Appendix B

Transportation Technical Memoranda

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MEMO

SAN FRANCISCO OFFICE
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Project Number: 395900

To: Amy Marshall, The Presidio Trust

From: José I. Farrán, Project Manager
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Subject: The Presidio of San Francisco
Public Health Service Hospital Site Supplemental Environmental Impact Statement
Draft Technical Memorandum No. 1 – Expanded Existing Conditions

1. INTRODUCTION

This Technical Memorandum describes the existing transportation conditions in the vicinity of the Presidio of San Francisco's Public Health Service Hospital (PHSH) development site, which is located in the southern end of the Presidio, west of Park Presidio Boulevard, and north of Lake Street. This assessment is based in part on the *Presidio Trust Management Plan – Background Transportation Report for the Final EIS*, prepared by Wilbur Smith Associates (WSA) in May 2002. In addition, this information has been supplemented and updated by WSA with new traffic data collected specifically for this study. The following are the components of the transportation system that are addressed in this technical Memorandum:

- Roadway network,
- Traffic operations,
- Transit services,
- Bicycle and pedestrian circulation, and
- Parking conditions.

2. ROADWAY NETWORK

The PHSH development site is located on the south side of the Presidio. Nearby roadways include Lake Street, California Street, Park Presidio Boulevard, 14th Avenue, 15th Avenue, Wedemeyer Street and Battery Caulfield Road. These roadways are described below.

Lake Street – Lake Street is an east-west oriented street located immediately south of the Presidio. It varies in width from approximately 50 feet between 15th and 14th Avenues to 62 feet between 14th Avenue and Park Presidio Boulevard. West of 14th Avenue, Lake Street has one travel lane and one bicycle lane each way, as well as on-street parking on both sides of the street. Between 14th Avenue and Park Presidio Boulevard, Lake Street has one travel lane and a bicycle lane each way, an eastbound left-turn lane and an eastbound right turn lane. On-street parking is prohibited on Lake Street between 14th Avenue and Park Presidio Boulevard. East of Park Presidio Boulevard, Lake Street has one travel lane in the eastbound direction, and a right-turn lane, a bicycle lane, a through lane and a left-turn lane in the westbound direction.

California Street – California Street is an east-west oriented street located immediately south of Lake Street. It is approximately 50 feet wide in the vicinity of the PHSH site, with one travel lane each way and on-street parking on both sides of the street. The *San Francisco General Plan* designates California Street as a secondary arterial and a neighborhood commercial street. East of Park Presidio Boulevard, California Street is designated as a Transit Oriented Street, while west of Park Presidio Boulevard is designated as a Secondary Transit Street.

Park Presidio Boulevard – Park Presidio Boulevard (Highway 1) is a major north-south arterial. It has three travel lanes each way with a raised median south of its intersection with Lake Street. Approximately 450 feet north of Lake Street, Park Presidio Boulevard narrows to two travel lanes each way prior to going through the MacArthur Tunnel. Highway 1 is a State-designated facility under Caltrans jurisdiction. Left-turns from Park Presidio Boulevard are prohibited at all intersections, with the exception of southbound buses at Geary Boulevard. Park Presidio Boulevard is part of San Francisco's Congestion Management Program network and it is designated in the *San Francisco General Plan* as a Neighborhood Network Connection Street.

14th Avenue – 14th Avenue is a north-south oriented residential street, located immediately west of Park Presidio Boulevard. It is approximately 40 feet wide with one travel lane each way at its intersection with Lake Street. 14th Avenue narrows to a width of 30 feet north of Lake Street, near the former entrance to the Presidio. The 14th Avenue gate to the Presidio is currently closed. On-street parking is permitted on both sides of the street.

15th Avenue – 15th Avenue is a north-south oriented residential street, located immediately west of 14th Avenue. It is approximately 40 feet wide with one travel lane each way near Lake Street and California Street and narrows to approximately 35 feet near the Presidio gate. 15th Avenue has on-street parking on both sides of the street and provides access to the Presidio approximately 260 feet north of Lake Street.

Wedemeyer Street – Wedemeyer Street is generally a north-south oriented street within the Presidio that circumvents the PHSH site, connecting 14th Avenue with Battery Caulfield Road north of the site. There is one travel lane each way and no on-street parking on Wedemeyer Street.

Battery Caulfield Road – Battery Caulfield Road is a north-south oriented street connecting Wedemeyer Street north of the PHSH site with Washington Boulevard at the West Washington residential neighborhood. It is approximately 24 feet wide with one travel lane each way. On-street parking is not permitted on either side of the street.

3. TRAFFIC OPERATIONS

3.1 Traffic Characteristics

The 15th Avenue gate entrance is currently the only direct vehicular access to the PHSH site from outside the Presidio. As part of the *Presidio Bus Management Plan* study (September 1999), 24-hour machine traffic counts were conducted at the nine Presidio gates during the second week of May (spring conditions), the first week of August (summer conditions), and the third week of November (fall conditions) in 1998. The data indicate that approximately 800 to 900 vehicles per day enter the Presidio via the 15th Avenue gate, which represents approximately one percent of all vehicles entering or exiting the park on a weekday. A summary of the data is shown in Table 1.

Table 1
15th Avenue Presidio Gate
Weekday Average Daily and PM Peak Hour Traffic Volumes (1998)

Season	Average Daily Traffic (vehicles)	PM Peak Hour Traffic (vehicles)	Percentage of Daily Traffic during the PM Peak Hour
Spring	864	82	9.5%
Summer	783	75	9.6%
Winter	920	93	10.1%

Source: *Presidio Bus Management Plan – Support Document: Summary of Analysis of Data Collected in 1998*, September 1999
Note:
Traffic volumes include both entering and existing volumes at the 15th Avenue gate

The traffic counts at the 15th Avenue Gate shown in Table 1 have been supplemented with turning movement counts at the intersection of 15th Avenue/Battery Caulfield Road and Gate counts in 2001 and 2002. Weekday traffic volumes in the Presidio are primarily work-related, so they do not vary substantially by season, unlike weekend traffic, which is primarily recreational. Weekday PM peak hour traffic volumes include even more work-related trips than weekday daily traffic volumes, and therefore vary the least amount by season. As shown in Table 1 the highest traffic volumes at the 15th Avenue gate occurred during the winter and spring seasons.

3.2 Intersection Analysis

Existing intersection operating conditions have been evaluated for weekday AM and PM peak period conditions at eight key intersections in the vicinity of the PHSH site. Because these

intersections are the intersections closest to the PHSH district, these are the intersections that would most likely experience the greatest change in traffic volumes due to changes in land uses at the PHSH site. . The dispersion of traffic to several routes radiating from the PHSH district would yield a decreasing effect on individual intersections with increased distance from the PHSH district, and therefore the effect of the PHSH alternatives on intersections beyond those identified below would be minimal. The eight study intersections are:

- Lake Street/17th Avenue
- Lake Street/15th Avenue
- Lake Street/14th Avenue
- Lake Street/Park Presidio Boulevard
- Lake Street/Funston Avenue
- California Street/15th Avenue
- California Street/14th Avenue
- California Street/Park Presidio Boulevard

The turning movement traffic volumes at six of the eight study intersections had been previously counted by WSA during the morning and afternoon peak commute periods (7:00 to 9:00 AM and 4:00 to 6:00 PM) in November 2000 as part of the data collection efforts undertaken as part of the Presidio Trust Management Plan (PTMP) EIS, published in 2002. After review of these data for consistency with traffic volume data from other sources (including the preliminary data from the Doyle Drive study), it was determined that the traffic counts collected for the PTMP EIS at the intersections on Park Presidio Boulevard were inconsistent with those being used by the Doyle Drive study, and that new traffic counts at the Lake Street/Park Presidio Boulevard and California Street/Park Presidio Boulevard intersections would improve the accuracy of the project-specific data set, which would refine the results of any subsequent analysis. Therefore, both AM and PM peak turning movement traffic counts were gathered at these two intersections again in January 2004 for the purposes of this analysis. In response to comments on the PHSH Environmental Assessment, the intersections of Lake Street/17th Avenue and Lake Street/Funston Avenue were added to the analysis. The intersection of Lake Street/17th Avenue was added because 17th Avenue is the one of the north-south street that motorists would likely use to cross California Street since there is an all-way stop at the intersection of California Street/17th Avenue. This would result in relatively more left turns from Lake Street to 17th Avenue, and left turns generally incur more delay than other turning movements. The intersection of Lake Street/Funston Avenue was added because the prohibition of left turns from Park Presidio Boulevard would result in more traffic traveling through this intersection to access the PHSH district. The traffic counts for the intersections of Lake Street at 17th Avenue and Funston Avenue were gathered in May 2004. For each study intersection, the peak hour total for the intersection traffic volume during each two-hour period was determined and used for the intersection capacity analysis. In order to conservatively account for the seasonal variation in

traffic volumes counts, the intersection turning movement volumes gathered in the winter were adjusted upward by 11 to 15 percent. The traffic counts collected in November 2000 for the PTMP traffic analysis were adjusted upward by 15 percent based on a comparison of the November counts to May 2000 counts at several PTMP study intersections. Because the seasonal variation for local traffic at local intersections is likely to differ from the seasonal variation for regional traffic on highways and freeways, the intersections of Lake Street/Park Presidio Boulevard and California Street/Park Presidio Boulevard were adjusted upward by 11 percent based on monthly traffic volume data for the Golden Gate Bridge.

The AM and PM peak hour intersection operations analysis was conducted according to the methodology described in the 2000 Highway Capacity Manual (HCM 2000) (Transportation Research Board, 2000). The HCM 2000 methodology is appropriate as it is the same methodology used by the San Francisco Planning Department (Transportation Impact Analysis Guidelines for Environmental Review, October 2002) and is also being used for the Doyle Drive study. The HCM methodology calculates the average delay experienced by a vehicle traveling through the intersection, and assigns a corresponding level of service (LOS). The levels of service range from LOS A, indicating volumes well below capacity with vehicles experiencing little or no delay, to LOS F, indicating volumes near capacity with vehicles experiencing extremely high delays. An intersection operating at LOS D or better is generally considered to be operating acceptably by the City and County of San Francisco and most other local agencies in the Bay Area, and levels of service E and F are undesirable and generally considered unacceptable. Appendix A contains the HCM 2000 LOS definitions.

For signalized intersections, the HCM 2000 methodology determines the average delay per vehicle for each lane group based on the particular movement, and traffic volume and capacity associated with that lane group. The average delay per vehicle is then aggregated for each approach and for the intersection as a whole. A combined weighted average delay and LOS is then presented for the intersection as a whole. For unsignalized intersections, average delay and LOS operating conditions are calculated by approach (e.g., northbound) and movement (e.g., northbound left-turn). For two-way stop-controlled intersections, delay and LOS are calculated for each of the two stop-controlled approaches and operating conditions are reported for the worst approach. For all-way stop-controlled intersections, average delay per vehicle is averaged across all approaches, and operating conditions are reported for the average delay and LOS for the intersection as a whole.

It should be noted that because the PHSH EIS traffic analysis is based on the more up to date and more widely accepted HCM 2000 methodology, the results for establishing the operating conditions shown in the PTMP EIS differ slightly from those shown in this technical memorandum. The transportation analyses conducted as part of the PTMP EIS were based on the 1994 HCM methodology, the generally accepted methodology at that time.

Table 2 presents the results of the intersection LOS analysis for the existing weekday AM and PM peak hour conditions (Appendix B contains the detailed calculations of the intersection LOS analysis). As the table indicates, all eight intersections operate at LOS D or better during the

weekday AM peak hour. During the weekday PM peak hour, six intersections operate at LOS D or better, with the Lake St. /14th Ave. and California St. /14th Ave. intersections currently operating at LOS E. It should be noted that the LOS and delay shown at these two intersections are for the worst minor stop-controlled approach (14th Avenue) vehicles, since traffic along the major street approaches (Lake Street and California Street) are uncontrolled and does not experience delays.

Table 2
Intersection Levels of Service – Weekday AM and PM Peak Hours
Existing Conditions – Year 2000/2004

Intersection	Traffic Control Device	AM Peak Hour		PM Peak Hour	
		Delay [1]	LOS	Delay [1]	LOS
Lake St/17th Ave	2-Way Stop (N-S)	15.8	C	13.8	B
Lake St/15th Ave	4-Way Stop	17.4	C	12.4	B
Lake St/14th Ave [2]	2-Way Stop (N-S)	29.3	D	36.1	E
Lake St/Park Presidio Blvd	Traffic Signal	24.4	C	21.5	C
Lake St/Funston Ave	2-Way Stop (N-S)	23.5	C	23.9	C
California St/15th Ave [2]	2-Way Stop (N-S)	27.0	D	26.6	D
California St/14th Ave [2]	2-Way Stop (N-S)	29.6	D	41.9	E
California St/Park Presidio Blvd	Traffic Signal	30.5	C	38.9	D

Source: Wilbur Smith Associates – June 2004
Notes:
[1] Delay presented in seconds per vehicle based on the 2000 HCM methodology.
[2] LOS and delay shown for worst minor stop-controlled approach. Major approach is uncontrolled and without delay.

4. TRANSIT SERVICE

Major public transit systems serving the PHSH site include the San Francisco Municipal Railway (Muni) and the Golden Gate Transit (GGT) operated by the Golden Gate Bridge, Highway and Transportation District. These services provide access to other regional carriers such as BART, AC Transit, Caltrain, SamTrans and the regional ferry system. In addition, the Presidio's internal shuttle bus service (PresidiGo) serves the park and connects to Muni and GGT buses at key transfer points.

4.1 Muni

Muni provides regular scheduled daily transit service directly to the San Francisco neighborhoods adjacent to the PHSH site with five routes (1-California, 1AX-California "A" Express, 1BX-California "B" Express, 28-19th Avenue, 28L-19th Avenue Limited). Table 3 summarizes the characteristics of Muni bus lines serving the PHSH site or its immediately adjacent neighborhoods, including route descriptions and the weekday AM and PM peak period headways.

Table 3
Nearby Muni Transit Lines

Route Designation	Route Type	Route Description	Peak Period Scheduled Headway (minutes)	
			7-9 AM	4-6 PM
1-California	Radial – Trolley Coach	Daily route connecting Outer Richmond area (Geary/33rd Ave.) to the Transbay Terminal (Howard/Main) via the Financial District and a stop at the Embarcadero BART/Muni station.	9 (1)	8 (1)
1AX-California "A" Express	Express – Motor Coach	Weekday peak periods peak direction only service connecting Geary/33rd Ave. to Davis/Pine in the morning and Davis/Pine to 33rd Ave./Geary in the afternoon.	10	15
1BX-California "B" Express	Express – Motor Coach	Weekday peak periods peak direction only service connecting California/12th Ave. to Davis/Pine in the morning, and Davis/Pine to Park Presidio Blvd./California St. in the afternoon.	6	15
28-19th Avenue	Crosstown – Motor Coach	Daily route connecting Daly City BART Station to Fort Mason via 19th Ave., Park Presidio Blvd., Doyle Drive and Lombard Street.	11	12
28-19th Avenue Limited	Crosstown – Motor Coach	Weekday AM and early PM peak (school service) periods with limited stop service connecting Daly City BART Station to the California St./Park Presidio Blvd. intersection.	10-15	n.a. (2)

Source: Muni 2003 Schedule
Note:
1. The 1-California line operates at a three-minute headway east of Fillmore Street.
2. n.a. – Not applicable; Indicates that no runs are made on that route during that particular time period.

The 1-California and 1AX/1BX-California Expresses run along California Street, and are within two blocks of the 14th Avenue and the 15th Avenue gates. The 28-19th Avenue and 28L-19th Avenue Limited travel along Park Presidio Boulevard with a stop at California Street, within three blocks of the 14th Avenue gate; the 28L route ends at the Park Presidio/California intersection.

Recent ridership data are available at each line's maximum load point, defined as the location along the route at which the highest level of ridership typically occurs. In all instances, with the exception of the 1AX-California route, the maximum load point occurs at a substantial distance from the Presidio. Table 4 presents the maximum load points and associated current ridership for the various bus lines serving the Presidio or its adjacent neighborhoods, during the AM and PM peak commute periods. Table 4 indicates that the Muni lines serving the PHSH site are well-utilized, but still have available capacity.

4.2 Golden Gate Transit

Golden Gate Transit (GGT) operates bus lines and ferry routes between San Francisco and counties in the Golden Gate corridor of Marin and Sonoma Counties. Twenty-one of their bus lines pass through the Presidio during the AM and PM peak hours, all stopping at the Golden Gate Bridge Plaza. Only route 10 proceeds south into San Francisco via Highway 1, Park Presidio Boulevard and Geary Boulevard, with the stop nearest to the PHSH site located at the Park Presidio/California intersection.

Route 10 opened for service on November 1, 2003 replacing and with the same alignment as previously served by route 50 through San Francisco. Weekday and weekend headway for route 10 is 60 minutes all day/every day (leaving SF terminus from about 7 AM to 11 PM). Because of the relatively short time since its implementation, GGT has not yet collected ridership information for the new route. Peak hour ridership data at the Golden Gate Bridge Plaza for route 50 provided by GGT (which GGT staff indicated could be used as a surrogate for the new route 10) are presented in Table 5. Although ridership data are not available by bus stop, previous observations indicate that few passengers were originating or terminating their trips in the Presidio (Wilbur Smith Associates, 2000).

Table 4
Existing Muni Passenger Loads

Line	Direction	AM Peak Hour				PM Peak Hour			
		Maximum Load Point	Peak Hour Load	Peak Hour Capacity	Load Factor	Maximum Load Point	Peak Hour Load	Peak Hour Capacity	Load Factor
1	to Howard/Main	Clay/Powell	929	987	94%	Clay/Polk	650	1,377	47%
	to Geary/33rd	Sacramento/Polk	444	851	52%	Sacramento/Powell	1,243	1,533	81%
1AX	to Davis/Pine	California/Park Presidio	303	432	70%	n.a.	n.a.	n.a.	n.a.
	to Geary/33rd	n.a.	n.a.	n.a.	n.a.	California/Park Presidio	154	314	49%
1BX	to Davis/Pine	California/Fillmore	653	765	85%	n.a.	n.a.	n.a.	n.a.
	to Park Presidio/California	n.a.	n.a.	n.a.	n.a.	California/Fillmore	248	373	66%
28	to Fort Mason	19th Ave/Lincoln	311	588	53%	19th Ave/Sloat	302	425	71%
	to Daly City BART	19th Ave/Sloat	171	425	40%	19th Ave/Lincoln	374	410	91%
28L	to Park Presidio/California	19th Ave/Lincoln	134	273	49%	n.a.	n.a.	n.a.	n.a.
	to Daly City BART	19th Ave/Sloat	113	331	34%	n.a.	n.a.	n.a.	n.a.

Source: Muni, FY 2001-2002 Transit Data
Notes:
1. n.a. – Not applicable; Indicates that no runs are made on that route in that direction during that particular time period.
2. Peak hour capacity is based on the Muni Bus and Metro FY 2001-2002 Weekday Conditions. It assumes an appreciable number of standees per vehicle (somewhere between 60% and 80% of the number of seated passengers, depending on the specific transit vehicle configuration) and may not include the effects of missed or late runs.
3. Peak hour ridership is assumed to be 60% of the two-hour peak period ridership.
4. The 1-California line operates at an eight-minute headway west of Fillmore Street and at a three-minute headway east of Fillmore Street. The peak hour loads correspond to maximum load points located east of Fillmore Street.

Table 5
Route 50 Golden Gate Transit Bus Passenger Loads – Year 2000

Time Period	Buses per hour	Number of Passengers	Peak Hour Capacity	Average Load Factor
AM Peak Hour				
- Northbound	2	56	85	66%
- Southbound	3	38	128	30%
PM Peak Hour				
- Northbound	2	49	85	58%
- Southbound	2	61	85	72%

Source: Golden Gate Bridge Highway and Transportation District, October 2000 data.
Notes:
Peak hour capacity assumes 42.5 passengers per bus.

The data indicate that GGT route 50 operates with excess capacity during both the AM and PM peak commute hours, with the peak hour load factor being highest for the typical reverse commute directions (northbound in the morning and southbound in the afternoon). It should be noted that although none of the overall load factors is above 75 percent, it is likely that some buses within the peak hours may be more crowded than others.

4.3 Presidio Internal Shuttle

Early in 2002 the Trust began implementation of an internal free-of-charge shuttle service for the Presidio (PresidiGo). The shuttle service consists of two routes (orange and blue) that serve the entire Presidio with more than 40 stops within the park, including key transfer points to Muni and GGT buses. The service operates on 30-minute headways from 7 AM to 7 PM on weekdays and on one-hour headways from 11 AM to 6 PM on weekends, using compressed natural gas (CNG) buses.

The blue PresidiGo line serves the PHSH site with a stop at Wedemeyer Street, in front of Building 1808 (Nurses' Quarters) and the 14th Avenue gate. The blue line also connects with Muni's 29-Sunset at Lincoln Boulevard, with GGT's Transbay lines at the Golden Gate Bridge Plaza, with Muni's 82X-Presidio and Wharves Express at the Transit Center near the Main Post, and with Muni's 43-Masonic on Letterman Drive. The blue line's terminus at the Lombard Gate is also one block from the terminus of Muni's 41-Union and 45-Union/Stockton routes at Lyon/Greenwich. During the first nine months of 2003, the PresidiGo service carried an average of 5,620 passengers each month, which represents an average of about 190 passengers per day.

In addition, PresidiGo provides special service for tenants and events within the Presidio. Special service must be arranged in advance and is generally paid for by the tenant or event sponsor.

5. BICYCLE AND PEDESTRIAN CONDITIONS

The Presidio does not currently have a continuous system of sidewalks, bicycle trails and bicycle lanes. Sidewalks and marked pedestrian crossings are provided sporadically throughout the Presidio. In many cases within the Presidio, pedestrians and bicyclists must mix with vehicles on the street system to move from one area to another.

Paved sidewalks are provided within the PHSH site connecting the main buildings in the area, such as along the north side of Wedemeyer Street, in front of Building 1801 (the former hospital building) and Building 1808 (the former nurses' quarters). Separate pedestrian-only paths also connect the site to the nearby park entrances. Pedestrian paths are located inside the park on both sides of 15th Avenue and on the east side of 14th Avenue. A similar network of pedestrian paths links together the buildings on Wyman Avenue. A shared pedestrian-bicycle path also crosses under Highway 1 to connect the PHSH site to the Mountain Lake area.

A total of 67 pedestrians were counted at Battery Caulfield Road[1] from 7 AM to 6 PM during a weekday in October 1999, while 157 pedestrian movements were counted the following Saturday during the same time period.

There are several bicycle routes within the Presidio, although bicycles and vehicles currently share a standard-width roadway along most of these routes. Near the PHSH site, 15th Avenue, 25th Avenue and El Camino del Mar are part of the designated San Francisco Citywide Bicycle Routes (Routes #69, #75 and #95, respectively) that continue into the Presidio. Route 69 is a Class III facility (signed route only where bicyclists share roadway with vehicles, generally with wider travel lanes), while Routes 75 and 95 are Class II facilities (dedicated, striped bike lanes on roadway edge) outside of the Presidio that change to Class III facilities inside the park.

In the immediate vicinity of the PHSH site, Route 69 (Class III) follows Wedemeyer Street and Battery Caulfield Road to connect with Route 65 (Class III) at Washington Boulevard. Park Boulevard/West Pacific Avenue at the southeast corner of the site is a Class I facility (paved off-street path separated from motor vehicle traffic) from 14th Avenue to the Presidio Golf Course parking area on West Pacific Avenue.

A total of 45 bicyclists were counted at Battery Caulfield Road[1] from 7 AM to 6 PM during a weekday in October 1999, while 241 bicyclists were counted the following Saturday during the same time period.

[1] *Presidio of San Francisco - 1999 Pedestrian and Bicycle Count Program*, Technical Memorandum, Robert Peccia & Associates

6. PARKING CONDITIONS

6.1 On-street Parking Outside the Park

On-street parking in the area adjacent to the PHSH site entrances is not metered but is mostly restricted to a two-hour maximum time limit, except for local residents displaying the appropriate sticker. Parking supply and occupancy surveys conducted in October 2001 and December 2000 as part of a study to assess the potential "spillover" effects of daytime parking fees and time restrictions in the Presidio, which are tabulated in Table 6 below, indicate that there are approximately 260 on-street parking spaces near the 14th and 15th Avenue gates.

Table 6
Weekday On-Street Parking Supply and Occupancy in the Vicinity of the PHSH Site

Location	Number of Spaces Available	Occupancy		
		6:00-8:30 AM	11:00 AM-1:00 PM	3:00-5:00 PM
Lake St., bet. 14th Ave. and 18th Ave.				
- North side	38	89%	66%	47%
- South side	31	94%	61%	68%
California St., bet. 14th Ave. and 18th Ave.				
- North side	32	97%	72%	75%
- South side	33	94%	88%	91%
14th Ave., bet. California St. and Presidio gate				
- East side	44	86%	70%	36%
- West side	29	79%	66%	28%
15th Ave., bet. California St. and Presidio gate				
- North side	26	69%	15%	23%
- South side	28	79%	25%	0%
Total	**261**	**87%**	**60%**	**47%**

Source: Wilbur Smith Associates, October 2001 and December 2000 data.

Parking occupancy data shown in Table 6 for the early morning, midday and early evening time periods indicate that parking occupancy is highest early in the morning, approaching 90 percent, as residents start leaving the area to go to work. Approximately half of all on-street parking spaces are occupied during the middle of the day. The cluster of parked vehicles near the 15th Avenue Gate suggests that the Presidio is used by some residents in the surrounding neighborhood as a convenient parking area when sufficient on-street parking is not available, and that parking occupancy during late evenings and weekends likely nears 100 percent.

6.2 Parking at the PHSH site

Parking supply and occupancy information for the PHSH site was obtained from a survey taken on a typical Tuesday in May, 1999, between 10 AM and 2 PM. Table 7 summarizes the parking supply at the PHSH site. There are 306 parking spaces at the site, 69 of which are on the street and 237 off the street at two surface parking lots. Parking occupancy data showed that parking facilities within the PHSH site were less than five percent occupied, indicating that parking usage in 1999 was extremely light and that there was substantial available parking in the area.

Table 7
Parking Supply at the PHSH Site

Location	Type	Spaces supplied
Lower Plateau		
PHSH West Lot	Off-street	200
PHSH East Lot	Off-street	37
Bldg. 1801 – PHS Hospital	On-street	19
Bldg. 1802 – Engineering Maint.	On-street	2
Bldg. 1806 – Sr. Enlisted Quarters	On-street	6
Bldg. 1808 – Nurses' Quarters	On-street	17
Bldgs. 1818 & 1819 – Laboratories	On-street	6
Wyman Avenue	On-street	19
Off-street		237
On-street		69
Lower Plateau Subtotal		*306*
Upper Plateau		
Bldgs. 1818/1819 & 1450	Off-street	30
Upper Plateau Subtotal		*30*
Total		**336**

Source: Wilbur Smith Associates - May 1999 data & Presidio Trust, 2004.

APPENDICES

Appendix A
Intersection Level of Service (LOS) Definitions

INTERSECTION LEVEL OF SERVICE (LOS) DEFINITIONS

HIGHWAY CAPACITY MANUAL 2000 METHODOLOGY

Level of Service	Average Control Delay (seconds per vehicle)
Signalized Intersections	
LOS A	≤ 10 seconds
LOS B	> 10 – 20 seconds
LOS C	> 20 – 35 seconds
LOS D	> 35 – 55 seconds
LOS E	> 55 – 80 seconds
LOS F	> 80 seconds
Two-Way STOP and All-Way STOP Intersections	
LOS A	≤ 10 seconds
LOS B	> 10 – 15 seconds
LOS C	> 15 – 25 seconds
LOS D	> 25 – 35 seconds
LOS E	> 35 – 50 seconds
LOS F	> 50 seconds

Source: *2000 Highway Capacity Manual*, Transportation Research Board, 2000.

Appendix B
LOS Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	4	421	23	12	245	4	6	1	29	9	1	4
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	4	458	25	13	266	4	7	1	32	10	1	4
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	271			483			778	776	470	805	786	268
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	271			483			778	776	470	805	786	268
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			98	100	95	97	100	99
cM capacity (veh/h)	1304			1091			310	326	598	283	322	775

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	487	284	39	15
Volume Left	4	13	7	10
Volume Right	25	4	32	4
cSH	1304	1091	507	349
Volume to Capacity	0.00	0.01	0.08	0.04
Queue Length (ft)	0	1	6	3
Control Delay (s)	0.1	0.5	12.7	15.8
Lane LOS	A	A	B	C
Approach Delay (s)	0.1	0.5	12.7	15.8
Approach LOS			B	C

Intersection Summary			
Average Delay	1.1		
Intersection Capacity Utilization	37.6%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	25	541	14	24	317	12	8	11	19	27	20	13
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (veh/h)	26	564	15	25	330	12	8	11	20	28	21	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	604	368	40	62
Volume Left (vph)	26	25	8	28
Volume Right (vph)	15	13	20	14
Hadj (s)	0.0	0.0	-0.3	0.0
Departure Headway (s)	4.6	4.9	5.9	6.0
Degree Utilization, x	0.78	0.50	0.06	0.10
Capacity (veh/h)	762	720	544	531
Control Delay (s)	21.6	12.5	9.3	9.7
Approach Delay (s)	21.6	12.5	9.3	9.7
Approach LOS	C	B	A	A

Intersection Summary			
Delay	17.4		
HCM Level of Service	C		
Intersection Capacity Utilization	64.3%	ICU Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	0	574	13	77	338	8	16	3	22	8	3	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (veh/h)	0	586	13	79	345	8	16	3	22	8	3	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.94						0.94	0.94		0.94	0.94	0.94
vC, conflicting volume	353			599			1100	1103	592	1122	1105	349
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	312			599			1106	1109	592	1130	1112	308
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			92			90	98	96	95	98	100
cM capacity (veh/h)	1185			988			165	183	510	152	182	693

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	599	432	42	11
Volume Left	0	79	16	8
Volume Right	13	8	22	0
cSH	1185	988	262	159
Volume to Capacity	0.00	0.08	0.16	0.07
Queue Length (ft)	0	6	14	6
Control Delay (s)	0.0	2.4	21.3	29.3
Lane LOS		A	C	D
Approach Delay (s)	0.0	2.4	21.3	29.3
Approach LOS			C	D

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	68.0%	ICU Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5008			4957	
Flt Permitted	0.61	1.00	1.00	0.29	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	1105	1756	1492	512	1756	1492		5008			4957	
Volume (vph)	199	387	18	102	161	114	0	2707	106	0	2241	262
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	207	403	19	106	168	119	0	2820	110	0	2334	273
Lane Group Flow (vph)	207	403	19	106	168	119	0	2930	0	0	2607	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	364	578	491	169	578	491		2887			2858	
v/s Ratio Prot		c0.23			0.10			c0.59			0.53	
v/s Ratio Perm	0.19		0.01	0.21		0.08						
v/c Ratio	0.57	0.70	0.04	0.63	0.29	0.24		1.01			0.91	
Uniform Delay, d1	23.5	24.8	19.4	24.1	21.1	20.8		18.0			16.1	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.70			1.00	
Incremental Delay, d2	6.3	6.8	0.1	16.3	1.3	1.2		12.4			5.7	
Delay (s)	29.8	31.6	19.5	40.4	22.4	21.9		24.9			21.8	
Level of Service	C	C	B	D	C	C		C			C	
Approach Delay (s)		30.7			27.1			24.9			21.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	24.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	94.0%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	477	15	3	354	0	22	0	26	4	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (veh/h)	1	542	17	3	402	0	25	0	30	5	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		69										
pX, platoon unblocked				0.80			0.80	0.80	0.80	0.80	0.80	
vC, conflicting volume	402			559			964	962	551	991	970	402
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	402			449			955	952	439	989	963	402
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			87	100	94	97	99	100
cM capacity (veh/h)	1162			894			190	208	498	171	205	652

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	560	406	55	7
Volume Left	1	3	25	5
Volume Right	17	0	30	1
cSH	1162	894	286	201
Volume to Capacity	0.00	0.00	0.19	0.03
Queue Length (ft)	0	0	17	3
Control Delay (s)	0.0	0.1	20.5	23.5
Lane LOS	A	A	C	C
Approach Delay (s)	0.0	0.1	20.5	23.5
Approach LOS			C	C

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization	40.1%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	13	512	21	25	338	13	20	12	16	34	16	7
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (veh/h)	14	545	22	27	360	14	21	13	17	36	17	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					528							
pX, platoon unblocked												
vC, conflicting volume	373			567			1019	1010	556	1027	1014	366
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	373			567			1019	1010	556	1027	1014	366
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			89	95	97	81	93	99
cM capacity (veh/h)	1196			1015			197	233	535	193	231	683

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	581	400	51	61
Volume Left	14	27	21	36
Volume Right	22	14	17	7
cSH	1196	1015	262	223
Volume to Capacity	0.01	0.03	0.19	0.27
Queue Length (ft)	1	2	18	27
Control Delay (s)	0.3	0.8	22.0	27.0
Lane LOS	A	A	C	D
Approach Delay (s)	0.3	0.8	22.0	27.0
Approach LOS			C	D

Intersection Summary			
Average Delay		3.0	
Intersection Capacity Utilization	49.1%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	9	536	17	34	349	23	14	9	38	64	16	13
Peak Hour Factor	0.91	0.91	0.25	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	10	589	68	37	384	25	15	10	42	70	18	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					228							
pX, platoon unblocked												
vC, conflicting volume	409			657			932	1126	329	832	1148	204
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	409			657			932	1126	329	832	1148	204
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			92	95	94	69	91	98
cM capacity (veh/h)	1161			940			197	197	673	230	191	809

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	304	363	229	217	67	102
Volume Left	10	0	37	0	15	70
Volume Right	0	68	0	25	42	14
cSH	1161	1700	940	1700	352	246
Volume to Capacity	0.01	0.21	0.04	0.13	0.19	0.41
Queue Length (ft)	1	0	3	0	17	48
Control Delay (s)	0.3	0.0	1.8	0.0	17.6	29.6
Lane LOS	A		A		C	D
Approach Delay (s)	0.2		0.9		17.6	29.6
Approach LOS					C	D

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	39.1%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	1.00		1.00	0.96			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3320		1668	3215			4939			5009	
Flt Permitted	0.41	1.00		0.31	1.00			1.00			1.00	
Satd. Flow (perm)	716	3320		538	3215			4939			5009	
Volume (vph)	86	535	17	105	323	103	0	2624	387	0	2278	83
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	89	552	18	108	333	106	0	2705	399	0	2348	86
Lane Group Flow (vph)	89	570	0	108	439	0	0	3104	0	0	2434	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Effective Green, g (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Actuated g/C Ratio	0.31	0.31		0.31	0.31			0.60			0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	219	1016		165	983			2963			3005	
v/s Ratio Prot		0.17			0.14			c0.63			0.49	
v/s Ratio Perm	0.12			c0.20								
v/c Ratio	0.41	0.56		0.65	0.45			1.05			0.81	
Uniform Delay, d1	23.4	24.7		25.6	23.7			17.0			13.2	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.65	
Incremental Delay, d2	5.5	2.2		18.5	1.5			30.7			1.1	
Delay (s)	28.9	27.0		44.1	25.2			47.7			9.6	
Level of Service	C	C		D	C			D			A	
Approach Delay (s)		27.2			28.9			47.7			9.6	
Approach LOS		C			C			D			A	

Intersection Summary			
HCM Average Control Delay	30.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	93.0%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	229	8	13	331	5	4	0	19	5	1	2
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	1	246	9	14	356	5	4	0	20	5	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	361			255			642	642	251	660	644	359
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	361			255			642	642	251	660	644	359
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	100	97	99	100	100
cM capacity (veh/h)	1208			1322			384	390	793	366	390	690

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	256	375	25	9
Volume Left	1	14	4	5
Volume Right	9	5	20	2
cSH	1208	1322	669	419
Volume to Capacity	0.00	0.01	0.04	0.02
Queue Length (ft)	0	1	3	2
Control Delay (s)	0.0	0.4	10.6	13.8
Lane LOS	A	A	B	B
Approach Delay (s)	0.0	0.4	10.6	13.8
Approach LOS			B	B

Intersection Summary			
Average Delay		0.8	
Intersection Capacity Utilization	34.8%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	10	322	8	35	359	19	6	16	17	18	19	13
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	11	354	9	38	395	21	7	18	19	20	21	14

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	374	454	43	55
Volume Left (vph)	11	38	7	20
Volume Right (vph)	9	21	19	14
Hadj (s)	0.0	0.0	-0.2	-0.1
Departure Headway (s)	4.6	4.6	5.5	5.6
Degree Utilization, x	0.48	0.58	0.07	0.09
Capacity (veh/h)	755	769	562	560
Control Delay (s)	11.9	13.6	8.9	9.2
Approach Delay (s)	11.9	13.6	8.9	9.2
Approach LOS	B	B	A	A

Intersection Summary			
Delay		12.4	
HCM Level of Service		B	
Intersection Capacity Utilization	57.3%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis
102: Lake Street & 14th Avenue

PM Peak Existing
6/14/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	353	3	148	405	7	8	10	28	4	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	1	380	3	159	435	8	9	11	30	4	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.88						0.88	0.88		0.88	0.88	0.88
vC, conflicting volume	443			383			1141	1145	381	1176	1142	439
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	364			383			1162	1165	381	1202	1163	359
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			87			94	93	96	96	99	100
cM capacity (veh/h)	1056			1187			136	148	670	116	149	604

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	384	602	49	5
Volume Left	1	159	9	4
Volume Right	3	8	30	0
cSH	1056	1187	273	121
Volume to Capacity	0.00	0.13	0.18	0.04
Queue Length (ft)	0	12	16	3
Control Delay (s)	0.0	3.4	21.1	36.1
Lane LOS	A	A	C	E
Approach Delay (s)	0.0	3.4	21.1	36.1
Approach LOS			C	E

Intersection Summary			
Average Delay	3.2		
Intersection Capacity Utilization	65.7%	ICU Level of Service	B

HCM Signalized Intersection Capacity Analysis
103: Lake Street & Park Presidio Boulevard

PM Peak Existing
6/14/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5015			4956	
Flt Permitted	0.44	1.00	1.00	0.40	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	808	1756	1492	701	1756	1492		5015			4956	
Volume (vph)	101	309	27	94	276	171	0	2380	67	0	2394	284
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	104	319	28	97	285	176	0	2454	69	0	2468	293
Lane Group Flow (vph)	104	319	28	97	285	176	0	2523	0	0	2761	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	266	578	491	231	578	491		2891			2857	
v/s Ratio Prot		c0.18			0.16			0.50			c0.56	
v/s Ratio Perm	0.13		0.02	0.14		0.12						
v/c Ratio	0.39	0.55	0.06	0.42	0.49	0.36		0.87			0.97	
Uniform Delay, d1	21.9	23.4	19.5	22.2	22.8	21.7		15.3			17.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.76			1.00	
Incremental Delay, d2	4.3	3.8	0.2	5.5	3.0	2.0		1.1			10.6	
Delay (s)	26.2	27.1	19.7	27.7	25.8	23.7		12.8			27.8	
Level of Service	C	C	B	C	C	C		B			C	
Approach Delay (s)		26.5			25.5			12.8			27.8	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM Average Control Delay	21.5	HCM Level of Service	C
HCM Volume to Capacity ratio	0.82		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.3%	ICU Level of Service	D

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	2	362	12	7	526	1	12	0	4	3	0	3
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (veh/h)	2	416	14	8	605	1	14	0	5	3	0	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		79										
pX, platoon unblocked				0.85			0.85	0.85	0.85	0.85	0.85	
vC, conflicting volume	606			430			1052	1049	423	1053	1056	605
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	606			331			1061	1058	323	1063	1065	605
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			92	100	99	98	100	99
cM capacity (veh/h)	977			1052			171	191	616	170	189	501

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	432	614	18	7
Volume Left	2	8	14	3
Volume Right	14	1	5	3
cSH	977	1052	208	254
Volume to Capacity	0.00	0.01	0.09	0.03
Queue Length (ft)	0	1	7	2
Control Delay (s)	0.1	0.2	23.9	19.6
Lane LOS	A	A	C	C
Approach Delay (s)	0.1	0.2	23.9	19.6
Approach LOS			C	C

Intersection Summary			
Average Delay		0.7	
Intersection Capacity Utilization	46.8%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	8	452	24	25	517	21	21	10	13	13	34	14
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (veh/h)	8	466	25	26	533	22	22	10	13	13	35	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					524							
pX, platoon unblocked												
vC, conflicting volume	555			491			1122	1101	478	1109	1103	544
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	555			491			1122	1101	478	1109	1103	544
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			86	95	98	92	83	97
cM capacity (veh/h)	1026			1083			153	207	591	173	206	543

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	499	580	45	63
Volume Left	8	26	22	13
Volume Right	25	22	13	14
cSH	1026	1083	212	230
Volume to Capacity	0.01	0.02	0.21	0.27
Queue Length (ft)	1	2	20	27
Control Delay (s)	0.2	0.7	26.6	26.5
Lane LOS	A	A	D	D
Approach Delay (s)	0.2	0.7	26.6	26.5
Approach LOS			D	D

Intersection Summary			
Average Delay		2.8	
Intersection Capacity Utilization	61.6%	ICU Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	11	466	11	51	533	18	10	17	42	56	24	20
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (veh/h)	12	491	12	54	561	19	11	18	44	59	25	21
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					224							
pX, platoon unblocked												
vC, conflicting volume	580			502			941	1207	251	999	1203	290
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	580			502			941	1207	251	999	1203	290
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			94	90	94	64	86	97
cM capacity (veh/h)	1004			1073			182	174	755	166	175	713

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	257	257	334	299	73	105
Volume Left	12	0	54	0	11	59
Volume Right	0	12	0	19	44	21
cSH	1004	1700	1073	1700	331	199
Volume to Capacity	0.01	0.15	0.05	0.18	0.22	0.53
Queue Length (ft)	1	0	4	0	21	68
Control Delay (s)	0.5	0.0	1.8	0.0	18.9	41.9
Lane LOS	A		A		C	E
Approach Delay (s)	0.3		0.9		18.9	41.9
Approach LOS					C	E

Intersection Summary			
Average Delay	4.9		
Intersection Capacity Utilization	48.4%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3310		1668	3231			4968			5009	
Flt Permitted	0.29	1.00		0.39	1.00			1.00			1.00	
Satd. Flow (perm)	513	3310		691	3231			4968			5009	
Volume (vph)	74	464	26	185	511	136	0	2237	219	0	2424	91
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	78	488	27	195	538	143	0	2355	231	0	2552	96
Lane Group Flow (vph)	78	515	0	195	681	0	0	2586	0	0	2648	0
Confl. Peds. (#/hr)												
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	34.0	34.0		34.0	34.0			43.0			43.0	
Effective Green, g (s)	34.0	34.0		34.0	34.0			43.0			43.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.51			0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	205	1324		276	1292			2513			2534	
v/s Ratio Prot		0.16			0.21			0.52			c0.53	
v/s Ratio Perm	0.15			c0.28								
v/c Ratio	0.38	0.39		0.71	0.53			1.03			1.04	
Uniform Delay, d1	18.0	18.1		21.3	19.4			21.0			21.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.71	
Incremental Delay, d2	5.3	0.9		14.2	1.5			25.9			25.4	
Delay (s)	23.3	19.0		35.5	20.9			46.9			40.3	
Level of Service	C	B		D	C			D			D	
Approach Delay (s)		19.6			24.2			46.9			40.3	
Approach LOS		B			C			D			D	

Intersection Summary			
HCM Average Control Delay	38.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	86.6%	ICU Level of Service	D
c Critical Lane Group			

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

MEMO

SAN FRANCISCO OFFICE
August 9, 2003

Project Number: 395900

To: Amy Marshall, The Presidio Trust

From: José I. Farrán, Project Manager
Sam Morrissey, Transportation Engineer

Subject: The Presidio of San Francisco
Public Health Service Hospital Site Supplemental Environmental Impact Statement
Draft Technical Memorandum No. 2 – Expanded Travel Demand Assumptions

1. INTRODUCTION

This Technical Memorandum provides a description of trip generation rates, mode split, auto occupancy factors and other travel and parking demand parameters associated with the four proposed alternatives for rehabilitation and reuse of the Presidio of San Francisco's Public Health Service Hospital (PHSH) development site, as well as the "Requested No Action" alternative, which would maintain the recent uses of the project site.

The number of weekday daily, AM and PM peak hour trips generated by each of the alternatives is based on the methodology used in the cumulative analysis for the PTMP EIS, which, in turn, was based on trip-generation information from standard data sources such as the San Francisco Planning Department Guidelines for Environmental Review (SF Guidelines), the State of California Department of Transportation (Caltrans), and the Institute of Transportation Engineers (ITE). Modal split and auto occupancy for each of the alternatives varies by land use type, and whether the trip is external or internal to the Presidio. All of these travel characteristics incorporate the TDM measures associated with all of the proposed alternatives. Parking demand has also been estimated for midday weekday, evening and weekend conditions, based on the methodology used in the PTMP EIS.

2. LAND USES ASSOCIATED WITH EACH PHSH ALTERNATIVE

Five alternatives are being considered for evaluation in the Draft Environmental Impact Statement for the PHSH site. These are a "Requested No Action" alternative that represents the recent uses of the project site, an alternative that represents the PTMP land use scenario analyzed in the PTMP EIS (Alternative 1), and three additional alternatives (Alternatives 2, 3, and 4), each with differences in the proposed amount and location of demolition and new replacement construction and amount of various land uses. The following paragraphs provide a summary

description of each alternative. Table 1 summarizes the type and intensity of the land uses for the four alternatives.

Table 1
Land Use Type and Intensity by Alternative

Land Use Type	PHSH Alternative				
	Requested No Action Alternative	Alternative 1: PTMP Alternative	Alternative 2: Infill Alternative	Alternative 3: No Infill Alternative	Alternative 4: Battery Caulfield Alternative
Industrial/Warehouse (gsq.ft.)	16,617	1,500	15,000	32,000	15,000
Office (gsq.ft.)	14,332	9,600	3,700	0	0
Conference (gsq.ft.)	0	10,000	0	0	0
Recreation (gsq.ft.)	0	0	0	0	5,400
Cultural/Education (gsq.ft.)	37,708	190,900*	11,300	10,000	9,600
Residential (d.u.)	0	185 to 211	350	230	114
Senior Residential (d.u.)	0	0	0	0	155
Total occupied building area (gsq.ft.)	68,657	400,000	400,000	275,000	362,000

Source: The Presidio Trust - June 2004.
Notes:
gsq.ft. = gross square feet, d.u. = dwelling units
*Approximately 37,700 gsq.ft. of the Cultural/Education land use will be day care.

Requested No Action Alternative– This alternative would maintain the current uses for the project site. No building demolition or replacement construction would occur, and therefore the existing total building area of 400,000 gsq.ft., would be maintained; however, only 68,657 gsq.ft. of the existing building area would be occupied and utilized. The number of parking spaces in the west lot would be reduced concurrently with the remediation activities on the lower plateau to provide a total parking supply of 264 spaces, including 234 spaces on the lower plateau and 30 spaces on the upper plateau.

Alternative 1: PTMP Alternative – This alternative would rehabilitate buildings within the PHSH district to accommodate residential and educational uses. No building demolition or replacement construction would occur, and therefore the existing total building area of 400,000 gsq.ft., would be maintained. The historic concentration of development would be retained on the lower plateau (i.e., the PHSH complex), and the three-acre Battery Caulfield site, on the northern end of the district on the upper plateau, would continue to be used in the short term as a maintenance/corporation yard for Trust operations. The historic portion of Building 1801 and its non-historic additions (including the seven-story end "wings" and large one-story "connector" in front of the original main entry) would be rehabilitated for residential use (approximately 200 units) together with the historic housing on Wyman Terrace (approximately 11 units). Other ancillary buildings in the district would be rehabilitated for mainly educational and some supporting uses. According to the Final Plan Alternative described in the PTMP, this alternative was proposed to have a parking supply of 708 spaces. However, the more site-specific analysis reflected in the Supplemental Draft EIS for the PHSH district indicates that the parking supply could be reduced considerably from this level to 547 spaces.

Alternative 2: Infill Alternative – This alternative would rehabilitate historic buildings within the PHSH district, and would concentrate and primarily locate development on the lower plateau for residential use (up to 337 residential units) and reuse buildings on the upper plateau for residential (up to 13 units) and other uses. Both the historic portion and non-historic wings of Building 1801 would be rehabilitated. Non-historic buildings would be removed and replaced with an equivalent amount of compatible infill construction at locations on the lower plateau to maintain the existing total building area of 400,000 gsq.ft. No new buildings would be constructed on the Battery Caulfield site, which would remain as a Trust maintenance/corporation yard. This alternative proposes a total of 475 parking spaces, 91 of which would be underground or under buildings to increase the amount of landscaped open space, leaving 384 surface parking spaces on the lower plateau.

Alternative 3: No Infill Alternative – This alternative would rehabilitate historic buildings within the PHSH district, remove the non-historic wings of Building 1801, and provide no replacement construction at Battery Caulfield or elsewhere within the district. Total square footage of building area in the district would decrease to about 275,000 gsq.ft. Buildings would be rehabilitated for residential use (230 units total). The Battery Caulfield site would remain in the short term as a Trust maintenance/corporation yard, and outlying buildings would continue to serve as Trust maintenance facilities. This alternative proposes a supply of 330 parking spaces.

Alternative 4: Battery Caulfield Alternative – This alternative would rehabilitate historic buildings within the PHSH district, remove the non-historic wings and provide for replacement construction within the Battery Caulfield site for primarily residential uses. Several non-historic buildings would be removed and replaced with an equivalent amount of compatible new residential construction (up to 192 residential units) within the lower plateau and within Battery Caulfield (about 77 units) for a total of 269 residential units, 155 of which would be senior/assisted living units. Total square footage of building area in the district would decrease to about 362,000 gsq.ft. This alternative proposes a supply of 233 parking spaces.

3. TRIP GENERATION

In order to estimate the number of person trips that would be generated by each alternative, trip generation rates were developed as explained below for the different land use types (office, retail, residential, etc.) and applied to each quantity. A trip generation rate expresses the number of person trips that would be generated by a unit of given land use type. Person trips for each alternative were calculated for weekday daily, AM peak hour and PM peak hour conditions.

Trip generation rates by land use type were estimated based on information obtained from sources that are widely used and accepted as industry standards, including the San Francisco Transportation Impact Analysis Guidelines for Environmental Review, and the Institute of Transportation Engineers Trip Generation Manual-Sixth Edition. The Caltrans' 15th Progress Report on Trip Ends Generation Research Counts and the San Diego Traffic Generators Manual were also consulted. The resulting person trip generation rates shown in Table 2 were developed to estimate the number of trips that were representative of the land uses expected in the PHSH site.

For Alternative 1: PTMP Alternative, a different trip generation rate was used for the cultural/educational facilities, compared to the rate used for the Requested No Action Alternative and Alternatives 2, 3, and 4. Alternative 1 used a daily trip rate of 40 person trips per 1,000 gross square feet; compared to a daily trip rate of 67 person trips per 1,000 gross square feet for all other study alternatives. The different rate was used for Alternative 1 because the PTMP assumed a museum-type use for cultural/educational facilities whereas the Requested No Action Alternative and Alternatives 2, 3, and 4 assumed a day-care type use. In order to provide the most accurate estimate of trips generated, different trip generation rates were applied to these two different uses even though they fall within the same generalized PTMP land use category.

Based on the Presidio Trust's live/work model, it is expected that most of the employed residents living in the Presidio would also work within the Presidio. The resulting balance of employment and residential land uses within the Presidio in 2020 creates the opportunity for individuals that live in the Presidio to also work within the Presidio, indicating that some of the trips would both originate and terminate in the Presidio. So that these internal trips could be evaluated differently than trips to and from other parts of the City or Bay Area, the total number of person trips generated by the proposed land uses in each alternative was separated into external and internal trips. The mix of land uses expected within the Presidio in 2020 would also create the opportunity for "linked" trips. "Linked" trips are trips that are made as intermediate stops on the way from an origin to a primary trip destination. For example, a Presidio resident who stops at a café on the trip from home to work would be a linked trip. The fact that some trips within the Presidio would be linked yields fewer trips than would occur otherwise.

Table 2
Trip Generation Rates by Land Use

Time Period	Land Use Type						
	Industrial/ Warehouse (1)	Office (1)	Conference (1)	Recreation (1)	Cultural/ Educational (1)	Residential (2)	Senior Residential (2)
Daily	6	15	8.5	45	67	10	5
Inbound	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*
Outbound	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*	*50%*
AM Peak Hour	0.60	2.25	0.85	2.48	10.7	0.90	0.20
Inbound	*80%*	*90%*	*80%*	*60%*	*53%*	*20%*	*20%*
Outbound	*20%*	*10%*	*20%*	*40%*	*47%*	*80%*	*80%*
PM Peak Hour	0.90	1.50	0.85	4.50	12.1	1.05	0.25
Inbound	*20%*	*15%*	*30%*	*50%*	*47%*	*70%*	*70%*
Outbound	*80%*	*85%*	*70%*	*50%*	*53%*	*30%*	*30%*

Source: Wilbur Smith Associates - November 2003.
Notes:
(1) Number of person trips per 1,000 gross square feet
(2) Number of person trips per dwelling unit

Table 3 presents the internal/external split by alternative. Each land use type was assumed to have a different internal/external split, and the figures in Table 3 represent the weighted average of these different internal/external splits for the various types of land uses making up each alternative. Approximately 5 to 14 percent of the trips generated or attracted to the PHSH site

were assumed to begin and end within the Presidio, depending of the alternative. Persons employed within the Presidio could walk, bike or ride the internal shuttle service to destinations within the Presidio. Because internal trips are more likely to be made by transit, walking or bicycling than external trips, the separation of the two types of trips allowed for the application of different mode splits.

Table 3
Internal, External and Linked Person Trip Percentages by Alternative

Person Trip Type	PHSH Alternative				
	Requested No Action Alternative	Alternative 1: PTMP Alternative	Alternative 2: Infill Alternative	Alternative 3: No Infill Alternative	Alternative 4: Battery Caulfield Alternative
Percentage of External Trips	94%	88%	95%	94%	89%
Percentage of Internal Trips	6%	12%	5%	6%	11%
Non-linked trip factor for internal trips	51%	68%	89%	84%	78%
Overall linked trip factor	5%	7%	1%	2%	4%

Source: Wilbur Smith Associates - August 2004.

4. MODE SPLIT

PHSH site-generated person trips were assigned to travel modes in order to estimate the number of auto, transit, and walk/bicycle trips. Mode split information was obtained from the PTMP EIS, Presidio employee and resident surveys, and the minimum performance standards of the Transportation Demand Management Program.

The mode split obtained for the different alternatives assumes implementation of Travel Demand Management (TDM) measures associated with each alternative that would be phased in as more and more people work and live in the Presidio. Implementation of a TDM program would improve transit, pedestrian and bicycle conditions and would thereby reduce auto usage to Presidio destinations. The TDM program to be implemented as part of the Final Plan Alternative of the PTMP EIS would include the following:

- Mandatory participation and commitment to trip-reduction requirements by all non-residential tenants;
- A clean-fuel shuttle bus serving the entire Presidio with direct connections to Muni and GGT routes;
- On-site sale of transit passes;
- Transit and ridesharing information disseminated on kiosks within the Park, the Presidio Trust's website, and employee orientation programs;
- Mandatory event-specific TDM programs for all special events;

- Periodic monitoring of traffic volumes and mode choice among Presidio residents and employees;
- Express bus service to regional transit connections (i.e., BART and the Transbay Terminal);
- Secure bicycle parking; and
- Parking Management Program including:
  - A constrained supply of parking spaces within the Presidio; and
  - A parking regulation and fee program.

The TDM program consists of components that can be implemented to meet or exceed the intended traffic reductions. Expected reductions were used in calculating the potential impact of future vehicular traffic in the park and surrounding areas. The TDM traffic reductions used in the transportation analyses reflect the Trust's minimum performance standards. Since traffic reductions are likely to exceed what has been incorporated here, the traffic forecasts can be considered somewhat conservative.

Table 4 presents the projected daily, AM peak hour and PM peak hour travel demand estimates by mode for typical weekday conditions for the five PHSH site alternatives being analyzed for transportation impacts. Auto person trips refer to person trips either as a driver or passenger in a private vehicle. To determine the number of vehicle trips generated by the number of auto person trips, average vehicle occupancy was used. The assumed vehicle occupancy factor varies by land use. The chosen vehicle occupancy factors were based on the PTMP EIS, which in turn are based on Citywide Travel Behavior Survey (CTBS) travel data published by the San Francisco Planning Department. Therefore, the vehicle occupancy factors are consistent with the vehicle occupancy factors used in the San Francisco Planning Department's environmental analyses. Daily and peak hour travel demand vary by alternative, depending on the land use elements contained in the alternatives and the intensity of use. Detailed travel demand calculations by alternative are provided in Appendix A.

As shown in Table 4, the number of weekday daily person-trips would range from a low of about 2,600 for the Battery Caulfield Alternative (Alternative 4) to a high of approximately 9,560 for the PTMP Alternative (Alternative 1); vehicle trips would follow a similar pattern. In general, approximately six to ten percent of the daily trips generated by Alternatives 1 through 4 occur during the AM peak hour, and eleven to fourteen percent occur during the PM peak hour. For the Requested No Action Alternative, approximately sixteen percent of the daily trips would occur during the AM peak hour, and approximately seventeen percent occur during the PM peak hour. The primary reason for the difference in peak hour trips for the Requested No Action Alternative versus Alternatives 1 through 4 is that the existing cultural/educational uses of the site tend to generate higher AM and PM peak hour trips; while the proposed residential uses generate high AM peak hour trips, but have a more dispersed PM trip generation rate (the PM peak hour trips occur over a longer peak period, therefore the PM peak hour trip generation is not as concentrated).

Table 4
Estimated Trip Generation[1] by Mode of Travel and by Alternative
Weekday Daily, AM and PM Peak Hour

Time Period	PHSH Alternative				
	Requested No Action Alternative	Alternative 1: PTMP Alternative	Alternative 2: Infill Alternative	Alternative 3: No Infill Alternative	Alternative 4: Battery Caulfield Alternative
Daily					
Person-Trips[2]					
Auto	2,174	6,490	2,816	2,048	1,759
Transit	304	1,562	701	496	427
Other[3]	204	1,506	658	460	410
Total	**2,682**	**9,558**	**4,175**	**3,004**	**2,596**
Vehicle-Trips[4]	*1,501*	*4,485*	*2,212*	*1,600*	*1,346*
AM Peak Hour					
Person-Trips[2]					
Auto	343	589	298	222	171
Transit	47	120	69	50	36
Other[3]	31	107	63	45	32
Total	**421**	**816**	**430**	**317**	**239**
Vehicle-Trips[4]	*236*	*409*	*229*	*170*	*127*
PM Peak Hour					
Person-Trips[2]					
Auto	383	955	343	260	203
Transit	52	219	80	59	44
Other[3]	34	207	73	53	40
Total	**469**	**1,381**	**496**	**372**	**287**
Vehicle-Trips[4]	*262*	*659*	*265*	*199*	*151*

Source: Wilbur Smith Associates - August 2004.
Notes:
1. Includes total number (internal plus external) inbound and outbound trips
2. Person-trips refer to trips made by all modes
3. Other includes walk, bicycle and other modes
4. Vehicle trips are calculated by dividing the auto person trips by the average number of persons per vehicle for each individual land use and then added together for each alternative

The transportation mode split, which is the percentage of total trips that would occur via a private vehicle, transit, or as a bicycle-or pedestrian, for each alternative reflects implementation of improvements to encourage transit, pedestrian and bicycle modes and discourage single occupant vehicle travel. The mode split differs for each land use type as well as for external and internal trips; thus, the overall modal split represents the composite of that for all the land uses, and since each alternative has a different mix of land uses, the overall mode split would vary by alternative. Similarly, the average vehicle occupancy (number of person per vehicles) varies by

land use type and for external and internal trips, and therefore would also vary by alternative. Table 5 summarizes the modal split percentages and average vehicle occupancies for each of the five PHSH site alternatives.

Table 5
Mode Choice and Vehicle Occupancy Characteristics by Alternative
Weekday Daily Total Trips

Person Trip Type	PHSH Alternative				
	Requested No Action Alternative	Alternative 1: PTMP Alternative	Alternative 2: Infill Alternative	Alternative 3: No Infill Alternative	Alternative 4: Battery Caulfield Alternative
Mode Choice Percentages					
Auto	81%	68%	67%	68%	68%
Transit	11%	16%	17%	17%	16%
Other[1]	8%	16%	16%	15%	16%
Total[2]	100%	100%	100%	100%	100%
Average Vehicle Occupancy[3]	1.5	1.4	1.3	1.3	1.3

Source: Wilbur Smith Associates - June 2004.
Notes:
1. Other includes walk, bicycle and other modes
2. Total may not add up to 100% due to rounding
3. Average number of passengers per vehicle

As shown in Table 5, the modal split for the Requested No Action Alternative would be approximately 81 percent by auto, 11 percent by transit use, and 8 percent by walking and bicycle; while the PTMP alternative modal split would be approximately 63 percent by auto, 18 percent by transit use, and 19 percent by walking and bicycle. For the other three alternatives, the modal split would be approximately 67 to 68 percent by auto, 16 to 17 percent by transit use, and 15 to 16 percent by walking and bicycle. The average number of occupants per vehicle would be 1.3 to 1.5 for all alternatives.

5. TRIP DISTRIBUTION

The geographic distribution of employee, visitor and resident trips to the PHSH site was based on data gathered as part of the PTMP EIS transportation analyses, which in turn was based on a survey of Presidio employees, the San Francisco Guidelines for Environmental Review, and results from the San Francisco County Transportation Authority travel demand model. These data sources were used to develop a geographic distribution pattern that reflects distribution patterns for a project in the same general area of San Francisco, but is also consistent with distribution patterns of Presidio employees. With the exception of the Presidio survey data, these sources are widely used for projects throughout San Francisco. The PHSH generated trips were distributed to San Francisco, the East Bay, the North Bay, and the South Bay. The trips to and

from San Francisco were further separated into four quadrants of the City, or Superdistricts as described in the Citywide Travel Behavior Survey. Based on the trip distribution, external vehicle trips were assigned to the local street network, and external transit trips were assigned to the appropriate transit routes.

6. PARKING DEMAND

Parking demand for the five land use alternatives has been estimated for the midday weekday, evening and weekend conditions, based on the methodology used in the PTMP EIS. Parking demand consists of both long-term demand (i.e., employee and resident parking) and short-term demand (i.e. visitor parking). Consistent with the methodology outlined in the San Francisco Planning Department's Transportation Impact Analysis Guidelines for Environmental Review (October 2002), long-term parking for non-residential land uses was estimated by determining the number of employees for each land use and applying the average mode split and vehicle occupancy from the trip generation estimates for both external and internal trips. Each employee vehicle trip was assumed to require one space per day. A long-term rate of 1.13 to 1.32 spaces per dwelling unit was used for standard residential units (depending on the unit type configuration of each alternative), and a rate of 0.27 spaces per dwelling unit was used for all senior housing, based on information in the San Francisco Planning Department's Transportation Impact Analysis Guidelines for Environmental Review (October 2002) and the Institute of Transportation Engineers' Parking Generation Manual, Second Edition.

Like the methodology used for long-term parking, the methodology for estimating short-term parking demand is also consistent with the methodology outlined in the San Francisco Planning Department's Transportation Impact Analysis Guidelines for Environmental Review (October 2002). Short-term parking was estimated based on the total daily visitor trips and the average turnover rate. A short-term parking turnover rate of six vehicles per space per day was applied to industrial/warehousing and office uses, ten vehicles per space per day were used for cultural/educational uses and three vehicles per space per day was used for conference uses. Table 6 presents the estimated weekday midday and evening and weekend parking demand for all alternatives. Detailed parking demand calculations by alternative are provided in Appendix B.

Table 6
Parking Demand (spaces) by Time of Day and by Alternative

	PHSH Alternative				
Time Period	**Requested No Action Alternative**	**Alternative 1: PTMP Alternative**	**Alternative 2: Infill Alternative**	**Alternative 3: No Infill Alternative**	**Alternative 4: Battery Caulfield Alternative**
Weekday Midday	144	440	265	199	144
Weekday Evening	65	417	445	297	217
Weekend	90	501	453	304	228
Peak parking demand	144	501	453	304	228

Source: Wilbur Smith Associates – July 2004.

The Requested No Action Alternative would generate the lowest overall parking demand, followed by the Battery Caulfield Alternative (Alternative 4), the No Infill Alternative (Alternative 3) and by the Infill Alternative (Alternative 2). The PTMP Alternative (Alternative 1) would generate the highest parking demand.

APPENDICES

APPENDIX A

TRAVEL DEMAND BY ALTERNATIVE

6/25/2004
3:04 PM

TRIP GENERATION AND MODAL SPLIT FOR AREA B OF THE PRESIDIO OF SAN FRANCISCO
PHSH EA ALTERNATIVE 0 (NO ACTION) ONLY
TOTAL TRIPS

	Industrial Warehouse	Office	Retail	Lodging	Conference	Recreation	Day Care (Cult./Ed.)	Std. Residential	Infrastructure	Military	Sr. Residential	Total
Weekday Daily												
Auto Person Trips	57	121	0	0	0	0	1,996	0	0	0	0	2,174
Inbound	*28*	*60*	*0*	*0*	*0*	*0*	*998*	*0*	*0*	*0*	*0*	*1,087*
Outbound	*28*	*60*	*0*	*0*	*0*	*0*	*998*	*0*	*0*	*0*	*0*	*1,087*
Transit Person Trips	16	35	0	0	0	0	253	0	0	0	0	304
Inbound	*8*	*17*	*0*	*0*	*0*	*0*	*126*	*0*	*0*	*0*	*0*	*152*
Outbound	*8*	*17*	*0*	*0*	*0*	*0*	*126*	*0*	*0*	*0*	*0*	*152*
Bike/Ped/Other Person Trips	17	36	0	0	0	0	152	0	0	0	0	204
Inbound	*8*	*18*	*0*	*0*	*0*	*0*	*76*	*0*	*0*	*0*	*0*	*102*
Outbound	*8*	*18*	*0*	*0*	*0*	*0*	*76*	*0*	*0*	*0*	*0*	*102*
Total Person Trips	**90**	**191**	**0**	**0**	**0**	**0**	**2,400**	**0**	**0**	**0**	**0**	**2,681**
Inbound	***45***	***96***	***0***	***0***	***0***	***0***	***1,200***	***0***	***0***	***0***	***0***	***1,341***
Outbound	***45***	***96***	***0***	***0***	***0***	***0***	***1,200***	***0***	***0***	***0***	***0***	***1,341***
Total Vehicle Trips	53	117	0	0	0	0	1,331	0	0	0	0	1,501
Inbound	*26*	*59*	*0*	*0*	*0*	*0*	*665*	*0*	*0*	*0*	*0*	*750*
Outbound	*26*	*59*	*0*	*0*	*0*	*0*	*665*	*0*	*0*	*0*	*0*	*750*
Weekday AM Peak Hour												
Auto Person Trips	6	18	0	0	0	0	319	0	0	0	0	343
Inbound	*5*	*16*	*0*	*0*	*0*	*0*	*169*	*0*	*0*	*0*	*0*	*190*
Outbound	*1*	*2*	*0*	*0*	*0*	*0*	*150*	*0*	*0*	*0*	*0*	*153*
Transit Person Trips	2	5	0	0	0	0	40	0	0	0	0	47
Inbound	*1*	*5*	*0*	*0*	*0*	*0*	*21*	*0*	*0*	*0*	*0*	*27*
Outbound	*0*	*1*	*0*	*0*	*0*	*0*	*19*	*0*	*0*	*0*	*0*	*20*
Bike/Ped/Other Person Trips	2	5	0	0	0	0	24	0	0	0	0	31
Inbound	*1*	*5*	*0*	*0*	*0*	*0*	*13*	*0*	*0*	*0*	*0*	*19*
Outbound	*0*	*1*	*0*	*0*	*0*	*0*	*11*	*0*	*0*	*0*	*0*	*12*
Total Person Trips	**9**	**29**	**0**	**0**	**0**	**0**	**384**	**0**	**0**	**0**	**0**	**422**
Inbound	***7***	***26***	***0***	***0***	***0***	***0***	***204***	***0***	***0***	***0***	***0***	***237***
Outbound	***2***	***3***	***0***	***0***	***0***	***0***	***180***	***0***	***0***	***0***	***0***	***185***
Total Vehicle Trips	5	18	0	0	0	0	213	0	0	0	0	236
Inbound	*4*	*16*	*0*	*0*	*0*	*0*	*113*	*0*	*0*	*0*	*0*	*133*
Outbound	*1*	*2*	*0*	*0*	*0*	*0*	*100*	*0*	*0*	*0*	*0*	*103*
Weekday PM Peak Hour												
Auto Person Trips	9	15	0	0	0	0	359	0	0	0	0	383
Inbound	*2*	*2*	*0*	*0*	*0*	*0*	*169*	*0*	*0*	*0*	*0*	*173*
Outbound	*7*	*13*	*0*	*0*	*0*	*0*	*190*	*0*	*0*	*0*	*0*	*210*
Transit Person Trips	2	4	0	0	0	0	45	0	0	0	0	52
Inbound	*0*	*1*	*0*	*0*	*0*	*0*	*21*	*0*	*0*	*0*	*0*	*23*
Outbound	*2*	*4*	*0*	*0*	*0*	*0*	*24*	*0*	*0*	*0*	*0*	*30*
Bike/Ped/Other Person Trips	2	4	0	0	0	0	27	0	0	0	0	34
Inbound	*0*	*1*	*0*	*0*	*0*	*0*	*13*	*0*	*0*	*0*	*0*	*14*
Outbound	*2*	*4*	*0*	*0*	*0*	*0*	*14*	*0*	*0*	*0*	*0*	*20*
Total Person Trips	**13**	**24**	**0**	**0**	**0**	**0**	**432**	**0**	**0**	**0**	**0**	**469**
Inbound	***3***	***4***	***0***	***0***	***0***	***0***	***203***	***0***	***0***	***0***	***0***	***209***
Outbound	***11***	***20***	***0***	***0***	***0***	***0***	***229***	***0***	***0***	***0***	***0***	***260***
Total Vehicle Trips	8	15	0	0	0	0	240	0	0	0	0	262
Inbound	*2*	*2*	*0*	*0*	*0*	*0*	*113*	*0*	*0*	*0*	*0*	*116*
Outbound	*6*	*12*	*0*	*0*	*0*	*0*	*127*	*0*	*0*	*0*	*0*	*146*

6/25/2004
3:04 PM

TRIP GENERATION AND MODAL SPLIT FOR AREA B OF THE PRESIDIO OF SAN FRANCISCC
PHSH EA ALTERNATIVE 0 (NO ACTION) ONLY
EXTERNAL TRIPS

	Industrial Warehouse	Office	Retail	Lodging	Conference	Recreation	Day Care (Cult./Ed.)	Std. Residential	Infrastructure	Military	Sr. Residential	Total
Weekday Daily												
Auto Person Trips	52	109	0	0	0	0	1,933	0	0	0	0	2,094
Inbound	*26*	*54*	*0*	*0*	*0*	*0*	*966*	*0*	*0*	*0*	*0*	*1,047*
Outbound	*26*	*54*	*0*	*0*	*0*	*0*	*966*	*0*	*0*	*0*	*0*	*1,047*
Transit Person Trips	14	30	0	0	0	0	227	0	0	0	0	272
Inbound	*7*	*15*	*0*	*0*	*0*	*0*	*114*	*0*	*0*	*0*	*0*	*136*
Outbound	*7*	*15*	*0*	*0*	*0*	*0*	*114*	*0*	*0*	*0*	*0*	*136*
Bike/Ped/Other Person Trips	14	29	0	0	0	0	114	0	0	0	0	156
Inbound	*7*	*14*	*0*	*0*	*0*	*0*	*57*	*0*	*0*	*0*	*0*	*78*
Outbound	*7*	*14*	*0*	*0*	*0*	*0*	*57*	*0*	*0*	*0*	*0*	*78*
Total Person Trips	**80**	**168**	**0**	**0**	**0**	**0**	**2,274**	**0**	**0**	**0**	**0**	**2,521**
Inbound	***40***	***84***	***0***	***0***	***0***	***0***	***1,137***	***0***	***0***	***0***	***0***	***1,261***
Outbound	***40***	***84***	***0***	***0***	***0***	***0***	***1,137***	***0***	***0***	***0***	***0***	***1,261***
Total Vehicle Trips	48	106	0	0	0	0	1,288	0	0	0	0	1,442
Inbound	*24*	*53*	*0*	*0*	*0*	*0*	*644*	*0*	*0*	*0*	*0*	*721*
Outbound	*24*	*53*	*0*	*0*	*0*	*0*	*644*	*0*	*0*	*0*	*0*	*721*
Weekday AM Peak Hour												
Auto Person Trips	5	16	0	0	0	0	309	0	0	0	0	331
Inbound	*4*	*15*	*0*	*0*	*0*	*0*	*164*	*0*	*0*	*0*	*0*	*183*
Outbound	*1*	*2*	*0*	*0*	*0*	*0*	*145*	*0*	*0*	*0*	*0*	*148*
Transit Person Trips	1	5	0	0	0	0	36	0	0	0	0	42
Inbound	*1*	*4*	*0*	*0*	*0*	*0*	*19*	*0*	*0*	*0*	*0*	*25*
Outbound	*0*	*0*	*0*	*0*	*0*	*0*	*17*	*0*	*0*	*0*	*0*	*18*
Bike/Ped/Other Person Trips	1	4	0	0	0	0	18	0	0	0	0	24
Inbound	*1*	*4*	*0*	*0*	*0*	*0*	*10*	*0*	*0*	*0*	*0*	*15*
Outbound	*0*	*0*	*0*	*0*	*0*	*0*	*9*	*0*	*0*	*0*	*0*	*9*
Total Person Trips	**8**	**25**	**0**	**0**	**0**	**0**	**364**	**0**	**0**	**0**	**0**	**397**
Inbound	***6***	***23***	***0***	***0***	***0***	***0***	***193***	***0***	***0***	***0***	***0***	***222***
Outbound	***2***	***3***	***0***	***0***	***0***	***0***	***171***	***0***	***0***	***0***	***0***	***175***
Total Vehicle Trips	5	16	0	0	0	0	206	0	0	0	0	227
Inbound	*4*	*14*	*0*	*0*	*0*	*0*	*109*	*0*	*0*	*0*	*0*	*127*
Outbound	*1*	*2*	*0*	*0*	*0*	*0*	*97*	*0*	*0*	*0*	*0*	*99*
Weekday PM Peak Hour												
Auto Person Trips	8	14	0	0	0	0	348	0	0	0	0	369
Inbound	*2*	*2*	*0*	*0*	*0*	*0*	*164*	*0*	*0*	*0*	*0*	*167*
Outbound	*6*	*12*	*0*	*0*	*0*	*0*	*184*	*0*	*0*	*0*	*0*	*202*
Transit Person Trips	2	4	0	0	0	0	41	0	0	0	0	47
Inbound	*0*	*1*	*0*	*0*	*0*	*0*	*19*	*0*	*0*	*0*	*0*	*20*
Outbound	*2*	*3*	*0*	*0*	*0*	*0*	*22*	*0*	*0*	*0*	*0*	*27*
Bike/Ped/Other Person Trips	2	4	0	0	0	0	20	0	0	0	0	26
Inbound	*0*	*1*	*0*	*0*	*0*	*0*	*10*	*0*	*0*	*0*	*0*	*11*
Outbound	*2*	*3*	*0*	*0*	*0*	*0*	*11*	*0*	*0*	*0*	*0*	*16*
Total Person Trips	**12**	**21**	**0**	**0**	**0**	**0**	**409**	**0**	**0**	**0**	**0**	**442**
Inbound	***2***	***3***	***0***	***0***	***0***	***0***	***192***	***0***	***0***	***0***	***0***	***198***
Outbound	***10***	***18***	***0***	***0***	***0***	***0***	***217***	***0***	***0***	***0***	***0***	***244***
Total Vehicle Trips	7	13	0	0	0	0	232	0	0	0	0	252
Inbound	*1*	*2*	*0*	*0*	*0*	*0*	*109*	*0*	*0*	*0*	*0*	*112*
Outbound	*6*	*11*	*0*	*0*	*0*	*0*	*123*	*0*	*0*	*0*	*0*	*140*

TRIP GENERATION AND MODAL SPLIT FOR AREA B OF THE PRESIDIO OF SAN FRANCISCO
PHSH EA ALTERNATIVE 1 ONLY (Revised Trip. Gen. with two types of Cult/Educ.)
TOTAL TRIPS

	Industrial Warehouse	Office	Retail	Lodging	Conference	Recreation	Cultural Education	Std. Residential	Infrastructure	Military	Day Care (Cult./Ed.)	Total
Weekday Daily												
Auto Person Trips	5	81	0	0	47	0	3,493	868	0	0	1,996	6,490
Inbound	*3*	*40*	*0*	*0*	*23*	*0*	*1,747*	*434*	*0*	*0*	*998*	*3,245*
Outbound	*3*	*40*	*0*	*0*	*23*	*0*	*1,747*	*434*	*0*	*0*	*998*	*3,245*
Transit Person Trips	1	23	0	0	14	0	1,005	266	0	0	253	1,562
Inbound	*1*	*12*	*0*	*0*	*7*	*0*	*503*	*133*	*0*	*0*	*126*	*781*
Outbound	*1*	*12*	*0*	*0*	*7*	*0*	*503*	*133*	*0*	*0*	*126*	*781*
Bike/Ped/Other Person Trips	1	24	0	0	14	0	1,017	297	0	0	152	1,506
Inbound	*1*	*12*	*0*	*0*	*7*	*0*	*509*	*149*	*0*	*0*	*76*	*753*
Outbound	*1*	*12*	*0*	*0*	*7*	*0*	*509*	*149*	*0*	*0*	*76*	*753*
Total Person Trips	**8**	**128**	**0**	**0**	**74**	**0**	**5,516**	**1,431**	**0**	**0**	**2,400**	**9,557**
Inbound	***4***	***64***	***0***	***0***	***37***	***0***	***2,758***	***716***	***0***	***0***	***1,200***	***4,779***
Outbound	***4***	***64***	***0***	***0***	***37***	***0***	***2,758***	***716***	***0***	***0***	***1,200***	***4,779***
Total Vehicle Trips	5	78	0	0	37	0	2,329	706	0	0	1,331	4,485
Inbound	*2*	*39*	*0*	*0*	*19*	*0*	*1,164*	*353*	*0*	*0*	*665*	*2,243*
Outbound	*2*	*39*	*0*	*0*	*19*	*0*	*1,164*	*353*	*0*	*0*	*665*	*2,243*
Weekday AM Peak Hour												
Auto Person Trips	1	12	0	0	5	0	175	78	0	0	319	589
Inbound	*0*	*11*	*0*	*0*	*4*	*0*	*140*	*16*	*0*	*0*	*169*	*340*
Outbound	*0*	*1*	*0*	*0*	*1*	*0*	*35*	*62*	*0*	*0*	*150*	*250*
Transit Person Trips	0	4	0	0	1	0	50	24	0	0	40	120
Inbound	*0*	*3*	*0*	*0*	*1*	*0*	*40*	*5*	*0*	*0*	*21*	*71*
Outbound	*0*	*0*	*0*	*0*	*0*	*0*	*10*	*19*	*0*	*0*	*19*	*49*
Bike/Ped/Other Person Trips	0	4	0	0	1	0	51	27	0	0	24	107
Inbound	*0*	*3*	*0*	*0*	*1*	*0*	*41*	*5*	*0*	*0*	*13*	*63*
Outbound	*0*	*0*	*0*	*0*	*0*	*0*	*10*	*21*	*0*	*0*	*11*	*44*
Total Person Trips	**1**	**19**	**0**	**0**	**7**	**0**	**276**	**129**	**0**	**0**	**384**	**816**
Inbound	***1***	***17***	***0***	***0***	***6***	***0***	***221***	***26***	***0***	***0***	***204***	***474***
Outbound	***0***	***2***	***0***	***0***	***1***	***0***	***55***	***103***	***0***	***0***	***180***	***342***
Total Vehicle Trips	0	12	0	0	4	0	116	64	0	0	213	409
Inbound	*0*	*11*	*0*	*0*	*3*	*0*	*93*	*13*	*0*	*0*	*113*	*233*
Outbound	*0*	*1*	*0*	*0*	*1*	*0*	*23*	*51*	*0*	*0*	*100*	*176*
Weekday PM Peak Hour												
Auto Person Trips	1	10	0	0	5	0	454	126	0	0	359	955
Inbound	*0*	*2*	*0*	*0*	*1*	*0*	*227*	*88*	*0*	*0*	*169*	*487*
Outbound	*1*	*9*	*0*	*0*	*3*	*0*	*227*	*38*	*0*	*0*	*190*	*468*
Transit Person Trips	0	3	0	0	1	0	131	39	0	0	45	219
Inbound	*0*	*0*	*0*	*0*	*0*	*0*	*65*	*27*	*0*	*0*	*21*	*115*
Outbound	*0*	*2*	*0*	*0*	*1*	*0*	*65*	*12*	*0*	*0*	*24*	*105*
Bike/Ped/Other Person Trips	0	3	0	0	1	0	132	43	0	0	27	207
Inbound	*0*	*0*	*0*	*0*	*0*	*0*	*66*	*30*	*0*	*0*	*13*	*110*
Outbound	*0*	*3*	*0*	*0*	*1*	*0*	*66*	*13*	*0*	*0*	*14*	*97*
Total Person Trips	**1**	**16**	**0**	**0**	**7**	**0**	**717**	**208**	**0**	**0**	**432**	**1,381**
Inbound	***0***	***2***	***0***	***0***	***2***	***0***	***359***	***145***	***0***	***0***	***203***	***712***
Outbound	***1***	***14***	***0***	***0***	***5***	***0***	***359***	***62***	***0***	***0***	***229***	***670***
Total Vehicle Trips	1	10	0	0	4	0	303	102	0	0	240	659
Inbound	*0*	*1*	*0*	*0*	*1*	*0*	*151*	*72*	*0*	*0*	*113*	*338*
Outbound	*1*	*8*	*0*	*0*	*3*	*0*	*151*	*31*	*0*	*0*	*127*	*321*

TRIP GENERATION AND MODAL SPLIT FOR AREA B OF THE PRESIDIO OF SAN FRANCISCC
PHSH EA ALTERNATIVE 1 ONLY (Revised Trip. Gen. with two types of Cult/Educ.)
EXTERNAL TRIPS

	Industrial Warehouse	Office	Retail	Lodging	Conference	Recreation	Cultural Education	Std. Residential	Infrastructure	Military	Day Care (Cult./Ed.)	Total
Weekday Daily												
Auto Person Trips	5	73	0	0	41	0	3,187	660	0	0	1,933	5,899
Inbound	*2*	*36*	*0*	*0*	*21*	*0*	*1,593*	*330*	*0*	*0*	*966*	*2,949*
Outbound	*2*	*36*	*0*	*0*	*21*	*0*	*1,593*	*330*	*0*	*0*	*966*	*2,949*
Transit Person Trips	1	20	0	0	11	0	883	183	0	0	227	1,326
Inbound	*1*	*10*	*0*	*0*	*6*	*0*	*441*	*91*	*0*	*0*	*114*	*663*
Outbound	*1*	*10*	*0*	*0*	*6*	*0*	*441*	*91*	*0*	*0*	*114*	*663*
Bike/Ped/Other Person Trips	1	19	0	0	11	0	833	173	0	0	114	1,151
Inbound	*1*	*10*	*0*	*0*	*5*	*0*	*417*	*86*	*0*	*0*	*57*	*575*
Outbound	*1*	*10*	*0*	*0*	*5*	*0*	*417*	*86*	*0*	*0*	*57*	*575*
Total Person Trips	**7**	**112**	**0**	**0**	**64**	**0**	**4,903**	**1,016**	**0**	**0**	**2,274**	**8,375**
Inbound	***4***	***56***	***0***	***0***	***32***	***0***	***2,451***	***508***	***0***	***0***	***1,137***	***4,188***
Outbound	***4***	***56***	***0***	***0***	***32***	***0***	***2,451***	***508***	***0***	***0***	***1,137***	***4,188***
Total Vehicle Trips	4	71	0	0	33	0	2,125	537	0	0	1,288	4,058
Inbound	*2*	*35*	*0*	*0*	*16*	*0*	*1,062*	*268*	*0*	*0*	*644*	*2,029*
Outbound	*2*	*35*	*0*	*0*	*16*	*0*	*1,062*	*268*	*0*	*0*	*644*	*2,029*
Weekday AM Peak Hour												
Auto Person Trips	0	11	0	0	4	0	159	59	0	0	309	544
Inbound	*0*	*10*	*0*	*0*	*3*	*0*	*127*	*12*	*0*	*0*	*164*	*317*
Outbound	*0*	*1*	*0*	*0*	*1*	*0*	*32*	*48*	*0*	*0*	*145*	*227*
Transit Person Trips	0	3	0	0	1	0	44	16	0	0	36	101
Inbound	*0*	*3*	*0*	*0*	*1*	*0*	*35*	*3*	*0*	*0*	*19*	*62*
Outbound	*0*	*0*	*0*	*0*	*0*	*0*	*9*	*13*	*0*	*0*	*17*	*40*
Bike/Ped/Other Person Trips	0	3	0	0	1	0	42	16	0	0	18	79
Inbound	*0*	*3*	*0*	*0*	*1*	*0*	*33*	*3*	*0*	*0*	*10*	*50*
Outbound	*0*	*0*	*0*	*0*	*0*	*0*	*8*	*12*	*0*	*0*	*9*	*30*
Total Person Trips	**1**	**17**	**0**	**0**	**6**	**0**	**245**	**91**	**0**	**0**	**364**	**724**
Inbound	***1***	***15***	***0***	***0***	***5***	***0***	***196***	***18***	***0***	***0***	***193***	***428***
Outbound	***0***	***2***	***0***	***0***	***1***	***0***	***49***	***73***	***0***	***0***	***171***	***296***
Total Vehicle Trips	0	11	0	0	3	0	106	48	0	0	206	375
Inbound	*0*	*10*	*0*	*0*	*3*	*0*	*85*	*10*	*0*	*0*	*109*	*216*
Outbound	*0*	*1*	*0*	*0*	*1*	*0*	*21*	*39*	*0*	*0*	*97*	*159*
Weekday PM Peak Hour												
Auto Person Trips	1	9	0	0	4	0	414	96	0	0	348	872
Inbound	*0*	*1*	*0*	*0*	*1*	*0*	*207*	*67*	*0*	*0*	*164*	*440*
Outbound	*1*	*8*	*0*	*0*	*3*	*0*	*207*	*29*	*0*	*0*	*184*	*431*
Transit Person Trips	0	3	0	0	1	0	115	27	0	0	41	186
Inbound	*0*	*0*	*0*	*0*	*0*	*0*	*57*	*19*	*0*	*0*	*19*	*96*
Outbound	*0*	*2*	*0*	*0*	*1*	*0*	*57*	*8*	*0*	*0*	*22*	*90*
Bike/Ped/Other Person Trips	0	2	0	0	1	0	108	25	0	0	20	158
Inbound	*0*	*0*	*0*	*0*	*0*	*0*	*54*	*18*	*0*	*0*	*10*	*82*
Outbound	*0*	*2*	*0*	*0*	*1*	*0*	*54*	*8*	*0*	*0*	*11*	*75*
Total Person Trips	**1**	**14**	**0**	**0**	**6**	**0**	**637**	**147**	**0**	**0**	**409**	**1,215**
Inbound	***0***	***2***	***0***	***0***	***2***	***0***	***319***	***103***	***0***	***0***	***192***	***618***
Outbound	***1***	***12***	***0***	***0***	***4***	***0***	***319***	***44***	***0***	***0***	***217***	***597***
Total Vehicle Trips	1	9	0	0	3	0	276	78	0	0	232	599
Inbound	*0*	*1*	*0*	*0*	*1*	*0*	*138*	*54*	*0*	*0*	*109*	*304*
Outbound	*1*	*8*	*0*	*0*	*2*	*0*	*138*	*23*	*0*	*0*	*123*	*295*

TRIP GENERATION AND MODAL SPLIT FOR AREA B OF THE PRESIDIO OF SAN FRANCISCC
PHSH EA ALTERNATIVE 2 ONLY
TOTAL TRIPS

	Industrial Warehouse	Office	Conference	Recreation	Day Care (Cult./Ed.)	Std. Residential	Sr. Residential	Total
Weekday Daily								
Auto Person Trips	51	31	0	0	598	2,135	0	2,816
Inbound	*26*	*16*	*0*	*0*	*299*	*1,068*	*0*	*1,408*
Outbound	*26*	*16*	*0*	*0*	*299*	*1,068*	*0*	*1,408*
Transit Person Trips	15	9	0	0	76	602	0	701
Inbound	*7*	*5*	*0*	*0*	*38*	*301*	*0*	*351*
Outbound	*7*	*5*	*0*	*0*	*38*	*301*	*0*	*351*
Bike/Ped/Other Person Trips	15	9	0	0	45	588	0	658
Inbound	*7*	*5*	*0*	*0*	*23*	*294*	*0*	*329*
Outbound	*7*	*5*	*0*	*0*	*23*	*294*	*0*	*329*
Total Person Trips	**81**	**49**	**0**	**0**	**719**	**3,325**	**0**	**4,175**
Inbound	***41***	***25***	***0***	***0***	***360***	***1,663***	***0***	***2,087***
Outbound	***41***	***25***	***0***	***0***	***360***	***1,663***	***0***	***2,087***
Total Vehicle Trips	48	30	0	0	399	1,736	0	2,212
Inbound	*24*	*15*	*0*	*0*	*199*	*868*	*0*	*1,106*
Outbound	*24*	*15*	*0*	*0*	*199*	*868*	*0*	*1,106*
Weekday AM Peak Hour								
Auto Person Trips	5	5	0	0	96	192	0	298
Inbound	*4*	*4*	*0*	*0*	*51*	*38*	*0*	*97*
Outbound	*1*	*0*	*0*	*0*	*45*	*154*	*0*	*200*
Transit Person Trips	1	1	0	0	12	54	0	69
Inbound	*1*	*1*	*0*	*0*	*6*	*11*	*0*	*20*
Outbound	*0*	*0*	*0*	*0*	*6*	*43*	*0*	*49*
Bike/Ped/Other Person Trips	1	1	0	0	7	53	0	63
Inbound	*1*	*1*	*0*	*0*	*4*	*11*	*0*	*17*
Outbound	*0*	*0*	*0*	*0*	*3*	*42*	*0*	*46*
Total Person Trips	**8**	**7**	**0**	**0**	**115**	**299**	**0**	**430**
Inbound	***6***	***7***	***0***	***0***	***61***	***60***	***0***	***134***
Outbound	***2***	***1***	***0***	***0***	***54***	***239***	***0***	***296***
Total Vehicle Trips	5	5	0	0	64	156	0	229
Inbound	*4*	*4*	*0*	*0*	*34*	*31*	*0*	*73*
Outbound	*1*	*0*	*0*	*0*	*30*	*125*	*0*	*156*
Weekday PM Peak Hour								
Auto Person Trips	8	4	0	0	108	224	0	343
Inbound	*2*	*1*	*0*	*0*	*51*	*157*	*0*	*210*
Outbound	*6*	*3*	*0*	*0*	*57*	*67*	*0*	*134*
Transit Person Trips	2	1	0	0	14	63	0	80
Inbound	*0*	*0*	*0*	*0*	*6*	*44*	*0*	*51*
Outbound	*2*	*1*	*0*	*0*	*7*	*19*	*0*	*29*
Bike/Ped/Other Person Trips	2	1	0	0	8	62	0	73
Inbound	*0*	*0*	*0*	*0*	*4*	*43*	*0*	*48*
Outbound	*2*	*1*	*0*	*0*	*4*	*19*	*0*	*26*
Total Person Trips	**12**	**6**	**0**	**0**	**129**	**349**	**0**	**497**
Inbound	***2***	***1***	***0***	***0***	***61***	***244***	***0***	***309***
Outbound	***10***	***5***	***0***	***0***	***69***	***105***	***0***	***188***
Total Vehicle Trips	7	4	0	0	72	182	0	265
Inbound	*1*	*1*	*0*	*0*	*34*	*128*	*0*	*163*
Outbound	*6*	*3*	*0*	*0*	*38*	*55*	*0*	*102*

TRIP GENERATION AND MODAL SPLIT FOR AREA B OF THE PRESIDIO OF SAN FRANCISCC
PHSH EA ALTERNATIVE 2 ONLY
EXTERNAL TRIPS

	Industrial Warehouse	Office	Conference	Recreation	Day Care (Cult./Ed.)	Std. Residential	Sr. Residential	Total
Weekday Daily								
Auto Person Trips	47	28	0	0	579	2,048	0	2,702
Inbound	*23*	*14*	*0*	*0*	*290*	*1,024*	*0*	*1,351*
Outbound	*23*	*14*	*0*	*0*	*290*	*1,024*	*0*	*1,351*
Transit Person Trips	13	8	0	0	68	567	0	656
Inbound	*6*	*4*	*0*	*0*	*34*	*284*	*0*	*328*
Outbound	*6*	*4*	*0*	*0*	*34*	*284*	*0*	*328*
Bike/Ped/Other Person Trips	12	7	0	0	34	536	0	589
Inbound	*6*	*4*	*0*	*0*	*17*	*268*	*0*	*295*
Outbound	*6*	*4*	*0*	*0*	*17*	*268*	*0*	*295*
Total Person Trips	**72**	**43**	**0**	**0**	**681**	**3,150**	**0**	**3,947**
Inbound	***36***	***22***	***0***	***0***	***341***	***1,575***	***0***	***1,973***
Outbound	***36***	***22***	***0***	***0***	***341***	***1,575***	***0***	***1,973***
Total Vehicle Trips	43	27	0	0	386	1,665	0	2,121
Inbound	*22*	*14*	*0*	*0*	*193*	*832*	*0*	*1,061*
Outbound	*22*	*14*	*0*	*0*	*193*	*832*	*0*	*1,061*
Weekday AM Peak Hour								
Auto Person Trips	5	4	0	0	93	184	0	286
Inbound	*4*	*4*	*0*	*0*	*49*	*37*	*0*	*94*
Outbound	*1*	*0*	*0*	*0*	*44*	*147*	*0*	*192*
Transit Person Trips	1	1	0	0	11	51	0	64
Inbound	*1*	*1*	*0*	*0*	*6*	*10*	*0*	*18*
Outbound	*0*	*0*	*0*	*0*	*5*	*41*	*0*	*46*
Bike/Ped/Other Person Trips	1	1	0	0	5	48	0	56
Inbound	*1*	*1*	*0*	*0*	*3*	*10*	*0*	*15*
Outbound	*0*	*0*	*0*	*0*	*3*	*39*	*0*	*41*
Total Person Trips	**7**	**6**	**0**	**0**	**109**	**284**	**0**	**406**
Inbound	***6***	***6***	***0***	***0***	***58***	***57***	***0***	***126***
Outbound	***1***	***1***	***0***	***0***	***51***	***227***	***0***	***280***
Total Vehicle Trips	4	4	0	0	62	150	0	220
Inbound	*3*	*4*	*0*	*0*	*33*	*30*	*0*	*70*
Outbound	*1*	*0*	*0*	*0*	*29*	*120*	*0*	*150*
Weekday PM Peak Hour								
Auto Person Trips	7	4	0	0	104	215	0	330
Inbound	*1*	*1*	*0*	*0*	*49*	*150*	*0*	*201*
Outbound	*6*	*3*	*0*	*0*	*55*	*64*	*0*	*128*
Transit Person Trips	2	1	0	0	12	60	0	75
Inbound	*0*	*0*	*0*	*0*	*6*	*42*	*0*	*48*
Outbound	*2*	*1*	*0*	*0*	*7*	*18*	*0*	*27*
Bike/Ped/Other Person Trips	2	1	0	0	6	56	0	65
Inbound	*0*	*0*	*0*	*0*	*3*	*39*	*0*	*43*
Outbound	*1*	*1*	*0*	*0*	*3*	*17*	*0*	*22*
Total Person Trips	**11**	**5**	**0**	**0**	**123**	**331**	**0**	**470**
Inbound	***2***	***1***	***0***	***0***	***58***	***232***	***0***	***292***
Outbound	***9***	***5***	***0***	***0***	***65***	***99***	***0***	***177***
Total Vehicle Trips	7	3	0	0	70	175	0	254
Inbound	*1*	*1*	*0*	*0*	*33*	*122*	*0*	*157*
Outbound	*5*	*3*	*0*	*0*	*37*	*52*	*0*	*97*

TRIP GENERATION AND MODAL SPLIT FOR AREA B OF THE PRESIDIO OF SAN FRANCISCC
PHSH EA ALTERNATIVE 3 ONLY
TOTAL TRIPS

	Industrial Warehouse	Office	Conference	Recreation	Day Care (Cult./Ed.)	Std. Residential	Sr. Residential	Total
Weekday Daily								
Auto Person Trips	109	0	0	0	529	1,409	0	2,048
Inbound	*55*	*0*	*0*	*0*	*265*	*705*	*0*	*1,024*
Outbound	*55*	*0*	*0*	*0*	*265*	*705*	*0*	*1,024*
Transit Person Trips	31	0	0	0	67	397	0	496
Inbound	*16*	*0*	*0*	*0*	*34*	*199*	*0*	*248*
Outbound	*16*	*0*	*0*	*0*	*34*	*199*	*0*	*248*
Bike/Ped/Other Person Trips	32	0	0	0	40	388	0	460
Inbound	*16*	*0*	*0*	*0*	*20*	*194*	*0*	*230*
Outbound	*16*	*0*	*0*	*0*	*20*	*194*	*0*	*230*
Total Person Trips	**173**	**0**	**0**	**0**	**637**	**2,195**	**0**	**3,004**
Inbound	***86***	***0***	***0***	***0***	***318***	***1,097***	***0***	***1,502***
Outbound	***86***	***0***	***0***	***0***	***318***	***1,097***	***0***	***1,502***
Total Vehicle Trips	101	0	0	0	353	1,146	0	1,600
Inbound	*51*	*0*	*0*	*0*	*176*	*573*	*0*	*800*
Outbound	*51*	*0*	*0*	*0*	*176*	*573*	*0*	*800*
Weekday AM Peak Hour								
Auto Person Trips	11	0	0	0	85	127	0	222
Inbound	*9*	*0*	*0*	*0*	*45*	*25*	*0*	*79*
Outbound	*2*	*0*	*0*	*0*	*40*	*101*	*0*	*143*
Transit Person Trips	3	0	0	0	11	36	0	50
Inbound	*3*	*0*	*0*	*0*	*6*	*7*	*0*	*15*
Outbound	*1*	*0*	*0*	*0*	*5*	*29*	*0*	*34*
Bike/Ped/Other Person Trips	3	0	0	0	6	35	0	45
Inbound	*3*	*0*	*0*	*0*	*3*	*7*	*0*	*13*
Outbound	*1*	*0*	*0*	*0*	*3*	*28*	*0*	*32*
Total Person Trips	**17**	**0**	**0**	**0**	**102**	**198**	**0**	**317**
Inbound	***14***	***0***	***0***	***0***	***54***	***40***	***0***	***107***
Outbound	***3***	***0***	***0***	***0***	***48***	***158***	***0***	***209***
Total Vehicle Trips	10	0	0	0	56	103	0	170
Inbound	*8*	*0*	*0*	*0*	*30*	*21*	*0*	*59*
Outbound	*2*	*0*	*0*	*0*	*27*	*82*	*0*	*111*
Weekday PM Peak Hour								
Auto Person Trips	16	0	0	0	95	148	0	260
Inbound	*3*	*0*	*0*	*0*	*45*	*104*	*0*	*152*
Outbound	*13*	*0*	*0*	*0*	*50*	*44*	*0*	*108*
Transit Person Trips	5	0	0	0	12	42	0	59
Inbound	*1*	*0*	*0*	*0*	*6*	*29*	*0*	*36*
Outbound	*4*	*0*	*0*	*0*	*6*	*13*	*0*	*23*
Bike/Ped/Other Person Trips	5	0	0	0	7	41	0	53
Inbound	*1*	*0*	*0*	*0*	*3*	*29*	*0*	*33*
Outbound	*4*	*0*	*0*	*0*	*4*	*12*	*0*	*20*
Total Person Trips	**26**	**0**	**0**	**0**	**115**	**230**	**0**	**371**
Inbound	***5***	***0***	***0***	***0***	***54***	***161***	***0***	***220***
Outbound	***21***	***0***	***0***	***0***	***61***	***69***	***0***	***151***
Total Vehicle Trips	15	0	0	0	64	120	0	199
Inbound	*3*	*0*	*0*	*0*	*30*	*84*	*0*	*117*
Outbound	*12*	*0*	*0*	*0*	*34*	*36*	*0*	*82*

TRIP GENERATION AND MODAL SPLIT FOR AREA B OF THE PRESIDIO OF SAN FRANCISCC
PHSH EA ALTERNATIVE 3 ONLY
EXTERNAL TRIPS

	Industrial Warehouse	Office	Conference	Recreation	Day Care (Cult./Ed.)	Std. Residential	Sr. Residential	Total
Weekday Daily								
Auto Person Trips	100	0	0	0	513	1,351	0	1,964
Inbound	*50*	*0*	*0*	*0*	*256*	*676*	*0*	*982*
Outbound	*50*	*0*	*0*	*0*	*256*	*676*	*0*	*982*
Transit Person Trips	28	0	0	0	60	374	0	462
Inbound	*14*	*0*	*0*	*0*	*30*	*187*	*0*	*231*
Outbound	*14*	*0*	*0*	*0*	*30*	*187*	*0*	*231*
Bike/Ped/Other Person Trips	26	0	0	0	30	353	0	410
Inbound	*13*	*0*	*0*	*0*	*15*	*177*	*0*	*205*
Outbound	*13*	*0*	*0*	*0*	*15*	*177*	*0*	*205*
Total Person Trips	**154**	**0**	**0**	**0**	**603**	**2,079**	**0**	**2,836**
Inbound	***77***	***0***	***0***	***0***	***302***	***1,040***	***0***	***1,418***
Outbound	***77***	***0***	***0***	***0***	***302***	***1,040***	***0***	***1,418***
Total Vehicle Trips	92	0	0	0	342	1,099	0	1,533
Inbound	*46*	*0*	*0*	*0*	*171*	*549*	*0*	*766*
Outbound	*46*	*0*	*0*	*0*	*171*	*549*	*0*	*766*
Weekday AM Peak Hour								
Auto Person Trips	10	0	0	0	82	122	0	214
Inbound	*8*	*0*	*0*	*0*	*43*	*24*	*0*	*76*
Outbound	*2*	*0*	*0*	*0*	*39*	*97*	*0*	*138*
Transit Person Trips	3	0	0	0	10	34	0	46
Inbound	*2*	*0*	*0*	*0*	*5*	*7*	*0*	*14*
Outbound	*1*	*0*	*0*	*0*	*5*	*27*	*0*	*32*
Bike/Ped/Other Person Trips	3	0	0	0	5	32	0	39
Inbound	*2*	*0*	*0*	*0*	*3*	*6*	*0*	*11*
Outbound	*1*	*0*	*0*	*0*	*2*	*25*	*0*	*28*
Total Person Trips	**15**	**0**	**0**	**0**	**96**	**187**	**0**	**299**
Inbound	***12***	***0***	***0***	***0***	***51***	***37***	***0***	***101***
Outbound	***3***	***0***	***0***	***0***	***45***	***150***	***0***	***198***
Total Vehicle Trips	9	0	0	0	55	99	0	163
Inbound	*7*	*0*	*0*	*0*	*29*	*20*	*0*	*56*
Outbound	*2*	*0*	*0*	*0*	*26*	*79*	*0*	*107*
Weekday PM Peak Hour								
Auto Person Trips	15	0	0	0	92	142	0	249
Inbound	*3*	*0*	*0*	*0*	*43*	*99*	*0*	*146*
Outbound	*12*	*0*	*0*	*0*	*49*	*43*	*0*	*103*
Transit Person Trips	4	0	0	0	11	39	0	54
Inbound	*1*	*0*	*0*	*0*	*5*	*28*	*0*	*33*
Outbound	*3*	*0*	*0*	*0*	*6*	*12*	*0*	*21*
Bike/Ped/Other Person Trips	4	0	0	0	5	37	0	46
Inbound	*1*	*0*	*0*	*0*	*3*	*26*	*0*	*29*
Outbound	*3*	*0*	*0*	*0*	*3*	*11*	*0*	*17*
Total Person Trips	**23**	**0**	**0**	**0**	**109**	**218**	**0**	**350**
Inbound	***5***	***0***	***0***	***0***	***51***	***153***	***0***	***208***
Outbound	***18***	***0***	***0***	***0***	***58***	***65***	***0***	***141***
Total Vehicle Trips	14	0	0	0	62	115	0	191
Inbound	*3*	*0*	*0*	*0*	*29*	*81*	*0*	*112*
Outbound	*11*	*0*	*0*	*0*	*33*	*35*	*0*	*78*

TRIP GENERATION AND MODAL SPLIT FOR AREA B OF THE PRESIDIO OF SAN FRANCISCC
PHSH EA ALTERNATIVE 4 ONLY
TOTAL TRIPS

	Industrial Warehouse	Office	Conference	Recreation	Day Care (Cult./Ed.)	Std. Residential	Sr. Residential	Total
Weekday Daily								
Auto Person Trips	51	0	0	109	508	695	395	1,759
Inbound	*26*	*0*	*0*	*55*	*254*	*348*	*198*	*880*
Outbound	*26*	*0*	*0*	*55*	*254*	*348*	*198*	*880*
Transit Person Trips	15	0	0	34	64	196	118	427
Inbound	*7*	*0*	*0*	*17*	*32*	*98*	*59*	*213*
Outbound	*7*	*0*	*0*	*17*	*32*	*98*	*59*	*213*
Bike/Ped/Other Person Trips	15	0	0	39	39	192	126	410
Inbound	*7*	*0*	*0*	*19*	*19*	*96*	*63*	*205*
Outbound	*7*	*0*	*0*	*19*	*19*	*96*	*63*	*205*
Total Person Trips	**81**	**0**	**0**	**182**	**611**	**1,083**	**639**	**2,597**
Inbound	***41***	***0***	***0***	***91***	***306***	***542***	***320***	***1,298***
Outbound	***41***	***0***	***0***	***91***	***306***	***542***	***320***	***1,298***
Total Vehicle Trips	48	0	0	73	339	565	321	1,346
Inbound	*24*	*0*	*0*	*36*	*169*	*283*	*161*	*673*
Outbound	*24*	*0*	*0*	*36*	*169*	*283*	*161*	*673*
Weekday AM Peak Hour								
Auto Person Trips	5	0	0	6	81	63	16	171
Inbound	*4*	*0*	*0*	*4*	*43*	*13*	*3*	*66*
Outbound	*1*	*0*	*0*	*2*	*38*	*50*	*13*	*104*
Transit Person Trips	1	0	0	2	10	18	5	36
Inbound	*1*	*0*	*0*	*1*	*5*	*4*	*1*	*12*
Outbound	*0*	*0*	*0*	*1*	*5*	*14*	*4*	*24*
Bike/Ped/Other Person Trips	1	0	0	2	6	17	5	32
Inbound	*1*	*0*	*0*	*1*	*3*	*3*	*1*	*10*
Outbound	*0*	*0*	*0*	*1*	*3*	*14*	*4*	*22*
Total Person Trips	**8**	**0**	**0**	**10**	**98**	**97**	**26**	**239**
Inbound	***6***	***0***	***0***	***6***	***52***	***19***	***5***	***89***
Outbound	***2***	***0***	***0***	***4***	***46***	***78***	***20***	***150***
Total Vehicle Trips	5	0	0	4	54	51	13	127
Inbound	*4*	*0*	*0*	*2*	*29*	*10*	*3*	*48*
Outbound	*1*	*0*	*0*	*2*	*25*	*41*	*10*	*79*
Weekday PM Peak Hour								
Auto Person Trips	8	0	0	11	91	73	20	203
Inbound	*2*	*0*	*0*	*5*	*43*	*51*	*14*	*115*
Outbound	*6*	*0*	*0*	*5*	*48*	*22*	*6*	*88*
Transit Person Trips	2	0	0	3	12	21	6	44
Inbound	*0*	*0*	*0*	*2*	*5*	*14*	*4*	*26*
Outbound	*2*	*0*	*0*	*2*	*6*	*6*	*2*	*18*
Bike/Ped/Other Person Trips	2	0	0	4	7	20	6	40
Inbound	*0*	*0*	*0*	*2*	*3*	*14*	*4*	*24*
Outbound	*2*	*0*	*0*	*2*	*4*	*6*	*2*	*15*
Total Person Trips	**12**	**0**	**0**	**18**	**110**	**114**	**32**	**286**
Inbound	***2***	***0***	***0***	***9***	***52***	***80***	***22***	***165***
Outbound	***10***	***0***	***0***	***9***	***58***	***34***	***10***	***121***
Total Vehicle Trips	7	0	0	7	61	59	16	151
Inbound	*1*	*0*	*0*	*4*	*29*	*42*	*11*	*87*
Outbound	*6*	*0*	*0*	*4*	*32*	*18*	*5*	*64*

TRIP GENERATION AND MODAL SPLIT FOR AREA B OF THE PRESIDIO OF SAN FRANCISCC
PHSH EA ALTERNATIVE 4 ONLY
EXTERNAL TRIPS

	Industrial Warehouse	Office	Conference	Recreation	Day Care (Cult./Ed.)	Std. Residential	Sr. Residential	Total
Weekday Daily								
Auto Person Trips	47	0	0	79	492	667	327	1,612
Inbound	*23*	*0*	*0*	*39*	*246*	*333*	*164*	*806*
Outbound	*23*	*0*	*0*	*39*	*246*	*333*	*164*	*806*
Transit Person Trips	13	0	0	22	58	185	91	368
Inbound	*6*	*0*	*0*	*11*	*29*	*92*	*45*	*184*
Outbound	*6*	*0*	*0*	*11*	*29*	*92*	*45*	*184*
Bike/Ped/Other Person Trips	12	0	0	21	29	174	86	322
Inbound	*6*	*0*	*0*	*10*	*14*	*87*	*43*	*161*
Outbound	*6*	*0*	*0*	*10*	*14*	*87*	*43*	*161*
Total Person Trips	**72**	**0**	**0**	**122**	**579**	**1,026**	**504**	**2,302**
Inbound	***36***	***0***	***0***	***61***	***289***	***513***	***252***	***1,151***
Outbound	***36***	***0***	***0***	***61***	***289***	***513***	***252***	***1,151***
Total Vehicle Trips	43	0	0	53	328	542	266	1,232
Inbound	*22*	*0*	*0*	*26*	*164*	*271*	*133*	*616*
Outbound	*22*	*0*	*0*	*26*	*164*	*271*	*133*	*616*
Weekday AM Peak Hour								
Auto Person Trips	5	0	0	4	79	60	13	161
Inbound	*4*	*0*	*0*	*3*	*42*	*12*	*3*	*63*
Outbound	*1*	*0*	*0*	*2*	*37*	*48*	*10*	*98*
Transit Person Trips	1	0	0	1	9	17	4	32
Inbound	*1*	*0*	*0*	*1*	*5*	*3*	*1*	*11*
Outbound	*0*	*0*	*0*	*0*	*4*	*13*	*3*	*21*
Bike/Ped/Other Person Trips	1	0	0	1	5	16	3	26
Inbound	*1*	*0*	*0*	*1*	*2*	*3*	*1*	*8*
Outbound	*0*	*0*	*0*	*0*	*2*	*13*	*3*	*18*
Total Person Trips	**7**	**0**	**0**	**7**	**93**	**92**	**20**	**219**
Inbound	***6***	***0***	***0***	***4***	***49***	***18***	***4***	***81***
Outbound	***1***	***0***	***0***	***3***	***44***	***74***	***16***	***138***
Total Vehicle Trips	4	0	0	3	52	49	11	119
Inbound	*3*	*0*	*0*	*2*	*28*	*10*	*2*	*45*
Outbound	*1*	*0*	*0*	*1*	*25*	*39*	*9*	*74*
Weekday PM Peak Hour								
Auto Person Trips	7	0	0	8	89	70	16	190
Inbound	*1*	*0*	*0*	*4*	*42*	*49*	*11*	*107*
Outbound	*6*	*0*	*0*	*4*	*47*	*21*	*5*	*82*
Transit Person Trips	2	0	0	2	10	19	5	38
Inbound	*0*	*0*	*0*	*1*	*5*	*14*	*3*	*23*
Outbound	*2*	*0*	*0*	*1*	*6*	*6*	*1*	*15*
Bike/Ped/Other Person Trips	2	0	0	2	5	18	4	32
Inbound	*0*	*0*	*0*	*1*	*2*	*13*	*3*	*20*
Outbound	*1*	*0*	*0*	*1*	*3*	*5*	*1*	*12*
Total Person Trips	**11**	**0**	**0**	**12**	**104**	**108**	**25**	**260**
Inbound	***2***	***0***	***0***	***6***	***49***	***75***	***18***	***150***
Outbound	***9***	***0***	***0***	***6***	***55***	***32***	***8***	***110***
Total Vehicle Trips	7	0	0	5	59	57	13	141
Inbound	*1*	*0*	*0*	*3*	*28*	*40*	*9*	*81*
Outbound	*5*	*0*	*0*	*3*	*31*	*17*	*4*	*60*

APPENDIX B

PARKING DEMAND BY ALTERNATIVE

8/7/2004
10:05 AM

PHSH Site Environmental Assessment
Parking Demand

LAND USE			LONG-TERM DEMAND							SHORT-TERM DEMAND							TOTAL DEMAND		
Type	Intensity	Unit	Spaces per Unit	Empl./ 1,000 gsq.ft.	Auto Mode Share	Vehicle Occupancy Rate	Midday Demand (spaces)	Evening Demand (spaces)	Weekend Demand (spaces)	Daily Vehicle Trips	% Non-work	Trip Ends	Turnover Rate	Midday Demand (spaces)	Evening Demand (spaces)	Weekend Demand (spaces)	Midday	Evening	Weekend
PHSH - Final Plan Alternative																			
Industrial/Warehouse	1,480	gsq.ft.		1.53	63%	1.08	1	0	0	5	60%	2	6	0	0	0	2	0	0
Office	9,583	gsq.ft.		3.27	63%	1.03	19	1	2	78	47%	2	6	3	0	0	22	1	2
Retail	0	gsq.ft.		2.86	0%	0.00	0	0	0	0	92%	2	10	0	0	0	0	0	0
Lodging	0	rooms	1.00	---	0%	0.00	0	0	0	0	---	---	---				0	0	0
Conference	10,000	gsq.ft.		1.53	63%	1.26	8	5	10	37	92%	2	3	6	4	8	13	9	18
Recreational	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	92%	2					0	0	0
Cultural/Educational	190,922	gsq.ft.		1.53	63%	1.50	123	82	112	2,902	92%	2	10	133	89	121	257	171	234
Day Care	0	gsq.ft.		1.53	0%	0.00	0	0	0	0	92%	2	10	0	0	0	0	0	0
Std. Residential	185	d.u.	1.13	---	61%	1.23	104	208	208	706	---	---	---				104	208	208
Senior Residential	0	d.u.	0.27	---	0%	0.00	0	0	0	0	---	---	---				0	0	0
Infrastructure	100	gsq.ft.		0.81	55%	1.08	0	0	0	0	60%	2	6	0	0	0	0	0	0
Military	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	92%	2					0	0	0
TOTAL	397,353	gsq.ft.			63%	1.44	256	297	333	3,728				142	93	129	398	389	462
PHSH - No Action Alternative																			
Industrial/Warehouse	16,617	gsq.ft.		1.53	63%	1.08	15	1	1	53	60%	2	6	3	0	0	18	1	2
Office	14,332	gsq.ft.		3.27	63%	1.03	29	1	3	117	47%	2	6	5	0	0	33	2	3
Retail	0	gsq.ft.		2.86	0%	0.00	0	0	0	0	92%	2	10	0	0	0	0	0	0
Lodging	0	rooms	1.00	---	0%	0.00	0	0	0	0	---	---	---				0	0	0
Conference	0	gsq.ft.		1.53	0%	0.00	0	0	0	0	92%	2	3	0	0	0	0	0	0
Recreational	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	92%	2	6	0	0	0	0	0	0
Cultural/Educational	0	gsq.ft.		1.53	0%	0.00	0	0	0	0	92%	2	10	0	0	0	0	0	0
Day Care	37,708	gsq.ft.		1.53	83%	1.50	32	21	29	1,331	92%	2	10	61	41	56	93	62	85
Std. Residential	0	d.u.	0.00	---	0%	0.00	0	0	0	0	---	---	---				0	0	0
Senior Residential	0	d.u.	0.27	---	0%	0.00	0	0	0	0	---	---	---				0	0	0
Infrastructure	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	60%	2	6	0	0	0	0	0	0
Military	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	92%	2					0	0	0
TOTAL	68,657	gsq.ft.			81%	1.45	76	24	33	1,501				68	41	56	144	65	90
PHSH - E.A. Alternative 1																			
Industrial/Warehouse	1,480	gsq.ft.		1.53	63%	1.08	1	0	0	5	60%	2	6	0	0	0	2	0	0
Office	9,583	gsq.ft.		3.27	63%	1.03	19	1	2	78	47%	2	6	3	0	0	22	1	2
Retail	0	gsq.ft.		2.86	0%	0.00	0	0	0	0	92%	2	10	0	0	0	0	0	0
Lodging	0	rooms	1.00	---	0%	0.00	0	0	0	0	---	---	---				0	0	0
Conference	10,000	gsq.ft.		1.53	63%	1.26	8	5	10	37	92%	2	3	6	4	8	13	9	18
Recreational	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	92%	2					0	0	0
Cultural/Educational	153,214	gsq.ft.		1.53	63%	1.50	99	66	90	2,329	92%	2	10	107	71	97	206	137	188
Day Care	37,708	gsq.ft.		1.53	83%	1.50	32	21	29	1,331	92%	2	10	61	41	56	93	62	85
Std. Residential	185	d.u.	1.13	---	61%	1.23	104	208	208	706	---	---	---				104	208	208
Senior Residential	0	d.u.	0.27	---	0%	0.00	0	0	0	0	---	---	---				0	0	0
Infrastructure	100	gsq.ft.		0.81	55%	1.08	0	0	0	0	60%	2	6	0	0	0	0	0	0
Military	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	92%	2					0	0	0
TOTAL	397,353	gsq.ft.			68%	1.45	263	302	340	4,485				177	116	161	440	417	501

Summary
H:\395900 Presidio of SF PHSH EA\Parking\07 PHSH Parking Demand by Alternative 072104

8/7/2004
10:05 AM

PHSH Site Environmental Assessment
Parking Demand

LAND USE			LONG-TERM DEMAND							SHORT-TERM DEMAND							TOTAL DEMAND		
Type	Intensity	Unit	Spaces per Unit	Empl./ 1,000 gsq.ft.	Auto Mode Share	Vehicle Occupancy Rate	Midday Demand (spaces)	Evening Demand (spaces)	Weekend Demand (spaces)	Daily Vehicle Trips	% Non-work	Trip Ends	Turnover Rate	Midday Demand (spaces)	Evening Demand (spaces)	Weekend Demand (spaces)	Midday	Evening	Weekend
PHSH - E.A. Alternative 2C																			
Industrial/Warehouse	15,000	gsq.ft.		1.53	63%	1.08	13	1	1	48	60%	2	6	2	0	0	16	1	2
Office	3,700	gsq.ft.		3.27	63%	1.03	7	0	1	30	47%	2	6	1	0	0	9	0	1
Retail	0	gsq.ft.		2.86	0%	0.00	0	0	0	0	92%	2	10	0	0	0	0	0	0
Lodging	0	rooms	1.00	---	0%	0.00	0	0	0	0	---	---	---				0	0	0
Conference	0	gsq.ft.		1.53	0%	0.00	0	0	0	0	92%	2	3	0	0	0	0	0	0
Recreational	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	92%	2					0	0	0
Cultural/Educational	0	gsq.ft.		1.53	0%	0.00	0	0	0	0	92%	2	10	0	0	0	0	0	0
Day Care	10,000	gsq.ft.		1.53	83%	1.50	8	6	8	399	92%	2	10	18	12	17	27	18	24
Std. Residential	350	d.u.	1.22	---	64%	1.23	213	426	426	1,736	---	---	---				213	426	426
Senior Residential	0	d.u.	0.27	---	0%	0.00	0	0	0	0	---	---	---				0	0	0
Infrastructure	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	60%	2	6	0	0	0	0	0	0
Military	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	92%	2					0	0	0
TOTAL	400,000	gsq.ft.			67%	1.27	242	433	436	2,212				22	12	17	265	445	453
PHSH - E.A. Alternative 3																			
Industrial/Warehouse	32,000	gsq.ft.		1.53	63%	1.08	29	1	3	101	60%	2	6	5	0	1	34	2	3
Office	0	gsq.ft.		3.27	0%	0.00	0	0	0	0	47%	2	6	0	0	0	0	0	0
Retail	0	gsq.ft.		2.86	0%	0.00	0	0	0	0	92%	2	10	0	0	0	0	0	0
Lodging	0	rooms	1.00	---	0%	0.00	0	0	0	0	---	---	---				0	0	0
Conference	0	gsq.ft.		1.53	0%	0.00	0	0	0	0	92%	2	3	0	0	0	0	0	0
Recreational	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	92%	2					0	0	0
Cultural/Educational	0	gsq.ft.		1.53	0%	0.00	0	0	0	0	92%	2	10	0	0	0	0	0	0
Day Care	10,000	gsq.ft.		1.53	83%	1.50	8	6	8	353	92%	2	10	16	11	15	25	16	22
Std. Residential	231	d.u.	1.21	---	64%	1.23	140	279	279	1,146	---	---	---				140	279	279
Senior Residential	0	d.u.	0.27	---	0%	0.00	0	0	0	0	---	---	---				0	0	0
Infrastructure	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	60%	2	6	0	0	0	0	0	0
Military	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	92%	2					0	0	0
TOTAL	275,000	gsq.ft.			68%	1.28	177	286	290	1,600				21	11	15	199	297	304
PHSH - E.A. Alternative 4																			
Industrial/Warehouse	15,000	gsq.ft.		1.53	63%	1.08	13	1	1	48	60%	2	6	2	0	0	16	1	2
Office	0	gsq.ft.		3.27	0%	0.00	0	0	0	0	47%	2	6	0	0	0	0	0	0
Retail	0	gsq.ft.		2.86	0%	0.00	0	0	0	0	92%	2	10	0	0	0	0	0	0
Lodging	0	rooms	1.00	---	0%	0.00	0	0	0	0	---	---	---				0	0	0
Conference	0	gsq.ft.		1.53	0%	0.00	0	0	0	0	92%	2	3	0	0	0	0	0	0
Recreational	5,400	gsq.ft.		0.81	60%	1.50	2	1	2	73	92%	2	6	6	6	8	7	7	11
Cultural/Educational	0	gsq.ft.		1.53	0%	0.00	0	0	0	0	92%	2	10	0	0	0	0	0	0
Day Care	9,600	gsq.ft.		1.53	83%	1.50	8	5	7	339	92%	2	10	16	10	14	24	16	22
Std. Residential	114	d.u.	1.32	---	64%	1.23	76	151	151	565	---	---	---				76	151	151
Senior Residential	155	d.u.	0.27	---	62%	1.23	21	42	42	321	---	---	---				21	42	42
Infrastructure	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	60%	2	6	0	0	0	0	0	0
Military	0	gsq.ft.		0.81	0%	0.00	0	0	0	0	92%	2					0	0	0
TOTAL	362,000	gsq.ft.			68%	1.31	120	200	204	1,346				24	16	23	144	217	228

Summary
H:\395900 Presidio of SF PHSH EA\Parking\07 PHSH Parking Demand by Alternative 072104

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

MEMO

SAN FRANCISCO OFFICE
August 10, 2004

Project Number: 395900

To: Amy Marshall, The Presidio Trust

From: José I. Farrán, Project Manager
Sam Morrissey, Transportation Engineer

Subject: The Presidio of San Francisco
Public Health Service Hospital Site Supplemental Environmental Impact Statement
Draft Technical Memorandum No. 3 – Expanded Transportation Impact Analysis of Alternatives

1. INTRODUCTION

This Technical Memorandum estimates and describes the potential impacts parameters associated with the Requested No Action Alternative and Alternatives 1, 2, 3 and 4 for rehabilitation and reuse of the Presidio of San Francisco's Public Health Service Hospital (PHSH) development site. This Technical Memorandum estimates the impact of each land use alternative with respect to:

- Traffic levels in and adjacent to the Presidio,
- Traffic at adjacent intersections,
- On/Off-site pedestrian and bicycle facilities,
- Public transportation
- Parking, and
- Cumulative impacts.

2. TRAFFIC OPERATIONS

2.1 Future Highway Network

Currently, the 15th Avenue Gate is open to vehicular and pedestrian traffic while the 14th Avenue Gate is open only to pedestrians. This roadway configuration is assumed to be maintained for the Requested No Action Alternative. Although this configuration functions adequately with the existing level of traffic, future occupancy of the PHSH and other Presidio buildings is expected to warrant improved access and circulation. The NPS 1994 General Management Plan Amendment for the Presidio recognized such access needs and recommended reopening the 14th

Avenue Gate to vehicular traffic and operating the 14th Avenue and 15th Avenue Gates as a one-way couplet with the 14th Avenue Gate accommodating northbound traffic entering the Presidio and the 15th Avenue Gate accommodating southbound traffic exiting the Presidio. This one-way couplet was assumed in the analysis of transportation-related impacts of land use alternatives in the *Presidio Trust Management Plan – Background Transportation Report for the Final EIS*, prepared by Wilbur Smith Associates (WSA) in May 2002 and has also been assumed for the assessment of traffic impacts related to Alternatives 1, 2, 3, and 4 in the Draft EIS.

In addition, Alternatives 1, 2, 3, and 4 have also been analyzed assuming direct vehicular access to Park Presidio Boulevard via a new intersection north of Lake Street, as described in the *Public Health Service Hospital Transportation Study: Additional Alternatives Analysis* (WSA, December 2003). This access variant would allow traffic leaving the PHSH site to turn left or right on Highway 1, and allow southbound traffic on Highway 1 to enter the PHSH site directly from Highway 1. Both the 14th and 15th Avenue Gates would be open to inbound (northbound) traffic only.

2.2 Intersection Analysis

Intersection operating conditions have been evaluated for weekday AM and PM peak period conditions in the year 2020 at eight key intersections in the vicinity of the PHSH site. Because these intersections are the intersections closest to the PHSH district, these are the intersections that would most likely experience the greatest change in traffic volumes due to changes in land uses at the PHSH site. The dispersion of traffic to several routes radiating from the PHSH district would yield a decreasing effect on individual intersections with increased distance from the PHSH district, and therefore the effect of the PHSH alternatives on intersections beyond those identified below would be minimal. The eight study intersections are:

- Lake Street/17th Avenue
- Lake Street/15th Avenue
- Lake Street/14th Avenue
- Lake Street/Park Presidio Boulevard
- Lake Street/Funston Avenue
- California Street/15th Avenue
- California Street/14th Avenue
- California Street/Park Presidio Boulevard

The AM and PM peak hour intersection operations analysis was conducted according to the methodology described in the 2000 Highway Capacity Manual (HCM 2000) (Transportation Research Board, 2000). The HCM 2000 methodology is appropriate as it is the same methodology used by the San Francisco Planning Department (Transportation Impact Analysis Guidelines for Environmental Review, October 2002) and is also being used for the Doyle Drive study. The HCM methodology calculates the average delay experienced by a vehicle traveling

through the intersection, and assigns a corresponding level of service (LOS). The levels of service range from LOS A, indicating volumes well below capacity with vehicles experiencing little or no delay, to LOS F, indicating volumes near capacity with vehicles experiencing extremely high delays[1]. Appendix A contains the HCM 2000 LOS definitions.

For signalized intersections, the HCM 2000 methodology determines the average delay per vehicle for each lane group based on the particular movement, and traffic volume and capacity associated with that lane group. The average delay per vehicle is then aggregated for each approach and for the intersection as a whole. A combined weighted average delay and LOS is then presented for the intersection as a whole. For unsignalized intersections, average delay and LOS operating conditions are calculated by approach (e.g., northbound) and movement (e.g., northbound left-turn). For two-way stop-controlled intersections, delay and LOS are calculated for each of the stop-controlled approaches and operating conditions are reported for the worst approach. For all-way stop-controlled intersections, average delay per vehicle is averaged across all approaches, and operating conditions are reported for the average delay and LOS for the intersection as a whole.

2.2.1 One-Way Couplet at 14th and 15th Avenue Gates

Tables 1 and 2 present the results of the intersection LOS analysis for the 2020 weekday AM and PM peak hour conditions for the five land use alternatives assuming that the 14th Avenue and 15th Avenue Gates operate as a one-way couplet with the 14th Avenue Gate accommodating northbound traffic entering the Presidio and the 15th Avenue Gate accommodating southbound traffic exiting the Presidio (Appendix A contains the detailed calculations of the intersection LOS analysis). Note that under the Requested No Action Alternative, the 14th Avenue Gate would remain closed to both inbound and outbound traffic, with the 15th Avenue Gate maintaining its existing operations as the entrance and exit to the Presidio and PHSH site.

It should be noted that the intersection of California Street/15th Avenue was not expected to operate at LOS F in the PM peak hour based on the traffic analysis for the Final Plan Alternative in the PTMP EIS. The Highway Capacity Manual (HCM) methodology was revised in 2000; because the revisions were very recent at the time of the PTMP EIS analysis, the HCM 2000 methodology was not widely accepted at the time. The PTMP EIS therefore used the then prevailing 1994 HCM methodology. The HCM 2000 methodology has since become widely accepted, and using this methodology the intersection of California Street/15th Avenue is forecasted to operate at LOS F in the PM peak hour, while it was forecasted to operate at LOS D in the PTMP EIS.

[1] The City and County of San Francisco generally considers intersection operation at LOS D or better to be acceptable, and intersection operation at LOS E or F to be unacceptable.

Table 1
Intersection Levels of Service – Weekday AM Peak Hour
Year 2020 - One-Way Couplet at 14th and 15th Avenue Gates[3]

Intersection	Traffic Control Device	Requested No Action Alternative		Alt. 1		Alt. 2		Alt. 3		Alt. 4	
		Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS
Lake St/ 17th Ave	2-Way Stop (N-S)	18.8	C	19.1	C	18.7	C	18.5	C	18.4	C
Lake St/ 15th Ave	4-Way Stop	40.4	E	32.6	D	29.1	D	27.2	D	26.0	D
Lake St/ 14th Ave [2]	2-Way Stop (N-S)	38.0	E	**>90**	**F**	68.8	F	62.9	F	59.5	F
Lake St/ Park Presidio Blvd	Traffic Signal	38.0	D	38.1	D	38.1	D	37.9	D	37.9	D
Lake St/ Funston Ave	2-Way Stop (N-S)	30.7	D	31.7	D	30.6	D	30.0	D	29.6	D
California St/ 15th Ave [2]	2-Way Stop (N-S)	34.0	D	29.1	D	27.7	D	27.4	D	27.5	D
California St/ 14th Ave [2]	2-Way Stop (N-S)	36.3	E	**72.1**	**F**	53.0	F	51.7	F	50.8	F
California St/ Park Presidio Blvd	Traffic Signal	42.3	D	42.3	D	42.3	D	42.3	D	42.3	D

Source: Wilbur Smith Associates – July 2004.
Notes:
[1] Delay presented in seconds per vehicle based on the 2000 HCM methodology.
[2] LOS and delay shown for worst minor stop-controlled approach. Major approach is uncontrolled and without delay.
[3] Under the Requested No Action Alternative, no vehicles are assumed to enter or exit through the 14th Avenue Gate, the 15th Avenue Gate is assumed to have two-way operations.

Table 2
Intersection Levels of Service – Weekday PM Peak Hour
Year 2020 - One-Way Couplet at 14th and 15th Avenue Gates[3]

Intersection	Traffic Control Device	Requested No Action Alternative		Alt. 1		Alt. 2		Alt. 3		Alt. 4	
		Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS
Lake St/ 17th Ave	2-Way Stop (N-S)	17.2	C	17.9	C	17.1	C	17.0	C	16.9	C
Lake St/ 15th Ave	4-Way Stop	37.2	E	28.0	D	19.2	C	18.8	C	18.3	C
Lake St/ 14th Ave [2]	2-Way Stop (N-S)	64.2	F	**>90**	**F**	>90	F	>90	F	>90	F
Lake St/ Park Presidio Blvd	Traffic Signal	36.4	D	36.6	D	36.3	D	36.2	D	36.2	D
Lake St/ Funston Ave	2-Way Stop (N-S)	41.9	E	**46.4**	**E**	40.6	E	39.9	E	39.2	E
California St/ 15th Ave [2]	2-Way Stop (N-S)	75.4	F	**64.1**	**F**	47.4	E	45.5	E	44.3	E
California St/ 14th Ave [2]	2-Way Stop (N-S)	72.9	F	**>90**	**F**	>90	F	>90	F	>90	F
California St/ Park Presidio Blvd	Traffic Signal	75.4	E	**75.4**	**E**	75.4	E	75.4	E	75.4	E

Source: Wilbur Smith Associates – July 2004.
Notes:
[1] Delay presented in seconds per vehicle based on the 2000 HCM methodology.
[2] LOS and delay shown for worst minor stop-controlled approach. Major approach is uncontrolled and without delay.
[3] Under the Requested No Action Alternative, no vehicles are assumed to enter or exit through the 14th Avenue Gate, the 15th Avenue Gate is assumed to have two-way operations.

Requested No Action Alternative – As Table 1 indicates, under the Requested No Action Alternative, in the AM peak hour, all but three intersections would operate at LOS D or better. The minor approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would operate at LOS E, and the all-way-stop-controlled intersection of Lake Street/15th Avenue would also operate at LOS E. As shown in Table 2, in the PM peak hour, the minor approaches to the two-way stop-controlled intersection of Lake Street/Funston Avenue would operate at LOS E; while the two-way stop-controlled intersections of Lake Street/14th Avenue, California Street/15th Avenue, and California Street/14th Avenue would operate at LOS F; and the all-way-stop-controlled intersection of Lake Street/15th Avenue would operate at LOS E. While the low-volume traffic on one or both of the minor approaches to the four two-way stop-controlled intersections would incur delay, the majority of the traffic on the uncontrolled approaches (California Street or Lake Street) would not have to stop and therefore would not incur any delay.

The signalized intersection of California Street/Park Presidio Boulevard would operate at LOS E in the PM peak hour due to the growth in traffic volumes associated with Bay Area regional trends in population and employment. The Presidio's contribution to the total peak hour traffic volume is expected to be less than two percent.

Alternative 1: PTMP Alternative –As Table 1 indicates, under

Alternative 1, in the AM peak hour, all but two intersections would operate at LOS D or better. The minor approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would operate at LOS F. As shown in Table 2, in the PM peak hour, the minor approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue, California Street/14th Avenue and California Street/15th Avenue would operate at LOS F. The two-way stop-controlled intersection of Lake Street/Funston Avenue would operate at LOS E. While the low-volume traffic on one or both of the minor approaches to these intersections would incur delay, the majority of the traffic on the uncontrolled approaches (California Street or Lake Street) would not have to stop and therefore would not incur any delay.

The signalized intersection of California Street/Park Presidio Boulevard would operate at LOS E in the PM peak hour due to the growth in traffic volumes associated with Bay Area regional trends in population and employment. The Presidio's contribution to the total peak hour traffic volume is expected to be less than two percent.

Comparison of Alternative 1 to the Requested No Action Alternative
Compared to the Requested No Action Alternative, Alternative 1 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/15th Avenue (approximate reduction of 19%)
- California Street/15th Avenue (approximate reduction of 14%)

Alternative 1 results in no change to the delay compared to the Requested No Action Alternative at the following intersection during the AM peak hour:

- Lake Street/Park Presidio Boulevard

During the AM peak hour, Alternative 1 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/17h Avenue (approximate increase of 2%)
- Lake Street/14th Avenue (approximate increase of more than 100%)
- Lake Street/Funston Avenue (approximate increase of 3%)
- California Street/14th Avenue (approximate increase of 99%)

Compared to the Requested No Action Alternative, Alternative 1 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/15th Avenue (approximate reduction of 25%)
- California Street/15th Avenue (approximate reduction of 15%)

Alternative 1 results in no changes to the delays compared to the Requested No Action Alternative at the following intersections during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 1 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/17th Avenue (approximate increase of 4%)
- Lake Street/14th Avenue (approximate increase of more than 100%)
- Lake Street/Park Presidio Boulevard (approximate increase of 1%)
- Lake Street/Funston Avenue (approximate increase of 11%)
- California Street/14th Avenue (approximate increase of more than 100%)

Alternative 2: Infill Alternative – As shown in Table 1, in the AM peak hour in 2020, Alternative 2 would yield the same intersection levels of service as Alternative 1 (the PTMP Alternative). In the PM peak hour in 2020 (Table 2), Alternative 2 would operate at the same levels of service as Alternative 1, except at the intersection of California Street/15th Avenue, which would improve to LOS E. The signalized intersection of California Street/Park Presidio Boulevard would operate at LOS E, as it would with Alternative 1.

Comparison of Alternative 2 to Alternative 1

Compared to Alternative 1, Alternative 2 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 11%)
- Lake Street/14th Avenue (approximate reduction of 21%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 5%)
- California Street/14th Avenue (approximate reduction of 26%)

Alternative 2 results in no change to the delay compared to Alternative 1 at the following intersections during the AM peak hour:

- Lake Street/Park Presidio Boulevard
- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 2 results in increased delays at the following intersection compared to Alternative 1:

- Lake Street/14th Avenue (approximate increase of more than 100%)

Compared to Alternative 1, Alternative 2 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 4%)
- Lake Street/15th Avenue (approximate reduction of 31%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 13%)
- California Street/15th Avenue (approximate reduction of 26%)

Alternative 2 results in no changes to the delays compared to Alternative 1 at the following intersection during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 2 results in increased delays at the following intersections compared to Alternative 1:

- Lake Street/14th Avenue (approximate increase of more than 100%)
- California Street/14th Avenue (approximate increase of more than 100%)

Comparison of Alternative 2 to the Requested No Action Alternative
Compared to the Requested No Action Alternative, Alternative 2 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 28%)
- Lake Street/Funston Avenue (approximate reduction of less than 1%)
- California Street/15th Avenue (approximate reduction of19%)

Alternative 2 results in no change to the delay compared to the Requested No Action Alternative at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 2 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/14th Avenue (approximate increase of 81%)
- Lake Street/Park Presidio Boulevard (approximate increase of less than 1%))
- California Street/14th Avenue (approximate increase of 46%)

Compared to the Requested No Action Alternative, Alternative 2 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 48%)
- Lake Street/Park Presidio Boulevard (approximate reduction of less than 1%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 37%)

Alternative 2 results in no changes to the delays compared to the Requested No Action Alternative at the following intersections during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 2 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/14th Avenue (approximate increase of more than 100%)
- California Street/14th Avenue (approximate increase of more than 100%)

Alternative 3: No Infill Alternative – As Table 1 indicates, in the AM peak hour in 2020, Alternative 3 would yield the same intersection levels of service as Alternative 1 but with delays that are about the same or less than with Alternative 1. Similarly, as shown in Table 2, in the PM peak hour in 2020, Alternative 3 would yield the same levels of service as Alternative 1 except at the intersection of California Street/15th Avenue, which would improve to LOS E. Average delays would be the same or less than with Alternative 1.

Comparison of Alternative 3 to Alternative 2
Compared to Alternative 2, Alternative 3 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 7%)
- Lake Street/14th Avenue (approximate reduction of 9%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/15th Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 2%)

Alternative 3 results in no change to the delay compared to Alternative 2 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 3 does not result in increased delays at any of the study intersections compared to Alternative 2.

Compared to Alternative 2, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 2%)
- Lake Street/Park Presidio Boulevard (approximate reduction of less than 1%)

- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/15th Avenue (approximate reduction of 4%)

Alternative 3 results in no changes to the delays compared to Alternative 2 at the following intersections during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue
- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 3 does not result in increased delays at any of the study intersections compared to Alternative 2.

Comparison of Alternative 3 to Alternative 1
Compared to Alternative 1, Alternative 3 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 3%)
- Lake Street/15th Avenue (approximate reduction of 17%)
- Lake Street/14th Avenue (approximate reduction of 28%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 5%)
- California Street/15th Avenue (approximate reduction of 6%)
- California Street/14th Avenue (approximate reduction of 28%)

Alternative 3 results in no change to the delay compared to Alternative 1 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 3 results in increased delays at the following intersection compared to Alternative 1:

- Lake Street/15th Avenue (approximate increase of 1%)

Compared to Alternative 1, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 5%)
- Lake Street/15th Avenue (approximate reduction of 33%)

- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 14%)
- California Street/15th Avenue (approximate reduction of 29%)

Alternative 3 results in no changes to the delays compared to Alternative 1 at the following intersection during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 3 results in increased delays at of the following intersections compared to Alternative 1:

- Lake Street/14th Avenue (approximate increase of more than 100%)
- California Street/14th Avenue (approximate increase of more than 100%)

Comparison of Alternative 3 to the Requested No Action Alternative
Compared to the Requested No Action Alternative, Alternative 3 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 33%)
- Lake Street/Park Presidio Boulevard (approximate reduction of less than 1%)
- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/15th Avenue (approximate reduction of 19%)

Alternative 3 results in no change to the delay compared to the Requested No Action Alternative at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 3 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/14th Avenue (approximate increase of 66%)
- California Street/14th Avenue (approximate increase of 42%)

Compared to the Requested No Action Alternative, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)

- Lake Street/15th Avenue (approximate reduction of 49%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 5%)
- California Street/15th Avenue (approximate reduction of 40%)

Alternative 3 results in no changes to the delays compared to the Requested No Action Alternative at the following intersections during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 3 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/14th Avenue (approximate increase of more than 100%)
- California Street/14th Avenue (approximate increase of more than 100%)

Alternative 4: Battery Caulfield Alternative –As shown in Table 1, in the AM peak hour in 2020, Alternative 4 would yield the same intersection levels of service as Alternative 1, but would result in the same or less average delay per vehicle at all intersections. As indicated in Table 2, in the PM peak hour in 2020, Alternative 4 would operate at the same levels of service as Alternative 1 except at the intersection of California Street/15th Avenue, which would improve to LOS E. The average delay per vehicle would be the same or less than with Alternative 1 at all intersections. As with Alternative 1, the signalized intersection of California Street/Park Presidio Boulevard would operate at LOS E.

Comparison of Alternative 4 to Alternative 3
Compared to Alternative 3, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 4%)
- Lake Street/14th Avenue (approximate reduction of 5%)
- Lake Street/Funston Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 2%)

Alternative 4 results in no change to the delay compared to Alternative 3 at the following intersection during the AM peak hour:

- Lake Street/Park Presidio Boulevard
- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 results in increased delay at the following intersection compared to Alternative 3:

- California Street/15th Avenue (approximate increase of less than 1%)

Compared to Alternative 3, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 3%)
- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/15th Avenue (approximate reduction of 3%)

Alternative 4 results in no changes to the delays compared to Alternative 3 at the following intersections during the PM peak hour:

- Lake Street/14th Avenue
- Lake Street/Park Presidio Boulevard
- California Street/14th Avenue
- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 3.

Comparison of Alternative 4 to Alternative 2
Compared to Alternative 2, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 11%)
- Lake Street/14th Avenue (approximate reduction of 14%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 4%)

Alternative 4 results in no change to the delay compared to Alternative 2 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 2.

Compared to Alternative 2, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 5%)
- Lake Street/Park Presidio Boulevard (approximate reduction of less than 1%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 7%)

Alternative 4 results in no changes to the delays compared to Alternative 2 at the following intersections during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue
- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 2.

Comparison of Alternative 4 to Alternative 1
Compared to Alternative 1, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 4%)
- Lake Street/15th Avenue (approximate reduction of 20%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 7%)
- California Street/15th Avenue (approximate reduction of 5%)
- California Street/14th Avenue (approximate reduction of 30%)

Alternative 4 results in no change to the delay compared to Alternative 1 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 results in increased delays the following study intersections compared to Alternative 1:

- Lake Street/14th Avenue (approximate increase of more than 100%)

Compared to Alternative 1, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 6%)
- Lake Street/15th Avenue (approximate reduction of 35%)
- Lake Street/Funston Avenue (approximate reduction of 16%)
- California Street/15th Avenue (approximate reduction of 31%)

Alternative 4 results in no changes to the delays compared to Alternative 1 at the following intersection during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 4 results in increased delays at the following study intersections compared to Alternative 1.

- Lake Street/14th Avenue (approximate increase of more than 100%)
- California Street/14th Avenue (approximate increase of more than 100%)

Comparison of Alternative 4 to the Requested No Action Alternative
Compared to the Requested No Action Alternative, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 36%)
- Lake Street/Park Presidio Boulevard (approximate reduction of less than 1%)
- Lake Street/Funston Avenue (approximate reduction of 4%)
- California Street/15th Avenue (approximate reduction of 19%)

Alternative 4 results in no change to the delay compared to the Requested No Action Alternative at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/14th Avenue (approximate increase of 57%)
- California Street/14th Avenue (approximate increase of 40%)

Compared to the Requested No Action Alternative, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 51%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 6%)
- California Street/15th Avenue (approximate reduction of 41%)

Alternative 4 results in no changes to the delays compared to the Requested No Action Alternative at the following intersections during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 4 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/14th Avenue (approximate increase of more than 100%)
- California Street/14th Avenue (approximate increase of more than 100%)

2.2.2 Variant: New Park Presidio Blvd. Access with Inbound Only Traffic at 14th and 15th Avenue Gates

Tables 3 and 4 present the results of the intersection LOS analysis for the 2020 weekday AM and PM peak hour conditions for the four proposed land use build alternatives (Alternatives 1, 2, 3 and 4) assuming a new connection to Park Presidio Boulevard to and from the PHSH site north of Lake Street). The new intersection would allow traffic leaving the PHSH site to turn left or right on Highway 1, and allow southbound traffic on Highway 1 to enter the PHSH site directly from Highway 1. Both the 14th and 15th Avenue Gates would be open to inbound (northbound) traffic only.

Table 3
Intersection Levels of Service – Weekday AM Peak Hour
Year 2020
Variant: New Park Presidio Blvd. Access with Inbound Only Traffic at 14th and 15th Ave. Gates

Intersection	Traffic Control Device	Alt. 1		Alt. 2		Alt. 3		Alt. 4	
		Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS
Lake St/ 17th Ave	2-Way Stop	18.8	C	18.5	C	18.4	C	18.3	C
Lake St/ 15th Ave	4-Way Stop	23.7	C	21.6	C	21.3	C	21.1	C
Lake St/ 14th Ave [2]	2-Way Stop	**51.1**	**F**	45.1	E	43.7	E	42.5	E
Lake St/ Park Presidio Blvd.	Traffic Signal	39.6	D	39.6	D	39.1	D	38.6	D
Lake St/ Funston Ave	2-Way Stop	27.7	D	27.0	D	26.9	D	26.9	D
California St/ 15th Ave [2]	2-Way Stop	**35.0**	**E**	32.1	D	31.9	D	31.7	D
California St/ 14th Ave [2]	2-Way Stop	**71.1**	**F**	61.1	F	58.2	F	55.5	F
California St/ Park Presidio Blvd.	Traffic Signal	42.3	D	42.3	D	42.3	D	42.3	D
New Alternative Access/ Park Presidio Blvd.	Traffic Signal	5.7	A	5.6	A	4.9	A	4.8	A

Source: Wilbur Smith Associates – July 2004.
Notes:
[1] Delay presented in seconds per vehicle based on the 2000 HCM methodology.
[2] LOS and delay shown for worst minor stop-controlled approach. Major approach is uncontrolled and without delay.

Table 4
Intersection Levels of Service – Weekday PM Peak Hour
Year 2020
Variant: New Park Presidio Blvd. Access with Inbound Only Traffic at 14th and 15th Ave. Gates

Intersection	Traffic Control Device	Alt. 1		Alt. 2		Alt. 3		Alt. 4	
		Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS
Lake St/ 17th Ave	2-Way Stop	17.5	C	19.5	C	16.9	C	16.8	C
Lake St/ 15th Ave	4-Way Stop	19.1	C	17.4	C	17.1	C	16.9	C
Lake St/ 14th Ave [2]	2-Way Stop	**>90**	**F**	>90	F	>90	F	>90	F
Lake St/ Park Presidio Blvd.	Traffic Signal	**55.5**	**E**	50.0	D	50.0	D	49.5	D
Lake St/ Funston Ave	2-Way Stop	34.1	D	33.2	D	33.1	D	32.7	D
California St/ 15th Ave [2]	2-Way Stop	**49.1**	**E**	42.7	E	41.0	E	39.7	E
California St/ 14th Ave [2]	2-Way Stop	**>90**	**F**	>90	F	>90	F	>90	F
California St/ Park Presidio Blvd.	Traffic Signal	**75.3**	**E**	72.0	E	71.6	E	71.3	E
New Alternative Access/ Park Presidio Blvd.	Traffic Signal	8.4	A	7.0	A	6.9	A	6.8	A

Source: Wilbur Smith Associates – July 2004.
Notes:
[1] Delay presented in seconds per vehicle based on the 2000 HCM methodology.
[2] LOS and delay shown for worst minor stop-controlled approach. Major approach is uncontrolled and without delay.

Alternative 1: PTMP Alternative – For the Park Presidio Boulevard Access variant, Table 3 shows that five intersections would operate at LOS D or better under Alternative 1 AM peak hour conditions. During the AM peak hour, the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th would operate at LOS F. Table 3 also shows that five of the nine intersections would operate at LOS D or better under Alternative 1 PM peak hour conditions. During the PM peak hour, the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would operate at LOS F. Also during the PM peak hour, the signalized intersections of California Street/Park Presidio Boulevard and Late Street Park Presidio Boulevard are forecast to operate at LOS E.

Comparison of Alternative 1 to the Requested No Action Alternative
Compared to the Requested No Action Alternative, Alternative 1 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/15th Avenue (approximate reduction of 41%)
- Lake Street/Funston Avenue (approximate reduction of 10%)

Alternative 1 results in no change to the delay compared to the Requested No Action Alternative at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard
- Lake Street/17th Avenue

During the AM peak hour, Alternative 1 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/14th Avenue (approximate increase of 134%)
- Lake Street/Park Presidio Boulevard (approximate increase of 4%)
- California Street/14th Avenue (approximate increase of 96%)

Compared to the Requested No Action Alternative, Alternative 1 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/15th Avenue (approximate reduction of 49%)
- Lake Street/Funston Avenue (approximate reduction of 19%)
- California Street/15th Avenue (approximate reduction of 35%)

During the PM peak hour, Alternative 1 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/17th Avenue (approximate increase of 2%)
- Lake Street/14th Avenue (approximate increase of more than 100%)
- Lake Street/Park Presidio Boulevard (approximate increase of 52%)
- California Street/14th Avenue (approximate increase of more than 100%)

Alternative 2: Infill Alternative –As shown in Table 3, in the AM peak hour in 2020, the minor approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would operate at LOS E and LOS F respectively under Alternative 2. As Table 4 indicates, in the PM peak hour in 2020, levels of service for Alternative 2 would be the same as under Alternative 1.

Comparison of Alternative 2 to Alternative 1
Compared to Alternative 1, Alternative 2 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 9%)
- Lake Street/14th Avenue (approximate reduction of 12%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 8%)
- California Street/14th Avenue (approximate reduction of 14%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 2%)

Alternative 2 results in no change to the delay compared to Alternative 1 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 2 does not result in any increased delays compared to Alternative 1.

Compared to Alternative 1, Alternative 2 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/15th Avenue (approximate reduction of 9%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 10%)
- Lake Street/Funston Avenue (approximate reduction of3%)
- California Street/15th Avenue (approximate reduction of 13%)
- California Street/Park Presidio Boulevard (approximate reduction of 4%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 17%)

Alternative 2 results in an increase or decrease in the delays compared to Alternative 1 at the following intersections during the PM. No intersections retain the same level of delay.

During the PM peak hour, Alternative 2 results in increased delay at the following intersection compared to Alternative 1:

- Lake Street/14th Avenue (approximate increase of more than 100%)
- California Street/14th Avenue (approximate increase of more than 100%)

Comparison of Alternative 2 to the Requested No Action Alternative
Compared to the Requested No Action Alternative, Alternative 2 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 47%)
- Lake Street/Funston Avenue (approximate reduction of 12%)
- California Street/15th Avenue (approximate reduction of 6%)

Alternative 2 results in no change to the delay compared to the Requested No Action Alternative at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 2 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/14th Avenue (approximate increase of 19%)
- Lake Street/Park Presidio Boulevard (approximate increase of 4%)
- California Street/14th Avenue (approximate increase of 68%)

Compared to the Requested No Action Alternative, Alternative 2 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/15th Avenue (approximate reduction of 53%)
- Lake Street/Funston Avenue (approximate reduction of 21%)
- California Street/15th Avenue (approximate reduction of 43%)
- California Street/Park Presidio Boulevard (approximate reduction of 5%)

During the PM peak hour, Alternative 2 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/17th Avenue (approximate increase of 13%)
- Lake Street/14th Avenue (approximate increase of more than 100%)
- Lake Street/Park Presidio Boulevard (approximate increase of 37%)
- California Street/14th Avenue (approximate increase of more than 100%)

Alternative 3: No Infill Alternative – As Table 3 indicates, in the AM peak hour in 2020, the levels of service for Alternative 3 would be the same as with Alternative 1. As shown in Table 4,

the PM peak hour levels of service under Alternative 3 would also be the same as with Alternative 1.

Comparison of Alternative 3 to Alternative 2
Compared to Alternative 2, Alternative 3 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 1%)
- Lake Street/14th Avenue (approximate reduction of 3%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of less than 1%)
- California Street/15th Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 5%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 13%)

Alternative 3 results in no change to the delay compared to Alternative 2 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 3 does not result in increased delays at any study intersections compared to Alternative 2.

Compared to Alternative 2, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 13%)
- Lake Street/15th Avenue (approximate reduction of 2%)
- Lake Street/Funston Avenue (approximate reduction of less than 1%)
- California Street/15th Avenue (approximate reduction of 4%)
- California Street/Park Presidio Boulevard (approximate reduction of 1%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 1%)

Alternative 3 results in no changes to the delays compared to Alternative 2 at the following intersections during the PM peak hour:

- Lake Street/14th Avenue

- Lake Street/Park Presidio Boulevard
- California Street/14th Avenue

During the PM peak hour, Alternative 3 does not result in increased delays at any study intersections compared to Alternative 2.

Comparison of Alternative 3 to Alternative 1
Compared to Alternative 1, Alternative 3 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 10%)
- Lake Street/14th Avenue (approximate reduction of 14%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 9%)
- California Street/14th Avenue (approximate reduction of 18%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 14%)

Alternative 3 results in no change to the delay compared to Alternative 1 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 3 results in no increased delays compared to Alternative 1.

Compared to Alternative 1, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 3%)
- Lake Street/15th Avenue (approximate reduction of 10%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 10%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 16%)
- California Street/Park Presidio Boulevard (approximate reduction of 5%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 18%)

Alternative 3 results in either an increase or a decrease in delay; there are no intersections that retain the same level of delay compared to Alternative 1 during the PM peak hour.

During the PM peak hour, Alternative 3 results in increased delays the following study intersections compared to Alternative 1.

- Lake Street/14th Avenue (approximate increase of more than 100%)
- California Street/14th Avenue (approximate increase of more than 100%)

Comparison of Alternative 3 to the Requested No Action Alternative
Compared to the Requested No Action Alternative, Alternative 3 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 47%)
- Lake Street/Funston Avenue (approximate reduction of 12%)
- California Street/15th Avenue (approximate reduction of 6%)

Alternative 3 results in no change to the delay compared to the Requested No Action Alternative at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 3 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/14th Avenue (approximate increase of 15%)
- Lake Street/Park Presidio Boulevard (approximate increase of 3%)
- California Street/14th Avenue (approximate increase of 60%)

Compared to the Requested No Action Alternative, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 54%)
- Lake Street/Funston Avenue (approximate reduction of 21%)
- California Street/15th Avenue (approximate reduction of 46%)
- California Street/Park Presidio Boulevard (approximate reduction of 5%)

During the PM peak hour, Alternative 3 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/14th Avenue (approximate increase of more than 100%)
- Lake Street/Park Presidio Boulevard (approximate increase of 37%)
- California Street/14th Avenue (approximate increase of more than 100%)

Alternative 4: Battery Caulfield Alternative – As shown in Table 3, in the AM peak hour in 2020, levels of service with Alternative 4 would be the same as with Alternative 1. In the PM peak hour in 2020, all intersections would operate under Alternative 4 at the same levels of service as with Alternative 1.

Comparison of Alternative 4 to Alternative 3
Compared to Alternative 3, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 1%)
- Lake Street/14th Avenue (approximate reduction of 3%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- California Street/15th Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 5%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 2%)

Alternative 4 results in no change to the delays compared to Alternative 3 at the following intersections during the AM peak hour:

- Lake Street/Funston Avenue
- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 does not result in increased delays at any study intersections compared to Alternative 3.

Compared to Alternative 3, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 1%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)

- Lake Street/Funston Avenue (approximate reduction of less than 1%)
- California Street/15th Avenue (approximate reduction of 3%)
- California Street/Park Presidio Boulevard (approximate reduction of less than 1%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 1%)

Alternative 4 results in no changes to the delays compared to Alternative 3 at the following intersections during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue

During the PM peak hour, Alternative 4 does not result in increased delays at any study intersections compared to Alternative 3.

Comparison of Alternative 4 to Alternative 2
Compared to Alternative 2, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 2%)
- Lake Street/14th Avenue (approximate reduction of 6%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 3%)
- Lake Street/Funston Avenue (approximate reduction of less than 1%)
- California Street/15th Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 9%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 14%)

Alternative 4 results in no change to the delay compared to Alternative 2 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 does not result in increased delays at any study intersections compared to Alternative 2.

Compared to Alternative 2, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 14%)

- Lake Street/15th Avenue (approximate reduction of 3%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/15th Avenue (approximate reduction of 7%)
- California Street/Park Presidio Boulevard (approximate reduction of 1%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 3%)

Alternative 4 results in no changes to the delays compared to Alternative 2 at the following intersections during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue

During the PM peak hour, Alternative 4 does not result in increased delays at any study intersections compared to Alternative 2.

Comparison of Alternative 4 to Alternative 1
Compared to Alternative 1, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 3%)
- Lake Street/15th Avenue (approximate reduction of 11%)
- Lake Street/14th Avenue (approximate reduction of 17%)
- Lake Street/Park Presidio Boulevard (approximate reduction of less than 3%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 9%)
- California Street/14th Avenue (approximate reduction of 22%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 16%)

Alternative 4 results in no change to the delays compared to Alternative 1 at the following intersections during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 does not result in increased delays at any study intersections compared to Alternative 1.

Compared to Alternative 1, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 4%)
- Lake Street/15th Avenue (approximate reduction of 12%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 11%)
- Lake Street/Funston Avenue (approximate reduction of 4%)
- California Street/15th Avenue (approximate reduction of 19%)
- California Street/Park Presidio Boulevard (approximate reduction of 5%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 19%)

Alternative 4 results in either an increase or a decrease in delay compared to Alternative during the PM peak hour; no intersections retain the same level of delay.

During the PM peak hour, Alternative 4 results in increased delays at the following study intersections compared to Alternative 1.

- Lake Street/14th Avenue (approximate increase of more than 100%)
- California Street/14th Avenue (approximate increase of more than 100%)

Comparison of Alternative 4 to the Requested No Action Alternative
Compared to the Requested No Action Alternative, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 3%)
- Lake Street/15th Avenue (approximate reduction of 48%)
- Lake Street/Funston Avenue (approximate reduction of 12%)
- California Street/15th Avenue (approximate reduction of 7%)

Alternative 4 results in no change to the delay compared to the Requested No Action Alternative at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/14th Avenue (approximate increase of 12%)
- Lake Street/Park Presidio Boulevard (approximate increase of 2%)

- California Street/14th Avenue (approximate increase of 53%)

Compared to the Requested No Action Alternative, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 55%)
- Lake Street/Funston Avenue (approximate reduction of 22%)
- California Street/15th Avenue (approximate reduction of 47%)
- California Street/Park Presidio Boulevard (approximate reduction of 5%)

During the PM peak hour, Alternative 4 results in increased delays at the following intersections compared to the Requested No Action Alternative:

- Lake Street/14th Avenue (approximate increase of more than 100%)
- Lake Street/Park Presidio Boulevard (approximate increase of 36%)
- California Street/14th Avenue (approximate increase of more than 100%)

2.3 Traffic Operations and Safety Considerations

Traffic conditions on Park Presidio Boulevard and in the surrounding residential neighborhood would vary across alternatives and with the Park Presidio Boulevard Access Variant. Table 5 shows anticipated peak hour traffic volumes through the 14th and 15th Avenue Gates for each of the alternatives with and without the Variant. Future traffic volumes through the 14th and 15th Avenue Gates would relate directly to the level of comfort and safety concerns of the residents of the surrounding neighborhood.

Requested No Action Alternative – The Requested No Action Alternative is expected to result in approximately 310 and 490 vehicles per hour traveling through the 15th Avenue Gate in the AM and PM peak hours, respectively. A PM peak hour volume of 490 vehicles is about 162% greater than the PM peak hour volume of 187 vehicles per hour observed in October 2002.

Table 5
Comparison of Peak Hour Traffic Volumes[1] through 14th/15th Avenue Gates
Year 2020

Land Use Alternative	One-way Couplet		Variant	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Requested No Action Alternative	310[2]	490[2]	n.a.	n.a.
Alternative 1	380	620	200	320
Alternative 2	310	480	150	270
Alternative 3	290	450	150	250
Alternative 4	270	430	140	240

Source: Wilbur Smith Associates – July 2004.
Note:
1. Forecasted 2020 gate volumes have been rounded
2. Under the Requested No Action Alternative, all traffic into and out of the Presidio utilizes the 15th Avenue Gate; the 14th Avenue Gate is closed.

n.a. - Not applicable, the Park Presidio Access Variant is not assumed to be implemented under the Requested No Action Alternative.

Alternative 1: PTMP Alternative –Alternative 1 is expected to result in approximately 380 and 620 vehicles per hour traveling through the 14th and 15th Avenue Gates in the AM and PM peak hours, respectively. A PM peak hour volume of 620 vehicles is about three times the PM peak hour volume of 187 vehicles per hour observed in October 2002. Compared to the Requested No Action Alternative, Alternative 1 would generate approximately 18 percent more trips during the AM peak hour and 21% more trips during the PM peak hour.

With the Park Presidio Access Variant, Alternative 1 would result in higher generated volumes of traffic through the 14th and 15th Avenue Gates during both the AM and PM peak hours compared to Alternatives 2, 3, and 4.

Alternative 2: Infill Alternative – Alternative 2 would result in 23% fewer PM peak hour vehicle trips through the 14th and 15th Avenue Gates than Alternative 1, and approximately two percent fewer trips during the PM peak hour compared to the Requested No Action Alternative. During the AM peak hour, Alternative 2 would generate about 18% more vehicle trips through the gates than Alternative 1, and the same amount as the Requested No Action Alternative. The reduction in traffic volume through the 14th and 15th Avenue Gates would result in less traffic on nearby residential neighborhood streets, and therefore could result in a higher level of comfort, quality of life benefits, and safer conditions for neighborhood residents.

With the Park Presidio Access Variant, Alternative 2 would result in approximately 18% fewer trips through the 14th and 15th Avenue Gates during the AM peak hour and approximately 23% fewer in the PM peak hour compared to Alternative 1. In addition, the Park Presidio Access Variant would improve pedestrian and bicycle safety at the intersection of Lake Street/Park Presidio Boulevard because the new intersection on Park Presidio Boulevard would replace the Lake Street intersection as the first intersection encountered by southbound traffic on Highway 1.

Alternative 3: No Infill Alternative – Compared to Alternative 2, Alternative 3 would result in approximately six percent fewer trips through the 14th and 15th Avenue Gates during both the AM and PM peak hours. When compared to Alternative 1, Alternative 3 would result in approximately 24% and 27% percent fewer vehicle trips through the 14th and 15th Avenue Gates during the AM and PM peak hours, respectively; and approximately six and eight percent fewer vehicle trips through the Gates during the AM and PM peak hours as compared to the Requested No Action Alternative.

With the Park Presidio Access Variant, Alternative 3 would result in 25% and 22% less traffic through the 14th and 15th Avenue Gates during the AM and PM peak hours, respectively, than Alternative 1; and seven percent less traffic through the 14th and 15th Avenue Gates during the PM peak hour than Alternative 2. Less traffic through the 14th and 15th Avenue Gates would result in less traffic on nearby residential neighborhood streets, and therefore could result in a higher level of comfort, improved quality of life, and safer traffic conditions for neighborhood residents. The Park Presidio Access Variant would also improve pedestrian and bicycle safety at the intersection of Lake Street/Park Presidio Boulevard by creating a new intersection on Park Presidio Boulevard that would be encountered by southbound traffic on Highway 1 prior to reaching Lake Street.

Alternative 4: Battery Caulfield Alternative – Alternative 4 would generate 13 and 12 percent fewer vehicle trips through the 14th and 15th Avenue Gates in the AM and PM peak hours, respectively, than the Requested No Action Alternative; 29 and 31 percent fewer vehicle trips through the 14th and 15th Avenue Gates in the AM and PM peak hours, respectively, than Alternative 1; 13 and 10 percent fewer vehicle trips through the 14th and 15th Avenue Gates in the AM and PM peak hours, respectively, than Alternative 2; and seven and four percent fewer vehicle trips through the 14th and 15th Avenue Gates in the AM and PM peak hours, respectively, than Alternative 3.

With the Park Presidio Access Variant, Alternative 4 would result in 30 and 25 percent less traffic through the 14th and 15th Avenue Gates during the AM and PM peak hours, respectively, than Alternative 1; seven and 11 percent less traffic through the 14th and 15th Avenue Gates during the AM and PM peak hours, respectively, than Alternative 2; and seven and four percent less traffic through the 14th and 15th Avenue Gates during the AM and PM peak hours, respectively, than Alternative 3. The Park Presidio Access Variant would also improve pedestrian and bicycle safety at the intersection of Lake Street/Park Presidio Boulevard because the new intersection would replace the Lake Street intersection as the first intersection encountered by southbound traffic on Highway 1.

3. TRANSIT SERVICE

The land uses associated with the PHSH alternatives would generate transit trips on several Bay Area transit providers, and would most affect the three transit providers that directly serve the project site, the San Francisco Municipal Railway (Muni), Golden Gate Transit (GGT) and the Presidio's internal shuttle (PresidiGo). Trips to and from the project site expected to be made by transit were estimated based on the expected mode split discussed in Technical Memorandum

No. 2, Travel Demand, and then assigned to transit routes based on the geographic distribution of origins and destinations. Because some transit passengers may use more than one transit mode (e.g., transfer from Muni to PresidiGo), the sum of transit trips made on each transit provider may exceed the total number of transit passengers. Table 6 summarizes the expected AM peak hour and PM peak hour transit trips to and from the project site by transit service provider for each alternative. Tables 7, 8, 9 and 10 summarize the AM and PM peak hour ridership on Muni, Golden Gate Transit and PresidiGo for all trips to and from the Presidio.

In general, Muni and GGT transit routes currently have sufficient capacity to accommodate all project alternatives. Under Year 2020 conditions, the majority of Muni lines will have sufficient capacity to accommodate all project alternatives; however, forecast ridership on some Muni lines will exceed capacity unless Muni expands service, without or with the additional ridership associated with the PHSH project alternatives. During the AM peak hour under Year 2020 conditions, the PHSH alternatives will contribute less than 1% of the total ridership to the Muni routes anticipated to exceed capacity, and between 1% and 3% of the total ridership during the PM peak hour. For the GGT route expected to exceed capacity under Year 2020 conditions, the PHS alternatives will contribute between 1% and 5% of the total ridership during the PM peak hour; with no GGT route forecast to exceed capacity during the AM peak hour. Currently, neither Muni nor GGT have plans to provide the additional capacity identified by the Year 2020 analysis; however, both Muni and GGT periodically assess system efficiency and capacity, and will generally modify or expand service to meet ridership demands.

Table 6
Peak Hour Transit Trips to/from Project Site by Service Provider and Alternative
Year 2020

Time Period and Service Provider	Requested No Action Alternative	Alternative 1	Alternative 2	Alternative 3	Alternative 4
AM Peak Hour					
S.F. Muni	40	95	61	43	95
Golden Gate Transit	4	10	6	5	10
PresidiGo	16	46	19	14	46
PM Peak Hour					
S.F. Muni	44	175	70	51	175
Golden Gate Transit	5	19	7	5	19
PresidiGo	18	80	23	17	80

Source: Wilbur Smith Associates – July 2004.

Table 7
Year 2020 Muni Passenger Loads and Load Factors
AM Peak Hour

Line	Direction	Maximum Load Point	Number of Passengers					Average Load Factor				
			Requested No Action	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Requested No Action	Alt. 1	Alt. 2	Alt. 3	Alt. 4
1	to Howard/Main	Clay/Powell	1,184	1,187	1,188	1,186	1,184	120%	120%	120%	120%	120%
	to Geary/33rd	Sacramento/Polk	574	584	572	571	570	67%	69%	67%	67%	67%
1AX	to Davis/Pine	California/Park Presidio	389	393	394	391	390	90%	91%	91%	91%	90%
	to Geary/33rd	n.a.	0	n.a.	0	0	0	0%	n.a.	0%	0%	0%
1BX	to Davis/Pine	California/Fillmore	833	837	838	836	834	109%	109%	109%	109%	109%
	to Park Presidio/California	n.a.	0	n.a.	0	0	0	0%	n.a.	0%	0%	0%
28	to Fort Mason	19th Ave/Lincoln	433	435	436	435	434	74%	74%	74%	74%	74%
	to Daly City BART	19th Ave/Sloat	313	318	312	312	311	74%	75%	73%	73%	73%
28L	to Park Presidio/ California	19th Ave/Lincoln	182	183	183	183	182	67%	67%	67%	67%	67%
	to Daly City BART	19th Ave/Sloat	175	178	175	175	174	53%	54%	53%	53%	53%

Source: Wilbur Smith Associates - July 2004.
Notes:
1. n.a. – Not applicable; Indicates that no runs are made on that route in that direction during that particular time period.
2. Peak hour capacity is based on the Muni Bus and Metro FY 2001-2002 Weekday Conditions. It assumes an appreciable number of standees per vehicle (somewhere between 60% and 80% of the number of seated passengers, depending on the specific transit vehicle configuration) and may not include the effects of missed or late runs.
3. Peak hour ridership is assumed to be 60% of the two-hour peak period ridership.
4. The 1-California line operates at an eight-minute headway west of Fillmore Street and at a three-minute headway east of Fillmore Street. The peak hour loads correspond to maximum load points located east of Fillmore Street.

Table 8
Year 2020 Muni Passenger Loads and Load Factors
PM Peak Hour

Line	Direction	Maximum Load Point	Number of Passengers					Average Load Factor				
			Requested No Action	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Requested No Action	Alt. 1	Alt. 2	Alt. 3	Alt. 4
1	to Howard/Main	Clay/Powell	838	855	837	835	834	61%	62%	61%	61%	61%
	to Geary/33rd	Sacramento/Polk	1,589	1,595	1,588	1,586	1,584	104%	104%	104%	103%	103%
1AX	to Davis/Pine	California/Park Presidio	0	n.a.	0	0	0	0%	n.a.	0%	0%	0%
	to Geary/33rd	n.a.	205	212	205	203	201	65%	68%	65%	64%	64%
1BX	to Davis/Pine	California/Fillmore	0	n.a.	0	0	0	0%	n.a.	0%	0%	0%
	to Park Presidio/California	n.a.	325	332	325	322	321	87%	89%	87%	86%	86%
28	to Fort Mason	19th Ave/Lincoln	523	535	522	521	520	123%	126%	123%	123%	122%
	to Daly City BART	19th Ave/Sloat	593	599	593	591	589	145%	146%	145%	144%	144%
28L	to Park Presidio/ California	n.a.	0	n.a.	0	0	0	0%	n.a.	0%	0%	0%
	to Daly City BART	n.a.	0	n.a.	0	0	0	0%	n.a.	0%	0%	0%

Source: Wilbur Smith Associates – July 2004.
Notes:
1. n.a. – Not applicable; Indicates that no runs are made on that route in that direction during that particular time period.
2. Peak hour capacity is based on the Muni Bus and Metro FY 2001-2002 Weekday Conditions. It assumes an appreciable number of standees per vehicle (somewhere between 60% and 80% of the number of seated passengers, depending on the specific transit vehicle configuration) and may not include the effects of missed or late runs.
3. Peak hour ridership is assumed to be 60% of the two-hour peak period ridership.
4. The 1-California line operates at an eight-minute headway west of Fillmore Street and at a three-minute headway east of Fillmore Street. The peak hour loads correspond to maximum load points located east of Fillmore Street.

Table 9
Route 50[(1)] Golden Gate Transit Bus Passenger Loads and Load Factors
Year 2020

Time Period	Number of Passengers					Average Load Factor[(2)]				
	Requested No Action	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Requested No Action	Alt. 1	Alt. 2	Alt. 3	Alt. 4
AM Peak Hour										
- Northbound	76	78	79	77	76	89%	92%	93%	91%	90%
- Southbound	48	51	47	46	46	37%	40%	37%	36%	36%
PM Peak Hour										
- Northbound	61	67	61	60	60	72%	79%	71%	70%	70%
- Southbound	85	90	85	83	82	100%	105%	100%	98%	97%

Source: Wilbur Smith Associates – July 2004.
Notes:
1. Ridership data presented are for GGT Route 50. GGT Route 50 no longer exists, but GGT Route 10 follows the same alignment in San Francisco. Ridership data for GGT Route 10 are not yet available.
2. Peak hour capacity assumes 42.5 passengers per bus.

Table 10
PresidiGo Ridership by Alternative
Year 2020

Alternative	AM Peak Hour	PM Peak Hour
Requested No Action Alt.	230	342
Alternative 1	245	370
Alternative 2	231	342
Alternative 3	230	341
Alternative 4	230	342

Source: Wilbur Smith Associates – July 2004.

Requested No Action Alternative – The Requested No Action Alternative would generate 304 daily transit trips. The alternative would generate 47 transit trips in the AM peak hour and 52 transit trips in the PM peak hour. The transit analysis of year 2020 conditions shows that cumulative ridership due to regional growth trends on Routes 1 and 1BX on California Street could exceed capacity in the inbound (toward downtown) direction during the AM peak hour if additional capacity is not added to these routes by 2020. However, the Presidio is expected to contribute only three percent or less to the total projected 2020 ridership on these routes. In the PM peak hour, cumulative ridership on Muni Routes 1 and 28 could exceed capacity if additional capacity is not added. In the southbound direction, projected ridership on Muni Route 28 is expected to exceed capacity without ridership generated by the Presidio. The maximum load point for the Muni Route 28 occurs south of Golden Gate Park, and many passengers traveling to and from the Presidio are expected to board or alight the bus at a considerable distance from the maximum load point.

Golden Gate Transit (GGT) Route 10[2] is the route that directly serves the project site. As shown in Table 9, ridership on this route could be at capacity in the PM peak hour in the southbound direction if.

Alternative 1: PTMP Alternative – Alternative 1 would generate 1,562 daily transit trips, which is approximately 414 percent more transit trips than the Requested No Action Alternative. The alternative would generate 92 transit trips in the AM peak hour and 206 transit trips in the PM peak hour; which is an increase of 153 and 319 percent, respectively, compared to the Requested No Action Alternative. If Muni does not provide additional capacity for Routes 1, 1AX, and 1BX on California Street by 2020, the cumulative ridership due to regional growth trends and implementation of the PTMP could exceed capacity on one or more of these three routes in the inbound (toward downtown) direction in the AM peak hour. However, the Presidio is expected to contribute only two percent or less to the total projected 2020 ridership on these routes. In the PM peak hour, cumulative ridership on Muni Route 28 could exceed capacity if additional capacity is not added to this route. In the southbound direction, projected ridership on Muni Route 28 is expected to exceed capacity without ridership generated by the Presidio. The maximum load point for the Muni Route 28 occurs south of Golden Gate Park, and many passengers traveling to and from the Presidio are expected to board or alight the bus at a considerable distance from the maximum load point. The average load factor for Muni ridership during both the AM and PM peak hours under Alternative 1 is similar to the Requested No Action Alternative.

As shown in Table 9, ridership on GGT Route 10 could slightly exceed capacity in the PM peak hour in the southbound direction if capacity is not increased beyond the current level. The Presidio is expected to contribute about 11 percent to the total PM peak hour projected ridership in 2020. Alternative 1 results in similar load factors for GGT ridership as the Requested No Action Alternative.

Alternative 2: Infill Alternative – Alternative 2 would generate 701 daily transit trips, or 55 percent fewer than Alternative 1, and approximately 131 percent more than the Requested No Action Alternative. In the AM peak hour, Alternative 2 would generate 69 transit trips, or 37 percent fewer than Alternative 1 and approximately 47 percent more than the Requested No Action Alternative. In the PM peak hour, Alternative 2 would generate 80 transit trips, or 60 percent fewer than Alternative 1, and approximately 54 percent more than the Requested No Action Alternative.

Alternative 2 is expected to result in 36 percent and 60 percent less Muni ridership in 2020 than Alternative 1 in the AM and PM peak hours, respectively; and 53 percent more Muni ridership in 2020 than the Requested No Action Alternative in the AM peak hour, and 59 percent more during the PM peak hour. As shown in Tables 7 and 8, average load factors on Muni lines

[2] Ridership data presented are for GGT Route 50. GGT Route 50 no longer exists, but GGT Route 10 follows the same alignment in San Francisco. Ridership data for GGT Route 10 are not yet available.

during the AM and PM peak hours with Alternative 2 would be virtually the same as with Alternative 1 and the Requested No Action Alternative. The two Muni lines that would experience an average load factor at the maximum load point higher than 100 percent (1-California and 28-19th Avenue) under Alternative 1 due to the growth in cumulative ridership associated with Bay Area regional trends in population and employment would continue to do so under Alternative 2.

On Golden Gate Transit, Alternative 2 would result in eight percent less ridership in 2020 in the PM peak hour as compared to Alternative 1; and two percent more ridership in 2020 in the AM peak hour as compared to the Requested No Action Alternative. As shown in Table 9, GGT's average load factor for the PM peak hour in the southbound direction would improve to 100 percent, from 105 percent under Alternative 1 (similar to the Requested No Action Alternative). None of the average load factors in the year 2020 under Alternative 2 would be above 100 percent.

As Table 10 indicates, PresidiGo ridership in the year 2020 under Alternative 2 would decrease by approximately seven percent in the AM peak hour and eight percent in the PM peak hour when compared to Alternative 1, due to the lower development intensity associated with Alternative 2. PresidiGo ridership for Alternative 2 would be approximately one and 11 percent higher during the AM and PM peak hours, respectively, as compared to the Requested No Action Alternative.

Alternative 3: No Infill Alternative –Alternative 3 would generate 496 daily transit trips, or 63 percent more than the Requested No Action Alternative; 68 percent fewer than Alternative 1; and 29 percent fewer than Alternative 2. In the AM peak hour, Alternative 3 would generate 50 transit trips, or six percent more than the Requested No Action Alternative; 59 percent fewer than Alternative 1; and 28 percent fewer than Alternative 2. In the PM peak hour, Alternative 3 would generate 59 transit trips, or 13 percent more than the Requested No Action Alternative; 73 percent fewer than Alternative 1; and 26 percent fewer than Alternative 2.

Compared to the Requested No Action Alternative, Alternative 3 is expected to result in eight percent more Muni ridership in 2020 in the AM peak hour and 16 percent more Muni ridership in 2020 in the PM peak hour; compared to Alternative 1, Alternative 3 is expected to result in 55 and 71 percent less Muni ridership in 2020 in the AM and PM peak hours, respectively; and compared to Alternative 2, Alternative 3 is expected to result in 30 and 27 percent less Muni ridership in 2020 in the AM and PM peak hours, respectively. As shown in Tables 7 and 8, average load factors on Muni lines during the AM and PM peak hours with Alternative 3 would be virtually the same as with Alternative 1 (similar to Alternative 2 and the Requested No Action Alternative). The two Muni lines that would experience an average load factor at the maximum load point higher than 100 percent (1-California and 28-19th Avenue) under Alternative 1 due to the growth in cumulative ridership associated with Bay Area regional trends in population and employment would continue to do so under Alternative 3.

On Golden Gate Transit, Alternative 3 would result in approximately two percent less ridership in 2020 in the AM and PM peak hours as compared to Alternative 2; approximately five percent less ridership in 2020 in the AM peak hour and approximately nine percent less ridership in the PM peak hour as compared to Alternative 1; and less than one percent less ridership in 2020 in the AM peak hour and approximately two percent less ridership in the PM peak hour as compared to the Requested No Action Alternative. As shown in Table 9, GGT's average load factor for the PM peak hour in the southbound direction would improve to 98 percent, from 105 percent under Alternative 1, and 100% under Alternative 2 and the Requested No Action Alternative. None of the average load factors in the year 2020 under Alternative 3 would be above 100 percent for Alternative 3.

As Table 10 indicates, PresidiGo ridership in the year 2020 under Alternative 3 would decrease by less than on percent in the AM and PM peak hours when compared to Alternative 2; decrease by approximately six percent in the AM peak hour and eight percent in the PM peak hour when compared to Alternative 1, due to the lower development intensity associated with Alternative 3; and increase by approximately 11 percent in the PM peak hour when compared to the Requested No Action Alternative.

Alternative 4: Battery Caulfield Alternative –Alternative 4 would generate 427 daily transit trips, or 40 percent more than the Requested No Action Alternative; 73 percent fewer than Alternative 1; 39 percent fewer than Alternative 2; and 14 percent fewer than Alternative 3. In the AM peak hour, Alternative 4 would generate 36 transit trips, or 23 percent fewer than the Requested No Action Alternative; 70 percent fewer than Alternative 1; 48 percent fewer than Alternative 2; and 28 percent fewer than Alternative 3. In the PM peak hour, Alternative 4 would generate 44 transit trips, or 15 percent fewer than the Requested No Action Alternative; 80 percent fewer than Alternative 1; 45 percent fewer than Alternative 2; and 25 percent fewer than Alternative 3.

Compared to the Requested No Action Alternative, Alternative 4 is expected to result in 25 percent less Muni ridership in 2020 in the AM peak hour and 18 percent less in the PM peak hour; compared to Alternative 1, Alternative 4 is expected to result in 68 and 79 percent less Muni ridership in 2020 in the AM and PM peak hours, respectively; compared to Alternative 2, Alternative 4 is expected to result in 51 percent less Muni ridership in 2020 in both the AM and PM peak hours; and compared to Alternative 3, Alternative 4 is expected to result in 30 percent less Muni ridership in 2020 in both the AM and PM peak hours. As shown in Tables 7 and 8, average load factors on Muni lines during the AM and PM peak hours with Alternative 4 would be virtually the same as with Alternative 1 (similar to Alternative 3, Alternative 2, and the Requested No Action Alternative). The two Muni lines that would experience an average load factor at the maximum load point higher than 100 percent (1-California and 28-19th Avenue) under Alternative 1 due to the growth in cumulative ridership associated with Bay Area regional trends in population and employment would continue to do so under Alternative 4.

On Golden Gate Transit, Alternative 4 would result in less than one percent less ridership in 2020 in the AM and PM peak hours as compared to Alternative 3; approximately three percent less ridership in 2020 in the AM and PM peak hours as compared to Alternative 2; approximately five percent less ridership in 2020 in the AM peak hour and approximately ten percent less ridership in the PM peak hour as compared to Alternative 1; and two percent less ridership in 2020 in the AM peak hour and approximately three percent less ridership in the PM peak hour as compared to the Requested No Action Alternative. As shown in Table 9, GGT's average load factor for the PM peak hour in the southbound direction would improve to 97 percent, from 98 percent under Alternative 3, and 100 percent under Alternative 2 and the Requested No Action Alternative. None of the average load factors in the year 2020 under Alternative 4 would be above 100 percent.

As Table 10 indicates, PresidiGo ridership in the year 2020 under Alternative 4 would remain virtually the same when compared to Alternative 3; decrease by less than one percent in the AM peak hour when compared to Alternative 2; decrease by approximately five percent in the AM peak hour and seven percent in the PM peak hour when compared to Alternative 1, due to the lower development intensity associated with Alternative 4; and increase by approximately 11 percent in the PM peak hour when compared to the Requested No Action Alternative.

4. BICYCLE AND PEDESTRIAN CONDITIONS

The number of person trips to and from the project site expected to be made by bicycling, walking, or some other mode was calculated assuming the mode split discussed in Technical Memorandum No. 2, Travel Demand.

All of the alternatives assume improvements to the pedestrian and bicycle circulation network consistent with the Trails and Bikeways Master Plan. In the vicinity of the project site, the Trails and Bikeways Master Plan would provide a multi-use path that would extend from Battery Caulfield Road on the west side of the site around the south side of the site to connect with Park Boulevard, which is an existing multi-use path that continues under Highway 1 to the Mountain Lake area. The Master Plan would also provide an uphill bike lane on Wedemeyer Street/Battery Caulfield Road between 15th Avenue and Washington Boulevard, a pedestrian path in the Wedemeyer Street/Battery Caulfield corridor, and pedestrian paths that connect the project site to Lobos Creek and the Baker Beach Apartments.

Requested No Action Alternative – The Requested No Action Alternative would generate 204 daily pedestrian or bicycle trips. The alternative would generate 31 pedestrian or bicycle trips in the AM peak hour and 34 pedestrian or bicycle trips in the PM peak hour.

Alternative 1: PTMP Alternative – Alternative 1 would generate 1,604 daily pedestrian or bicycle trips, which is approximately 686 percent more than the Requested No Action Alternative. In the AM peak hour, Alternative 1 would generate 95 pedestrian or bicycle trips, or approximately 206 percent more than the Requested No Action Alternative. In the PM peak hour, Alternative 1 would generate 213 pedestrian or bicycle trips, or 526 percent more than the

Requested No Action Alternative. The expected level of pedestrian and bicycle activity with Alternative 1 would be accommodated within the bicycle and pedestrian network planned as part of the Presidio Trails and Bikeways Master Plan.

Alternative 2: Infill Alternative – Alternative 2 would generate 658 daily pedestrian or bicycle trips, or 59 percent fewer than Alternative 1; and approximately 222 percent more than the Requested No Action Alternative. In the AM peak hour, Alternative 2 would generate 63 pedestrian or bicycle trips, or 34 percent fewer than Alternative 1; and approximately 103 percent more than the Requested No Action Alternative. In the PM peak hour, Alternative 2 would generate 73 pedestrian or bicycle trips, or 66 percent fewer than Alternative 1; and approximately 114 percent more than the Requested No Action Alternative. Since Alternative 2 would generate fewer bicycle and pedestrian trips than Alternative 1, the expected level of pedestrian and bicycle activity with Alternative 2 could be accommodated within the bicycle and pedestrian network planned as part of the Presidio Trails and Bikeways Master Plan.

Alternative 3: No Infill Alternative – Alternative 3 would generate 460 daily pedestrian or bicycle trips, or 30 percent fewer than Alternative 2; 71 percent fewer than Alternative 1; and approximately 125 percent more than the Requested No Action Alternative. In the AM peak hour, Alternative 3 would generate 45 pedestrian or bicycle trips, or 29 percent fewer than Alternative 2; 53 percent fewer than Alternative 1; and approximately 45 percent more than the Requested No Action Alternative. In the PM peak hour, Alternative 3 would generate 53 pedestrian or bicycle trips, or 27 percent fewer than Alternative 2; 75 percent fewer than Alternative 1; and approximately 56 percent more than the Requested No Action Alternative. The expected level of pedestrian and bicycle activity with Alternative 3 would be accommodated within the bicycle and pedestrian network planned as part of the Presidio Trails and Bikeways Master Plan.

Alternative 4: Battery Caulfield Alternative – Alternative 4 would generate 410 daily pedestrian or bicycle trips, or 11 percent fewer than Alternative 3; 38 percent fewer than Alternative 2; 74 percent fewer than Alternative 1; and approximately 100 percent more than the Requested No Action Alternative. In the AM peak hour, Alternative 4 would generate 32 pedestrian or bicycle trips, or 29 percent fewer than Alternative 3; 49 percent fewer than Alternative 2; 66 percent fewer than Alternative 1; and approximately three percent more than the Requested No Action Alternative. In the PM peak hour, Alternative 4 would generate 40 pedestrian or bicycle trips, or 25 percent fewer than Alternative 3; 45 percent fewer than Alternative 2; 81 percent fewer than Alternative 1; and approximately 18 percent more than the Requested No Action Alternative. The expected level of pedestrian and bicycle activity with Alternative 4 would be accommodated within the bicycle and pedestrian network planned as part of the Presidio Trails and Bikeways Master Plan.

Park Presidio Access Variant – In combination with Alternatives 1, 2, 3 or 4, the proposed access to Park Presidio Boulevard would improve pedestrian and bicycle safety when compared to existing conditions. By providing for an intersection north of the intersection of Lake

Street/Park Presidio Boulevard, the variant would slow southbound traffic before it reaches the crosswalk and designated bicycle route on Lake Street.

5. PARKING CONDITIONS

Parking demand generated by the five land use alternatives has been estimated for the midday weekday, evening, and weekend conditions, based on the methodology used in the PTMP EIS. Parking demand consists of both long-term demand (i.e., employee and resident parking) and short-term demand (i.e., visitor parking). Consistent with the methodology outlined in the San Francisco Planning Department's Transportation Impact Analysis Guidelines for Environmental Review (October 2002), long-term parking for non-residential land uses was estimated by determining the number of employees for each land use and applying the average mode split and vehicle occupancy from the trip generation estimates for both external and internal trips. Each employee vehicle trip was assumed to require one space per day. A long-term rate of 1.13 to 1.32 spaces per dwelling unit was used for standard residential units (depending on the mix of unit types/sizes for each alternative), and a rate of 0.27 space per dwelling unit was used for all senior housing, based on the Institute of Transportation Engineers' Parking Generation Manual, Second Edition.

Like the methodology for estimating long-term parking demand, the methodology for estimating short-term parking demand is also consistent with the methodology outlined in the San Francisco Planning Department's Transportation Impact Analysis Guidelines for Environmental Review (October 2002). Short-term parking was estimated based on the total daily visitor trips and the average turnover rate. A short-term parking turnover rate of six vehicles per space per day was applied to industrial/warehousing and office uses, ten vehicles per space per day was used for cultural/educational uses, and three vehicles per space per day was used for conference uses. Table 11 presents the estimated average weekday midday, evening, and weekend parking demand for all alternatives. Of Alternatives 1, 2, 3 and 4, Alternative 4 would generate the lowest overall parking demand, followed by Alternative 3. Peak period parking demand for Alternatives 1, 2, 3, and 4 is expected to be 223 percent, 217 percent, 113 percent, and 59 percent more, respectively, than the peak period parking demand for the Requested No Action Alternative.

Requested No Action Alternative – There are currently approximately 306 parking spaces on the lower plateau of the project site. Under the Requested No Action Alternative there would continue to be 30 spaces around buildings 1450, 1818 and 1819, and 72 of the 306 spaces on the lower plateau would be removed during remediation of Landfill 10. Therefore, under the Requested No Action Alternative, 143 of the 264 total parking spaces available would be occupied during peak demand periods , leaving a surplus of 121 parking spaces (representing approximately 46% of the total parking capacity).

Table 11
Parking Supply and Demand at the PHSH site by Time of Day and Alternative

Time Period/ Supply and Demand	Number of Parking Spaces				
	Requested No Action Alt.	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Weekday Midday	143	440	266	199	144
Weekday Evening	65	417	446	297	217
Weekend	90	501	454	304	228
Peak Period Demand	143	501	454	304	228
Proposed Supply	264	547	475	330	233
Surplus / (Deficit)	121	46	21	26	5
Surplus / (Deficit) as % or Available Spaces	46%	8%	4%	8%	2%

Source: Wilbur Smith Associates - July 2004

Alternative 1: PTMP Alternative – According to the Final Plan Alternative described in the PTMP, the PHSH district was estimated to have a demand of 674 spaces, and therefore was proposed to have a parking supply of 708 spaces. The parking demand calculation assumptions for residential uses in the PTMP EIS were intended to reflect the wide range of types and sizes of residential units throughout the Presidio. The parking demand assumptions used for the calculations in the PTMP EIS have been refined for the purposes of this site-specific study, and consequently the parking demand for Alternative 1 is estimated to be 501 spaces. The parking supply of 708 parking spaces called for in the PTMP would far exceed the peak period demand, thus allowing for a reduction in this proposed parking supply to 547 spaces.

The peak period parking surplus calculated for Alternative 1 is approximately 81 percent less than the parking surplus calculated for the Requested No Action Alternative. As a percentage of supply, Alternative 1 has approximately 5% excess capacity, which is substantially less than the 46% excess capacity of the Requested No Action Alternative.

Alternative 2: Infill Alternative – There are currently approximately 306 parking spaces on the lower plateau of the project site. Alternative 2 would increase the number of spaces on the lower plateau to 475, but 91 of these spaces would be underground or under buildings, leaving 384 surface parking spaces—a 25 percent increase from the 306 surface parking spaces currently on the lower plateau. Alternative 2 is expected to have a peak period demand of 454 spaces, or about three times that of the Requested No Action Alternative and nine percent less than Alternative 1. The proposed supply of 475 spaces would accommodate the estimated demand, and allow 21 additional spaces for drivers circulating to find parking spaces during peak periods.

The peak period parking surplus calculated for Alternative 2 is approximately 16 percent less than the parking surplus calculated for Alternative 1, and approximately 83 percent less than the parking surplus calculated for the Requested No Action Alternative. As a percentage of supply, Alternative 2 has approximately 4% excess capacity, which is approximately one percent less

than the 5% excess capacity of Alternative 1; and substantially less than the 46% excess capacity of the Requested No Action Alternative.

Alternative 3: No Infill Alternative – Alternative 3 is expected to have a peak period demand of 304 spaces, or about twice that of the Requested No Action Alternative and 39 percent less than Alternative 1. The proposed supply of 330 spaces would adequately accommodate the estimated demand, and would provide about nine percent additional spaces for drivers circulating to find parking spaces.

The peak period parking surplus calculated for Alternative 3 is approximately 24 percent more than the parking surplus calculated for Alternative 2, approximately 4 percent more than the parking surplus calculated for Alternative 1, and approximately 79 percent less than the parking surplus calculated for the Requested No Action Alternative. As a percentage of supply, Alternative 3 has approximately 8% excess capacity, which is approximately four percent more than the 4% excess capacity of Alternative 2; approximately three percent more than the 5% excess capacity of Alternative 1; and substantially less than the 46% excess capacity of the Requested No Action Alternative.

Alternative 4: Battery Caulfield Alternative – Of Alternatives 1, 2, 3 and 4, Alternative 4 would generate the least overall parking demand, with a weekend demand for about 228 spaces in 2020, or approximately 59 percent more than the peak period demand expected for the Requested No Action Alternative . The proposed supply of 233 spaces would accommodate the expected demand, but would allow only about two percent additional spaces for drivers circulating trying to find parking spaces.

The peak period parking surplus calculated for Alternative 4 is approximately 81 percent less than the parking surplus calculated for Alternative 3, approximately 76 percent less than the parking surplus calculated for Alternative 2, approximately 80 percent less than the parking surplus calculated for Alternative 1, and approximately 96 percent less than the parking surplus calculated for the Requested No Action Alternative. As a percentage of supply, Alternative 4 has approximately 2% excess capacity, which is approximately six percent less than the 8% excess capacity of Alternative 3; approximately two percent less than the 4% excess capacity of Alternative 2; approximately three percent less than the 5% excess capacity of Alternative 1; and substantially less than the 46% excess capacity of the Requested No Action Alternative.

6. MITIGATION MEASURES

6.1 Potential Impacts Identified

The possible mitigation measure identified for Lake Street/14th Avenue in the PTMP EIS included signalization and restriping to provide a westbound left-turn pocket at Lake Street /14th Avenue (Mitigation Measure TR-11). The possible mitigation measure identified in the PTMP EIS for the California Street/14th Avenue intersection included installing STOP signs on California Street at the intersection and restriping to add a right-turn lane to the northbound

approach, or possibly installing a traffic signal if queues on the westbound approach were determined to extend into the adjacent intersection of Park Presidio Boulevard/California Street.

While signalization would mitigate the operation of these intersections, coordination with the San Francisco Department of Parking and Traffic following its comments on the PTMP EIS raised questions about the need for improving the minor approaches to these intersections (PTMP EIS, Volume II, Chapter 5, page 5-59). It has been determined, through subsequent analysis (Access Study at 14th/15th Avenue Gates, Presidio Trust, February 2003) , that if LOS E or F conditions occur on the minor approaches to Lake Street/14th Avenue, they could be mitigated with other measures such as RIGHT TURN ONLY restrictions for the minor approaches if the City determines that this is warranted. The minor approaches to the intersection of Lake Street/14th Avenue are expected to operate with more average delay per vehicle than the minor approaches to the intersection of California Street/14th Avenue or California Street/15th Avenue. Therefore, such measures would also likely improve the minor approaches to the intersection of California Street/14th Avenue to LOS D or better in the AM and PM peak hours, and to improve the minor approaches to the intersection of California Street/15th Avenue to LOS D or better in the PM peak hour.

As discussed earlier, the intersection of California Street/15th Avenue was not expected to operate at LOS F in the PM peak hour based on the traffic analysis for the Final Plan Alternative in the PTMP EIS, which used the 1994 HCM methodology. The California Street/15th Avenue intersection is a two-way stop-controlled intersection like California Street/14th Avenue and Lake Street/14th Avenue, and the Trust would work with the San Francisco Department of Parking and Traffic to develop acceptable improvements if desired. It is likely that alternatives to signalization, such as turn restrictions on the minor approaches similar to Lake Street/14th Avenue, would improve the operation on the minor approaches to this intersection.

The signalized intersection of California Street/Park Presidio Boulevard would operate at LOS E in the PM peak hour. This intersection is expected to operate at LOS E due to the growth in traffic volumes associated with Bay Area regional trends in population and employment. The PTMP EIS determined that this intersection would be unmitigable, and the Presidio's contribution to the total peak hour traffic volume is expected to be less than two percent.

As discussed in Section 3 Transit Service, if Muni does not add capacity to the routes, two Muni lines (1-California and 28-19th Avenue) would experience a maximum peak hour load factor higher than 100 percent under all alternatives in the year 2020 due to the growth in cumulative ridership associated with Bay Area regional trends in population and employment. In addition, GGT's average load factor for the PM peak hour in the southbound direction under Alternative 1 would be 105 percent. Mitigation measures called for in the PTMP EIS, including increased frequency on MUNI lines, PresidiGo service, and monitoring of GGT routes and coordination with GGT, would reduce the effects of these alternatives on transit service.

6.2 Mitigation Measures Identified in the PTMP EIS

The following measures are part of the PTMP EIS and would apply to all PHSH site alternatives with and without direct access to Park Presidio Boulevard, unless indicated otherwise. For measures that fall outside the Presidio, the Trust would coordinate with the City's Department of Parking and Traffic, which would have sole jurisdiction.

TR-11 *Lake Street / 14th Avenue Intersection Improvements* – Designate the 15th Avenue Gate for outbound traffic, and open the 14th Avenue Gate for inbound traffic. Alternatively, if the Park Presidio Boulevard Access Variant is implemented, designate both the 14th and 15th Avenue Gates for inbound traffic only. Prior to the operation of the minor approach(es) deteriorating to LOS E or F, implement right-turn-only restrictions for the minor approach(es) at the intersection of Lake Street/14th Avenue if the City determines that this is warranted.

TR-15 *California Street / 14th Avenue Intersection Improvements* – If desired, prior to the operations of the minor approach(es) deteriorating to LOS E or F, install STOP signs on the California Street approaches to this intersection and restripe to add a right-turn lane to the northbound approach. This improvement could require removal of some on-street parking spaces. Installing STOP signs on California Street would improve the operation of this intersection to an acceptable level of service, however queues on the westbound approach could potentially extend into the intersection of California Street/ Park Presidio Boulevard. Therefore, if queues on the westbound approach to this intersection are determined to affect the operation of California Street/ Park Presidio Boulevard, a traffic signal may be warranted at the intersection of California Street /14th Avenue. A traffic signal at this location would adequately mitigate the operation of the intersection to an acceptable level of service.[3]

TR-22 *TDM Program Monitoring* – The Trust has agreed to implement a TDM Program to reduce automobile usage by all tenants, occupants, and visitors (see Appendix D of the PTMP for a full description). The Trust would monitor implementation and effectiveness of the TDM program on an ongoing basis. If the TDM performance standards as described in the PTMP (Appendix D) are not being reached, the Trust will implement more aggressive TDM strategies or intensify components of the existing TDM program, such as requiring tenant participation in more TDM program elements, or implementing more frequent and/or extensive shuttle service.

[3] In a comment letter on the PTMP EIS, the San Francisco Department of Parking and Traffic (DPT) expressed concern about the reasonableness of signalization at this intersection. Since the average delay per vehicle on the minor approaches to the intersection of California Street/14th Avenue is expected to be less than for the minor approaches to the intersection of Lake Street/14th Avenue, the alternatives to signalization developed for the intersection of Lake Street/14th Avenue would also likely improve the operation of the minor approaches of the intersection of California Street/14th Avenue. The Trust will continue to work with the San Francisco DPT to develop an acceptable mitigation measure for this intersection. Ultimately, because this intersection is within the City and County of San Francisco's jurisdiction, implementation of the measure will be at the discretion of the City and County of San Francisco.

TR-10 and TR-25 *Transit Service Improvements and Monitoring Program* – The Trust currently monitors Muni operations and passenger loads within the Presidio. Continued monitoring of Muni service in the Presidio, and similar monitoring of GGT service at the Presidio would indicate any capacity problems. If the monitoring were to reveal insufficient capacity for northbound Presidio-generated passengers during the PM peak hour, the Trust will notify Muni and/or the Golden Gate Bridge Highway and Transportation District of the deficiencies. Transit service providers could then reduce passenger load factors through increased frequency.

TR-26 *Construction Traffic Management Plan* – During pre-construction activities, the contractor(s) of individual projects will work with the Trust to develop a construction traffic management protocol. The plan will include information on construction phases and duration, scheduling, proposed haul routes, permit parking, staging area management, visitor safety, detour routes, and pedestrian movements on adjacent routes.

6.3 Additional PHSH-related Mitigation Measure

TR-27 *California Street /* 15th *Avenue Intersection Improvements* –Prior to the operation of both minor approaches deteriorating to LOS E or F, restrict the northbound and/or southbound approach (depending on the alternative) to right turns only with signage and striping. Because this intersection is within the City and County of San Francisco's jurisdiction, the Trust will coordinate with the San Francisco Department of Parking and Traffic to ensure the City's concurrence on the mitigation measure. Ultimately, implementation of the measure will be at the discretion of the City and County of San Francisco. The Trust would coordinate with the City and County of San Francisco to determine the contribution of each party to the cost of the improvements.

TR-28 *Lake Street /* 15th *Avenue Intersection Improvements (Requested No Action Alternative Only.)* – This all-way stop-controlled intersection is expected to operate at LOS E in both the AM and PM peak hours with the Requested No Action Alternative. Implementation of the one-way couplet assumed in PTMP and under Alternatives 1, 2, 3 and 4 will improve the operation of this intersection to LOS D or better.

TR-29 *Lake Street / Funston Avenue Intersection Improvements* – This two-way stop-controlled intersection is expected to operate at LOS E in the PM peak hour with all alternatives, including the Requested No Action Alternative assuming the one-way couplet at the 14th Avenue and 15th Avenue Gates. Alternatives 1, 2, 3 and 4 are expected to contribute between 1 and 6 percent to the PM peak hour volumes at this intersection in 2020, depending on the alternative. Prior to the operation of both minor approaches deteriorating to LOS E or F, the City could restrict the northbound and/or southbound approach (depending on the alternative) to right turns only with signage and striping.

TR-30 *Lake Street / Park Presidio Boulevard Intersection Improvements (Alternative 1 Only)* – The signalized intersection of Lake Street/Park Presidio Boulevard is expected to operate at LOS E in the PM peak hour when the traffic volumes associated with Alternative 1, the PTMP

Alternative, are combined with the travel patterns created by the Park Presidio Boulevard Access Variant. This impact is attributed to the high southbound through volumes and southbound right-turn volumes. The most effective mitigation would be to add a southbound right-turn lane and maintain the three southbound through lanes. The adjacent land is outside of State and federal right of way, and lies within the jurisdiction of the San Francisco Recreation and Park Department.

PTMP mitigation measures related to parking supply and the use of the 14th/15th Avenue Gates (TR-23 and TR-11 portion) have been addressed in the definition of the project alternatives and are therefore not repeated here. Other intersection improvement measures included in the PTMP EIS fall outside the PHSH district and vicinity, and also are not repeated here. Mitigation Measure TR-9 *Bicycle and Pedestrian Amenities* will be implemented as planned improvements are funded pursuant to the adopted Presidio Trails and Bikeways Master Plan. Mitigation Measure TR-21 *Presidio-wide Parking Management*, which applies to the Crissy Field area, does not apply to the PHSH district.

APPENDICES

APPENDIX A
INTERSECTION LEVEL OF SERVICE (LOS) by Alternative

NO ACTION ALTERNATIVE

AM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	480	30	15	284	5	10	5	40	10	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	5	522	33	16	309	5	11	5	43	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	314			554			901	896	538	939	909	311
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	314			554			901	896	538	939	909	311
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			96	98	92	95	98	99
cM capacity (veh/h)	1258			1026			251	276	547	220	271	733

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	560	330	60	22
Volume Left	5	16	11	11
Volume Right	33	5	43	5
cSH	1258	1026	420	283
Volume to Capacity	0.00	0.02	0.14	0.08
Queue Length (ft)	0	1	12	6
Control Delay (s)	0.1	0.6	15.0	18.8
Lane LOS	A	A	B	C
Approach Delay (s)	0.1	0.6	15.0	18.8
Approach LOS			B	C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	42.7%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	60	576	15	25	336	48	8	73	20	52	58	37
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (veh/h)	62	600	16	26	350	50	8	76	21	54	60	39

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	678	426	105	153
Volume Left (vph)	63	26	8	54
Volume Right (vph)	16	50	21	39
Hadj (s)	0.0	-0.1	-0.1	-0.1
Departure Headway (s)	5.4	5.7	6.9	6.8
Degree Utilization, x	1.02	0.67	0.20	0.29
Capacity (veh/h)	659	615	483	498
Control Delay (s)	64.1	19.7	11.7	12.5
Approach Delay (s)	64.1	19.7	11.7	12.5
Approach LOS	F	C	B	B

Intersection Summary			
Delay	40.4		
HCM Level of Service	E		
Intersection Capacity Utilization	84.1%	ICU Level of Service	D

HCM Unsignalized Intersection Capacity Analysis — AM Peak No Action Alt

102: Lake Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	2	631	14	82	393	10	17	5	23	8	3	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (veh/h)	2	644	14	84	401	10	17	5	23	8	3	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	411			658			1230	1234	651	1255	1236	406
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	356			658			1252	1256	651	1279	1258	350
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			91			86	96	95	93	98	100
cM capacity (veh/h)	1110			939			126	144	472	114	143	638

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	660	495	46	11
Volume Left	2	84	17	8
Volume Right	14	10	23	0
cSH	1110	939	206	120
Volume to Capacity	0.00	0.09	0.22	0.09
Queue Length (ft)	0	7	21	8
Control Delay (s)	0.1	2.5	27.4	38.0
Lane LOS	A	A	D	E
Approach Delay (s)	0.1	2.5	27.4	38.0
Approach LOS			D	E

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	74.6%	ICU Level of Service	C

HCM Signalized Intersection Capacity Analysis — AM Peak No Action Alt

103: Lake Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5007			4957	
Flt Permitted	0.54	1.00	1.00	0.23	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	980	1756	1492	408	1756	1492		5007			4957	
Volume (vph)	211	433	19	108	207	121	0	2869	112	0	2375	278
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	220	451	20	112	216	126	0	2989	117	0	2474	290
Lane Group Flow (vph)	220	451	20	112	216	126	0	3106	0	0	2764	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	323	578	491	134	578	491		2886			2858	
v/s Ratio Prot		0.26			0.12			c0.62			0.56	
v/s Ratio Perm	0.22		0.01	c0.27		0.08						
v/c Ratio	0.68	0.78	0.04	0.84	0.37	0.26		1.08			0.97	
Uniform Delay, d1	24.6	25.7	19.4	26.4	21.8	20.9		18.0			17.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.72			1.00	
Incremental Delay, d2	11.1	10.0	0.2	43.2	1.8	1.3		35.1			10.7	
Delay (s)	35.7	35.8	19.5	69.5	23.6	22.1		48.0			28.0	
Level of Service	D	D	B	E	C	C		D			C	
Approach Delay (s)		35.3			34.5			48.0			28.0	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM Average Control Delay	38.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.3%	ICU Level of Service	F

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	524	20	5	405	0	30	0	35	4	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (veh/h)	1	595	23	6	460	0	34	0	40	5	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		67										
pX, platoon unblocked				0.77			0.77	0.77	0.77	0.77	0.77	
vC, conflicting volume	460			618			1082	1081	607	1120	1092	460
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460			503			1107	1105	488	1157	1120	460
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			76	100	91	96	99	100
cM capacity (veh/h)	1106			819			143	162	448	122	159	605

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	619	466	74	7
Volume Left	1	6	34	5
Volume Right	23	0	40	1
cSH	1106	819	226	147
Volume to Capacity	0.00	0.01	0.33	0.05
Queue Length (ft)	0	1	34	4
Control Delay (s)	0.0	0.2	28.4	30.7
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.2	28.4	30.7
Approach LOS			D	D

Intersection Summary			
Average Delay		2.1	
Intersection Capacity Utilization	45.7%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	74	546	22	27	358	24	21	4	17	36	18	44
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (veh/h)	79	581	23	29	381	26	22	4	18	38	19	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					528							
pX, platoon unblocked												
vC, conflicting volume	406			604			1257	1214	593	1221	1213	394
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	406			604			1257	1214	593	1221	1213	394
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			97			81	97	96	72	88	93
cM capacity (veh/h)	1163			983			117	166	510	139	166	660

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	683	435	45	104
Volume Left	79	29	22	38
Volume Right	23	26	18	47
cSH	1163	983	178	225
Volume to Capacity	0.07	0.03	0.25	0.46
Queue Length (ft)	5	2	24	56
Control Delay (s)	1.7	0.9	31.9	34.0
Lane LOS	A	A	D	D
Approach Delay (s)	1.7	0.9	31.9	34.0
Approach LOS			D	D

Intersection Summary			
Average Delay		5.2	
Intersection Capacity Utilization	80.3%	ICU Level of Service	D

HCM Unsignalized Intersection Capacity Analysis — AM Peak No Action Alt

106: California Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	13	568	18	36	371	23	24	10	40	68	17	14
Peak Hour Factor	0.91	0.91	0.25	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	14	624	72	40	408	25	26	11	44	75	19	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					228							
pX, platoon unblocked												
vC, conflicting volume	433			696			996	1201	348	890	1224	216
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	433			696			996	1201	348	890	1224	216
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			85	94	93	64	89	98
cM capacity (veh/h)	1137			909			173	176	654	205	171	794

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	326	384	243	229	81	109
Volume Left	14	0	40	0	26	75
Volume Right	0	72	0	25	44	15
cSH	1137	1700	909	1700	289	220
Volume to Capacity	0.01	0.23	0.04	0.13	0.28	0.49
Queue Length (ft)	1	0	3	0	28	62
Control Delay (s)	0.5	0.0	1.9	0.0	22.3	36.3
Lane LOS	A		A		C	E
Approach Delay (s)	0.2		1.0		22.3	36.3
Approach LOS					C	E

Intersection Summary			
Average Delay	4.6		
Intersection Capacity Utilization	41.6%	ICU Level of Service	A

HCM Signalized Intersection Capacity Analysis — AM Peak No Action Alt

107: California Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	1.00		1.00	0.96			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3320		1668	3215			4939			5009	
Flt Permitted	0.39	1.00		0.28	1.00			1.00			1.00	
Satd. Flow (perm)	678	3320		496	3215			4939			5009	
Volume (vph)	91	567	18	111	342	109	0	2781	410	0	2415	88
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	94	585	19	114	353	112	0	2867	423	0	2490	91
Lane Group Flow (vph)	94	604	0	114	465	0	0	3290	0	0	2581	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Effective Green, g (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Actuated g/C Ratio	0.31	0.31		0.31	0.31			0.60			0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	207	1016		152	983			2963			3005	
v/s Ratio Prot		0.18			0.14			c0.67			0.52	
v/s Ratio Perm	0.14			c0.23								
v/c Ratio	0.45	0.59		0.75	0.47			1.11			0.86	
Uniform Delay, d1	23.8	25.0		26.6	23.9			17.0			14.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.67	
Incremental Delay, d2	7.0	2.6		28.4	1.6			55.2			1.2	
Delay (s)	30.8	27.6		54.9	25.6			72.2			10.6	
Level of Service	C	C		D	C			E			B	
Approach Delay (s)		28.0			31.4			72.2			10.6	
Approach LOS		C			C			E			B	

Intersection Summary			
HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	E

c Critical Lane Group

NO ACTION ALTERNATIVE

PM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	304	15	20	412	10	5	0	25	10	5	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	5	327	16	22	443	11	5	0	27	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	454			343			845	842	335	864	845	448
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	454			343			845	842	335	864	845	448
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			98	100	96	96	98	99
cM capacity (veh/h)	1118			1227			274	296	712	262	295	615

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	348	475	32	22
Volume Left	5	22	5	11
Volume Right	16	11	27	5
cSH	1118	1227	562	316
Volume to Capacity	0.00	0.02	0.06	0.07
Queue Length (ft)	0	1	5	5
Control Delay (s)	0.2	0.5	11.8	17.2
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	0.5	11.8	17.2
Approach LOS			B	C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	47.4%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	60	357	9	39	398	68	7	108	19	72	112	66
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	66	392	10	43	437	75	8	119	21	79	123	73

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	468	555	147	275
Volume Left (vph)	66	43	8	79
Volume Right (vph)	10	75	21	73
Hadj (s)	0.0	-0.1	-0.1	-0.1
Departure Headway (s)	6.5	6.3	7.6	7.1
Degree Utilization, x	0.84	0.97	0.31	0.54
Capacity (veh/h)	468	561	424	474
Control Delay (s)	35.3	54.4	14.0	18.3
Approach Delay (s)	35.3	54.4	14.0	18.3
Approach LOS	E	F	B	C

Intersection Summary			
Delay	37.2		
HCM Level of Service	E		
Intersection Capacity Utilization	91.4%	ICU Level of Service	E

HCM Unsignalized Intersection Capacity Analysis — PM Peak No Action Alt

102: Lake Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	444	3	164	496	10	9	15	31	4	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	1	477	3	176	533	11	10	16	33	4	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	544			481			1373	1378	479	1414	1374	539
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	456			481			1445	1451	479	1494	1447	450
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			84			88	83	94	93	99	100
cM capacity (veh/h)	935			1092			81	93	591	62	93	514

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	482	720	59	5
Volume Left	1	176	10	4
Volume Right	3	11	33	0
cSH	935	1092	169	66
Volume to Capacity	0.00	0.16	0.35	0.08
Queue Length (ft)	0	14	37	6
Control Delay (s)	0.0	3.8	37.5	64.2
Lane LOS	A	A	E	F
Approach Delay (s)	0.0	3.8	37.5	64.2
Approach LOS			E	F

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	77.3%	ICU Level of Service	C

HCM Signalized Intersection Capacity Analysis — PM Peak No Action Alt

103: Lake Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5015			4956	
Flt Permitted	0.34	1.00	1.00	0.29	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	616	1756	1492	503	1756	1492		5015			4956	
Volume (vph)	112	395	30	104	355	190	0	2642	74	0	2657	315
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	115	407	31	107	366	196	0	2724	76	0	2739	325
Lane Group Flow (vph)	115	407	31	107	366	196	0	2800	0	0	3064	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	203	578	491	166	578	491		2891			2857	
v/s Ratio Prot		c0.23			0.21			0.56			c0.62	
v/s Ratio Perm	0.19		0.02	0.21		0.13						
v/c Ratio	0.57	0.70	0.06	0.64	0.63	0.40		0.97			1.07	
Uniform Delay, d1	23.5	24.9	19.5	24.3	24.1	22.0		17.3			18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.78			1.00	
Incremental Delay, d2	11.0	7.0	0.2	17.7	5.2	2.4		1.6			40.2	
Delay (s)	34.5	31.9	19.8	42.0	29.4	24.4		15.0			58.2	
Level of Service	C	C	B	D	C	C		B			E	
Approach Delay (s)		31.8			29.9			15.0			58.2	
Approach LOS		C			C			B			E	

Intersection Summary			
HCM Average Control Delay	36.4	HCM Level of Service	D
HCM Volume to Capacity ratio	0.94		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.5%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	444	20	15	629	5	15	0	5	5	0	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (veh/h)	6	510	23	17	723	6	17	0	6	6	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		52										
pX, platoon unblocked				0.80			0.80	0.80	0.80	0.80	0.80	
vC, conflicting volume	729			533			1299	1297	522	1299	1305	726
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	729			415			1375	1372	401	1375	1382	726
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			82	100	99	94	100	99
cM capacity (veh/h)	880			917			96	115	522	96	113	428

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	539	746	23	11
Volume Left	6	17	17	6
Volume Right	23	6	6	6
cSH	880	917	120	157
Volume to Capacity	0.01	0.02	0.19	0.07
Queue Length (ft)	0	1	17	6
Control Delay (s)	0.2	0.5	41.9	29.8
Lane LOS	A	A	E	D
Approach Delay (s)	0.2	0.5	41.9	29.8
Approach LOS			E	D

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization	63.9%	ICU Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	89	503	27	28	574	43	23	2	26	14	43	102
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (veh/h)	92	519	28	29	592	44	24	2	27	14	44	105
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					524							
pX, platoon unblocked												
vC, conflicting volume	636			546			1515	1410	532	1415	1402	614
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	636			546			1515	1410	532	1415	1402	614
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			97			54	98	95	85	64	79
cM capacity (veh/h)	957			1033			52	123	551	99	124	496

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	638	665	53	164
Volume Left	92	29	24	14
Volume Right	28	44	27	105
cSH	957	1033	100	229
Volume to Capacity	0.10	0.03	0.53	0.71
Queue Length (ft)	8	2	59	119
Control Delay (s)	2.4	0.7	75.4	52.3
Lane LOS	A	A	F	F
Approach Delay (s)	2.4	0.7	75.4	52.3
Approach LOS			F	F

Intersection Summary			
Average Delay		9.6	
Intersection Capacity Utilization	91.1%	ICU Level of Service	E

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	13	517	12	57	589	22	33	20	47	62	27	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (veh/h)	14	544	13	60	620	23	35	21	49	65	28	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					224							
pX, platoon unblocked												
vC, conflicting volume	643			557			1045	1341	278	1111	1336	322
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			557			1045	1341	278	1111	1336	322
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			76	85	93	50	80	97
cM capacity (veh/h)	951			1024			144	143	725	130	144	680

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	286	285	370	333	105	117
Volume Left	14	0	60	0	35	65
Volume Right	0	13	0	23	49	23
cSH	951	1700	1024	1700	230	159
Volume to Capacity	0.01	0.17	0.06	0.20	0.46	0.73
Queue Length (ft)	1	0	5	0	55	112
Control Delay (s)	0.6	0.0	1.9	0.0	33.2	72.9
Lane LOS	A		A		D	F
Approach Delay (s)	0.3		1.0		33.2	72.9
Approach LOS					D	F

Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	55.6%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3309		1668	3231			4969			5009	
Flt Permitted	0.25	1.00		0.36	1.00			1.00			1.00	
Satd. Flow (perm)	443	3309		625	3231			4969			5009	
Volume (vph)	82	515	29	205	567	151	0	2483	243	0	2691	101
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	542	31	216	597	159	0	2614	256	0	2833	106
Lane Group Flow (vph)	86	573	0	216	756	0	0	2870	0	0	2939	0
Confl. Peds. (#/hr)												
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	34.0	34.0		34.0	34.0			43.0			43.0	
Effective Green, g (s)	34.0	34.0		34.0	34.0			43.0			43.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.51			0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	177	1324		250	1292			2514			2534	
v/s Ratio Prot		0.17			0.23			0.58			c0.59	
v/s Ratio Perm	0.19			c0.35								
v/c Ratio	0.49	0.43		0.86	0.59			1.14			1.16	
Uniform Delay, d1	19.0	18.5		23.4	20.0			21.0			21.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.78	
Incremental Delay, d2	9.2	1.0		30.5	1.9			69.1			72.4	
Delay (s)	28.2	19.5		53.9	21.9			90.1			88.8	
Level of Service	C	B		D	C			F			F	
Approach Delay (s)		20.7			29.0			90.1			88.8	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM Average Control Delay	75.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	E
c Critical Lane Group			

ALTERNATIVE 1

AM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	486	30	15	291	5	10	5	40	10	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	5	528	33	16	316	5	11	5	43	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	322			561			915	910	545	953	923	319
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	322			561			915	910	545	953	923	319
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			96	98	92	95	98	99
cM capacity (veh/h)	1250			1020			246	271	542	215	266	726

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	566	338	60	22
Volume Left	5	16	11	11
Volume Right	33	5	43	5
cSH	1250	1020	414	277
Volume to Capacity	0.00	0.02	0.14	0.08
Queue Length (ft)	0	1	13	6
Control Delay (s)	0.1	0.6	15.2	19.1
Lane LOS	A	A	C	C
Approach Delay (s)	0.1	0.6	15.2	19.1
Approach LOS			C	C

Intersection Summary			
Average Delay		1.6	
Intersection Capacity Utilization	43.0%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	5	637	15	25	336	3	8	3	20	59	70	44
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (veh/h)	5	664	16	26	350	3	8	3	21	61	73	46

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	684	379	32	180
Volume Left (vph)	5	26	8	61
Volume Right (vph)	16	3	21	46
Hadj (s)	0.0	0.0	-0.3	-0.1
Departure Headway (s)	5.1	5.5	6.5	6.3
Degree Utilization, x	0.97	0.58	0.06	0.32
Capacity (veh/h)	701	642	498	536
Control Delay (s)	48.4	15.6	9.9	12.3
Approach Delay (s)	48.4	15.6	9.9	12.3
Approach LOS	E	C	A	B

Intersection Summary			
Delay		32.6	
HCM Level of Service		D	
Intersection Capacity Utilization	62.6%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 1 (mod)

102: Lake Street & 14th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	63	638	14	82	348	61	17	86	23	8	3	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (veh/h)	64	651	14	84	355	62	17	88	23	8	3	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	417			665			1342	1371	658	1408	1347	386
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	360			665			1375	1408	658	1448	1381	326
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			91			82	20	95	72	97	100
cM capacity (veh/h)	1102			933			98	109	468	29	113	656

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	730	501	129	11
Volume Left	64	84	17	8
Volume Right	14	62	23	0
cSH	1102	933	125	36
Volume to Capacity	0.06	0.09	1.03	0.31
Queue Length (ft)	5	7	179	25
Control Delay (s)	1.5	2.5	155.8	143.0
Lane LOS	A	A	F	F
Approach Delay (s)	1.5	2.5	155.8	143.0
Approach LOS			F	F

Intersection Summary			
Average Delay	17.5		
Intersection Capacity Utilization	84.3%	ICU Level of Service	D

HCM Signalized Intersection Capacity Analysis — AM Peak Alt 1 (mod)

103: Lake Street & Park Presidio Boulevard — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5007			4957	
Flt Permitted	0.53	1.00	1.00	0.22	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	965	1756	1492	393	1756	1492		5007			4957	
Volume (vph)	211	440	19	108	213	121	0	2869	112	0	2375	278
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	220	458	20	112	222	126	0	2989	117	0	2474	290
Lane Group Flow (vph)	220	458	20	112	222	126	0	3106	0	0	2764	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	318	578	491	129	578	491		2886			2858	
v/s Ratio Prot		0.26			0.13			c0.62			0.56	
v/s Ratio Perm	0.23		0.01	c0.29		0.08						
v/c Ratio	0.69	0.79	0.04	0.87	0.38	0.26		1.08			0.97	
Uniform Delay, d1	24.8	25.9	19.4	26.8	21.9	20.9		18.0			17.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.72			1.00	
Incremental Delay, d2	11.7	10.7	0.2	49.9	1.9	1.3		35.1			10.7	
Delay (s)	36.5	36.5	19.5	76.7	23.8	22.1		48.0			28.0	
Level of Service	D	D	B	E	C	C		D			C	
Approach Delay (s)		36.0			36.2			48.0			28.0	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	38.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.7%	ICU Level of Service	F

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 1 (mod)

104: Lake Street & Funston Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	531	20	5	411	0	30	0	35	4	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (veh/h)	1	603	23	6	467	0	34	0	40	5	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		67										
pX, platoon unblocked				0.76			0.76	0.76	0.76	0.76	0.76	
vC, conflicting volume	467			626			1097	1095	615	1135	1107	467
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	467			510			1127	1125	495	1177	1140	467
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			75	100	91	96	99	100
cM capacity (veh/h)	1100			809			138	157	441	117	153	600

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	627	473	74	7
Volume Left	1	6	34	5
Volume Right	23	0	40	1
cSH	1100	809	219	142
Volume to Capacity	0.00	0.01	0.34	0.05
Queue Length (ft)	0	1	35	4
Control Delay (s)	0.0	0.2	29.6	31.7
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.2	29.6	31.7
Approach LOS			D	D

Intersection Summary			
Average Delay		2.1	
Intersection Capacity Utilization	46.1%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 1 (mod)

105: California Street & 15th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	14	615	22	27	358	14	21	4	17	36	18	54
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (veh/h)	15	654	23	29	381	15	22	4	18	38	19	57
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					528							
pX, platoon unblocked												
vC, conflicting volume	396			678			1209	1149	666	1162	1153	388
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	396			678			1209	1149	666	1162	1153	388
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			83	98	96	76	90	91
cM capacity (veh/h)	1174			924			132	191	463	159	190	664

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	693	424	45	115
Volume Left	15	29	22	38
Volume Right	23	15	18	57
cSH	1174	924	193	268
Volume to Capacity	0.01	0.03	0.23	0.43
Queue Length (ft)	1	2	22	51
Control Delay (s)	0.3	1.0	29.1	28.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	1.0	29.1	28.1
Approach LOS			D	D

Intersection Summary			
Average Delay		4.1	
Intersection Capacity Utilization	66.9%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 1 (mod)

106: California Street & 14th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	82	568	18	36	370	24	15	21	40	68	17	14
Peak Hour Factor	0.91	0.91	0.25	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	90	624	72	40	407	26	16	23	44	75	19	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					228							
pX, platoon unblocked												
vC, conflicting volume	433			696			1148	1352	348	1047	1375	216
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	433			696			1148	1352	348	1047	1375	216
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			96			87	83	93	45	86	98
cM capacity (veh/h)	1137			909			124	133	654	136	129	794

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	402	384	243	230	84	109
Volume Left	90	0	40	0	16	75
Volume Right	0	72	0	26	44	15
cSH	1137	1700	909	1700	224	153
Volume to Capacity	0.08	0.23	0.04	0.14	0.37	0.71
Queue Length (ft)	6	0	3	0	41	105
Control Delay (s)	2.5	0.0	1.9	0.0	30.4	72.1
Lane LOS	A		A		D	F
Approach Delay (s)	1.3		1.0		30.4	72.1
Approach LOS					D	F

Intersection Summary			
Average Delay	8.2		
Intersection Capacity Utilization	58.1%	ICU Level of Service	A

HCM Signalized Intersection Capacity Analysis — AM Peak Alt 1 (mod)

107: California Street & Park Presidio Boulevard — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	1.00		1.00	0.96			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3320		1668	3215			4939			5009	
Flt Permitted	0.39	1.00		0.28	1.00			1.00			1.00	
Satd. Flow (perm)	678	3320		496	3215			4939			5009	
Volume (vph)	91	567	18	111	342	109	0	2781	410	0	2415	88
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	94	585	19	114	353	112	0	2867	423	0	2490	91
Lane Group Flow (vph)	94	604	0	114	465	0	0	3290	0	0	2581	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Effective Green, g (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Actuated g/C Ratio	0.31	0.31		0.31	0.31			0.60			0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	207	1016		152	983			2963			3005	
v/s Ratio Prot		0.18			0.14			c0.67			0.52	
v/s Ratio Perm	0.14			c0.23								
v/c Ratio	0.45	0.59		0.75	0.47			1.11			0.86	
Uniform Delay, d1	23.8	25.0		26.6	23.9			17.0			14.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.67	
Incremental Delay, d2	7.0	2.6		28.4	1.6			55.2			1.2	
Delay (s)	30.8	27.6		54.9	25.6			72.2			10.5	
Level of Service	C	C		D	C			E			B	
Approach Delay (s)		28.0			31.4			72.2			10.5	
Approach LOS		C			C			E			B	

Intersection Summary			
HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	E

c Critical Lane Group

ALTERNATIVE 1

PM PEAK HOUR

HCM Unsignalized Intersection Capacity Analysis — PM Peak Alt 1 (mod)

100: Lake Street & 17th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	324	15	20	424	10	5	0	25	10	5	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	5	348	16	22	456	11	5	0	27	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	467			365			880	877	356	898	880	461
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	467			365			880	877	356	898	880	461
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			98	100	96	96	98	99
cM capacity (veh/h)	1105			1205			259	283	692	248	282	604

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	370	488	32	22
Volume Left	5	22	5	11
Volume Right	16	11	27	5
cSH	1105	1205	541	301
Volume to Capacity	0.00	0.02	0.06	0.07
Queue Length (ft)	0	1	5	6
Control Delay (s)	0.2	0.5	12.1	17.9
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	0.5	12.1	17.9
Approach LOS			B	C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	48.4%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — PM Peak Alt 1 (mod)

101: Lake Street & 15th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	2	435	9	39	398	8	7	4	19	85	134	78
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	2	478	10	43	437	9	8	4	21	93	147	86

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	490	489	33	326
Volume Left (vph)	2	43	8	93
Volume Right (vph)	10	9	21	86
Hadj (s)	0.0	0.0	-0.3	-0.1
Departure Headway (s)	5.9	5.9	7.1	6.4
Degree Utilization, x	0.80	0.80	0.06	0.58
Capacity (veh/h)	601	595	423	531
Control Delay (s)	27.9	28.0	10.6	17.8
Approach Delay (s)	27.9	28.0	10.6	17.8
Approach LOS	D	D	B	C

Intersection Summary			
Delay	25.0		
HCM Level of Service	D		
Intersection Capacity Utilization	86.6%	ICU Level of Service	D

HCM Unsignalized Intersection Capacity Analysis — PM Peak Alt 1 (mod)
102: Lake Street & 14th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	79	457	3	164	436	90	9	158	31	4	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	85	491	3	176	469	97	10	170	33	4	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.83						0.83	0.83		0.83	0.83	0.83
vC, conflicting volume	566			495			1533	1581	493	1651	1534	517
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	477			495			1642	1699	493	1783	1643	419
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			84			82	0	94	0	98	100
cM capacity (veh/h)	910			1079			54	59	580	0	64	531

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	580	742	213	5
Volume Left	85	176	10	4
Volume Right	3	97	33	0
cSH	910	1079	68	0
Volume to Capacity	0.09	0.16	3.13	Err
Queue Length (ft)	8	15	Err	Err
Control Delay (s)	2.4	3.8	Err	Err
Lane LOS	A	A	F	F
Approach Delay (s)	2.4	3.8	Err	Err
Approach LOS			F	F

Intersection Summary			
Average Delay		Err	
Intersection Capacity Utilization	94.1%	ICU Level of Service	E

HCM Signalized Intersection Capacity Analysis — PM Peak Alt 1 (mod)
103: Lake Street & Park Presidio Boulevard — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5015			4956	
Flt Permitted	0.31	1.00	1.00	0.27	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	567	1756	1492	473	1756	1492		5015			4956	
Volume (vph)	112	408	30	104	375	190	0	2642	74	0	2657	315
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	115	421	31	107	387	196	0	2724	76	0	2739	325
Lane Group Flow (vph)	115	421	31	107	387	196	0	2800	0	0	3064	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	187	578	491	156	578	491		2891			2857	
v/s Ratio Prot		c0.24			0.22			0.56			c0.62	
v/s Ratio Perm	0.20		0.02	0.23		0.13						
v/c Ratio	0.61	0.73	0.06	0.69	0.67	0.40		0.97			1.07	
Uniform Delay, d1	24.0	25.1	19.5	24.7	24.5	22.0		17.3			18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.78			1.00	
Incremental Delay, d2	14.2	7.8	0.2	21.8	6.1	2.4		1.6			40.2	
Delay (s)	38.2	33.0	19.8	46.5	30.6	24.4		15.0			58.2	
Level of Service	D	C	B	D	C	C		B			E	
Approach Delay (s)		33.3			31.3			15.0			58.2	
Approach LOS		C			C			B			E	

Intersection Summary			
HCM Average Control Delay	36.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	E

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis — PM Peak Alt 1 (mod)

104: Lake Street & Funston Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	457	20	15	649	5	15	0	5	5	0	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (veh/h)	6	525	23	17	746	6	17	0	6	6	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		52										
pX, platoon unblocked				0.79			0.79	0.79	0.79	0.79	0.79	
vC, conflicting volume	752			548			1337	1334	537	1337	1343	749
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	752			427			1428	1424	413	1428	1435	749
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			80	100	99	93	100	99
cM capacity (veh/h)	862			897			87	105	508	87	104	415

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	554	769	23	11
Volume Left	6	17	17	6
Volume Right	23	6	6	6
cSH	862	897	110	144
Volume to Capacity	0.01	0.02	0.21	0.08
Queue Length (ft)	1	1	19	6
Control Delay (s)	0.2	0.5	46.4	32.2
Lane LOS	A	A	E	D
Approach Delay (s)	0.2	0.5	46.4	32.2
Approach LOS			E	D

Intersection Summary			
Average Delay		1.4	
Intersection Capacity Utilization	65.6%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — PM Peak Alt 1 (mod)

105: California Street & 15th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	7	618	27	28	574	21	23	2	26	14	44	123
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (veh/h)	7	637	28	29	592	22	24	2	27	14	45	127
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					524							
pX, platoon unblocked												
vC, conflicting volume	613			665			1475	1337	651	1354	1340	603
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	613			665			1475	1337	651	1354	1340	603
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			60	99	94	88	69	75
cM capacity (veh/h)	976			934			59	149	472	116	148	503

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	672	642	53	187
Volume Left	7	29	24	14
Volume Right	28	22	27	127
cSH	976	934	111	273
Volume to Capacity	0.01	0.03	0.48	0.68
Queue Length (ft)	1	2	53	114
Control Delay (s)	0.2	0.8	64.1	42.4
Lane LOS	A	A	F	E
Approach Delay (s)	0.2	0.8	64.1	42.4
Approach LOS			F	E

Intersection Summary			
Average Delay		7.7	
Intersection Capacity Utilization	82.6%	ICU Level of Service	D

HCM Unsignalized Intersection Capacity Analysis
106: California Street & 14th Avenue

PM Peak Alt 1 (mod)
7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	128	517	12	57	589	22	11	48	47	62	27	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (veh/h)	135	544	13	60	620	23	12	51	49	65	28	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					224							
pX, platoon unblocked												
vC, conflicting volume	643			557			1287	1583	278	1368	1578	322
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			557			1287	1583	278	1368	1578	322
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			94			85	43	93	0	68	97
cM capacity (veh/h)	951			1024			77	89	725	48	89	680

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	407	285	370	333	112	117
Volume Left	135	0	60	0	12	65
Volume Right	0	13	0	23	49	23
cSH	951	1700	1024	1700	142	68
Volume to Capacity	0.14	0.17	0.06	0.20	0.79	1.72
Queue Length (ft)	12	0	5	0	122	259
Control Delay (s)	4.2	0.0	1.9	0.0	89.0	479.7
Lane LOS	A		A		F	F
Approach Delay (s)	2.5		1.0		89.0	479.7
Approach LOS					F	F

Intersection Summary			
Average Delay	42.1		
Intersection Capacity Utilization	62.2%	ICU Level of Service	B

HCM Signalized Intersection Capacity Analysis
107: California Street & Park Presidio Boulevard

PM Peak Alt 1 (mod)
7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3309		1668	3231			4969			5009	
Flt Permitted	0.25	1.00		0.36	1.00			1.00			1.00	
Satd. Flow (perm)	443	3309		625	3231			4969			5009	
Volume (vph)	82	515	29	205	567	151	0	2483	243	0	2691	101
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	542	31	216	597	159	0	2614	256	0	2833	106
Lane Group Flow (vph)	86	573	0	216	756	0	0	2870	0	0	2939	0
Confl. Peds. (#/hr)												
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	34.0	34.0		34.0	34.0			43.0			43.0	
Effective Green, g (s)	34.0	34.0		34.0	34.0			43.0			43.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.51			0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	177	1324		250	1292			2514			2534	
v/s Ratio Prot		0.17			0.23			0.58			c0.59	
v/s Ratio Perm	0.19			c0.35								
v/c Ratio	0.49	0.43		0.86	0.59			1.14			1.16	
Uniform Delay, d1	19.0	18.5		23.4	20.0			21.0			21.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.78	
Incremental Delay, d2	9.2	1.0		30.5	1.9			69.1			72.4	
Delay (s)	28.2	19.5		53.9	21.9			90.1			88.8	
Level of Service	C	B		D	C			F			F	
Approach Delay (s)		20.7			29.0			90.1			88.8	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM Average Control Delay	75.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	E
c Critical Lane Group			

ALTERNATIVE 2

AM PEAK HOUR

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 2

100: Lake Street & 17th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	469	30	15	290	5	10	5	40	10	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	5	510	33	16	315	5	11	5	43	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	321			542			896	890	526	934	904	318
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	321			542			896	890	526	934	904	318
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			96	98	92	95	98	99
cM capacity (veh/h)	1251			1037			254	278	556	222	273	727

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	548	337	60	22
Volume Left	5	16	11	11
Volume Right	33	5	43	5
cSH	1251	1037	425	285
Volume to Capacity	0.00	0.02	0.14	0.08
Queue Length (ft)	0	1	12	6
Control Delay (s)	0.1	0.6	14.9	18.7
Lane LOS	A	A	B	C
Approach Delay (s)	0.1	0.6	14.9	18.7
Approach LOS			B	C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	42.0%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 2

101: Lake Street & 15th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	5	620	15	25	336	3	8	3	20	58	68	43
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (veh/h)	5	646	16	26	350	3	8	3	21	60	71	45

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	667	379	32	176
Volume Left (vph)	5	26	8	60
Volume Right (vph)	16	3	21	45
Hadj (s)	0.0	0.0	-0.3	-0.1
Departure Headway (s)	5.1	5.4	6.5	6.3
Degree Utilization, x	0.94	0.57	0.06	0.31
Capacity (veh/h)	703	643	500	535
Control Delay (s)	42.4	15.4	9.9	12.1
Approach Delay (s)	42.4	15.4	9.9	12.1
Approach LOS	E	C	A	B

Intersection Summary			
Delay	29.1		
HCM Level of Service	D		
Intersection Capacity Utilization	61.4%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 2

102: Lake Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	46	637	14	82	348	44	17	55	23	8	3	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (veh/h)	47	650	14	84	355	45	17	56	23	8	3	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	400			664			1297	1318	657	1347	1303	378
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	348			664			1323	1346	657	1377	1329	324
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			91			84	54	95	87	98	100
cM capacity (veh/h)	1125			934			110	123	468	63	126	665

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	711	484	97	11
Volume Left	47	84	17	8
Volume Right	14	45	23	0
cSH	1125	934	146	73
Volume to Capacity	0.04	0.09	0.67	0.15
Queue Length (ft)	3	7	93	13
Control Delay (s)	1.1	2.5	68.8	63.1
Lane LOS	A	A	F	F
Approach Delay (s)	1.1	2.5	68.8	63.1
Approach LOS			F	F

Intersection Summary			
Average Delay	7.2		
Intersection Capacity Utilization	79.9%	ICU Level of Service	C

HCM Signalized Intersection Capacity Analysis — AM Peak Alt 2

103: Lake Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5007			4957	
Flt Permitted	0.56	1.00	1.00	0.22	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	1011	1756	1492	395	1756	1492		5007			4957	
Volume (vph)	211	439	19	108	196	121	0	2869	112	0	2375	278
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	220	457	20	112	204	126	0	2989	117	0	2474	290
Lane Group Flow (vph)	220	457	20	112	204	126	0	3106	0	0	2764	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	333	578	491	130	578	491		2886			2858	
v/s Ratio Prot		0.26			0.12			c0.62			0.56	
v/s Ratio Perm	0.22		0.01	c0.28		0.08						
v/c Ratio	0.66	0.79	0.04	0.86	0.35	0.26		1.08			0.97	
Uniform Delay, d1	24.4	25.8	19.4	26.7	21.6	20.9		18.0			17.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.72			1.00	
Incremental Delay, d2	9.9	10.6	0.2	48.5	1.7	1.3		35.1			10.7	
Delay (s)	34.3	36.4	19.5	75.1	23.3	22.1		48.0			28.0	
Level of Service	C	D	B	E	C	C		D			C	
Approach Delay (s)		35.3			36.1			48.0			28.0	
Approach LOS		D			D			D			C	

Intersection Summary			
HCM Average Control Delay	38.1	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.6%	ICU Level of Service	F

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis
104: Lake Street & Funston Avenue

AM Peak Alt 2
7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	530	20	5	394	0	30	0	35	4	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (veh/h)	1	602	23	6	448	0	34	0	40	5	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		67										
pX, platoon unblocked				0.76			0.76	0.76	0.76	0.76	0.76	
vC, conflicting volume	448			625			1077	1075	614	1115	1086	448
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	448			509			1100	1098	494	1150	1113	448
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			76	100	91	96	99	100
cM capacity (veh/h)	1118			810			144	163	442	122	159	615

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	626	453	74	7
Volume Left	1	6	34	5
Volume Right	23	0	40	1
cSH	1118	810	226	148
Volume to Capacity	0.00	0.01	0.33	0.05
Queue Length (ft)	0	1	34	4
Control Delay (s)	0.0	0.2	28.4	30.6
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.2	28.4	30.6
Approach LOS			D	D

Intersection Summary			
Average Delay		2.1	
Intersection Capacity Utilization	46.1%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis
105: California Street & 15th Avenue

AM Peak Alt 2
7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	14	589	22	27	358	14	21	4	17	36	18	53
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (veh/h)	15	627	23	29	381	15	22	4	18	38	19	56
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					528							
pX, platoon unblocked												
vC, conflicting volume	396			650			1180	1121	638	1134	1126	388
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	396			650			1180	1121	638	1134	1126	388
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			84	98	96	77	90	92
cM capacity (veh/h)	1174			946			138	199	480	166	198	664

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	665	424	45	114
Volume Left	15	29	22	38
Volume Right	23	15	18	56
cSH	1174	946	203	276
Volume to Capacity	0.01	0.03	0.22	0.41
Queue Length (ft)	1	2	20	48
Control Delay (s)	0.3	0.9	27.7	26.9
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.9	27.7	26.9
Approach LOS			D	D

Intersection Summary			
Average Delay		3.9	
Intersection Capacity Utilization	64.8%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 2

106: California Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	56	568	18	36	370	24	15	16	40	68	17	14
Peak Hour Factor	0.91	0.91	0.25	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	62	624	72	40	407	26	16	18	44	75	19	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					228							
pX, platoon unblocked												
vC, conflicting volume	433			696			1090	1295	348	987	1318	216
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	433			696			1090	1295	348	987	1318	216
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			96			88	88	93	54	87	98
cM capacity (veh/h)	1137			909			141	148	654	161	144	794

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	374	384	243	230	78	109
Volume Left	62	0	40	0	16	75
Volume Right	0	72	0	26	44	15
cSH	1137	1700	909	1700	258	177
Volume to Capacity	0.05	0.23	0.04	0.14	0.30	0.61
Queue Length (ft)	4	0	3	0	31	85
Control Delay (s)	1.8	0.0	1.9	0.0	24.9	53.0
Lane LOS	A		A		C	F
Approach Delay (s)	0.9		1.0		24.9	53.0
Approach LOS					C	F

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	57.3%	ICU Level of Service	A

HCM Signalized Intersection Capacity Analysis — AM Peak Alt 2

107: California Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	1.00		1.00	0.96			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3320		1668	3215			4939			5009	
Flt Permitted	0.39	1.00		0.28	1.00			1.00			1.00	
Satd. Flow (perm)	678	3320		496	3215			4939			5009	
Volume (vph)	91	567	18	111	342	109	0	2781	410	0	2415	88
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	94	585	19	114	353	112	0	2867	423	0	2490	91
Lane Group Flow (vph)	94	604	0	114	465	0	0	3290	0	0	2581	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Effective Green, g (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Actuated g/C Ratio	0.31	0.31		0.31	0.31			0.60			0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	207	1016		152	983			2963			3005	
v/s Ratio Prot		0.18			0.14			c0.67			0.52	
v/s Ratio Perm	0.14			c0.23								
v/c Ratio	0.45	0.59		0.75	0.47			1.11			0.86	
Uniform Delay, d1	23.8	25.0		26.6	23.9			17.0			14.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.67	
Incremental Delay, d2	7.0	2.6		28.4	1.6			55.2			1.2	
Delay (s)	30.8	27.6		54.9	25.6			72.2			10.5	
Level of Service	C	C		D	C			E			B	
Approach Delay (s)		28.0			31.4			72.2			10.5	
Approach LOS		C			C			E			B	

Intersection Summary			
HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	E

c Critical Lane Group

ALTERNATIVE 2

PM PEAK HOUR

HCM Unsignalized Intersection Capacity Analysis — PM Peak Alt 2

100: Lake Street & 17th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	308	15	20	402	10	5	0	25	10	5	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	5	331	16	22	432	11	5	0	27	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	443			347			839	836	339	858	839	438
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	443			347			839	836	339	858	839	438
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			98	100	96	96	98	99
cM capacity (veh/h)	1128			1223			277	299	708	264	298	623

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	353	465	32	22
Volume Left	5	22	5	11
Volume Right	16	11	27	5
cSH	1128	1223	562	319
Volume to Capacity	0.00	0.02	0.06	0.07
Queue Length (ft)	0	1	5	5
Control Delay (s)	0.2	0.6	11.8	17.1
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	0.6	11.8	17.1
Approach LOS			B	C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	46.5%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — PM Peak Alt 2

101: Lake Street & 15th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	2	419	9	39	398	8	7	4	19	61	94	56
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	2	460	10	43	437	9	8	4	21	67	103	62

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	473	489	33	232
Volume Left (vph)	2	43	8	67
Volume Right (vph)	10	9	21	62
Hadj (s)	0.0	0.0	-0.3	-0.1
Departure Headway (s)	5.4	5.4	6.5	6.2
Degree Utilization, x	0.71	0.73	0.06	0.40
Capacity (veh/h)	647	642	455	534
Control Delay (s)	20.4	21.7	9.9	13.1
Approach Delay (s)	20.4	21.7	9.9	13.1
Approach LOS	C	C	A	B

Intersection Summary			
Delay	19.2		
HCM Level of Service	C		
Intersection Capacity Utilization	80.4%	ICU Level of Service	D

HCM Unsignalized Intersection Capacity Analysis
102: Lake Street & 14th Avenue

PM Peak Alt 2
7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	63	433	3	164	436	74	9	127	31	4	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	68	466	3	176	469	80	10	137	33	4	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	548			469			1465	1504	467	1566	1466	509
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	460			469			1555	1602	467	1676	1556	413
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			84			85	0	94	0	99	100
cM capacity (veh/h)	930			1103			64	70	600	0	74	539

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	537	725	180	5
Volume Left	68	176	10	4
Volume Right	3	80	33	0
cSH	930	1103	83	0
Volume to Capacity	0.07	0.16	2.17	Err
Queue Length (ft)	6	14	406	Err
Control Delay (s)	2.0	3.7	645.7	Err
Lane LOS	A	A	F	F
Approach Delay (s)	2.0	3.7	645.7	Err
Approach LOS			F	F

Intersection Summary			
Average Delay		Err	
Intersection Capacity Utilization	88.7%	ICU Level of Service	D

HCM Signalized Intersection Capacity Analysis
103: Lake Street & Park Presidio Boulevard

PM Peak Alt 2
7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5015			4956	
Flt Permitted	0.33	1.00	1.00	0.30	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	606	1756	1492	528	1756	1492		5015			4956	
Volume (vph)	112	384	30	104	359	190	0	2642	74	0	2657	315
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	115	396	31	107	370	196	0	2724	76	0	2739	325
Lane Group Flow (vph)	115	396	31	107	370	196	0	2800	0	0	3064	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	200	578	491	174	578	491		2891			2857	
v/s Ratio Prot		c0.23			0.21			0.56			c0.62	
v/s Ratio Perm	0.19		0.02	0.20		0.13						
v/c Ratio	0.57	0.69	0.06	0.61	0.64	0.40		0.97			1.07	
Uniform Delay, d1	23.6	24.7	19.5	24.0	24.2	22.0		17.3			18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.78			1.00	
Incremental Delay, d2	11.5	6.5	0.2	15.2	5.4	2.4		1.6			40.2	
Delay (s)	35.1	31.2	19.8	39.2	29.6	24.4		15.0			58.2	
Level of Service	D	C	B	D	C	C		B			E	
Approach Delay (s)		31.3			29.6			15.0			58.2	
Approach LOS		C			C			B			E	

Intersection Summary			
HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	96.9%	ICU Level of Service	E

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis — PM Peak Alt 2

104: Lake Street & Funston Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	433	20	15	633	5	15	0	5	5	0	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (veh/h)	6	498	23	17	728	6	17	0	6	6	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		67										
pX, platoon unblocked				0.81			0.81	0.81	0.81	0.81	0.81	
vC, conflicting volume	733			521			1291	1289	509	1291	1297	730
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	733			405			1362	1358	390	1362	1369	730
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			83	100	99	94	100	99
cM capacity (veh/h)	876			934			99	118	533	99	116	425

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	526	751	23	11
Volume Left	6	17	17	6
Volume Right	23	6	6	6
cSH	876	934	124	160
Volume to Capacity	0.01	0.02	0.19	0.07
Queue Length (ft)	0	1	16	6
Control Delay (s)	0.2	0.5	40.6	29.2
Lane LOS	A	A	E	D
Approach Delay (s)	0.2	0.5	40.6	29.2
Approach LOS			E	D

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization	64.2%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — PM Peak Alt 2

105: California Street & 15th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	7	591	27	28	574	21	23	2	26	14	41	86
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (veh/h)	7	609	28	29	592	22	24	2	27	14	42	89
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					524							
pX, platoon unblocked												
vC, conflicting volume	613			637			1408	1309	623	1326	1312	603
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	613			637			1408	1309	623	1326	1312	603
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			68	99	95	88	73	82
cM capacity (veh/h)	976			956			74	155	490	122	154	503

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	644	642	53	145
Volume Left	7	29	24	14
Volume Right	28	22	27	89
cSH	976	956	136	255
Volume to Capacity	0.01	0.03	0.39	0.57
Queue Length (ft)	1	2	41	80
Control Delay (s)	0.2	0.8	47.4	36.2
Lane LOS	A	A	E	E
Approach Delay (s)	0.2	0.8	47.4	36.2
Approach LOS			E	E

Intersection Summary			
Average Delay		5.7	
Intersection Capacity Utilization	79.3%	ICU Level of Service	C

HCM Unsignalized Intersection Capacity Analysis — PM Peak Alt 2

106: California Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	101	517	12	57	589	22	11	43	47	62	27	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (veh/h)	106	544	13	60	620	23	12	45	49	65	28	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					224							
pX, platoon unblocked												
vC, conflicting volume	643			557			1231	1526	278	1308	1521	322
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			557			1231	1526	278	1308	1521	322
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	89			94			87	54	93	0	72	97
cM capacity (veh/h)	951			1024			90	99	725	63	100	680

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	378	285	370	333	106	117
Volume Left	106	0	60	0	12	65
Volume Right	0	13	0	23	49	23
cSH	951	1700	1024	1700	163	86
Volume to Capacity	0.11	0.17	0.06	0.20	0.65	1.35
Queue Length (ft)	9	0	5	0	92	220
Control Delay (s)	3.5	0.0	1.9	0.0	61.1	303.8
Lane LOS	A		A		F	F
Approach Delay (s)	2.0		1.0		61.1	303.8
Approach LOS					F	F

Intersection Summary			
Average Delay	27.7		
Intersection Capacity Utilization	61.3%	ICU Level of Service	B

HCM Signalized Intersection Capacity Analysis — PM Peak Alt 2

107: California Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3309		1668	3231			4969			5009	
Flt Permitted	0.25	1.00		0.36	1.00			1.00			1.00	
Satd. Flow (perm)	443	3309		625	3231			4969			5009	
Volume (vph)	82	515	29	205	567	151	0	2483	243	0	2691	101
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	542	31	216	597	159	0	2614	256	0	2833	106
Lane Group Flow (vph)	86	573	0	216	756	0	0	2870	0	0	2939	0
Confl. Peds. (#/hr)												
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	34.0	34.0		34.0	34.0			43.0			43.0	
Effective Green, g (s)	34.0	34.0		34.0	34.0			43.0			43.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.51			0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	177	1324		250	1292			2514			2534	
v/s Ratio Prot		0.17			0.23			0.58			c0.59	
v/s Ratio Perm	0.19			c0.35								
v/c Ratio	0.49	0.43		0.86	0.59			1.14			1.16	
Uniform Delay, d1	19.0	18.5		23.4	20.0			21.0			21.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.78	
Incremental Delay, d2	9.2	1.0		30.5	1.9			69.1			72.4	
Delay (s)	28.2	19.5		53.9	21.9			90.1			88.8	
Level of Service	C	B		D	C			F			F	
Approach Delay (s)		20.7			29.0			90.1			88.8	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM Average Control Delay	75.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	E
c Critical Lane Group			

ALTERNATIVE 3

AM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	467	30	15	285	5	10	5	40	10	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	5	508	33	16	310	5	11	5	43	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	315			540			888	883	524	926	896	312
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	315			540			888	883	524	926	896	312
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			96	98	92	95	98	99
cM capacity (veh/h)	1256			1038			257	281	557	225	276	732

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	546	332	60	22
Volume Left	5	16	11	11
Volume Right	33	5	43	5
cSH	1256	1038	428	288
Volume to Capacity	0.00	0.02	0.14	0.08
Queue Length (ft)	0	1	12	6
Control Delay (s)	0.1	0.6	14.8	18.5
Lane LOS	A	A	B	C
Approach Delay (s)	0.1	0.6	14.8	18.5
Approach LOS			B	C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	5	618	15	25	336	3	8	3	20	53	59	38
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (veh/h)	5	644	16	26	350	3	8	3	21	55	61	40

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	665	379	32	156
Volume Left (vph)	5	26	8	55
Volume Right (vph)	16	3	21	40
Hadj (s)	0.0	0.0	-0.3	-0.1
Departure Headway (s)	5.0	5.3	6.4	6.3
Degree Utilization, x	0.92	0.56	0.06	0.27
Capacity (veh/h)	713	643	508	535
Control Delay (s)	38.8	14.9	9.7	11.6
Approach Delay (s)	38.8	14.9	9.7	11.6
Approach LOS	E	B	A	B

Intersection Summary			
Delay	27.2		
HCM Level of Service	D		
Intersection Capacity Utilization	60.2%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 3

102: Lake Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	44	632	14	82	348	42	17	52	23	8	3	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (veh/h)	45	645	14	84	355	43	17	53	23	8	3	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	398			659			1287	1307	652	1336	1293	377
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	347			659			1312	1333	652	1364	1318	324
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			91			85	58	95	88	98	100
cM capacity (veh/h)	1128			938			112	125	471	67	128	666

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	704	482	94	11
Volume Left	45	84	17	8
Volume Right	14	43	23	0
cSH	1128	938	149	77
Volume to Capacity	0.04	0.09	0.63	0.15
Queue Length (ft)	3	7	85	12
Control Delay (s)	1.0	2.5	62.9	59.3
Lane LOS	A	A	F	F
Approach Delay (s)	1.0	2.5	62.9	59.3
Approach LOS			F	F

Intersection Summary			
Average Delay		6.6	
Intersection Capacity Utilization	79.1%	ICU Level of Service	C

HCM Signalized Intersection Capacity Analysis — AM Peak Alt 3

103: Lake Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5007			4957	
Flt Permitted	0.56	1.00	1.00	0.23	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	1016	1756	1492	406	1756	1492		5007			4957	
Volume (vph)	211	434	19	108	194	121	0	2869	112	0	2375	278
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	220	452	20	112	202	126	0	2989	117	0	2474	290
Lane Group Flow (vph)	220	452	20	112	202	126	0	3106	0	0	2764	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	335	578	491	134	578	491		2886			2858	
v/s Ratio Prot		0.26			0.12			c0.62			0.56	
v/s Ratio Perm	0.22		0.01	c0.28		0.08						
v/c Ratio	0.66	0.78	0.04	0.84	0.35	0.26		1.08			0.97	
Uniform Delay, d1	24.4	25.7	19.4	26.4	21.6	20.9		18.0			17.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.72			1.00	
Incremental Delay, d2	9.7	10.1	0.2	43.2	1.7	1.3		35.1			10.7	
Delay (s)	34.1	35.9	19.5	69.5	23.3	22.1		48.0			28.0	
Level of Service	C	D	B	E	C	C		D			C	
Approach Delay (s)		34.8			34.7			48.0			28.0	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.4%	ICU Level of Service	F

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 3

104: Lake Street & Funston Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	525	20	5	392	0	30	0	35	4	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (veh/h)	1	597	23	6	445	0	34	0	40	5	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		66										
pX, platoon unblocked				0.77			0.77	0.77	0.77	0.77	0.77	
vC, conflicting volume	445			619			1069	1067	608	1107	1078	445
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	445			504			1090	1087	489	1139	1102	445
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			77	100	91	96	99	100
cM capacity (veh/h)	1120			818			147	166	447	125	162	617

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	620	451	74	7
Volume Left	1	6	34	5
Volume Right	23	0	40	1
cSH	1120	818	231	151
Volume to Capacity	0.00	0.01	0.32	0.05
Queue Length (ft)	0	1	33	4
Control Delay (s)	0.0	0.2	27.8	30.0
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.2	27.8	30.0
Approach LOS			D	D

Intersection Summary			
Average Delay		2.1	
Intersection Capacity Utilization	45.8%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 3

105: California Street & 15th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	14	586	22	27	358	14	21	4	17	36	18	44
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (veh/h)	15	623	23	29	381	15	22	4	18	38	19	47
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					528							
pX, platoon unblocked												
vC, conflicting volume	396			647			1167	1118	635	1131	1122	388
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	396			647			1167	1118	635	1131	1122	388
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			84	98	96	77	90	93
cM capacity (veh/h)	1174			948			143	200	482	167	199	664

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	662	424	45	104
Volume Left	15	29	22	38
Volume Right	23	15	18	47
cSH	1174	948	208	263
Volume to Capacity	0.01	0.03	0.21	0.40
Queue Length (ft)	1	2	20	45
Control Delay (s)	0.3	0.9	26.9	27.4
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.9	26.9	27.4
Approach LOS			D	D

Intersection Summary			
Average Delay		3.8	
Intersection Capacity Utilization	62.9%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 3

106: California Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	53	568	18	36	370	24	15	16	40	68	17	14
Peak Hour Factor	0.91	0.91	0.25	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	58	624	72	40	407	26	16	18	44	75	19	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					228							
pX, platoon unblocked												
vC, conflicting volume	433			696			1084	1289	348	980	1312	216
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	433			696			1084	1289	348	980	1312	216
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			96			88	88	93	54	87	98
cM capacity (veh/h)	1137			909			143	150	654	164	145	794

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	370	384	243	230	78	109
Volume Left	58	0	40	0	16	75
Volume Right	0	72	0	26	44	15
cSH	1137	1700	909	1700	260	180
Volume to Capacity	0.05	0.23	0.04	0.14	0.30	0.60
Queue Length (ft)	4	0	3	0	30	83
Control Delay (s)	1.8	0.0	1.9	0.0	24.6	51.7
Lane LOS	A		A		C	F
Approach Delay (s)	0.9		1.0		24.6	51.7
Approach LOS					C	F

Intersection Summary			
Average Delay	6.1		
Intersection Capacity Utilization	57.2%	ICU Level of Service	A

HCM Signalized Intersection Capacity Analysis — AM Peak Alt 3

107: California Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	1.00		1.00	0.96			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3320		1668	3215			4939			5009	
Flt Permitted	0.39	1.00		0.28	1.00			1.00			1.00	
Satd. Flow (perm)	678	3320		496	3215			4939			5009	
Volume (vph)	91	567	18	111	342	109	0	2781	410	0	2415	88
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	94	585	19	114	353	112	0	2867	423	0	2490	91
Lane Group Flow (vph)	94	604	0	114	465	0	0	3290	0	0	2581	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Effective Green, g (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Actuated g/C Ratio	0.31	0.31		0.31	0.31			0.60			0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	207	1016		152	983			2963			3005	
v/s Ratio Prot		0.18			0.14			c0.67			0.52	
v/s Ratio Perm	0.14			c0.23								
v/c Ratio	0.45	0.59		0.75	0.47			1.11			0.86	
Uniform Delay, d1	23.8	25.0		26.6	23.9			17.0			14.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.67	
Incremental Delay, d2	7.0	2.6		28.4	1.6			55.2			1.2	
Delay (s)	30.8	27.6		54.9	25.6			72.2			10.6	
Level of Service	C	C		D	C			E			B	
Approach Delay (s)		28.0			31.4			72.2			10.6	
Approach LOS		C			C			E			B	

Intersection Summary			
HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	E

c Critical Lane Group

ALTERNATIVE 3

PM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	303	15	20	400	10	5	0	25	10	5	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	5	326	16	22	430	11	5	0	27	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	441			342			831	828	334	850	831	435
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	441			342			831	828	334	850	831	435
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			98	100	96	96	98	99
cM capacity (veh/h)	1130			1228			280	302	713	267	301	625

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	347	462	32	22
Volume Left	5	22	5	11
Volume Right	16	11	27	5
cSH	1130	1228	567	322
Volume to Capacity	0.00	0.02	0.06	0.07
Queue Length (ft)	0	1	5	5
Control Delay (s)	0.2	0.6	11.7	17.0
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	0.6	11.7	17.0
Approach LOS			B	C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	2	414	9	39	398	8	7	4	19	59	91	54
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	2	455	10	43	437	9	8	4	21	65	100	59

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	467	489	33	224
Volume Left (vph)	2	43	8	65
Volume Right (vph)	10	9	21	59
Hadj (s)	0.0	0.0	-0.3	-0.1
Departure Headway (s)	5.4	5.3	6.4	6.1
Degree Utilization, x	0.70	0.73	0.06	0.38
Capacity (veh/h)	650	646	459	535
Control Delay (s)	19.7	21.2	9.8	12.9
Approach Delay (s)	19.7	21.2	9.8	12.9
Approach LOS	C	C	A	B

Intersection Summary			
Delay	18.8		
HCM Level of Service	C		
Intersection Capacity Utilization	79.7%	ICU Level of Service	C

HCM Unsignalized Intersection Capacity Analysis — PM Peak Alt 3

102: Lake Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	58	431	3	164	436	69	9	117	31	4	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	62	463	3	176	469	74	10	126	33	4	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	543			467			1449	1485	465	1545	1450	506
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	455			467			1536	1579	465	1650	1537	411
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			84			85	0	94	0	99	100
cM capacity (veh/h)	936			1105			66	73	602	0	77	541

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	529	719	169	5
Volume Left	62	176	10	4
Volume Right	3	74	33	0
cSH	936	1105	87	0
Volume to Capacity	0.07	0.16	1.94	Err
Queue Length (ft)	5	14	364	Err
Control Delay (s)	1.8	3.7	540.0	Err
Lane LOS	A	A	F	F
Approach Delay (s)	1.8	3.7	540.0	Err
Approach LOS			F	F

Intersection Summary			
Average Delay		Err	
Intersection Capacity Utilization	87.3%	ICU Level of Service	D

HCM Signalized Intersection Capacity Analysis — PM Peak Alt 3

103: Lake Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5015			4956	
Flt Permitted	0.34	1.00	1.00	0.30	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	618	1756	1492	532	1756	1492		5015			4956	
Volume (vph)	112	382	30	104	354	190	0	2642	74	0	2657	315
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	115	394	31	107	365	196	0	2724	76	0	2739	325
Lane Group Flow (vph)	115	394	31	107	365	196	0	2800	0	0	3064	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	204	578	491	175	578	491		2891			2857	
v/s Ratio Prot		c0.22			0.21			0.56			c0.62	
v/s Ratio Perm	0.19		0.02	0.20		0.13						
v/c Ratio	0.56	0.68	0.06	0.61	0.63	0.40		0.97			1.07	
Uniform Delay, d1	23.5	24.6	19.5	23.9	24.1	22.0		17.3			18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.78			1.00	
Incremental Delay, d2	10.8	6.4	0.2	14.9	5.2	2.4		1.6			40.2	
Delay (s)	34.3	31.0	19.8	38.8	29.3	24.4		15.0			58.2	
Level of Service	C	C	B	D	C	C		B			E	
Approach Delay (s)		31.1			29.4			15.0			58.2	
Approach LOS		C			C			B			E	

Intersection Summary			
HCM Average Control Delay	36.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	96.8%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	431	20	15	628	5	15	0	5	5	0	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (veh/h)	6	495	23	17	722	6	17	0	6	6	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		72										
pX, platoon unblocked				0.81			0.81	0.81	0.81	0.81	0.81	
vC, conflicting volume	728			518			1283	1280	507	1283	1289	725
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	728			403			1351	1348	389	1351	1358	725
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			83	100	99	94	100	99
cM capacity (veh/h)	880			937			100	120	536	101	118	429

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	524	745	23	11
Volume Left	6	17	17	6
Volume Right	23	6	6	6
cSH	880	937	126	163
Volume to Capacity	0.01	0.02	0.18	0.07
Queue Length (ft)	0	1	16	6
Control Delay (s)	0.2	0.5	39.9	28.8
Lane LOS	A	A	E	D
Approach Delay (s)	0.2	0.5	39.9	28.8
Approach LOS			E	D

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization	63.8%	ICU Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	7	583	27	28	574	21	23	2	26	14	41	82
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (veh/h)	7	601	28	29	592	22	24	2	27	14	42	85
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					524							
pX, platoon unblocked												
vC, conflicting volume	613			629			1395	1301	615	1318	1304	603
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	613			629			1395	1301	615	1318	1304	603
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			69	99	95	88	73	83
cM capacity (veh/h)	976			963			77	157	495	123	156	503

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	636	642	53	141
Volume Left	7	29	24	14
Volume Right	28	22	27	85
cSH	976	963	140	254
Volume to Capacity	0.01	0.03	0.38	0.56
Queue Length (ft)	1	2	40	77
Control Delay (s)	0.2	0.8	45.5	35.6
Lane LOS	A	A	E	E
Approach Delay (s)	0.2	0.8	45.5	35.6
Approach LOS			E	E

Intersection Summary			
Average Delay		5.5	
Intersection Capacity Utilization	79.0%	ICU Level of Service	C

HCM Unsignalized Intersection Capacity Analysis
106: California Street & 14th Avenue

PM Peak Alt 3
7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	93	517	12	57	589	22	11	42	47	62	27	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (veh/h)	98	544	13	60	620	23	12	44	49	65	28	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					224							
pX, platoon unblocked												
vC, conflicting volume	643			557			1214	1509	278	1291	1504	322
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			557			1214	1509	278	1291	1504	322
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			94			88	57	93	3	73	97
cM capacity (veh/h)	951			1024			94	103	725	67	103	680

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	370	285	370	333	105	117
Volume Left	98	0	60	0	12	65
Volume Right	0	13	0	23	49	23
cSH	951	1700	1024	1700	169	92
Volume to Capacity	0.10	0.17	0.06	0.20	0.62	1.28
Queue Length (ft)	9	0	5	0	86	210
Control Delay (s)	3.3	0.0	1.9	0.0	56.0	269.0
Lane LOS	A		A		F	F
Approach Delay (s)	1.8		1.0		56.0	269.0
Approach LOS					F	F

Intersection Summary			
Average Delay	24.8		
Intersection Capacity Utilization	61.1%	ICU Level of Service	B

HCM Signalized Intersection Capacity Analysis
107: California Street & Park Presidio Boulevard

PM Peak Alt 3
7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3309		1668	3231			4969			5009	
Flt Permitted	0.25	1.00		0.36	1.00			1.00			1.00	
Satd. Flow (perm)	443	3309		625	3231			4969			5009	
Volume (vph)	82	515	29	205	567	151	0	2483	243	0	2691	101
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	542	31	216	597	159	0	2614	256	0	2833	106
Lane Group Flow (vph)	86	573	0	216	756	0	0	2870	0	0	2939	0
Confl. Peds. (#/hr)												
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	34.0	34.0		34.0	34.0			43.0			43.0	
Effective Green, g (s)	34.0	34.0		34.0	34.0			43.0			43.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.51			0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	177	1324		250	1292			2514			2534	
v/s Ratio Prot		0.17			0.23			0.58			c0.59	
v/s Ratio Perm	0.19			c0.35								
v/c Ratio	0.49	0.43		0.86	0.59			1.14			1.16	
Uniform Delay, d1	19.0	18.5		23.4	20.0			21.0			21.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.78	
Incremental Delay, d2	9.2	1.0		30.5	1.9			69.1			72.4	
Delay (s)	28.2	19.5		53.9	21.9			90.1			88.8	
Level of Service	C	B		D	C			F			F	
Approach Delay (s)		20.7			29.0			90.1			88.8	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM Average Control Delay	75.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	E
c Critical Lane Group			

ALTERNATIVE 4

AM PEAK HOUR

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 4

100: Lake Street & 17th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	466	30	15	281	5	10	5	40	10	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	5	507	33	16	305	5	11	5	43	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	311			539			883	877	523	921	891	308
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	311			539			883	877	523	921	891	308
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			96	98	92	95	98	99
cM capacity (veh/h)	1261			1039			259	283	558	227	278	737

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	545	327	60	22
Volume Left	5	16	11	11
Volume Right	33	5	43	5
cSH	1261	1039	430	290
Volume to Capacity	0.00	0.02	0.14	0.07
Queue Length (ft)	0	1	12	6
Control Delay (s)	0.1	0.6	14.7	18.4
Lane LOS	A	A	B	C
Approach Delay (s)	0.1	0.6	14.7	18.4
Approach LOS			B	C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 4

101: Lake Street & 15th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	5	617	15	25	336	3	8	3	20	49	52	34
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (veh/h)	5	643	16	26	350	3	8	3	21	51	54	35

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	664	379	32	141
Volume Left (vph)	5	26	8	51
Volume Right (vph)	16	3	21	35
Hadj (s)	0.0	0.0	-0.3	-0.1
Departure Headway (s)	4.9	5.3	6.3	6.2
Degree Utilization, x	0.91	0.55	0.06	0.24
Capacity (veh/h)	721	654	514	535
Control Delay (s)	36.4	14.6	9.7	11.2
Approach Delay (s)	36.4	14.6	9.7	11.2
Approach LOS	E	B	A	B

Intersection Summary			
Delay	26.0		
HCM Level of Service	D		
Intersection Capacity Utilization	59.2%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis
102: Lake Street & 14th Avenue

AM Peak Alt 4
7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	43	628	14	82	348	41	17	50	23	8	3	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (veh/h)	44	641	14	84	355	42	17	51	23	8	3	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	397			655			1281	1300	648	1328	1286	376
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	346			655			1304	1325	648	1356	1310	324
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			91			85	60	95	88	98	100
cM capacity (veh/h)	1129			942			114	127	474	70	130	666

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	699	481	92	11
Volume Left	44	84	17	8
Volume Right	14	42	23	0
cSH	1129	942	152	80
Volume to Capacity	0.04	0.09	0.60	0.14
Queue Length (ft)	3	7	80	12
Control Delay (s)	1.0	2.5	59.5	57.1
Lane LOS	A	A	F	F
Approach Delay (s)	1.0	2.5	59.5	57.1
Approach LOS			F	F

Intersection Summary			
Average Delay	6.2		
Intersection Capacity Utilization	78.7%	ICU Level of Service	C

HCM Signalized Intersection Capacity Analysis
103: Lake Street & Park Presidio Boulevard

AM Peak Alt 4
7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5007			4957	
Flt Permitted	0.56	1.00	1.00	0.24	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	1019	1756	1492	414	1756	1492		5007			4957	
Volume (vph)	211	430	19	108	193	121	0	2869	112	0	2375	278
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	220	448	20	112	201	126	0	2989	117	0	2474	290
Lane Group Flow (vph)	220	448	20	112	201	126	0	3106	0	0	2764	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	336	578	491	136	578	491		2886			2858	
v/s Ratio Prot		0.26			0.11			c0.62			0.56	
v/s Ratio Perm	0.22		0.01	c0.27		0.08						
v/c Ratio	0.65	0.78	0.04	0.82	0.35	0.26		1.08			0.97	
Uniform Delay, d1	24.4	25.7	19.4	26.2	21.6	20.9		18.0			17.2	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.72			1.00	
Incremental Delay, d2	9.6	9.8	0.2	40.8	1.7	1.3		35.1			10.7	
Delay (s)	33.9	35.5	19.5	67.0	23.2	22.1		48.0			28.0	
Level of Service	C	D	B	E	C	C		D			C	
Approach Delay (s)		34.5			34.1			48.0			28.0	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	37.9	HCM Level of Service	D
HCM Volume to Capacity ratio	0.98		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.1%	ICU Level of Service	F

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	521	20	5	391	0	30	0	35	4	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (veh/h)	1	592	23	6	444	0	34	0	40	5	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		70										
pX, platoon unblocked				0.77			0.77	0.77	0.77	0.77	0.77	
vC, conflicting volume	444			615			1063	1061	603	1101	1073	444
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	444			500			1082	1080	485	1131	1094	444
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			77	100	91	96	99	100
cM capacity (veh/h)	1121			824			150	168	451	127	165	618

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	616	450	74	7
Volume Left	1	6	34	5
Volume Right	23	0	40	1
cSH	1121	824	234	153
Volume to Capacity	0.00	0.01	0.32	0.04
Queue Length (ft)	0	1	33	3
Control Delay (s)	0.0	0.2	27.4	29.6
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.2	27.4	29.6
Approach LOS			D	D

Intersection Summary			
Average Delay		2.0	
Intersection Capacity Utilization	45.5%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	14	584	22	27	358	14	21	4	17	36	17	38
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (veh/h)	15	621	23	29	381	15	22	4	18	38	18	40
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					528							
pX, platoon unblocked												
vC, conflicting volume	396			645			1158	1116	633	1129	1120	388
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	396			645			1158	1116	633	1129	1120	388
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			85	98	96	77	91	94
cM capacity (veh/h)	1174			950			148	200	483	168	199	664

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	660	424	45	97
Volume Left	15	29	22	38
Volume Right	23	15	18	40
cSH	1174	950	213	255
Volume to Capacity	0.01	0.03	0.21	0.38
Queue Length (ft)	1	2	19	42
Control Delay (s)	0.3	0.9	26.3	27.5
Lane LOS	A	A	D	D
Approach Delay (s)	0.3	0.9	26.3	27.5
Approach LOS			D	D

Intersection Summary			
Average Delay		3.6	
Intersection Capacity Utilization	61.5%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — AM Peak Alt 4

106: California Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	51	568	18	36	370	24	15	16	40	68	17	14
Peak Hour Factor	0.91	0.91	0.25	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	56	624	72	40	407	26	16	18	44	75	19	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					228							
pX, platoon unblocked												
vC, conflicting volume	433			696			1079	1284	348	976	1307	216
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	433			696			1079	1284	348	976	1307	216
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	95			96			89	88	93	55	87	98
cM capacity (veh/h)	1137			909			145	151	654	165	146	794

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	368	384	243	230	78	109
Volume Left	56	0	40	0	16	75
Volume Right	0	72	0	26	44	15
cSH	1137	1700	909	1700	262	181
Volume to Capacity	0.05	0.23	0.04	0.14	0.30	0.60
Queue Length (ft)	4	0	3	0	30	82
Control Delay (s)	1.7	0.0	1.9	0.0	24.4	50.8
Lane LOS	A		A		C	F
Approach Delay (s)	0.8		1.0		24.4	50.8
Approach LOS					C	F

Intersection Summary			
Average Delay	6.0		
Intersection Capacity Utilization	56.1%	ICU Level of Service	A

HCM Signalized Intersection Capacity Analysis — AM Peak Alt 4

107: California Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	1.00		1.00	0.96			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3320		1668	3215			4939			5009	
Flt Permitted	0.39	1.00		0.28	1.00			1.00			1.00	
Satd. Flow (perm)	678	3320		496	3215			4939			5009	
Volume (vph)	91	567	18	111	342	109	0	2781	410	0	2415	88
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	94	585	19	114	353	112	0	2867	423	0	2490	91
Lane Group Flow (vph)	94	604	0	114	465	0	0	3290	0	0	2581	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Effective Green, g (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Actuated g/C Ratio	0.31	0.31		0.31	0.31			0.60			0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	207	1016		152	983			2963			3005	
v/s Ratio Prot		0.18			0.14			c0.67			0.52	
v/s Ratio Perm	0.14			c0.23								
v/c Ratio	0.45	0.59		0.75	0.47			1.11			0.86	
Uniform Delay, d1	23.8	25.0		26.6	23.9			17.0			14.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.67	
Incremental Delay, d2	7.0	2.6		28.4	1.6			55.2			1.2	
Delay (s)	30.8	27.6		54.9	25.6			72.2			10.6	
Level of Service	C	C		D	C			E			B	
Approach Delay (s)		28.0			31.4			72.2			10.6	
Approach LOS		C			C			E			B	

Intersection Summary			
HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.99		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	97.9%	ICU Level of Service	E

c Critical Lane Group

ALTERNATIVE 4

PM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	300	15	20	398	10	5	0	25	10	5	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	5	323	16	22	428	11	5	0	27	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	439			339			826	823	331	845	826	433
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	439			339			826	823	331	845	826	433
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			98	100	96	96	98	99
cM capacity (veh/h)	1132			1232			282	304	716	270	303	627

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	344	460	32	22
Volume Left	5	22	5	11
Volume Right	16	11	27	5
cSH	1132	1232	570	325
Volume to Capacity	0.00	0.02	0.06	0.07
Queue Length (ft)	0	1	4	5
Control Delay (s)	0.2	0.6	11.7	16.9
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	0.6	11.7	16.9
Approach LOS			B	C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	46.1%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	2	411	9	39	398	8	7	4	19	56	87	52
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	2	452	10	43	437	9	8	4	21	62	96	57

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	464	489	33	214
Volume Left (vph)	2	43	8	62
Volume Right (vph)	10	9	21	57
Hadj (s)	0.0	0.0	-0.3	-0.1
Departure Headway (s)	5.3	5.3	6.4	6.1
Degree Utilization, x	0.68	0.72	0.06	0.36
Capacity (veh/h)	656	662	464	536
Control Delay (s)	19.0	20.7	9.8	12.5
Approach Delay (s)	19.0	20.7	9.8	12.5
Approach LOS	C	C	A	B

Intersection Summary			
Delay	18.3		
HCM Level of Service	C		
Intersection Capacity Utilization	79.0%	ICU Level of Service	C

HCM Unsignalized Intersection Capacity Analysis
102: Lake Street & 14th Avenue

PM Peak Alt 4
7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	55	428	3	164	436	66	9	110	31	4	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	59	460	3	176	469	71	10	118	33	4	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	540			463			1438	1473	462	1530	1439	504
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	452			463			1521	1563	462	1631	1523	409
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			84			86	0	94	0	99	100
cM capacity (veh/h)	940			1108			68	75	604	0	79	543

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	523	716	161	5
Volume Left	59	176	10	4
Volume Right	3	71	33	0
cSH	940	1108	90	0
Volume to Capacity	0.06	0.16	1.78	Err
Queue Length (ft)	5	14	334	Err
Control Delay (s)	1.7	3.7	471.5	Err
Lane LOS	A	A	F	F
Approach Delay (s)	1.7	3.7	471.5	Err
Approach LOS			F	F

Intersection Summary			
Average Delay		Err	
Intersection Capacity Utilization	86.3%	ICU Level of Service	D

HCM Signalized Intersection Capacity Analysis
103: Lake Street & Park Presidio Boulevard

PM Peak Alt 4
7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5015			4956	
Flt Permitted	0.34	1.00	1.00	0.31	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	625	1756	1492	539	1756	1492		5015			4956	
Volume (vph)	112	379	30	104	351	190	0	2642	74	0	2657	315
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	115	391	31	107	362	196	0	2724	76	0	2739	325
Lane Group Flow (vph)	115	391	31	107	362	196	0	2800	0	0	3064	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	206	578	491	178	578	491		2891			2857	
v/s Ratio Prot		c0.22			0.21			0.56			c0.62	
v/s Ratio Perm	0.18		0.02	0.20		0.13						
v/c Ratio	0.56	0.68	0.06	0.60	0.63	0.40		0.97			1.07	
Uniform Delay, d1	23.4	24.6	19.5	23.8	24.1	22.0		17.3			18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.78			1.00	
Incremental Delay, d2	10.5	6.2	0.2	14.1	5.1	2.4		1.6			40.2	
Delay (s)	33.9	30.8	19.8	38.0	29.1	24.4		15.0			58.2	
Level of Service	C	C	B	D	C	C		B			E	
Approach Delay (s)		30.9			29.2			15.0			58.2	
Approach LOS		C			C			B			E	

Intersection Summary			
HCM Average Control Delay	36.2	HCM Level of Service	D
HCM Volume to Capacity ratio	0.93		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	96.7%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	428	20	15	625	5	15	0	5	5	0	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (veh/h)	6	492	23	17	718	6	17	0	6	6	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		60										
pX, platoon unblocked				0.81			0.81	0.81	0.81	0.81	0.81	
vC, conflicting volume	724			515			1276	1274	503	1276	1282	721
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	724			400			1342	1338	386	1342	1349	721
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			83	100	99	94	100	99
cM capacity (veh/h)	883			941			102	122	539	102	120	431

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	521	741	23	11
Volume Left	6	17	17	6
Volume Right	23	6	6	6
cSH	883	941	128	165
Volume to Capacity	0.01	0.02	0.18	0.07
Queue Length (ft)	0	1	16	6
Control Delay (s)	0.2	0.5	39.2	28.4
Lane LOS	A	A	E	D
Approach Delay (s)	0.2	0.5	39.2	28.4
Approach LOS			E	D

Intersection Summary			
Average Delay		1.3	
Intersection Capacity Utilization	63.5%	ICU Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	7	578	27	28	574	21	23	2	26	14	41	79
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (veh/h)	7	596	28	29	592	22	24	2	27	14	42	81
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					524							
pX, platoon unblocked												
vC, conflicting volume	613			624			1387	1295	610	1312	1298	603
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	613			624			1387	1295	610	1312	1298	603
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			70	99	95	88	73	84
cM capacity (veh/h)	976			967			78	158	498	125	157	503

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	631	642	53	138
Volume Left	7	29	24	14
Volume Right	28	22	27	81
cSH	976	967	142	253
Volume to Capacity	0.01	0.03	0.37	0.55
Queue Length (ft)	1	2	39	75
Control Delay (s)	0.2	0.8	44.3	35.2
Lane LOS	A	A	E	E
Approach Delay (s)	0.2	0.8	44.3	35.2
Approach LOS			E	E

Intersection Summary			
Average Delay		5.3	
Intersection Capacity Utilization	78.7%	ICU Level of Service	C

HCM Unsignalized Intersection Capacity Analysis
106: California Street & 14th Avenue

PM Peak Alt 4
7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	88	517	12	57	589	22	11	41	47	62	27	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (veh/h)	93	544	13	60	620	23	12	43	49	65	28	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					224							
pX, platoon unblocked												
vC, conflicting volume	643			557			1203	1499	278	1280	1494	322
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	643			557			1203	1499	278	1280	1494	322
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	90			94			88	59	93	8	73	97
cM capacity (veh/h)	951			1024			97	105	725	71	106	680

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	365	285	370	333	104	117
Volume Left	93	0	60	0	12	65
Volume Right	0	13	0	23	49	23
cSH	951	1700	1024	1700	174	95
Volume to Capacity	0.10	0.17	0.06	0.20	0.60	1.23
Queue Length (ft)	8	0	5	0	82	203
Control Delay (s)	3.1	0.0	1.9	0.0	52.6	247.3
Lane LOS	A		A		F	F
Approach Delay (s)	1.8		1.0		52.6	247.3
Approach LOS					F	F

Intersection Summary			
Average Delay	23.0		
Intersection Capacity Utilization	60.9%	ICU Level of Service	B

HCM Signalized Intersection Capacity Analysis
107: California Street & Park Presidio Boulevard

PM Peak Alt 4
7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00			1.00	
Frt	1.00	0.99		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3309		1668	3231			4969			5009	
Flt Permitted	0.25	1.00		0.36	1.00			1.00			1.00	
Satd. Flow (perm)	443	3309		625	3231			4969			5009	
Volume (vph)	82	515	29	205	567	151	0	2483	243	0	2691	101
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	542	31	216	597	159	0	2614	256	0	2833	106
Lane Group Flow (vph)	86	573	0	216	756	0	0	2870	0	0	2939	0
Confl. Peds. (#/hr)												
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	34.0	34.0		34.0	34.0			43.0			43.0	
Effective Green, g (s)	34.0	34.0		34.0	34.0			43.0			43.0	
Actuated g/C Ratio	0.40	0.40		0.40	0.40			0.51			0.51	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	177	1324		250	1292			2514			2534	
v/s Ratio Prot		0.17			0.23			0.58			c0.59	
v/s Ratio Perm	0.19			c0.35								
v/c Ratio	0.49	0.43		0.86	0.59			1.14			1.16	
Uniform Delay, d1	19.0	18.5		23.4	20.0			21.0			21.0	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.78	
Incremental Delay, d2	9.2	1.0		30.5	1.9			69.1			72.4	
Delay (s)	28.2	19.5		53.9	21.9			90.1			88.8	
Level of Service	C	B		D	C			F			F	
Approach Delay (s)		20.7			29.0			90.1			88.8	
Approach LOS		C			C			F			F	

Intersection Summary			
HCM Average Control Delay	75.4	HCM Level of Service	E
HCM Volume to Capacity ratio	1.03		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	95.0%	ICU Level of Service	E
c Critical Lane Group			

ALTERNATIVE 1 VARIANT

AM PEAK HOUR

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 1 (mod)

100: Lake Street & 17th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	481	30	15	285	5	10	5	40	10	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	5	523	33	16	310	5	11	5	43	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	315			555			903	898	539	941	911	312
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	315			555			903	898	539	941	911	312
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			96	98	92	95	98	99
cM capacity (veh/h)	1256			1025			250	276	546	219	271	732

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	561	332	60	22
Volume Left	5	16	11	11
Volume Right	33	5	43	5
cSH	1256	1025	419	282
Volume to Capacity	0.00	0.02	0.14	0.08
Queue Length (ft)	0	1	12	6
Control Delay (s)	0.1	0.6	15.0	18.8
Lane LOS	A	A	C	C
Approach Delay (s)	0.1	0.6	15.0	18.8
Approach LOS			C	C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	42.7%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 1 (mod)

101: Lake Street & 15th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	61	576	15	25	366	3	8	42	20	7	4	8
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (veh/h)	64	600	16	26	381	3	8	44	21	7	4	8

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	679	410	73	20
Volume Left (vph)	64	26	8	7
Volume Right (vph)	16	3	21	8
Hadj (s)	0.0	0.0	-0.1	-0.2
Departure Headway (s)	4.7	4.9	6.1	6.2
Degree Utilization, x	0.88	0.56	0.12	0.03
Capacity (veh/h)	758	712	544	519
Control Delay (s)	31.5	14.1	10.0	9.4
Approach Delay (s)	31.5	14.1	10.0	9.4
Approach LOS	D	B	A	A

Intersection Summary			
Delay	23.7		
HCM Level of Service	C		
Intersection Capacity Utilization	71.9%	ICU Level of Service	C

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 1 (mod)

102: Lake Street & 14th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	2	586	14	111	378	56	17	39	32	8	3	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (veh/h)	2	598	14	113	386	57	17	40	33	8	3	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.91						0.91	0.91		0.91	0.91	0.91
vC, conflicting volume	443			612			1252	1279	605	1303	1257	414
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	390			612			1275	1305	605	1331	1281	359
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			88			85	69	93	90	98	100
cM capacity (veh/h)	1077			977			119	130	501	79	135	630

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	614	556	90	11
Volume Left	2	113	17	8
Volume Right	14	57	33	0
cSH	1077	977	174	89
Volume to Capacity	0.00	0.12	0.52	0.13
Queue Length (ft)	0	10	64	10
Control Delay (s)	0.1	3.0	46.0	51.1
Lane LOS	A	A	E	F
Approach Delay (s)	0.1	3.0	46.0	51.1
Approach LOS			E	F

Intersection Summary			
Average Delay	5.0		
Intersection Capacity Utilization	78.2%	ICU Level of Service	C

HCM Signalized Intersection Capacity Analysis — Variant AM Peak Alt 1 (mod)

103: Lake Street & Park Presidio Boulevard — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5007			4945	
Flt Permitted	0.54	1.00	1.00	0.28	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	978	1756	1492	488	1756	1492		5007			4945	
Volume (vph)	211	397	19	108	208	121	0	2869	112	0	2458	336
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	220	414	20	112	217	126	0	2989	117	0	2560	350
Lane Group Flow (vph)	220	414	20	112	217	126	0	3106	0	0	2910	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	322	578	491	161	578	491		2886			2851	
v/s Ratio Prot		c0.24			0.12			c0.62			0.59	
v/s Ratio Perm	0.23		0.01	0.23		0.08						
v/c Ratio	0.68	0.72	0.04	0.70	0.38	0.26		1.08			1.02	
Uniform Delay, d1	24.7	25.0	19.4	24.8	21.8	20.9		18.0			18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.72			0.78	
Incremental Delay, d2	11.2	7.4	0.2	22.0	1.9	1.3		35.1			19.8	
Delay (s)	35.8	32.4	19.5	46.8	23.7	22.1		48.0			33.9	
Level of Service	D	C	B	D	C	C		D			C	
Approach Delay (s)		33.2			28.9			48.0			33.9	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	E

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 1 (mod)

104: Lake Street & Funston Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	488	20	5	406	0	30	0	35	4	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (veh/h)	1	555	23	6	461	0	34	0	40	5	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		71										
pX, platoon unblocked				0.79			0.79	0.79	0.79	0.79	0.79	
vC, conflicting volume	461			577			1043	1041	566	1081	1052	461
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	461			467			1054	1052	453	1102	1066	461
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			79	100	92	97	99	100
cM capacity (veh/h)	1105			872			161	180	485	138	176	604

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	578	467	74	7
Volume Left	1	6	34	5
Volume Right	23	0	40	1
cSH	1105	872	252	165
Volume to Capacity	0.00	0.01	0.29	0.04
Queue Length (ft)	0	0	30	3
Control Delay (s)	0.0	0.2	25.1	27.7
Lane LOS	A	A	D	D
Approach Delay (s)	0.0	0.2	25.1	27.7
Approach LOS			D	D

Intersection Summary			
Average Delay		1.9	
Intersection Capacity Utilization	43.5%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 1 (mod)

105: California Street & 15th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	47	575	22	27	370	14	21	10	17	32	4	7
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (veh/h)	50	612	23	29	394	15	22	11	18	34	4	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					531							
pX, platoon unblocked												
vC, conflicting volume	409			635			1191	1189	623	1205	1194	401
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	409			635			1191	1189	623	1205	1194	401
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			97			85	94	96	76	98	99
cM capacity (veh/h)	1161			958			152	176	489	141	175	653

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	685	437	51	46
Volume Left	50	29	22	34
Volume Right	23	15	18	7
cSH	1161	958	209	165
Volume to Capacity	0.04	0.03	0.24	0.28
Queue Length (ft)	3	2	23	27
Control Delay (s)	1.1	0.9	27.7	35.0
Lane LOS	A	A	D	E
Approach Delay (s)	1.1	0.9	27.7	35.0
Approach LOS			D	E

Intersection Summary			
Average Delay		3.4	
Intersection Capacity Utilization	72.9%	ICU Level of Service	C

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 1 (mod)

106: California Street & 14th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	42	564	18	36	382	33	15	14	40	97	17	14
Peak Hour Factor	0.91	0.91	0.25	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	46	620	72	40	420	36	16	15	44	107	19	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					231							
pX, platoon unblocked												
vC, conflicting volume	456			692			1062	1283	346	971	1301	228
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	456			692			1062	1283	346	971	1301	228
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			96			89	90	93	37	87	98
cM capacity (veh/h)	1115			913			150	153	656	170	149	781

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	356	382	249	246	76	141
Volume Left	46	0	40	0	16	107
Volume Right	0	72	0	36	44	15
cSH	1115	1700	913	1700	273	182
Volume to Capacity	0.04	0.22	0.04	0.14	0.28	0.77
Queue Length (ft)	3	0	3	0	28	128
Control Delay (s)	1.5	0.0	1.8	0.0	23.2	71.1
Lane LOS	A		A		C	F
Approach Delay (s)	0.7		0.9		23.2	71.1
Approach LOS					C	F

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	52.7%	ICU Level of Service	A

HCM Signalized Intersection Capacity Analysis — Variant AM Peak Alt 1 (mod)

107: California Street & Park Presidio Boulevard — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	1.00		1.00	0.96			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3321		1668	3215			4939			5004	
Flt Permitted	0.39	1.00		0.27	1.00			1.00			1.00	
Satd. Flow (perm)	678	3321		466	3215			4939			5004	
Volume (vph)	91	592	18	111	342	109	0	2781	410	0	2477	109
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	94	610	19	114	353	112	0	2867	423	0	2554	112
Lane Group Flow (vph)	94	629	0	114	465	0	0	3290	0	0	2666	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Effective Green, g (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Actuated g/C Ratio	0.31	0.31		0.31	0.31			0.60			0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	207	1016		143	983			2963			3002	
v/s Ratio Prot		0.19			0.14			c0.67			0.53	
v/s Ratio Perm	0.14			c0.24								
v/c Ratio	0.45	0.62		0.80	0.47			1.11			0.89	
Uniform Delay, d1	23.8	25.3		27.1	23.9			17.0			14.6	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.70	
Incremental Delay, d2	7.0	2.8		35.6	1.6			55.2			1.1	
Delay (s)	30.8	28.1		62.7	25.6			72.2			11.3	
Level of Service	C	C		E	C			E			B	
Approach Delay (s)		28.4			32.9			72.2			11.3	
Approach LOS		C			C			E			B	

Intersection Summary			
HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.6%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1787	2814		5036	5031	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1787	2814		5036	5031	
Volume (vph)	11	142	0	3201	2653	17
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	11	148	0	3334	2764	18
Lane Group Flow (vph)	11	148	0	3334	2782	0
Heavy Vehicles (%)	1%	1%	3%	3%	3%	3%
Turn Type		custom				
Protected Phases	1!	5		2	6!	
Permitted Phases						
Actuated Green, G (s)	1.4	14.1		75.6	62.9	
Effective Green, g (s)	1.4	14.1		75.6	62.9	
Actuated g/C Ratio	0.02	0.17		0.89	0.74	
Clearance Time (s)	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	29	467		4479	3723	
v/s Ratio Prot	0.01	c0.05		c0.66	0.55	
v/s Ratio Perm						
v/c Ratio	0.38	0.32		0.74	0.75	
Uniform Delay, d1	41.4	31.2		1.5	6.4	
Progression Factor	1.00	1.00		1.63	1.00	
Incremental Delay, d2	8.1	0.4		0.1	1.4	
Delay (s)	49.5	31.6		2.6	7.8	
Level of Service	D	C		A	A	
Approach Delay (s)	32.8			2.6	7.8	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	C

! Phase conflict between lane groups.

c Critical Lane Group

ALTERNATIVE 1 VARIANT

PM PEAK HOUR

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 1 (mod)

100: Lake Street & 17th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	318	15	20	414	10	5	0	25	10	5	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	5	342	16	22	445	11	5	0	27	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	456			358			862	860	350	881	862	451
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	456			358			862	860	350	881	862	451
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			98	100	96	96	98	99
cM capacity (veh/h)	1116			1212			266	289	698	255	288	613

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	363	477	32	22
Volume Left	5	22	5	11
Volume Right	16	11	27	5
cSH	1116	1212	550	309
Volume to Capacity	0.00	0.02	0.06	0.07
Queue Length (ft)	0	1	5	6
Control Delay (s)	0.2	0.5	12.0	17.5
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	0.5	12.0	17.5
Approach LOS			B	C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	47.5%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 1 (mod)

101: Lake Street & 15th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	74	357	9	39	464	8	7	91	19	4	5	2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	81	392	10	43	510	9	8	100	21	4	5	2

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	484	562	129	12
Volume Left (vph)	81	43	8	4
Volume Right (vph)	10	9	21	2
Hadj (s)	0.0	0.0	-0.1	0.0
Departure Headway (s)	5.0	4.9	6.1	6.5
Degree Utilization, x	0.68	0.77	0.22	0.02
Capacity (veh/h)	484	712	521	472
Control Delay (s)	17.8	22.3	10.8	9.6
Approach Delay (s)	17.8	22.3	10.8	9.6
Approach LOS	C	C	B	A

Intersection Summary			
Delay	19.1		
HCM Level of Service	C		
Intersection Capacity Utilization	73.0%	ICU Level of Service	C

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 1 (mod)

102: Lake Street & 14th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	376	3	224	502	84	9	59	31	4	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	1	404	3	241	540	90	10	63	33	4	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.82						0.82	0.82		0.82	0.82	0.82
vC, conflicting volume	630			408			1475	1520	406	1540	1476	585
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	547			408			1582	1637	406	1661	1583	492
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			79			84	4	95	35	98	100
cM capacity (veh/h)	843			1162			60	66	649	7	71	474

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	409	871	106	5
Volume Left	1	241	10	4
Volume Right	3	90	33	0
cSH	843	1162	90	8
Volume to Capacity	0.00	0.21	1.18	0.66
Queue Length (ft)	0	19	185	31
Control Delay (s)	0.0	4.6	234.9	745.3
Lane LOS	A	A	F	F
Approach Delay (s)	0.0	4.6	234.9	745.3
Approach LOS			F	F

Intersection Summary			
Average Delay	23.7		
Intersection Capacity Utilization	85.2%	ICU Level of Service	D

HCM Signalized Intersection Capacity Analysis — Variant PM Peak Alt 1 (mod)

103: Lake Street & Park Presidio Boulevard — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5018			4946	
Flt Permitted	0.32	1.00	1.00	0.38	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	583	1756	1492	660	1756	1492		5018			4946	
Volume (vph)	112	327	30	104	369	190	0	2642	74	0	2798	440
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	115	337	31	107	380	196	0	2724	76	0	2885	454
Lane Group Flow (vph)	115	337	31	107	380	196	0	2800	0	0	3339	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	3%	1%	1%	3%	1%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	192	578	491	217	578	491		2893			2851	
v/s Ratio Prot		0.19			c0.22			0.56			c0.68	
v/s Ratio Perm	0.20		0.02	0.16		0.13						
v/c Ratio	0.60	0.58	0.06	0.49	0.66	0.40		0.97			1.17	
Uniform Delay, d1	23.8	23.7	19.5	22.8	24.4	22.0		17.2			18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.21			0.73	
Incremental Delay, d2	13.1	4.3	0.2	7.8	5.8	2.4		1.5			79.4	
Delay (s)	36.9	27.9	19.8	30.6	30.2	24.4		22.3			92.6	
Level of Service	D	C	B	C	C	C		C			F	
Approach Delay (s)		29.5			28.6			22.3			92.6	
Approach LOS		C			C			C			F	

Intersection Summary			
HCM Average Control Delay	55.5	HCM Level of Service	E
HCM Volume to Capacity ratio	0.98		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	102.3%	ICU Level of Service	F

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 1 (mod)

104: Lake Street & Funston Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	376	20	15	643	5	15	0	5	5	0	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (veh/h)	6	432	23	17	739	6	17	0	6	6	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		68										
pX, platoon unblocked				0.84			0.84	0.84	0.84	0.84	0.84	
vC, conflicting volume	745			455			1237	1234	444	1237	1243	742
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	745			353			1282	1279	339	1282	1289	742
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			85	100	99	95	100	99
cM capacity (veh/h)	868			1020			117	138	596	118	136	419

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	461	762	23	11
Volume Left	6	17	17	6
Volume Right	23	6	6	6
cSH	868	1020	146	184
Volume to Capacity	0.01	0.02	0.16	0.06
Queue Length (ft)	1	1	13	5
Control Delay (s)	0.2	0.4	34.1	25.9
Lane LOS	A	A	D	D
Approach Delay (s)	0.2	0.4	34.1	25.9
Approach LOS			D	D

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization	65.1%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 1 (mod)

105: California Street & 15th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	86	529	27	28	599	21	23	10	26	9	25	18
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (veh/h)	89	545	28	29	618	22	24	10	27	9	26	19
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					531							
pX, platoon unblocked												
vC, conflicting volume	639			573			1454	1434	559	1455	1437	628
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	639			573			1454	1434	559	1455	1437	628
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	91			97			70	91	95	89	78	96
cM capacity (veh/h)	955			1010			80	119	532	88	119	486

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	662	668	61	54
Volume Left	89	29	24	9
Volume Right	28	22	27	19
cSH	955	1010	140	149
Volume to Capacity	0.09	0.03	0.43	0.36
Queue Length (ft)	8	2	48	38
Control Delay (s)	2.3	0.8	49.1	42.3
Lane LOS	A	A	E	E
Approach Delay (s)	2.3	0.8	49.1	42.3
Approach LOS			E	E

Intersection Summary			
Average Delay		5.1	
Intersection Capacity Utilization	84.3%	ICU Level of Service	D

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 1 (mod)

106: California Street & 14th Avenue — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	39	512	12	57	614	22	11	38	47	122	27	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (veh/h)	41	539	13	60	646	23	12	40	49	128	28	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					231							
pX, platoon unblocked												
vC, conflicting volume	669			552			1108	1417	276	1199	1412	335
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	669			552			1108	1417	276	1199	1412	335
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	96			94			91	68	93	0	77	97
cM capacity (veh/h)	930			1028			123	125	728	93	125	667

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	311	282	383	346	101	180
Volume Left	41	0	60	0	12	128
Volume Right	0	13	0	23	49	23
cSH	930	1700	1028	1700	209	110
Volume to Capacity	0.04	0.17	0.06	0.20	0.48	1.64
Queue Length (ft)	3	0	5	0	60	343
Control Delay (s)	1.6	0.0	1.9	0.0	37.3	394.1
Lane LOS	A		A		E	F
Approach Delay (s)	0.8		1.0		37.3	394.1
Approach LOS					E	F

Intersection Summary			
Average Delay	47.4		
Intersection Capacity Utilization	60.6%	ICU Level of Service	B

HCM Signalized Intersection Capacity Analysis — Variant PM Peak Alt 1 (mod)

107: California Street & Park Presidio Boulevard — 7/23/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	0.99		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3311		1668	3231			4969			5003	
Flt Permitted	0.25	1.00		0.32	1.00			1.00			1.00	
Satd. Flow (perm)	432	3311		554	3231			4969			5003	
Volume (vph)	82	570	29	205	567	151	0	2483	243	0	2807	126
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	600	31	216	597	159	0	2614	256	0	2955	133
Lane Group Flow (vph)	86	631	0	216	756	0	0	2870	0	0	3088	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	33.0	33.0		33.0	33.0			44.0			44.0	
Effective Green, g (s)	33.0	33.0		33.0	33.0			44.0			44.0	
Actuated g/C Ratio	0.39	0.39		0.39	0.39			0.52			0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	168	1285		215	1254			2572			2590	
v/s Ratio Prot		0.19			0.23			0.58			c0.62	
v/s Ratio Perm	0.20			c0.39								
v/c Ratio	0.51	0.49		1.00	0.60			1.12			1.19	
Uniform Delay, d1	19.9	19.7		26.0	20.8			20.5			20.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.47	
Incremental Delay, d2	10.7	1.3		62.6	2.2			58.2			86.9	
Delay (s)	30.6	21.0		88.6	22.9			78.7			96.5	
Level of Service	C	C		F	C			E			F	
Approach Delay (s)		22.1			37.5			78.7			96.5	
Approach LOS		C			D			E			F	

Intersection Summary			
HCM Average Control Delay	75.3	HCM Level of Service	E
HCM Volume to Capacity ratio	1.11		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.6%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1787	2814		5036	5030	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1787	2814		5036	5030	
Volume (vph)	20	266	0	2944	2972	24
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	21	277	0	3067	3096	25
Lane Group Flow (vph)	21	277	0	3067	3121	0
Heavy Vehicles (%)	1%	1%	3%	3%	3%	3%
Turn Type		custom				
Protected Phases	1!	5		2	6!	
Permitted Phases						
Actuated Green, G (s)	1.2	16.4		75.8	60.6	
Effective Green, g (s)	1.2	16.4		75.8	60.6	
Actuated g/C Ratio	0.01	0.19		0.89	0.71	
Clearance Time (s)	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	25	543		4491	3586	
v/s Ratio Prot	0.01	c0.10		c0.61	c0.62	
v/s Ratio Perm						
v/c Ratio	0.84	0.51		0.68	0.87	
Uniform Delay, d1	41.8	30.7		1.3	9.2	
Progression Factor	1.00	1.00		0.75	1.00	
Incremental Delay, d2	110.8	0.8		0.3	3.2	
Delay (s)	152.6	31.5		1.3	12.4	
Level of Service	F	C		A	B	
Approach Delay (s)	40.0			1.3	12.4	
Approach LOS	D			A	B	

Intersection Summary			
HCM Average Control Delay	8.4	HCM Level of Service	A
HCM Volume to Capacity ratio	0.79		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	76.7%	ICU Level of Service	C

! Phase conflict between lane groups.

c Critical Lane Group

ALTERNATIVE 2 VARIANT

AM PEAK HOUR

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 2

100: Lake Street & 17th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	468	30	15	284	5	10	5	40	10	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	5	509	33	16	309	5	11	5	43	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	314			541			888	883	525	926	896	311
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	314			541			888	883	525	926	896	311
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			96	98	92	95	98	99
cM capacity (veh/h)	1258			1038			257	281	556	225	276	733

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	547	330	60	22
Volume Left	5	16	11	11
Volume Right	33	5	43	5
cSH	1258	1038	428	288
Volume to Capacity	0.00	0.02	0.14	0.08
Queue Length (ft)	0	1	12	6
Control Delay (s)	0.1	0.6	14.8	18.5
Lane LOS	A	A	B	C
Approach Delay (s)	0.1	0.6	14.8	18.5
Approach LOS			B	C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	41.9%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 2

101: Lake Street & 15th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	48	576	15	25	365	3	8	29	20	7	4	8
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (veh/h)	50	600	16	26	380	3	8	30	21	7	4	8

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	666	409	59	20
Volume Left (vph)	50	26	8	7
Volume Right (vph)	16	3	21	8
Hadj (s)	0.0	0.0	-0.2	-0.2
Departure Headway (s)	4.6	4.9	6.0	6.1
Degree Utilization, x	0.85	0.55	0.10	0.03
Capacity (veh/h)	767	723	547	525
Control Delay (s)	27.8	13.7	9.7	9.3
Approach Delay (s)	27.8	13.7	9.7	9.3
Approach LOS	D	B	A	A

Intersection Summary			
Delay	21.6		
HCM Level of Service	C		
Intersection Capacity Utilization	70.3%	ICU Level of Service	C

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 2

102: Lake Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	2	586	14	110	377	43	17	26	32	8	3	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (veh/h)	2	598	14	112	385	44	17	27	33	8	3	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	429			612			1242	1262	605	1286	1247	407
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	380			612			1262	1285	605	1311	1269	356
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			86	80	93	91	98	100
cM capacity (veh/h)	1096			977			122	135	501	92	138	638

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	614	541	77	11
Volume Left	2	112	17	8
Volume Right	14	44	33	0
cSH	1096	977	190	101
Volume to Capacity	0.00	0.11	0.40	0.11
Queue Length (ft)	0	10	45	9
Control Delay (s)	0.1	3.0	36.2	45.1
Lane LOS	A	A	E	E
Approach Delay (s)	0.1	3.0	36.2	45.1
Approach LOS			E	E

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	76.3%	ICU Level of Service	C

HCM Signalized Intersection Capacity Analysis — Variant AM Peak Alt 2

103: Lake Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5007			4945	
Flt Permitted	0.56	1.00	1.00	0.28	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	1014	1756	1492	488	1756	1492		5007			4945	
Volume (vph)	211	397	19	108	195	121	0	2869	112	0	2457	335
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	220	414	20	112	203	126	0	2989	117	0	2559	349
Lane Group Flow (vph)	220	414	20	112	203	126	0	3106	0	0	2908	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	334	578	491	161	578	491		2886			2851	
v/s Ratio Prot		c0.24			0.12			c0.62			0.59	
v/s Ratio Perm	0.22		0.01	0.23		0.08						
v/c Ratio	0.66	0.72	0.04	0.70	0.35	0.26		1.08			1.02	
Uniform Delay, d1	24.4	25.0	19.4	24.8	21.6	20.9		18.0			18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.72			0.78	
Incremental Delay, d2	9.8	7.4	0.2	22.0	1.7	1.3		35.1			19.6	
Delay (s)	34.2	32.4	19.5	46.8	23.3	22.1		48.0			33.7	
Level of Service	C	C	B	D	C	C		D			C	
Approach Delay (s)		32.6			28.9			48.0			33.7	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	39.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	488	20	5	393	0	30	0	35	4	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (veh/h)	1	555	23	6	447	0	34	0	40	5	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		71										
pX, platoon unblocked				0.79			0.79	0.79	0.79	0.79	0.79	
vC, conflicting volume	447			577			1028	1026	566	1066	1038	447
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	447			467			1035	1033	453	1083	1047	447
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			79	100	92	97	99	100
cM capacity (veh/h)	1119			872			166	185	485	142	181	616

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	578	452	74	7
Volume Left	1	6	34	5
Volume Right	23	0	40	1
cSH	1119	872	257	170
Volume to Capacity	0.00	0.01	0.29	0.04
Queue Length (ft)	0	0	29	3
Control Delay (s)	0.0	0.2	24.6	27.0
Lane LOS	A	A	C	D
Approach Delay (s)	0.0	0.2	24.6	27.0
Approach LOS			C	D

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	38	562	22	27	370	14	21	6	17	32	4	7
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (veh/h)	40	598	23	29	394	15	22	6	18	34	4	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					531							
pX, platoon unblocked												
vC, conflicting volume	409			621			1159	1156	610	1170	1161	401
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	409			621			1159	1156	610	1170	1161	401
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			97			86	97	96	78	98	99
cM capacity (veh/h)	1161			969			161	186	498	153	185	653

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	662	437	47	46
Volume Left	40	29	22	34
Volume Right	23	15	18	7
cSH	1161	969	224	178
Volume to Capacity	0.03	0.03	0.21	0.26
Queue Length (ft)	3	2	19	24
Control Delay (s)	0.9	0.9	25.3	32.1
Lane LOS	A	A	D	D
Approach Delay (s)	0.9	0.9	25.3	32.1
Approach LOS			D	D

Intersection Summary			
Average Delay	3.1		
Intersection Capacity Utilization	71.7%	ICU Level of Service	C

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 2

106: California Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	29	564	18	36	382	33	15	14	40	96	17	14
Peak Hour Factor	0.91	0.91	0.25	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	32	620	72	40	420	36	16	15	44	105	19	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					231							
pX, platoon unblocked												
vC, conflicting volume	456			692			1033	1255	346	942	1273	228
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	456			692			1033	1255	346	942	1273	228
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			96			90	90	93	42	88	98
cM capacity (veh/h)	1115			913			160	161	656	181	157	781

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	342	382	249	246	76	140
Volume Left	32	0	40	0	16	105
Volume Right	0	72	0	36	44	15
cSH	1115	1700	913	1700	285	193
Volume to Capacity	0.03	0.22	0.04	0.14	0.27	0.72
Queue Length (ft)	2	0	3	0	26	116
Control Delay (s)	1.0	0.0	1.8	0.0	22.1	61.1
Lane LOS	A		A		C	F
Approach Delay (s)	0.5		0.9		22.1	61.1
Approach LOS					C	F

Intersection Summary			
Average Delay	7.7		
Intersection Capacity Utilization	47.5%	ICU Level of Service	A

HCM Signalized Intersection Capacity Analysis — Variant AM Peak Alt 2

107: California Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	1.00		1.00	0.96			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3321		1668	3215			4939			5004	
Flt Permitted	0.39	1.00		0.27	1.00			1.00			1.00	
Satd. Flow (perm)	678	3321		467	3215			4939			5004	
Volume (vph)	91	591	18	111	342	109	0	2781	410	0	2476	109
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	94	609	19	114	353	112	0	2867	423	0	2553	112
Lane Group Flow (vph)	94	628	0	114	465	0	0	3290	0	0	2665	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Effective Green, g (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Actuated g/C Ratio	0.31	0.31		0.31	0.31			0.60			0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	207	1016		143	983			2963			3002	
v/s Ratio Prot		0.19			0.14			c0.67			0.53	
v/s Ratio Perm	0.14			c0.24								
v/c Ratio	0.45	0.62		0.80	0.47			1.11			0.89	
Uniform Delay, d1	23.8	25.3		27.1	23.9			17.0			14.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.70	
Incremental Delay, d2	7.0	2.8		35.6	1.6			55.2			1.1	
Delay (s)	30.8	28.1		62.7	25.6			72.2			11.3	
Level of Service	C	C		E	C			E			B	
Approach Delay (s)		28.4			32.9			72.2			11.3	
Approach LOS		C			C			E			B	

Intersection Summary			
HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.6%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1787	2814		5036	5034	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1787	2814		5036	5034	
Volume (vph)	11	139	0	3201	2653	6
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	11	145	0	3334	2764	6
Lane Group Flow (vph)	11	145	0	3334	2770	0
Heavy Vehicles (%)	1%	1%	3%	3%	3%	3%
Turn Type		custom				
Protected Phases	1!	5		2	6!	
Permitted Phases						
Actuated Green, G (s)	1.4	14.1		75.6	62.9	
Effective Green, g (s)	1.4	14.1		75.6	62.9	
Actuated g/C Ratio	0.02	0.17		0.89	0.74	
Clearance Time (s)	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	29	467		4479	3725	
v/s Ratio Prot	0.01	c0.05		c0.66	0.55	
v/s Ratio Perm						
v/c Ratio	0.38	0.31		0.74	0.74	
Uniform Delay, d1	41.4	31.2		1.5	6.4	
Progression Factor	1.00	1.00		1.63	1.00	
Incremental Delay, d2	8.1	0.4		0.1	1.4	
Delay (s)	49.5	31.6		2.6	7.8	
Level of Service	D	C		A	A	
Approach Delay (s)	32.8			2.6	7.8	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	C

! Phase conflict between lane groups.

c Critical Lane Group

ALTERNATIVE 2 VARIANT

PM PEAK HOUR

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 2

100: Lake Street & 17th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	380	15	20	441	10	5	0	25	10	5	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	5	409	16	22	474	11	5	0	27	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	485			425			958	955	417	977	958	480
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	485			425			958	955	417	977	958	480
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			98	100	96	95	98	99
cM capacity (veh/h)	1088			1145			229	254	640	218	253	590

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	430	506	32	22
Volume Left	5	22	5	11
Volume Right	16	11	27	5
cSH	1088	1145	493	270
Volume to Capacity	0.00	0.02	0.07	0.08
Queue Length (ft)	0	1	5	6
Control Delay (s)	0.2	0.6	12.8	19.5
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	0.6	12.8	19.5
Approach LOS			B	C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	49.9%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 2

101: Lake Street & 15th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	61	357	9	39	448	8	7	78	19	4	5	2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	67	392	10	43	492	9	8	86	21	4	5	2

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	469	544	114	12
Volume Left (vph)	67	43	8	4
Volume Right (vph)	10	9	21	2
Hadj (s)	0.0	0.0	-0.1	0.0
Departure Headway (s)	4.9	4.8	6.0	6.4
Degree Utilization, x	0.64	0.73	0.19	0.02
Capacity (veh/h)	707	731	527	482
Control Delay (s)	16.4	19.9	10.4	9.5
Approach Delay (s)	16.4	19.9	10.4	9.5
Approach LOS	C	C	B	A

Intersection Summary			
Delay	17.4		
HCM Level of Service	C		
Intersection Capacity Utilization	70.4%	ICU Level of Service	C

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 2

102: Lake Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	376	3	207	486	71	9	47	31	4	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	1	404	3	223	523	76	10	51	33	4	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.82						0.82	0.82		0.82	0.82	0.82
vC, conflicting volume	599			408			1415	1452	406	1473	1416	561
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	514			408			1502	1548	406	1573	1504	468
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			81			86	34	95	85	99	100
cM capacity (veh/h)	876			1162			70	77	649	29	82	495

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	409	822	94	5
Volume Left	1	223	10	4
Volume Right	3	76	33	0
cSH	876	1162	110	33
Volume to Capacity	0.00	0.19	0.85	0.16
Queue Length (ft)	0	18	124	13
Control Delay (s)	0.0	4.3	119.9	133.0
Lane LOS	A	A	F	F
Approach Delay (s)	0.0	4.3	119.9	133.0
Approach LOS			F	F

Intersection Summary			
Average Delay	11.6		
Intersection Capacity Utilization	81.6%	ICU Level of Service	D

HCM Signalized Intersection Capacity Analysis — Variant PM Peak Alt 2

103: Lake Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5018			4951	
Flt Permitted	0.34	1.00	1.00	0.38	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	613	1756	1492	660	1756	1492		5018			4951	
Volume (vph)	112	327	30	104	356	190	0	2642	74	0	2757	409
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	115	337	31	107	367	196	0	2724	76	0	2842	422
Lane Group Flow (vph)	115	337	31	107	367	196	0	2800	0	0	3264	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	1%	3%	1%	1%	3%	1%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	202	578	491	217	578	491		2893			2854	
v/s Ratio Prot		0.19			c0.21			0.56			c0.66	
v/s Ratio Perm	0.19		0.02	0.16		0.13						
v/c Ratio	0.57	0.58	0.06	0.49	0.63	0.40		0.97			1.14	
Uniform Delay, d1	23.5	23.7	19.5	22.8	24.2	22.0		17.2			18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.21			0.77	
Incremental Delay, d2	11.1	4.3	0.2	7.8	5.2	2.4		1.5			67.6	
Delay (s)	34.7	27.9	19.8	30.6	29.4	24.4		22.3			81.4	
Level of Service	C	C	B	C	C	C		C			F	
Approach Delay (s)		29.0			28.1			22.3			81.4	
Approach LOS		C			C			C			F	

Intersection Summary			
HCM Average Control Delay	50.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	100.0%	ICU Level of Service	F

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	376	20	15	630	5	15	0	5	5	0	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (veh/h)	6	432	23	17	724	6	17	0	6	6	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		68										
pX, platoon unblocked				0.84			0.84	0.84	0.84	0.84	0.84	
vC, conflicting volume	730			455			1222	1220	444	1222	1228	727
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	730			353			1264	1261	339	1264	1271	727
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			86	100	99	95	100	99
cM capacity (veh/h)	879			1020			120	141	596	121	139	427

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	461	747	23	11
Volume Left	6	17	17	6
Volume Right	23	6	6	6
cSH	879	1020	150	188
Volume to Capacity	0.01	0.02	0.15	0.06
Queue Length (ft)	0	1	13	5
Control Delay (s)	0.2	0.4	33.2	25.3
Lane LOS	A	A	D	D
Approach Delay (s)	0.2	0.4	33.2	25.3
Approach LOS			D	D

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization	64.0%	ICU Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	77	517	27	28	599	21	23	6	26	9	25	18
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (veh/h)	79	533	28	29	618	22	24	6	27	9	26	19
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					531							
pX, platoon unblocked												
vC, conflicting volume	639			561			1423	1403	547	1422	1406	628
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	639			561			1423	1403	547	1422	1406	628
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			97			72	95	95	90	79	96
cM capacity (veh/h)	955			1020			85	126	541	96	125	486

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	640	668	57	54
Volume Left	79	29	24	9
Volume Right	28	22	27	19
cSH	955	1020	151	158
Volume to Capacity	0.08	0.03	0.38	0.34
Queue Length (ft)	7	2	40	35
Control Delay (s)	2.1	0.7	42.7	39.2
Lane LOS	A	A	E	E
Approach Delay (s)	2.1	0.7	42.7	39.2
Approach LOS			E	E

Intersection Summary			
Average Delay		4.5	
Intersection Capacity Utilization	82.9%	ICU Level of Service	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	27	512	12	57	614	22	11	38	47	105	27	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (veh/h)	28	539	13	60	646	23	12	40	49	111	28	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					231							
pX, platoon unblocked												
vC, conflicting volume	669			552			1083	1392	276	1174	1386	335
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	669			552			1083	1392	276	1174	1386	335
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			94			91	69	93	0	78	97
cM capacity (veh/h)	930			1028			131	131	728	100	132	667

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	298	282	383	346	101	162
Volume Left	28	0	60	0	12	111
Volume Right	0	13	0	23	49	23
cSH	930	1700	1028	1700	219	119
Volume to Capacity	0.03	0.17	0.06	0.20	0.46	1.36
Queue Length (ft)	2	0	5	0	56	273
Control Delay (s)	1.2	0.0	1.9	0.0	34.8	274.0
Lane LOS	A		A		D	F
Approach Delay (s)	0.6		1.0		34.8	274.0
Approach LOS					D	F

Intersection Summary			
Average Delay	31.2		
Intersection Capacity Utilization	59.6%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	0.99		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3311		1668	3231			4969			5003	
Flt Permitted	0.25	1.00		0.33	1.00			1.00			1.00	
Satd. Flow (perm)	432	3311		573	3231			4969			5003	
Volume (vph)	82	553	29	205	567	151	0	2483	243	0	2766	126
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	582	31	216	597	159	0	2614	256	0	2912	133
Lane Group Flow (vph)	86	613	0	216	756	0	0	2870	0	0	3045	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	33.0	33.0		33.0	33.0			44.0			44.0	
Effective Green, g (s)	33.0	33.0		33.0	33.0			44.0			44.0	
Actuated g/C Ratio	0.39	0.39		0.39	0.39			0.52			0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	168	1285		222	1254			2572			2590	
v/s Ratio Prot		0.19			0.23			0.58			c0.61	
v/s Ratio Perm	0.20			c0.38								
v/c Ratio	0.51	0.48		0.97	0.60			1.12			1.18	
Uniform Delay, d1	19.9	19.5		25.6	20.8			20.5			20.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.45	
Incremental Delay, d2	10.7	1.3		53.8	2.2			58.2			79.5	
Delay (s)	30.6	20.8		79.4	22.9			78.7			88.8	
Level of Service	C	C		E	C			E			F	
Approach Delay (s)		22.0			35.5			78.7			88.8	
Approach LOS		C			D			E			F	

Intersection Summary			
HCM Average Control Delay	72.0	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.2%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1787	2814		5036	5033	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1787	2814		5036	5033	
Volume (vph)	6	194	0	2944	2972	12
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	6	202	0	3067	3096	12
Lane Group Flow (vph)	6	202	0	3067	3108	0
Heavy Vehicles (%)	1%	1%	3%	3%	3%	3%
Turn Type		custom				
Protected Phases	1!	5		2	6!	
Permitted Phases						
Actuated Green, G (s)	0.6	14.9		76.4	62.1	
Effective Green, g (s)	0.6	14.9		76.4	62.1	
Actuated g/C Ratio	0.01	0.18		0.90	0.73	
Clearance Time (s)	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	13	493		4526	3677	
v/s Ratio Prot	0.00	c0.07		c0.61	c0.62	
v/s Ratio Perm						
v/c Ratio	0.46	0.41		0.68	0.85	
Uniform Delay, d1	42.0	31.1		1.1	8.1	
Progression Factor	1.00	1.00		1.19	1.00	
Incremental Delay, d2	23.8	0.6		0.3	2.6	
Delay (s)	65.8	31.7		1.7	10.6	
Level of Service	E	C		A	B	
Approach Delay (s)	32.7			1.7	10.6	
Approach LOS	C			A	B	

Intersection Summary			
HCM Average Control Delay	7.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	73.8%	ICU Level of Service	C

! Phase conflict between lane groups.

c Critical Lane Group

ALTERNATIVE 3 VARIANT

AM PEAK HOUR

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	466	30	15	281	5	10	5	40	10	5	5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (veh/h)	5	507	33	16	305	5	11	5	43	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	311			539			883	877	523	921	891	308
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	311			539			883	877	523	921	891	308
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			96	98	92	95	98	99
cM capacity (veh/h)	1261			1039			259	283	558	227	278	737

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	545	327	60	22
Volume Left	5	16	11	11
Volume Right	33	5	43	5
cSH	1261	1039	430	290
Volume to Capacity	0.00	0.02	0.14	0.07
Queue Length (ft)	0	1	12	6
Control Delay (s)	0.1	0.6	14.7	18.4
Lane LOS	A	A	B	C
Approach Delay (s)	0.1	0.6	14.7	18.4
Approach LOS			B	C

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	41.8%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	46	576	15	25	362	3	8	28	20	7	4	8
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (veh/h)	48	600	16	26	377	3	8	29	21	7	4	8

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	664	406	58	20
Volume Left (vph)	48	26	8	7
Volume Right (vph)	16	3	21	8
Hadj (s)	0.0	0.0	-0.2	-0.2
Departure Headway (s)	4.6	4.9	6.0	6.1
Degree Utilization, x	0.85	0.55	0.10	0.03
Capacity (veh/h)	769	724	548	526
Control Delay (s)	27.3	13.6	9.6	9.3
Approach Delay (s)	27.3	13.6	9.6	9.3
Approach LOS	D	B	A	A

Intersection Summary			
Delay	21.3		
HCM Level of Service	C		
Intersection Capacity Utilization	70.0%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 3

102: Lake Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	2	586	14	107	374	41	17	25	32	8	3	0
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (veh/h)	2	598	14	109	382	42	17	26	33	8	3	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.92						0.92	0.92		0.92	0.92	0.92
vC, conflicting volume	423			612			1232	1251	605	1276	1237	403
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	375			612			1251	1272	605	1299	1257	352
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			89			86	82	93	91	98	100
cM capacity (veh/h)	1102			977			125	138	501	95	141	642

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	614	533	76	11
Volume Left	2	109	17	8
Volume Right	14	42	33	0
cSH	1102	977	194	104
Volume to Capacity	0.00	0.11	0.39	0.11
Queue Length (ft)	0	9	43	9
Control Delay (s)	0.1	3.0	34.8	43.7
Lane LOS	A	A	D	E
Approach Delay (s)	0.1	3.0	34.8	43.7
Approach LOS			D	E

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	75.8%	ICU Level of Service	C

HCM Signalized Intersection Capacity Analysis — Variant AM Peak Alt 3

103: Lake Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		0.99			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5007			4947	
Flt Permitted	0.56	1.00	1.00	0.28	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	1019	1756	1492	488	1756	1492		5007			4947	
Volume (vph)	211	397	19	108	193	121	0	2869	112	0	2448	328
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	220	414	20	112	201	126	0	2989	117	0	2550	342
Lane Group Flow (vph)	220	414	20	112	201	126	0	3106	0	0	2892	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	336	578	491	161	578	491		2886			2852	
v/s Ratio Prot		c0.24			0.11			c0.62			0.58	
v/s Ratio Perm	0.22		0.01	0.23		0.08						
v/c Ratio	0.65	0.72	0.04	0.70	0.35	0.26		1.08			1.01	
Uniform Delay, d1	24.4	25.0	19.4	24.8	21.6	20.9		18.0			18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.72			0.80	
Incremental Delay, d2	9.6	7.4	0.2	22.0	1.7	1.3		35.1			18.2	
Delay (s)	33.9	32.4	19.5	46.8	23.2	22.1		48.0			32.6	
Level of Service	C	C	B	D	C	C		D			C	
Approach Delay (s)		32.6			28.9			48.0			32.6	
Approach LOS		C			C			D			C	

Intersection Summary			
HCM Average Control Delay	39.1	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.3%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	488	20	5	391	0	30	0	35	4	1	1
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Hourly flow rate (veh/h)	1	555	23	6	444	0	34	0	40	5	1	1
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		76										
pX, platoon unblocked				0.79			0.79	0.79	0.79	0.79	0.79	
vC, conflicting volume	444			577			1026	1024	566	1064	1035	444
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	444			467			1032	1030	453	1080	1044	444
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			80	100	92	97	99	100
cM capacity (veh/h)	1121			872			167	185	485	143	182	618

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	578	450	74	7
Volume Left	1	6	34	5
Volume Right	23	0	40	1
cSH	1121	872	258	171
Volume to Capacity	0.00	0.01	0.29	0.04
Queue Length (ft)	0	0	29	3
Control Delay (s)	0.0	0.2	24.5	26.9
Lane LOS	A	A	C	D
Approach Delay (s)	0.0	0.2	24.5	26.9
Approach LOS			C	D

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	43.5%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	37	561	22	27	370	14	21	6	17	32	4	7
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (veh/h)	39	597	23	29	394	15	22	6	18	34	4	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					531							
pX, platoon unblocked												
vC, conflicting volume	409			620			1155	1153	609	1167	1157	401
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	409			620			1155	1153	609	1167	1157	401
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			97			86	97	96	78	98	99
cM capacity (veh/h)	1161			970			162	187	499	154	186	653

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	660	437	47	46
Volume Left	39	29	22	34
Volume Right	23	15	18	7
cSH	1161	970	225	179
Volume to Capacity	0.03	0.03	0.21	0.26
Queue Length (ft)	3	2	19	24
Control Delay (s)	0.9	0.9	25.2	31.9
Lane LOS	A	A	D	D
Approach Delay (s)	0.9	0.9	25.2	31.9
Approach LOS			D	D

Intersection Summary			
Average Delay	3.0		
Intersection Capacity Utilization	71.5%	ICU Level of Service	C

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 3

106: California Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	28	564	18	36	382	33	15	14	40	93	17	14
Peak Hour Factor	0.91	0.91	0.25	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	31	620	72	40	420	36	16	15	44	102	19	15
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					231							
pX, platoon unblocked												
vC, conflicting volume	456			692			1031	1252	346	940	1270	228
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	456			692			1031	1252	346	940	1270	228
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			96			90	90	93	44	88	98
cM capacity (veh/h)	1115			913			161	162	656	181	158	781

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	341	382	249	246	76	136
Volume Left	31	0	40	0	16	102
Volume Right	0	72	0	36	44	15
cSH	1115	1700	913	1700	286	194
Volume to Capacity	0.03	0.22	0.04	0.14	0.26	0.70
Queue Length (ft)	2	0	3	0	26	110
Control Delay (s)	1.0	0.0	1.8	0.0	22.0	58.2
Lane LOS	A		A		C	F
Approach Delay (s)	0.5		0.9		22.0	58.2
Approach LOS					C	F

Intersection Summary			
Average Delay	7.3		
Intersection Capacity Utilization	47.0%	ICU Level of Service	A

HCM Signalized Intersection Capacity Analysis — Variant AM Peak Alt 3

107: California Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	1.00		1.00	0.96			0.98			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3321		1668	3215			4939			5004	
Flt Permitted	0.39	1.00		0.27	1.00			1.00			1.00	
Satd. Flow (perm)	678	3321		471	3215			4939			5004	
Volume (vph)	91	588	18	111	342	109	0	2781	410	0	2467	109
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	94	606	19	114	353	112	0	2867	423	0	2543	112
Lane Group Flow (vph)	94	625	0	114	465	0	0	3290	0	0	2655	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Effective Green, g (s)	26.0	26.0		26.0	26.0			51.0			51.0	
Actuated g/C Ratio	0.31	0.31		0.31	0.31			0.60			0.60	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	207	1016		144	983			2963			3002	
v/s Ratio Prot		0.19			0.14			c0.67			0.53	
v/s Ratio Perm	0.14			c0.24								
v/c Ratio	0.45	0.62		0.79	0.47			1.11			0.88	
Uniform Delay, d1	23.8	25.2		27.0	23.9			17.0			14.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.70	
Incremental Delay, d2	7.0	2.8		34.7	1.6			55.2			1.1	
Delay (s)	30.8	28.0		61.7	25.6			72.2			11.2	
Level of Service	C	C		E	C			E			B	
Approach Delay (s)		28.4			32.7			72.2			11.2	
Approach LOS		C			C			E			B	

Intersection Summary			
HCM Average Control Delay	42.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.00		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.5%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1787	2814		5036	5035	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1787	2814		5036	5035	
Volume (vph)	8	123	0	3201	2653	5
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	8	128	0	3334	2764	5
Lane Group Flow (vph)	8	128	0	3334	2769	0
Heavy Vehicles (%)	1%	1%	3%	3%	3%	3%
Turn Type		custom				
Protected Phases	1!	5		2	6!	
Permitted Phases						
Actuated Green, G (s)	1.4	11.7		75.6	65.3	
Effective Green, g (s)	1.4	11.7		75.6	65.3	
Actuated g/C Ratio	0.02	0.14		0.89	0.77	
Clearance Time (s)	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	29	387		4479	3868	
v/s Ratio Prot	0.00	c0.05		c0.66	0.55	
v/s Ratio Perm						
v/c Ratio	0.28	0.33		0.74	0.72	
Uniform Delay, d1	41.3	33.1		1.5	5.1	
Progression Factor	1.00	1.00		1.65	1.00	
Incremental Delay, d2	5.1	0.5		0.1	1.2	
Delay (s)	46.4	33.6		2.6	6.2	
Level of Service	D	C		A	A	
Approach Delay (s)	34.4			2.6	6.2	
Approach LOS	C			A	A	

Intersection Summary			
HCM Average Control Delay	4.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.71		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	74.4%	ICU Level of Service	C

! Phase conflict between lane groups.

c Critical Lane Group

ALTERNATIVE 3 VARIANT

PM PEAK HOUR

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 3

100: Lake Street & 17th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	301	15	20	397	10	5	0	25	10	5	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	5	324	16	22	427	11	5	0	27	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	438			340			826	823	332	845	826	432
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	438			340			826	823	332	845	826	432
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			98	100	96	96	98	99
cM capacity (veh/h)	1133			1231			282	304	715	270	303	628

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	345	459	32	22
Volume Left	5	22	5	11
Volume Right	16	11	27	5
cSH	1133	1231	569	325
Volume to Capacity	0.00	0.02	0.06	0.07
Queue Length (ft)	0	1	4	5
Control Delay (s)	0.2	0.6	11.7	16.9
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	0.6	11.7	16.9
Approach LOS			B	C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 3

101: Lake Street & 15th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	57	357	9	39	447	8	7	74	19	4	5	2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	63	392	10	43	491	9	8	81	21	4	5	2

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	465	543	110	12
Volume Left (vph)	63	43	8	4
Volume Right (vph)	10	9	21	2
Hadj (s)	0.0	0.0	-0.1	0.0
Departure Headway (s)	4.9	4.8	6.0	6.3
Degree Utilization, x	0.63	0.73	0.18	0.02
Capacity (veh/h)	710	734	529	485
Control Delay (s)	16.0	19.5	10.3	9.5
Approach Delay (s)	16.0	19.5	10.3	9.5
Approach LOS	C	C	B	A

Intersection Summary			
Delay	17.1		
HCM Level of Service	C		
Intersection Capacity Utilization	69.8%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 3

102: Lake Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	376	3	206	485	67	9	43	31	4	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	1	404	3	222	522	72	10	46	33	4	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.83						0.83	0.83		0.83	0.83	0.83
vC, conflicting volume	594			408			1409	1445	406	1465	1410	558
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	509			408			1494	1537	406	1562	1496	465
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			81			86	41	95	87	99	100
cM capacity (veh/h)	883			1162			72	78	649	33	83	498

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	409	815	89	5
Volume Left	1	222	10	4
Volume Right	3	72	33	0
cSH	883	1162	115	38
Volume to Capacity	0.00	0.19	0.78	0.14
Queue Length (ft)	0	18	110	11
Control Delay (s)	0.0	4.3	102.4	115.6
Lane LOS	A	A	F	F
Approach Delay (s)	0.0	4.3	102.4	115.6
Approach LOS			F	F

Intersection Summary			
Average Delay	10.1		
Intersection Capacity Utilization	80.9%	ICU Level of Service	D

HCM Signalized Intersection Capacity Analysis — Variant PM Peak Alt 3

103: Lake Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5015			4939	
Flt Permitted	0.34	1.00	1.00	0.38	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	623	1756	1492	660	1756	1492		5015			4939	
Volume (vph)	112	327	30	104	352	190	0	2642	74	0	2753	405
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	115	337	31	107	363	196	0	2724	76	0	2838	418
Lane Group Flow (vph)	115	337	31	107	363	196	0	2800	0	0	3256	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	205	578	491	217	578	491		2891			2847	
v/s Ratio Prot		0.19			c0.21			0.56			c0.66	
v/s Ratio Perm	0.18		0.02	0.16		0.13						
v/c Ratio	0.56	0.58	0.06	0.49	0.63	0.40		0.97			1.14	
Uniform Delay, d1	23.4	23.7	19.5	22.8	24.1	22.0		17.3			18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.21			0.77	
Incremental Delay, d2	10.6	4.3	0.2	7.8	5.1	2.4		1.6			67.6	
Delay (s)	34.1	27.9	19.8	30.6	29.2	24.4		22.4			81.4	
Level of Service	C	C	B	C	C	C		C			F	
Approach Delay (s)		28.9			28.0			22.4			81.4	
Approach LOS		C			C			C			F	

Intersection Summary			
HCM Average Control Delay	50.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.6%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	376	20	15	628	5	15	0	5	5	0	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (veh/h)	6	432	23	17	722	6	17	0	6	6	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		76										
pX, platoon unblocked				0.84			0.84	0.84	0.84	0.84	0.84	
vC, conflicting volume	728			455			1220	1217	444	1220	1226	725
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	728			353			1262	1258	339	1262	1268	725
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			86	100	99	95	100	99
cM capacity (veh/h)	880			1020			121	142	596	121	140	429

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	461	745	23	11
Volume Left	6	17	17	6
Volume Right	23	6	6	6
cSH	880	1020	151	189
Volume to Capacity	0.01	0.02	0.15	0.06
Queue Length (ft)	0	1	13	5
Control Delay (s)	0.2	0.4	33.1	25.2
Lane LOS	A	A	D	D
Approach Delay (s)	0.2	0.4	33.1	25.2
Approach LOS			D	D

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization	63.8%	ICU Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	74	513	27	28	599	21	23	5	26	9	25	18
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (veh/h)	76	529	28	29	618	22	24	5	27	9	26	19
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					531							
pX, platoon unblocked												
vC, conflicting volume	639			557			1413	1392	543	1411	1395	628
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	639			557			1413	1392	543	1411	1395	628
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			97			73	96	95	91	80	96
cM capacity (veh/h)	955			1024			87	128	544	99	127	486

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	633	668	56	54
Volume Left	76	29	24	9
Volume Right	28	22	27	19
cSH	955	1024	154	161
Volume to Capacity	0.08	0.03	0.36	0.33
Queue Length (ft)	6	2	38	34
Control Delay (s)	2.0	0.7	41.0	38.3
Lane LOS	A	A	E	E
Approach Delay (s)	2.0	0.7	41.0	38.3
Approach LOS			E	E

Intersection Summary			
Average Delay		4.3	
Intersection Capacity Utilization	82.5%	ICU Level of Service	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	23	512	12	57	614	22	11	38	47	104	27	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (veh/h)	24	539	13	60	646	23	12	40	49	109	28	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					231							
pX, platoon unblocked												
vC, conflicting volume	669			552			1074	1383	276	1165	1378	335
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	669			552			1074	1383	276	1165	1378	335
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			94			91	70	93	0	79	97
cM capacity (veh/h)	930			1028			134	133	728	102	134	667

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	294	282	383	346	101	161
Volume Left	24	0	60	0	12	109
Volume Right	0	13	0	23	49	23
cSH	930	1700	1028	1700	222	122
Volume to Capacity	0.03	0.17	0.06	0.20	0.46	1.32
Queue Length (ft)	2	0	5	0	55	265
Control Delay (s)	1.0	0.0	1.9	0.0	34.1	257.4
Lane LOS	A		A		D	F
Approach Delay (s)	0.5		1.0		34.1	257.4
Approach LOS					D	F

Intersection Summary			
Average Delay	29.3		
Intersection Capacity Utilization	59.5%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	0.99		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3311		1668	3231			4969			5003	
Flt Permitted	0.25	1.00		0.33	1.00			1.00			1.00	
Satd. Flow (perm)	432	3311		574	3231			4969			5003	
Volume (vph)	82	552	29	205	567	151	0	2483	243	0	2762	126
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	581	31	216	597	159	0	2614	256	0	2907	133
Lane Group Flow (vph)	86	612	0	216	756	0	0	2870	0	0	3040	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	33.0	33.0		33.0	33.0			44.0			44.0	
Effective Green, g (s)	33.0	33.0		33.0	33.0			44.0			44.0	
Actuated g/C Ratio	0.39	0.39		0.39	0.39			0.52			0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	168	1285		223	1254			2572			2590	
v/s Ratio Prot		0.18			0.23			0.58			c0.61	
v/s Ratio Perm	0.20			c0.38								
v/c Ratio	0.51	0.48		0.97	0.60			1.12			1.17	
Uniform Delay, d1	19.9	19.5		25.5	20.8			20.5			20.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.45	
Incremental Delay, d2	10.7	1.3		52.7	2.2			58.2			78.6	
Delay (s)	30.6	20.8		78.2	22.9			78.7			87.9	
Level of Service	C	C		E	C			E			F	
Approach Delay (s)		22.0			35.2			78.7			87.9	
Approach LOS		C			D			E			F	

Intersection Summary			
HCM Average Control Delay	71.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.1%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1787	2814		5036	5034	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1787	2814		5036	5034	
Volume (vph)	5	187	0	2944	2972	9
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	5	195	0	3067	3096	9
Lane Group Flow (vph)	5	195	0	3067	3105	0
Heavy Vehicles (%)	1%	1%	3%	3%	3%	3%
Turn Type		custom				
Protected Phases	1!	5		2	6!	
Permitted Phases						
Actuated Green, G (s)	0.6	14.8		76.4	62.2	
Effective Green, g (s)	0.6	14.8		76.4	62.2	
Actuated g/C Ratio	0.01	0.17		0.90	0.73	
Clearance Time (s)	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	13	490		4526	3684	
v/s Ratio Prot	0.00	c0.07		c0.61	c0.62	
v/s Ratio Perm						
v/c Ratio	0.38	0.40		0.68	0.84	
Uniform Delay, d1	42.0	31.1		1.1	8.0	
Progression Factor	1.00	1.00		1.19	1.00	
Incremental Delay, d2	17.9	0.5		0.3	2.5	
Delay (s)	59.9	31.7		1.7	10.5	
Level of Service	E	C		A	B	
Approach Delay (s)	32.4			1.7	10.5	
Approach LOS	C			A	B	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	C

! Phase conflict between lane groups.

c Critical Lane Group

ALTERNATIVE 4 VARIANT

AM PEAK HOUR

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 4

100: Lake Street & 17th Avenue — 7/7/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	301	15	20	397	10	5	0	25	10	5	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	5	324	16	22	427	11	5	0	27	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	438			340			826	823	332	845	826	432
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	438			340			826	823	332	845	826	432
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			98	100	96	96	98	99
cM capacity (veh/h)	1133			1231			282	304	715	270	303	628

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	345	459	32	22
Volume Left	5	22	5	11
Volume Right	16	11	27	5
cSH	1133	1231	569	325
Volume to Capacity	0.00	0.02	0.06	0.07
Queue Length (ft)	0	1	4	5
Control Delay (s)	0.2	0.6	11.7	16.9
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	0.6	11.7	16.9
Approach LOS			B	C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	46.0%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 4

101: Lake Street & 15th Avenue — 7/7/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	57	357	9	39	447	8	7	74	19	4	5	2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	63	392	10	43	491	9	8	81	21	4	5	2

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	465	543	110	12
Volume Left (vph)	63	43	8	4
Volume Right (vph)	10	9	21	2
Hadj (s)	0.0	0.0	-0.1	0.0
Departure Headway (s)	4.9	4.8	6.0	6.3
Degree Utilization, x	0.63	0.73	0.18	0.02
Capacity (veh/h)	710	734	529	485
Control Delay (s)	16.0	19.5	10.3	9.5
Approach Delay (s)	16.0	19.5	10.3	9.5
Approach LOS	C	C	B	A

Intersection Summary			
Delay	17.1		
HCM Level of Service	C		
Intersection Capacity Utilization	69.8%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 4

102: Lake Street & 14th Avenue — 7/7/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	376	3	206	485	67	9	43	31	4	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	1	404	3	222	522	72	10	46	33	4	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.83						0.83	0.83		0.83	0.83	0.83
vC, conflicting volume	594			408			1409	1445	406	1465	1410	558
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	509			408			1494	1537	406	1562	1496	465
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			81			86	41	95	87	99	100
cM capacity (veh/h)	883			1162			72	78	649	33	83	498

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	409	815	89	5
Volume Left	1	222	10	4
Volume Right	3	72	33	0
cSH	883	1162	115	38
Volume to Capacity	0.00	0.19	0.78	0.14
Queue Length (ft)	0	18	110	11
Control Delay (s)	0.0	4.3	102.4	115.6
Lane LOS	A	A	F	F
Approach Delay (s)	0.0	4.3	102.4	115.6
Approach LOS			F	F

Intersection Summary			
Average Delay	10.1		
Intersection Capacity Utilization	80.9%	ICU Level of Service	D

HCM Signalized Intersection Capacity Analysis — Variant AM Peak Alt 4

103: Lake Street & Park Presidio Boulevard — 7/7/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5015			4939	
Flt Permitted	0.34	1.00	1.00	0.38	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	623	1756	1492	660	1756	1492		5015			4939	
Volume (vph)	112	327	30	104	352	190	0	2642	74	0	2753	405
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	115	337	31	107	363	196	0	2724	76	0	2838	418
Lane Group Flow (vph)	115	337	31	107	363	196	0	2800	0	0	3256	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	205	578	491	217	578	491		2891			2847	
v/s Ratio Prot		0.19			c0.21			0.56			c0.66	
v/s Ratio Perm	0.18		0.02	0.16		0.13						
v/c Ratio	0.56	0.58	0.06	0.49	0.63	0.40		0.97			1.14	
Uniform Delay, d1	23.4	23.7	19.5	22.8	24.1	22.0		17.3			18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.21			0.77	
Incremental Delay, d2	10.6	4.3	0.2	7.8	5.1	2.4		1.6			67.6	
Delay (s)	34.1	27.9	19.8	30.6	29.2	24.4		22.4			81.4	
Level of Service	C	C	B	C	C	C		C			F	
Approach Delay (s)		28.9			28.0			22.4			81.4	
Approach LOS		C			C			C			F	

Intersection Summary			
HCM Average Control Delay	50.0	HCM Level of Service	D
HCM Volume to Capacity ratio	0.96		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.6%	ICU Level of Service	E

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 4

104: Lake Street & Funston Avenue — 7/7/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	376	20	15	628	5	15	0	5	5	0	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (veh/h)	6	432	23	17	722	6	17	0	6	6	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		76										
pX, platoon unblocked				0.84			0.84	0.84	0.84	0.84	0.84	
vC, conflicting volume	728			455			1220	1217	444	1220	1226	725
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	728			353			1262	1258	339	1262	1268	725
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			86	100	99	95	100	99
cM capacity (veh/h)	880			1020			121	142	596	121	140	429

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	461	745	23	11
Volume Left	6	17	17	6
Volume Right	23	6	6	6
cSH	880	1020	151	189
Volume to Capacity	0.01	0.02	0.15	0.06
Queue Length (ft)	0	1	13	5
Control Delay (s)	0.2	0.4	33.1	25.2
Lane LOS	A	A	D	D
Approach Delay (s)	0.2	0.4	33.1	25.2
Approach LOS			D	D

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization	63.8%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — Variant AM Peak Alt 4

105: California Street & 15th Avenue — 7/7/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	74	513	27	28	599	21	23	5	26	9	25	18
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (veh/h)	76	529	28	29	618	22	24	5	27	9	26	19
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					531							
pX, platoon unblocked												
vC, conflicting volume	639			557			1413	1392	543	1411	1395	628
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	639			557			1413	1392	543	1411	1395	628
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			97			73	96	95	91	80	96
cM capacity (veh/h)	955			1024			87	128	544	99	127	486

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	633	668	56	54
Volume Left	76	29	24	9
Volume Right	28	22	27	19
cSH	955	1024	154	161
Volume to Capacity	0.08	0.03	0.36	0.33
Queue Length (ft)	6	2	38	34
Control Delay (s)	2.0	0.7	41.0	38.3
Lane LOS	A	A	E	E
Approach Delay (s)	2.0	0.7	41.0	38.3
Approach LOS			E	E

Intersection Summary			
Average Delay		4.3	
Intersection Capacity Utilization	82.5%	ICU Level of Service	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	23	512	12	57	614	22	11	38	47	104	27	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (veh/h)	24	539	13	60	646	23	12	40	49	109	28	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					231							
pX, platoon unblocked												
vC, conflicting volume	669			552			1074	1383	276	1165	1378	335
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	669			552			1074	1383	276	1165	1378	335
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	97			94			91	70	93	0	79	97
cM capacity (veh/h)	930			1028			134	133	728	102	134	667

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	294	282	383	346	101	161
Volume Left	24	0	60	0	12	109
Volume Right	0	13	0	23	49	23
cSH	930	1700	1028	1700	222	122
Volume to Capacity	0.03	0.17	0.06	0.20	0.46	1.32
Queue Length (ft)	2	0	5	0	55	265
Control Delay (s)	1.0	0.0	1.9	0.0	34.1	257.4
Lane LOS	A		A		D	F
Approach Delay (s)	0.5		1.0		34.1	257.4
Approach LOS					D	F

Intersection Summary			
Average Delay	29.3		
Intersection Capacity Utilization	59.5%	ICU Level of Service	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	0.99		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3311		1668	3231			4969			5003	
Flt Permitted	0.25	1.00		0.33	1.00			1.00			1.00	
Satd. Flow (perm)	432	3311		574	3231			4969			5003	
Volume (vph)	82	552	29	205	567	151	0	2483	243	0	2762	126
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	581	31	216	597	159	0	2614	256	0	2907	133
Lane Group Flow (vph)	86	612	0	216	756	0	0	2870	0	0	3040	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	33.0	33.0		33.0	33.0			44.0			44.0	
Effective Green, g (s)	33.0	33.0		33.0	33.0			44.0			44.0	
Actuated g/C Ratio	0.39	0.39		0.39	0.39			0.52			0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	168	1285		223	1254			2572			2590	
v/s Ratio Prot		0.18			0.23			0.58			c0.61	
v/s Ratio Perm	0.20			c0.38								
v/c Ratio	0.51	0.48		0.97	0.60			1.12			1.17	
Uniform Delay, d1	19.9	19.5		25.5	20.8			20.5			20.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.45	
Incremental Delay, d2	10.7	1.3		52.7	2.2			58.2			78.6	
Delay (s)	30.6	20.8		78.2	22.9			78.7			87.9	
Level of Service	C	C		E	C			E			F	
Approach Delay (s)		22.0			35.2			78.7			87.9	
Approach LOS		C			D			E			F	

Intersection Summary			
HCM Average Control Delay	71.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.09		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.1%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1787	2814		5036	5034	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1787	2814		5036	5034	
Volume (vph)	5	187	0	2944	2972	9
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	5	195	0	3067	3096	9
Lane Group Flow (vph)	5	195	0	3067	3105	0
Heavy Vehicles (%)	1%	1%	3%	3%	3%	3%
Turn Type		custom				
Protected Phases	1!	5		2	6!	
Permitted Phases						
Actuated Green, G (s)	0.6	14.8		76.4	62.2	
Effective Green, g (s)	0.6	14.8		76.4	62.2	
Actuated g/C Ratio	0.01	0.17		0.90	0.73	
Clearance Time (s)	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	13	490		4526	3684	
v/s Ratio Prot	0.00	c0.07		c0.61	c0.62	
v/s Ratio Perm						
v/c Ratio	0.38	0.40		0.68	0.84	
Uniform Delay, d1	42.0	31.1		1.1	8.0	
Progression Factor	1.00	1.00		1.19	1.00	
Incremental Delay, d2	17.9	0.5		0.3	2.5	
Delay (s)	59.9	31.7		1.7	10.5	
Level of Service	E	C		A	B	
Approach Delay (s)	32.4			1.7	10.5	
Approach LOS	C			A	B	

Intersection Summary			
HCM Average Control Delay	6.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	73.5%	ICU Level of Service	C

! Phase conflict between lane groups.

c Critical Lane Group

ALTERNATIVE 4 VARIANT

PM PEAK HOUR

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 4

100: Lake Street & 17th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	298	15	20	396	10	5	0	25	10	5	5
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	5	320	16	22	426	11	5	0	27	11	5	5
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	437			337			822	819	328	840	822	431
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	437			337			822	819	328	840	822	431
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			98			98	100	96	96	98	99
cM capacity (veh/h)	1134			1234			284	306	718	272	305	628

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	342	458	32	22
Volume Left	5	22	5	11
Volume Right	16	11	27	5
cSH	1134	1234	572	327
Volume to Capacity	0.00	0.02	0.06	0.07
Queue Length (ft)	0	1	4	5
Control Delay (s)	0.2	0.6	11.7	16.8
Lane LOS	A	A	B	C
Approach Delay (s)	0.2	0.6	11.7	16.8
Approach LOS			B	C

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	45.9%	ICU Level of Service	A

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 4

101: Lake Street & 15th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Stop			Stop			Stop			Stop	
Volume (veh/h)	54	357	9	39	445	8	7	71	19	4	5	2
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Hourly flow rate (veh/h)	59	392	10	43	489	9	8	78	21	4	5	2

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total (vph)	462	541	107	12
Volume Left (vph)	59	43	8	4
Volume Right (vph)	10	9	21	2
Hadj (s)	0.0	0.0	-0.1	0.0
Departure Headway (s)	4.9	4.8	6.0	6.3
Degree Utilization, x	0.63	0.72	0.18	0.02
Capacity (veh/h)	713	737	530	487
Control Delay (s)	15.7	19.2	10.3	9.4
Approach Delay (s)	15.7	19.2	10.3	9.4
Approach LOS	C	C	B	A

Intersection Summary			
Delay	16.8		
HCM Level of Service	C		
Intersection Capacity Utilization	69.3%	ICU Level of Service	B

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 4

102: Lake Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	1	376	3	204	483	64	9	40	31	4	1	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (veh/h)	1	404	3	219	519	69	10	43	33	4	1	0
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					300							
pX, platoon unblocked	0.83						0.83	0.83		0.83	0.83	0.83
vC, conflicting volume	588			408			1401	1435	406	1455	1402	554
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	504			408			1484	1524	406	1549	1485	462
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			81			87	46	95	88	99	100
cM capacity (veh/h)	889			1162			73	80	649	37	85	501

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	409	808	86	5
Volume Left	1	219	10	4
Volume Right	3	69	33	0
cSH	889	1162	119	42
Volume to Capacity	0.00	0.19	0.72	0.13
Queue Length (ft)	0	17	99	10
Control Delay (s)	0.0	4.2	89.6	104.0
Lane LOS	A	A	F	F
Approach Delay (s)	0.0	4.2	89.6	104.0
Approach LOS			F	F

Intersection Summary			
Average Delay	9.0		
Intersection Capacity Utilization	80.3%	ICU Level of Service	D

HCM Signalized Intersection Capacity Analysis — Variant PM Peak Alt 4

103: Lake Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	11	10	10	10	10	10	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0		4.0			4.0	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00		0.91			0.91	
Frt	1.00	1.00	0.85	1.00	1.00	0.85		1.00			0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00		1.00			1.00	
Satd. Flow (prot)	1728	1756	1492	1668	1756	1492		5015			4940	
Flt Permitted	0.35	1.00	1.00	0.38	1.00	1.00		1.00			1.00	
Satd. Flow (perm)	630	1756	1492	660	1756	1492		5015			4940	
Volume (vph)	112	327	30	104	349	190	0	2642	74	0	2748	402
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	115	337	31	107	360	196	0	2724	76	0	2833	414
Lane Group Flow (vph)	115	337	31	107	360	196	0	2800	0	0	3247	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm		Perm	Perm		Perm						
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8		8						
Actuated Green, G (s)	26.0	26.0	26.0	26.0	26.0	26.0		47.0			47.0	
Effective Green, g (s)	28.0	28.0	28.0	28.0	28.0	28.0		49.0			49.0	
Actuated g/C Ratio	0.33	0.33	0.33	0.33	0.33	0.33		0.58			0.58	
Clearance Time (s)	6.0	6.0	6.0	6.0	6.0	6.0		6.0			6.0	
Lane Grp Cap (vph)	208	578	491	217	578	491		2891			2848	
v/s Ratio Prot		0.19			c0.21			0.56			c0.66	
v/s Ratio Perm	0.18		0.02	0.16		0.13						
v/c Ratio	0.55	0.58	0.06	0.49	0.62	0.40		0.97			1.14	
Uniform Delay, d1	23.4	23.7	19.5	22.8	24.0	22.0		17.3			18.0	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00		1.21			0.77	
Incremental Delay, d2	10.2	4.3	0.2	7.8	5.0	2.4		1.6			66.1	
Delay (s)	33.6	27.9	19.8	30.6	29.0	24.4		22.4			79.9	
Level of Service	C	C	B	C	C	C		C			E	
Approach Delay (s)		28.7			27.9			22.4			79.9	
Approach LOS		C			C			C			E	

Intersection Summary			
HCM Average Control Delay	49.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.95		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	99.3%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	5	376	20	15	623	5	15	0	5	5	0	5
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Hourly flow rate (veh/h)	6	432	23	17	716	6	17	0	6	6	0	6
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)		64										
pX, platoon unblocked				0.84			0.84	0.84	0.84	0.84	0.84	
vC, conflicting volume	722			455			1214	1211	444	1214	1220	719
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	722			353			1255	1251	339	1255	1262	719
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			86	100	99	95	100	99
cM capacity (veh/h)	885			1020			122	143	596	123	141	432

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	461	739	23	11
Volume Left	6	17	17	6
Volume Right	23	6	6	6
cSH	885	1020	153	191
Volume to Capacity	0.01	0.02	0.15	0.06
Queue Length (ft)	0	1	13	5
Control Delay (s)	0.2	0.4	32.7	25.0
Lane LOS	A	A	D	D
Approach Delay (s)	0.2	0.4	32.7	25.0
Approach LOS			D	D

Intersection Summary			
Average Delay		1.2	
Intersection Capacity Utilization	63.4%	ICU Level of Service	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	72	510	27	28	599	21	23	4	26	9	25	18
Peak Hour Factor	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (veh/h)	74	526	28	29	618	22	24	4	27	9	26	19
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					531							
pX, platoon unblocked												
vC, conflicting volume	639			554			1406	1385	540	1403	1388	628
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	639			554			1406	1385	540	1403	1388	628
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			97			73	97	95	91	80	96
cM capacity (veh/h)	955			1027			89	130	546	101	129	486

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	628	668	55	54
Volume Left	74	29	24	9
Volume Right	28	22	27	19
cSH	955	1027	157	163
Volume to Capacity	0.08	0.03	0.35	0.33
Queue Length (ft)	6	2	36	34
Control Delay (s)	2.0	0.7	39.7	37.6
Lane LOS	A	A	E	E
Approach Delay (s)	2.0	0.7	39.7	37.6
Approach LOS			E	E

Intersection Summary			
Average Delay		4.2	
Intersection Capacity Utilization	82.2%	ICU Level of Service	D

HCM Unsignalized Intersection Capacity Analysis — Variant PM Peak Alt 4

106: California Street & 14th Avenue — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Volume (veh/h)	20	512	12	57	614	22	11	38	47	102	27	22
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (veh/h)	21	539	13	60	646	23	12	40	49	107	28	23
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)					231							
pX, platoon unblocked												
vC, conflicting volume	669			552			1068	1377	276	1159	1372	335
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	669			552			1068	1377	276	1159	1372	335
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			94			91	70	93	0	79	97
cM capacity (veh/h)	930			1028			136	135	728	104	136	667

Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1
Volume Total	291	282	383	346	101	159
Volume Left	21	0	60	0	12	107
Volume Right	0	13	0	23	49	23
cSH	930	1700	1028	1700	225	124
Volume to Capacity	0.02	0.17	0.06	0.20	0.45	1.28
Queue Length (ft)	2	0	5	0	54	255
Control Delay (s)	0.9	0.0	1.9	0.0	33.5	240.6
Lane LOS	A		A		D	F
Approach Delay (s)	0.4		1.0		33.5	240.6
Approach LOS					D	F

Intersection Summary			
Average Delay	27.3		
Intersection Capacity Utilization	59.4%	ICU Level of Service	A

HCM Signalized Intersection Capacity Analysis — Variant PM Peak Alt 4

107: California Street & Park Presidio Boulevard — 7/5/2004

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	10	10	15	10	10	15	12	12	12	12	12	12
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			0.91			0.91	
Frt	1.00	0.99		1.00	0.97			0.99			0.99	
Flt Protected	0.95	1.00		0.95	1.00			1.00			1.00	
Satd. Flow (prot)	1668	3311		1668	3231			4969			5003	
Flt Permitted	0.25	1.00		0.33	1.00			1.00			1.00	
Satd. Flow (perm)	432	3311		576	3231			4969			5003	
Volume (vph)	82	550	29	205	567	151	0	2483	243	0	2757	126
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	86	579	31	216	597	159	0	2614	256	0	2902	133
Lane Group Flow (vph)	86	610	0	216	756	0	0	2870	0	0	3035	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	3%	3%	3%	3%	3%	3%
Turn Type	Perm			Perm								
Protected Phases		4			8			2			6	
Permitted Phases	4			8								
Actuated Green, G (s)	33.0	33.0		33.0	33.0			44.0			44.0	
Effective Green, g (s)	33.0	33.0		33.0	33.0			44.0			44.0	
Actuated g/C Ratio	0.39	0.39		0.39	0.39			0.52			0.52	
Clearance Time (s)	4.0	4.0		4.0	4.0			4.0			4.0	
Lane Grp Cap (vph)	168	1285		224	1254			2572			2590	
v/s Ratio Prot		0.18			0.23			0.58			c0.61	
v/s Ratio Perm	0.20			c0.38								
v/c Ratio	0.51	0.47		0.96	0.60			1.12			1.17	
Uniform Delay, d1	19.9	19.5		25.4	20.8			20.5			20.5	
Progression Factor	1.00	1.00		1.00	1.00			1.00			0.45	
Incremental Delay, d2	10.7	1.3		51.6	2.2			58.2			77.7	
Delay (s)	30.6	20.8		77.0	22.9			78.7			87.0	
Level of Service	C	C		E	C			E			F	
Approach Delay (s)		22.0			34.9			78.7			87.0	
Approach LOS		C			C			E			F	

Intersection Summary			
HCM Average Control Delay	71.2	HCM Level of Service	E
HCM Volume to Capacity ratio	1.08		
Cycle Length (s)	85.0	Sum of lost time (s)	8.0
Intersection Capacity Utilization	98.0%	ICU Level of Service	E

c Critical Lane Group

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.88		0.91	0.91	
Frt	1.00	0.85		1.00	1.00	
Flt Protected	0.95	1.00		1.00	1.00	
Satd. Flow (prot)	1787	2814		5036	5034	
Flt Permitted	0.95	1.00		1.00	1.00	
Satd. Flow (perm)	1787	2814		5036	5034	
Volume (vph)	6	178	0	2944	2972	6
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	6	185	0	3067	3096	6
Lane Group Flow (vph)	6	185	0	3067	3102	0
Heavy Vehicles (%)	1%	1%	3%	3%	3%	3%
Turn Type		custom				
Protected Phases	1!	5		2	6!	
Permitted Phases						
Actuated Green, G (s)	0.6	14.6		76.4	62.4	
Effective Green, g (s)	0.6	14.6		76.4	62.4	
Actuated g/C Ratio	0.01	0.17		0.90	0.73	
Clearance Time (s)	4.0	4.0		4.0	4.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	13	483		4526	3696	
v/s Ratio Prot	0.00	c0.07		c0.61	c0.62	
v/s Ratio Perm						
v/c Ratio	0.46	0.38		0.68	0.84	
Uniform Delay, d1	42.0	31.2		1.1	7.8	
Progression Factor	1.00	1.00		1.19	1.00	
Incremental Delay, d2	23.8	0.5		0.3	2.5	
Delay (s)	65.8	31.7		1.7	10.3	
Level of Service	E	C		A	B	
Approach Delay (s)	32.8			1.7	10.3	
Approach LOS	C			A	B	

Intersection Summary			
HCM Average Control Delay	6.8	HCM Level of Service	A
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	85.0	Sum of lost time (s)	4.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	C

! Phase conflict between lane groups.

c Critical Lane Group

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

MEMO

SAN FRANCISCO OFFICE
August 10, 2004

Project Number: 395900

To: Amy Marshall, The Presidio Trust

From: José I. Farrán, Project Manager
Sam Morrissey, Transportation Engineer

Subject: The Presidio of San Francisco
Public Health Service Hospital Site Supplemental Environmental Impact Statement
Draft Technical Memorandum No. 4 – Existing + Project Transportation Impact Analysis of Alternatives

1. INTRODUCTION

This Technical Memorandum estimates and describes potential traffic and transit impacts and parameters associated with four land use alternatives for rehabilitation and reuse of the Presidio of San Francisco's Public Health Service Hospital (PHSH) development site as they compare against existing (Year 2000/2004) conditions with respect to:

- Traffic levels in and adjacent to the Presidio,
- Traffic at adjacent intersections,
- On/Off-site pedestrian and bicycle facilities,
- Public transportation, and
- Parking.

2. TRAFFIC OPERATIONS

2.1 Existing Roadway Network

Currently, the 15th Avenue Gate is open to vehicular and pedestrian traffic while the 14th Avenue Gate is open only to pedestrians. Although this configuration functions adequately with the existing level of traffic, future occupancy of the PHSH and other Presidio buildings is expected to warrant improved access and circulation. The NPS 1994 General Management Plan Amendment for the Presidio recognized such access needs and recommended reopening the 14th Avenue Gate to vehicular traffic and operating the 14th Avenue and 15th Avenue Gates as a one-way couplet with the 14th Avenue Gate accommodating northbound traffic entering the Presidio and the 15th Avenue Gate accommodating southbound traffic exiting the Presidio. This one-way

couplet was assumed in the analysis of transportation-related impacts of land use alternatives in the *Presidio Trust Management Plan – Background Transportation Report for the Final EIS*, prepared by Wilbur Smith Associates (WSA) in May 2002 and has also been assumed for the assessment of traffic impacts related to the PHSH Draft EIS Alternatives 1, 2, 3, and 4.

In addition, Alternatives 1, 2, 3, and 4 have also been analyzed assuming direct vehicular access to Park Presidio Boulevard via a new intersection north of Lake Street, as described in the *Public Health Service Hospital Transportation Study: Additional Alternatives Analysis* (WSA, December 2003). This access variant would allow traffic leaving the PHSH site to turn left or right on Highway 1, and allow southbound traffic on Highway 1 to enter the PHSH site directly from Highway 1. Both the 14th and 15th Avenue Gates would be open to inbound (northbound) traffic only.

2.2 Intersection Analysis

Intersection operating conditions have been evaluated for weekday AM and PM peak period conditions under existing conditions at eight key intersections in the vicinity of the PHSH site. These are the intersections that would most likely experience the greatest change in traffic volumes due to changes in land uses at the PHSH site. Further basis of the basis for identifying these eight intersections for analysis is set forth in Technical Memorandum #1. The eight study intersections are:

- Lake Street/17th Avenue
- Lake Street/15th Avenue
- Lake Street/14th Avenue
- Lake Street/Park Presidio Boulevard
- Lake Street/Funston Avenue
- California Street/15th Avenue
- California Street/14th Avenue
- California Street/Park Presidio Boulevard

The AM and PM peak hour intersection operations analysis was conducted according to the methodology described in the 2000 Highway Capacity Manual (HCM 2000) (Transportation Research Board, 2000). The HCM methodology calculates the average delay experienced by a vehicle traveling through the intersection, and assigns a corresponding level of service (LOS). The levels of service range from LOS A, indicating volumes well below capacity with vehicles experiencing little or no delay, to LOS F, indicating volumes near capacity with vehicles experiencing extremely high delays[1]. Appendix A contains the HCM 2000 LOS definitions.

[1] The City and County of San Francisco generally considers intersection operation at LOS D or better to be acceptable, and intersection operation at LOS E or F to be unacceptable.

For signalized intersections, the HCM 2000 methodology determines the average delay per vehicle for each lane group based on the particular movement, and traffic volume and capacity associated with that lane group. The average delay per vehicle is then aggregated for each approach and for the intersection as a whole. A combined weighted average delay and LOS is then presented for the intersection as a whole. For unsignalized intersections, average delay and LOS operating conditions are calculated by approach (e.g., northbound) and movement (e.g., northbound left-turn). For two-way stop-controlled intersections, delay and LOS are calculated for each of the stop-controlled approaches and operating conditions are reported for the worst approach. For all-way stop-controlled intersections, average delay per vehicle is averaged across all approaches, and operating conditions are reported for the average delay and LOS for the intersection as a whole.

2.2.1 One-Way Couplet at 14th and 15th Avenue Gates

Tables 1 and 2 present the results of the intersection LOS analysis for the Existing and Existing + Project weekday AM and PM peak hour conditions assuming that the 14th Avenue and 15th Avenue Gates operate as a one-way couplet with the 14th Avenue Gate accommodating northbound traffic entering the Presidio and the 15th Avenue Gate accommodating southbound traffic exiting the Presidio (Appendix A contains the detailed calculations of the intersection LOS analysis).

Alternative 1: PTMP Alternative – As Table 1 indicates, under Alternative 1 in the AM peak hour, all but three intersections would operate at LOS D or better. The minor approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California/14th Avenue would operate at LOS E. Overall, Alternative 1 would result in slight increases in delay at three study intersections and would remain unchanged or decrease slightly the rest of the study intersections,, versus the existing conditions. As shown in Table 2, in the PM peak hour, the minor approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would operate at LOS F with Alternative 1 compared to LOS E under existing conditions. While the low-volume traffic on one or both of the minor approaches to these intersections would incur delay, the majority of the traffic on the uncontrolled approaches (California Street or Lake Street) would not have to stop and therefore would not incur any delay. Alternative 1 would result in increases in delay at two intersections, decreases in delay at two intersections and no change at four study intersections during the PM peak hour versus the existing conditions.

Table 1
Intersection Levels of Service – Weekday AM Peak Hour
Existing Year 2000/2004 plus Project Conditions - One-Way Couplet at 14th and 15th Avenue Gates

Intersection	Traffic Control Device	Existing Conditions		Existing + Project Conditions							
				Alt. 1		Alt. 2		Alt. 3		Alt. 4	
		Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS
Lake St/ 17th Ave	2-Way Stop (N-S)	15.8	C	16.6	C	16.3	C	16.1	C	16.0	C
Lake St/ 15th Ave	4-Way Stop	17.4	C	22.2	C	20.4	C	19.5	C	18.8	C
Lake St/ 14th Ave [2]	2-Way Stop (N-S)	29.3	D	**43.7**	**E**	33.3	D	32.3	D	31.6	D
Lake St/ Park Presidio Blvd	Traffic Signal	24.4	C	24.7	C	24.6	C	24.5	C	24.5	C
Lake St/ Funston Ave	2-Way Stop (N-S)	23.5	C	25.8	D	25.0	C	24.6	C	24.3	C
California St/ 15th Ave [2]	2-Way Stop (N-S)	27.0	D	24.9	C	24.0	C	24.7	C	25.2	D
California St/ 14th Ave [2]	2-Way Stop (N-S)	29.6	D	**39.8**	**E**	32.4	D	31.8	D	31.4	D
California St/ Park Presidio Blvd	Traffic Signal	30.5	C	30.5	C	30.5	C	30.5	C	30.5	C

Source: Wilbur Smith Associates – August 2004.
Notes:
[1] Delay presented in seconds per vehicle based on the 2000 HCM methodology.
[2] LOS and delay shown for worst minor stop-controlled approach. Major approach is uncontrolled and without delay.

Table 2
Intersection Levels of Service – Weekday PM Peak Hour
Existing Year 2000/2004 plus Project Conditions - One-Way Couplet at 14th and 15th Avenue Gates

Intersection	Traffic Control Device	Existing Conditions		Existing + Project Conditions							
				Alt. 1		Alt. 2		Alt. 3		Alt. 4	
		Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS
Lake St/ 17th Ave	2-Way Stop (N-S)	13.8	B	14.7	B	14.2	B	14.1	B	14.0	B
Lake St/ 15th Ave	4-Way Stop	12.4	B	15.2	C	13.3	B	13.1	B	12.9	B
Lake St/ 14th Ave [2]	2-Way Stop (N-S)	36.1	E	**>90**	**F**	52.1	F	46.2	E	42.9	E
Lake St/ Park Presidio Blvd	Traffic Signal	21.5	C	21.8	C	21.6	C	21.6	C	21.5	C
Lake St/ Funston Ave	2-Way Stop (N-S)	23.9	C	27.9	D	25.4	D	25.0	D	24.7	C
California St/ 15th Ave [2]	2-Way Stop (N-S)	26.6	D	31.7	D	26.9	D	26.2	D	26.2	D
California St/ 14th Ave [2]	2-Way Stop (N-S)	41.9	E	**72.8**	**F**	54.0	F	50.1	F	47.8	E
California St/ Park Presidio Blvd	Traffic Signal	38.9	D	38.9	D	38.9	D	38.9	D	38.9	D

Source: Wilbur Smith Associates – August 2004.
Notes:
[1] Delay presented in seconds per vehicle based on the 2000 HCM methodology.
[2] LOS and delay shown for worst minor stop-controlled approach. Major approach is uncontrolled and without delay.

Comparison of Alternative 1 to Existing Conditions
Compared to the existing conditions, Alternative 1 results in reduced delay at the following intersection during the AM peak hour:

- California Street/15th Avenue (approximate reduction of 8%)

Alternative 1 results in no change to the delay compared to the existing conditions at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 1 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 5%)
- Lake Street/15th Avenue (approximate increase of 28%)
- Lake Street/14th Avenue (approximate increase of 49%)
- Lake Street/Park Presidio Boulevard (approximate increase of 1%)
- Lake Street/Funston Avenue (approximate increase of 10%)
- California Street/14th Avenue (approximate increase of 34%)

Compared to the existing conditions, Alternative 1 does not result in reduced delays at any study intersections during the PM peak hour.

Alternative 1 results in no changes to the delay compared to the existing conditions at the following intersection during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 1 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 7%)
- Lake Street/15th Avenue (approximate increase of 23%)
- Lake Street/14th Avenue (approximate increase of more than 100%)
- Lake Street/Park Presidio Boulevard (approximate increase of 1%)
- Lake Street/Funston Avenue (approximate increase of 17%)
- California Street/15th Avenue (approximate increase of 19%)
- California Street/14th Avenue (approximate increase of 74%)

Alternative 2: Infill Alternative – As shown in Table 1, in the AM peak hour under existing conditions with Alternative 2, all study intersections would operate at LOS D or better. Three of the eight study intersections would operate at slightly lower delays and five would operate at the same level of delay as under Alternative 1, Alternative 2 would not result in increased delays at at any of the eight study intersections during the AM peak hour versus existing conditions. In the PM peak hour, as shown in Table 2, all but two intersections under Alternative 2 would operate at LOS D or higher. The minor approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would operate at LOS E and F, respectively. Alternative 2 would result in the same delay or slight decreases in delay for all study intersections during the PM peak hour versus the Alternative 1, but would result in the same or increased delays at all study intersections versus existing conditions.

Comparison of Alternative 2 to Alternative 1
Compared to Alternative 1, Alternative 2 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 8%)
- Lake Street/14th Avenue (approximate reduction of 24%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 4%)
- California Street/14th Avenue (approximate reduction of 19%)

Alternative 2 results in no change to the delay compared to Alternative 1 at the following intersection during the AM peak hour:

- Lake Street/Park Presidio Boulevard
- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 2 does not result in increased delays at any of the study intersections compared to Alternative 1.

Compared to Alternative 1, Alternative 2 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 3%)
- Lake Street/15th Avenue (approximate reduction of 13%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 9%)

- California Street/15th Avenue (approximate reduction of 15 %)
- California Street/14th Avenue (approximate reduction of 26%)

Alternative 2 results in no changes to the delay compared to Alternative 1 at the following intersection during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 2 resulted in increased delays at the following study intersection compared to Alternative 1:

- Lake Street/14th Avenue (approximate reduction of more than 100%)

Comparison of Alternative 2 to Existing Conditions
Compared to the existing conditions, Alternative 2 results in reduced delay at the following intersection during the AM peak hour:

- California Street/15th Avenue (approximate reduction of 11%)

Alternative 2 results in no change to the delay compared to the existing conditions at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 2 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 3%)
- Lake Street/15th Avenue (approximate increase of 17%)
- Lake Street/14th Avenue (approximate increase of 14%)
- Lake Street/Park Presidio Boulevard (approximate increase of 1%)
- Lake Street/Funston Avenue (approximate increase of 6%)
- California Street/14th Avenue (approximate increase of 9%)

Compared to the existing conditions, Alternative 2 does not result in reduced delays at any study intersections during the PM peak hour.

Alternative 2 results in no changes to the delay compared to the existing conditions at the following intersection during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 2 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 3%)
- Lake Street/15th Avenue (approximate increase of 7%)
- Lake Street/14th Avenue (approximate increase of 44%)
- Lake Street/Park Presidio Boulevard (approximate increase of less than 1%)
- Lake Street/Funston Avenue (approximate increase of 6%)
- California Street/15th Avenue (approximate increase of 1%)
- California Street/14th Avenue (approximate increase of 29%)

Alternative 3: No Infill Alternative –Table 1 shows that in the AM peak hour under existing conditions with Alternative 3 all study intersections would operate at LOS D or better. In the AM peak hour, Alternative 3 would result in increased delays at only the intersection of California Street/15th Avenue versus Alternative 2; in addition, all but one study intersection would operate at the same or reduced delays versus Alternative 1, while most study intersections would operate at slightly increased delays versus existing conditions. As shown on Table 2, Alternative 3 would result in similar trends during the PM peak hour versus Alternative 2. Compared to existing conditions, Alternative 3 would result in increased delays for the minor approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue, which would operate at LOS E and LOS F, respectively, versus LOS E and LOS E with existing conditions. At the minor approaches to the two-way stop – controlled intersection of Lake Street/14th Avenue, Alternative 3 would operate at LOS E, versus LOS F in Alternative 1. The remaining study intersections would operate at LOS D or better during the PM peak hour, similar to Alternatives 1, 2, and existing conditions.

Comparison of Alternative 3 to Alternative 2
Compared to Alternative 2, Alternative 3 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 4%)
- Lake Street/14th Avenue (approximate reduction of 3%)
- Lake Street/Park Presidio Boulevard (approximate reduction of less than 1%)
- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/14th Avenue (approximate reduction of 2%)

Alternative 3 results in no change to the delay compared to Alternative 2 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 3 results in increased delay at the following intersection compared to Alternative 2:

- California Street/15th Avenue (approximate increase of 3%)

Compared to Alternative 2, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 2%)
- Lake Street/14th Avenue (approximate reduction of 11%)
- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/15th Avenue (approximate reduction of 3%)
- California Street/14th Avenue (approximate reduction of 7%)

Alternative 3 results in no changes to the delays compared to Alternative 2 at the following intersections during the PM peak hour:

- Lake Street/Park Presidio Boulevard
- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 3 does not result in increased delays at any of the study intersections compared to Alternative 2.

Comparison of Alternative 3 to Alternative 1
Compared to Alternative 1, Alternative 3 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 3%)
- Lake Street/15th Avenue (approximate reduction of 12%)
- Lake Street/14th Avenue (approximate reduction of 26%)
- Lake Street/14th Avenue (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 5%)
- California Street/15th Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 20%)

Alternative 3 results in no change to the delay compared to Alternative 1 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 3 does not result in increased delays at any of the study intersections compared to Alternative 1.

Compared to Alternative 1, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 4%)
- Lake Street/15th Avenue (approximate reduction of 14%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 10%)
- California Street/15th Avenue (approximate reduction of 17%)
- California Street/14th Avenue (approximate reduction of 31%)

Alternative 3 results in no changes to the delays compared to Alternative 1 at the following intersections during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 3 results in increased delays at the following study intersection compared to Alternative 1:

- Lake Street/14th Avenue (approximate increase of more than 100%)

Comparison of Alternative 3 to Existing Conditions
Compared to the existing conditions, Alternative 3 results in reduced delay at the following intersection during the AM peak hour:

- California Street/15th Avenue (approximate reduction of 9%)

Alternative 3 results in no change to the delay compared to the existing conditions at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 3 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 2%)
- Lake Street/15th Avenue (approximate increase of 12%)
- Lake Street/14th Avenue (approximate increase of 10%)
- Lake Street/Park Presidio Boulevard (approximate increase of less than 1%)
- Lake Street/Funston Avenue (approximate increase of 5%)
- California Street/14th Avenue (approximate increase of 7%)

Compared to the existing conditions, Alternative 3 results in reduced delay at the following intersection during the PM peak hour:

- California Street/15th Avenue (approximate reduction of 2%)

Alternative 3 results in no changes to the delay compared to the existing conditions at the following intersection during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 3 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 2%)
- Lake Street/15th Avenue (approximate increase of 6%)
- Lake Street/14th Avenue (approximate increase of 28%)
- Lake Street/Park Presidio Boulevard (approximate increase of less than 1%)
- Lake Street/Funston Avenue (approximate increase of 5%)
- California Street/14th Avenue (approximate increase of 20%)

Alternative 4: Battery Caulfield Alternative – Table 1 shows that Alternative 4 would result in similar levels of service and delays as the other alternatives and existing conditions during the AM peak hour, with all study intersections operating at LOS D or better. During the AM peak hour, Alternative 4 would result in the same or reduced delays versus Alternative 1, and generally lower delays versus Alternatives 2 and 3, with only the minor street approaches of the intersection of California Street/15th Avenue operating at slightly increased delays. Alternative 4 would have a similar change in delays versus existing conditions as Alternatives 2 and 3. Table 2 shows that during the PM peak hour, Alternative 4 would result in the lowest delays and best levels of service of all study alternatives; however, the minor approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would operate at LOS E as with existing conditions. Alternative 4 would result in the same levels of

service but slightly increased delays for a majority of the study intersections versus existing conditions during the PM peak hour.

Comparison of Alternative 4 to Alternative 3
Compared to Alternative 3, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 4%)
- Lake Street/14th Avenue (approximate reduction of 2%)
- Lake Street/Funston Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 1%)

Alternative 4 results in no change to the delays compared to Alternative 3 at the following intersections during the AM peak hour:

- Lake Street/Park Presidio Boulevard
- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 results in increased delay at the following intersection compared to Alternative 3:

- California Street/15th Avenue (approximate increase of 2%)

Compared to Alternative 3, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 3%)
- Lake Street/14th Avenue (approximate reduction of 7%)
- Lake Street/Park Presidio Boulevard (approximate reduction of less than 1%)
- Lake Street/Funston Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 5%)

Alternative 4 results in no changes to the delays compared to Alternative 3 at the following intersections during the PM peak hour:

- California Street/15th Avenue
- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 3.

Comparison of Alternative 4 to Alternative 2
Compared to Alternative 2, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 8%)
- Lake Street/14th Avenue (approximate reduction of 5%)
- Lake Street/Park Presidio Boulevard (approximate reduction of less than 1%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/14th Avenue (approximate reduction of 3%)

Alternative 4 results in no change to the delay compared to Alternative 2 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 results in increased delay at the following intersection compared to Alternative 2:

- California Street/15th Avenue (approximate increase of 5%)

Compared to Alternative 2, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 3%)
- Lake Street/14th Avenue (approximate reduction of 18%)
- Lake Street/Park Presidio Boulevard (approximate reduction of less than 1%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 3%)
- California Street/14th Avenue (approximate reduction of 11%)

Alternative 4 results in no changes to the delay compared to Alternative 2 at the following intersection during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 2.

Comparison of Alternative 4 to Alternative 1
Compared to Alternative 1, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 4%)
- Lake Street/15th Avenue (approximate reduction of 15%)
- Lake Street/14th Avenue (approximate reduction of 28%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 6%)
- California Street/14th Avenue (approximate reduction of 21%)

Alternative 4 results in no change to the delays compared to Alternative 1 at the following intersections during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 results in increased delays at the following study intersection compared to Alternative 1:

- California Street/15th Avenue (approximate increase of 1%)

Compared to Alternative 1, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 5%)
- Lake Street/15th Avenue (approximate reduction of 15%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 11%)
- California Street/15th Avenue (approximate reduction of 17%)
- California Street/14th Avenue (approximate reduction of 34%)

Alternative 4 results in no changes to the delay compared to Alternative 1 at the following intersection during the PM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 4 results in increased delays at the following study intersections compared to Alternative 1

- California Street/Park Presidio Boulevard

Comparison of Alternative 4 to Existing Conditions
Compared to the existing conditions, Alternative 4 results in reduced delay at the following intersection during the AM peak hour:

- California Street/15th Avenue (approximate reduction of 7%)

Alternative 4 results in no change to the delay compared to the existing conditions at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 1%)
- Lake Street/15th Avenue (approximate increase of 8%)
- Lake Street/14th Avenue (approximate increase of 8%)
- Lake Street/Park Presidio Boulevard (approximate increase of less than 1%)
- Lake Street/Funston Avenue (approximate increase of 3%)
- California Street/14th Avenue (approximate increase of 6%)

Compared to the existing conditions, Alternative 4 results in reduced delay at the following intersection during the PM peak hour:

- California Street/15th Avenue (approximate reduction of 2%)

Alternative 4 results in no changes to the delays compared to the existing conditions at the following intersections during the PM peak hour:

- Lake Street/Park Presidio Boulevard
- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 4 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 1%)
- Lake Street/15th Avenue (approximate increase of 4%)
- Lake Street/14th Avenue (approximate increase of 19%)

- Lake Street/Funston Avenue (approximate increase of 3%)
- California Street/14th Avenue (approximate increase of 14%)

2.2.2 Variant: New Park Presidio Blvd. Access with Inbound Only Traffic at 14th and 15th Avenue Gates

Tables 3 and 4 present the results of the intersection LOS analysis for the Existing Year 2000/2004 weekday AM and PM peak hour conditions for the four proposed land use build alternatives (Alternatives 1, 2, 3 and 4) assuming a new connection to Park Presidio Boulevard to and from the PHSH site north of Lake Street). The new intersection would allow traffic leaving the PHSH site to turn left or right on Highway 1, and allow southbound traffic on Highway 1 to enter the PHSH site directly from Highway 1. Both the 14th and 15th Avenue Gates would be open to inbound (northbound) traffic only.

Table 3
Intersection Levels of Service – Weekday AM Peak Hour
Existing Year 2000/2004 plus Project Conditions
Variant: New Park Presidio Blvd. Access with Inbound Only Traffic at 14th and 15th Ave. Gates

Intersection	Traffic Control Device	Existing Conditions		Existing + Project Variant Conditions							
				Alt. 1		Alt. 2		Alt. 3		Alt. 4	
		Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS
Lake St/ 17th Ave	2-Way Stop (N-S)	15.8	C	16.2	C	16.1	C	16.0	C	16.0	C
Lake St/ 15th Ave	4-Way Stop	17.4	C	18.1	C	16.8	C	16.6	C	16.5	C
Lake St/ 14th Ave [2]	2-Way Stop (N-S)	29.3	D	**35.9**	**E**	33.0	D	32.3	D	31.6	D
Lake St/ Park Presidio Blvd	Traffic Signal	24.4	C	23.9	C	23.9	C	23.5	C	23.3	C
Lake St/ Funston Ave	2-Way Stop (N-S)	23.5	C	23.4	C	22.9	C	22.8	C	22.8	C
California St/ 15th Ave [2]	2-Way Stop (N-S)	27.0	D	31.8	D	29.3	D	29.1	D	28.9	D
California St/ 14th Ave [2]	2-Way Stop (N-S)	29.6	D	**40.6**	**E**	**36.5**	**E**	**35.3**	**E**	34.3	D
California St/ Park Presidio Blvd	Traffic Signal	30.5	C	30.6	C	30.6	C	30.6	C	30.6	C
New Alternative Access/ Park Presidio Blvd.	Traffic Signal			4.1	A	4.1	A	3.9	A	3.8	A

Source: Wilbur Smith Associates – August 2004.
Notes:
[1] Delay presented in seconds per vehicle based on the 2000 HCM methodology.
[2] LOS and delay shown for worst minor stop-controlled approach. Major approach is uncontrolled and without delay.

Table 4
Intersection Levels of Service – Weekday PM Peak Hour
Existing Year 2000/2004 plus Project Conditions
Variant: New Park Presidio Blvd. Access with Inbound Only Traffic at 14th and 15th Ave. Gates

Intersection	Traffic Control Device	Existing Conditions		Existing + Project Variant Conditions							
				Alt. 1		Alt. 2		Alt. 3		Alt. 4	
		Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS
Lake St/ 17th Ave	2-Way Stop (N-S)	13.8	B	14.5	B	14.1	B	14.0	B	14.0	B
Lake St/ 15th Ave	4-Way Stop	12.4	B	13.5	B	12.7	B	12.6	B	12.5	B
Lake St/ 14th Ave [2]	2-Way Stop (N-S)	36.1	E	**53.2**	**F**	42.0	E	40.4	E	39.1	E
Lake St/ Park Presidio Blvd	Traffic Signal	21.5	C	27.2	C	24.4	C	24.4	C	24.1	C
Lake St/ Funston Ave	2-Way Stop (N-S)	23.9	C	24.0	C	23.5	C	23.4	C	23.3	C
California St/ 15th Ave [2]	2-Way Stop (N-S)	26.6	D	33.9	D	31.7	D	31.0	D	30.5	D
California St/ 14th Ave [2]	2-Way Stop (N-S)	41.9	E	**83.3**	**F**	57.0	F	54.2	F	51.4	F
California St/ Park Presidio Blvd	Traffic Signal	38.9	D	35.2	D	32.7	C	32.4	C	32.2	C
New Alternative Access/ Park Presidio Blvd.	Traffic Signal			5.8	A	3.7	A	3.6	A	3.5	A

Source: Wilbur Smith Associates – August 2004.
Notes:
[1] Delay presented in seconds per vehicle based on the 2000 HCM methodology.
[2] LOS and delay shown for worst minor stop-controlled approach. Major approach is uncontrolled and without delay.

Alternative 1: PTMP Alternative – For the Park Presidio Boulevard Access variant, Table 3 shows that all study intersections would operate at LOS D or better under Alternative 1 AM peak hour conditions except for the minor street approach to the two-way stop-controlled intersections of California Street/14th Avenue and Lake Street/14th Avenue, which would operate at LOS E. As shown on Table 4, during the PM peak hour, the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would operate at LOS F, with the remaining study intersections operating at LOS D or better. In general, the Alternative 1 Park Presidio Boulevard Access variant results in reduced delays at one of the study intersections and the same or increased delays for all other intersections during the AM peak hour versus existing conditions, and generally increased delays for all but two study intersections during the PM peak hour versus existing conditions.

Comparison of Alternative 1 to Existing Conditions
Compared to the existing conditions, Alternative 1 results in reduced delays at the following intersection during the AM peak hour:

- Lake Street/Park Presidio Boulevard (approximate reduction of 2%)

Alternative 1 results in no change to the delay compared to the existing conditions at the following intersections during the AM peak hour:

- Lake Street/Funston Avenue
- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 1 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 3%)
- Lake Street/15th Avenue (approximate increase of 4%)
- Lake Street/14th Avenue (approximate increase of 23%)
- California Street/15th Avenue (approximate increase of 18%)
- California Street/14th Avenue (approximate increase of 37%)

Compared to the existing conditions, Alternative 1 results in reduced delays at the following intersections during the PM peak hour:

- California Street/Park Presidio Boulevard (approximate reduction of 10%)

Compared to existing conditions, Alternative 1 resutlts in no change in delay at the following intersection during the PM peak hour:

- Lake Street/Funston Avenue

During the PM peak hour, Alternative 1 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 5%)
- Lake Street/15th Avenue (approximate increase of 9%)
- Lake Street/14th Avenue (approximate increase of 47%)
- Lake Street/Park Presidio Boulevard (approximate increase of 27%)
- California Street/15th Avenue (approximate increase of 27%)
- California Street/14th Avenue (approximate increase of 99%)

Alternative 2: Infill Alternative – As shown in Table 3, in the AM peak hour under existing conditions, study intersections would operate at LOS D or better with the Alternative 2 Park Presidio Boulevard Access variant except for the minor street approach to the two-way stop-controlled intersection of California Street/14th Avenue, which would operate at LOS E. Table 4 shows that during the PM peak hour, the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would operate at LOS E and LOS F respectively, with the remaining study intersections operating at LOS D or better. Alternative 2 Park Presidio Boulevard Access variant results in reduced delays at three of the study intersections along Lake Street and higher delays at all other intersections during the AM peak hour versus existing conditions, and generally increased delays for all but two study intersections during the PM peak hour versus existing conditions. Compared to Alternative 1 project entrance variant conditions, all study intersections would operate at comparable or slightly lower delays during the AM peak hour and slightly less delay in the PM peak hour.

Comparison of Alternative 2 to Alternative 1
Compared to Alternative 1, Alternative 2 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 7%)
- Lake Street/14th Avenue (approximate reduction of 8%)
- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/15th Avenue (approximate reduction of 8%)

During the AM peak hour, Alternative 2 results in no change in delays at the following intersections compared to Alternative 1:

- Lake Street/Park Presidio Boulevard
- California Street/Park Presidio Boulevard
- New Alternative Access/ Park Presidio Boulevard

During the AM peak hour, Alternative 2 does not result in any increased delays at the study intersections compared to Alternative 1.

Compared to Alternative 1, Alternative 2 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 3%)
- Lake Street/15th Avenue (approximate reduction 6%)
- Lake Street/14th Avenue (approximate reduction of 21%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 10%)
- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/15th Avenue (approximate reduction of 6%)
- California Street/14th Avenue (approximate reduction of 32%)
- California Street/Park Presidio Boulevard (approximate reduction of 7%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 36%)

During the PM peak hour, Alternative 2 does not result in increased delays at any of the study intersections compared to Alternative 1.

Comparison of Alternative 2 to Existing Conditions
Compared to the existing conditions, Alternative 2 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/15th Avenue (approximate reduction of 3%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 2%)
- Lake Street/Funston Avenue (approximate reduction of 3%)

During the AM peak hour, Alternative 2 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 2%)

- Lake Street/14th Avenue (approximate increase of 13%)
- California Street/15th Avenue (approximate reduction of 9%)
- California Street/14th Avenue (approximate increase of 23%)
- California Street/Park Presidio Boulevard (approximate increase of less than 1%)

Compared to the existing conditions, Alternative 2 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/Park Presidio Boulevard (approximate reduction of 16%)

During the PM peak hour, Alternative 2 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 2%)
- Lake Street/15th Avenue (approximate increase of 2%)
- Lake Street/14th Avenue (approximate increase of 16%)
- Lake Street/Park Presidio Boulevard (approximate increase of 13%)
- California Street/15th Avenue (approximate increase of 19%)
- California Street/14th Avenue (approximate increase of 36%)

Alternative 3: No Infill Alternative – As Table 3 indicates, in the AM peak hour under existing conditions, the Alternative 3 Park Presidio Boulevard Access variant would result in slightly reduced delays for all study intersections versus the Alternative 2 Park Presidio Boulevard Access variant conditions. Similar to Alternative 2 Park Presidio Boulevard Access variant conditions, all study intersections would operate at LOS D or better with the Alternative 3 Park Presidio Boulevard Access variant except for the minor street approach to the two-way stop-controlled intersection of California Street/14th Avenue, which would operate at LOS E. During the PM peak hour, as shown on Table 4, the Alternative 3 Park Presidio Boulevard Access variant would again result in slightly reduced delays for all study intersections versus the Alternative 2 Park Presidio Boulevard Access variant conditions. Like the Alternative 2 Park Presidio Boulevard Access variant PM peak hour conditions, the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would operate at LOS E and LOS F respectively, with the remaining study intersections operating at LOS D or better. As shown for the previous Park Presidio Boulevard Access variant conditions, the Alternative 3 Park Presidio Boulevard Access variant results in reduced delays at three of the intersections along Lake Street and increased delays for all other study intersections during the AM peak hour versus existing conditions, and generally increased delays for all but two study intersections during the PM peak hour versus existing conditions.

Comparison of Alternative 3 to Alternative 2
Compared to Alternative 2, Alternative 3 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 1%)
- Lake Street/14th Avenue (approximate reduction of 2%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 2%)
- Lake Street/Funston Avenue (approximate reduction of less than 1%)
- California Street/15th Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 3%)

Alternative 3 results in no change to the delay compared to Alternative 2 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 3 does not result in increased delays at any of the study intersections compared to Alternative 2.

Compared to Alternative 2, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 1%)
- Lake Street/14th Avenue (approximate reduction of 4%)
- Lake Street/Funston Avenue (approximate reduction of less than 1%)
- California Street/15th Avenue (approximate reduction of 2%)
- California Street/14th Avenue (approximate reduction of 5%)
- California Street/Park Presidio Boulevard (approximate reduction of 1%)

Alternative 3 results in no changes to the delay compared to Alternative 2 at the following intersection during the PM peak hour:

- Lake Street/Park Presidio Boulevard

During the PM peak hour, Alternative 3 does not result in increased delays at any of the study intersections compared to Alternative 2.

Comparison of Alternative 3 to Alternative 1
Compared to Alternative 1, Alternative 3 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 8%)
- Lake Street/14th Avenue (approximate reduction of 10%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 2%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 8%)
- California Street/14th Avenue (approximate reduction of 13%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 5%)

Alternative 3 results in no change to the delay compared to Alternative 1 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 3 does not result in increased delay at any of the study intersections compared to Alternative 1.

Compared to Alternative 1, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 32%)
- Lake Street/15th Avenue (approximate reduction of 7%)
- Lake Street/14th Avenue (approximate reduction of 24%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 10%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 9%)
- California Street/14th Avenue (approximate reduction of 35%)
- California Street/Park Presidio Boulevard (approximate reduction of 8%)
- New Alternative Access/Park Presidio Boulevard (approximate reduction of 38%)

During the PM peak hour, Alternative 3 does not result in increased delays at any of the study intersections compared to Alternative 1.

Comparison of Alternative 3 to Existing Conditions
Compared to the existing conditions, Alternative 3 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/15th Avenue (approximate reduction of 5%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 4%)
- Lake Street/Funston Avenue (approximate reduction of 3%)

Alternative 3 results in no change to the delay compared to the existing conditions at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 3 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 1%)
- Lake Street/14th Avenue (approximate increase of 10%)
- California Street/15th Avenue (approximate increase of 8%)
- California Street/14th Avenue (approximate increase of 19%)

Compared to the existing conditions, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/Park Presidio Boulevard (approximate reduction of 17%)

During the PM peak hour, Alternative 3 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 1%)
- Lake Street/15th Avenue (approximate increase of 2%)
- Lake Street/14th Avenue (approximate increase of 12%)
- Lake Street/Park Presidio Boulevard (approximate increase of 13%)
- California Street/15th Avenue (approximate increase of 17%)
- California Street/14th Avenue (approximate increase of 29%)

Alternative 4: Battery Caulfield Alternative – The Alternative 4 Park Presidio Boulevard Access variant conditions follow the trends of the previous Park Presidio Boulevard Access

variants, and result in the lowest intersection delays of all Park Presidio Boulevard Access variants. Table 3 shows that during the AM peak hour, all study intersections would operate at LOS D or better under the Alternative 4 Park Presidio Boulevard Access variant conditions; and Table 4 shows that during the PM peak hour, the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would operate at LOS E and LOS F respectively, with the remaining study intersections operating at LOS D or better. Similar to the Alternative 2 and 3 Park Presidio Boulevard Access variants, the Alternative 4 Park Presidio Boulevard Access variant results in reduced delays for three of the study intersections along Lake Street and increased delays for all other study intersections during the AM peak hour versus existing conditions, and generally increased delays for all but two study intersections during the PM peak hour versus existing conditions.

Comparison of Alternative 4 to Alternative 3
Compared to Alternative 3, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/15th Avenue (approximate reduction of 1%)
- Lake Street/14th Avenue (approximate reduction of 2%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- California Street/15th Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 3%)

Alternative 4 results in no change to the delays compared to Alternative 3 at the following intersections during the AM peak hour:

- Lake Street/17th Avenue
- Lake Street/Funston Avenue
- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 3.

Compared to Alternative 3, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/15th Avenue (approximate reduction of 1%)
- Lake Street/14th Avenue (approximate reduction of 3%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of less than 1%)
- California Street/15th Avenue (approximate reduction of 2%)

- California Street/14th Avenue (approximate reduction of 5%)
- California Street/Park Presidio Boulevard (approximate reduction of 1%)

Alternative 4 results in no changes to the delay compared to Alternative 3 at the following intersection during the PM peak hour:

- Lake Street/17th Avenue

During the PM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 3.

Comparison of Alternative 4 to Alternative 2
Compared to Alternative 2, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 2%)
- Lake Street/14th Avenue (approximate reduction of 4%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 3%)
- Lake Street/Funston Avenue (approximate reduction of less than 1%)
- California Street/15th Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 6%)

Alternative 4 results in no change to the delay compared to Alternative 2 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 2.

Compared to Alternative 2, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 2%)
- Lake Street/14th Avenue (approximate reduction of 7%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 1%)

- California Street/15th Avenue (approximate reduction of 4%)
- California Street/14th Avenue (approximate reduction of 10%)
- California Street/Park Presidio Boulevard (approximate reduction of 2%)

During the PM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 2.

Comparison of Alternative 4 to Alternative 1
Compared to Alternative 1, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 9%)
- Lake Street/14th Avenue (approximate reduction of 12%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 3%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 9%)
- California Street/14th Avenue (approximate reduction of 16%)
- New Access Alternative/Park Presidio Boulevard (approximate reduction of 7%)

Alternative 4 results in no change to the delay compared to Alternative 1 at the following intersection during the AM peak hour:

- Lake Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 does not result in increased delay at any of the study intersections compared to Alternative 1.

Compared to Alternative 1, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 3%)
- Lake Street/15th Avenue (approximate reduction of 7%)
- Lake Street/14th Avenue (approximate reduction of 27%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 11%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 10%)

- California Street/14th Avenue (approximate reduction of 38%)
- California Street/Park Presidio Boulevard (approximate reduction of 9%)
- New Access Alternative/Park Presidio Boulevard (approximate reduction of 40%)

During the PM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 1.

Comparison of Alternative 4 to Existing Conditions
Compared to the existing conditions, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/15th Avenue (approximate reduction of 5%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 5%)
- Lake Street/Funston Avenue (approximate reduction of 3%)

During the AM peak hour, Alternative 4 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 1%)
- Lake Street/14th Avenue (approximate increase of 8%)
- California Street/15th Avenue (approximate increase of 7%)
- California Street/14th Avenue (approximate increase of 16%)
- California Street/Park Presidio Boulevard (approximate increase of less than 1%)

Compared to the existing conditions, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/Park Presidio Boulevard (approximate reduction of 17%)

During the PM peak hour, Alternative 4 results in increased delays at the following intersections compared to the existing conditions:

- Lake Street/17th Avenue (approximate increase of 1%)
- Lake Street/15th Avenue (approximate increase of 1%)
- Lake Street/14th Avenue (approximate increase of 8%)
- Lake Street/Park Presidio Boulevard (approximate increase of 12%)
- California Street/15th Avenue (approximate increase of 15%)
- California Street/14th Avenue (approximate increase of 23%)

2.3 Traffic Operations and Safety Considerations

Traffic conditions on Park Presidio Boulevard and in the surrounding residential neighborhood would vary across alternatives and with the Park Presidio Access Variant. Table 5 shows anticipated peak hour traffic volumes through the 14th and 15th Avenue Gates for each of the alternatives with and without the variant. Traffic volumes through the 14th and 15th Avenue Gates would relate directly to the level of comfort and safety concerns of the residents of the surrounding neighborhood.

Table 5
Comparison of Peak Hour Traffic Volumes[1] through 14th/15th Avenue Gates
Existing Year 2000/2004 plus Project Conditions

Land Use Alternative	One-way Couplet		Variant	
	AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Requested No Action Alternative[2]	110[3]	100[3]	n.a.	n.a.
Alternative 1	240	330	140	170
Alternative 2	170	180	90	120
Alternative 3	140	150	80	100
Alternative 4	120	130	80	90

Source: Wilbur Smith Associates – August 2004.
Note:
1. Existing Year 2000/2004 gate volumes have been rounded.
2. The "Requested No Action Alternative" represents existing Year 2004 land uses and traffic conditions.
3. Under existing conditions, all vehicle traffic enters and exits the PHSH study area through the 15th Avenue Gate, the 14th Avenue Gate is closed to traffic.

n.a. - Not applicable, the one-way couplet and the project variant are not assumed to be implemented under existing conditions.

Alternative 1: PTMP Alternative – Alternative 1 is expected to result in approximately 240 and 330 vehicles per hour traveling through the 14th and 15th Avenue Gates in the AM and PM peak hours, respectively. A PM peak hour volume of 330 vehicles is about 76 percent more than the PM peak hour volume of 187 vehicles per hour observed in October 2002. Compared to the existing conditions, Alternative 1 would generate approximately 118 percent more trips during the AM peak hour and 230 percent more trips during the PM peak hour.

With the Park Presidio Access Variant, Alternative 1 would result in higher generated volumes of traffic through the 14th and 15th Avenue Gates during both the AM and PM peak hours compared to Alternatives 2, 3, and 4.

Alternative 2: Infill Alternative – Alternative 2 would result in 29 percent fewer AM peak hour vehicle trips through the 14th and 15th Avenue Gates and 45 percent fewer PM peak hour vehicle trips through the 14th and 15th Avenue Gates than Alternative 1, and approximately 55 percent more trips during the AM peak hour and approximately 80 percent more trips during the PM peak hour compared to the existing conditions.

With the Park Presidio Access Variant, Alternative 2 would result in approximately 36 percent fewer total trips through the 14th and 15th Avenue Gates during the AM peak hour, and 29 percent fewer trips during the PM peak hour compared to Alternative 1. In addition, the Park Presidio Access Variant would improve pedestrian and bicycle safety at the intersection of Lake Street/Park Presidio Boulevard because the new intersection on Park Presidio Boulevard would replace the Lake Street intersection as the first intersection encountered by southbound traffic on Highway 1.

Alternative 3: No Infill Alternative – Compared to Alternative 2, Alternative 3 would result in approximately 18 percent fewer trips during both the AM and PM peak hours. When compared to Alternative 1, Alternative 3 would result in approximately 42 percent fewer vehicle trips through the 14th and 15th Avenue Gates during the AM peak hour and approximately 55 percent fewer trips during the PM peak hour; and approximately 27 and 50 percent more vehicle trips during the AM and PM peak hours as compared to the existing conditions.

With the Park Presidio Access Variant, Alternative 3 would result in 43 and 41 percent less traffic through the 14th and 15th Avenue Gates during the AM and PM peak hours, respectively, than Alternative 1 and 11 percent less traffic through the 14th and 15th Avenue Gates during the AM peak hour and 17 percent fewer trips during the PM peak hour compared to Alternative 2. Less traffic through the 14th and 15th Avenue Gates would result in less traffic on nearby residential neighborhood streets, and therefore could result in a higher level of comfort, improved quality of life, and safer traffic conditions for neighborhood residents. The Park Presidio Access Variant would also improve pedestrian and bicycle safety at the intersection of Lake Street/Park Presidio Boulevard by creating a new intersection on Park Presidio Boulevard that would be encountered by southbound traffic on Highway 1 prior to reaching Lake Street.

Alternative 4: Battery Caulfield Alternative – Alternative 4 would generate nine and 30 percent more vehicle trips through the 14th and 15th Avenue Gates in the AM and PM peak hours, respectively, than the existing conditions; 50 and 61percent fewer vehicle trips through the 14th and 15th Avenue Gates in the AM and PM peak hours, respectively, than Alternative 1; 29 and 28 percent fewer vehicle trips through the 14th and 15th Avenue Gates in the AM and PM peak hours, respectively, than Alternative 2; and 14 and 13 percent fewer vehicle trips through the 14th and 15th Avenue Gates in the AM and PM peak hours, respectively, than Alternative 3.

With the Park Presidio Access Variant, Alternative 4 would result in 43 and 47 percent less traffic through the 14th and 15th Avenue Gates during the AM and PM peak hours, respectively, than Alternative 1; 11 and 25 percent less traffic through the 14th and 15th Avenue Gates during the AM and PM peak hours, respectively, than Alternative 2; and ten percent less traffic through the 14th and 15th Avenue Gates during the PM peak hour only compared to Alternative 3. The Park Presidio Access Variant would also improve pedestrian and bicycle safety at the intersection of Lake Street/Park Presidio Boulevard because the new intersection would replace the Lake Street intersection as the first intersection encountered by southbound traffic on Highway 1.

3. TRANSIT SERVICE

The land uses associated with the PHSH alternatives would generate transit trips on several Bay Area transit providers, and would most affect the three transit providers that directly serve the project site, including the San Francisco Municipal Railway (Muni), Golden Gate Transit (GGT) and the Presidio's internal shuttle (PresidiGo). Trips to and from the project site expected to be made by transit were estimated based on the expected mode split discussed in Technical Memorandum No. 2, Travel Demand, and then assigned to transit routes based on the geographic distribution of origins and destinations. Because some transit passengers may use more than one transit mode (e.g., transfer from Muni to PresidiGo), the sum of transit trips made on each transit provider may exceed the total number of transit passengers. Table 6 summarizes the expected AM peak hour and PM peak hour transit trips to and from the project site by transit service provider for each alternative. Tables 7, 8, 9 and 10 summarize the AM and PM peak hour ridership on Muni, Golden Gate Transit and PresidiGo for all trips to and from the Presidio.

Table 6
Peak Hour Transit Trips to/from Project Site by Service Provider and Alternative
Existing Year 2000/2004 plus Project Conditions

Time Period and Service Provider	Alternative 1	Alternative 2	Alternative 3	Alternative 4
AM Peak Hour				
S.F. Muni	95	61	43	30
Golden Gate Transit	10	6	5	3
PresidiGo	46	19	14	11
PM Peak Hour				
S.F. Muni	175	70	51	36
Golden Gate Transit	19	7	5	4
PresidiGo	80	23	17	15

Source: Wilbur Smith Associates – August 2004.

Table 7
Existing Year 2000/2004 plus Project Conditions Muni Passenger Loads and Load Factors
AM Peak Hour

Line	Direction	Maximum Load Point	Number of Passengers				Average Load Factor			
			Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 1	Alt. 2	Alt. 3	Alt. 4
1	to Howard/Main	Clay/Powell	937	938	936	934	95%	95%	95%	95%
	to Geary/33rd	Sacramento/Polk	465	452	451	450	55%	53%	53%	53%
1AX	to Davis/Pine	California/Park Presidio	311	312	310	308	72%	72%	72%	71%
	to Geary/33rd	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
1BX	to Davis/Pine	California/Fillmore	661	662	660	658	86%	86%	86%	86%
	to Park Presidio/California	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
28	to Fort Mason	19th Ave/Lincoln	352	352	351	350	60%	60%	60%	60%
	to Daly City BART	19th Ave/Sloat	272	266	266	265	64%	63%	62%	62%
28L	to Park Presidio/ California	19th Ave/Lincoln	147	147	147	146	54%	54%	54%	53%
	to Daly City BART	19th Ave/Sloat	147	144	144	144	44%	44%	44%	43%

Source: Wilbur Smith Associates - August 2004.
Notes:
1. n.a. – Not applicable; Indicates that no runs are made on that route in that direction during that particular time period.
2. Peak hour capacity is based on the Muni Bus and Metro FY 2001-2002 Weekday Conditions. It assumes an appreciable number of standees per vehicle (somewhere between 60% and 80% of the number of seated passengers, depending on the specific transit vehicle configuration) and may not include the effects of missed or late runs.
3. Peak hour ridership is assumed to be 60% of the two-hour peak period ridership.
4. The 1-California line operates at an eight-minute headway west of Fillmore Street and at a three-minute headway east of Fillmore Street. The peak hour loads correspond to maximum load points located east of Fillmore Street.

Table 8
Existing Year 2000/2004 plus Project Conditions Muni Passenger Loads and Load Factors
PM Peak Hour

Line	Direction	Maximum Load Point	Number of Passengers				Average Load Factor			
			Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 1	Alt. 2	Alt. 3	Alt. 4
1	to Howard/Main	Clay/Powell	680	662	660	659	46%	48%	48%	48%
	to Geary/33rd	Sacramento/Polk	1,260	1,253	1,251	1,249	82%	82%	82%	81%
1AX	to Davis/Pine	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	to Geary/33rd	California/Park Presidio	171	163	161	160	54%	52%	51%	51%
1BX	to Davis/Pine	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	to Park Presidio/California	California/Fillmore	265	258	255	254	71%	69%	69%	68%
28	to Fort Mason	19th Ave/Lincoln	454	441	440	439	107%	104%	103%	103%
	to Daly City BART	19th Ave/Sloat	499	492	490	489	122%	120%	120%	119%
28L	to Park Presidio/ California	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	to Daly City BART	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: Wilbur Smith Associates - August 2004.
Notes:
1. n.a. – Not applicable; Indicates that no runs are made on that route in that direction during that particular time period.
2. Peak hour capacity is based on the Muni Bus and Metro FY 2001-2002 Weekday Conditions. It assumes an appreciable number of standees per vehicle (somewhere between 60% and 80% of the number of seated passengers, depending on the specific transit vehicle configuration) and may not include the effects of missed or late runs.
3. Peak hour ridership is assumed to be 60% of the two-hour peak period ridership.
4. The 1-California line operates at an eight-minute headway west of Fillmore Street and at a three-minute headway east of Fillmore Street. The peak hour loads correspond to maximum load points located east of Fillmore Street.

Table 9
Route 50(1) Golden Gate Transit Bus Passenger Loads and Load Factors
Existing Year 2000/2004 plus Project Conditions

Time Period	Number of Passengers				Average Load Factor(2)			
	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 1	Alt. 2	Alt. 3	Alt. 4
AM Peak Hour								
- Northbound	60	61	59	58	71%	71%	70%	68%
- Southbound	44	40	39	39	35%	31%	31%	31%
PM Peak Hour								
- Northbound	58	52	51	51	68%	61%	60%	59%
- Southbound	71	66	64	63	83%	77%	76%	74%

Source: Wilbur Smith Associates – August 2004.
Notes:
1. Ridership data presented are for GGT Route 50. GGT Route 50 no longer exists, but GGT Route 10 follows the same alignment in San Francisco. Ridership data for GGT Route 10 are not yet available.

Peak hour capacity assumes 42.5 passengers per bus.

Table 10
PresidiGo Ridership by Alternative
Existing Year 2000/2004 plus Project Conditions

Alternative	AM Peak Hour	PM Peak Hour
Alternative 1	245	370
Alternative 2	231	342
Alternative 3	230	341
Alternative 4	230	342

Source: Wilbur Smith Associates – August 2004.

Alternative 1: PTMP Alternative – Alternative 1 would generate 1562 daily transit trips. The alternative would generate 92 transit trips in the AM peak hour and 206 transit trips in the PM peak hour. Under existing AM peak hour conditions, the additional transit trips associated with Alternative 1 would not exceed the capacity of any of the Muni routes; however, under PM peak hour conditions, Muni Route 28 would exceed capacity in both the inbound and outbound direction with the addition of transit trips associated with Alternative 1. The maximum load point for the Muni Route 28 occurs south of Golden Gate Park, and many passengers traveling to and from the Presidio are expected to board or alight the bus at a considerable distance from the maximum load point.

Golden Gate Transit (GGT) Route 10[2] is the GGT route that directly serves the project site. As shown in Table 9, ridership on this route would not exceed capacity during the AM and PM peak hours under existing conditions with the addition of transit trips associated with Alternative 1.

[2] Ridership data presented are for GGT Route 50. GGT Route 50 no longer exists, but GGT Route 10 follows the same alignment in San Francisco. Ridership data for GGT Route 10 are not yet available.

Alternative 2: Infill Alternative – Alternative 2 would generate 701 daily transit trips, or 55 percent fewer than Alternative 1. In the AM peak hour, Alternative 2 would generate 69 transit trips, or 37 percent fewer than Alternative 1. In the PM peak hour, Alternative 2 would generate 80 transit trips, or 60 percent fewer than Alternative 1.

The calculated Muni ridership for Alternative 2 is expected to result in 36 percent and 60 percent less Muni ridership than Alternative 1 in the AM and PM peak hours, respectively. As shown in Tables 7 and 8, average load factors on Muni lines during the AM and PM peak hours with Alternative 2 would be virtually the same as with Alternative 1. As under Alternative 1 conditions, under PM peak hour conditions, Muni Route 28 would exceed capacity in both the inbound and outbound direction with the addition of transit trips associated with Alternative 2.

As shown in Table 9, ridership on GGT Route 10[3] would not exceed capacity during the AM and PM peak hours under existing conditions with the addition of transit trips associated with Alternative 2. Alternative 2 would result in decreased load factors in the AM southbound direction and both PM northbound and southbound directions, as compared to Alternative 1; with an increase in the AM northbound direction versus Alternative 1.

Alternative 3: No Infill Alternative – Alternative 3 would generate 496 daily transit trips, or 68 percent fewer than Alternative 1 and 29 percent fewer than Alternative 2. In the AM peak hour, Alternative 3 would generate 50 transit trips, or 59 percent fewer than Alternative 1 and 28 percent fewer than Alternative 2. In the PM peak hour, Alternative 3 would generate 59 transit trips, or 73 percent fewer than Alternative 1 and 26 percent fewer than Alternative 2. Compared to Alternatives 1 and 2, Alternative 3 is expected to result in 55 and 71 percent and 27 to 69 percent less Muni ridership under existing conditions in the AM and PM peak hours, respectively. As shown in Tables 7 and 8, average load factors on Muni lines during the AM and PM peak hours with Alternative 3 would be virtually the same as with Alternative 1 and 2. Similar to Alternative 1 and 2 conditions, under PM peak hour conditions, Muni Route 28 would exceed capacity in both the inbound and outbound direction with the addition of transit trips associated with Alternative 3.

Table 9 shows that ridership on GGT Route 10[4] would not exceed capacity during the AM and PM peak hours under existing conditions with the addition of transit trips associated with Alternative 3. Also similar to Alternative 2, Alternative 3 would result in decreased load factors in the AM southbound direction and both PM northbound and southbound directions, as compared to Alternative 1; with an increase in the AM northbound direction versus Alternative 1.

Alternative 4: Battery Caulfield Alternative – Alternative 4 would generate 427 daily transit trips, or 73 percent fewer than Alternative 1 and 39 percent fewer than Alternative 2 and 14

[3] Ridership data presented are for GGT Route 50. GGT Route 50 no longer exists, but GGT Route 10 follows the same alignment in San Francisco. Ridership data for GGT Route 10 are not yet available.
[4] Ridership data presented are for GGT Route 50. GGT Route 50 no longer exists, but GGT Route 10 follows the same alignment in San Francisco. Ridership data for GGT Route 10 are not yet available.

percent fewer than Alternative 3. In the AM peak hour, Alternative 4 would generate 36 transit trips, or 70 percent fewer than Alternative 1, and 48 percent fewer than Alternative 2, and 28 percent fewer than Alternative 3. In the PM peak hour, Alternative 4 would generate 44 transit trips, or 80 percent fewer than Alternative 1, 45 percent fewer than Alternative 2, and 25 percent fewer than Alternative 3. Compared to Alternative 1, Alternative 4 is expected to result in 68 percent and 79 percent less Muni ridership under existing conditions in the AM and PM peak hours, respectively. Average load factors on Muni lines during the AM and PM peak hours with Alternative 4 would be virtually the same as with Alternatives 1, 2, and 3, as shown on Tables 7 and 8. Similar to Alternatives 1, 2, and 3 conditions, under PM peak hour conditions, Muni Route 28 would exceed capacity in both the inbound and outbound direction with the addition of transit trips associated with Alternative 4.

As shown in Table 9, ridership on GGT Route 10[5] would not exceed capacity during the AM and PM peak hours under existing conditions with the addition of transit trips associated with Alternative 4. Alternative 4 would result in the lowest load factors in both the AM and PM peak hours for both northbound and southbound directions, as compared to Alternatives 1, 2, and 3.

4. BICYCLE AND PEDESTRIAN CONDITIONS

The number of person trips to and from the project site expected to be made by bicycling, walking, or some other mode was calculated assuming the mode split discussed in Technical Memorandum No. 2, Travel Demand. The effects of the PHSH project alternatives on bicycle and pedestrian conditions are discussed in Technical Memorandum No. 3, Expanded Transportation Impact Analysis of Alternatives.

5. PARKING CONDITIONS

The effects of the PHSH project alternatives on parking conditions are discussed in Technical Memorandum No. 3, Expanded Transportation Impact Analysis of Alternatives.

6. MITIGATION MEASURES

The mitigation measures identified in this section represent those mitigation measures identified for Year 2020 conditions (in Technical Memorandum No. 3) that would be required under existing conditions.

6.1 Potential Impacts Identified

The possible mitigation measure identified for Lake Street/14th Avenue in the PTMP EIS included signalization and restriping to provide a westbound left-turn pocket at Lake Street /14th Avenue (Mitigation Measure TR-11). The possible mitigation measure identified in the PTMP EIS for the California Street/14th Avenue intersection included installing STOP signs on California Street at the intersection and restriping to add a right-turn lane to the northbound

[5] Ridership data presented are for GGT Route 50. GGT Route 50 no longer exists, but GGT Route 10 follows the same alignment in San Francisco. Ridership data for GGT Route 10 are not yet available.

approach, or possibly installing a traffic signal if queues on the westbound approach were determined to extend into the adjacent intersection of Park Presidio Boulevard/California Street.

While signalization would mitigate the operation of these intersections, it has been determined, through subsequent analysis (Access Study at 14th/15th Avenue Gates, Presidio Trust, February 2003) and coordination with the San Francisco Department of Parking and Traffic following their comments on the PTMP EIS that questioned the need for improving the minor approaches to these intersections (PTMP EIS, Volume II, Chapter 5, page 5-59), that the LOS E or F conditions on the minor approaches to Lake Street/14th Avenue could be mitigated with other measures such as RIGHT TURN ONLY restrictions for the minor approaches. The minor approaches to the intersection of Lake Street/14th Avenue are expected to operate with more average delay per vehicle than the minor approaches to the intersection of California Street/14th Avenue. Therefore, such measures would also likely improve the minor approaches to the intersection of California Street/14th Avenue to LOS D or better in the AM and PM peak hours.

As discussed in Section 3 Transit Service, Muni Route 28-19th Avenue would experience a maximum peak hour load factor higher than 100 percent under all alternatives under PM peak hour conditions. Mitigation measures called for in the PTMP EIS, including increased frequency on MUNI lines, PresidiGo service, and monitoring of GGT routes and coordination with GGT, would reduce the effects of these alternatives on transit service.

6.2 Mitigation Measures Identified in the PTMP EIS

The following measures are part of the PTMP EIS and would apply to all PHSH site alternatives with and without direct access to Park Presidio Boulevard, unless indicated otherwise. For measures that fall outside the Presidio, the Trust would coordinate with the City's Department of Parking and Traffic, which would have sole jurisdiction.

TR-11 *Lake Street / 14th Avenue Intersection Improvements* – Designate the 15th Avenue Gate for outbound traffic, and open the 14th Avenue Gate for inbound traffic. Alternatively, if the Park Presidio Access Variant is implemented, designate both the 14th and 15th Avenue Gates for inbound traffic only. Prior to the intersection operations deteriorating to LOS E or F, right-turn-only restrictions could be implemented for the minor approaches at the intersection of Lake Street/14th Avenue if the City determines this is warranted.

TR-15 *California Street / 14th Avenue Intersection Improvements* –Prior to the minor intersection approaches' operations deteriorating to LOS E or F, install STOP signs on the California Street approaches to this intersection and restripe to add a right-turn lane to the northbound approach. This improvement could require removal of some on-street parking spaces. Installing STOP signs on California Street would improve the operation of this intersection to an acceptable level of service, however queues on the westbound approach could potentially extend into the intersection of California Street/ Park Presidio Boulevard. Therefore, if queues on the westbound approach to this intersection are determined to affect the operation of California Street/ Park Presidio Boulevard, a traffic signal may be warranted at the intersection of

California Street /14th Avenue. A traffic signal at this location would adequately mitigate the operation of the intersection to an acceptable level of service.[6]

TR-22 *TDM Program Monitoring* – The Trust has agreed to implement a TDM Program to reduce automobile usage by all tenants, occupants, and visitors (see Appendix D of the PTMP for a full description). The Trust would monitor implementation and effectiveness of the TDM program on an ongoing basis. If the TDM performance standards as described in the PTMP (Appendix D) are not being reached, the Trust will implement more aggressive TDM strategies or intensify components of the existing TDM program, such as requiring tenant participation in more TDM program elements, or implementing more frequent and/or extensive shuttle service.

TR-10 and TR-25 *Transit Service Improvements and Monitoring Program* – The Trust currently monitors Muni operations and passenger loads within the Presidio. Continued monitoring of Muni service in the Presidio, and similar monitoring of GGT service at the Presidio would indicate any capacity problems. If the monitoring were to reveal insufficient capacity for northbound Presidio-generated passengers during the PM peak hour, the Trust will notify Muni or the Golden Gate Bridge Highway and Transportation District of the deficiencies. Transit service providers could then reduce passenger load factors through increased frequency.

TR-26 *Construction Traffic Management Plan* – During pre-construction activities, the contractor(s) of individual projects will work with the Trust to develop a construction traffic management protocol. The plan will include information on construction phases and duration, scheduling, proposed haul routes, permit parking, staging area management, visitor safety, detour routes, and pedestrian movements on adjacent routes.

Mitigation Measure TR-9 *Bicycle and Pedestrian Amenities,* would be implemented as planned improvements are funded pursuant to th e adopted Presidio Trails and Bikeways Master Plan. Mitigation Measure TR-21 *Presidio-wide Parking Management*, which applies to the Crissy Field area, does not apply to the PHSH district.

[6] In a comment letter on the PTMP EIS, the San Francisco Department of Parking and Traffic (DPT) expressed concern about the reasonableness of signalization at this intersection. Since the average delay per vehicle on the minor approaches to the intersection of California Street/14th Avenue is expected to be less than for the minor approaches to the intersection of Lake Street/14th Avenue, the alternatives to signalization developed for the intersection of Lake Street/14th Avenue would also likely improve the operation of the minor approaches of the intersection of California Street/14th Avenue. The Trust will continue to work with the San Francisco DPT to develop an acceptable mitigation measure for this intersection. Ultimately, because this intersection is within the City and County of San Francisco's jurisdiction, implementation of the measure will be at the discretion of the City and County of San Francisco.

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

MEMO

SAN FRANCISCO OFFICE
August 7, 2004

Project Number: 395900

To: Amy Marshall, The Presidio Trust

From: José I. Farrán, Project Manager
Sam Morrissey, Transportation Engineer

Subject: The Presidio of San Francisco
Public Health Service Hospital Site Supplemental Environmental Impact Statement
Draft Technical Memorandum No. 5 – Sensitivity Analyses for Trip Assignment and Generation

1. INTRODUCTION

This Technical Memorandum documents the results of two sensitivity analyses performed for Alternatives 1, 2, 3 and 4 of the SEIS for rehabilitation and reuse of the Presidio of San Francisco's Public Health Service Hospital (PHSH) development site. This Technical Memorandum discusses the sensitivity of each land use alternative under Year 2020 conditions with respect to:

- Traffic levels in and adjacent to the Presidio,
- Traffic at adjacent intersections, and
- Public transportation.

Intersection operating conditions have been evaluated for weekday AM and PM peak period conditions under Year 2020 conditions at eight key intersections in the vicinity of the PHSH site. These are the intersections that would most likely experience the greatest change in traffic volumes due to changes in land uses at the PHSH site. A more detailed discussion setting forth the basis for selecting these intersections for analysis is in Technical Memorandum #1. The eight study intersections are:

- Lake Street/17th Avenue
- Lake Street/15th Avenue
- Lake Street/14th Avenue
- Lake Street/Park Presidio Boulevard
- Lake Street/Funston Avenue

- California Street/15th Avenue
- California Street/14th Avenue
- California Street/Park Presidio Boulevard

The AM and PM peak hour intersection operations analysis was conducted according to the methodology described in the 2000 Highway Capacity Manual (HCM 2000) (Transportation Research Board, 2000). The HCM methodology calculates the average delay experienced by a vehicle traveling through the intersection, and assigns a corresponding level of service (LOS). The levels of service range from LOS A, indicating volumes well below capacity with vehicles experiencing little or no delay, to LOS F, indicating volumes near capacity with vehicles experiencing extremely high delays[1]. Appendix A contains the HCM 2000 LOS definitions.

For signalized intersections, the HCM 2000 methodology determines the average delay per vehicle for each lane group based on the particular movement, and traffic volume and capacity associated with that lane group. The average delay per vehicle is then aggregated for each approach and for the intersection as a whole. A combined weighted average delay and LOS is then presented for the intersection as a whole. For unsignalized intersections, average delay and LOS operating conditions are calculated by approach (e.g., northbound) and movement (e.g., northbound left-turn). For two-way stop-controlled intersections, delay and LOS are calculated for each of the stop-controlled approaches and operating conditions are reported for the worst approach. For all-way stop-controlled intersections, average delay per vehicle is averaged across all approaches, and operating conditions are reported for the average delay and LOS for the intersection as a whole.

2. SENSITIVITY ANALYSIS FOR ALTERNATIVE TRAFFIC ASSIGNMENT

2.1 Definition

A sensitivity analysis was completed in response to public comments on the PHSH EA. Comments received suggested that the percentage of traffic assumed to be turning left from the PHSH district onto northbound Park Presidio Boulevard was underestimated. The sensitivity analysis for alternative traffic assignment changes the distribution of PHSH related traffic exiting the site from the proposed new connection to Park Presidio Boulevard north of Lake Street and documents the effect of this changed assumption on the operation of study intersections. For purposes of the analysis, it is assumed that 33% and 23% of the traffic exiting the PHSH site onto Park Presidio Boulevard turns left in the AM peak hour and PM peak hour, respectively. The transportation analysis for the EA and Draft EIS assumes that 4.3 to 7.3 percent of the traffic leaving the PHSH district via the new intersection in the AM peak hour would turn left onto Highway 1 and 2.2 to 3.0 percent would turn left onto Highway 1 in the PM peak hour, depending on the alternative. The trip assignments within the study area were adjusted in order to accommodate the changed distribution; however, no other adjustments or modifications were made to Alternatives 1, 2, 3 and 4 or their trip assignments.

[1] The City and County of San Francisco generally considers intersection operation at LOS D or better to be acceptable, and intersection operation at LOS E or F to be unacceptable.

2.2 Intersection Analysis

Tables 1 and 2 present the results of the sensitivity analysis for the Year 2020 weekday AM and PM peak hour conditions for the four proposed land use build alternatives (Alternatives 1, 2, 3 and 4) assuming a new connection to Park Presidio Boulevard to and from the PHSH site north of Lake Street), as well as the adjusted traffic assignments associated with the sensitivity analysis. In general, all study intersections would operate at the same levels of service with Alternatives 1, 2, 3 and 4 during both the AM and PM peak hours (Appendix B contains the detailed calculations of the intersection LOS analysis) under either the original or adjusted trip assignments.

Table 1
Intersection Levels of Service – Weekday AM Peak Hour
Year 2020 Sensitivity Analysis For Alternative Traffic Assignment
Variant: New Park Presidio Blvd. Access with Inbound Only Traffic at 14th and 15th Ave. Gates

Intersection	Traffic Control Device	Alt. 1		Alt. 2		Alt. 3		Alt. 4	
		Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS
Lake St/ 17th Ave	2-Way Stop (N-S)	18.8	C	18.5	C	18.4	C	18.3	C
Lake St/ 15th Ave	4-Way Stop	23.7	C	21.5	C	21.2	C	21.0	C
Lake St/ 14th Ave [2]	2-Way Stop (N-S)	49.9	E	44.5	E	43.1	E	42.2	E
Lake St/ Park Presidio Blvd.	Traffic Signal	38.5	D	38.7	D	38.8	D	38.3	D
Lake St/ Funston Ave	2-Way Stop (N-S)	27.7	D	27.0	D	26.9	D	26.9	D
California St/ 15th Ave [2]	2-Way Stop (N-S)	35.0	E	32.1	D	31.9	D	31.7	D
California St/ 14th Ave [2]	2-Way Stop (N-S)	68.2	F	59.5	F	56.7	F	54.8	F
California St/ Park Presidio Blvd.	Traffic Signal	42.3	D	42.3	D	42.3	D	42.3	D
New Alternative Access/ Park Presidio Blvd.	Traffic Signal	5.8	A	5.2	A	4.9	A	4.8	A

Source: Wilbur Smith Associates – July 2004.
Notes:
[1] Delay presented in seconds per vehicle based on the 2000 HCM methodology.
[2] LOS and delay shown for worst minor stop-controlled approach. Major approach is uncontrolled and without delay.

Table 2
Intersection Levels of Service – Weekday PM Peak Hour
Year 2020 Sensitivity Analysis For Alternative Traffic Assignment
Variant: New Park Presidio Blvd. Access with Inbound Only Traffic at 14th and 15th Ave. Gates

Intersection	Traffic Control Device	Alt. 1		Alt. 2		Alt. 3		Alt. 4	
		Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS
Lake St/ 17th Ave	2-Way Stop (N-S)	17.5	C	17.0	C	16.8	C	16.8	C
Lake St/ 15th Ave	4-Way Stop	19.0	C	17.4	C	17.0	C	16.8	C
Lake St/ 14th Ave [2]	2-Way Stop (N-S)	>90	F	>90	F	>90	F	>90	F
Lake St/ Park Presidio Blvd.	Traffic Signal	54.2	D	49.7	D	49.8	D	49.3	D
Lake St/ Funston Ave	2-Way Stop (N-S)	34.1	D	33.2	D	33.1	D	32.7	D
California St/ 15th Ave [2]	2-Way Stop (N-S)	49.1	E	42.7	E	41.0	E	39.7	E
California St/ 14th Ave [2]	2-Way Stop (N-S)	>90	F	>90	F	>90	F	>90	F
California St/ Park Presidio Blvd.	Traffic Signal	74.9	E	71.7	E	71.5	E	71.2	E
New Alternative Access/ Park Presidio Blvd.	Traffic Signal	8.4	A	7.2	A	7.0	A	6.8	A

Source: Wilbur Smith Associates – July 2004.
Notes:
[1] Delay presented in seconds per vehicle based on the 2000 HCM methodology.
[2] LOS and delay shown for worst minor stop-controlled approach. Major approach is uncontrolled and without delay.

Alternative 1: PTMP Alternative – For the Park Presidio Access Variant, Table 1 shows that all study intersections would operate at LOS D or better under Alternative 1 AM peak hour conditions except for the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/15th Avenue, which would both operate at LOS E, and the minor street approaches to the two-way stop-controlled intersections of California Street/14th Avenue, which would operate at LOS F. As shown on Table 2, during the PM peak hour, the minor street approach to the two-way stop-controlled intersection of California Street/15th Avenue would operate at LOS E; the traffic signal controlled intersection of California Street/Park Presidio Boulevard would operate at LOS E; the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would both operate at LOS F; with the remaining study intersections operating at LOS D or better.

The sensitivity analysis for traffic assignment indicates that under Alternative 1 with the Park Presidio Access Variant, the operations of the traffic controlled intersection of the New Alternative Access/Park Presidio Boulevard would maintain operations at LOS A during both

AM and PM peak hours. All study intersections would operate at the same levels of service in both the AM and PM peak hours as they would assuming the traffic assignment used in the SEIS traffic analysis.

Alternative 2: Infill Alternative –Table 1 shows that for the Park Presidio Access Variant, all study intersections would operate at LOS D or better under Alternative 2 AM peak hour conditions except for the minor street approach to the two-way stop-controlled intersection of Lake Street/14th Avenue, which would operate at LOS E, and the minor street approach to the two-way stop-controlled intersection of California Street/14th Avenue, which would operate at LOS F. During the PM peak hour, Table 2 shows that the minor street approach to the two-way stop-controlled intersection of California Street/15th Avenue would operate at LOS E; the traffic signal controlled intersection of California Street/Park Presidio Boulevard would operate at LOS E; the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would both operate at LOS F; with the remaining study intersections operating at LOS D or better.

As found for Alternative 1, the sensitivity analysis for traffic assignment indicates that under Alternative 2 with the Park Presidio Access Variant, the operations of the traffic controlled intersection of the New Alternative Access/Park Presidio Boulevard would maintain operations at LOS A during both AM and PM peak hours.

All study intersections would operate at the same levels of service in both the AM and PM peak hours as they would assuming the traffic assignment used in the SEIS traffic analysis.

Comparison of Alternative 2 to Alternative 1
Compared to Alternative 1, Alternative 2 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 9%)
- Lake Street/14th Avenue (approximate reduction of 11%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 8%)
- California Street/14th Avenue (approximate reduction of 13%)

Alternative 2 results in no change to the delay compared to Alternative 1 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 2 results in increased delays at the following intersections compared to Alternative 1:

- Lake Street/Park Presidio Boulevard (approximate increase of 1%)

Compared to Alternative 1, Alternative 2 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 3%)
- Lake Street/15th Avenue (approximate reduction of 8%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 8%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 13%)
- California Street/Park Presidio Boulevard (approximate reduction of 4%)

Alternative 2 results in no changes to the delay compared to Alternative 1 at the following intersection during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue

During the PM peak hour, Alternative 2 does not result in increased delays at any of the study intersections compared to Alternative 1.

Alternative 3: No Infill Alternative – Under Alternative 3 AM peak hour conditions Table 1 shows that, for the Park Presidio Access Variant, all study intersections would operate at LOS D or better except for the minor street approach to the two-way stop-controlled intersection of Lake Street/14th Avenue, which would operate at LOS E, and the minor street approach to the two-way stop-controlled intersection of California Street/14th Avenue, which would operate at LOS F. As shown on Table 2, during the PM peak hour, the minor street approach to the two-way stop-controlled intersection of California Street/15th Avenue would operate at LOS E; the traffic signal controlled intersection of California Street/Park Presidio Boulevard would operate at LOS E; the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would both operate at LOS F; with the remaining study intersections operating at LOS D or better.

Again, as found for the previous Alternative 1 and Alternative 2 conditions, the sensitivity analysis for traffic assignment indicates that under Alternative 3 with the Park Presidio Access Variant, the operations of the traffic controlled intersection of the New Alternative Access/Park Presidio Boulevard would maintain operations at LOS A during both AM and PM peak hours.

All study intersections would operate at the same levels of service in both the AM and PM peak hours as they would assuming the traffic assignment used in the SEIS traffic analysis.

Comparison of Alternative 3 to Alternative 2
Compared to Alternative 2, Alternative 3 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 1%)
- Lake Street/14th Avenue (approximate reduction of 3%)
- Lake Street/Funston Avenue (approximate reduction of less than 1%)
- California Street/15th Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 5%)

Alternative 3 results in no change to the delay compared to Alternative 2 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 3 results in increased delay at the following intersection compared to Alternative 2:

- Lake Street/Park Presidio Boulevard (approximate increase of less than 1%)

Compared to Alternative 2, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 2%)
- Lake Street/Funston Avenue (approximate reduction of less than 1%)
- California Street/15th Avenue (approximate reduction of 4%)
- California Street/Park Presidio Boulevard (approximate reduction of less than 1%)

Alternative 3 results in no changes to the delays compared to Alternative 2 at the following intersections during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue

During the PM peak hour, Alternative 3 results in increased delay at the following intersection compared to Alternative 2:

- Lake Street/Park Presidio Boulevard (approximate increase of less than 1%)

Comparison of Alternative 3 to Alternative 1
Compared to Alternative 1, Alternative 3 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 11%)
- Lake Street/14th Avenue (approximate reduction of 14%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 9%)
- California Street/14th Avenue (approximate reduction of 17%)

Alternative 3 results in no change to the delay compared to Alternative 1 at the following intersection during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 3 results in increased delay at the following intersection compared to Alternative 1:

- Lake Street/Park Presidio Boulevard (approximate increase of 1%)

Compared to Alternative 1, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 4%)
- Lake Street/15th Avenue (approximate reduction of 11%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 8%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 16%)
- California Street/Park Presidio Boulevard (approximate reduction of 5%)

Alternative 3 results in no changes to the delays compared to Alternative 1 at the following intersections during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue

During the PM peak hour, Alternative 3 does not result in increased delays at any of the study intersections compared to Alternative 1.

Alternative 4: Battery Caulfield Alternative – For the Park Presidio Access Variant, Table 1 shows that all study intersections would operate at LOS D or better under Alternative 4 AM peak hour conditions except for the minor street approach to the two-way stop-controlled intersection of Lake Street/14th Avenue, which would operate at LOS E, and the minor street approach to the two-way stop-controlled intersection of California Street/14th Avenue, which would operate at LOS F. As shown on Table 2, during the PM peak hour, the minor street approach to the two-way stop-controlled intersection of California Street/15th Avenue would operate at LOS E; the traffic signal controlled intersection of California Street/Park Presidio Boulevard would operate at LOS E; the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would both operate at LOS F; with the remaining study intersections operating at LOS D or better.

The sensitivity analysis for traffic assignment indicates that under Alternative 4 with the Park Presidio Access Variant, the operations of the traffic controlled intersection of the New Alternative Access/Park Presidio Boulevard would maintain operations at LOS A during both AM and PM peak hours. This is consistent with the findings of Alternative 1, Alternative 2, and Alternative 3.

All study intersections would operate at the same levels of service in both the AM and PM peak hours as they would assuming the traffic assignment used in the SEIS traffic analysis.

Comparison of Alternative 4 to Alternative 3
Compared to Alternative 3, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 1%)
- Lake Street/14th Avenue (approximate reduction of 2%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- California Street/15th Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 3%)

Alternative 4 results in no change to the delays compared to Alternative 3 at the following intersections during the AM peak hour:

- Lake Street/Funston Avenue
- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 3.

Compared to Alternative 3, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/15th Avenue (approximate reduction of 1%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 1%)
- California Street/15th Avenue (approximate reduction of 3%)
- California Street/Park Presidio Boulevard (approximate reduction of less than 1%)

Alternative 4 results in no changes to the delays compared to Alternative 3 at the following intersections during the PM peak hour:

- Lake Street/17th Avenue
- Lake Street/14th Avenue
- California Street/14th Avenue

During the PM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 3.

Comparison of Alternative 4 to Alternative 2
Compared to Alternative 2, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 2%)
- Lake Street/14th Avenue (approximate reduction of 5%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- California Street/15th Avenue (approximate reduction of 1%)
- California Street/14th Avenue (approximate reduction of 8%)

Alternative 4 results in no change to the delay compared to Alternative 2 at the following intersection during the AM peak hour:

- Lake Street/Funston Avenue
- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 2.

Compared to Alternative 2, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 3%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/15th Avenue (approximate reduction of 7%)
- California Street/Park Presidio Boulevard (approximate reduction of 1%)

Alternative 4 results in no changes to the delay compared to Alternative 2 at the following intersection during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue

During the PM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 2.

Comparison of Alternative 4 to Alternative 1
Compared to Alternative 1, Alternative 4 results in reduced delays at the following intersections during the AM peak hour:

- Lake Street/17th Avenue (approximate reduction of 3%)
- Lake Street/15th Avenue (approximate reduction of 11%)
- Lake Street/14th Avenue (approximate reduction of 15%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 1%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 9%)
- California Street/14th Avenue (approximate reduction of 20%)

Alternative 4 results in no change to the delays compared to Alternative 1 at the following intersections during the AM peak hour:

- California Street/Park Presidio Boulevard

During the AM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 1.

Compared to Alternative 1, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 4%)
- Lake Street/15th Avenue (approximate reduction of 12%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 9%)
- Lake Street/Funston Avenue (approximate reduction of 4%)
- California Street/15th Avenue (approximate reduction of 19%)
- California Street/Park Presidio Boulevard (approximate reduction of 5%)

Alternative 4 results in no changes to the delay compared to Alternative 1 at the following intersection during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue

During the PM peak hour, Alternative 4 does not result in increased delays at any of the study intersections compared to Alternative 1.

3. SENSITIVITY ANALYSIS FOR HIGHER PM PEAK HOUR RESIDENTIAL TRIP GENERATION RATE

3.1 Definition

The sensitivity analysis for alternative traffic assignment changes the distribution of PHSH related traffic exiting the site from the proposed new connection to Park Presidio Boulevard north of Lake Street and documents the effect of this changed assumption on the operation of study intersections. For purposes of the analysis, it is assumed that 33% and 23% of the traffic exiting the PHSH site onto Park Presidio Boulevard turns left in the AM peak hour and PM peak hour, respectively. The transportation analysis for the EA and Draft EIS assumes that 4.3 to 7.3 percent of the traffic leaving the PHSH district via the new intersection in the AM peak hour would turn left onto Highway 1 and 2.2 to 3.0 percent would turn left onto Highway 1 in the PM peak hour, depending on the alternative.

A sensitivity analysis was completed in response to public comments on the PHSH EA. Comments received suggested that the Trust should have used the trip generation rates in the San Francisco Guidelines for Environmental Review, and specifically mentioned the discrepancy with the SF Guidelines for the PM peak hour trip generation rate for residential uses. For this sensitivity analysis, the PM peak hour trip generation rate was increased from 1.05 as used in the SEIS analysis to 1.73 persons per dwelling unit, for Alternatives 1, 2, 3 and 4, with and without the Variant. The results of the analysis provided below describe the effect of the change in trip

generation rate on traffic conditions at the study intersections and transit serving the PHSH district.

Note that for this analysis, only Alternatives 2, 3, and 4 were evaluated, because Alternative 1 provides the baseline for comparison to the previous PTMP EIS analysis.

3.2 Intersection Analysis

Intersection operating conditions have been evaluated for weekday PM peak period conditions under Year 2020 conditions for the same key intersections in the vicinity of the PHSH site as identified in Section 1, utilizing the same evaluation methodologies.

3.2.1 One-Way Couplet at 14th and 15th Avenue Gates

Table 3 presents the results of the sensitivity analysis for the Year 2020 weekday PM peak hour conditions assuming that the 14th Avenue and 15th Avenue Gates operate as a one-way couplet with the 14th Avenue Gate accommodating northbound traffic entering the Presidio and the 15th Avenue Gate accommodating southbound traffic exiting the Presidio (Appendix C contains the detailed calculations of the intersection LOS analysis).

Table 3
Intersection Levels of Service – Weekday PM Peak Hour
Year 2020 Sensitivity Analysis For Higher Residential Trip Generation Rate
One-Way Couplet at 14th and 15th Avenue Gates

Intersection	Traffic Control Device	Alt. 2		Alt. 3		Alt. 4	
		Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS
Lake St/ 17th Ave	2-Way Stop (N-S)	17.3	C	17.1	C	16.9	C
Lake St/ 15th Ave	4-Way Stop	20.5	C	19.3	C	18.6	C
Lake St/ 14th Ave [2]	2-Way Stop (N-S)	>90	F	>90	F	>90	F
Lake St/ Park Presidio Blvd.	Traffic Signal	36.4	D	36.3	D	36.3	D
Lake St/ Funston Ave	2-Way Stop (N-S)	42.1	E	40.7	E	39.7	E
California St/ 15th Ave [2]	2-Way Stop (N-S)	51.3	F	47.9	E	45.2	E
California St/ 14th Ave [2]	2-Way Stop (N-S)	>90	F	>90	F	>90	F
California St/ Park Presidio Blvd.	Traffic Signal	75.4	E	75.4	E	75.4	E

Source: Wilbur Smith Associates – July 2004.
Notes:
[1] Delay presented in seconds per vehicle based on the 2000 HCM methodology.
[2] LOS and delay shown for worst minor stop-controlled approach. Major approach is uncontrolled and without delay.

Alternative 2: Infill Alternative – As shown in Table 3, for the Alternative 2 scenario in the PM peak hour, the minor street approach to the two-way stop-controlled intersection of Lake Street/Funston Avenue would operate at LOS E; the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue, California Street/15th Avenue, and California Street/14th Avenue would operate LOS F; and the traffic signal controlled intersection of California Street/Park Presidio Boulevard would operate at LOS E; with the remaining study intersections operating at LOS D or better.

All study intersections would operate at the same levels of service as with the lower trip generation rate except the intersection of California Street/15th Avenue. As described above, the minor street approach(es) to this intersection would operate at LOS F, compared to LOS E with the lower trip generation rate.

Alternative 3: No Infill Alternative – As Table 3 indicates, for the Alternative 3 scenario in the PM peak hour, the minor street approaches to the two-way stop-controlled intersections of Lake Street/Funston Avenue and California Street/15th Avenue would operate at LOS E; the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would operate LOS F; and the traffic signal controlled intersection of California Street/Park Presidio Boulevard would operate at LOS E; with the remaining study intersections operating at LOS D or better.

All study intersections would operate at the same levels of service as with the lower residential trip generation rate.

Comparison of Alternative 3 to Alternative 2
Compared to Alternative 2, Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 6%)
- Lake Street/Park Presidio Boulevard (approximate reduction of less than 1%)
- Lake Street/Funston Avenue (approximate reduction of 3%)
- California Street/15th Avenue (approximate reduction of 7%)

Alternative 3 results in no change to the delay compared to Alternative 2 at the following intersection during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue
- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 3 does not result in increased delay at any of the study intersections as compared to Alternative 2.

Alternative 4: Battery Caulfield Alternative – The Alternative 4 conditions follow the trends of the previous project entrance variants, and result in the lowest intersection delays of all project entrance variants. Table 3 shows that during the PM peak hour, the minor street approaches to the two-way stop-controlled intersections of Lake Street/Funston Avenue and California Street/15th Avenue would operate at LOS E; the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would operate LOS F; and the traffic signal controlled intersection of California Street/Park Presidio Boulevard would operate at LOS E; with the remaining study intersections operating at LOS D or better.

All study intersections would operate at the same levels of service as with the lower residential trip generation rate.

Comparison of Alternative 4 to Alternative 3
Compared to Alternative 3, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 4%)
- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/15th Avenue (approximate reduction of 6%)

Alternative 4 results in no change to the delay compared to Alternative 3 at the following intersection during the PM peak hour:

- Lake Street/14th Avenue
- Lake Street/Park Presidio Boulevard
- California Street/14th Avenue
- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 4 does not result in increased delay at any of the study intersections as compared to Alternative 3.

Comparison of Alternative 4 to Alternative 2
Compared to Alternative 2, Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)

- Lake Street/15th Avenue (approximate reduction of 9%)
- Lake Street/Park Presidio Boulevard (approximate reduction of less than 1%)
- Lake Street/Funston Avenue (approximate reduction of 6%)
- California Street/15th Avenue (approximate reduction of 12%)

Alternative 4 results in no change to the delay compared to Alternative 2 at the following intersection during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue
- California Street/Park Presidio Boulevard

During the PM peak hour, Alternative 4 does not result in increased delay at any of the study intersections as compared to Alternative 2.

3.2.2 Variant: New Park Presidio Blvd. Access with Inbound Only Traffic at 14th and 15th Avenue Gates

Table 4 presents the results of the sensitivity analysis for the Year 2020 weekday PM peak hour conditions for Alternatives 2, 3 and 4 assuming a new connection to Park Presidio Boulevard to and from the PHSH site north of Lake Street). The new intersection would allow traffic leaving the PHSH site to turn left or right on Highway 1, and allow southbound traffic on Highway 1 to enter the PHSH site directly from Highway 1. Both the 14th and 15th Avenue Gates would be open to inbound (northbound) traffic only.

Alternative 2: Infill Alternative – As shown in Table 4, under Alternative 2 conditions in the PM peak hour, the minor street approach to the two-way stop-controlled intersection of California Street/15th Avenue would operate at LOS E; the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would both operate at LOS F; and the traffic signal controlled intersection of California Street/Park Presidio Boulevard would operate at LOS E; with the remaining study intersections operating at LOS D or better.

All study intersections would operate at the same levels of service as with the lower residential trip generation rate.

Table 4
Intersection Levels of Service – Weekday PM Peak Hour
Year 2020 Sensitivity Analysis For Higher Residential Trip Generation Rate
Variant: New Park Presidio Blvd. Access with Inbound Only Traffic at 14th and 15th Ave. Gates

Intersection	Traffic Control Device	Alt. 2		Alt. 3		Alt. 4	
		Delay [1]	LOS	Delay [1]	LOS	Delay [1]	LOS
Lake St/ 17th Ave	2-Way Stop (N-S)	17.1	C	17.0	C	16.8	C
Lake St/ 15th Ave	4-Way Stop	18.0	C	17.5	C	17.0	C
Lake St/ 14th Ave [2]	2-Way Stop (N-S)	>90	F	>90	F	>90	F
Lake St/ Park Presidio Blvd.	Traffic Signal	50.9	D	50.7	D	49.8	D
Lake St/ Funston Ave	2-Way Stop (N-S)	33.7	D	33.3	D	32.9	D
California St/ 15th Ave [2]	2-Way Stop (N-S)	46.5	E	43.3	E	40.9	E
California St/ 14th Ave [2]	2-Way Stop (N-S)	>90	F	>90	F	>90	F
California St/ Park Presidio Blvd.	Traffic Signal	72.5	E	72.1	E	71.5	E
New Alternative Access/ Park Presidio Blvd.	Traffic Signal	7.4	A	7.1	A	6.9	A

Source: Wilbur Smith Associates – July 2004.
Notes:
[1] Delay presented in seconds per vehicle based on the 2000 HCM methodology.
[2] LOS and delay shown for worst minor stop-controlled approach. Major approach is uncontrolled and without delay.

Alternative 3: No Infill Alternative – As Table 4 indicates, in the PM peak hour under Alternative 3 conditions, the minor street approach to the two-way stop-controlled intersection of California Street/15th Avenue would operate at LOS E; the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would both operate at LOS F; and the traffic signal controlled intersection of California Street/Park Presidio Boulevard would operate at LOS E; with the remaining study intersections operating at LOS D or better.

All study intersections would operate at the same levels of service as with the lower residential trip generation rate.

Comparison of Alternative 3 to Alternative 2
Compared to Alternative 2; Alternative 3 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 3%)

- Lake Street/Park Presidio Boulevard (approximate reduction of less than 1%)
- Lake Street/Funston Avenue (approximate reduction of 1%)
- California Street/15th Avenue (approximate reduction of 7%)
- California Street/Park Presidio Boulevard (approximate reduction of 1%)

Alternative 3 results in no change to the delay compared to Alternative 2 at the following intersection during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue

During the PM peak hour, Alternative 3 does not result in increased delay at any of the study intersections as compared to Alternative 2.

Alternative 4: Battery Caulfield Alternative – The Alternative 4 Park Presidio Access Variant conditions follow the trends of the previous Park Presidio Access Variants, and result in the lowest intersection delays of all project entrance variants. Table 4 shows that during the PM peak hour, the minor street approach to the two-way stop-controlled intersection of California Street/15th Avenue would operate at LOS E; the minor street approaches to the two-way stop-controlled intersections of Lake Street/14th Avenue and California Street/14th Avenue would both operate at LOS F; and the traffic signal controlled intersection of California Street/Park Presidio Boulevard would operate at LOS E; with the remaining study intersections operating at LOS D or better.

All study intersections would operate at the same levels of service as with the lower residential trip generation rate.

Comparison of Alternative 4 to Alternative 3
Compared to Alternative 3; Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 1%)
- Lake Street/15th Avenue (approximate reduction of 3%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 2%)
- Lake Street/Funston Avenue (approximate reduction of 1%)
- California Street/15th Avenue (approximate reduction of 6%)
- California Street/Park Presidio Boulevard (approximate reduction of 1%)

Alternative 4 results in no change to the delay compared to Alternative 3 at the following intersection during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue

During the PM peak hour, Alternative 4 does not result in increased delay at any of the study intersections as compared to Alternative 3.

Comparison of Alternative 4 to Alternative 2
Compared to Alternative 2; Alternative 4 results in reduced delays at the following intersections during the PM peak hour:

- Lake Street/17th Avenue (approximate reduction of 2%)
- Lake Street/15th Avenue (approximate reduction of 6%)
- Lake Street/Park Presidio Boulevard (approximate reduction of 2%)
- Lake Street/Funston Avenue (approximate reduction of 2%)
- California Street/15th Avenue (approximate reduction of 12%)
- California Street/Park Presidio Boulevard (approximate reduction of 1%)

Alternative 4 results in no change to the delay compared to Alternative 2 at the following intersection during the PM peak hour:

- Lake Street/14th Avenue
- California Street/14th Avenue

3.3 Transit Service

The land uses associated with the PHSH alternatives would generate transit trips on several Bay Area transit providers, and would most affect the three transit providers that directly serve the project site, including the San Francisco Municipal Railway (Muni), Golden Gate Transit (GGT) and the Presidio's internal shuttle (PresidiGo). Trips to and from the project site expected to be made by transit were estimated based on the expected mode split discussed in Technical Memorandum No. 2, Travel Demand, and then assigned to transit routes based on the geographic distribution of origins and destinations. Because some transit passengers may use more than one transit mode (e.g., transfer from Muni to PresidiGo), the sum of transit trips made on each transit provider may exceed the total number of transit passengers. Table 5 summarizes the expected PM peak hour transit trips to and from the project site by transit service provider for each alternative. Tables 6, 7, and 8 summarize the PM peak hour ridership on Muni, Golden Gate Transit and PresidiGo for all trips to and from the Presidio.

Table 5
Peak Hour Transit Trips to/from Project Site by Service Provider and Alternative
Year 2020 Sensitivity Analysis For Higher Residential Trip Generation Rate

Time Period and Service Provider	Alternative 2	Alternative 3	Alternative 4
PM Peak Hour			
S.F. Muni	106	74	48
Golden Gate Transit	11	8	5
PresidiGo	34	25	18

Source: Wilbur Smith Associates – July 2004.

Alternative 2: Infill Alternative – In the PM peak hour, Alternative 2 would generate 149 transit trips or approximately 50 percent more than generated with lower the lower trip generation rate. As shown in Table 6, average load factors on Muni lines during the PM peak hour with Alternative 2 would exceed capacity on two lines in the outbound direction with the addition of transit trips associated with Alternative 2.

With the higher trip generation rate, Alternative 2 is expected to generate four more PM peak hour GGT trips than with the lower rate. As shown in Table 7, ridership on GGT Route 10[2] would exceed capacity during the PM peak hour in the southbound direction with the addition of transit trips associated with Alternative 2.

Alternative 3: No Infill Alternative – In the PM peak hour, Alternative 3 would generate 105 transit trips, or 30 percent less than Alternative 2 and about 44 percent more than Alternative 3 with the lower trip generation rate. Similar to Alternative 2, Table 6 shows that average load factors on Muni lines during the PM peak hour with Alternative 3 would exceed capacity on two lines in the outbound direction with the addition of transit trips associated with Alternative 3.

Table 7 shows that ridership on GGT Route 10[3] would be at capacity during the PM peak hour in the southbound direction with the addition of transit trips associated with Alternative 3.

[2] Ridership data presented are for GGT Route 50. GGT Route 50 no longer exists, but GGT Route 10 follows the same alignment in San Francisco. Ridership data for GGT Route 10 are not yet available.
[3] Ridership data presented are for GGT Route 50. GGT Route 50 no longer exists, but GGT Route 10 follows the same alignment in San Francisco. Ridership data for GGT Route 10 are not yet available.

Table 6
Year 2020 Sensitivity Analysis For Higher Residential Trip Generation Rate - PM Peak Hour
Muni Passenger Loads and Load Factors

Line	Direction	Maximum Load Point	Number of Passengers			Average Load Factor		
			Alt. 2	Alt. 3	Alt. 4	Alt. 2	Alt. 3	Alt. 4
1	to Howard/Main	Clay/Powell	863	860	858	63%	63%	62%
	to Geary/33rd	Sacramento/Polk	1,606	1,602	1,600	105%	105%	104%
1AX	to Davis/Pine	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	to Geary/33rd	California/Park Presidio	223	219	216	71%	70%	69%
1BX	to Davis/Pine	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	to Park Presidio/California	California/Fillmore	342	339	336	92%	91%	90%
28	to Fort Mason	19th Ave/Lincoln	541	539	538	127%	127%	126%
	to Daly City BART	19th Ave/Sloat	609	606	603	149%	148%	147%
28L	to Park Presidio/ California	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	to Daly City BART	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Source: Wilbur Smith Associates - July 2004.
Notes:
1. n.a. – Not applicable; Indicates that no runs are made on that route in that direction during that particular time period.
2. Peak hour capacity is based on the Muni Bus and Metro FY 2001-2002 Weekday Conditions. It assumes an appreciable number of standees per vehicle (somewhere between 60% and 80% of the number of seated passengers, depending on the specific transit vehicle configuration) and may not include the effects of missed or late runs.
3. Peak hour ridership is assumed to be 60% of the two-hour peak period ridership.
4. The 1-California line operates at an eight-minute headway west of Fillmore Street and at a three-minute headway east of Fillmore Street. The peak hour loads correspond to maximum load points located east of Fillmore Street.

Table 7
Route 50(1) Golden Gate Transit Bus Passenger Loads and Load Factors
Year 2020 Sensitivity Analysis For Higher Residential Trip Generation Rate

Time Period	Number of Passengers			Average Load Factor(2)		
	Alt. 2	Alt. 3	Alt. 4	Alt. 2	Alt. 3	Alt. 4
PM Peak Hour						
- Northbound	62	61	60	73%	72%	70%
- Southbound	88	85	83	103%	100%	98%

Source: Wilbur Smith Associates – July 2004.
Notes:
1. Ridership data presented are for GGT Route 50. GGT Route 50 no longer exists, but GGT Route 10 follows the same alignment in San Francisco. Ridership data for GGT Route 10 are not yet available.

Peak hour capacity assumes 42.5 passengers per bus.

Table 8
PresidiGo Ridership by Alternative
Year 2020 Sensitivity Analysis For Higher Residential Trip Generation Rate

Alternative	PM Peak Hour
Alternative 2	342
Alternative 3	340
Alternative 4	340

Source: Wilbur Smith Associates – July 2004.

Alternative 4: Battery Caulfield Alternative – In the PM peak hour, Alternative 4 would generate 70 transit trips, or 33 percent fewer than Alternative 3, and 53 percent less than Alternative 2. Compared to Alternative 4 with the lower residential trip generation rate, the higher trip generation rate would result in 27 percent more transit trips to and from the PHSH district. As shown for Alternatives 2 and 3, Table 6 shows that average load factors on Muni lines during the PM peak hour with Alternative 4 would exceed capacity on two lines in the outbound direction with the addition of transit trips associated with Alternative 4.

As shown in Table 7, ridership on GGT Route 10[4] would not exceed capacity during the PM peak hour in the southbound direction with the addition of transit trips associated with Alternative 4. Alternative 4 would result in the lowest load factors in both the AM and PM peak hours for both northbound and southbound directions, as compared to Alternatives 2 and 3.

4. CONCLUSION

The sensitivity analysis for alternative traffic assignment shows that the new intersection added on Park Presidio Boulevard under the Park Presidio Access Variant would have adequate capacity to support a higher percentage of northbound left-turn movements leaving the PHSH

[4] Ridership data presented are for GGT Route 50. GGT Route 50 no longer exists, but GGT Route 10 follows the same alignment in San Francisco. Ridership data for GGT Route 10 are not yet available.

site. Under all study scenarios during both AM and PM peak hour conditions, LOS A would be maintained for this location.

The sensitivity analysis for a higher residential PM peak hour trip generation rate shows that under all study scenarios, for both 2020 one-way couplet and 2020 Park Presidio Access Variant scenarios, intersection traffic volumes would increase and delays would increase, although levels of service would generally remain the same as with the lower residential trip generation rate.