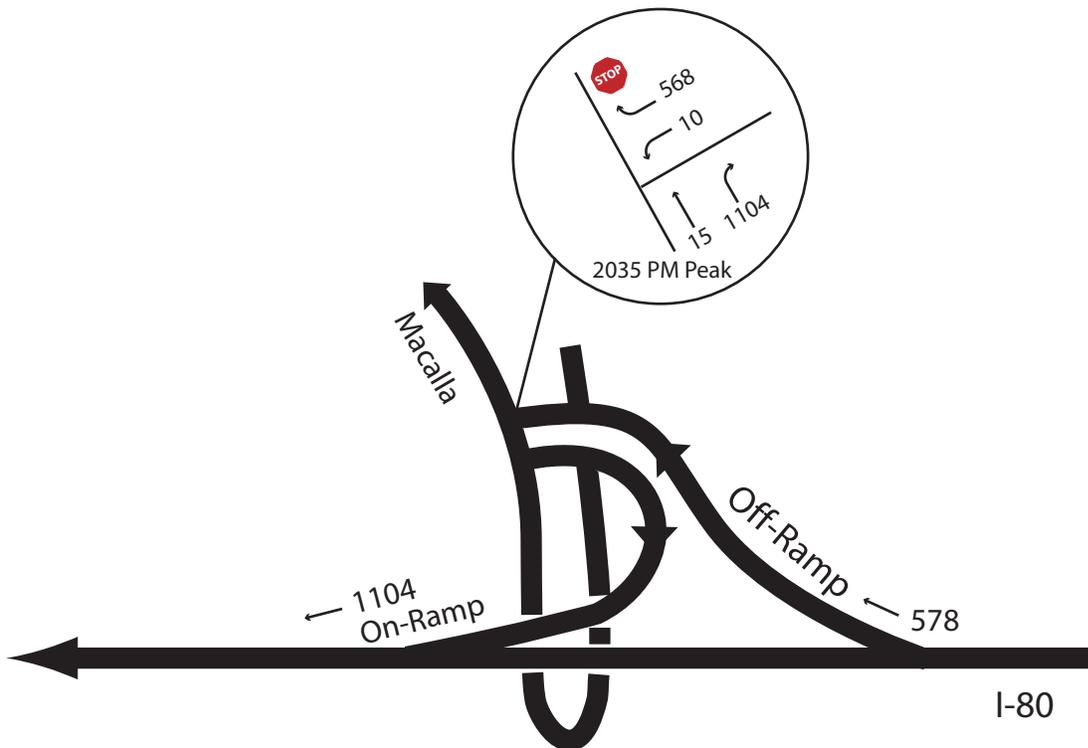
Macalla/Ramp Intersection Implementation Year PM Peak Hour Volume



Macalla/Ramp Intersection 2035 AM Peak Hour Volume



Macalla/Ramp Intersection 2035 PM Peak Hour Volume



TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst				Intersection	Macalla/Ramp			
Agency/Co.				Jurisdiction				
Date Performed	11/20/2009			Analysis Year	Implement Year			
Analysis Time Period	AM Peak							
Project Description								
East/West Street: Macalla				North/South Street: Ramp				
Intersection Orientation: East-West				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	0	6	110		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate (veh/h)	0	0	0	0	6	110		
Proportion of heavy vehicles, P _{HV}	0	--	--	0	--	--		
Median type	Undivided							
RT Channelized?			0			0		
Lanes	0	0	0	0	1	1		
Configuration					T	R		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	10	0	76		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate (veh/h)	0	0	0	10	0	76		
Proportion of heavy vehicles, P _{HV}	0	0	0	0	0	0		
Percent grade (%)	0			0				
Flared approach		N			N			
Storage		0			0			
RT Channelized?			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Control Delay, Queue Length, Level of Service								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration							LR	
Volume, v (vph)							86	
Capacity, c _m (vph)							1075	
v/c ratio							0.08	
Queue length (95%)							0.26	
Control Delay (s/veh)							8.6	
LOS							A	
Approach delay (s/veh)	--	--					8.6	
Approach LOS	--	--					A	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst				Intersection	Macalla/Ramp			
Agency/Co.				Jurisdiction				
Date Performed	11/20/2009			Analysis Year	Implement Year			
Analysis Time Period	PM Peak							
Project Description								
East/West Street: Macalla				North/South Street: Ramp				
Intersection Orientation: East-West				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	0	15	130		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate (veh/h)	0	0	0	0	15	130		
Proportion of heavy vehicles, P _{HV}	0	--	--	0	--	--		
Median type	Undivided							
RT Channelized?			0			0		
Lanes	0	0	0	0	1	1		
Configuration					T	R		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	10	0	76		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate (veh/h)	0	0	0	10	0	76		
Proportion of heavy vehicles, P _{HV}	0	0	0	0	0	0		
Percent grade (%)	0			0				
Flared approach		N			N			
Storage		0			0			
RT Channelized?			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Control Delay, Queue Length, Level of Service								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration							LR	
Volume, v (vph)							86	
Capacity, c _m (vph)							1063	
v/c ratio							0.08	
Queue length (95%)							0.26	
Control Delay (s/veh)							8.7	
LOS							A	
Approach delay (s/veh)	--	--					8.7	
Approach LOS	--	--					A	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst				Intersection	Macalla/Ramp			
Agency/Co.				Jurisdiction				
Date Performed	11/20/2009			Analysis Year	2035			
Analysis Time Period	AM Peak							
Project Description								
East/West Street: Macalla				North/South Street: Ramp				
Intersection Orientation: East-West				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	0	6	873		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate (veh/h)	0	0	0	0	6	873		
Proportion of heavy vehicles, P _{HV}	0	--	--	0	--	--		
Median type	Undivided							
RT Channelized?			0			0		
Lanes	0	0	0	0	1	1		
Configuration					T	R		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	10	0	313		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate (veh/h)	0	0	0	10	0	313		
Proportion of heavy vehicles, P _{HV}	0	0	0	0	0	0		
Percent grade (%)	0			0				
Flared approach		N			N			
Storage		0			0			
RT Channelized?			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Control Delay, Queue Length, Level of Service								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration							LR	
Volume, v (vph)							323	
Capacity, c _m (vph)							1081	
v/c ratio							0.30	
Queue length (95%)							1.27	
Control Delay (s/veh)							9.7	
LOS							A	
Approach delay (s/veh)	--	--					9.7	
Approach LOS	--	--					A	

TWO-WAY STOP CONTROL SUMMARY								
General Information				Site Information				
Analyst				Intersection	Macalla/Ramp			
Agency/Co.				Jurisdiction				
Date Performed	11/20/2009			Analysis Year	2035			
Analysis Time Period	PM Peak							
Project Description								
East/West Street: Macalla				North/South Street: Ramp				
Intersection Orientation: East-West				Study Period (hrs): 1.00				
Vehicle Volumes and Adjustments								
Major Street	Eastbound			Westbound				
Movement	1	2	3	4	5	6		
	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	0	15	1104		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate (veh/h)	0	0	0	0	15	1104		
Proportion of heavy vehicles, P _{HV}	0	--	--	0	--	--		
Median type	Undivided							
RT Channelized?			0			0		
Lanes	0	0	0	0	1	1		
Configuration					T	R		
Upstream Signal		0			0			
Minor Street	Northbound			Southbound				
Movement	7	8	9	10	11	12		
	L	T	R	L	T	R		
Volume (veh/h)	0	0	0	10	0	568		
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00		
Hourly Flow Rate (veh/h)	0	0	0	10	0	568		
Proportion of heavy vehicles, P _{HV}	0	0	0	0	0	0		
Percent grade (%)	0			0				
Flared approach		N			N			
Storage		0			0			
RT Channelized?			0			0		
Lanes	0	0	0	0	0	0		
Configuration					LR			
Control Delay, Queue Length, Level of Service								
Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Configuration							LR	
Volume, v (vph)							578	
Capacity, c _m (vph)							1069	
v/c ratio							0.54	
Queue length (95%)							3.48	
Control Delay (s/veh)							12.3	
LOS							B	
Approach delay (s/veh)	--	--					12.3	
Approach LOS	--	--					B	