



City of Sausalito South Gateway Complete Street Project



JANUARY 2016



METROPOLITAN
TRANSPORTATION
COMMISSION



Item 4A - Attachment 1
4/19/16
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Executive Summary



The South Gateway Complete Streets study was conducted to evaluate existing circulation conditions and to develop conceptual designs that would improve multimodal access and safety through the South Gateway corridor in the City of Sausalito. The corridor consists of Alexander Avenue, South Street, Second Street, and Richardson Street; it provides a transportation route of regional importance between San Francisco and Sausalito, as well as to other areas of southern Marin. The South Gateway streets are severely impacted by the mix and volume of multimodal traffic using the corridor; these modes include automobiles, commercial tour buses, public transit vehicles, commercial truck traffic, bicyclists, and pedestrians. A large portion of the traffic that Sausalito receives are visitors coming via the Golden Gate Bridge in automobiles and on bicycles.

Total daily multimodal activity (pedestrians, bicyclists, and automobiles) measured in 2015 ranged between 9,000 and 13,000 users in the spring, and between 12,000 and 15,000 users in the summer. Roughly two-thirds of this daily volume consists of vehicular traffic, almost another one-third is bicycle traffic, and two to three percent consists of pedestrian traffic. The existing right-of-way along the corridor is generally perceived as too narrow to accommodate these levels of multimodal traffic concurrently and safely.

There are a number of geometric issues of concern along the corridor, which include narrow roadway widths, limited sight lines, lack of dedicated bicycle facilities, and gaps in pedestrian facilities. The corridor experienced 56 reported crashes between January 2009 and September 2015. Twenty-four of these involved a bicycle, with one-half of these solo bicycle crashes and the other half involving a motor vehicle. Vehicle-involved crashes most commonly involved another parked vehicle, followed by bicycles, other vehicles, and solo crashes.

Initial improvement concepts were developed in consultation with City of Sausalito Public Works staff based on crash concentration and characteristics, and the observed conditions at each location. Design concepts were reviewed with staff over the course of several months. Refined improvement concepts were presented to the Sausalito Pedestrian and Bicycle Advisory Committee (BPAC) in spring and summer 2015. The following are the Staff-Recommended Concepts:

► Richardson Street, Bridgeway to Second Street:

- Install a marked crosswalk at the Richardson Street / Second Street intersection with a pedestrian refuge island and rectangular rapid flash beacons,
- Install bulb-outs to shorten pedestrian / bicycle crossing distance, and
- Reconstruct sidewalks and install ADA-compliant curb ramps.

► Second Street, Richardson Street to South Street:

- Install standard pedestrian / bicycle crossing warning signs at marked crosswalks and consider providing flashing beacons if warranted by crossing volumes, and
- Remove sidewalk obstacles, reconstruct sidewalks, and install ADA-compliant curb ramps.

► South Street, Second Street to Alexander Avenue:

- Widen South Street by about six feet to the north and reconstruct the sidewalk, curb and gutter; extend the southbound bike lane to connect Second Street and Alexander Avenue,
- Construct a midblock crosswalk with a pedestrian-activated flashing beacon, and
- Reconstruct sidewalks to eliminate or reduce driveway cross-slopes.

► Alexander Avenue, South Street to Sausalito City Limits:

- Construct a retaining wall on the south side of Alexander Avenue and widen the road four to five feet to the south; widen the sidewalk to five feet wide by widening to the south; avoid impacting the properties at 28 and 64 Alexander Avenue; and retain the shoulder for southbound bicycle traffic.
- Reconstruct sidewalks to eliminate or reduce driveway cross-slopes at driveways south of 64 Alexander Avenue;
- Convert Edwards Avenue to emergency access only with a raised barrier and signage, and
- Install a marked crosswalk at the Alexander Avenue / Edwards Avenue intersection with a pedestrian-activated flashing beacon.

Planning-level estimates for the Staff-Recommended Concepts total to an estimated cost of \$1.76 million. If the City of Sausalito moves forward with any or all of these improvements, the City would coordinate project elements with other responsible agencies, study whether the improvements would require more detailed environmental studies, and seek outside funding.

Introduction



PROJECT VICINITY MAP

This South Gateway Complete Street study was initiated by the City of Sausalito in 2015. It was funded through the Transportation Authority of Marin (TAM) and by a grant from the Metropolitan Transportation Commission (MTC).

The South Gateway corridor, which consists of Alexander Avenue, South Street, Second Street, and Richardson Street in the City of Sausalito, is severely impacted by the mix and volume of multimodal trips using the corridor; these include automobiles, commercial tour bus operators, public transit, commercial truck traffic, bicycles, and pedestrians. The existing right-of-way is generally perceived as too narrow to accommodate these multiple modes concurrently and safely. Issues of concern include the skinny roadway widths, limited sight lines, lack of dedicated bicycle facilities, and gaps in pedestrian facilities.

The intent of the study was to identify the deficiencies along the South Gateway corridor and to develop improvement strategies that would enhance the safety and access of users that walk, bicycle, ride transit, and drive through the corridor, making the South Gateway roadways “complete streets”.

BACKGROUND

The South Gateway corridor consists of a series of streets that connect the City of Sausalito’s downtown waterfront area to Golden Gate National Recreation Area (GGNRA) lands and ultimately the Golden Gate Bridge and the City of San Francisco. It is the only route into Sausalito from the south (San Francisco) for bicyclists and pedestrians, and accommodates thousands of person-trips each day.

The corridor serves as a major transportation and recreation route for commuters, residents, recreational users and tourists. It is a planned segment of the San Francisco Bay Trail, a planned 500-mile shoreline walking and bicycling path encircling the San Francisco Bay. The corridor is identified for multimodal improvements in the City of Sausalito General Plan, Sausalito Bicycle and Pedestrian Plan, and the Marin Countywide Bicycle Plan.

Alexander Avenue between the City Limits and the Golden Gate Bridge is owned and operated by the Golden Gate Bridge, Highway and Transportation District (GGBHTD). This study would build on recommendations from the Alexander Avenue Planning Study, which was undertaken by the National Park Service (NPS) and the Golden Gate National Recreation Area (GGNRA) in 2012.

PROJECT GOALS

The project’s goals are the following:

- ▶ Improve roadway geometry deficiencies to meet applicable roadway geometric standards.
- ▶ Correct geometric deficiencies that disproportionately affect pedestrians and bicyclists.
- ▶ Improve multimodal user safety through measures such as modified vehicular lanes, new bike lanes, new sidewalks or sidepaths, improved lighting, and circulation changes.



PROJECT STUDY AREA MAP

Data Collection

The data collection process for the South Gateway Complete Street study covered several aspects of the corridor. User counts considered travel mode, direction of travel, time of travel, day of the week, and time of year. Direct counts were supplemented with transit and ferry ridership data, when available, and parking occupancy surveys. Crash data were collected from City of Sausalito police records and California Highway Patrol records.

The physical conditions of the South Gateway corridor were recorded via two topographic surveys, one of which included a boundary survey of property rights-of-way. Additional physical measurements, including street and sidewalk dimensions, compliance to ADA standards for accessibility, and sight distance were collected via a field inspection in early 2015.

The list to the right summarizes the data collected, details of which are presented in the following section.



Multimodal traffic on westbound South Street.

User Counts

Vehicular Traffic Counts

- ▶ One weekday and one Saturday 24-hour vehicle count in February 2015.
- ▶ One weekday and one Saturday 24-hour vehicle count in August 2015.
- ▶ One weekday and one Saturday intersection count at Richardson Street / Second and Alexander Avenue / Edwards Avenue in October 2014.

Bicycle and Pedestrian Counts

- ▶ One weekday and one Saturday daytime pedestrian and bicyclist count near the South Street / Second Street intersection in March / April 2015 and August 2015.
- ▶ One weekday and one Saturday daytime pedestrian and bicyclist count at the Sausalito–Mill Valley Path (near the US 101 / Bridgeway ramps) in August 2015.

Bus and Ferry Ridership Counts

Golden Gate Transit Bus

- ▶ Ridership data provided by Golden Gate Transit for the 2013 / 2014 fiscal year (accessed September 2014).

Bicyclist Ferry Counts

- ▶ Golden Gate Ferry Daily Counts, May–October 2015.
- ▶ Blue and Gold Fleet One-Day Sample Counts, May / April 2015.
- ▶ Blue and Gold Fleet Weekday / Weekend Average Counts, July–Sept. 2015.

Parking Occupancy Survey

- ▶ Three-day, midweek, midday (12–1 p.m.) parking survey in April 2015 to measure parking occupancy.
- ▶ License plate survey of parked vehicles from April 2014 sample (to determine city of registration).

Physical Conditions Assessment

Land Survey

- ▶ A detailed survey showing topographic information, survey monuments, and rights of way for South Street and Alexander Avenue between 115 South Street and the City Limits.
- ▶ A topographic survey at the intersection of Second Street and Richardson Street.

Accessibility Survey

- ▶ Inspection of sidewalks and crosswalks for compliance to Americans with Disabilities Act standards for accessibility on January 22, 2015.

Crash Records

- ▶ City of Sausalito Police Department crash records, 2009–August 2014.
- ▶ California Highway Patrol (CHP) Statewide Integrated Traffic Records System (SWITRS), 2009–September 2015.

Existing Multimodal Demand

The South Gateway corridor provides a transportation route of regional importance between Marin and San Francisco. Sausalito receives large volumes of visitor traffic via the Golden Gate Bridge, primarily as automobile and bicycle traffic. Tour buses are allowed on the South Gateway corridor, but only in the northbound (down-hill) direction.

Multimodal counts were collected in spring and summer 2015. The counts comprised of 24-hour vehicular counts, and daytime pedestrian and bicyclist counts. The specific details for each mode are presented on subsequent pages.

Slight differences in total multimodal demand occur depending on the day of the week and season. The weekday sampled in spring 2015 exhibited traditional commute peak hour patterns among the vehicular traffic, with a peak in the morning commute hours (7-9 a.m.) and a second peak in the mid-afternoon (4-6 p.m.). Bicycle traffic peaked in the early afternoon, which is attributed to tourist bicycle traffic.

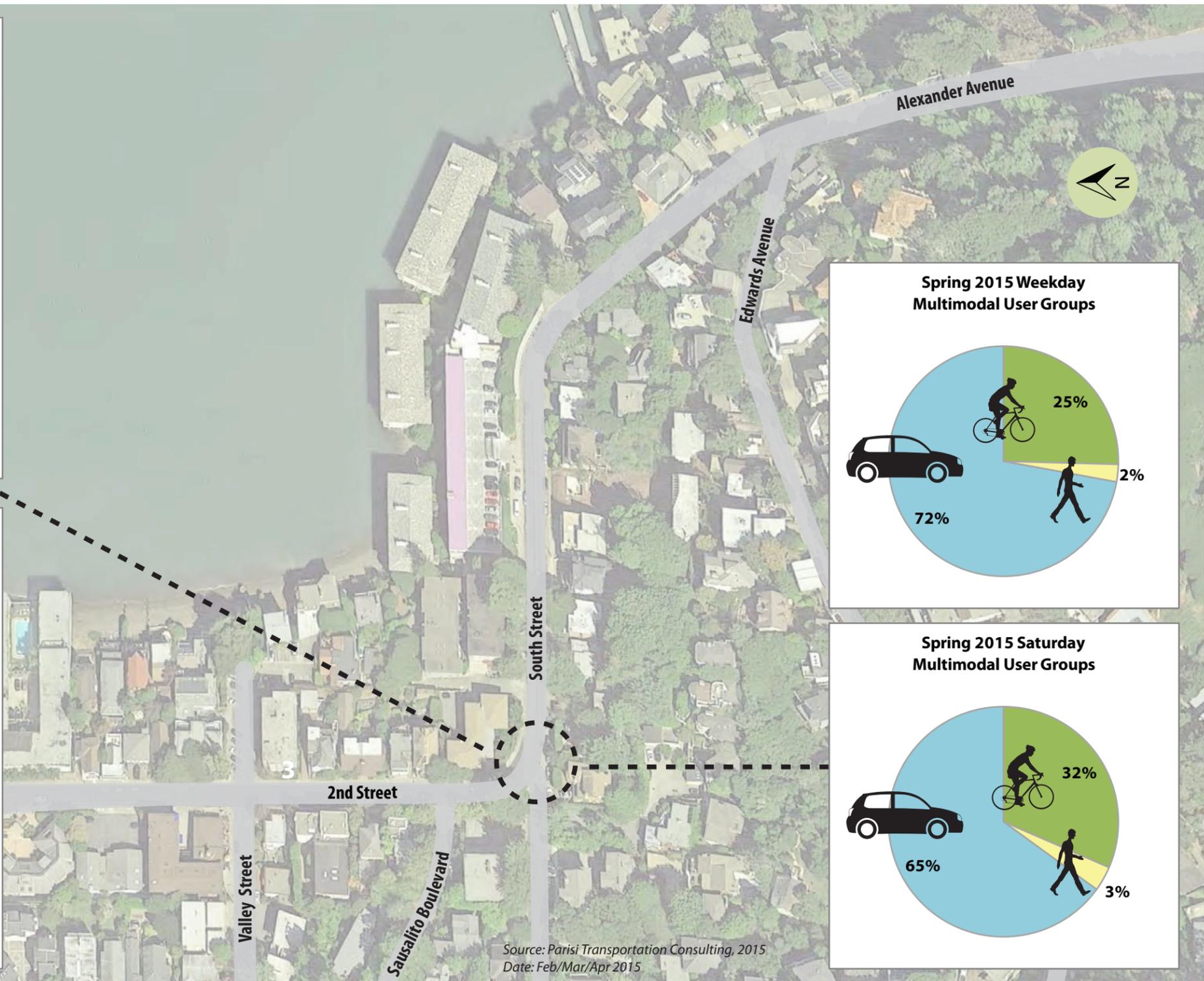
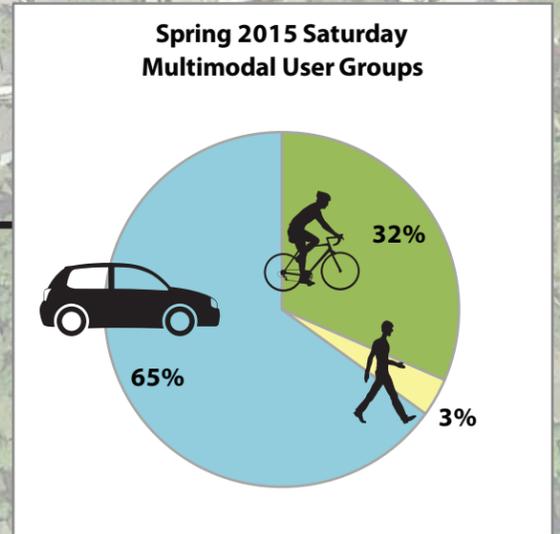
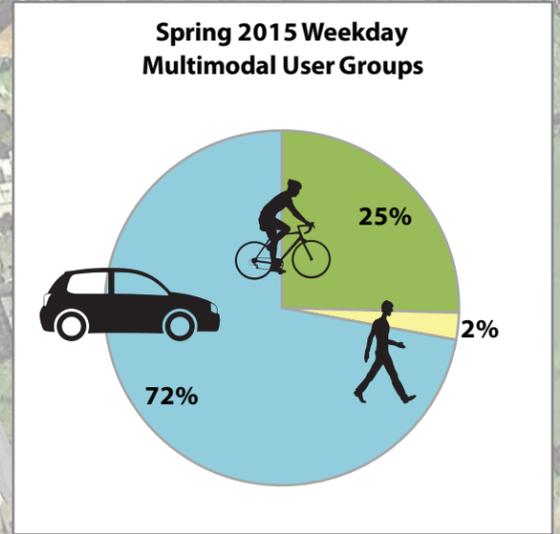
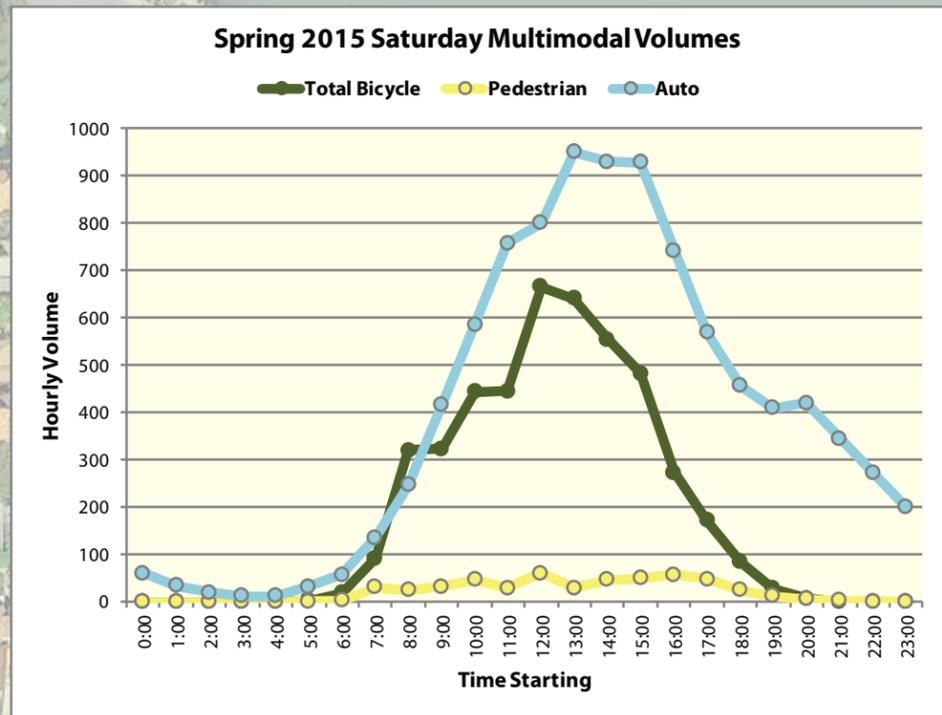
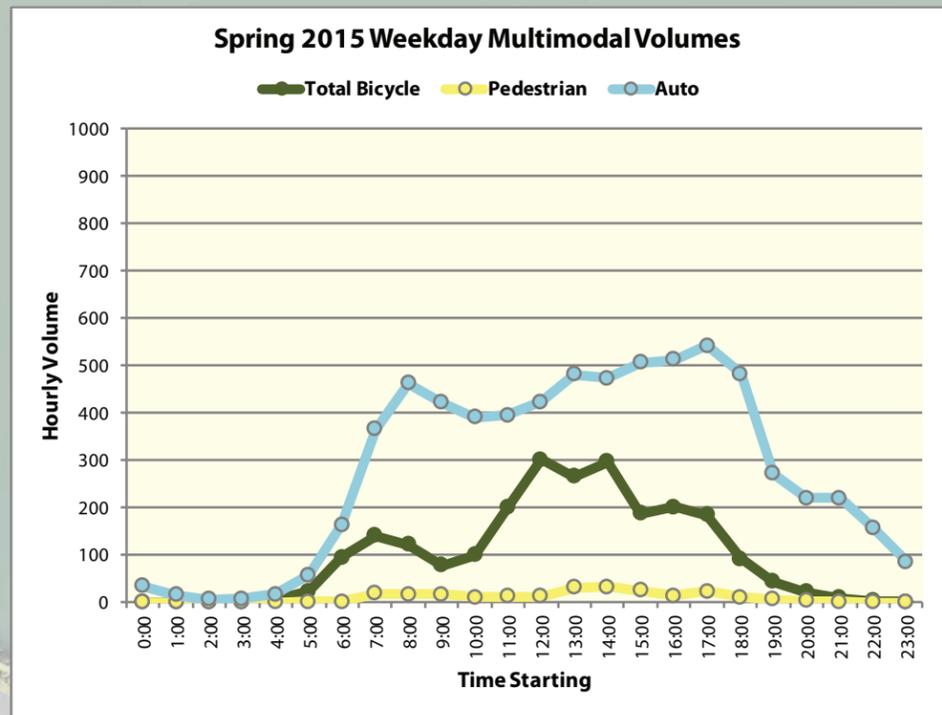
The summer weekday and the spring and summer Saturday multimodal demand tended to peak during the early afternoon (1-4 p.m.). Bicycle and vehicular demand appeared to occur concurrently.

In the spring, vehicular traffic represents between 65 and 75 percent of the South Gateway corridor traffic across a 24-hour period. Bicycle traffic makes up most of the remainder, at between 25 and 35 percent of the daily traffic. Pedestrian traffic is around two to three percent of the observed daily traffic.

In the summer, the proportion of vehicular traffic to the other modes drops to between 55 and 70 percent. Bicycle traffic increases to between 25 and 40 percent of the observed daily traffic, and pedestrian traffic increases to between three and four percent.



Eastbound South Street approaching Alexander Avenue.

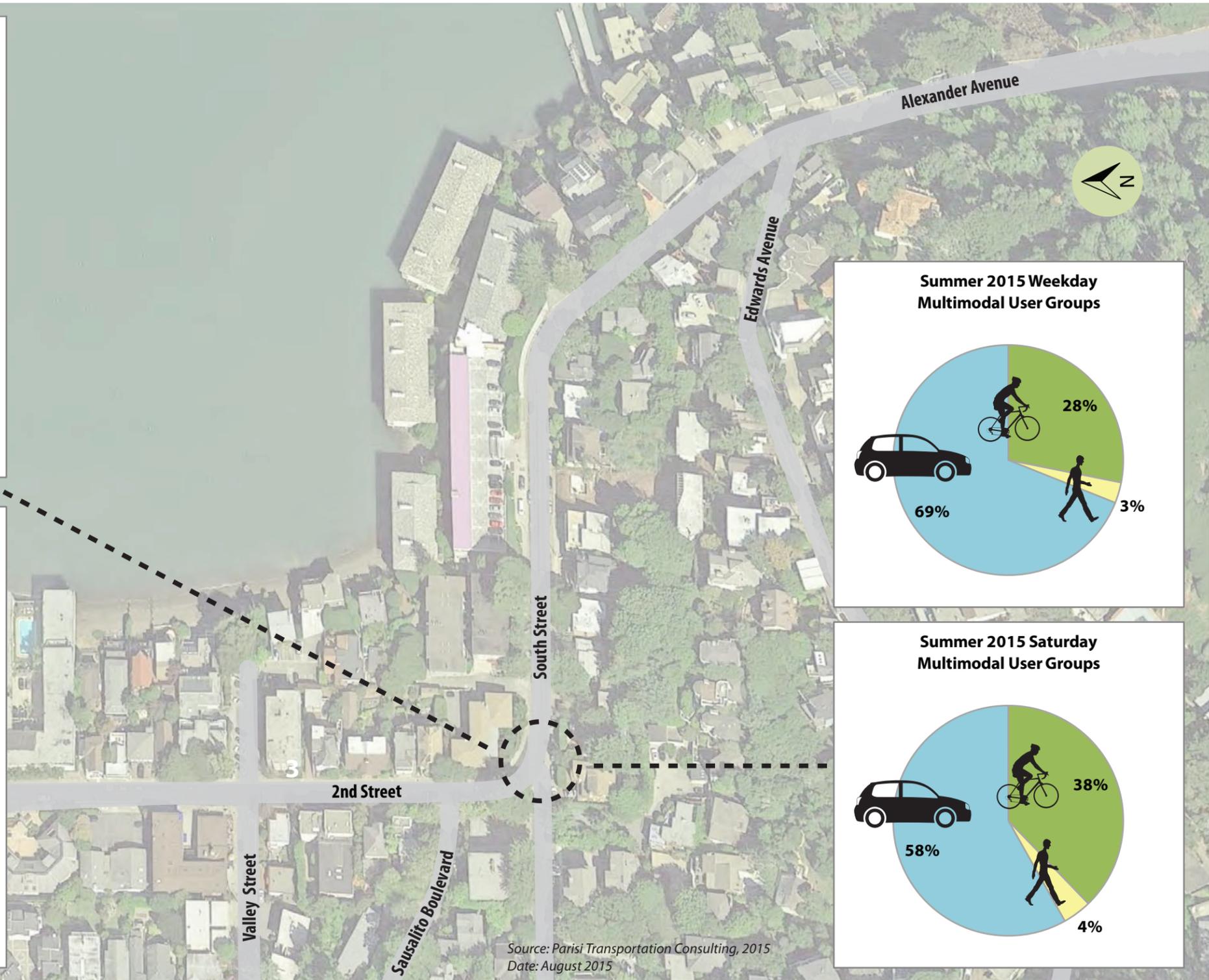
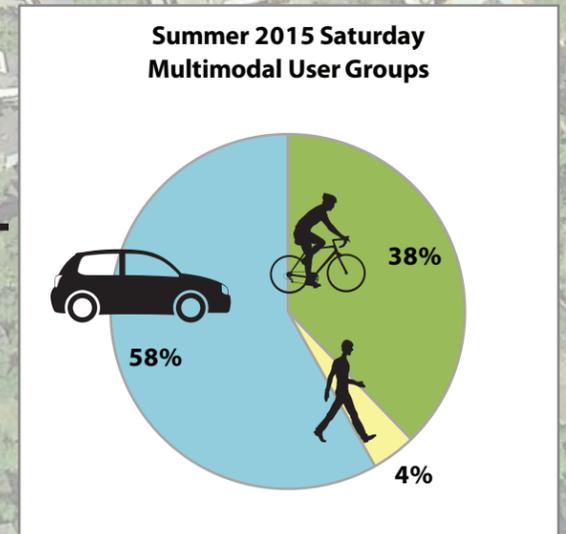
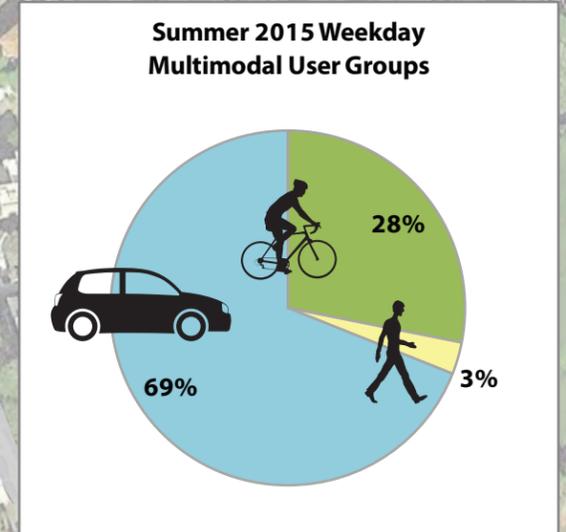
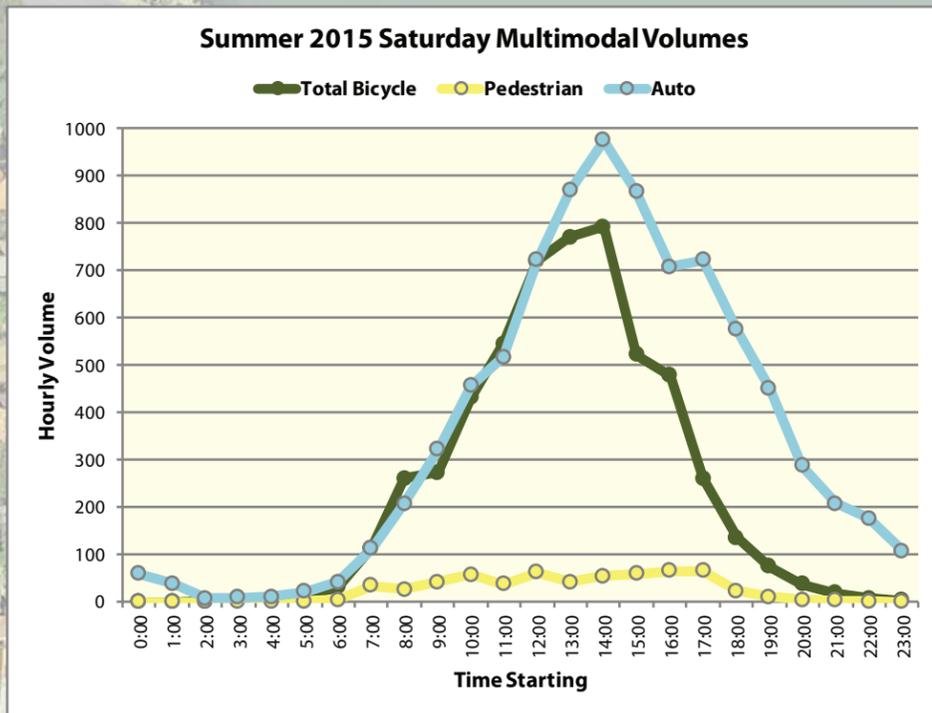
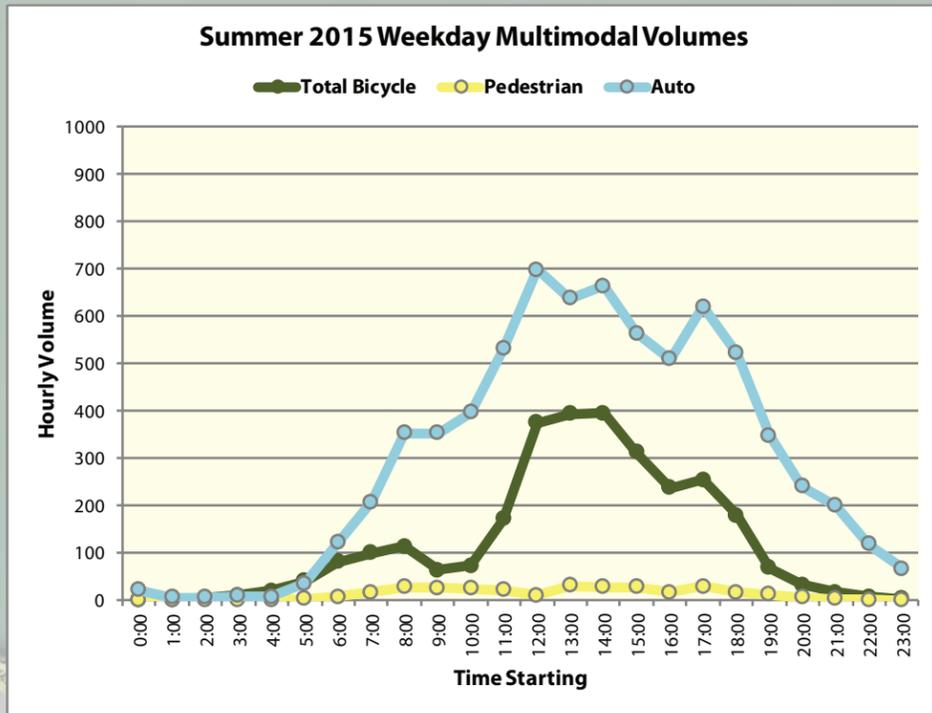


Source: Parisi Transportation Consulting, 2015
Date: Feb/Mar/Apr 2015

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SPRING 2015 MULTIMODAL VOLUMES



Source: Parisi Transportation Consulting, 2015
Date: August 2015

City of Sausalito South Gateway Complete Street Study



SUMMER 2015 MULTIMODAL VOLUMES

Pedestrians

The South Gateway corridor serves a variety of pedestrian trips, including local residents walking within a neighborhood or to/from Downtown, commuters walking to/from bus stops at Main Street and East Street, and tourists walking from across the Golden Gate Bridge. Weekend pedestrian traffic is noticeably higher than weekdays due to tourist and recreational foot traffic.

There were between 200 and 250 pedestrians counted on a weekday in spring 2015. These volumes increased to between 250 and 300 pedestrians on a weekday in summer 2015. For both counts, the majority of pedestrians (85-90 percent) were observed walking in the northbound/downhill direction from the Golden Gate Bridge into Downtown Sausalito. Pedestrian traffic was nearly double during the Saturday counts in spring and summer 2015, with between 500 and 600 pedestrians counted. As with the weekday counts, most pedestrians (80-85 percent) walked in the northbound/downhill direction into Downtown Sausalito.



Northbound Alexander Avenue approaching South Street

Public Transit Riders

There are two sets of public transit stops serviced by Golden Gate Transit in the South Gateway corridor. One set lies within Sausalito City Limits, at the southwest and northeast corners of Second Street and Main Street. The other set of stops is located south of the city limits at the intersection of Alexander Avenue and East Road.

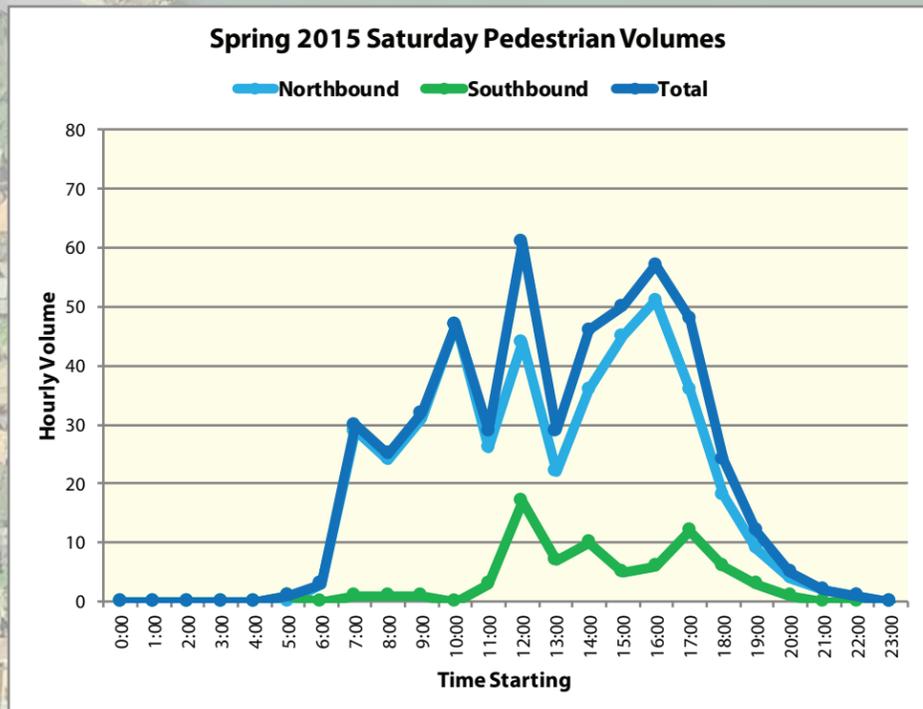
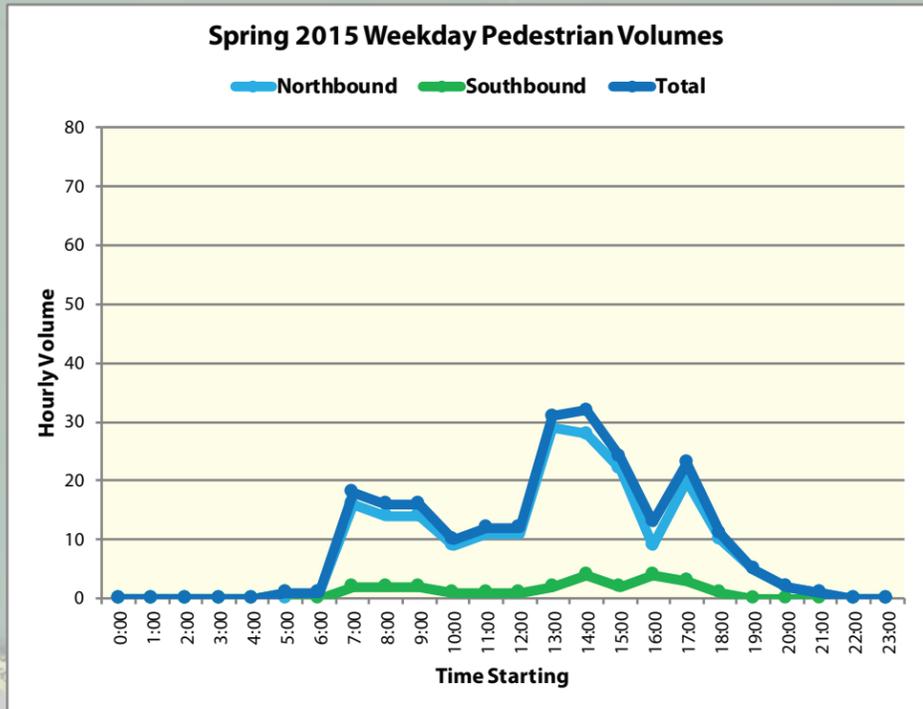
Transit riders typically access the public transit stops along the South Gateway corridor on foot. There are bike racks with capacity for around four bicycles available to transit riders at the Second Street/Main Street stop. Golden Gate Transit buses typically have the capacity to carry up to two bicycles.

Golden Gate Transit provided ridership data for each of the two stops for the 2013-2014 fiscal year. The stop at Second and Main streets services, on a daily basis, approximately 50 riders in the northbound direction (15 percent boarding / 85 percent alighting) and 90 riders in the southbound direction (85 percent boarding / 15 alighting).

Ridership at the Alexander Avenue and East Road stop, south of city limits) is much lower. Records show that the stop there services seven riders in the northbound direction and seven riders in the southbound direction on an average daily basis.



Golden Gate Transit Stop on southbound Second Street



Spring 2015 Pedestrian Activity Summary

Weekday:

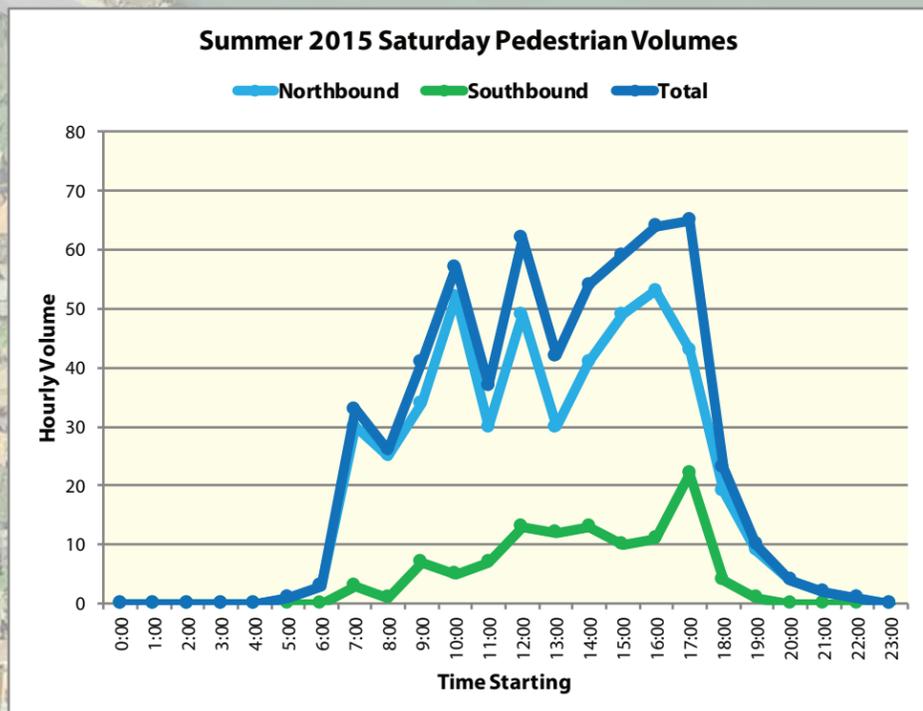
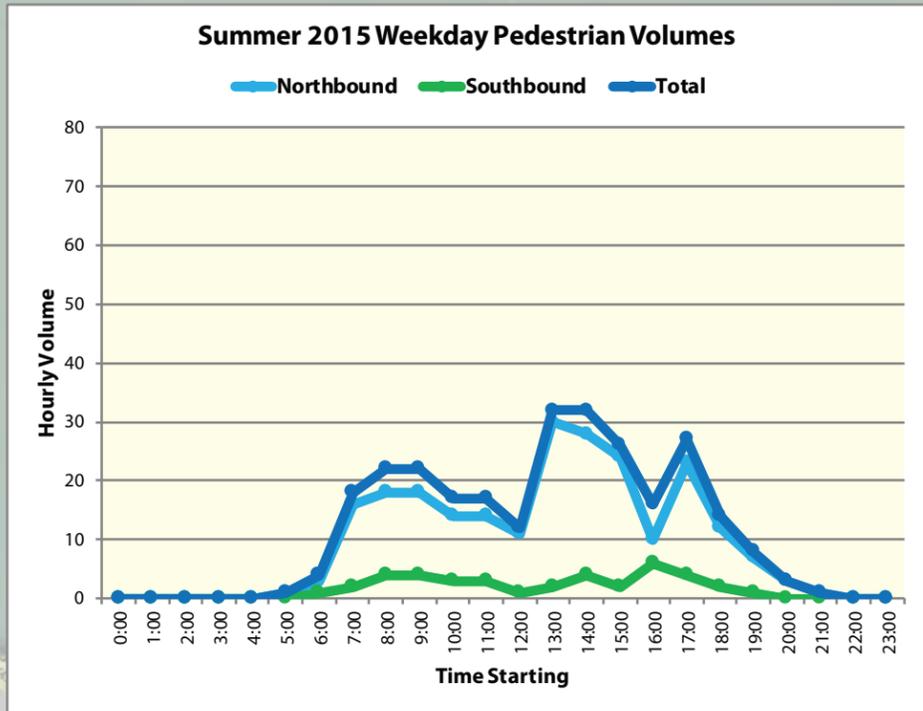
- 200-250 daily pedestrians
- 90% northbound
- 10% southbound

Saturday:

- 500 daily pedestrians
- 85% northbound
- 15% southbound

Source: Parisi Transportation Consulting, 2015
Date: April 11, 2015







Summer 2015 Pedestrian Activity Summary

Weekday:

- 250-300 daily pedestrians
- 85% northbound
- 15% southbound

Saturday:

- 550-600 daily pedestrians
- 80% northbound
- 20% southbound

Source: Parisi Transportation Consulting, 2015
Count Date: August, 2015





Bicyclists



On weekdays, the South Gateway corridor is a significant commuter route between San Francisco and Sausalito. It is also a popular recreational and tourist route throughout the week, but especially on weekend days.

People who bicycle through the South Gateway corridor represent a diverse ridership base. They range from regular commuters between Marin and San Francisco, occasional and regular recreational riders, local residents, and tourists making the ride across the Golden Gate Bridge. Because of their varying abilities and comfort levels, bicyclist behavior on the South Gateway corridor also varies, as described in the adjacent rider description.

There were between 2,300 and 2,400 bicyclists counted on a weekday in spring 2015, and nearly 3,000 bicyclists counted on a weekday in summer 2015. Between spring and summer, the majority of bicyclist traffic was in the northbound / downhill direction (70–75 percent). Tourist bicycles represented between 40 and 50 percent of the observed bicycle traffic.



Bicycle traffic was substantially higher during the Saturdays observed in spring and summer 2015. Both seasonal counts showed the Saturday bicycle volume to be nearly double the weekday count. The spring 2015 Saturday count was between 4,500 and 4,600 bicyclists, and the summer 2015 Saturday count was approximately 5,500 bicyclists. There were more recreational bicyclists observed during the Saturday counts than during the week, resulting in a near 50-50 split between tourists and recreational bicyclists.

Bicycle traffic in the South Gateway corridor travels predominantly in the northbound / downhill direction. Many bicyclists ride the ferries from Sausalito back to San Francisco. Appendix A contains detailed count information on bicycle ridership on the ferries that service Sausalito. Appendix B contains detailed count information for bicycle ridership at the Mill Valley – Sausalito Path (at Gate 6 Road) to account for riders continuing north of the City.

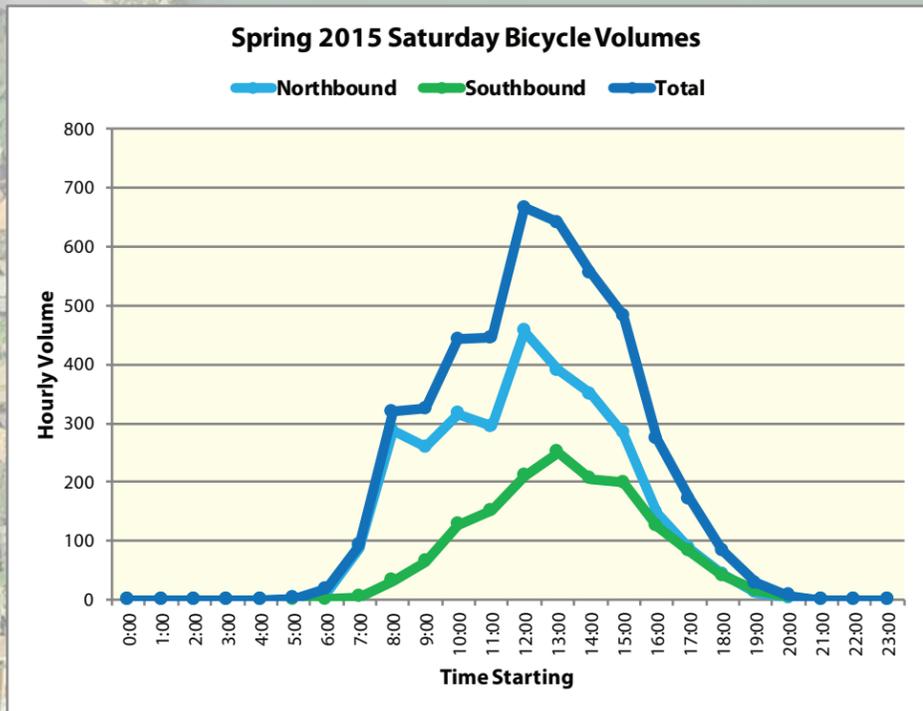
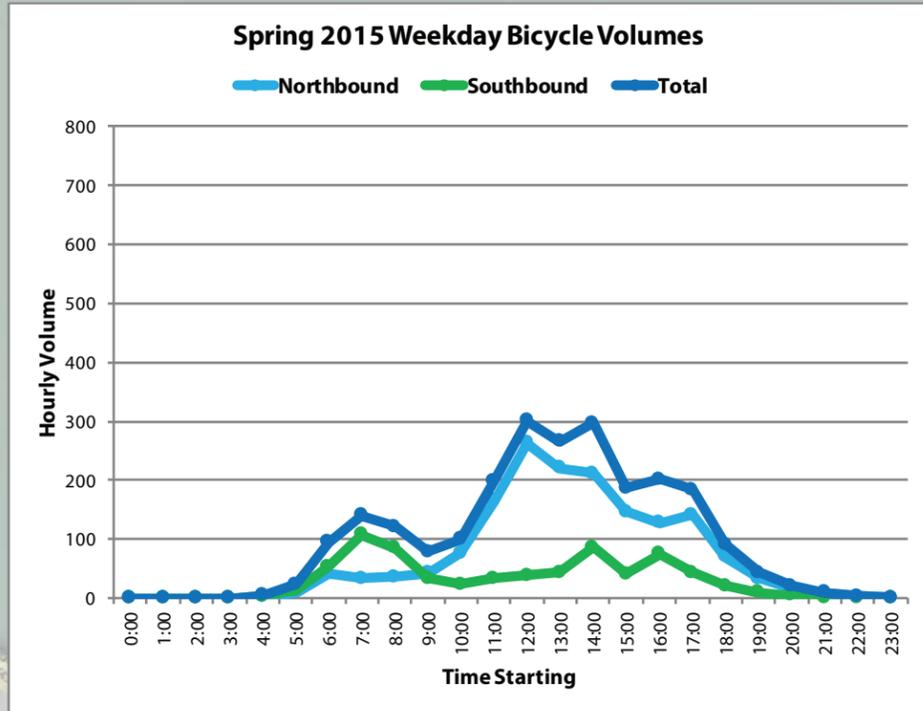


Tourists/ Casual Riders

- ▶ May include novice or Infrequent bicycle riders.
- ▶ May include young children, teens, and older adults.
- ▶ Are generally unfamiliar with features of the route, e.g., sharp turns and steep downhill grades.
- ▶ May not be accustomed to shared lane facilities (Class III bicycle routes). May not be comfortable with high speeds and making full use of the traffic lane.
- ▶ May walk their bicycles on steep uphill and downhill sections.

Commuters / Recreational Riders

- ▶ Are typically regular bicycle riders familiar with shared lane facilities and making full use of the traffic lane.
- ▶ Are familiar with the features of the route.
- ▶ Are comfortable traveling at high speeds in the downhill direction.
- ▶ May keep pace with or exceed the speed of vehicles in the downhill direction.



Spring 2015 Bicycle Activity Summary

Weekday:

- 2,400 daily vehicles
- 70% northbound
- 30% southbound

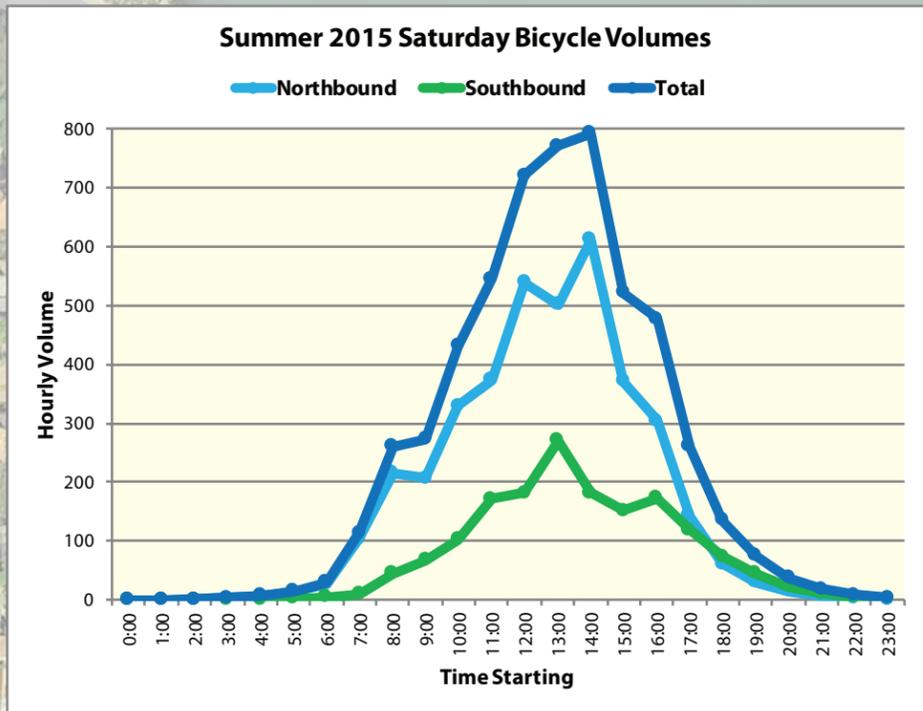
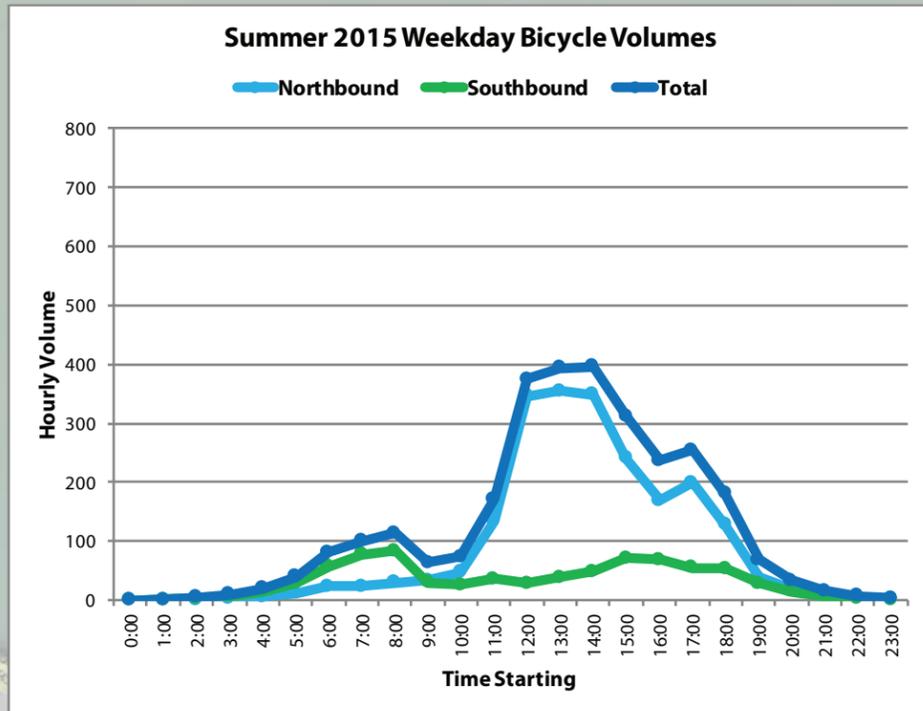
Saturday:

- 4,600 daily vehicles
- 67% northbound
- 33% southbound

Tourist bicycles represent 40–50% of the daily bicycle traffic observed.

Source: Parisi Transportation Consulting, 2015
Date: March / April 2015






Summer 2015 Bicycle Activity Summary

Weekday:

- 3,000 daily vehicles
- 75% northbound
- 25% southbound

Saturday:

- 5,500 daily vehicles
- 70% northbound
- 30% southbound

Tourist bicycles represent 45–55% of the daily bicycle traffic observed.

Source: Parisi Transportation Consulting, 2015
Date: August 2015



MOTORISTS

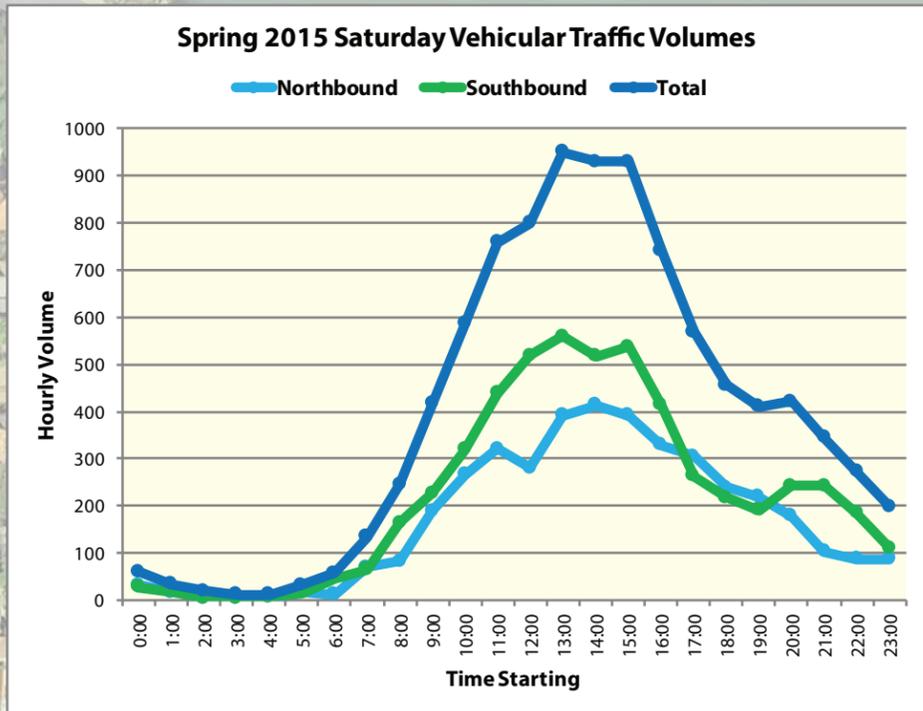
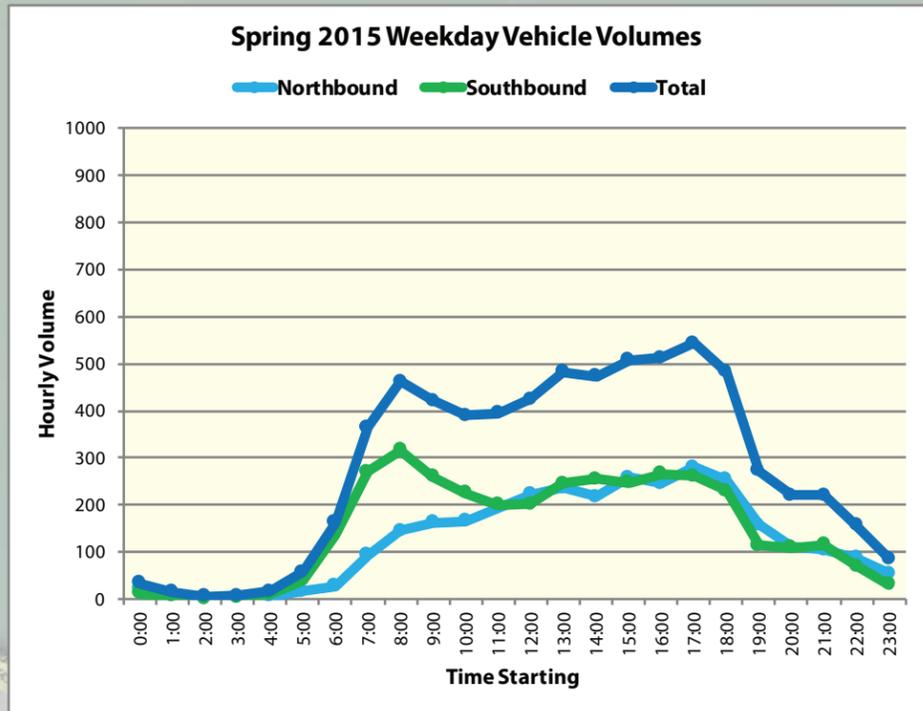
Spring 2015 weekday traffic counts showed approximately 6,700 daily vehicles, with a peak hourly volume of between 500 and 600 (5 to 6 p.m.). Summer 2015 weekday traffic was higher than the spring, with a recorded 7,200 daily vehicles and a peak hourly volume of nearly 700 vehicles (12–1 p.m.).

The spring 2015 Saturday traffic counts recorded nearly 9,400 daily vehicles, with a peak hourly volume of 950 vehicles (1–2 p.m.). Traffic activity declined in summer 2015 to approximately 8,500 daily vehicles. The peak summer hourly count was between 950 and 1000 vehicles, and occurred from 2 to 3 p.m.

Tour buses typically make 25 or more one-way trips per day through the South Gateway corridor. They are allowed on northbound (down-hill) South Gateway corridor streets, but are required by city ordinance to exit the city via northbound Bridgeway at Highway 101.



Vehicular traffic on South Street, facing east.




**Winter / Spring 2015
Vehicular Activity Summary**

Weekday:

- 6,700 daily vehicles
- 46% northbound
- 54% southbound

Saturday:

- 9,400 daily vehicles
- 43% northbound
- 57% southbound

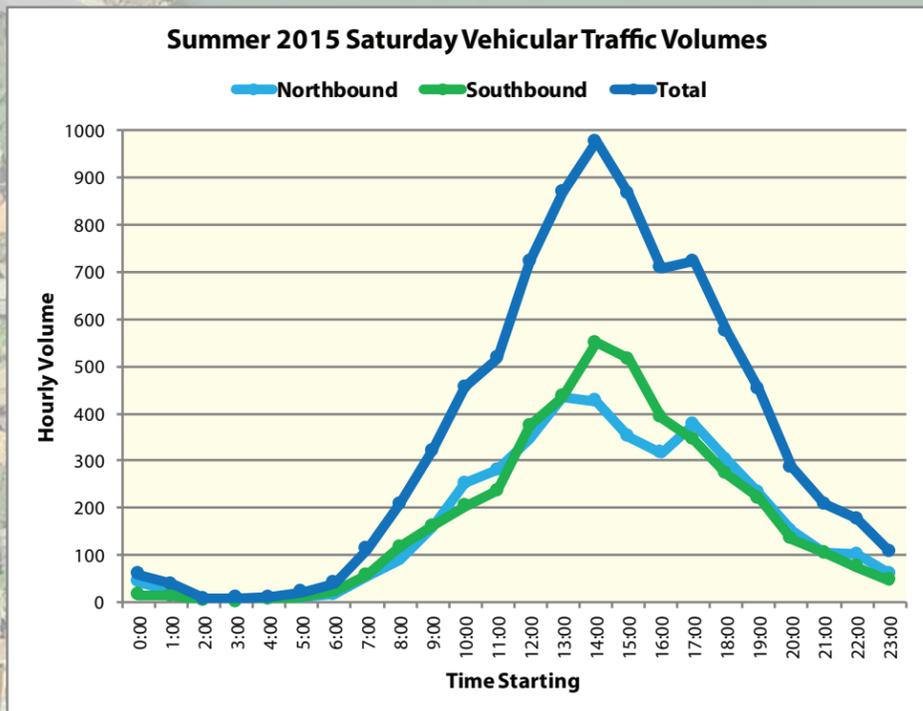
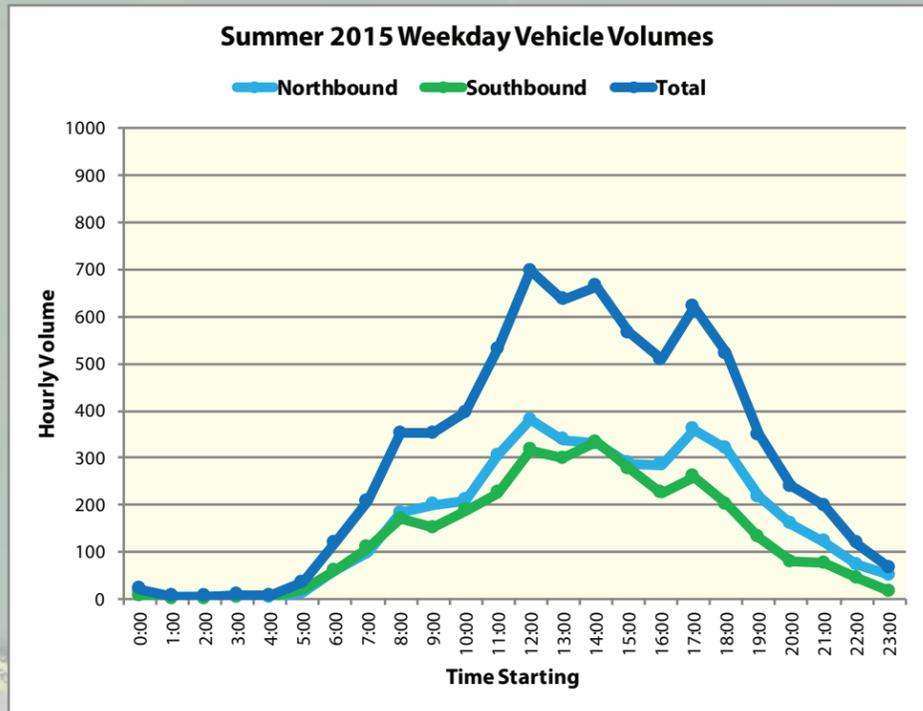
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DECEMBER 2015



WINTER/SPRING 2015 VEHICLE VOLUMES




Summer 2015 Vehicular Activity Summary

Weekday:

- 7,200 daily vehicles
- 56% northbound
- 44% southbound

Saturday:

- 8,500 daily vehicles
- 49% northbound
- 51% southbound

Source: Parisi Transportation Consulting, 2015
Date: August 2015



Existing Conditions Overview

The following section summarizes the physical conditions of the streets comprising the South Gateway corridor. The assessment notes the facilities available to pedestrians, bicyclists, and motorists on each street, and identifies potential barriers to access and/or deficient conditions. A review of reported crashes that have occurred along the South Gateway corridor over the past five years is presented. The section concludes with a summary assessment of “multimodal hotspots” where intermodal conflicts and crashes have been reported.

Pedestrian Facilities

Sidewalks

There are sidewalks present along Richardson Street, Second Street, and South Street. In general, the sidewalks on the north side of Richardson Street are wider than those on the south side (eight feet versus five to eight feet wide). Sidewalks on the west side of Second Street, where there are retail businesses, are wider than those on the east side, which is primarily residential use (five to eight feet versus five to six feet wide). The sidewalks narrow progressively on South Street, where they range between four and five feet on both sides. The sidewalk on the south side of South Street terminates at

a raised curb near where South Street transitions into Alexander Avenue. The sidewalk on the north side of South Street transitions onto Alexander Avenue via a laminate board path.

There are driveway curb cuts present on Richardson, Second, and South streets. Nearly all driveways were designed without a level path of travel through or behind the driveway ramp. As such, nearly all sidewalk driveways have cross-slopes in excess of the ADA standard of two percent cross-slope.

Alexander Avenue within the city limits lacks sidewalks. The shoulder on the east side of the street narrows considerably or is not present due to fronting homes and residential driveways. The shoulder on the west side of Alexander is similarly narrow due to the existing hillside. Alexander Avenue outside the city limits has six to eight-foot wide paved shoulders. Pedestrians share this shoulder with bicyclists when walking to/from the bus stop at East Road, Fort Baker and the Golden Gate Bridge.

Curb Ramps and Crosswalks

Second Street is the only segment of the South Gateway corridor where pedestrians have marked crosswalks and curb ramps to cross

the major traffic flows. There are marked crosswalks across Second Street at Main Street, and curb ramps from each of the four corners, although none appear to conform to current ADA standards for level landings and ramp slopes.

The City installed a marked crosswalk across Second Street at Valley Street in the summer of 2015; however, the northwest and southwest corners currently lack curb ramps.

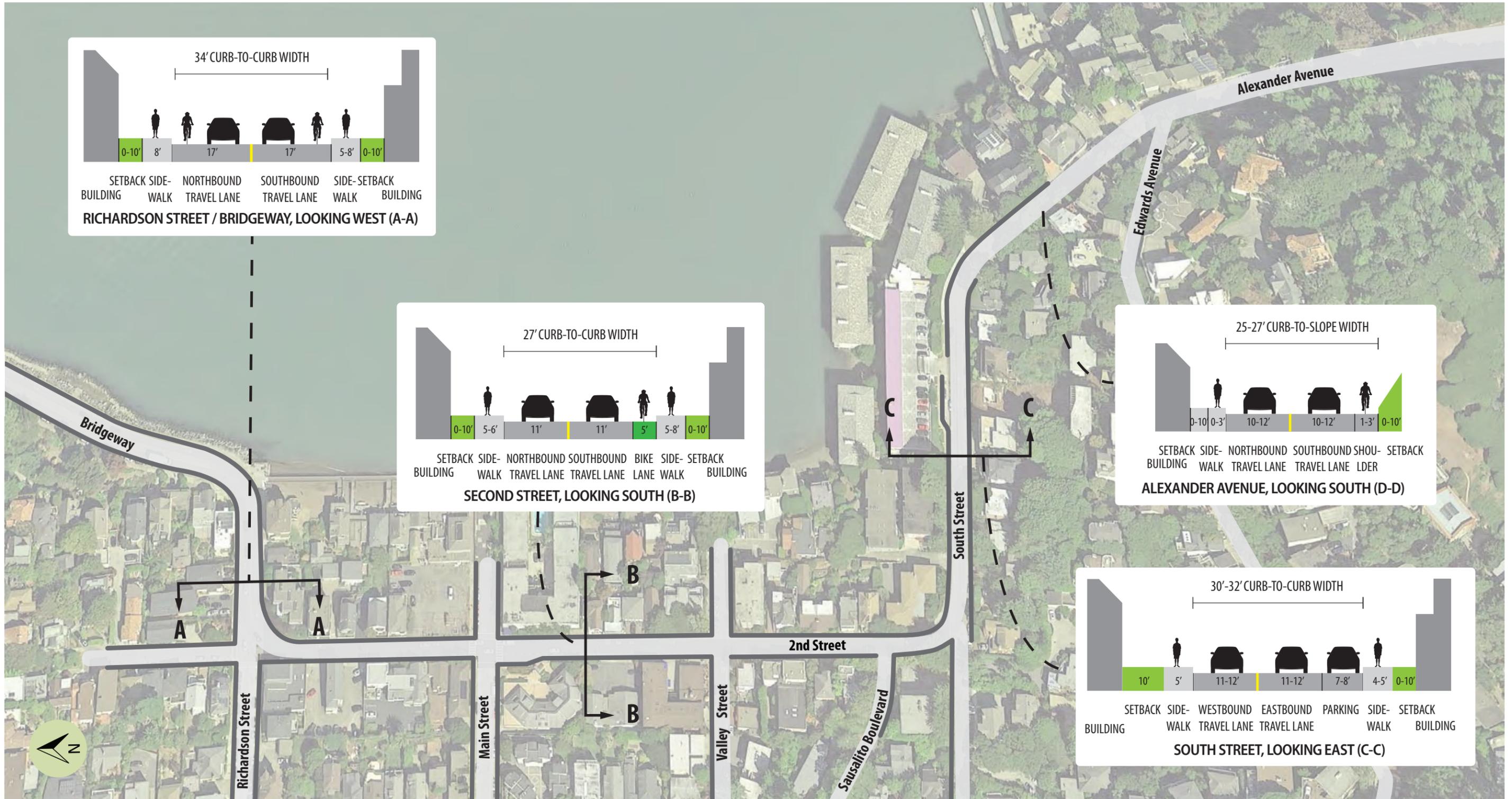
There are no other marked crossings or curb ramps along the South Gateway corridor streets to facilitate pedestrian movement across the major direction of traffic.

Accessible Path of Travel

Due to the absence of curb ramps and sidewalk obstructions in several locations, people that use wheelchairs or have mobility impairments are limited from traveling on the west side of Second Street between Valley Street and South Street, and from the entire south side of South Street.

The following figures present the typical cross-sections and existing pedestrian infrastructure located on South Gateway corridor streets.

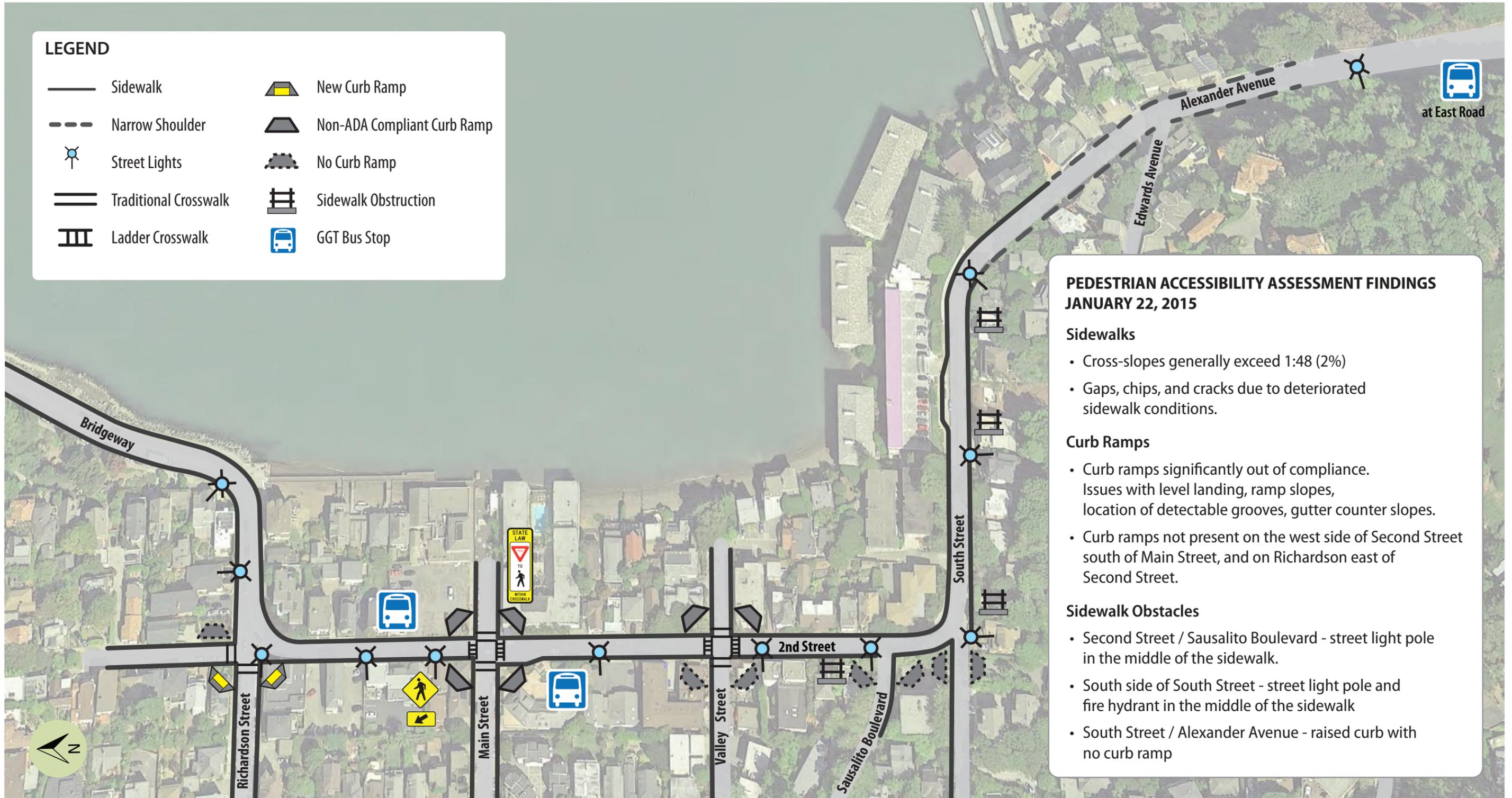




City of Sausalito South Gateway Complete Street Study

TYPICAL ROADWAY CROSS-SECTIONS





City of Sausalito South Gateway Complete Street Study



DECEMBER 2015



PEDESTRIAN CONDITIONS

Bicycle Facilities

Bicyclists riding uphill in the southbound direction originate from a shared lane facility (Class III bicycle route) on Bridgeway. The shared lane facility continues onto Richardson Street and the first half-block of Second Street, from which it transitions into an on-street bicycle lane (Class II). The route resumes as a shared lane facility where Second Street meets South Street. The four foot wide roadway shoulder that begins at Alexander Avenue is not a designated bicycle facility, but is frequently used by bicyclists.

Bicyclists riding downhill in the northbound direction originate from the shoulder on Alexander Avenue outside the city limits. Within city limits, the shoulder on Alexander Avenue is discontinued and bicyclists share the roadway with automobiles. The shared lane condition continues in the northbound direction for the remainder

of the South Gateway corridor through South Street, Second Street, Richardson Street, and Bridgeway.

Conflicts between motorists and bicyclists are less frequent in the southbound (uphill) direction due to several reasons. Uphill bicyclists have a dedicated bike lane and a painted shoulder in several sections of the corridor, which allows motorists to pass. Bicyclists are also easier to pass in the uphill direction because of their lower and more consistent travel speed, and tendency to ride in a single file. There are five to six times fewer bicyclists in the southbound direction.

Conversely, conflicts between motorists and bicyclists are more frequent in the northbound (downhill) direction. The predominant flow of bicycle traffic is in the downhill direction, as many tourist

bicyclists make a one-way pedaling trip, and later take a ferry back to San Francisco. However, there is no dedicated bicycle facility for the entirety of the downhill route. Although experienced bicyclists can keep pace or exceed the speed of vehicular traffic, there are also inexperienced recreational and tourist riders that are not comfortable traveling at vehicular travel speeds. In general, however, the combination of bicyclists' higher travel speeds and the lack of a dedicated bicycle facility makes passing more difficult, but often less necessary, for motorists.

The following figure illustrates the location of existing bicycle facilities, bicycle-related signage and markings, and a discussion on uphill vs. downhill bike lane operation. The detailed directional bike lane analysis is provided in Appendix C.



Bicyclists riding southbound in the Alexander Avenue striped shoulder.



Bicyclists riding northbound in the Second Street shared lane facility.



LEGEND

-  On-Street Bike Lane
-  Painted Shoulder Edge Line
-  Shared Lane Marking (Sharrow)

SECOND STREET BIKE LANE

Problem Statement

The existing South Gateway corridor bike lane and bike lane / shoulder currently runs in the southbound (uphill) direction. Given that most bicycle traffic is in the northbound direction, would the South Gateway Corridor operate better with a northbound bike lane?

SECOND STREET BIKE LANE - DIRECTIONAL ANALYSIS

Southbound (Uphill) Bike Lane Operation

- The existing uphill bike lane operates at LOS C based on bike volume, average speed, and speed differential.*
- A low speed differential among bicyclists reduces their need to pass each other.
- Vehicular traffic is able to easily pass bicycles, most of which are traveling below the speed of free-flow traffic.

Northbound (Downhill) Bike Lane Operation

- A downhill bike lane would operate at LOS E/F due to the large bicycle volumes and large speed differential between bicyclists.*
- Both the downhill bike lane and downhill traffic lane would be used by bicyclists. Downhill bicyclists would pass each other by using the vehicular lane.
- Uphill vehicle traffic would be unable to pass uphill bicyclists without crossing the roadway centerline.

Recommendation

- Maintain the southbound (uphill) bike lane.

*FHWA (1998) Capacity Analysis of Pedestrian and Bicycle Facilities



Facilities

The South Gateway corridor’s roadways have a single vehicular travel lane in each direction. The lanes are 10 to 12 feet wide in most sections, with intermittent shoulders. The entirety of the northbound lane is shared with bicyclists, while segments of the southbound lanes have dedicated bike lanes or striped shoulders that serve as bike lanes.

South Gateway corridor streets are not subject to any stop or signal control at their major approaches, i.e., the predominant direction of traffic. The minor street approaches along the corridor are controlled with stop signs.

Speed limits in the South Gateway corridor are 20 to 25 mph. A vehicle speed survey study was completed for the City of Sausalito in 2014 and included three surveys along the South Gateway corridor: Second Street between Richardson Street and South Street, South Street between Alexander Avenue and Second Street, and Alexander Avenue between East Street and South Street. The Engineering and Traffic Survey study recommended a 20 mph speed limit for reasons of bicyclist and pedestrian safety on Alexander Avenue and South Street, and a 25 mph speed limit on Second Street, per the 85th percentile speed.

Parking

On-street parking is not allowed on Alexander Avenue, the north side of South Street, most of Second Street and the south side of Richardson Street. On-street parking is allowed directly in front of the Golden Gate Market at Richardson Street / Bridgeway (approximately 60 feet, or capacity for three cars), and on the south side of South Street between Second Street and Alexander Avenue (12 space capacity). South Street west of Second Street (outside the South Gateway corridor) has 14 parking spaces. There is a loading zone cut-out on the north side of South Street fronting 100 South Street.

The following figures show the existing vehicular signage and on-street parking supply along the South Gateway corridor.



Second Street facing south. Bike lane in the southbound direction.



South Street facing east. On-street parking allowed on eastbound South Street.



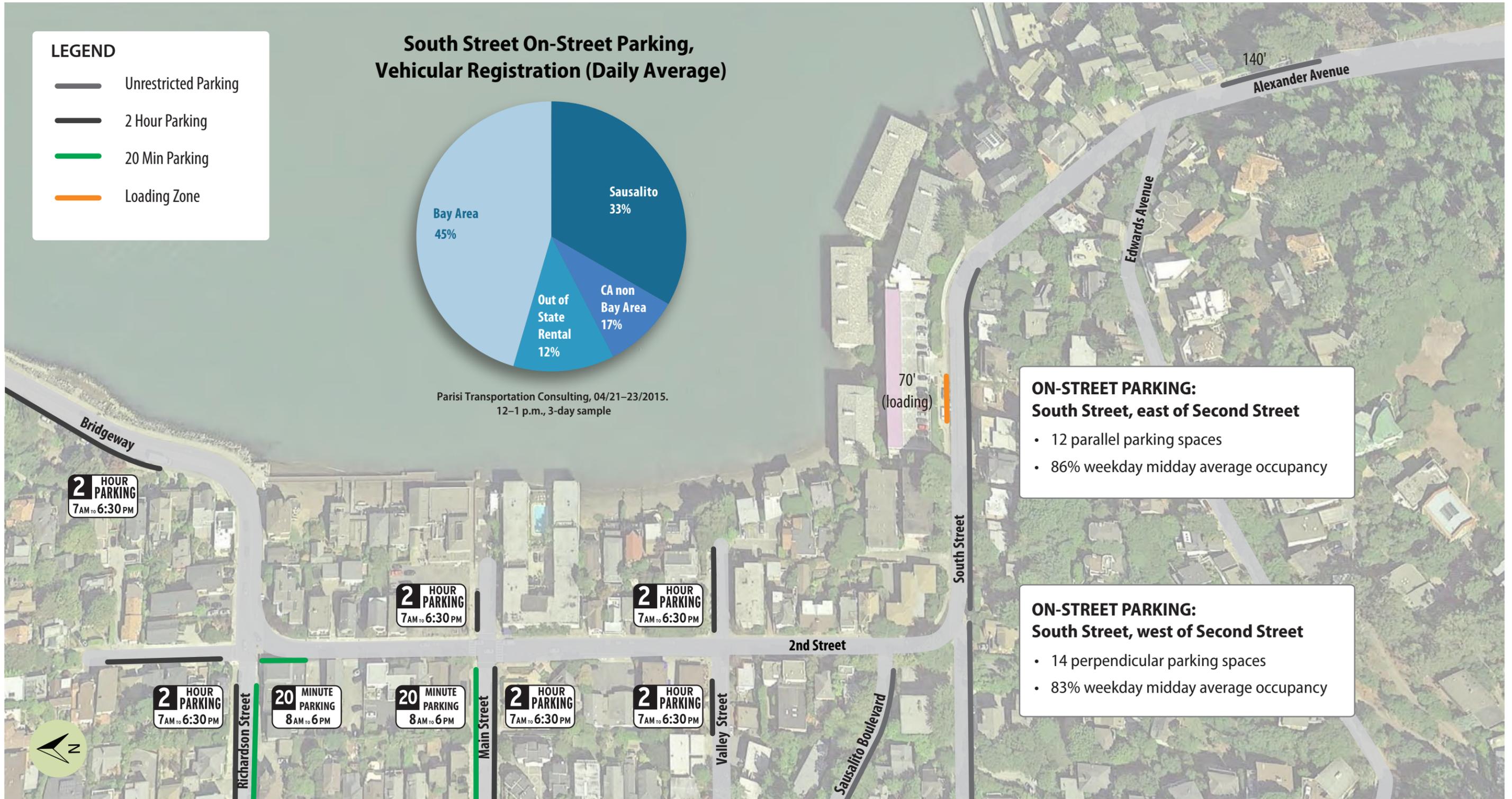
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SIGNAGE AND MARKINGS



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ON-STREET PARKING

Collisions and Multimodal Hotspots

Collision records from 2009 through September 2015 were compiled for the South Gateway corridor streets from records collected by the Sausalito Police Department (2009-2014) and the California Highway Patrol Statewide Integrated Traffic Records System (SWITRS, 2009-2015). Among 56 reported crashes, 24 involved a bicycle. One-half of the bicycle crashes were solo crashes, while the other half involved a motor vehicle. Vehicle-involved crashes most commonly involved another parked vehicle, followed by bicycles, other vehicles, and solo crashes. There were no reported pedestrian-involved crashes during the study period.

Several high crash areas emerged upon mapping the collision records. Second Street is particularly crash-prone with 43 crashes. South Street recorded seven crashes over six years, and Alexander Avenue within the city limits recorded another six crashes.

Several “multimodal hotspots” were identified based on the crash concentration, crash characteristics, and the observed conditions at these locations. Although the observed conditions may not necessarily be a recorded cause of a crash at the hotspot, e.g., uncontrolled pedestrian crossings, they may contribute to the complexity of the intersection operations. These multimodal hotspots and the contributing factors were a specific focus when developing improvement concepts, which are presented in the next section.

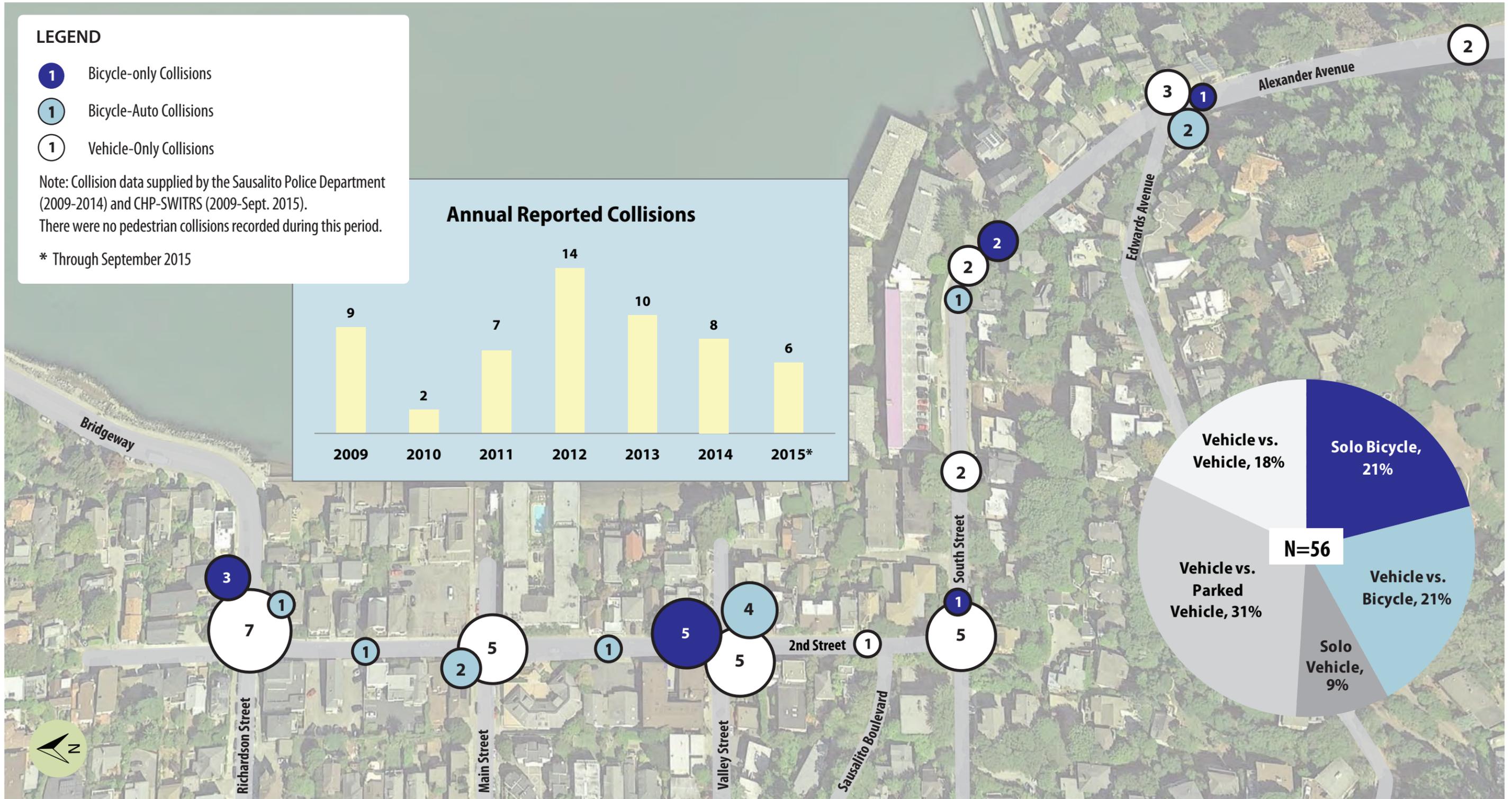
The Alexander Avenue segment is a particularly constrained area. Appendix D includes a detailed assessment for the section of Alexander Avenue between South Street and the City Limits to identify the existing physical constraints.



Vehicle crossing the centerline to pass bicyclists on northbound South Street.



Pedestrians walking on northbound Alexander Avenue.

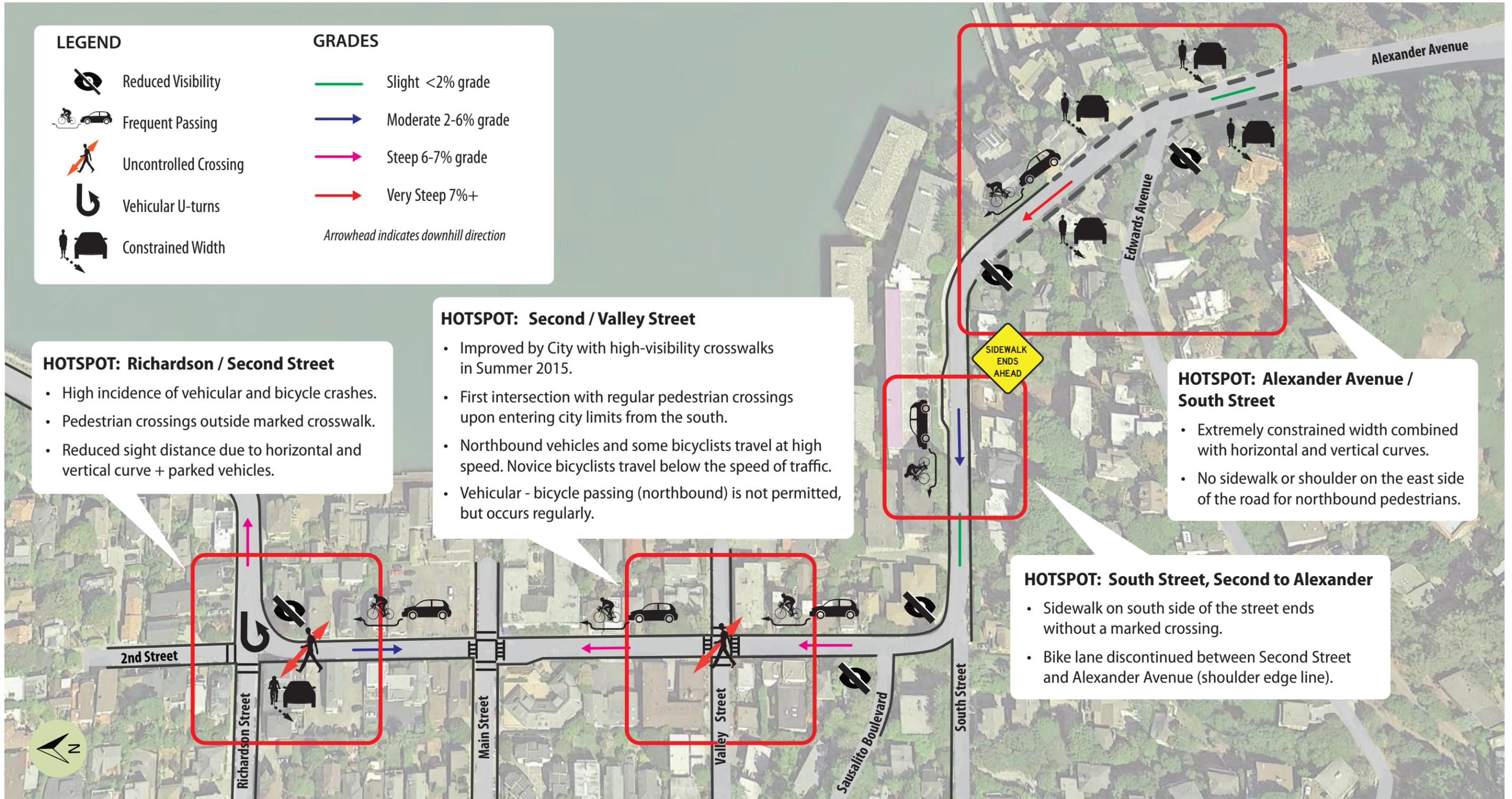


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COLLISION HISTORY (2009-2015)



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MULTIMODAL HOTSPOTS

Improvement Concepts

This section presents drawings that illustrate the recommended improvement concepts for the South Gateway corridor streets. These plans were developed based on the following methodology:

Existing Conditions Assessment

As presented in the previous section, this study began with a detailed data collection effort to assess the existing use among pedestrians, bicyclists and motorists. Twenty-four hour and peak hour counts were collected on both weekdays and Saturdays in spring and summer 2015. The physical conditions of the South Gateway corridor were assessed through multiple field visits, including an accessibility assessment with a Certified Access Specialist, a topographic survey at Second and Richardson streets, and a boundary survey at Alexander and South streets. Lastly, traffic collisions occurring in the South Gateway corridor over the past six years were analyzed to find common locations and crash factors. These data were combined to identify multimodal hotspots needing safety and access improvements.

Design Development

Initial improvement concepts were developed in consultation with City staff to address issues related to access and safety. Access-related measures address issues like sidewalks needing repair or reconstruction, obstructions in the pedestrian path of travel, and new curb ramps. Safety-related improvements address crash factors identified in the multimodal hotspot analysis; these improvements would alter the existing roadway cross-section and/or introduce new control measures and crossings that do not currently exist. These concepts include treatments like new crosswalks and flashing beacons, new bike lanes, sidewalk gap closures, and roadway widening.

Design Review and Refinement

Design concepts were reviewed with the Sausalito Public Works Department over the course of several months. Refined improvement concepts were presented to the Sausalito Pedestrian and Bicycle Advisory Committee (BPAC) in spring and then again in summer 2015. Recommendations received from staff and the BPAC were used to develop the Staff-Recommended Concepts. Each concept is discussed in detail in this chapter.

No Action Outcome

Expected outcomes from a course of no action for the South Gateway corridor could include:

- ▶ Increased illegal behavior by motorists, pedestrians, and bicyclists, such as
 - Vehicular passing of bicyclists on northbound Second Street,
 - Increased numbers of bicyclists illegally riding on the sidewalk,
 - Increased numbers of pedestrians crossing outside marked crosswalks
- ▶ Increased frequency and severity of traffic collisions,
- ▶ Potential lawsuit for failure to meet Americans with Disabilities Act (ADA) standards for accessible design in the public right-of-way,
- ▶ Incongruity with planned improvements for Alexander Avenue by the National Park Service and Golden Gate National Recreation Area.



Additional Design Consideration: Special Setback

The Sausalito Municipal Code calls for establishing special setbacks along designated streets to provide space for light, air, safety, circulation, and visual amenity. Section 10.40.070 E of the Sausalito Municipal Code calls for a 10-foot special building setback line for the roadway segments that make up the South Gateway corridor, namely:

- ▶ Alexander Avenue,
- ▶ South Street from Alexander Avenue to Second Street,
- ▶ Second Street from South Street to Richardson Street, and
- ▶ Richardson Street from Second Street to Bridgeway.

Where there would be substantial improvements to properties fronting these roadway segments, the SMC would require setting back buildings by 10 feet, measured at right angles from the property line.

The Staff-Recommended Concepts for the South Gateway, as proposed, would not require any property alterations based on the special building setback requirement.