

AFFECTED ENVIRONMENT

Transportation and Circulation

3.5 TRANSPORTATION AND CIRCULATION

This section describes existing transportation conditions within and in the vicinity of the Presidio in San Francisco. This assessment is based in part on the *Presidio Transportation Planning and Analysis Technical Report*, July 1994, *The Presidio Traffic Update Report of Findings*, December 1996 and the *Presidio Bus Management Plan*, September 1998. In addition, the information obtained from these reports was supplemented and updated with new traffic, transit, and parking data collected specifically for this study. The following are the components of the transportation system that are addressed in this section:

- Roadway Network,
- Traffic Characteristics,
- Transit Services,
- Bicycle and Pedestrian Circulation, and
- Parking.

3.5.1 ROADWAY NETWORK

The Presidio of San Francisco is located in the northwest corner of San Francisco, with roadways connecting to the Marina and Cow Hollow neighborhoods to the east and the Richmond, Sea Cliff and Presidio Heights neighborhoods to the south. All of the intersections within the Presidio, as well as those connecting the Presidio with the rest of the City, are either two-way or all-way STOP controlled. The nearest signalized intersections to the Presidio are just outside the Marina Boulevard and Gorgas Avenue gates. The key roadways within and near the Presidio are shown in Figure 29 and described below.

Lincoln Boulevard - Lincoln Boulevard runs generally east-west in the eastern portion of the Presidio and north-south in its western portion, and serves as the primary thoroughfare in the Presidio. It begins at the intersection of Presidio Boulevard/Letterman Drive and ends at the intersection of 25th Avenue/El Camino del Mar. Lincoln Boulevard contains two lanes each way between Torney Avenue and Montgomery Street, and one lane each way west to El Camino del Mar.

Presidio Boulevard - Presidio Boulevard has one lane each way, and begins at Funston Avenue in the Main Post Planning District, connects to Lincoln Boulevard/Letterman Drive near the Letterman Planning District, and continues north-south in the eastern portion to the southern boundary where it becomes Presidio Avenue in San Francisco.

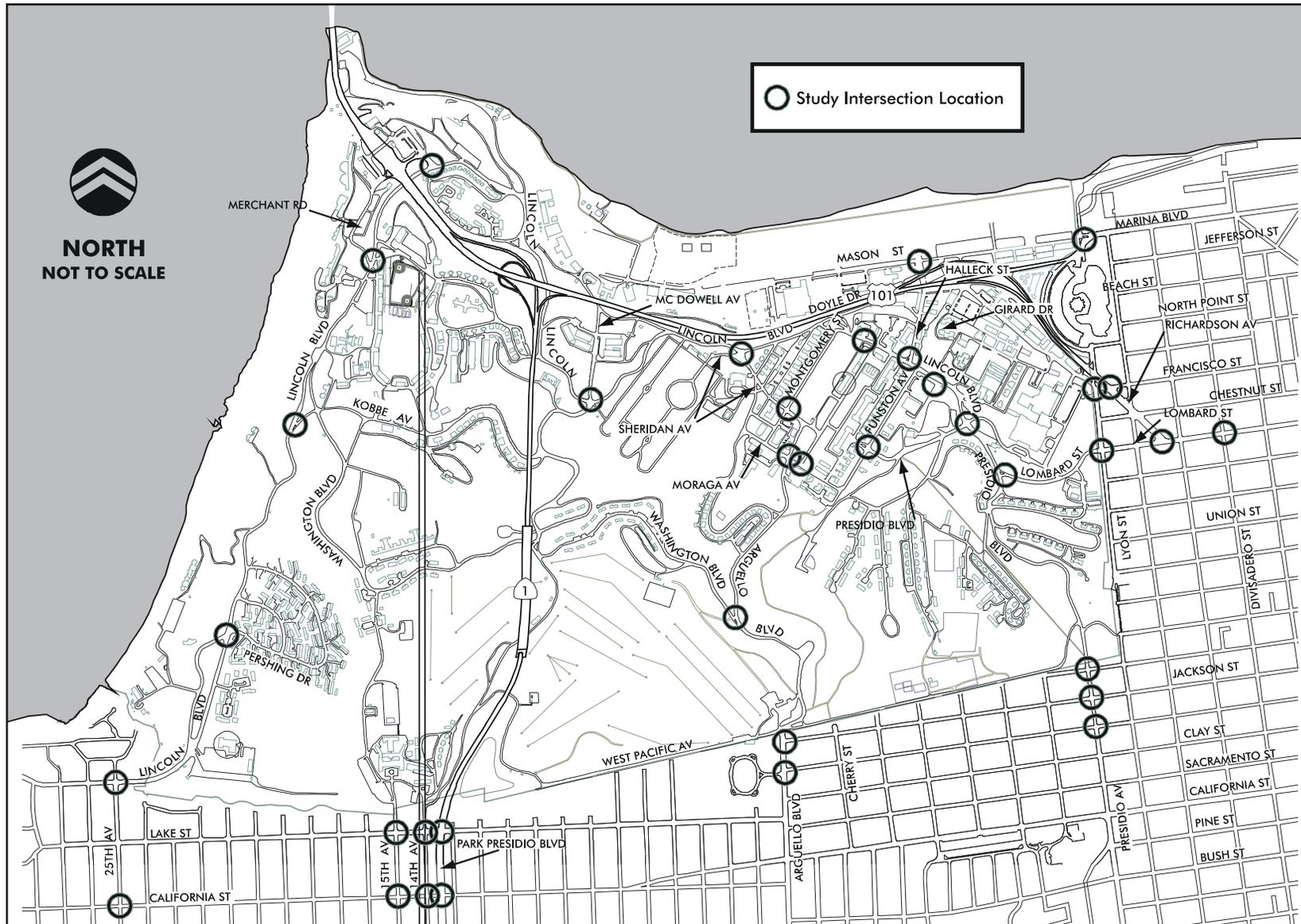
Mason Street - Mason Street provides east-west access through the Crissy Field Planning District along the Presidio's north coast. Mason Street connects to Marina Boulevard and Doyle Drive at the Presidio's northeast gate. At its western terminus, Mason Street indirectly connects to Lincoln Boulevard by way of two minor roadways (Crissy Field Avenue and McDowell Avenue). Mason Street at the northeast gate has one through lane and one right-turn only lane on in the eastbound direction, and one lane in the westbound direction.

Gorgas Avenue - Gorgas Avenue provides east-west access on the northeast side of the Presidio. It connects with U.S. Highway 101 and Lyon Street at an eastern gateway and provides access to Crissy Field via Halleck and Marshall Streets at its western terminus. Although Gorgas Avenue is wider west of General Kennedy Avenue, it only has one lane each way. The roadway narrows east of General Kennedy Avenue, but has an additional two eastbound lanes and one westbound lane.

Lombard Street - Lombard Street runs east-west from its intersection with Presidio Boulevard near the Letterman Planning District, and extends into San Francisco to the east. Lombard Street has one lane each way. It serves as the primary gateway to the eastern portion of the Presidio. *U.S. Highway 101* - U.S. Highway 101 near the Presidio is composed of the southern Golden Gate Bridge approach, Doyle Drive, Richardson Avenue, and Lombard Street (from Richardson Avenue south). Doyle Drive runs generally east-west through the northern portion of the Presidio before becoming Richardson Avenue. Richardson Avenue generally has three lanes in each direction and runs diagonally (northwest – southeast) from Doyle Drive until it merges with Lombard Street about two blocks east of the Presidio's eastern boundary. U.S. Highway 101 carries the majority of the east-west traffic between the Golden Gate Bridge and areas outside the Presidio. Although it connects with most intersecting streets in the city, the only connection to roadways within the

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Source: Wilbur Smith Associates, 2001, and Robert Peccia and Associates, 1996

Figure 29: PTMP EIS Study Intersections

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Presidio is at the Golden Gate viewing area near the Golden Gate bridge. Near the eastern boundary of the Presidio, U.S. Highway 101 intersects with Francisco Street just outside the Gorgas Avenue gate.

Arguello Boulevard - Arguello Boulevard has one lane each way, and runs north-south from its intersection with Moraga Avenue in the Main Post, extending south through the Presidio's southern boundary. It serves as a gateway to the Richmond district of San Francisco.

Washington Boulevard - Washington Boulevard is primarily a residential street with one lane each way. It runs east-west from its intersection with Lincoln Boulevard at the western edge of the Presidio and extends eastward to Arguello Boulevard.

Park Boulevard - Park Boulevard is a connecting arterial with one lane each way. It runs north-south from its intersection with Lincoln Boulevard and extends southward to intersect with Washington Boulevard.

Kobbe Avenue - Kobbe Avenue has one lane each way, and runs east-west from its intersection with Lincoln Boulevard at the western edge of the Presidio to its intersection with Park Boulevard. Although it is primarily a residential street, Kobbe Avenue provides east-west access into the Fort Scott Planning District within the Presidio.

15th Avenue/Wedemeyer Street/Battery Caulfield Road - Fifteenth Avenue provides access to the Richmond district of San Francisco. Fifteenth Avenue is a predominantly residential street outside the Presidio. It becomes Battery Caulfield Road just inside the Presidio's boundary in the vicinity of the Public Health Service Hospital (PHSH). Battery Caulfield Road is a north-south roadway with one lane each way that connects the PHSH Planning District to Washington Boulevard.

14th Avenue - Fourteenth Avenue is a former automobile entrance that now provides pedestrian and bicycle access to the Presidio.

TRAFFIC CHARACTERISTICS

Gateway Traffic

As part of the *Presidio Bus Management Plan* study, 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. Table 27 provides a summary of daily traffic volumes at each gate on the average weekday, as well as the peak hour traffic volumes for a weekday.

The data indicate that, on a daily basis, the gate with the highest weekday traffic volumes during both the spring and summer is the Lombard Gate, with 21 percent and 23 percent of total gate traffic, respectively. A similar relationship applies to the peak hour conditions for weekday and weekend days. Peak hour weekday gateway volumes collected in November and December of 2000 for this study indicate a similar number of vehicles entering and exiting the Presidio today compared to that observed in the spring and summer of 1998. As shown in Table 28, a total of 5,967 vehicles were observed at the Presidio's gateways during the weekday p.m. peak hour, with the greatest percentage of traffic (21 percent) traveling through the Lombard Street gateway. The 25th Avenue/El Camino del Mar, Presidio Avenue and Arguello Boulevard gateways accommodated most of the remaining traffic, with 18 percent, 17 percent and 14 percent of the p.m. peak hour daily traffic, respectively.

The 1998 daily traffic volumes of 63,000 to 67,000 at the gates represent an increase in volumes from 1996 when the Presidio was largely vacant, and to a lesser extent, from 1991 conditions, when the Army still occupied much of the Presidio. In 1996 the average weekday traffic volume was 48,800 vehicles per day, while the average weekday traffic volume in 1991 was 58,000 vehicles. The total weekday traffic volume through the Presidio gates in 1988 was 52,630 vehicles per day (CH2M Hill 1989). The increase in traffic volumes between 1996 and 1998 is due to increased occupancy and use of buildings at the Presidio and an increase in the amount of through traffic. Currently, city streets just beyond the 15th Avenue, 25th Avenue, Gorgas Avenue and Marina Boulevard gates have restrictions on heavy vehicles (3 tons) and/or tour buses. These restrictions have been accounted for in the analysis of AM peak hour and PM peak hour traffic conditions.

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Table 27: Presidio Gateways Traffic Volume Summary Weekday Average Daily and PM Peak Hour Volumes (1998)

Gate	Weekday Average Daily						Weekday Peak Hour					
	Spring		Summer		Fall		Spring		Summer		Fall	
	ADT	Percent of Total	ADT	Percent of Total	ADT	Percent of Total	vph	Percent of Total	vph	Percent of Total	vph	Percent of Total
Mason St.	5,313	8%	6,095	9%	4,251	7%	509	9%	575	9%	412	7%
Gorgas Ave.	2,357	4%	2,267	3%	2,059	3%	211	4%	279	5%	186	3%
Lombard St.	13,500	21%	15,631	23%	13,084	21%	1,110	19%	1,256	21%	1,102	19%
Presidio Ave.	11,501	18%	9,591	14%	13,848	22%	1,012	17%	838	14%	1,255	22%
Arguello Blvd.	6,234	9%	7,418	11%	6,893	11%	608	10%	711	11%	700	12%
15th Ave.	864	1%	783	1%	920	1%	82	1%	75	1%	93	2%
Lincoln Blvd./25th Ave.	9,771	15%	9,414	14%	8,785	14%	904	16%	962	16%	821	14%
Plaza West	8,387	13%	8,470	13%	6,570	10%	660	11%	592	10%	493	9%
Plaza East	6,923	11%	8,057	12%	6,757	11%	771	13%	778	13%	705	12%
Total	64,850	100%	67,726	100%	63,167	100%	5,867	100%	6,066	100%	5,767	100%

Source: *Presidio Bus Management Plan-Support Document: Summary and Analysis of Data Collected in 1998, September 1999.*

Notes:

ADT = Average Daily Traffic

vph = vehicles per hour

Traffic volumes include both entering and exiting volumes at the gates.

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**Table 28: Presidio Gateways Traffic Volume Summary
Weekday PM Peak Hour Volumes (2000)**

Gate	November/December	
	Vehicles per Hour	Percent of Total
Mason St.	456	8%
Gorgas Ave.	196	3%
Lombard St.	1,260	21%
Presidio Ave.	1,002	17%
Arguello Blvd.	815	14%
15th Ave.	107	2%
Lincoln Blvd./25th Ave.	1,072	18%
Plaza West	325	5%
Plaza East	734	12%
Total	5,967	100%

Source: Wilbur Smith Associates, 2000.

Notes:

Traffic volumes include both entering and exiting volumes at the gates.

Seasonal Variation

Estimates of seasonal variation of traffic within the Presidio were calculated and documented in the Presidio Traffic Analysis (Peccia 1992). Additional seasonal traffic count data were collected in 1998 and 2000. Weekday traffic volumes in the Presidio are primarily work-related, so they do not vary significantly by season, unlike weekend traffic, which is primarily recreational. Counts in 1998 indicate that weekday traffic volumes were between 63,000 and 67,000 throughout the year, while weekend traffic ranged from 58,000 in the fall to 75,000 in the summer. Weekday p.m. peak hour traffic volumes include even more work-related trips than weekday daily traffic volumes, and therefore vary the least amount by season.

The San Francisco County Transportation Authority (SFCTA) conducted peak hour traffic counts at Presidio gate intersections in May 2000 as part of their

effort to develop a Citywide travel demand forecasting model. A comparison of p.m. peak hour counts made at a small number of intersections in December 2000 by Wilbur Smith Associates and the SFCTA p.m. peak hour counts made in May, 2000 indicate that the December counts were generally 10 to 28 percent less than the counts made in May. In order to account for the seasonal variation in traffic volumes, the intersection turning movement counts conducted in the winter of 2000 for the purposes of this analysis were adjusted upward by 15 percent to represent an average weekday in the peak season.

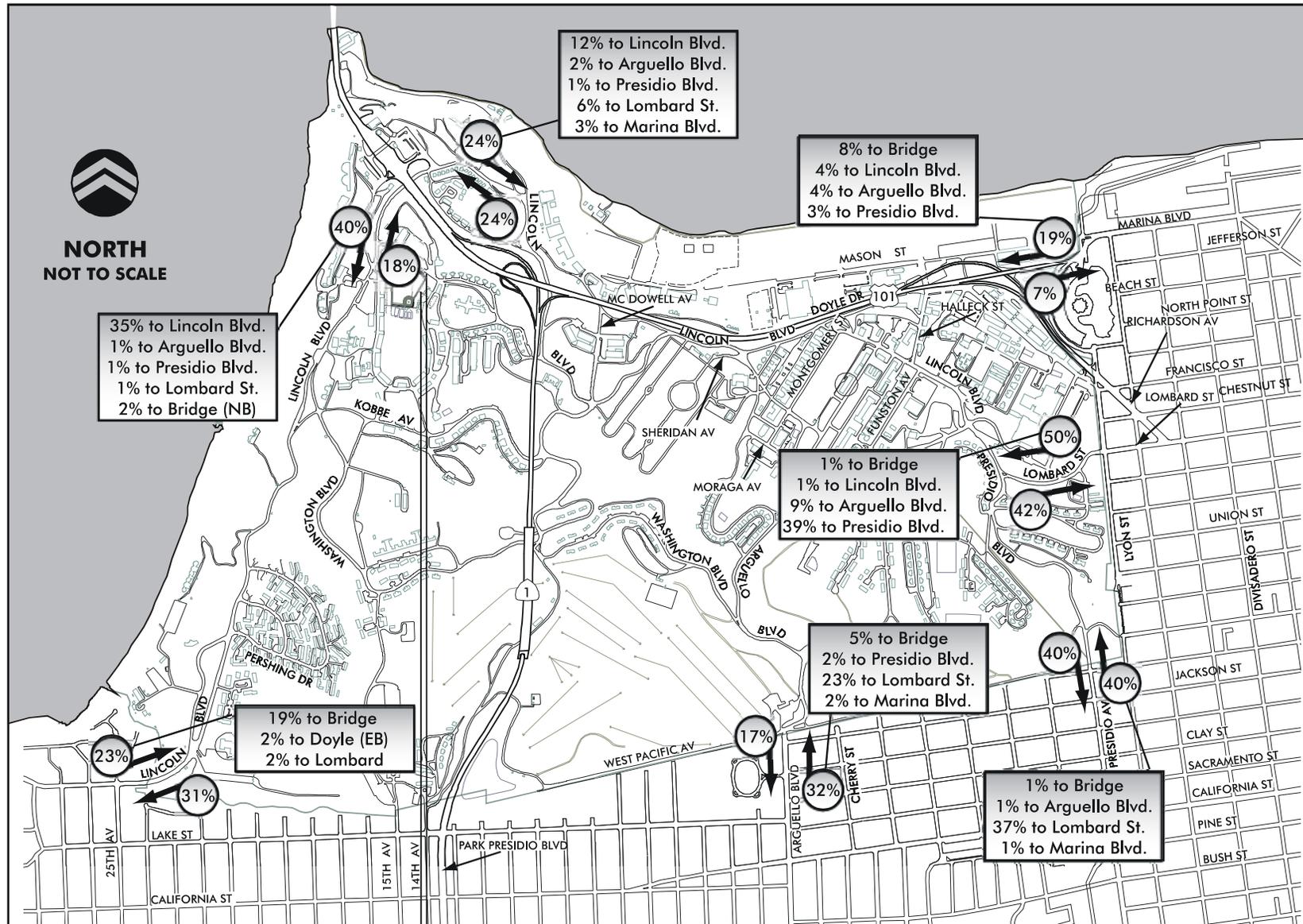
Through Traffic

According to origin/destination survey data collected in 1996, the Presidio's seven major entrances (not including 15th Avenue and Gorgas Avenue) carry significant pass-through traffic (Peccia 1996). Pass-through traffic was defined as any vehicle that moved through the Presidio in ten minutes or less. As shown in Figure 30, the study indicated that Lombard Street and Presidio Boulevard have the highest pass-through percentages, with the majority of their pass-through traffic moving between these two gateways. On weekdays, 50 percent of the traffic at the Lombard Street entrance is pass-through, with 78 percent of this traffic destined to Presidio Boulevard. At the Presidio Avenue entrance, 39 percent of the traffic is pass-through, with 95 percent destined to Lombard Street. The 1996 *Traffic Update* supported the conclusion from the 1991 analysis that this route may be used by motorists to bypass difficult street patterns and terrain southeast of the park. Arguello Boulevard also had a notable percentage of travel through the Lombard Street gateway, presumably for the same reason.

The Lincoln Boulevard entrance (at 25th Avenue and El Camino Del Mar) had the next highest pass-through percentages, with most of its through trips either entering or leaving at the Merchant Road and Golden Gate Viewing Plaza entrances. The data show that this is a primary pass-through route to the bridge.

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Source: Wilbur Smith Associates, 2001, and Robert Peccia and Associates, 1996

Figure 30: Pass-through Traffic Percentages – Weekday, July 1996

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Marina Boulevard also serves as a pass-through route to the bridge, primarily in the westbound direction. It is assumed that this route is used as a bypass to Doyle Drive westbound. Very few eastbound pass-through trips were observed, presumably because Presidio roadways in the eastbound direction are much less convenient.

Intersection Analysis

A total of 37 intersections were selected as study intersections for the analysis, as shown in Figure 29. These intersections represent key access points to the Presidio and/or are key intersections internal to the Presidio roadway network. These intersections most likely would experience the greatest increase in traffic volume due to the proposed alternatives being evaluated in this study. The study intersections include:

1. Lombard/Richardson
2. Lyon/Lombard
3. Francisco/Richardson
4. Gorgas/Lyon/Francisco
5. Doyle/Marina/Lyon
6. Mason/Marina/Lyon
7. Lincoln/Halleck
8. Presidio/Funston
9. Letterman/Presidio/Lincoln
10. Lombard/Presidio
11. Presidio/Pacific
12. Arguello/Jackson
13. Washington/Arguello
14. Arguello/Moraga
15. Graham/Moraga
16. Sheridan/Montgomery
17. Lincoln/Sheridan
18. Lincoln/Park/McDowell
19. 14th/Lake
20. 15th/Lake
21. Lincoln/25th/El Camino del Mar
22. Lincoln/Bowley/Pershing
23. Lincoln/Kobbe
24. Lincoln/Merchant
25. Lincoln/Storey
26. Lincoln/GGB Viewing Area
27. Lincoln/Graham
28. Divisadero/Lombard
29. Park Presidio/Lake
30. Park Presidio/California
31. 14th/California
32. 15th/California
33. 25th/California
34. Presidio/Jackson
35. Presidio/Washington
36. Arguello/Washington
37. Lincoln/Girard

The turning movement traffic volumes at the study intersections numbered 1-33 were counted during the morning and afternoon peak commute periods (7:00 to 9:00 a.m. and 4:00 to 6:00 p.m.) in May 2000 and November and December 2000. Intersections numbered 34-37 were counted in February 2002. The peak hour total intersection traffic volume during each two-hour period was determined for each intersection to be used for the intersection capacity analysis. In order to account for the seasonal variation in traffic volumes, the intersection turning movement counts conducted in the winter of 2000 for the purposes of this analysis were adjusted upward by 15 percent.

The a.m. and p.m. peak hour intersection operations analysis was conducted according to the methodology described in the 1994 Highway Capacity Manual (HCM) (Transportation Research Board 1994). 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

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intersection operating at LOS D or better is generally considered to be operating acceptably. Levels of service E and F are undesirable and generally considered unacceptable.

The HCM provides different methodologies and level of service criteria for signalized and unsignalized intersections. Levels of service for signalized intersections are based on the weighted average delay per vehicle for all vehicles approaching the intersection. Because a signal regulates the flow of traffic through the intersection from all approaches, the operation of any one traffic movement is directly related to other traffic movements through the intersection. Therefore, a single level of service accurately represents the operation of the intersection overall.

At unsignalized intersections, the compatible traffic turning movements are not coordinated to occur simultaneously; therefore, the delay experienced by the traffic on any one approach could be quite different from that of any other approach. At two-way STOP-sign controlled intersections, traffic on the uncontrolled (major) approaches does not stop, therefore, it incurs very little delay. Traffic on the stop-controlled (minor) approaches must wait for a gap in traffic flow before entering the intersection. Therefore, delay for traffic on the minor approaches depends on the traffic volumes on the major approaches. Consequently, for two-way STOP-sign controlled intersections, although the average delay per vehicle for the entire intersection is provided in the tables, the level of service provided is for the worst approach, in order to indicate the range of operation of each approach.

Table 29 presents the existing LOS for the 37 study intersections for both the a.m. peak hour and p.m. peak hour. All of the intersections internal to the Presidio operate acceptably (LOS D or better) during both the a.m. and p.m. peak hours. The two study intersections that do not currently operate at an acceptable LOS are Lombard and Lyon Streets, which operates at LOS E during the a.m. peak hour, and Park Presidio Boulevard and California Street, which operates at LOS E during the p.m. peak hour.

Table 29: Intersection LOS Operating Conditions: Existing (2000) AM and PM Peak Hour Conditions

Intersection	Control Device	AM Peak Hour LOS	PM Peak Hour LOS
1. Lombard/Richardson	Traffic Signal	A	A
2. Lyon/Lombard	All-way STOP	E	D
3. Francisco/Richardson	Traffic Signal	B	B
4. Gorgas/Lyon/Francisco (a)	All-way STOP	B	B
5. Doyle/Marina/Lyon	Traffic Signal	A	B
6. Mason/Marina/Lyon (b)	One-way STOP	A	B
7. Lincoln/Halleck	Two-way STOP	B	B
8. Presidio/Funston	All-way STOP	A	A
9. Letterman/Presidio/Lincoln	All-way STOP	A	A
10. Lombard/Presidio	All-way STOP	D	D
11. Presidio/Pacific	All-way STOP	B	B
12. Arguello/Jackson	All-way STOP	B	C
13. Washington/Arguello	Two-way STOP	A	A
14. Arguello/Moraga	Two-way STOP	A	B
15. Graham/Moraga	Two-way STOP	A	A
16. Sheridan/Montgomery	All-way STOP	A	A
17. Lincoln/Sheridan	Two-way STOP	B	B
18. Lincoln/Park/McDowell	Two-way STOP	B	B
19. 14th/Lake	Two-way STOP	C	C
20. 15th/Lake	All-way STOP	B	B
21. Lincoln/25th/El Camino del Mar	All-way STOP	D	D
22. Lincoln/Bowley/Pershing	Two-way STOP	C	C
23. Lincoln/Kobbe	Two-way STOP	C	C
24. Lincoln/Merchant	Two-way STOP	A	C
25. Lincoln/Storey	Two-way STOP	B	B
26. Lincoln/GGB Viewing Area	Two-way STOP	C	C
27. Lincoln/Graham	All-way STOP	B	A
28. Divisadero/Lombard	Traffic Signal	B	B
29. Park Presidio/Lake	Traffic Signal	B	C
30. Park Presidio/California	Traffic Signal	B	E
31. 14th/California	Two-way STOP	C	D
32. 15th/California	Two-way STOP	C	C
33. 25th/California	Traffic Signal	B	B
34. Presidio/Jackson	Traffic Signal	B	C
35. Presidio/Washington	Traffic Signal	C	C
36. Arguello/Washington	Traffic Signal	C	B
37. Lincoln/Girard	Two-way STOP	B	B

Source: Wilbur Smith Associates, January 2001.

Note: For two-way STOP-controlled intersections, the LOS is presented for the worst approach.

- (a) Three of four approaches stop. The Lyon Street approach does not stop.
- (b) Of the three approaches, only the Lyon Street approach stops.

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The intersection of Marina Boulevard/Mason Street/Lyon Street/Doyle Drive has five approaches and two different types of control devices; therefore, it was analyzed as two separate but adjacent intersections. The intersection of Marina Boulevard/Mason Street and Lyon Street is an unsignalized intersection that carries relatively low volumes of traffic, which is metered by the adjacent traffic signal. Therefore, the intersection operates well during both the morning and afternoon peak commute periods. The adjacent intersection of Marina Boulevard/Doyle Drive and Lyon Street is controlled by a semi-actuated traffic signal activated by vehicles on the Lyon Street approaches, with relatively low volumes of traffic on the Lyon Street approach, allowing it to operate well also.

The intersection of Richardson Avenue, Lyon Street, Francisco Street, and Gorgas Avenue was analyzed as two separate adjacent intersections: the signalized intersection of Richardson Avenue and Francisco Street, and the STOP-sign controlled intersection of Francisco Street/Gorgas Avenue and Lyon Street. Both of the intersections operate at LOS B during both the a.m. and p.m. peak hours. Although the geometric configuration of this intersection could be confusing to drivers, the traffic on Francisco Street is minimal and requires only a small portion of the signal cycle time, allowing the traffic signal to operate efficiently. The traffic volumes traveling through the intersection of Francisco Street, Lyon Street, and Gorgas Avenue are relatively light, and are served adequately by the three-way STOP-sign control device.

The all-way STOP-sign controlled intersection of Lyon and Lombard Streets is the only gateway intersection that does not operate acceptably during the a.m. or p.m. peak hour. During the p.m. peak hour, the intersection operates acceptably at LOS D, but during the a.m. peak hour, due to substantially more traffic entering the Presidio through the Lombard Street gate than in the afternoon peak hour, the intersection operates at LOS E.

3.5.2 TRANSIT SERVICES

Public transit systems serving the Presidio include the San Francisco Municipal Railway (Muni) and the Golden Gate Bridge, Highway and Transportation District (Golden Gate, Transit or GGT). These services provide access to other regional carriers such as BART, AC Transit, CalTrain,

SamTrans, and the regional ferry system. PresidiGo, the Presidio's internal shuttle service provides service throughout the park and provides connections to Muni routes just outside the Presidio gates. In addition, there are private transit carriers that accommodate specific needs not served by the public systems.

Muni

Muni provides regular scheduled daily transit service directly to the Presidio on four routes (28-19th Avenue, 29-Sunset, 43-Masonic and 82X-Presidio and Wharves Express), as well as to the adjacent neighborhoods near Presidio gates on another eight routes (1-California, 1AX-California "A" Express, 1BX-California "B" Express, 3-Jackson, 30-Stockton, 30X-Marina Express, 33-Stanyan, 41-Union and 45-Union-Stockton), as shown in Figure 31. Table 30 presents the Muni bus lines serving the Presidio or its immediately adjacent neighborhoods, including route descriptions and the weekday a.m. and p.m. peak period headways.

The northeastern portion of the Presidio has the most extensive transit service in the Park with convenient stops for the 29-Sunset, 43-Masonic, and 82X-Presidio and Wharves Express at the Main Post and/or Letterman Planning Districts. The 29-Sunset also provides direct transit service to the western portion of the Park, with stops along Lincoln Boulevard between 25th Avenue and the Golden Gate Bridge Toll Plaza. Buses on the 43-Masonic stop at Letterman and East Housing while traveling between the Lombard Street and Presidio Boulevard gates. The 28-19th Avenue route stops at the Golden Gate Bridge Toll Plaza within the Presidio, but also serves the Letterman Planning District with a stop on Richardson Avenue at Francisco Street. The 82X-Presidio Wharves Express, which provides peak hour service in the commute direction only, enters and exits the Presidio via Lombard Street, and serves the Main Post and Letterman Planning Districts with stops on Anza Avenue at Lincoln Boulevard, Lincoln Boulevard just east of Funston Avenue, and Letterman Drive.

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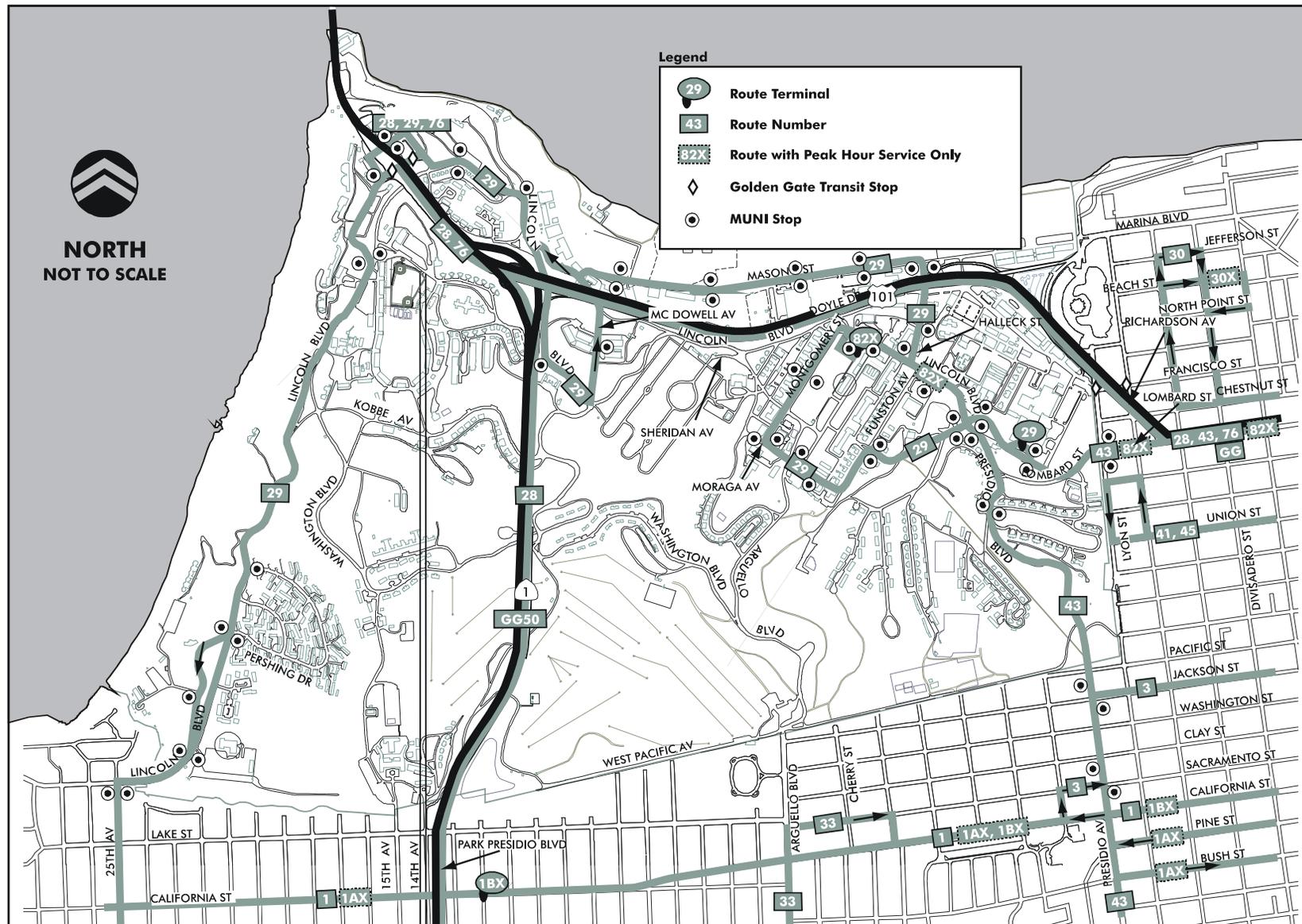


Figure 31: Existing Transit Routes Serving the Presidio Area

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Table 30: Nearby Muni Transit Lines

Muni Route	Description	AM/PM Peak Period Schedule Headway
1-California	Daily route connecting Outer Richmond area (Geary/33rd Ave.) through the Financial District to the Embarcadero BART/Muni station to Howard/Main, near the Transbay Terminal.	9/8 minutes
1AX-California 'A' Express	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 minutes
1BX-California 'B' Express	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 minutes
3-Jackson	Daily route connecting Presidio Heights to the Financial District (Sansome/Sutter).	10/10 minutes
28-19th Avenue	Daily route connecting Daly City BART Station to Highway 101 via 19th Avenue and Park Presidio Boulevard.	11/12 minutes
29-Sunset	Daily route connecting the Presidio to the Bayview area primarily via 25th/Sunset Avenue. Provides a connection to Golden Gate Transit at Golden Gate Bridge Plaza.	30/30 minutes
30-Stockton	Daily route connecting Marina District (Broderick/Beach Streets) to the Caltrain Station (4th St./Townsend St.).	4/5 minutes
30X-Marina Express	Weekday peak period peak - direction only service connecting the Marina District (Beach/Divisadero) to the Financial District, the Embarcadero Muni/BART station, and terminating at Howard/Beale near the Transbay Terminal in the morning. Afternoon service connects Howard/Embarcadero to Broderick/Jefferson.	5/10 minutes
33-Stanyan	Daily route connecting Laurel Heights and the Mission District via Arguello, Stanyan, Clayton, 18th Street, and Potrero.	15/15 minutes
41-Union	Weekday peak periods only connecting Greenwich/ Lyon with downtown San Francisco.	10/6 minutes
43-Masonic	Daily route connecting the Marina District to the Excelsior District via Lombard. Presidio and Masonic Streets.	15/10 minutes
45-Union/Stockton	Daily local route connecting Greenwich/Lyon with Caltrain Depot at 4th/Townsend.	8/8 minutes
76-Marin Headlands	Sundays only and some holidays.	60 minutes
82X-Presidio and Wharves Express	Weekday peak periods, peak direction only connecting Letterman and Main Post with the Caltrain Depot.	29/25 minutes

Source: Muni 2000 Schedule.

Lines 41-Union and 45-Union-Stockton provide service to the corner of Greenwich and Lyon Streets just outside the Lombard Street gate. Lines 30-Stockton and 30X-Marina Express serve the Marina neighborhood, and are within two to three blocks of the Gorgas Avenue gate and Mason Street gate. The 1-California and 1AX/1BX-California Expresses run along California Street, and are within two blocks of the 15th Avenue and the 25th Avenue gates. The 33-Stanyan runs on Arguello Boulevard, connecting with the Mission neighborhood and is within three blocks of the Arguello gate. The 3-Jackson line runs along Jackson Street and Presidio Avenue, stopping one block from the Presidio Boulevard gate. In addition to these weekday services, route 76-Marin Headlands is a Sunday- and Holiday-only service that runs from downtown, stops at the intersection of Richardson Avenue and

Francisco Street and Golden Gate Plaza, and then continues north to the Marin Headlands.

Recent ridership data on the number of passengers boarding or alighting from a bus within the Presidio are not available from Muni. However, visual observation of current passenger loads in the vicinity of the Presidio indicates low ridership with substantial excess capacity (Wilbur Smith Associates 2000). The Trust monitored bus operations and ridership for the 82X-Presidio and Wharves Express route within the Presidio in July 2000. The monitoring data indicate 16 passengers and 23 passengers on board 82X-Presidio and Wharves Express buses during the a.m. peak hour and p.m. peak hour, respectively. Current transit ridership within the Presidio is low for a number of reasons. The Presidio currently has free parking, and a substantial portion

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of existing buildings within the Presidio are currently vacant, which yields a substantial surplus of available parking spaces. Also, many buses serving the Presidio either begin or end their runs at or near the Presidio or operate in a reverse commute direction. Access to bus connections just outside the Presidio was limited until Presidio shuttle service became fully operational.

Recent ridership data are available for 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, the maximum load point occurs at a substantial distance from the Presidio. Table 31 presents the maximum load points for the various bus lines serving the Presidio or its adjacent neighborhoods, during the a.m. and p.m. peak commute periods. Table 31 indicates that the Muni lines serving the Presidio area are well-used at their respective maximum load points, but that many of the Muni lines directly serving the Presidio have available capacity.

Golden Gate Transit

Golden Gate Transit operates bus lines and ferry routes between San Francisco and counties in the Golden Gate corridor of Marin and Sonoma Counties. Twenty-six of their bus lines pass through the Presidio during the a.m. and p.m. peak hours, all stopping at the Golden Gate Bridge Plaza. All transbay lines but one (Route 50) proceed into San Francisco on U. S. Highway 101, with a stop at the corner of Richardson Avenue and Francisco Street. 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).

Peak hour transbay service ridership data collected in October 2000 provided by GGT are presented in Table 32. The ridership data presented in Table 32 represent the average passenger load at the Golden Gate Bridge Plaza during the peak hour by route. The data indicate that in general, GGT buses operate with excess capacity during both the a.m. and p.m. peak commute hours, with the overall peak hour load factor being highest for the typical commute directions (southbound in the morning and northbound in the afternoon). The average a.m. peak hour load factor in the southbound direction is 75 percent, and the average p.m. peak hour load factor in the northbound direction is 67 percent. As shown in Table 32, these load factors are an average across all

transbay GGT routes operating during the morning and afternoon peak hours. Certain routes are more heavily used than others; five GGT routes have average a.m. peak hour load factors of 90 percent or higher. In addition, some buses within the peak hours are more crowded than others.

PresiGo Internal Shuttle Service

Internal shuttle service began operating in the Presidio in July 2001. The shuttle service serves the entire Presidio with frequent stops in all seven planning districts of the park. Clean fuel buses connect residential area commercial areas, and visitor destinations within the park, as well as key transfer points to Muni and Golden Gate Transit buses. Shuttle service is provided on three routes, each with a frequency of 30 minutes. The Blue and Orange routes provide service on weekdays and weekends, with redundant service between the Main Post and the Lombard gate. The Green route provides service every 30 minutes between the Golden Gate Bridge Plaza and the Arguello gate during peak commute periods on weekdays.

Tour Buses and Charter Services

On a typical summer weekday, 180 non-Muni tour buses carry visitors to and from Presidio attractions such as the Golden Gate Bridge Plaza, Fort Point, and the Visitor Center on the Main Post. The Golden Gate Bridge is the primary attraction. They also stop at several scenic overlooks along the 49-mile drive (Peccia 1999). During the spring and fall seasons, about 210 and 220 non-Muni tour buses enter the Presidio on a typical weekday. No formal passenger count data are available to determine the amount of service provided.

3.5.3 BICYCLE AND PEDESTRIAN CIRCULATION

The Presidio does not 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.

AFFECTED ENVIRONMENT

Transportation and Circulation

Table 31: Existing Muni Passenger Loads

Muni Line	Direction	Maximum Load Point	AM Peak Hour			PM Peak Hour			
			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	1,075	1,008	107%	Clay/Polk	594	1,481	40%
	to Geary/33 rd	Sacramento/Polk	374	882	42%	Sacramento/Powell	1,229	1,386	89%
1AX	to Davis/Pine	California/Park Presidio	382	432	88%	n.a.	n.a.	n.a.	n.a.
	to Geary/33 rd	n.a.	n.a.	n.a.	n.a.	Davis/Pine	248	314	79%
1BX	to Davis/Pine	California/Fillmore	658	707	93%	n.a.	n.a.	n.a.	n.a.
	to Park Presidio/California	n.a.	n.a.	n.a.	n.a.	Davis/Pine	280	393	71%
3	to Sutter/Sansome	Post/Powell	303	410	74%	Post/Polk	136	347	39%
	to Presidio/California	Sutter/Polk	108	473	23%	Sutter/Powell	241	378	64%
28	to Ft. Mason	19th Ave/Lincoln	231	378	61%	19th Ave/Sloat	370	447	83%
	to Daly City BART	19th Ave/Sloat	191	567	34%	19th Ave/Lincoln	466	520	90%
29	to Letterman	Geneva/BART	280	325	86%	Sunset/Noriega	204	357	57%
	to Fitzgerald/Keith	Sunset/Noriega	171	252	68%	Geneva/BART station	280	252	111%
30	to 4th/Townsend	Stockton/Sutter	832	945	88%	Stockton/Sutter	855	851	101%
	to Broderick/Beach	Stockton/Sutter	753	914	82%	Stockton/Sutter	797	882	90%
30X	to Howard/Embarcadero	Chestnut/Van Ness	932	945	99%	n.a.	n.a.	n.a.	n.a.
	to Beach/Scott	n.a.	n.a.	n.a.	n.a.	Chestnut/Van Ness	475	567	84%
33	to Arguello/Maple	18th/Castro	118	252	47%	18th/Castro	170	252	68%
	to Potrero/25th	18th/Mission	103	252	41%	18th/Castro	158	252	63%
41	to Main/Howard	Union/Columbus	718	788	91%	Union/Jackson	76	473	16%
	to Lyon/Greenwich	Union/Columbus	79	441	18%	Union/Columbus	328	725	45%
43	to Chestnut/Fillmore	Geneva/Mission	576	536	108%	Masonic/Haight	353	630	56%
	to Munich/Geneva	Forest Hill Station	312	583	54%	Masonic/Haight	451	693	65%
45	to 4th/Townsend	Stockton/Sutter	527	536	98%	Stockton/Sutter	913	614	149%
	to Lyon/Greenwich	Stockton/Sutter	452	551	82%	Stockton/Sutter	519	599	87%
82X	to Anza/Lincoln	4th/Townsend	160	189	85%	n.a.	n.a.	n.a.	n.a.
	to 4th/Townsend	n.a.	n.a.	n.a.	n.a.	Beale/Mission	133	252	53%

Source: Muni, FY 1999-2000 Transit Data.

Notes:

n.a. – Data not available.

Peak hour capacity is based on the Muni Bus and Metro FY 1999-2000 Weekday Conditions. It assumes an appreciable number of standees per vehicle (somewhere between 60 percent and 80 percent of the number of seated passengers, depending on the specific transit vehicle configuration) and may not include the effects of missed or late runs.

Peak hour ridership is assumed to be 60 percent of the two-hour peak period ridership.

Note that the 82X maximum load points occur south of Market Street, while almost all Presidio-destined passengers embark and disembark at Market Street (Presidio Trust Transportation Manager), 2001.

AFFECTED ENVIRONMENT

Transportation and Circulation

Table 32: Golden Gate Transit Bus Passenger Loads – 2000

GGT Route	AM Peak Hour - Northbound				AM Peak Hour – Southbound				PM Peak Hour - Northbound				PM Peak Hour - Southbound			
	Buses/ Hour	Number of Pass.	Pk. Hr. Capacity	Load Factor	Buses/ Hour	Number of Pass.	Pk. Hr. Capacity	Load Factor	Buses/ Hour	Number of Pass.	Pk. Hr. Capacity	Load Factor	Buses/ Hour	Number of Pass.	Pk. Hr. Capacity	Load Factor
2	n.a.	n.a.	n.a.	n.a.	4	153	170	90%	3	91	128	71%	n.a.	n.a.	n.a.	n.a.
3	n.a.	n.a.	n.a.	n.a.	1	11	43	26%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
4	n.a.	n.a.	n.a.	n.a.	7	311	298	105%	11	311	468	67%	n.a.	n.a.	n.a.	n.a.
8	n.a.	n.a.	n.a.	n.a.	2	63	85	74%	4	76	170	45%	n.a.	n.a.	n.a.	n.a.
18	n.a.	n.a.	n.a.	n.a.	5	174	213	82%	4	138	170	81%	n.a.	n.a.	n.a.	n.a.
20	2	58	85	68%	2	47	85	55%	2	46	85	54%	2	45	85	53%
24	n.a.	n.a.	n.a.	n.a.	9	292	383	76%	8	258	340	76%	n.a.	n.a.	n.a.	n.a.
26	n.a.	n.a.	n.a.	n.a.	3	123	128	96%	4	103	170	61%	n.a.	n.a.	n.a.	n.a.
28	n.a.	n.a.	n.a.	n.a.	2	46	85	54%	2	21	85	25%	n.a.	n.a.	n.a.	n.a.
30	1	3	43	7%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1	9	43	21%
32	n.a.	n.a.	n.a.	n.a.	1	25	43	59%	1	26	43	61%	n.a.	n.a.	n.a.	n.a.
34	n.a.	n.a.	n.a.	n.a.	1	33	43	78%	1	23	43	54%	n.a.	n.a.	n.a.	n.a.
38	n.a.	n.a.	n.a.	n.a.	3	90	128	71%	3	98	128	77%	n.a.	n.a.	n.a.	n.a.
44	n.a.	n.a.	n.a.	n.a.	2	52	85	61%	2	50	85	59%	n.a.	n.a.	n.a.	n.a.
48	n.a.	n.a.	n.a.	n.a.	2	58	85	68%	2	51	85	60%	n.a.	n.a.	n.a.	n.a.
50	2	56	85	66%	3	38	128	30%	2	49	85	58%	2	61	85	72%
54	n.a.	n.a.	n.a.	n.a.	6	213	255	84%	5	173	213	81%	n.a.	n.a.	n.a.	n.a.
56	n.a.	n.a.	n.a.	n.a.	3	102	128	80%	4	142	170	84%	n.a.	n.a.	n.a.	n.a.
70	2	60	85	71%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
72	n.a.	n.a.	n.a.	n.a.	3	118	128	93%	4	138	170	81%	n.a.	n.a.	n.a.	n.a.
74	n.a.	n.a.	n.a.	n.a.	4	153	170	90%	4	128	170	75%	n.a.	n.a.	n.a.	n.a.
76	n.a.	n.a.	n.a.	n.a.	5	176	213	83%	5	124	213	58%	n.a.	n.a.	n.a.	n.a.
78	n.a.	n.a.	n.a.	n.a.	2	46	85	54%	2	37	85	44%	n.a.	n.a.	n.a.	n.a.
80	1	9	43	21%	2	54	85	64%	2	73	85	86%	3	85	128	67%
90	1	13	43	31%	1	26	43	61%	1	20	43	47%	n.a.	n.a.	n.a.	n.a.
93	n.a.	n.a.	n.a.	n.a.	3	31	128	24%	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total	9	199	383	52%	76	2,435	3,230	75%	76	2,176	3,230	67%	8	200	340	59%

Source: Golden Gate Bridge Highway and Transportation District, October 2000 data.

Notes:

Peak hour capacity assumes 42.5 passengers per bus.

n.a. = Not applicable; indicates that no runs are made on that route during that particular time period.

AFFECTED ENVIRONMENT

Transportation and Circulation

Sidewalks within the Presidio are generally provided in areas that are currently well-occupied, such as the western portion of the Letterman Planning District and along Lincoln Boulevard in the Main Post. Most intersections within the Main Post and along Lincoln Boulevard have marked pedestrian crossings.

Pedestrian movements were collected at 33 study intersections during field surveys conducted in November and early December of 2000. At the intersection of Presidio Boulevard/Lincoln Boulevard/Letterman Drive, a total of 72 pedestrian movements were observed on the four crosswalks during the a.m. peak hour, and 62 pedestrian movements during the p.m. peak hour (note that more than one movement could be attributed to a single pedestrian). At the intersection of Mason and Lyon Streets, where there is a considerable amount of recreational pedestrian activity, 144 and 191 pedestrian movements were observed during the a.m. peak hour and p.m. peak hour, respectively. Many of these pedestrians are likely traveling to and from Crissy Field.

There are several bicycle routes within the Presidio, although bicycles and vehicles share a standard-width roadway along most of these routes. As shown in Figure 32, Lombard Street, Presidio Boulevard, Mason Street, Arguello Boulevard, 14th Avenue, and El Camino del Mar are part of the designated San Francisco Citywide Bicycle Routes (Routes #4, #55, #2, #65, #69, and #95, respectively) that continue into the Presidio. Most of these routes are Class III facilities (signed route only - bicyclists share roadway with vehicles), although the travel lanes that vehicles and bicycles share are generally wider in the southwestern portion of the Park. Mason Street has Class I (separate off-street path) and Class II facilities (dedicated, striped bike lanes on roadway edge).

The Presidio is a popular location for recreational bicycling, particularly on weekends. At the intersection of Presidio Boulevard/Lincoln Boulevard/Letterman Drive, 11 bicyclists were observed in November 2000 during the weekday a.m. peak hour, and 14 bicyclists during the weekday p.m. peak hour (it should be noted that counts would likely be much higher during non-winter seasons). At the intersection of Mason Street/Lyon Street, 66 and 76 bicyclists were observed during the weekday a.m. peak hour and p.m. peak hour, respectively. Bicycle data gathered at the Presidio entrances in 1998 indicate that about 1,700 bicyclists entered and exited the Presidio on a spring or fall weekday. On spring and fall weekend days, 3,500 and 3,000 were observed entering or leaving the Presidio, respectively. Bicycle and pedestrian counts

conducted in October 1999 at eleven locations in the Presidio from 7 a.m. to 10 p.m. confirmed those findings. Weekday observations totaled 5,900 bicyclists and pedestrians, while weekend observations at the same locations amounted to 23,500, almost four times the weekday count. The weekday peak hour occurred between 7 a.m. and 8 a.m., representing 14 percent of the total daily count, while the weekend peak hour occurred between 10 a.m. and 11 a.m., representing 11 percent of the total daily count.

The Marina Boulevard gate accommodates the greatest percentage of bicycle traffic, accommodating 23 to 45 percent of the total bicycle to and from the Presidio. The Lombard Street gate accounts for approximately six to eleven percent of the total daily bicycle trips into and out of the Presidio. A comprehensive study of pedestrian and bicycle conditions within the Presidio is currently underway (*Draft Presidio Trails and Bikeways Master Plan*).

3.5.4 PARKING

Parking occupancy information in the Main Post and Letterman Planning Districts was collected on Tuesday, January 9, 2001 during the weekday midday peak period (between 10 a.m. and 2 p.m.). Parking occupancy for the remainder of Area B was obtained from aerial photographs taken on a typical Friday in March 2000.

Table 33 tabulates the parking supply and utilization of the parking facilities within Area B of the Presidio by planning district. There are a total of approximately 11,210 parking spaces within Area B, with about 1,979 (18 percent) of the spaces occupied during the midday period. Parking facilities within each of the Presidio planning districts are between 12 percent and 22 percent occupied, indicating that there is substantial available parking in all planning districts.

Table 33: Parking Supply and Current Utilization Within Area B

Planning District	Total Spaces	Spaces Occupied	Percent Occupied
Main Post and Crissy Field	4,070	888	22%
Letterman	2,473	309	12%
Fort Scott	963	139	14%
East Housing	1,095	198	18%
South Hills and Public Health Service Hospital	2,609	445	17%
Total	11,210	1,979	18%

Source: Wilbur Smith Associates, March 2000 and January 2001.

