Appendix G: Transportation and Circulation Analysis

Table of Figures

Table of Tables

7.1. Existing Conditions

This section summarizes the existing transportation conditions in the study area. The section references the numerous previous and ongoing studies that have addressed transportation conditions in Japantown to date. In addition, the section includes an in-depth assessment of parking and pedestrian safety conditions in Japantown.

The section is organized with the following components:

- Review of previous studies and community priorities
- Existing pedestrian and bicycle conditions
- Existing traffic conditions
- Existing parking conditions
- Existing transit conditions
- Pedestrian improvement measures to be Considered in Japantown

In identifying the "big picture" challenges for transportation in the Japantown neighborhood, this section serves as the basis for the transportation and circulation strategies recommended in this Plan

Review of Previous Studies and Community Priorities

The first phase of the transportation existing conditions study included a review of the numerous previous and ongoing studies that have considered or are relevant for transportation conditions in the Japantown neighborhood. These studies included:

- Japantown Historic Context Statement
- Concepts for the *Japantown Community Plan*
- *Neighborhood Cultural Preservation Report*
- *Fillmore Jazz Preservation District Plan*
- *Community Benefit District Draft Plan*
- Geary Corridor Bus Rapid Transit (BRT) Study
- *Japantown Neighborhood Pedestrian Safety & Traffic Community Plan*
- *City of San Francisco Transportation Master Plan* (draft)
- New development projects in the Project Area
- Economic development plans and documents
- Japan Center redesign and market analysis
- Workshop summaries
- Studies section of Japantown Taskforce website (www.jtowntaskforce.org)
- Focus Group summaries on project website (www.japantown.sfplanning.org)

Based on this review, four primary sources were selected for reference in this report (1) the focus group and workshop summaries from the current Better Neighborhoods study, (2) the *Environmental Impact Report* (EIR) for the J Pop Center (1746 Post St.), (3) the *Japantown Neighborhood Pedestrian Safety and Traffic Community Plan*, and (4) the ongoing Geary Corridor BRT Study.

The focus groups and workshops have identified the following community priorities for Japantown:

- Improving Geary Boulevard for pedestrians and cyclists
- Increasing pedestrian safety throughout the neighborhood
- Providing more countdown signals at crosswalks and longer times to cross the streets
- Making safer bus stops/ improving bus service
- Providing better parking locations and increasing parking supply

The subsequent sections of this section present data from the primary reference sources, as well as original data collection and analysis.

Existing Pedestrian and Bicycle Conditions

This section summarizes field observations and previous studies regarding existing pedestrian and bicycle conditions in Japantown.

Existing Pedestrian Conditions

The *Japantown Neighborhood Pedestrian Safety and Traffic Community Plan*, sponsored by the City & County of San Francisco Department of Public Health and the California Office of Traffic Safety Business, Transportation Housing Agency, and prepared by the Japantown Task Force, Inc. in 2006, summarized community concerns and recommended measures for improving pedestrian and traffic safety.

Key findings from this study included:

- "Insufficient time and long crosswalks to cross busy intersections
- Traffic laws not being obeyed by cars, bicyclists, and pedestrians
- Trucks double-parking and blocking traffic to unload goods on a daily basis
- The need for more police officers and traffic enforcement on a regular basis
- Visitors and tourists of the Japantown community unaware of different traffic laws."

Japantown Pedestrian Community Plan Findings

The *Pedestrian Community Plan* presented pedestrian safety concerns for each street and crossing location within the Japantown neighborhood. The following includes the key concerns and crossings:

Geary Boulevard Pedestrian Safety Concerns:

- Jaywalking, especially at Buchanan and Webster (inconvenient pedestrian overpass)
- Significant pedestrian injuries at Laguna
- High speed traffic: multi-lane and buses
- Long crossing distance

Post Street Pedestrian Safety Concerns:

- Cyclists riding on the sidewalks
- Jaywalking
- Trucks parking in crosswalks
- Fast vehicle and bicycle speeds
- Red light running

Webster Street Pedestrian Safety Concerns

- Fast traffic speeds
- Fast right turns on red (especially at Post)
- Long crossing distance (especially a problem for children and seniors)

Fillmore Street Pedestrian Safety Concerns

- Heavy vehicle and bus traffic
- Significant pedestrian injuries along corridor
- Narrow sidewalks (especially at bus stops)
- Fillmore and Post, Sutter:
  - Jaywalking (crossing against a red signal)
  - Fast turning vehicles, especially right turns on red

Figure 1 Geary Boulevard Pedestrian Safety Concerns (from top left clockwise: missing crosswalk, jaywalking, fast speeds and wide crossings, and inconvenient overpass)

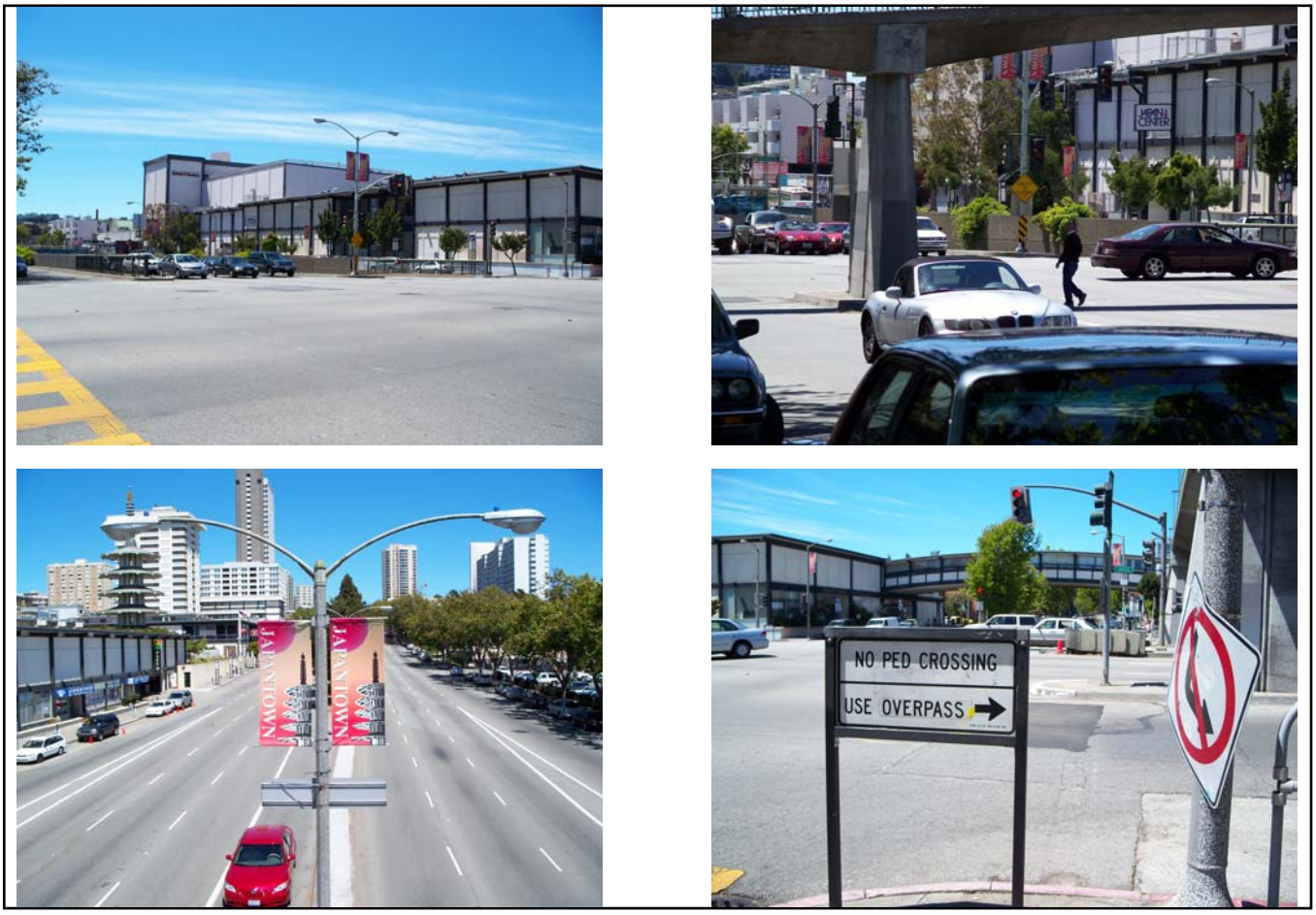


Figure 2 Post Street Pedestrian Safety Concerns (from left: bicycles on sidewalks, jaywalking, wide crossings, and senior pedestrians)

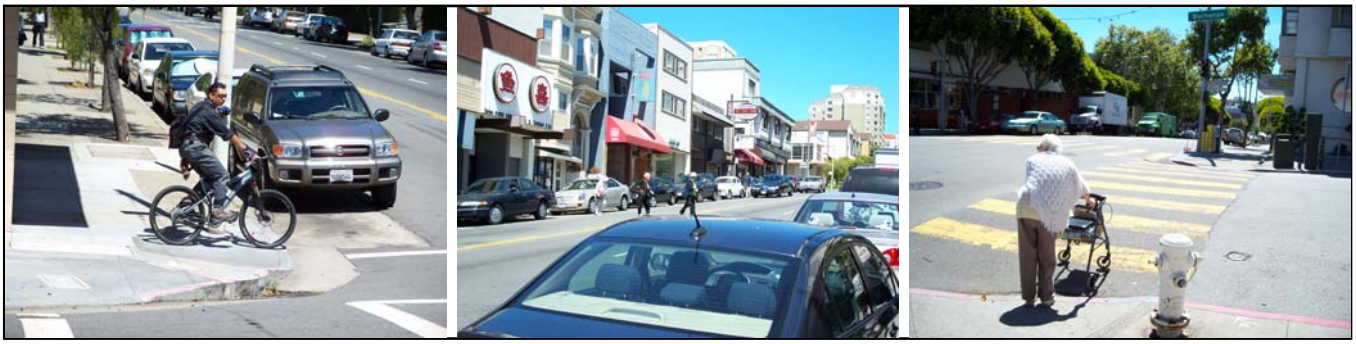


Figure 3 Webster Street Pedestrian Safety Concerns (from left: fast moving traffic, senior pedestrians, and wide crossings)

Figure 4 Fillmore Street Pedestrian Safety Concerns (from left: heavy traffic and bus volumes, sight distance concerns at bus stops and crosswalks)

Field Review Findings

Based on several walking and driving observations of the study area during midday, peak, and weekend hours, most of these findings were easily observed. Double-parked trucks, jaywalking, and long crosswalks across Geary and Webster were noted, as shown in the following photographs. Other key field observations included the significant number of seniors and children walking in the neighborhood.

Figure 5 Pedestrian Jaywalking at Post and Buchanan; Truck Double-Parked in the Background

Figure 6 Pedestrians Jaywalking at Post and Buchanan

Figure 7 Pedestrian Jaywalking at Geary and Webster; Wide Crossing at Geary with Underutilized/ Inconvenient Overcrossing

Figure 8 Wide crossing at Webster and Sutter; Significant Population of Senior Pedestrians

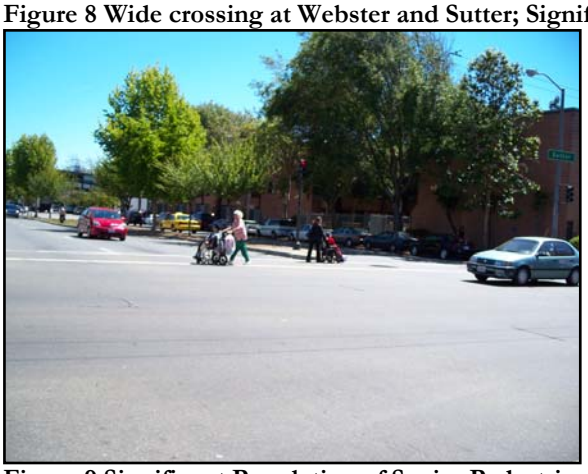
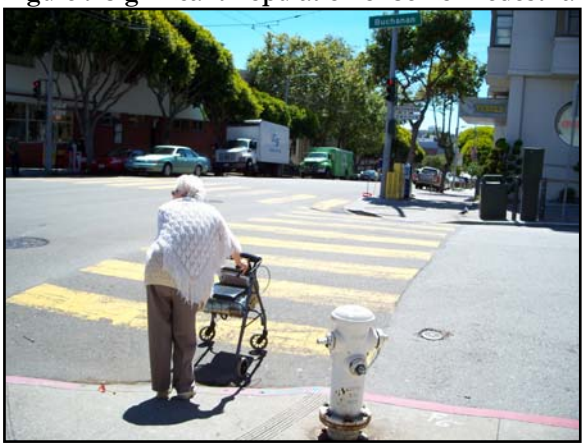


Figure 9 Significant Population of Senior Pedestrians



Pedestrian Collisions

The *Japantown Pedestrian Community Plan* also included a summary table of pedestrian-auto collisions in Japantown from 1998 to 2005 as well as a map of collisions from 2000 to 2004. The table illustrates that the prevalent contributing factors for pedestrian collisions are driver and pedestrian violations. Based on the findings from the *Community Plan* and our field visits, as well as the strong community priority of improving pedestrian safety, we have conducted a further analysis of pedestrian collisions in the Japantown neighborhood. We have also narrowed the data to focus only on the study area for this Plan.

This analysis included the development of pedestrian collision rates (calculated as the number of collisions divided by average daily intersection traffic volumes or vehicle exposure) for the intersections with pedestrian collisions from 2000-2004. Adjusting for exposure is standard practice in the analysis of collision data to ensure collision "hot spots" are identified where the number of collisions is particularly high given the level of vehicle-pedestrian conflicts that would be expected. For pedestrian-vehicle collisions, rates are often calculated as collisions per pedestrian volume (or pedestrian exposure). However, this data was not available for the study area.

The locations with the most pedestrian injuries from 2000-2004 were:

- Geary and Laguna
- Sutter and Fillmore
- Geary and Steiner

The locations with the most pedestrian injuries adjusted for vehicle exposure (traffic volumes) from 2000-2004 were:

- Sutter and Fillmore
- Sutter and Webster
- O'Farrell and Fillmore
- Post and Webster

The locations with the most severe[1] pedestrian injuries from 2000-2004 were:

- Ellis and Fillmore
- Geary and Laguna
- California and Fillmore

The locations with the most severe pedestrian injuries adjusted for vehicle exposure from 2000-2004 were:

- Ellis and Fillmore
- Cleary and Laguna
- Ellis and Laguna

Finally, the locations with pedestrian fatalities from 2000-2004 were:

- Ellis and Fillmore
- Geary and Laguna
- Post and Gough

Table 1 presents a summary of the causes and locations for pedestrian-vehicle collisions in Japantown from 2000-2004. Most collision occurred in crosswalks. The primary cause of collision was the driver failing to yield the right of way to the pedestrian, followed by pedestrian violations (such as jaywalking). Pedestrian-vehicle collisions are mapped in Figures 10-14.

Table 1 Pedestrian Collisions in Japantown, 2004-2006

Cause of Collision	Number of Collisions	Total Collisions
Pedestrian Right of Way	18	35
Pedestrian Violation	11	35
Driving Under the Influence	2	35
Traffic Signal/ Unsafe Speed	3	35
Unknown	1	35
Location of Collision	**Number of Collisions**	**Total Collisions**
Crossing in Crosswalk	24	35
In Road	4	35
Not Crossing in Crosswalk	6	35
Not in Road	1	35
Result of Collision	**Number of Collisions**	**Total Collisions**
Deaths	4	35
Injuries	30	35
Non-Injuries	1	35

Source: *Japantown Pedestrian Community Plan; Note the study area for the Better Neighborhoods Plan is slightly smaller, with fewer collisions.*

[1] A severe injury prevents the injured party from walking, driving, or performing activities he/she was normally capable of before the collision.

Figure 10 Pedestrian Collisions with Injuries in Japantown, 2000-2004
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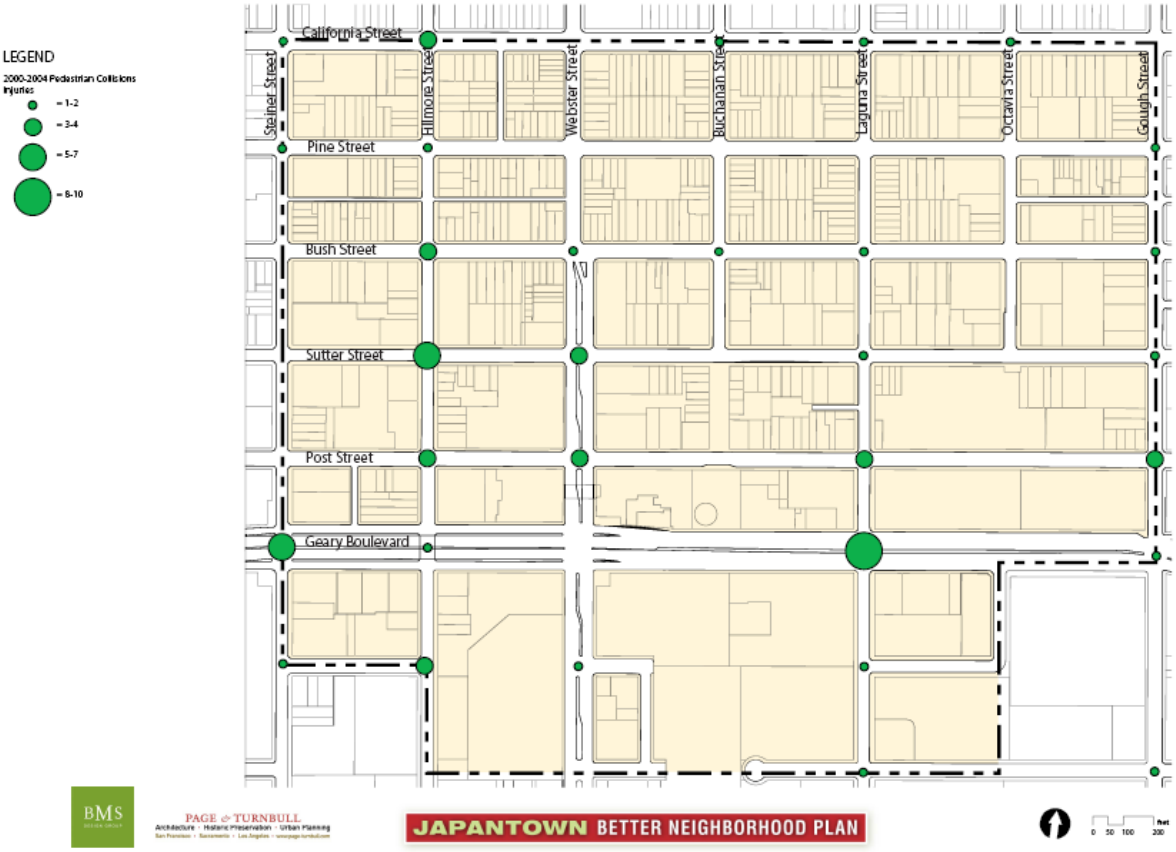

Figure 11 Pedestrian Injuries, Adjusted for Vehicle Exposure
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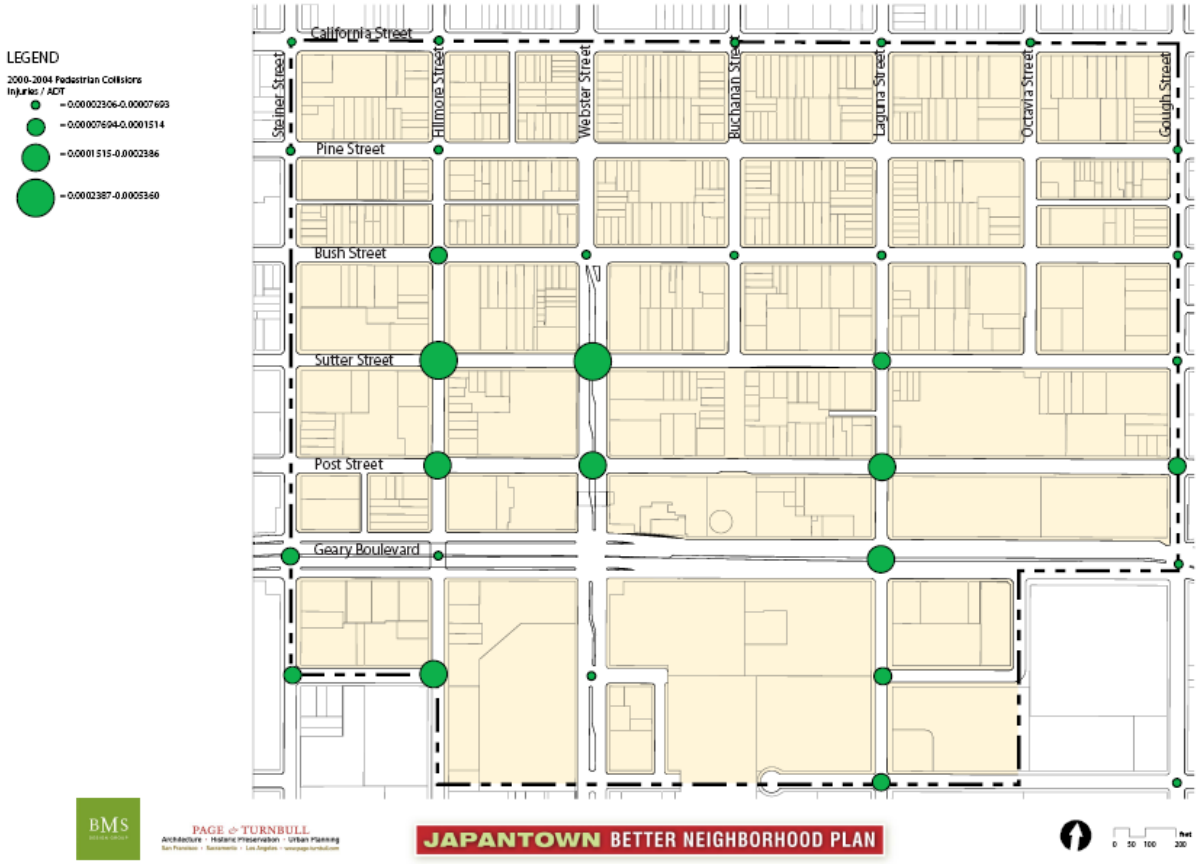

Figure 12 Severe Pedestrian Injuries in Japantown, 2000-2004
(replace with full size image)

Figure 13 Severe Pedestrian Injuries, Adjusted for Vehicle Exposure
(replace with full size image)

Figure 14 Pedestrian Fatalities in Japantown, 2000-2006
(replace with full size image)

Existing Bicycle Conditions

Designated bicycle routes in the study area include Steiner Street (Route 45), Webster Street (Route 345), Sutter Street (Route 16), and Post Street (Route 16), as shown on Figure 15. These routes connect Japantown with the Citywide bicycle network in all directions.

Bicycle ways may be classified as Class I, Class II, or Class III.

- Class I bikeways, such as a "bike path," which provide a completely separated right-of-way designated for the exclusive use of bicycles and pedestrians with crossflows by motorists minimized.
- Class II bikeways, such as a "bike lane," which provide a restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles with through travel by motor vehicles or pedestrians prohibited, but with vehicle parking and crossflows by pedestrians and motorists permitted.
- Class III bikeways, such as an on-street or off-street "bike route," which provide a right-of-way designated by signs or permanent markings and shared with pedestrians or motorists. Class III routes have been approved to use a relatively new pavement marking called "sharrows" to designate a shared lane. [2]

Bike Route 45 on Steiner Street is a Class III facility. Although bike lanes are not present, Steiner Street offers a wider curb lane where bicyclists may be able to ride outside the path of motor vehicle travel. This route runs in both northbound and southbound directions between Greenwich Street (Route 6) and McAllister/ Fulton Streets (Route 20).

Bike Route 345 on Webster Street is a Class II facility, offering dedicated bicycle lanes in both northbound and southbound directions. This route connects to Sutter/ Post Streets (Route 16) and Duboce Avenue (Route 30).

Bike Route 16 runs westbound along Sutter Street and eastbound along Post Street, east of Webster. West of Webster Street Route 16 runs eastbound and westbound on Post Street... The route is a Class III facility on Sutter Street and Post Street, except for the section of Post from Presidio Avenue to Steiner Street, where bike lanes (Class II) are present. The route connects to Presidio Avenue (Route 55) and Market Street (Route 50).

Based on previous transportation studies in Japantown (*1746 Post Street Draft EIR*, 7/26/06 and *1333 Gough/ 1481 Post Street Preliminary Draft EIR*, 9/14/07), few bicyclists use the facilities in the area. The studies note that during both weekday midday and evening periods, bicycle conditions are considered acceptable, with "no substantial safety or right-of-way issues" observed.

Field observations for this Plan and community feedback suggest that there may be a need for enforcement with regard to bicycles riding on sidewalks. Additionally, conflicts between bicyclists and vehicles entering/exiting the parking garages and double-parked vehicles were observed during field visits.

Bicycle parking is available in the Japan Center parking garage.

[2] Defined by the State of California in the California Streets and Highways Code, Section 890.4

Figure 15 Japantown Bicycle Routes
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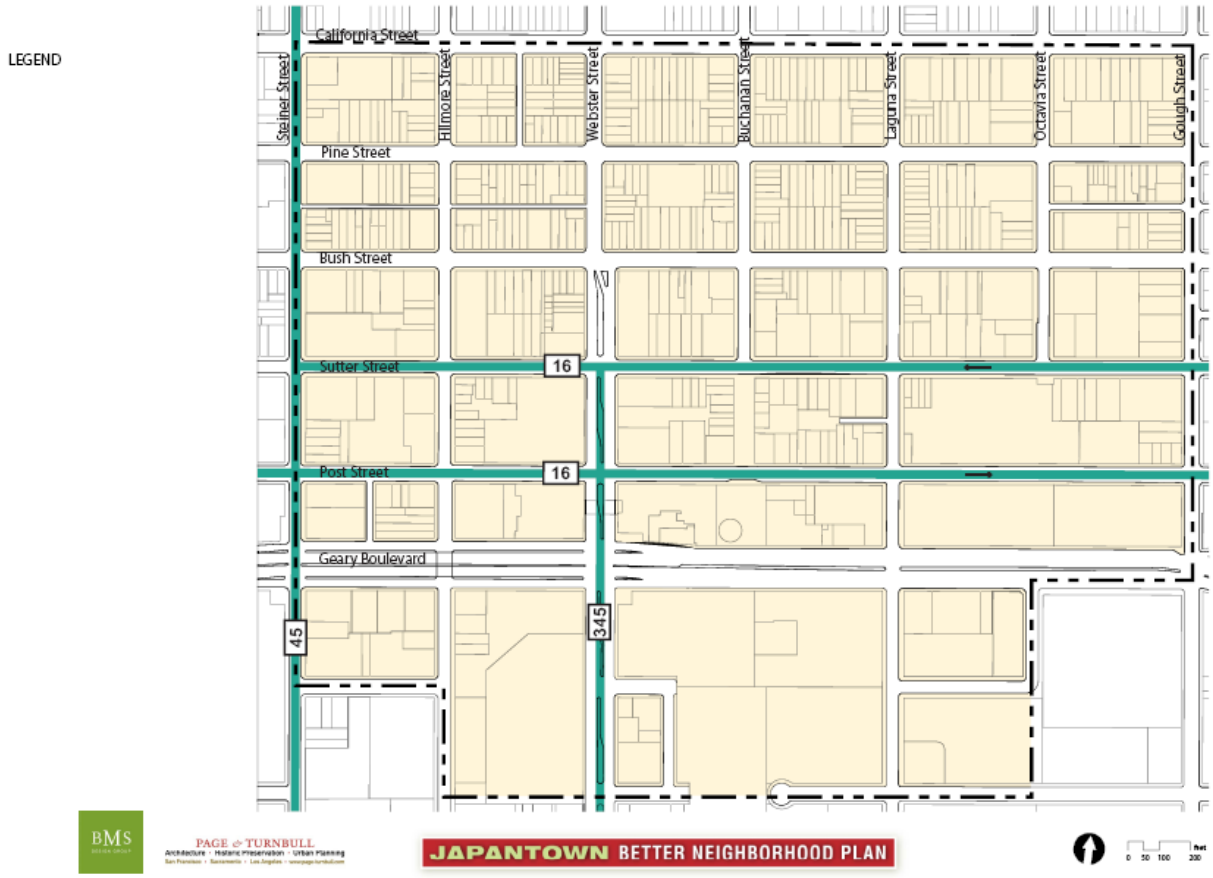


Existing Traffic Conditions

Japantown is connected to San Francisco and the Bay Area via a regional freeway network. Local streets also provide access within Japantown and to neighboring areas of the City. This section defines the vehicle access network and summarizing existing conditions on roadways in the Plan area.

Regional Freeways

The primary regional freeway access to Japantown is provided by Interstate 80 (I-80) and US Highway 101 (US 101). I-80 connects to the East Bay and points east via the San Francisco-Oakland Bay Bridge. US 101 connects to the Peninsula/ South Bay to the south and to the North Bay and points north via the Golden Gate Bridge. I-80 and US 101 merge south of the study area. US 101 becomes Van Ness Avenue to the east of the study area. The closest access point to I-80/ US 101 is via ramps at Market Street and Octavia Boulevard.

Interstate 280 provides additional regional access to the South Bay and Peninsula. The closest access to I-280 is via ramps at 6th Street and Brannan Street.

Local Streets

Local streets in Japantown provide multi-modal access to, from, and within the neighborhood.

Sutter Street

Sutter Street runs east-west between Presidio Avenue and Market Street. Sutter becomes a one-way three lane westbound street between Market and Gough Streets. Between Gough and Presidio Streets, Sutter has two lanes westbound and one lanes eastbound. Bicycle Route #16 runs westbound along Sutter Street between Steiner and Market Streets. In Japantown, Sutter Street serves as a transit corridor and a retail corridor with significant pedestrian crossings.

Post Street

Post Street runs east-west between Presidio Avenue and Market Street. Post becomes a one-way three lane eastbound street between Gough and Market Streets. Between Gough and Steiner Streets there are two eastbound and one westbound travel lanes. Between Steiner Street and Presidio Avenue there is one lane in each direction. Bike route #16 runs east-west between Presidio Avenue and Steiner Street, and westbound between Market and Steiner Streets as a signed route. In Japantown, Post Street serves as a transit corridor (east of Laguna Street) and a retail corridor with significant pedestrian crossings.

Geary Boulevard (Expressway)

Geary Boulevard runs east-west connecting downtown to the Richmond district. From 48th Avenue to Collins Street it is designated as Geary Boulevard and has three travel lanes in each direction. From Collins Street to Gough Street it is an eight-lane two-way roadway and is designated as Geary Expressway. East of Gough Street, Geary Street becomes one-way westbound, forming a two-way couplet with O'Farrell Street. In Japantown, Geary Expressway serves as a major transit and vehicle corridor with some retail primarily on the north side.

Fillmore Street

Fillmore Street runs north-south between Marina Boulevard and Duboce Avenue. It has one lane of travel in each direction. In Japantown, Fillmore Street serves as a transit corridor and a retail corridor with significant pedestrian crossings.

Webster Street

Webster Street is a two-way north-south street that runs between Marina Boulevard and Duboce Avenue. It has two lanes of travel in each direction through Japantown, with this excess capacity a remnant of historical

plans to convert Webster Street to an expressway. Bike route #345 runs along Webster Street with bike lanes present in Japantown.

Buchanan Street

Buchanan Street runs intermittently north-south between Beach Street and Market Street. It has one lane each direction with parking on both sides of the street. Buchanan Street serves as a pedestrian mall between Sutter and Post Streets. Peace Plaza is located between Post Street and Geary Boulevard on what was Buchanan Street right-of-way.

Laguna Street

Laguna Street runs north-south between Beach Street and Market Street. It has one lane each direction with parking on both sides of the street. In Japantown, Laguna Street serves as a transit corridor between Sutter and Post Streets and an important pedestrian corridor and connection for many residential areas and community uses.

Intersection Operations

Operating characteristics of several signalized intersections were evaluated as part of the *1746 Post Street and 1333 Gough/ 1481 Post Street Environment Impact Reports*. Under existing conditions, all evaluated intersections within Japantown were found to operate with acceptable conditions. Conditions were evaluated using based on level of service (LOS). LOS is a qualitative description of an intersection's performance based on average delay per vehicle. LOS ranges from LOS A, or free flow conditions, to LOS F, or very congested conditions. LOS A through D are considered acceptable conditions, with excellent to satisfactory service levels.

The following table presents existing intersection levels of service as included in the two impact reports. The analysis reflects an acceptable level of service throughout Japantown's intersections

Table 2 Intersection Levels of Service: Weekday PM Peak Hour (*1746 Post Street Draft EIR*, 7/26/06 and *1333 Gough/ 1481 Post Street Preliminary Draft EIR*, 9/14/07)

Intersection	Delay[1]	Level of Service (LOS)
Webster/ Post	16.1	B
Webster/ Geary	21.2	C
Laguna/ Post	18.8	B
Laguna/ Geary	20.8	C
Van Ness/ Post	20.8	C
Van Ness/ Geary	30.0	C
Van Ness/ O'Farrell	26.7	C
Franklin/ Post	21.9	C
Franklin/ Geary	35.4	D
Franklin/ O'Farrell	38.3	D
Gough/ Post	21.2	C
Gough/ Geary	28.1	C
Laguna/ Post	17.7	B
Laguna/ Geary	21.4	C

Source: LCW Consulting, June 2007 and September 2007

Notes:

[1] Delay presented in seconds per vehicle

Existing Parking Conditions

Parking is available in Japantown on-street (generally with meters or residential permits restricting use) and off-street in both public and private garages and surface lots. This section details the parking options and existing parking occupancies (or use of the available parking).

On-Street Parking

Fehr & Peers conducted a windshield survey of on-street parking supply and occupancy within the Japantown neighborhood in San Francisco, CA, on Wednesday, November 7th, 2007. Parking supply and occupancy counts were taken once between 1:00 PM - 3:00 PM, then again between 7:00 PM - 9:00 PM; supplies were categorized using the following classifications:

- Metered spaces
- Unmetered spaces
- Yellow (commercial loading) zone spaces
- White (passenger loading) zone spaces
- Blue (disabled) zone spaces

As shown in Figure 16, on-street parking supplies total 1,964 spaces within the Plan area, including those spaces dedicated to loading zones and disabled parking. Of those spaces, 1,679 (86%) were occupied during the afternoon period while 1,846 (94%) were occupied during the evening period (see Figure 17 below). When counting only metered and unmetered parking spaces however, occupancy ratios increased to 93% in the afternoon and 102% in the evening.

Table 3 Off-Street Parking Supply

Unmetered Spaces	Metered Spaces	Yellow Zone (Commercial Loading)	White Zone (Passenger Loading)	Blue Zone (Disabled)	Total Parking Supply
1,441	370	48	102	3	1,964

Source: Fehr & Peers, 2007.

Table 4 Parking Occupancy

Time Period	Total Spaces Occupied	% All Spaces Occupied	% Metered/Unmetered Spaces Occupied
1 PM – 3 PM	1679	86%	93%
7 PM – 9 PM	1846	94%	102%

Source: Fehr & Peers, 2007.

Because illegally parked vehicles were included in the parking occupancy survey, several streets within the study area exhibited parking occupancy rates exceeding 100% (as noted in Table 4). Occupancy rates were the highest on Post Street directly adjacent to Japan Center, where occupancy exceeded 100% on each block from Steiner Street to Octavia Street during both survey periods. Observations indicate that illegally parked vehicles on this street consist primarily of commercial loading vehicles, with a smaller percentage of double-parked passenger vehicles. Illegally parked vehicles within the remainder of the study area consist predominantly of work trucks and other commercial loading vehicles parked in front of driveways.

Figure 16 Metered Parking Stalls in the Japantown Neighborhood
(replace with full size version)

Figure 17 Parking Occupancies, Mid-day and Evening
(update to full size version)

Off-Street Parking

The primary off-street parking facility in the Japantown neighborhood is the Japan Center Garage. The garage, which is owned by the City of San Francisco and operated by the Japan Center Garage Corporation, has 924 parking spaces. The majority of these spaces (747) are located in the main garage, which is bounded by Geary to the south, Post to the north, Webster to the west, and Laguna to the east. An additional 177 parking spaces are located in the Annex Garage, which is bounded by Geary, Post, Webster, and Fillmore. The Annex Garage primarily serves the Kabuki Theatre, whereas the main garage serves the hotel, restaurants, and shops in Japan Center. The garage also provides bicycle parking.

Parking rates are presented in Table 5. Several merchants, including the Sundance Kabuki Cinemas, offer partial parking validation.

Table 5 Japan Center Parking Garage Parking Rates

Hourly Parking Rates	
Time	**Parking Rate**
0-1 Hour	$1.75
1-2 Hours	$ 3.50
2-3 Hours	$ 5.00
3-4 Hours	$ 6.50
4-5 Hours	$ 8.00
5-6 Hours	$ 9.50
6-7 Hours	$ 11.50
7-8 Hours	$ 13.50
8-24 Hours	$ 15.00
Motorcycle (2 wheels)	$ 4.00 per day
All Day In and Out Rate	$ 15.00
(Unlimited In and Out during Normal Operating Hours for One Day). Payment must be made in advance upon entering. Cannot be combined with any other rates. Parking validations are exempt. Receipt must accompany parking ticket at all times. TO QUALIFY, A BULK MINIMUM PURCHASE OF $375.00 PER DAY IS REQUIRED.	
EARLY BIRD SPECIAL ENTER by 10:00 a.m. EXIT before 10:00 p.m. Mondays through Fridays Only	$ 9.50 per day
Monthly Parking Rates	
Unrestricted (7 days, During Business Hours)	$ 155.00 per month
Assigned Stall (Limited Availability)	$ 250.00 per month
Restricted Monthlies (Mon. to Fri., 5 a.m. to 9 p.m.)	$ 115.00 per month
Carpool (7 days, 3 people or more per vehicle)	$ 80.00 per month
Motorcycle (2 wheels)	$ 60.00 per month
LOST TICKET CHARGE	$ 15.00 per day
Source: http://www.japantownparking.com/Rates/	

Garage occupancy data was obtained from the Japan Center Garage management for the months of May and June 2007 (prior to drainage construction efforts). The data includes parking permit usage by California Pacific Medical Center (CPMC) permit holders. The data suggests there is available capacity to accommodate additional vehicles in the Main Garage. However, during peak hours (Friday nights and Saturdays), the Annex Garage fills close to capacity. Anecdotal evidence suggests there is a greater parking shortage in Japantown garages than shown with this data.

Figure 18 Annex Garage Occupancy (Average of May and June 2007)

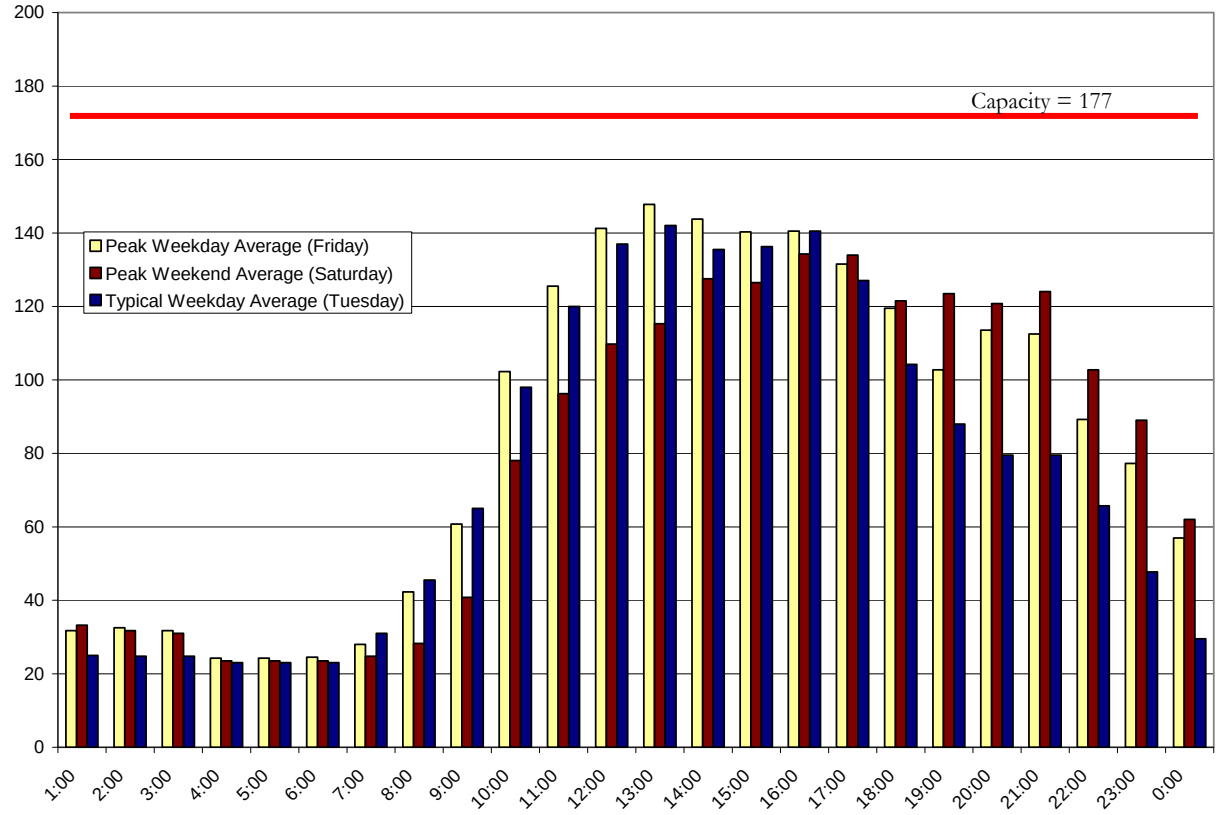
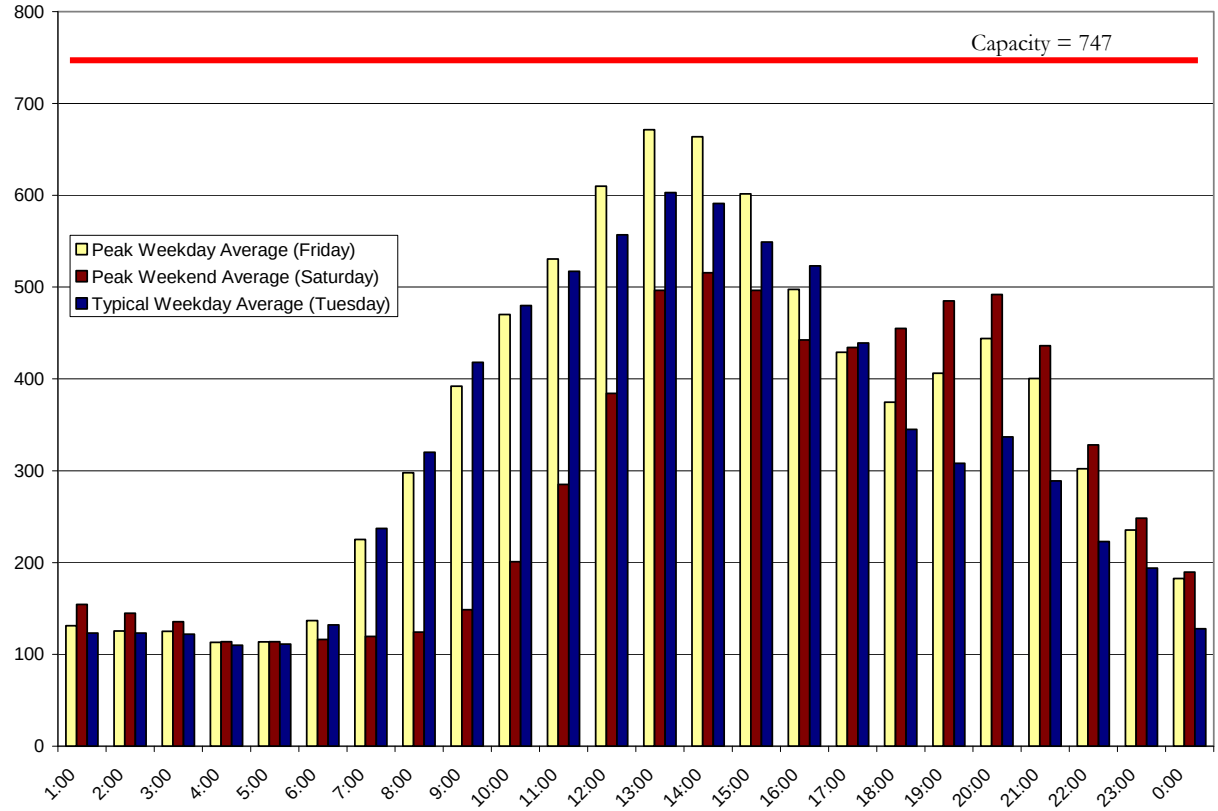


Figure 19 Main Garage Occupancy (Average of May and June 2007)



Existing Transit Service

Japantown is well-served by San Francisco Municipal Railway ("Muni") bus lines. These lines connect the neighborhood with the Muni bus network as well as cable car lines, the F-Market street car, and Muni Metro light rail to reach destinations throughout San Francisco. They also connect with regional transit service providers, including:

- BART runs along Market Street and provides service to and from the East Bay.
- AC Transit provides bus service to the East Bay from the TransBay Bus Terminal.
- Golden Gate Transit provides bus service to the North Bay along Van Ness Avenue and from the TransBay Bus Terminal.
- Ferry service to the North Bay is provided from the Ferry Building.
- Caltrain provides service to and from the South Bay and Peninsula from the terminal at Fourth and Townsend Streets.
- SamTrans provides bus services to the Peninsula from the TransBay Bus Terminal.

Existing Transit Service and Frequencies

Figure 20 depicts the transit lines in the Japantown neighborhood. Table 6 presents a summary of transit service from the *1333 Gough/ 1481 Post Preliminary Draft EIR*.

Figure 20 Existing Transit Routes Serving Japantown and Bus Stop Locations
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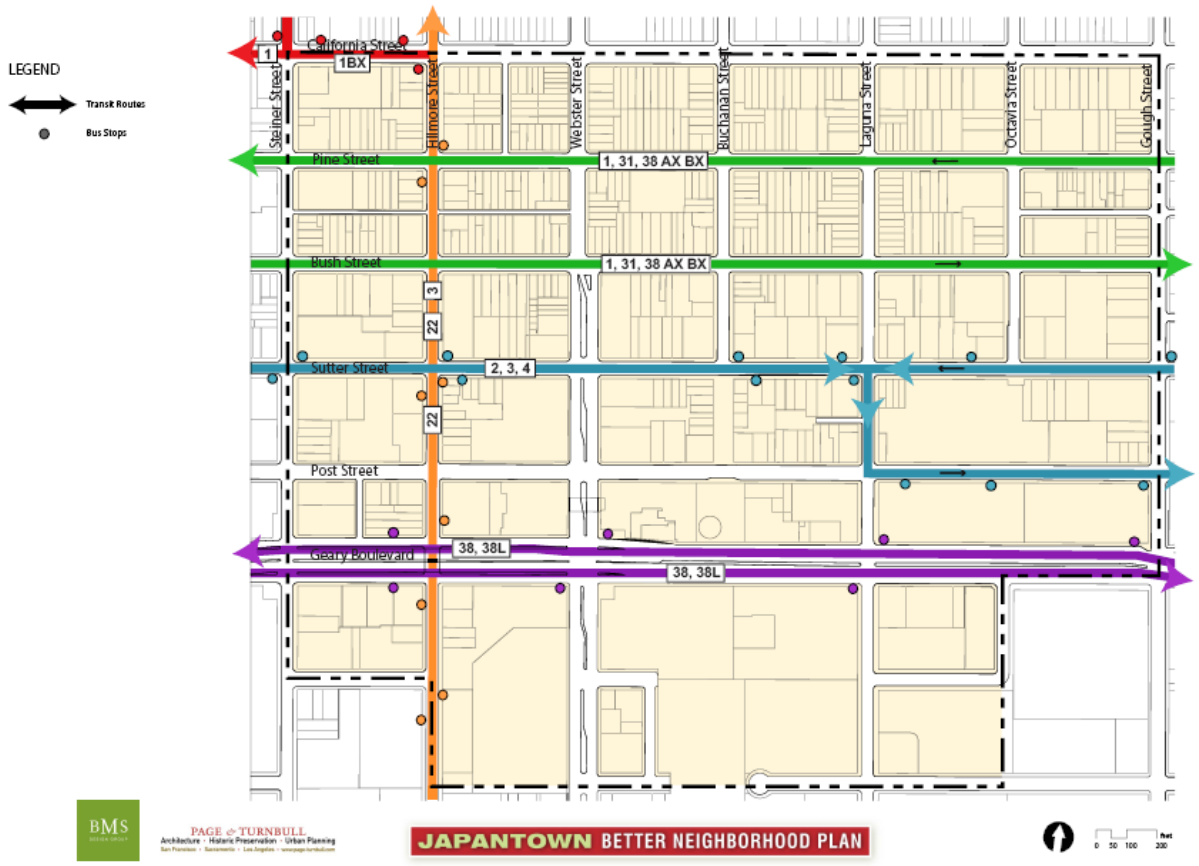


With a peak service frequency of at least one bus every 15 minutes (or a headway of 15 minutes between buses) on all lines serving Japantown, Table 6 illustrates the high level of transit service provided. A headway of 15 minutes implies an average wait of less than 8 minutes. For lines with more frequent service, the average wait is less that 5 minutes.

Table 6 Weekday Transit Service Headways Near Japantown (source: *1333 Gough/ 1481 Post Street Preliminary Draft EIR*, 9/14/07)

	Service Headway (minutes)			
Route	**AM**	**Midday**	**PM**	**Nearest Stop Location (inbound, outbound)**
2-Clement	10	20	10	Post/Gough, Post/Gough
3-Jackson	10	20	10	Post/Gough, Post/Gough
4-Sutter	15	--	15	Post/Gough, Post/Gough
22-Fillmore	10	8	7	Fillmore/Sutter, Fillmore/Sutter
38-Geary	8	8	6	Geary/Gough, Geary/Gough
38L-Geary Limited	7	7	5-7	Geary/Laguna, Geary/Laguna
47-Van Ness	8	9	8	Van Ness/Sutter, Van Ness/Sutter
39-Van Ness/ Mission	8	9	8	Van Ness/Sutter, Van Ness/Sutter

Source: SF Muni, LCW Consulting, September 2007

Notes:

The 76-Marin Headlands line also travels along Van Ness Avenue north of Post Street, and on Post and Sutter Streets east of Van Ness Avenue; however, service is only provided on Sundays and on some holidays. In addition, the 1AX/1BX California Expresses, 31AX/BX-Balboa Expresses, and the 38AX/BX-Geary Expresses travel on Pine and Bush Streets in the vicinity of the project site, but do not stop.

Transit ridership and capacity utilization analysis was also presented in the *1333 Gough/ 1481 Post Preliminary Draft EIR*. The results of this analysis are summarized in Table 7. During the PM Peak Hour, the northbound transit corridor operates at 88 percent capacity utilization, which exceeds Muni's standard of 85 percent. Southbound, eastbound, and westbound corridors currently operate below capacity.

Table 7 Muni Line Ridership and Capacity Utilization (source: *1333 Gough/ 1481 Post Street Preliminary Draft EIR*, 9/14/07)

	Inbound (towards downtown; eastbound or southbound)		Outbound (away from downtown; westbound or northbound)	
Line	**Ridership**	**Capacity Utilization**	**Ridership**	**Capacity Utilization**
2-Clement	222	61%	262	88%
3-Jackson	174	44%	251	63%
4-Sutter	177	42%	191	52%
22-Fillmore	485	81%	595	73%
38-Geary	582	68%	733	67%
38-Geary Limited	654	76%	1,114	102%
47-Van Ness	556	100%	285	58%
49-Van Ness-Mission	466	84%	549	94%

Source: Muni FY 2001-2002 Monitoring Data, LCW Consulting, September 2007

Pedestrian Improvement Measures to be Considered in Japantown

TABLE 8 EXAMPLE PEDESTRIAN IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Traffic Control Countermeasures			
Advanced Yield or Stop Lines and Sign  *Image source: www.saferoutesinfo.org*	Advanced stop bars are recommended at controlled crosswalks (both stop and signal controlled). Advanced yield limit lines (or "sharks teeth") are placed in advance of marked, uncontrolled crosswalks.	This measure increases the pedestrian's visibility to motorists, reduces the number of vehicles encroaching on the crosswalk, and improves general pedestrian conditions on multi-lane roadways. It is also an affordable option.	Useful in areas where pedestrian visibility is low and in areas with aggressive drivers, as advance limit lines will help prevent drivers from encroaching on the crosswalk. Addresses the multiple-threat collision on multi-lane roads. Stop bars are recommended at all stop and signal-controlled locations.
Overhead Flashing Beacons  *Image source: tti.tamu.edu*	Flashing amber lights are installed on overhead signs, in advance of the crosswalk or at the entrance to the crosswalk.	The blinking lights during pedestrian crossing times increase the number of drivers yielding for pedestrians and reduce pedestrian-vehicle conflicts. This measure can also improve conditions on multi-lane roadways.	Best used in places where motorists cannot see a traditional sign due to topography or other barriers.
Pedestrian Scramble  *Image source: tsc.berkeley.edu*	Provides a dedicated signal phased for pedestrian crossings, allowing for diagonal crossings	Provides for diagonal crossings and eliminates pedestrian/vehicle conflicts	Appropriate in areas with very high pedestrian volumes and relatively short crossing distances. May result in delay to vehicles and transit.

TABLE 8 EXAMPLE PEDESTRIAN IMPROVEMENT MEASURES

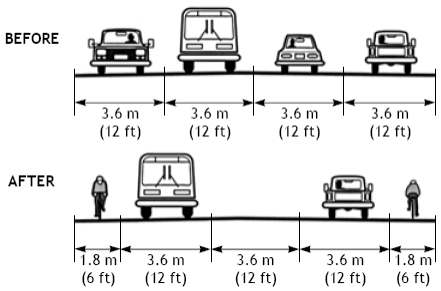
Measure	Description	Benefits	Application
In-Roadway Warning Lights  *Image Source: www.tfhrc.gov/*	Both sides of a crosswalk are lined with pavement markers, often containing an amber LED strobe light. The lights may be push-button activated or activated with pedestrian detection.	This measure provides a dynamic visual cue, and is increasingly effective in bad weather	Best in locations with low bicycle ridership, as the raised markers present a hazard to bicyclists. May not be appropriate in areas with heavy winter weather due to high maintenance costs. May not be appropriate for locations with bright sunlight. The lights may cause confusion when pedestrians fail to activate them and/or when they falsely activate.
Geometric Treatments			
Road Diet (aka Lane Reduction)  *Image Source: www.tfhrc.gov/*	The number of lanes of travel is reduced by widening sidewalks, adding bicycle and parking lanes, and converting parallel parking to angled or perpendicular parking.	Studies have shown road diets reduce vehicle-vehicle (especially rear-end) and pedestrian-vehicle (especially multiple-threat) collisions. Speeds are also reduced, creating a traffic calming effect.	Roadways with surplus roadway capacity (typically multi-lane roadways with less than 15,000 to 17,000 ADT) and high bicycle volumes, and roadways that would benefit from traffic calming measures.
Staggered Median Pedestrian Island  *Image Source: www.tfhrc.gov/*	This measure is similar to traditional median refuge islands; the only difference is that the crosswalks in the roadway are staggered such that a pedestrian crosses half the street and then must walk towards traffic to reach the second half of the crosswalk. This measure must be designed for accessibility by including rails and truncated domes to direct sight-impaired pedestrians along the path of travel.	Benefits of this tool include an increase in the concentration of pedestrians at a crossing and the provision of better traffic views for pedestrians. Additionally, motorists are better able to see pedestrians as they walk through the staggered refuge.	Best used on multi-lane roads with obstructed pedestrian visibility or with off-set intersections

TABLE 8 EXAMPLE PEDESTRIAN IMPROVEMENT MEASURES

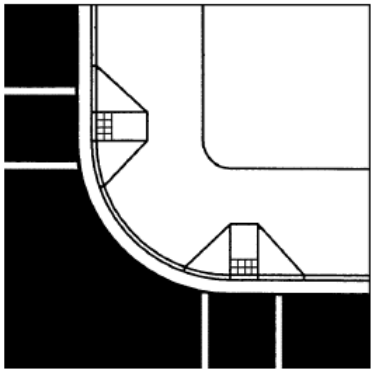
Measure	Description	Benefits	Application
Curb Extension/ Bulb Outs  *Image source: Dan Burden*	Also known as a pedestrian bulb-out, this traffic-calming measure is meant to slow traffic and increase driver awareness. It consists of an extension of the curb into the street, making the pedestrian space (sidewalk) wider. At corners with transit stops, a bulb out can be extended to form a transit bulb – a two-for-one investment (see transit section below for more details).	Curb extensions narrow the distance that a pedestrian has to cross and increases the sidewalk space on the corners. They also improve emergency vehicle access and make it difficult for drivers to turn illegally.	Due to the high cost of installation, this tool would only be suitable on streets with high pedestrian activity, on street parking, and infrequent (or no) curb-edge transit service. It is often used in combination with crosswalks or other markings.
Curb Ramps  *Image source: Designing Sidewalks and Trails for Access, McMillen et al, 2001.*	Curb ramps are sloped ramps that are constructed at the edge of a curb (normally at intersections) as a transition between the sidewalk and a crosswalk.	Curb ramps provide easy access between the sidewalk and roadway for people using wheelchairs, strollers, walkers, crutches, handcarts, bicycles, and also for pedestrians with mobility impairments who have trouble stepping up and down high curbs.	Curb ramps must be installed at all intersections and midblock locations where pedestrian crossings exist, as mandated by federal legislation (1973 Rehabilitation Act and 1990 Americans with Disabilities Act). Where feasible, separate curb ramps for each crosswalk at an intersection should be provided rather than having a single ramp at a corner for both crosswalks.
Raised Crosswalk/Intersection  *Image source: cache.daylife.com*	A crosswalk/intersection whose surface is elevated above the travel lanes.	Attracts drivers' attention; encourages lower travel speeds by providing visual and tactile feedback when approaching the crosswalk.	Appropriate for multi-lane roadways, roadways with lower speed limits that are not emergency routes, and roadways with high levels of pedestrian activity, such as near schools, shopping malls, etc. May result in delays to vehicles and transit.

TABLE 8 EXAMPLE PEDESTRIAN IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Pedestrian Access and Amenities			
Textured Pavers  *Image source: www.class.uidaho.edu*	Textured pavers come in a variety of materials (for example, concrete, brick, and stone) and can be constructed to create a textured pedestrian surface such as a crosswalk or sidewalk. Crosswalks are constructed with the pavers, or can be made of stamped concrete or asphalt.	Highly visible to motorists, this measure provides a visual and tactile cue to motorists and delineates a separate space for pedestrians, as it provides a different texture to the street for pedestrians and motorists. It also aesthetically enhances the streetscape.	Appropriate for areas with high volumes of pedestrian traffic and roadways with low visibility and/or narrow travel ways, as in the downtown area of towns and small cities. White striping must accompany the pavers to ensure visibility.
Pedestrian Countdown Signal  *Source: www.walkinginfo.org*	Displays a "countdown" of the number of seconds remaining for the pedestrian crossing interval. In some jurisdictions the countdown includes the walk phase. In other jurisdictions, the countdown is only displayed during the flashing don't walk phase.	Increases pedestrian awareness and allows them the flexibility to know when to speed up if the pedestrian phase is about to expire.	The forthcoming 2009 Manual on Uniform Traffic Control Devices (MUTCD) is expected to require all pedestrian signals to incorporated countdown signals within ten years. The signals should be prioritized for areas with pedestrian activity, roadways with high volumes of vehicular traffic, multi-lane roadways, and areas with elderly or disabled persons (who may walk slower than others may).
Reduce Pedestrian Walking Speed Accommodation at Signals	The current MUTCD requires that traffic signals allow time for a pedestrian walking at 4 feet/second to cross the intersection. This may result in insufficient crossing time for some slower pedestrians.	Accommodating slower walking speeds allows seniors, children, and those with disabilities to cross safely and more comfortably. Fewer pedestrians will be "trapped" in the intersection when the signal changes.	The new Manual on Uniform Traffic Control Devices (MUTCD) will accommodate those with slower walking speeds (up to 3.5 feet/second). Provide for 3.0 feet/second (or lower, if possible) when significant amounts of children or seniors are present. This is generally consistent with City of San Francisco policy.

TABLE 8 EXAMPLE PEDESTRIAN IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
			May result in delays to vehicles and transit.
Transit			
High-Visibility Bus Stop Locations  *Source: www.walkinginfo.org*	This measure should include siting bus stops on the far side of intersections **(where applicable)**, with paved connections to sidewalks where landscape buffers exist.	Provides safe, convenient, and inviting access for transit users; can improve roadway efficiency and driver sight distance.	Appropriate for all bus stops subject to sight distance and right-of-way constraints.
Transit Bulb  *Source: www.streetsblog.org*	Transit bulbs or bus bulbs, also known as nubs, curb extensions, or bus bulges, are a section of sidewalk that extends from the curb of a parking lane to the edge of the through lane.	Creates additional space at a bus stop for shelters, benches, and other passenger amenities. Typically doubles as a corner bulbout, creating benefits for pedestrians as well (see above for more details).	Appropriate at sites with high patron volumes, crowded city sidewalks, and curbside parking. May result in delays to vehicles while enhancing transit.

TABLE 8 EXAMPLE PEDESTRIAN IMPROVEMENT MEASURES

Measure	Description	Benefits	Application
Enhanced Bus Stop Amenities  *Source: flickr.com*	Adequate bus stop signing, lighting, a bus shelter with seating, trash receptacles, and bicycle parking are desirable features at bus stops.	Increases pedestrian visibility at bus stops and encourages transit ridership	Appropriate at sites with high patron volumes
Source: Fehr & Peers, 2009			