



City of Sausalito South Gateway Complete Street Project



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METROPOLITAN
TRANSPORTATION
COMMISSION



Acknowledgements

Sausalito City Council

Jill James Hoffman, Mayor
Ray Withy, Vice Mayor
Linda Pfeifer
Thomas Theodores
Herb Weiner

Sausalito Pedestrian and Bicycle Advisory Committee (PBAC)

Ed Fotsch
Robert Page
Patricia Pigman
Tom Reilly
David Suto

City Staff

Jonathon Goldman, PE, Director of Public Works
and ADA Coordinator
Andrew Davidson, PE, Senior Engineer
Alex Chan, EIT, Assistant Engineer

Transportation Consultants, Parisi Transportation Consulting

David Parisi, PE, TE
Andrew Lee, TE
Ashley Tam, EIT
Curt Harrington, EIT
David Hoffman
Jeremy Thornton

Civil & Survey Consultants

Al Cornwell, PE, CSW / Stuber-Stroeh

ADA Consultant

Craig Williams, Certified Access Specialist

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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:**

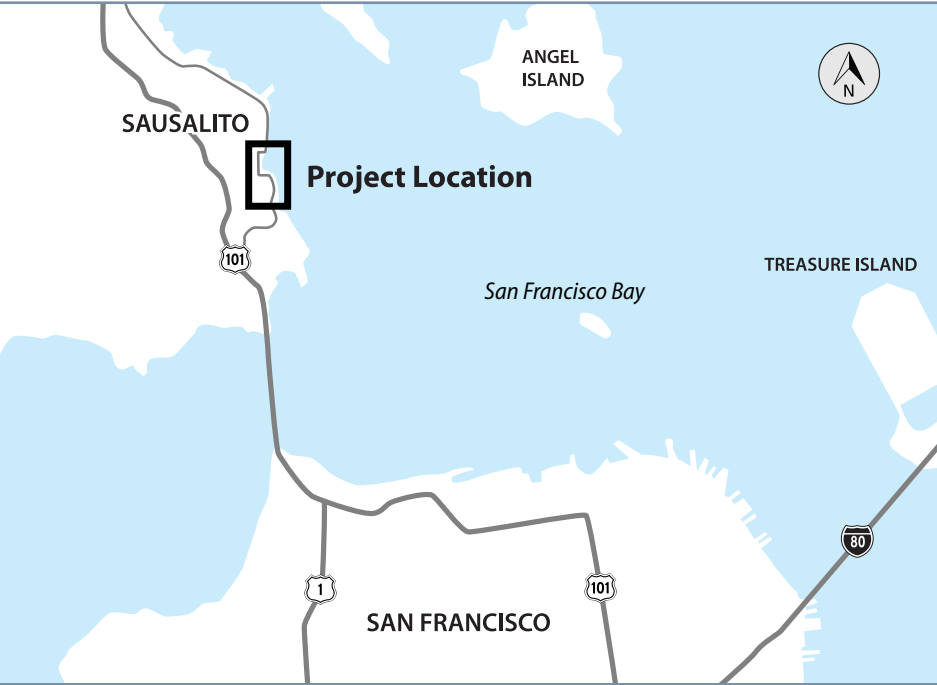
- Widen South Street by about six feet to the north and reconstruct the sidewalk, curb and gutter; extend the southbound bike lane to connect Second Street and Alexander Avenue,
- Construct a midblock crosswalk with a pedestrian-activated flashing beacon, and
- Reconstruct sidewalks to eliminate or reduce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

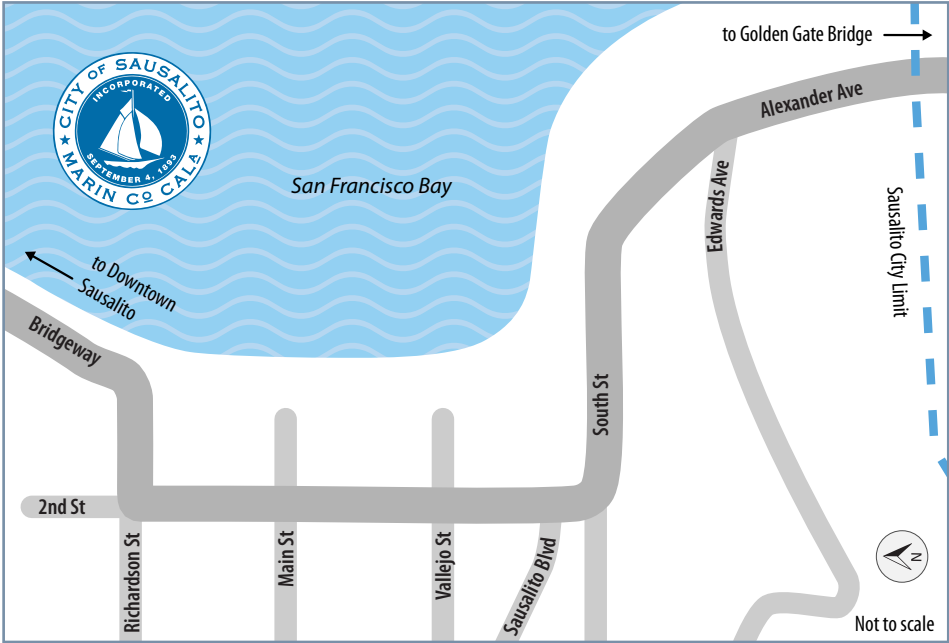
The corridor serves as a major transportation and recreation route for commuters, residents, recreational users and tourists. It is a planned segment of the San Francisco Bay Trail, a planned 500-mile shoreline walking and bicycling path encircling the San Francisco Bay. The corridor is identified for 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.

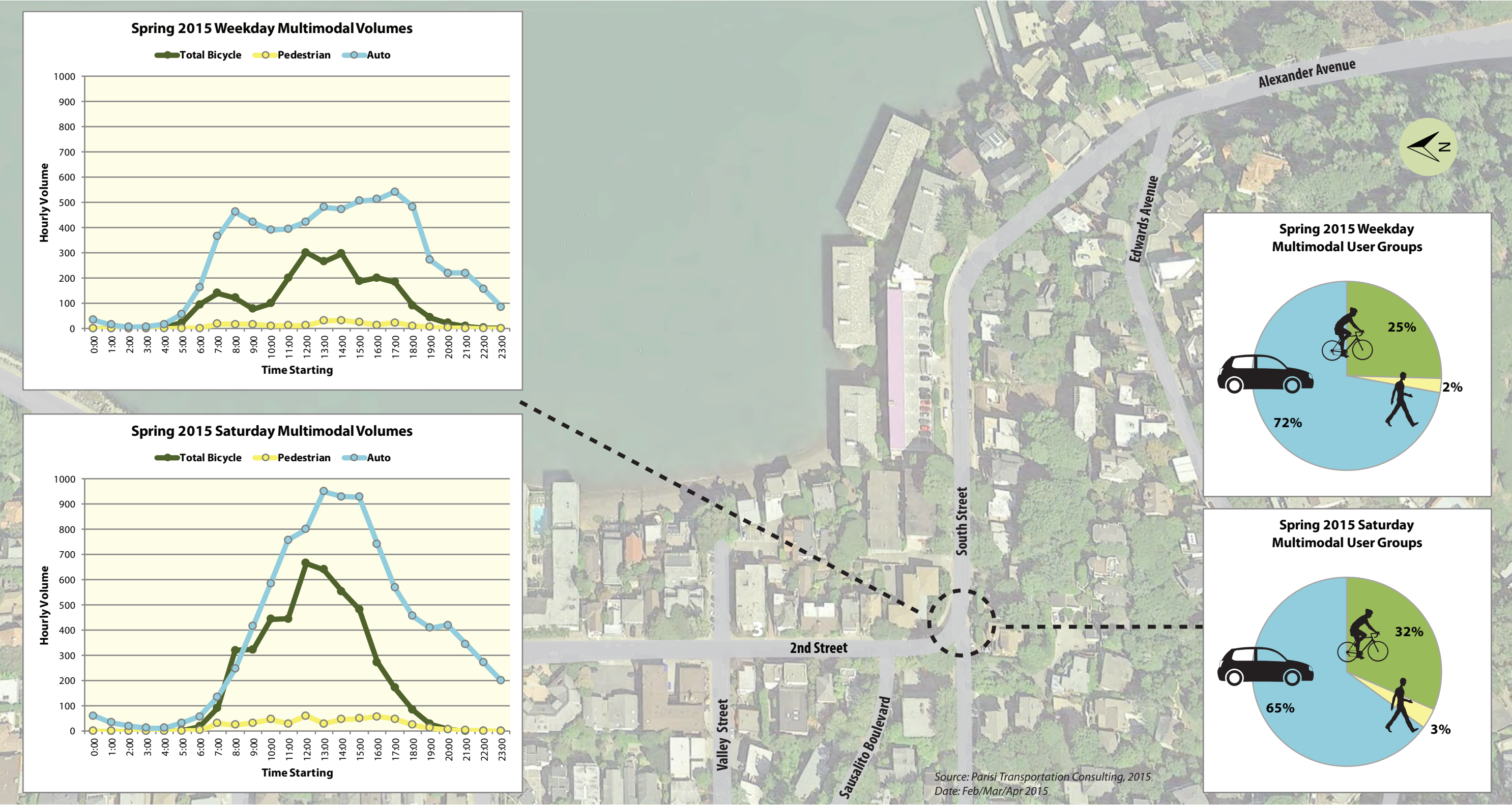
The summer weekday and the spring and summer Saturday multimodal demand tended to peak during the early afternoon (1-4 p.m.). Bicycle and vehicular demand appeared to occur concurrently.

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.

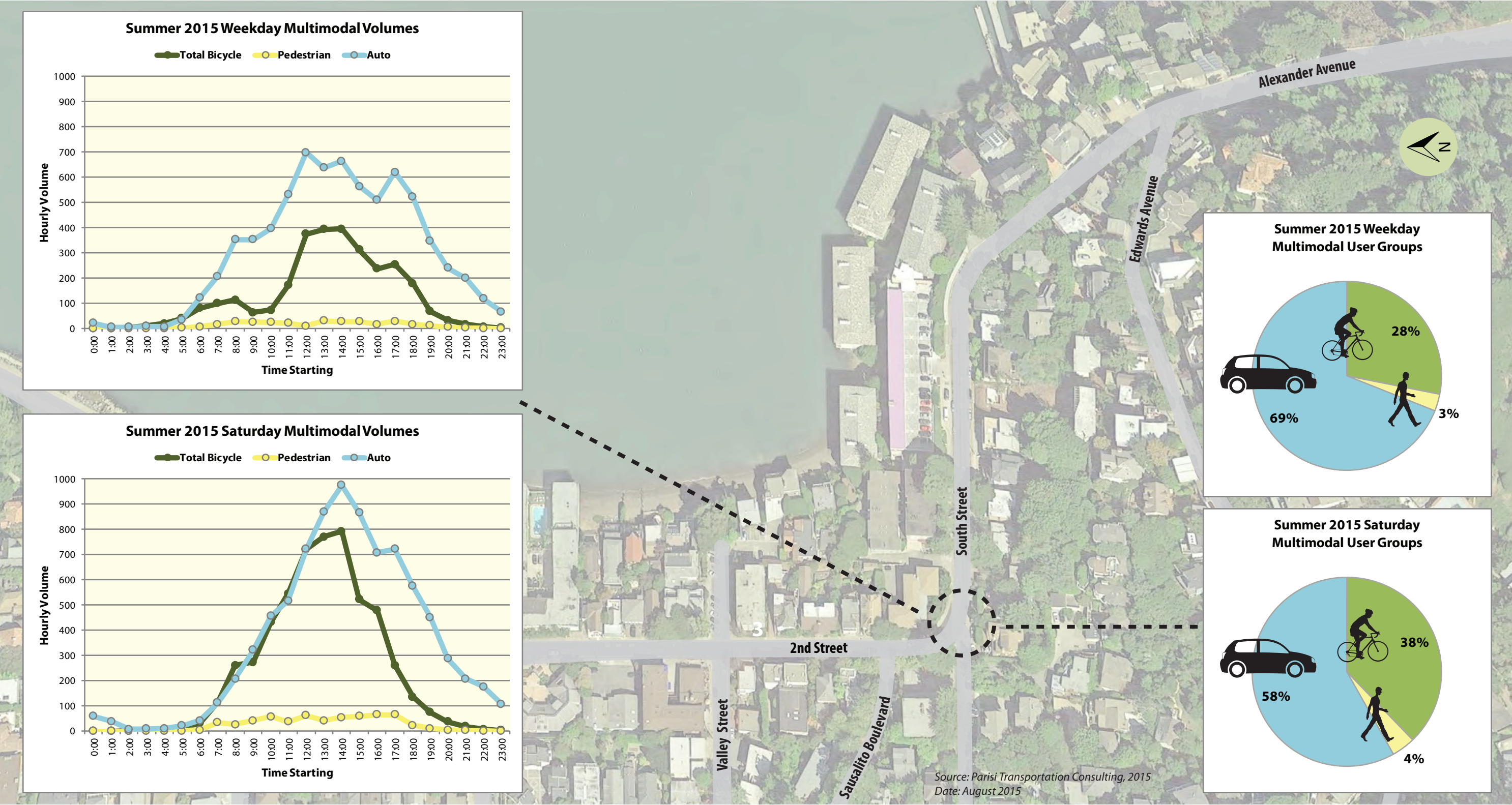


DECEMBER 2015



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SPRING 2015 MULTIMODAL VOLUMES



DECEMBER 2015



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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.

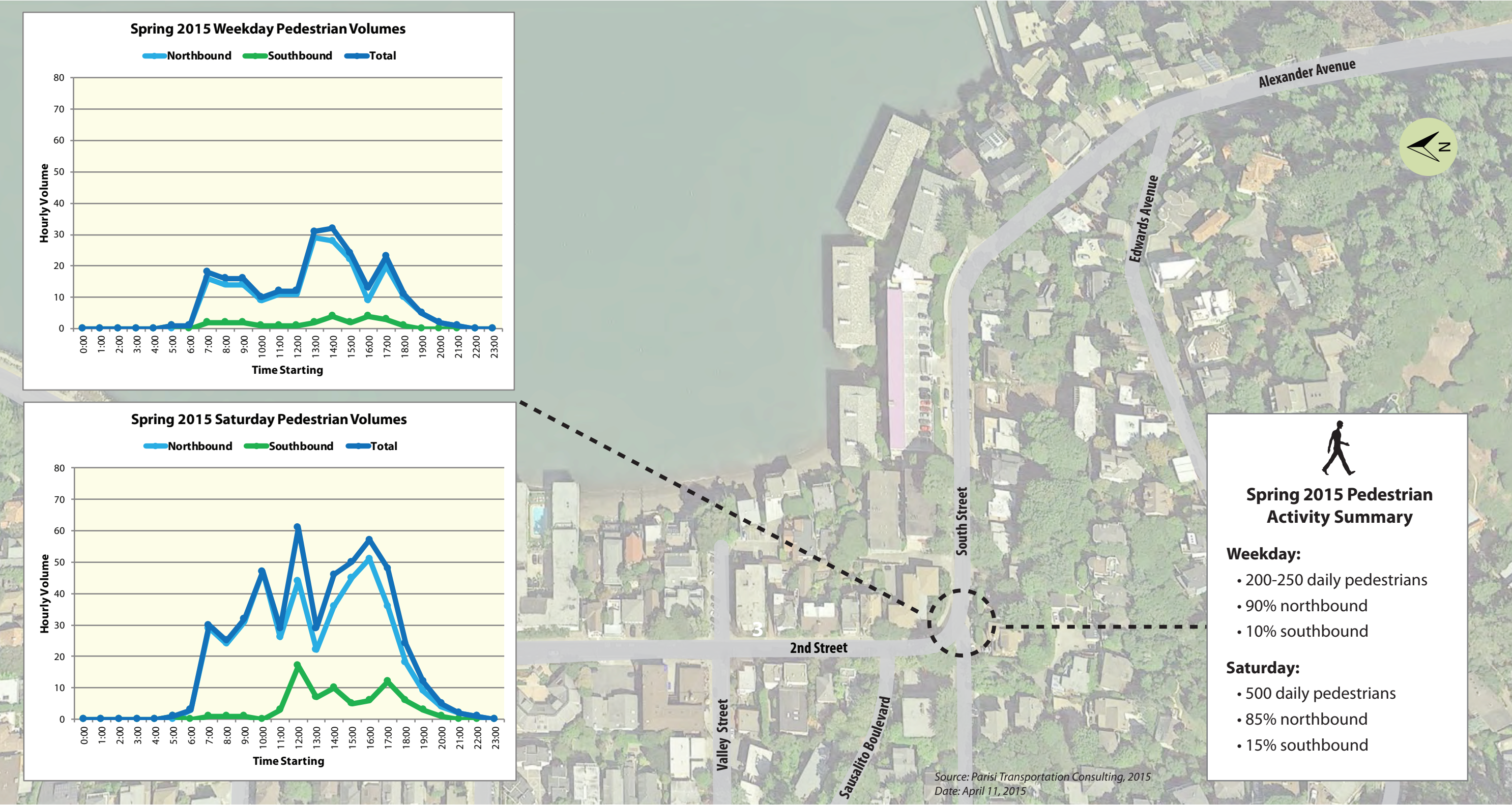
Transit riders typically access the public transit stops along the South Gateway corridor on foot. There are bike racks with capacity for around four bicycles available to transit riders at the Second Street / Main Street stop. Golden Gate Transit buses typically have the capacity to carry up to two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

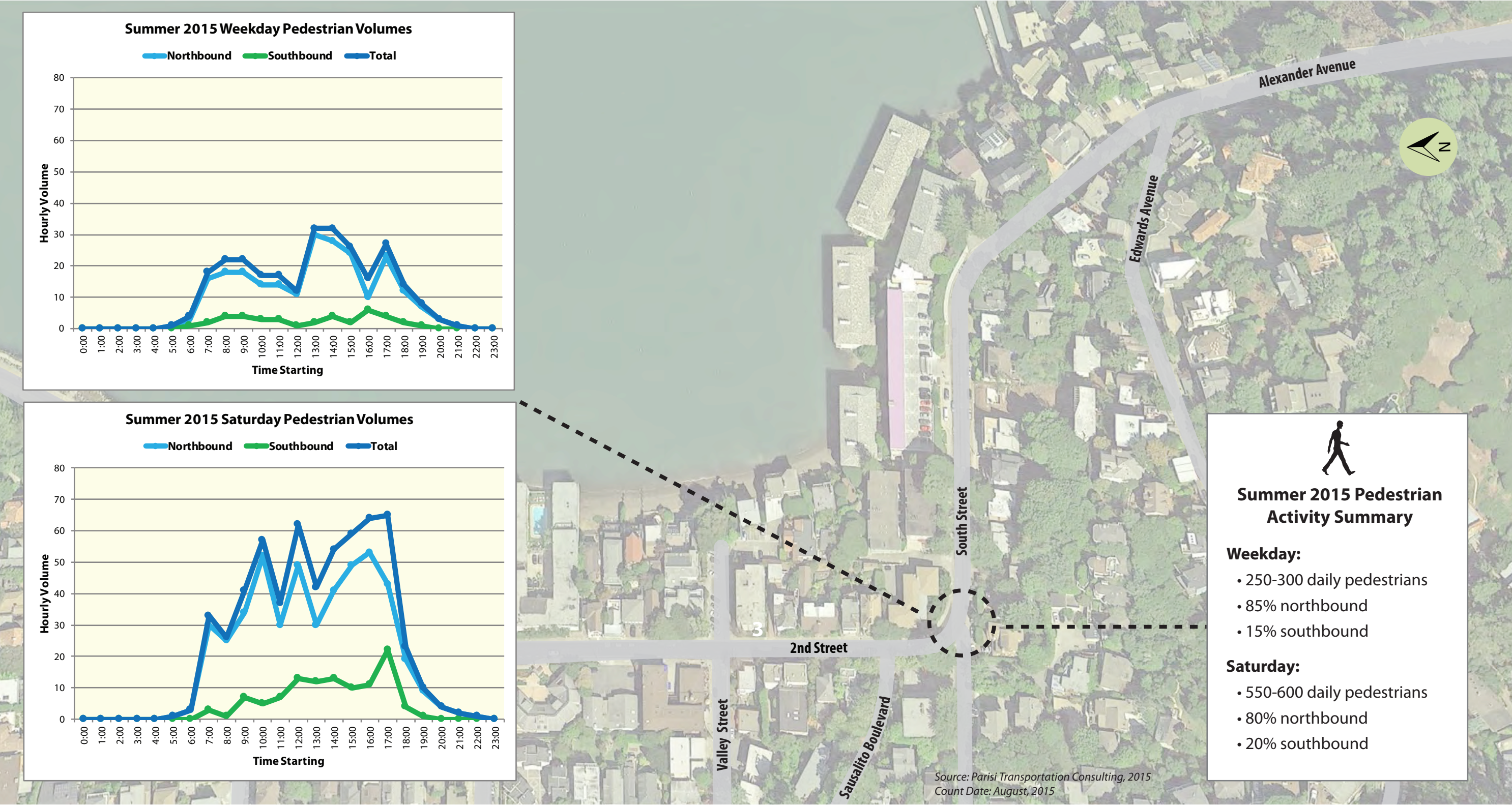


Golden Gate Transit Stop on southbound Second Street



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SPRING 2015 PEDESTRIAN VOLUMES



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SUMMER 2015 PEDESTRIAN VOLUMES



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.

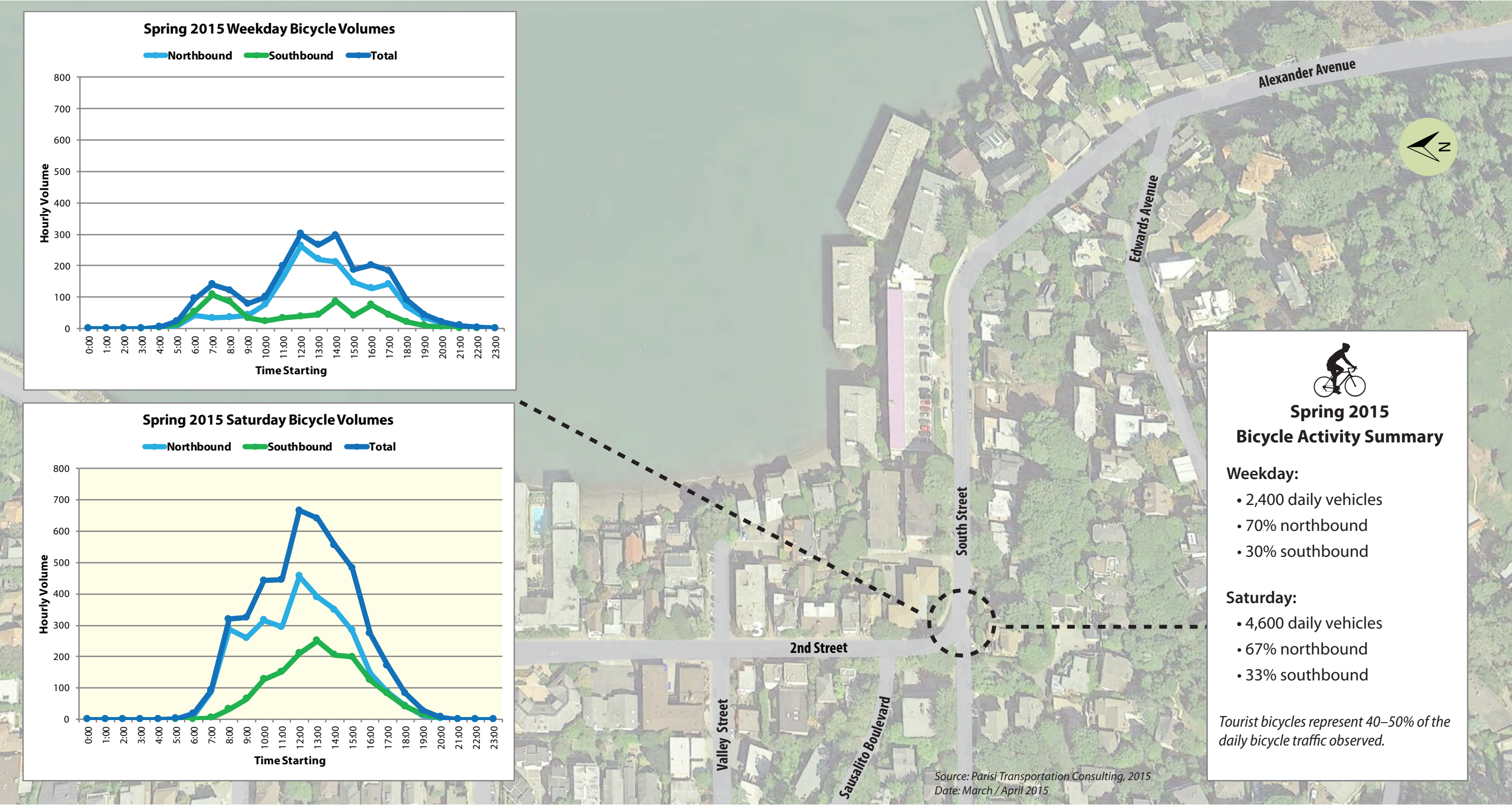


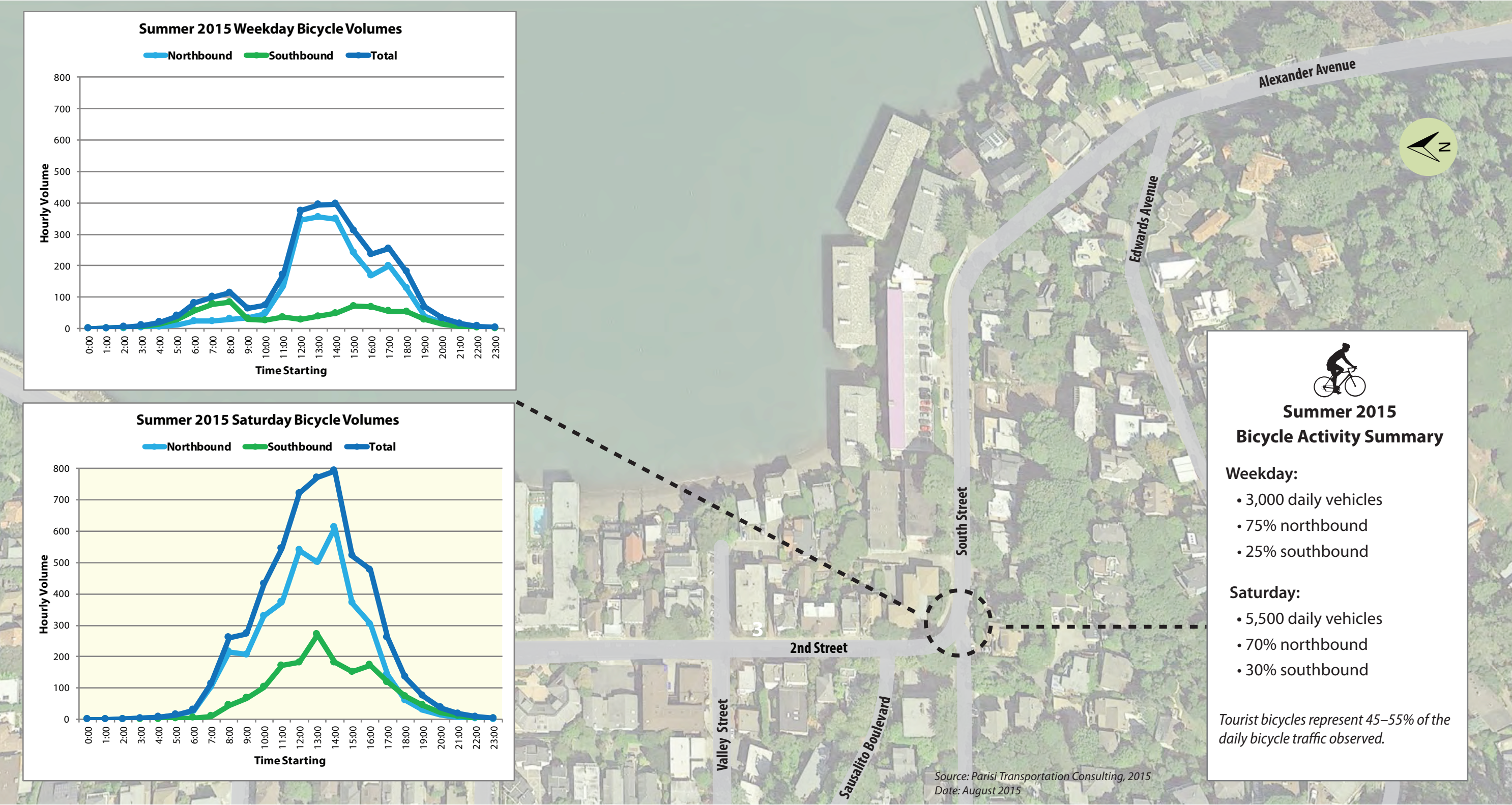
Tourists/ Casual Riders

- ▶ 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.





MOTORISTS

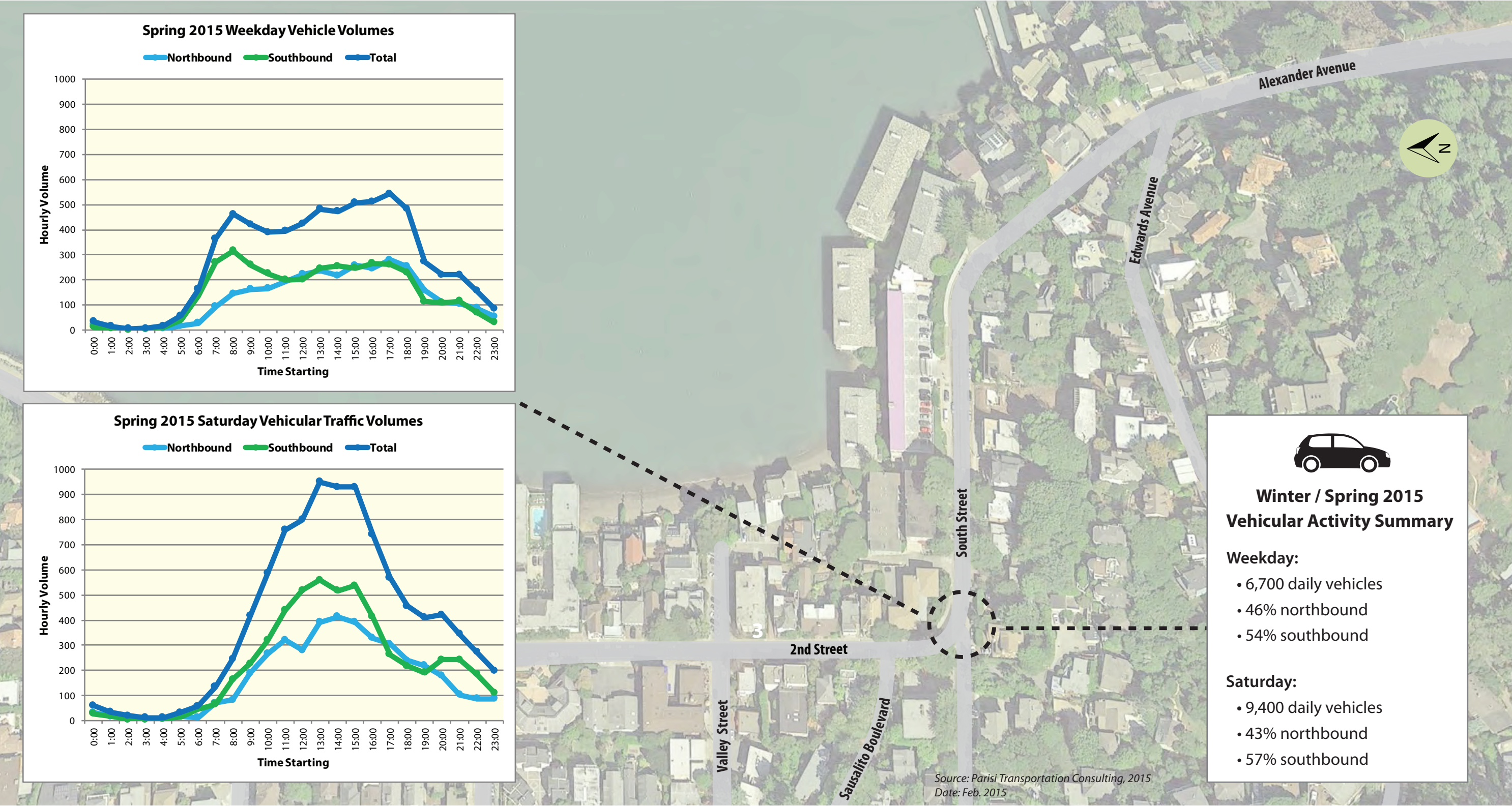
Spring 2015 weekday traffic counts showed approximately 6,700 daily vehicles, with a peak hourly volume of between 500 and 600 (5 to 6 p.m.). Summer 2015 weekday traffic was higher than the spring, with a recorded 7,200 daily vehicles and a peak hourly volume of nearly 700 vehicles (12–1 p.m.).

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.

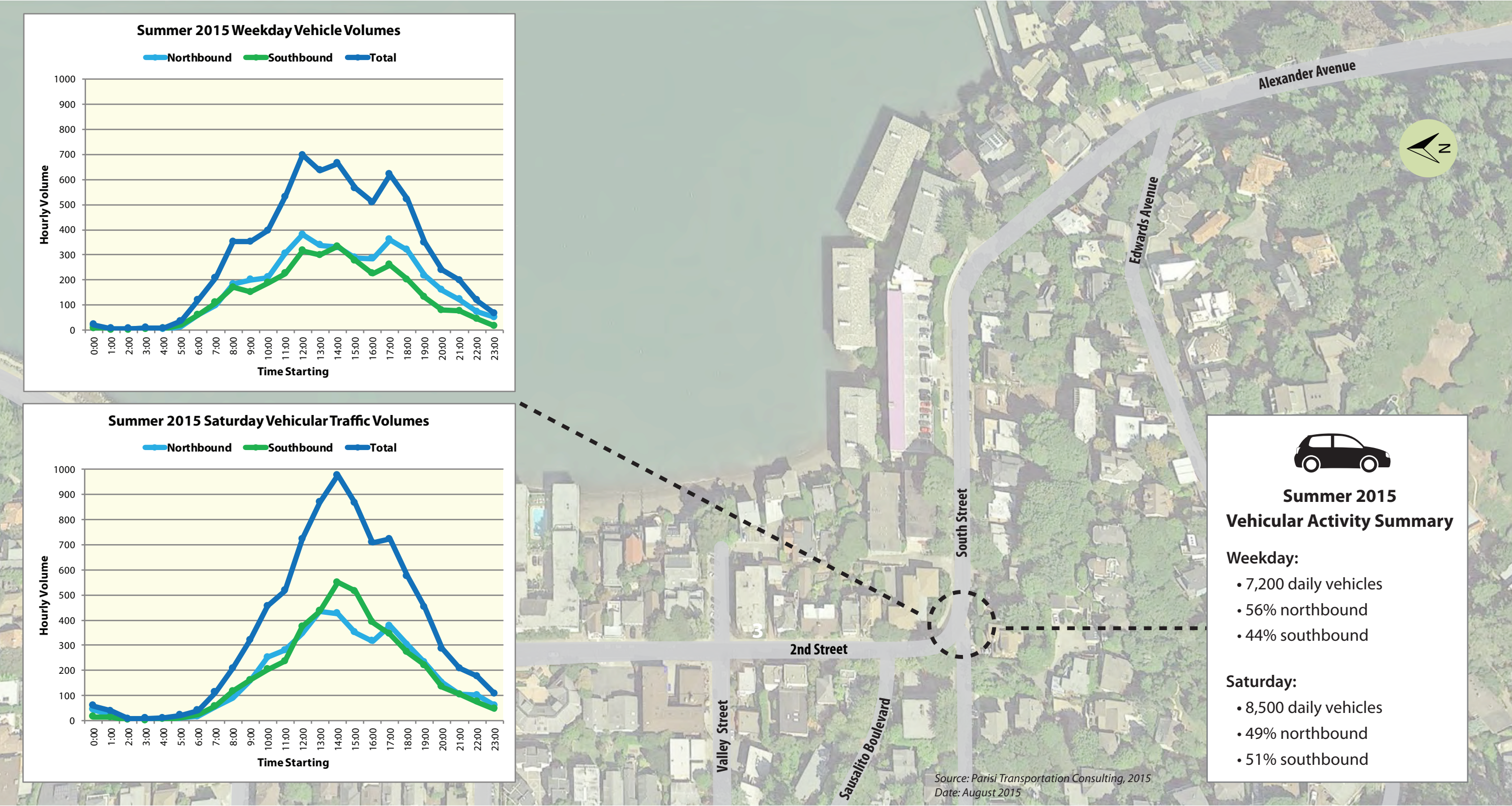


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WINTER/SPRING 2015 VEHICLE VOLUMES

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SUMMER 2015 VEHICLE VOLUMES

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.

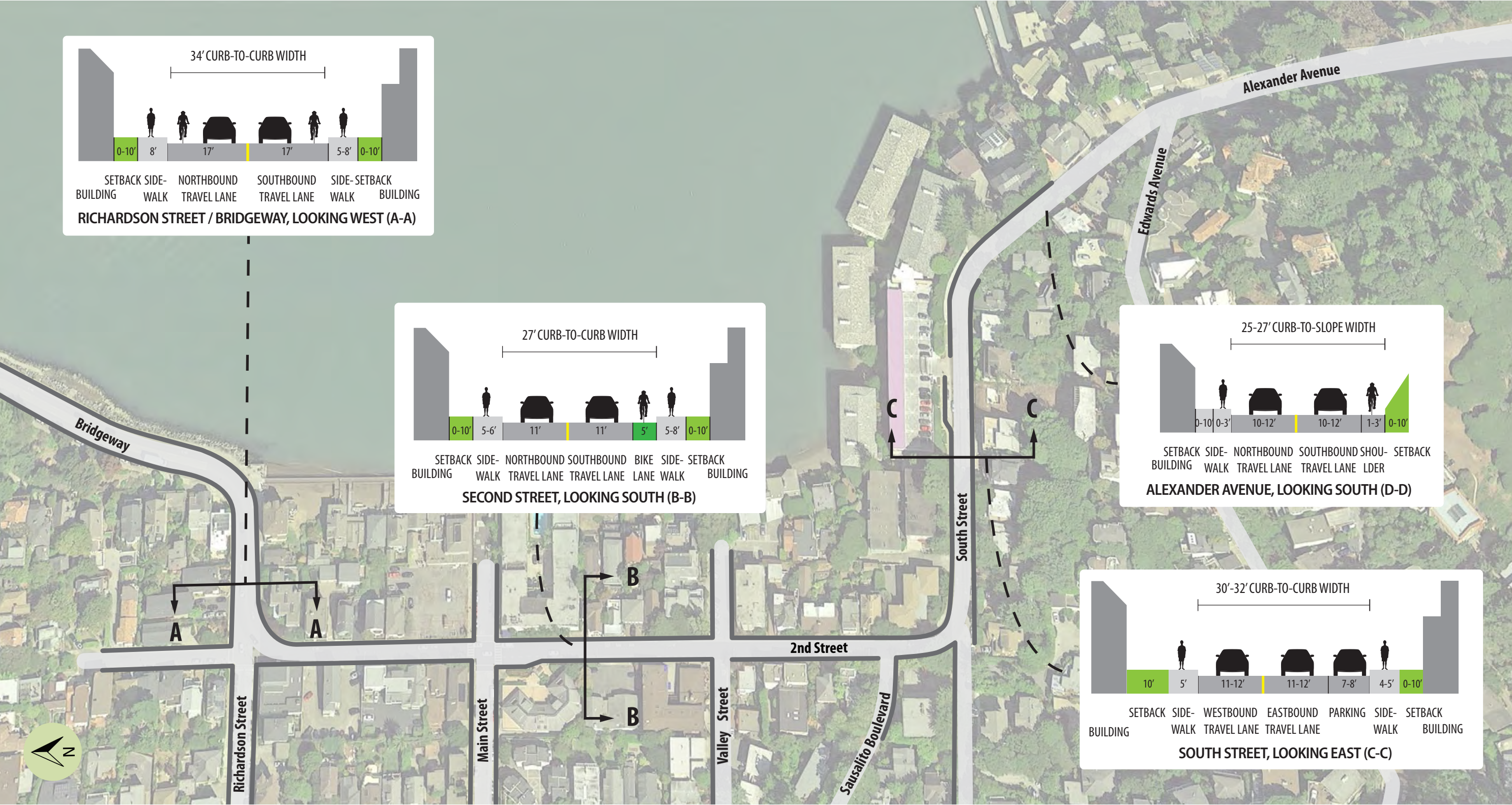
There are no other marked crossings or curb ramps along the South Gateway corridor streets to facilitate pedestrian movement across the major direction of traffic.

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



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TYPICAL ROADWAY CROSS-SECTIONS



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.



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.



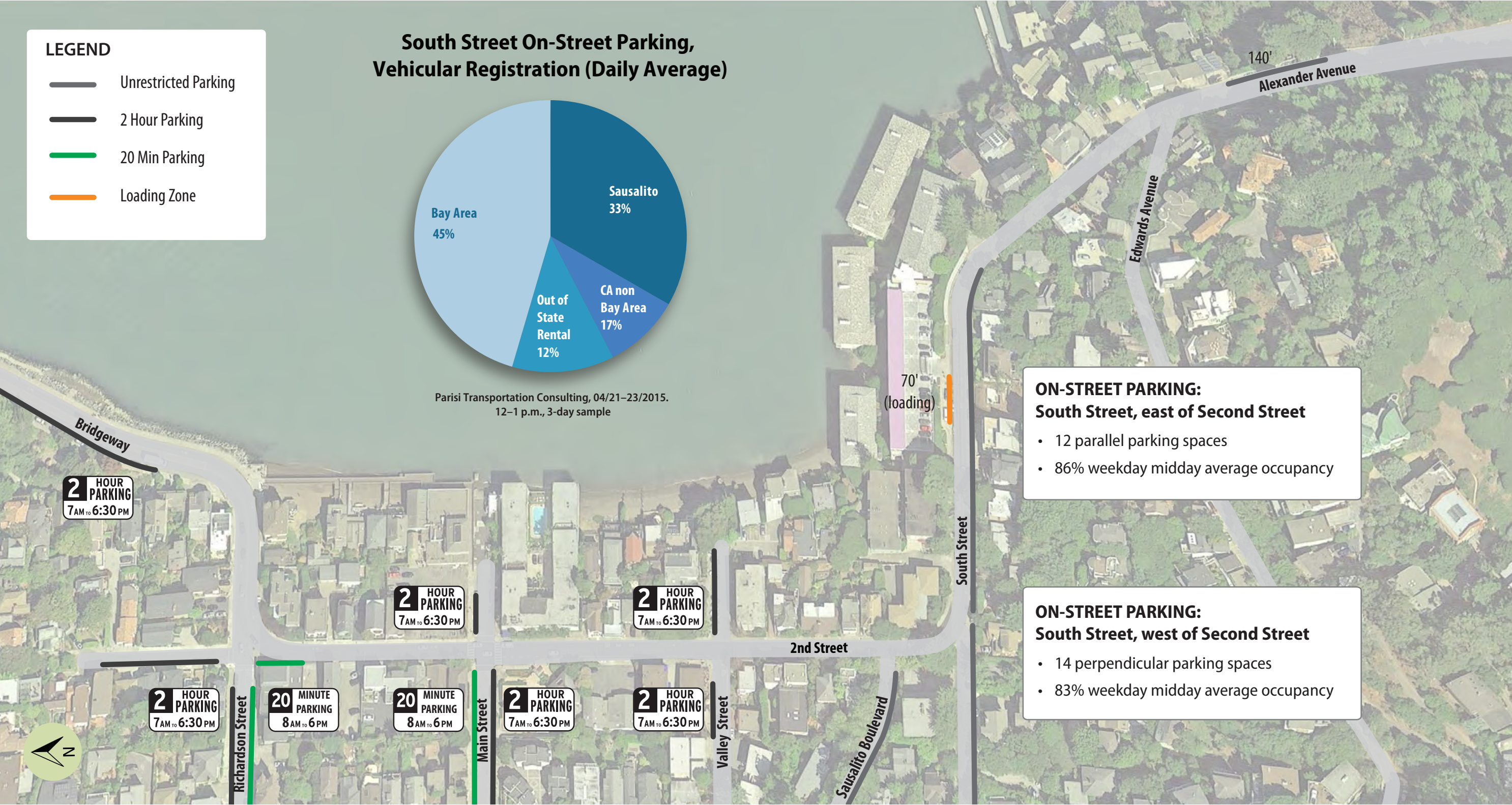
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DECEMBER 2015



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.

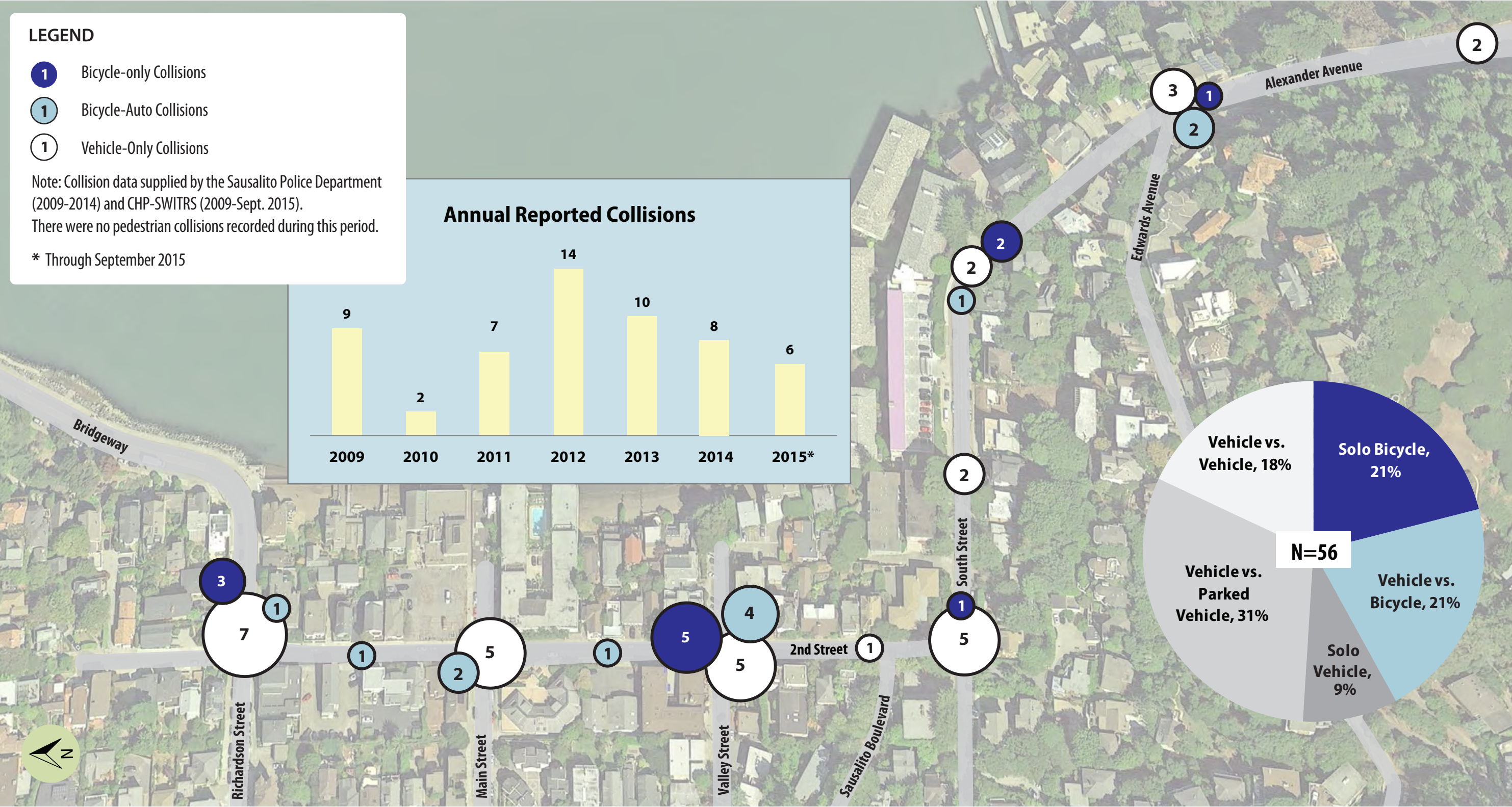
The Alexander Avenue segment is a particularly constrained area. Appendix D includes a detailed assessment for the section of Alexander Avenue between South Street and the City Limits to identify the existing physical constraints.



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



Pedestrians walking on northbound Alexander Avenue.

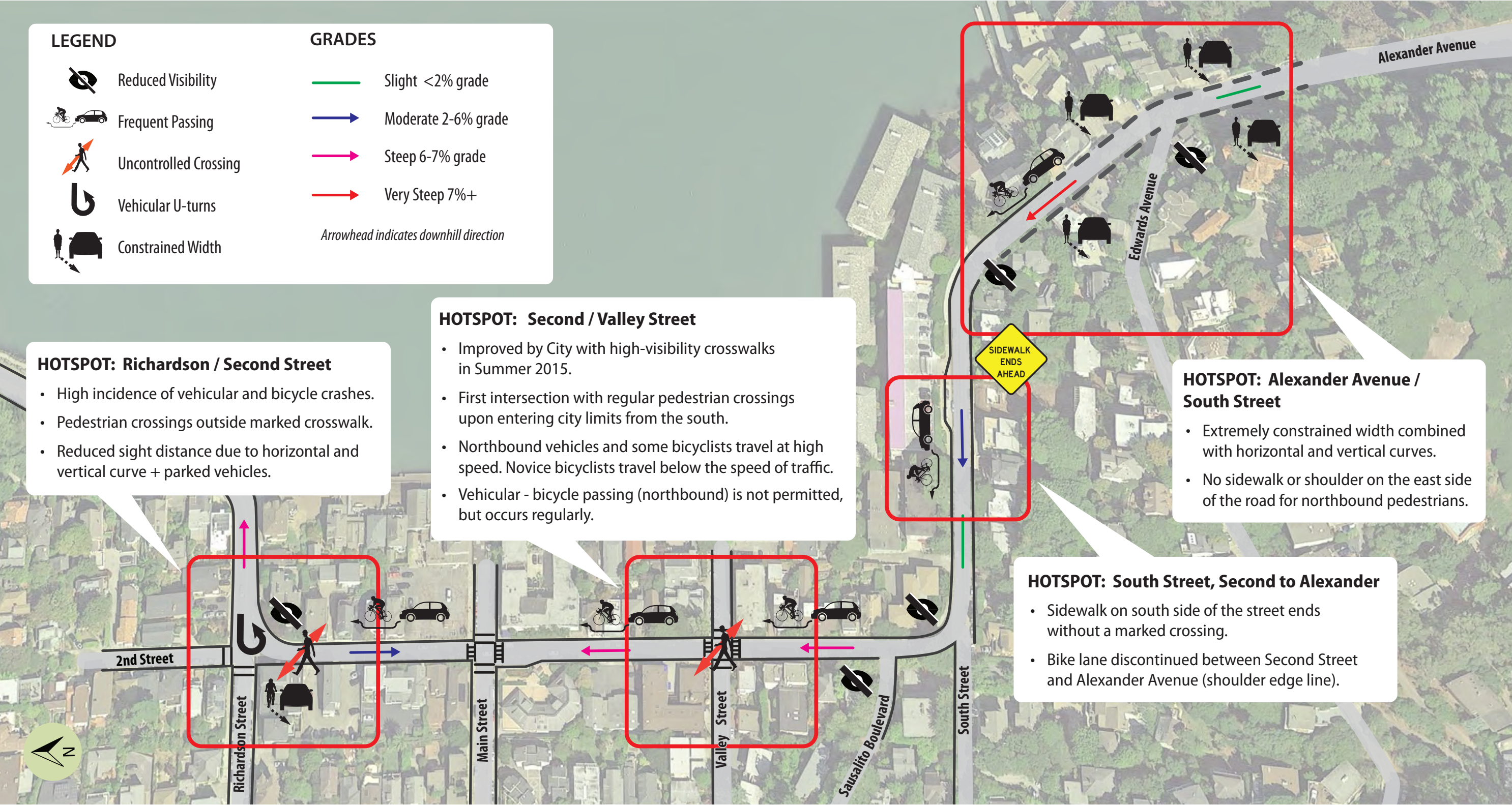


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City of Sausalito South Gateway Complete Street Study

COLLISION HISTORY (2009-2015)



City of Sausalito South Gateway Complete Street Study



DECEMBER 2015



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.

SEGMENT 1: RICHARDSON STREET, BRIDGEWAY TO SECOND STREET

Staff-Recommended Concept

The following improvements would address existing deficiencies in the sidewalk and curb ramps.

- **Sidewalks:** Reconstruct sidewalks on the north side of Richardson Street to eliminate or reduce driveway cross-slopes in excess of two percent (1:48). Repair sidewalk gaps, chips, and cracks.
- **Curb ramps:** Install new curb ramps at the northeast, northwest and southwest corners of the Richardson Street / Second Street intersection. Correct curb ramp deficiencies such as slopes in excess of 8.33% (1:12), flare slopes in excess of 10% (1:10), and level landing slopes in excess of 2% (1:48).

Furthermore, the Richardson Street / Second Street intersection would benefit from measures to slow traffic, prevent U-turns, and allow for safe pedestrian crossings. The Staff-Recommended Concept would install a marked crosswalk with the following components.

- **Marked crosswalk:** Install high-visibility crosswalk markings.
- **Pedestrian / bicycle refuge islands:** Channelize vehicles on Richardson Street and Second Street, and provide a refuge for crossing pedestrians, by constructing a six-foot wide refuge island with raised curbs.
- **Pedestrian / bicycle crossing warning signs with RRFB:** Provide pedestrian / bicyclist crossing warning signage and pedestrian / bicyclist-activated flashing beacons facing northbound Second Street and westbound Richardson Street to slow approaching traffic.
- **Bulb-out and curb ramps:** Install a bulb out at the southwest corner. Install curb ramps at the southwest and southeast corners within the new crosswalk.

The estimated cost for the Staff-Recommended Concept is \$144,000.

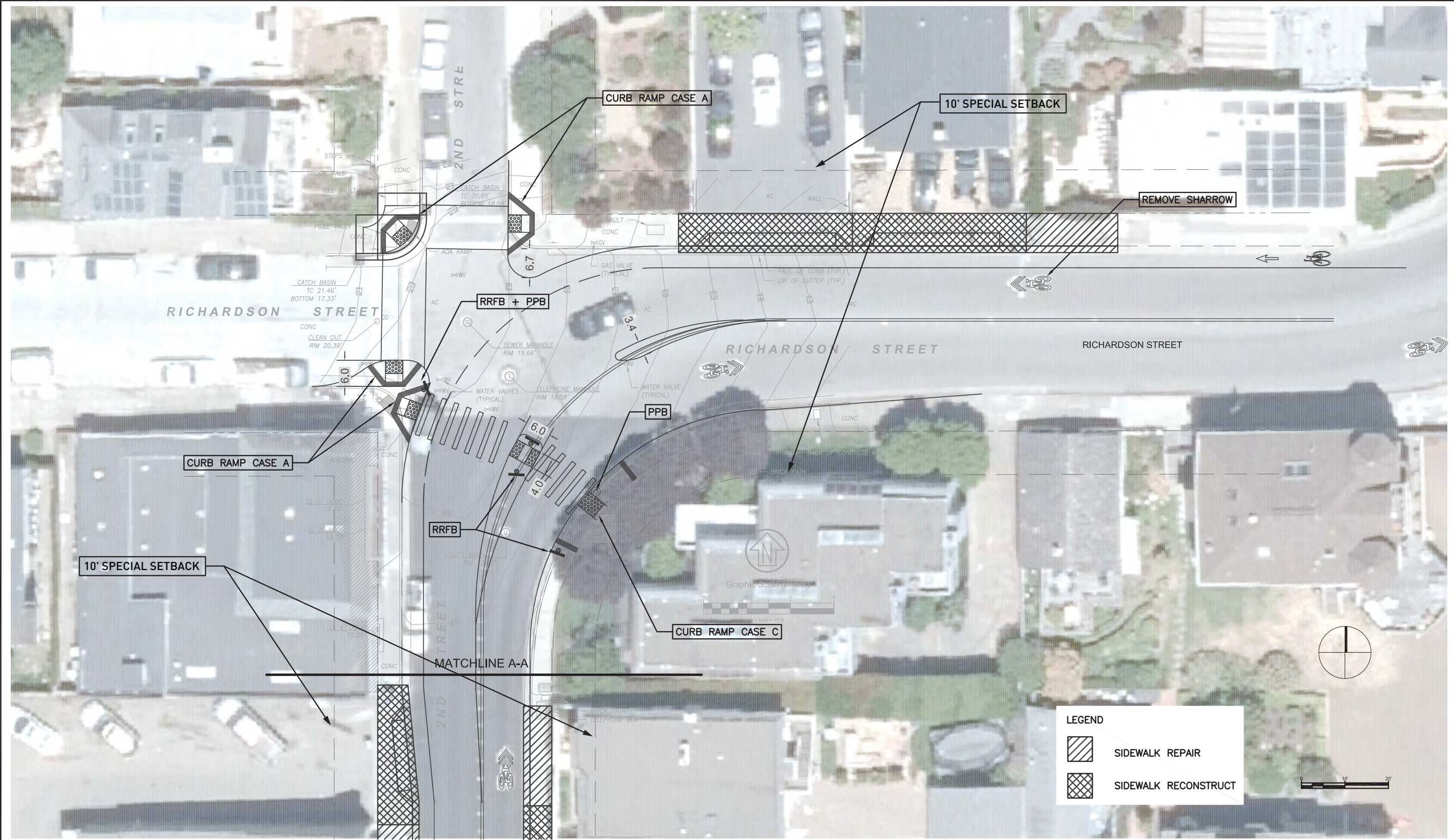
CONCEPT NOT RECOMMENDED – RICHARDSON / SECOND STREET ROUNDABOUT

A single lane roundabout able to accommodate a 40-foot bus (90-100-foot inscribed diameter) was found to exceed the available right-of-way at the intersection and would have negatively impacted existing buildings.

CONCEPT NOT RECOMMENDED – RICHARDSON / SECOND STREET ALL-WAY STOP AND TRAFFIC SIGNAL

The traffic volumes from minor street approaches do not satisfy California Manual on Uniform Traffic Control Devices (CA MUTCD) warrants for all-way stop control or signal control.





Parisi
TRANSPORTATION CONSULTING

1750 Bridgeway, Suite B208
Sausalito, CA 94965
(415) 649-0000

DRAWN:	AL	CHECKED:	DP
DESIGNED:	AL	APPROVED:	DP



CITY OF SAUSALITO | TRANSPORTATION AUTHORITY OF MARIN

SOUTH GATEWAY COMPLETE STREET PROJECT

SECOND STREET / RICHARDSON STREET / BRIDGEWAY, STAFF-RECOMMENDED CONCEPT

REVISIONS	
NO.	DESCRIPTION

DATE	SCALE
11/23/15	1" = 10'
PTC PROJECT NO.	14035
CLIENT	CITY OF SAUSALITO
SHEET NO.	1 OF 4

SEGMENT 2: SECOND STREET, RICHARDSON STREET TO SOUTH STREET

Staff-Recommended Concept

The following improvements would address existing deficiencies in the sidewalk and curb ramps, remove sidewalk obstructions, and improve the existing marked crosswalks.

- ▶ **Sidewalks:** Reconstruct sidewalks on both sides of Second Street to eliminate driveway cross-slopes in excess of two percent (1:48). Repair sidewalk gaps, chips, and cracks.
- ▶ **Curb ramps:** Correct curb ramp deficiencies where curb ramps exist, and install curb ramps where none exist, at the following locations.
 - Northwest, southeast, and southwest corners of Second Street / Main Street.
 - All four corners of Second Street / Valley Street.
 - Northwest and northeast corners of Second Street / Sausalito Boulevard.
 - Northwest corner of Second Street / South Street.

- ▶ **Pedestrian / bicycle crossing warning signs:** Provide pedestrian / bicyclist crossing warning signage or supplement existing signage in the northbound and southbound directions of Second Street at its intersections with Main Street and Valley Street. Consider providing flashing beacons if warranted by pedestrian and bicyclist crossing volumes.
- ▶ **Sidewalk obstruction:** Relocate existing street light pole at the northwest corner of Second Street / Sausalito Boulevard such that it does not impede the pedestrian path of travel.
- ▶ **Bus pull-out (by others):** Construct a northbound bus pull-out at the northeast corner of the Second Street / Main Street intersection, as part of the frontage improvements by an adjacent development. Construct a curb ramp as part of this improvement.

Second Street has as right-of-way width of 40 feet, which is typically arranged as two 11-foot lanes and a five-foot bike lane (27 feet curb-to-curb width), a five-foot sidewalk on the east side, and an

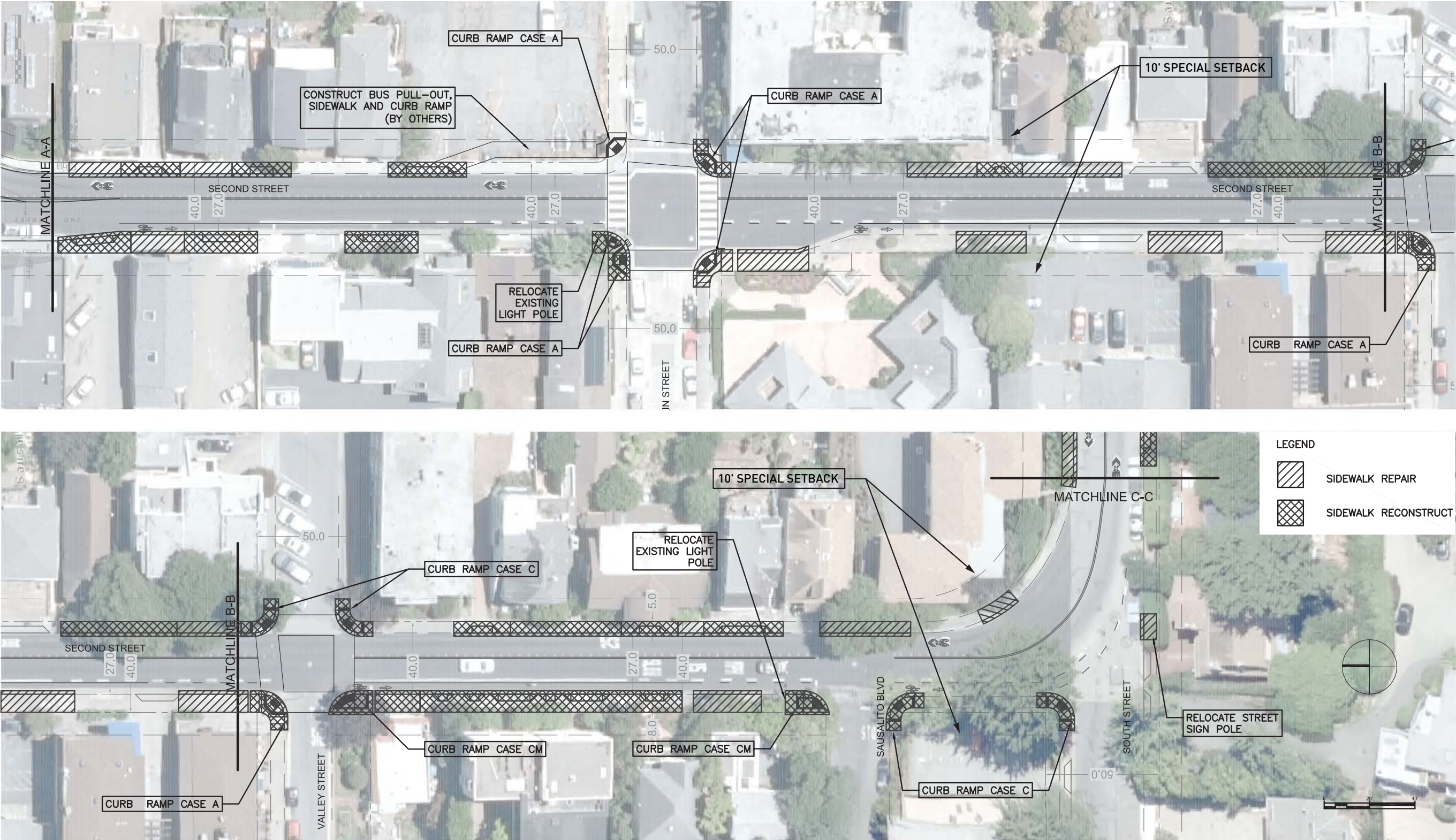
eight-foot sidewalk on the west side (40-foot Right of Way). Given the right-of-way constraints and built-out nature of the Second Street corridor, this study does not propose any additional concepts that would alter the existing cross-section.

The estimated cost for the Staff-Recommended Concept is \$519,000.

CONCEPT NOT RECOMMENDED – NORTHBOUND ONLY BIKE LANE

Changing the arrangement of the existing bike lane from southbound (uphill) to northbound (downhill) was considered based on the larger share of northbound bicycle traffic. However, this concept was deemed inferior based on the analysis presented in the previous section, which found that a five-foot lane in the northbound direction would be insufficient to handle the volume of northbound bicycle traffic. Eliminating the southbound bike lane would create additional problems for uphill traffic, which would be unable to pass slower uphill bicycle traffic.





Parisi
TRANSPORTATION CONSULTING

1750 Bridgeway, Suite B208
Sausalito, CA 94965
(415) 649-0000



DRAWN:	AL	CHECKED:	DP
DESIGNED:	AL	APPROVED:	DP

CITY OF SAUSALITO | TRANSPORTATION AUTHORITY OF MARIN
SOUTH GATEWAY COMPLETE STREET PROJECT
SECOND STREET, STAFF-RECOMMENDED CONCEPT

REVISIONS	
NO.	DESCRIPTION

DATE	SCALE
11/23/15	1" = 20'
PTC PROJECT NO.	14035
CLIENT	CITY OF SAUSALITO
SHEET NO.	2 OF 4

SEGMENT 3: SOUTH STREET, SECOND STREET TO ALEXANDER AVENUE

Staff-Recommended Concept

Most of the sidewalks along South Street are four to five feet wide, with no setback from the edge of roadway or parking lane. The residential driveways on the south side of South Street create in cross-slope conditions without an alternative level path behind the ramp apron. Existing street light poles and a fire hydrant obstruct the sidewalk on the south side of the street. The north side of South Street generally conforms to accessibility standards, but the nearest marked crossing across South Street is 600 feet away from mid-block South Street at Valley Street. South Street is a gap in the southbound bike lane that extends between Second Street and the striped shoulder on Alexander Avenue.

The Staff-Recommended Concept would resolve these issues with the following improvements:

- **Sidewalks:** Reconstruct sidewalks on the south side of South Street to eliminate or reduce driveway cross-slopes.

- **Roadway widening:** Widen South Street by six feet to the north. Reconstruct the existing sidewalk, curb, and gutter on the north side of South Street as part of this roadway widening. Complete the existing southbound bike lane between Second Street and Alexander Avenue.
- **Midblock crosswalk:** Provide a midblock South Street crosswalk to allow pedestrians on the south side of South Street to reach the north side walkway that continues onto Alexander Avenue. The location shown on the conceptual plan has clear sight lines from both directions of South Street and does not conflict with residential driveways.
 - The high-visibility crosswalk would be supplemented with a pedestrian-activated flashing beacon.
 - The midblock crosswalk has the added benefit of signaling to northbound motorists and bicyclists on the South Gateway corridor that there is cross-traffic ahead.

The estimated cost for Staff-Recommended Concept is \$445,000.

CONCEPT NOT RECOMMENDED – PARKING REMOVAL FOR EASTBOUND BIKE LANE

An alternate measure to widening South Street to provide a southbound bike lane would be to remove the residential parking allowed on the on the south side of South Street. This concept was not pursued because the curbside parking is highly utilized (80–85 percent daytime occupancy, as presented in the previous section) and there are few alternative parking or loading spaces along the corridor.



SEGMENT 4: ALEXANDER AVENUE, SOUTH STREET TO CITY LIMITS

Staff-Recommended Concept

There are multiple deficiencies related to multimodal access on Alexander Avenue. At the north end of Alexander Avenue, the five-foot wide laminate board path south of South Street narrows to a two-foot wide sidewalk behind a slightly raised curb (~two-to-three inches). The path of travel further narrows to a one-foot section abutting a wall. The record of survey finds that the wall and portions of the residential unit (64 Alexander Avenue) are within the public right-of-way.

Farther to the south, the east side of Alexander Avenue is fronted by residential driveways behind a slightly raised curb. These driveways generally fail to meet accessibility standards for pedestrian walkways due to driveway cross-slopes, narrow width, and occasional obstructions (e.g., broken pavement and broken utility box covers). The two residences on the west side of Alexander Avenue, south of Edwards Avenue, are accessed from the southbound Alexander Avenue shoulder. Bicyclists currently use this four-foot striped shoulder as a de facto southbound bike lane.

For motorists, traffic approaching Alexander Avenue from Edwards Avenue has extremely limited sight distance due to the horizontal curves and vertical crest at the intersection. Edwards Avenue is already limited to one-way eastbound access.

The Staff-Recommended Concept would resolve these issues with the following improvements:

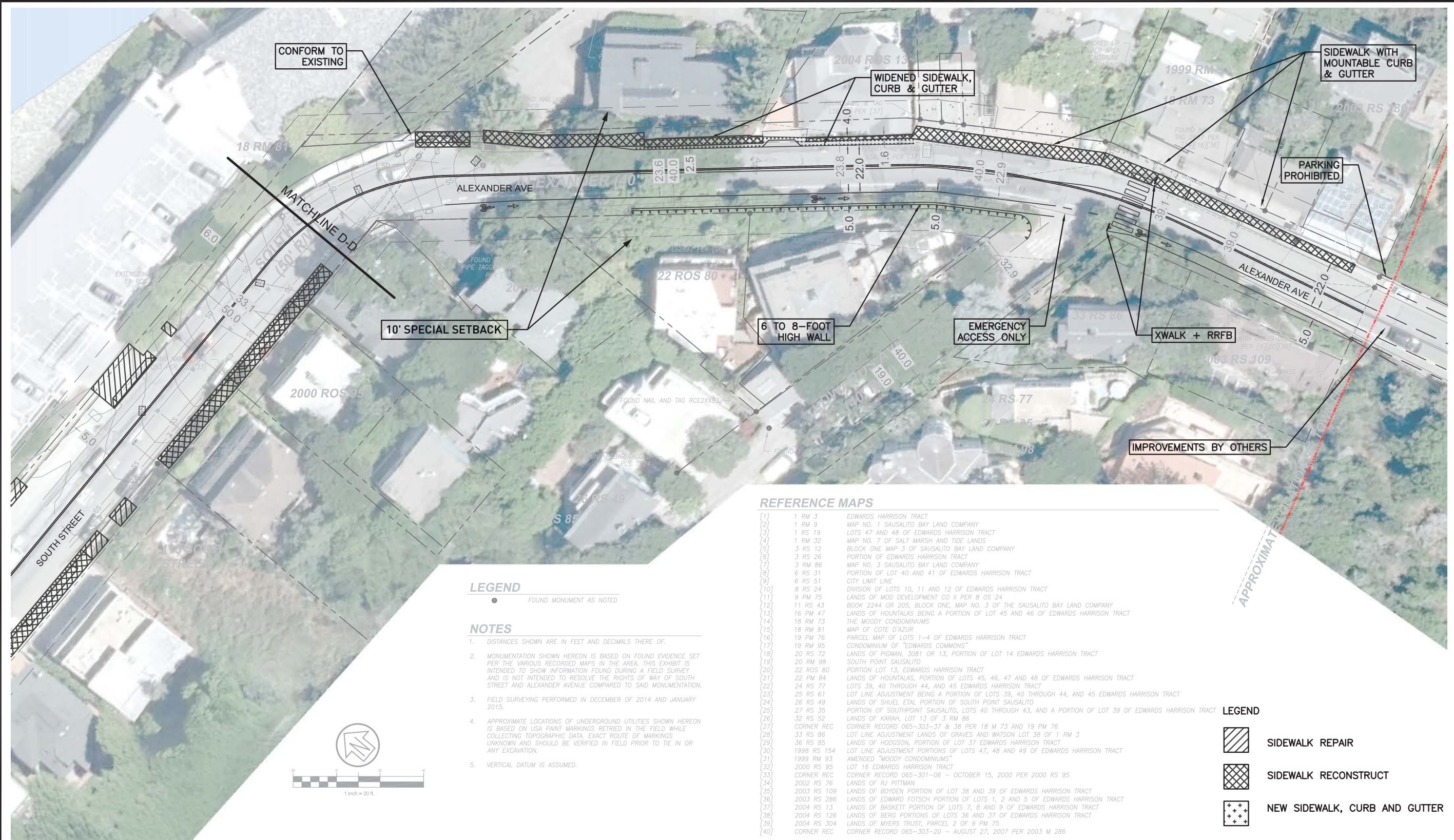
- ▶ **Retaining Wall:** Construct a retaining wall on the south side of Alexander Avenue. Widen Alexander four to five feet to the south. Shift the vehicular lanes and shoulder to the south. Retain the shoulder for southbound bicycle traffic.
- ▶ **Sidewalks:** Widen the pedestrian path on Alexander Avenue from the City Limits to South Street. Reconstruct the sidewalk to five feet wide by widening to the south. Avoid impacting the properties at 28 and 64 Alexander Avenue. Eliminate or reduce driveway cross-slopes at driveways south of 64 Alexander Avenue.

- ▶ **Convert Edwards Avenue to Emergency Access Only:** Prohibit general vehicular access at the Alexander Avenue / Edwards Avenue with a raised barrier and signage.
- ▶ **Marked crosswalk:** Provide a high-visibility crosswalk with a pedestrian-activated flashing beacon at the Alexander Avenue / Edwards Avenue intersection. Provide a supplemental advance warning beacon for southbound (uphill) vehicular traffic.

CONCEPT NOT RECOMMENDED – PEDESTRIAN PATH WIDENING TO THE NORTH

An alternate measure to widening Alexander Avenue to the south with a retaining wall would be to widen the pedestrian path to the north; this concept would impact the properties at 28 and 64 Alexander Avenue, would have significant effects on the properties, and incur substantial acquisition costs.





Parisi
TRANSPORTATION CONSULTING

1750 Bridgeway, Suite B208
Sausalito, CA 94965
(415) 649-0000

REGISTERED PROFESSIONAL ENGINEER
DAVID J. PARISI
No. 44893
Exp. 03/16
CIVIL
STATE OF CALIFORNIA

CITY OF SAUSALITO | TRANSPORTATION AUTHORITY OF MARIN
SOUTH GATEWAY COMPLETE STREET PROJECT
ALEXANDER AVENUE, STAFF-RECOMMENDED CONCEPT

REVISIONS	
NO.	DESCRIPTION
1	
2	
3	
4	
5	

DATE
11/23/15

SCALE
1" = 20'

PTC PROJECT NO.
14035

CLIENT
CITY OF SAUSALITO

SHEET NO.
4 OF 4

SAUSALITO PBAC REVIEW

The Sausalito Pedestrian and Bicycle Advisory Committee (PBAC) provided key input during the development of this report.

Existing Conditions Analysis, February 17, 2015.

This presentation summarized the physical data collection that occurred in the months prior, including the accessibility assessment, bicyclist demographics based on peak hour samples, collision records through 2014, and preliminary hotspot analysis.

The PBAC directed further study on detailed bicyclist and pedestrian counts, and considerations for a northbound bike lane on Second Street.

Design Alternatives, July 20, 2015.

This presentation summarized the results of detailed multimodal counts collected in March and April 2015 and the improvement concepts presented in this chapter.

The PBAC directed further study on seasonal peak bicycle traffic in addition to the average annual (spring) counts previous collected. PBAC members expressed support for the Staff Recommended Concepts as presented previously in this report.



Nearly 1,800 pedestrians, bicyclists, and motorists pass through the South Gateway corridor during the peak hour on summer weekend days.

Planning-Level Cost Estimates

The table to the right presents planning-level cost estimates for the Staff-Recommended Concepts, which total to an estimated \$1.76 million. The detailed cost estimates are provided on the following pages. Note that the costs do not include “soft costs”, such as those pertaining to:

- ▶ Environmental Clearance
- ▶ Bonding
- ▶ Connection Fees
- ▶ Plan Checking Fees
- ▶ Agency Fees
- ▶ Permits



LOCATION /IMPROVEMENT	SUBTOTAL
Richardson Street, Bridgeway to Second Street	
Staff-Recommended Concept – Sidewalk Rehab, Crosswalk, Bulb-Out and RRFB	\$144,000
Second Street, Richardson to South Street	
Staff-Recommended Concept – Sidewalk and Curb Ramp Rehab	\$519,000
South Street, Second Street to Alexander Avenue	
Staff-Recommended Concept – Bike Lane Widening, Sidewalk Rehab, Crosswalk, and RRFB	\$445,000
Alexander Avenue, South Street to City Limits	
Staff-Recommended Concept – Sidewalk Widening via Retaining Wall	\$651,000
TOTAL: Staff-Recommended Concept	\$1,759,000

Project Cost Estimates

Richardson Street, Bridgeway to Second Street Staff-Recommended Concept: Crosswalk, Bulb-Out, and RRFB

Prepared by: Parisi Transportation Consulting, November 16, 2015

	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	Mobilization	LS	1	Subtotal	\$5,300
				5%	
2	Traffic Control	LS	1	Subtotal	\$10,600
				10%	
3	Demolition, Removal and Salvage			Subtotal	\$2,800
	Sawcut Pavement	SF	800	\$3.50	\$2,800
4	Concrete Work and Paving				\$72,500
	Sidewalk	SF	800	\$25	\$20,000
	Curb and Gutter	LF	100	\$25	\$2,500
	Curb Ramp	EA	2	\$7,500	\$15,000
	Bulb Out Curb Ramp	EA	2	\$15,000	\$30,000
	Traffic Splitter Island and Pedestrian Refuge	LS	2	\$2,500	\$5,000
5	Signs and Pavement Markings				\$29,900
	Rectangular Rapid Flashing Beacon Type A (Single Sided)	EA	2	\$8,000	\$16,000
	Rectangular Rapid Flashing Beacon Type B (Double Sided)	EA	1	\$12,000	\$12,000
	Crosswalk Striping (Thermoplastic)	SF	300	\$5	\$1,500
	4" Thermoplastic Striping	LF	400	\$1	\$400
	TOTAL CONSTRUCTION				\$91,200
	DESIGN (PS&E)			18%	\$16,500
	CONSTRUCTION ADMINISTRATION			15%	\$13,700
	CONSTRUCTION CONTINGENCY			25%	\$22,800
	TOTAL PROJECT				\$144,200



Second Street, Richardson to South Street Staff-Recommended Concept: Sidewalk and Curb Ramp Rehab

Prepared by: Parisi Transportation Consulting, November 16, 2015

	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	Mobilization	LS	1	Subtotal	\$14,300
				5%	
2	Traffic Control	LS	1	Subtotal	\$28,600
				10%	
3	Demolition, Removal and Salvage			Subtotal	\$36,500
	Sawcut Pavement	SF	6000	\$3.50	\$21,000
	Relocate Existing Street Light	EA	2	\$7,500	\$15,000
	Relocate Existing Street Sign Pole	EA	1	\$500	\$500
4	Concrete Work and Paving				\$248,750
	Sidewalk	SF	6000	\$25	\$150,000
	Curb and Gutter	LF	950	\$25	\$23,750
	Curb Ramp	EA	10	\$7,500	\$75,000
	TOTAL CONSTRUCTION				\$328,150
	DESIGN (PS&E)			18%	\$59,100
	CONSTRUCTION ADMINISTRATION			15%	\$49,300
	CONSTRUCTION CONTINGENCY			25%	\$82,100
	TOTAL PROJECT				\$518,650

Costs do not include:

- Bonding
- Connection Fees
- Plan Checking Fees
- Agency Fees
- Permits

LEGEND:

- LS – Lump Sum
- EA – Each
- LF – Linear Feet
- AL – Allowance
- SF – Square Feet

South Street, Second Street to Alexander Avenue
Staff-Recommended Concept: Crosswalk, Road Widening for Bike Lane + RRFB

Prepared by: Parisi Transportation Consulting, November 16, 2015

	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	Mobilization	LS	1	Subtotal	\$11,700
				5%	
2	Traffic Control	LS	1	Subtotal	\$23,400
				10%	
3	Demolition, Removal and Salvage			Subtotal	\$32,250
	Sawcut Pavement	SF	3500	\$3.50	\$12,250
	Relocate Existing Street Light	EA	2	\$7,500	\$15,000
	Relocate Existing Fire Hydrant	EA	1	\$5,000	\$5,000
4	Earthwork				\$12,250
	Clearing and Grubbing	SF	2000	\$0.50	\$1,000
	Excavation and Grading	CY	225	\$50	\$11,250
5	Concrete Work and Paving				\$176,250
	Sidewalk	SF	3500	\$25	\$87,500
	Curb and Gutter	LF	700	\$25	\$17,500
	Curb Ramp	EA	2	\$7,500	\$15,000
	Install AC Pavement	SF	2250	\$25	\$56,250
6	Signs and Pavement Markings				\$25,500
	Rectangular Rapid Flashing Beacon Type B (Double Sided)	EA	2	\$12,000	\$24,000
	Crosswalk Striping (Thermoplastic)	SF	300	\$5	\$1,500
	4" Thermoplastic Striping	LF		\$1	\$-
8	Right of Way Acquisition				
	TOTAL CONSTRUCTION				\$281,350
	DESIGN (PS&E)			18%	\$50,700
	CONSTRUCTION ADMINISTRATION			15%	\$42,300
	CONSTRUCTION CONTINGENCY			25%	\$70,400
	TOTAL PROJECT				\$444,750

Alexander Avenue, South Street to City Limits
Staff-Recommended Concept: Sidewalk Widening via Retaining Wall

Prepared by: CSW-ST2*, adjustments by Parisi Transportation Consulting, November 16, 2015

	CONTRACT ITEMS	UNIT	QUANTITY	PRICE	AMOUNT
1	Earthwork (Inclusive of Mobilization & Traffic Control)*	LS	1	Subtotal	\$86,200
2	Streetwork (In Place)*	LS	1	Subtotal	\$236,900
3	Other Facilities (Retaining Wall & Utilities)*	LS	1	Subtotal	\$63,350
4	Supplemental Project - Signs and Pavement Markings				\$25,500
	Rectangular Rapid Flashing Beacon Type B (Double Sided)	EA	2	\$12,000	\$24,000
	Crosswalk Striping (Thermoplastic)	SF	300	\$5	\$1,500
	TOTAL CONSTRUCTION				\$411,950
	DESIGN (PS&E)			18%	\$74,200
	CONSTRUCTION ADMINISTRATION			15%	\$61,800
	CONSTRUCTION CONTINGENCY			25%	\$103,000
	TOTAL PROJECT				\$650,950

*See attached: CSW-ST2 Opinion of Probable Construction Costs.

Costs do not include:

- Bonding
- Connection Fees
- Plan Checking Fees
- Agency Fees
- Permits

LEGEND:
LS – Lump Sum
EA – Each
LF – Linear Feet
AL – Allowance
SF – Square Feet



Alexander Avenue, South Street to City Limits
CSW-ST2 Opinion of Probable Construction Costs

Date: 09/08/2015
File: 4.1183.00

SOUTH GATEWAY COMPLETE STREETS
ALEXANDER AVENUE, SAUSALITO, CALIFORNIA
OPINION OF PROBABLE CONSTRUCTION COSTS
FOR CITY LIMITS AND SECOND LINE

(Costs do not include: Bonding, Connection Fees, Plan Checking Fees, Agency Fees, or Permits)

QUANTITY		DESCRIPTION	UNIT PRICE	TOTAL
A. EARTHWORK				
1.	1	L.S. Mobilization (Allowance)	\$25,000.00	\$25,000
2.	1	L.S. Traffic Control	\$20,000.00	\$20,000
3.	1	L.S. Demolition/Clear & Grub (Allowance)	\$10,000.00	\$10,000
4.	570	C.Y. Excavation	\$50.00	\$28,500
5.	180	C.Y. Export and Disposal - Clean Material	\$15.00	\$2,700
Subtotal - Earthwork:				\$86,200
B. STREETWORK (IN PLACE)				
1.	3,080	S.F. Asphalt Concrete	\$7.50	\$23,100
2.	3,080	S.F. Aggregate Base	\$4.20	\$12,936
3.	6,220	S.F. Fine Street Grading (Incl. Handling Utility Trench Spoils)	\$1.50	\$9,330
4.	440	L.F. Sawcut Pavement	\$3.50	\$1,540
5.	410	L.F. 18" Curb & Gutter (Incl. Cushion)	\$34.00	\$13,940
6.	1,960	S.F. Conform Pavement	\$25.00	\$49,000
7.	3,200	S.F. 4" Sidewalk (Incl. Thickened Driveways)	\$25.00	\$80,000
8.	225	S.F. Special Pier Supported Sidewalk (Incl. Walkway Below)	\$170.00	\$38,250
9.	440	L.F. Striping (Thermoplastic) Four (4) Lines	\$20.00	\$8,800
Subtotal - Streetwork:				\$236,896
C. OTHER FACILITIES				
1.	98	C.Y. Retaining Wall (Soil Nail), Concrete	\$575.00	\$56,350
2.	14	EA. Raise Utility Boxes to Grade	\$500.00	\$7,000
Subtotal - Other Facilities:				\$63,350

SUMMARY		
A.	EARTHWORK	\$86,200
B.	STREETWORK (IN PLACE)	\$236,896
C.	OTHER FACILITIES	\$63,350
SUBTOTAL CONSTRUCTION COST		\$386,446
+ SOFT COSTS		
	DESIGN	18% \$69,560
	CONSTRUCTION ADMINISTRATION	15% \$57,967
	+ CONSTRUCTION CONTINGENCY	25% \$96,612
TOTAL CONSTRUCTION COSTS		\$610,585

- NOTES:
- 1. This estimate does not include work north of the curve along Alexander Avenue and other costs not listed above.
 - 2. This estimate does not include specific items which may be required by public agencies during the approval process.
 - 3. This estimate should be used as a guide only and was prepared to an accuracy commensurate with the intent of the client. Actual cost can only be determined by a contract based on final approved plans or actual construction of facilities.
 - 4. The estimate above is based on the plan entitled Alexander Avenue, Additional Improvement Concept 2, South Gateway Complete Street Project, prepared by Parisi Transportation Consulting, dated 5/21/15, as requested by Parisi Transportation Consulting.

Next Steps

The City of Sausalito should provide final direction on the set of improvements to move forward into coordination, environmental clearance, detailed design, and funding.

Coordination

The improvements the City decides to move forward with should be coordinated with improvements on Alexander Avenue by the National Park Service (NPS) and the Golden Gate National Recreation Area (GGNRA), per the Alexander Avenue Planning Study (2012). The NPS and GGNRA would rehabilitate approximately 0.9 miles of existing shoulders to maximize space to accommodate bicyclists, pedestrians and vehicles. The rehabilitation would also include

signage and wayfinding, removing and replacing deteriorated pavement, curb and gutters, striping, guardrail, fencing, bus shelters and lighting improvements.

Environmental Clearance

The California Environmental Quality Act (CEQA) governs whether a project is required to undergo environmental review. Some improvements, such as repairs to existing facilities, may be categorically exempt. Other more intensive improvements that may cause a substantial change to the physical environment or scenic resource could require more detailed environmental studies.

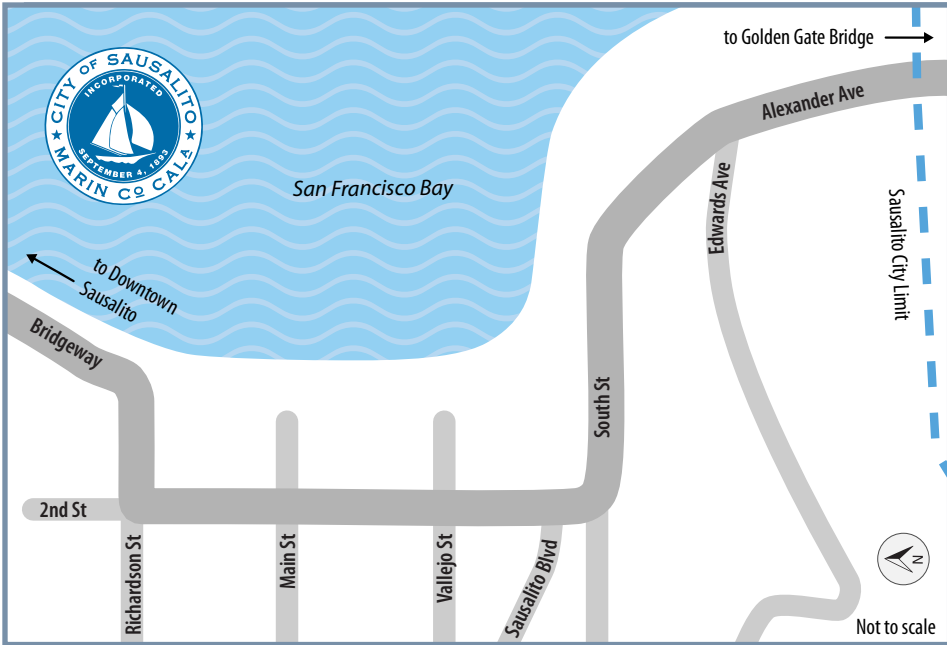
Note that coordinating improvements with the NPS and GGNRA may trigger a joint National Environmental Policy Act (NEPA) / CEQA review.

Funding

The Transportation Authority of Marin, the County of Marin, Golden Gate Transit, and the City of Sausalito should seek outside funding for improvements the City decides to pursue. Potential outside funding sources include, but are not limited to, Caltrans Active Transportation Program funds, the MTC-administered Regional Measure 2 funds, and TAM-administered Measure A transportation sales tax funds and Measure B annual vehicle registration fee funds.



Saturday peak hour multimodal traffic, northbound South Street



APPENDIX

Appendix A: Ferry Bicycle Ridership



Travelling by bicycle to Sausalito from San Francisco via the Golden Gate Bridge and then riding the ferry back to the city is a popular tourist activity. The following section summarizes trends in ferry ridership by bicyclists on an annual, typical springtime and peak summertime basis.

Annual Trends

The ferry from Downtown Sausalito is a popular alternative for tourists on foot and bicycles to travel back to San Francisco rather than walking or cycling back via the Golden Gate Bridge. Ferry service is provided by Golden Gate Transit and the Blue & Gold Fleet.

As shown in Figure A1, bicycle ridership on the Golden Gate Ferry grew consistently between 2012 and 2014. There was a drop in bicycle passengers starting in spring 2015, which carried into the summer. Annual Blue and Gold Fleet ridership data was not available.

The average annual Golden Gate Ferry bicycle ridership (average across 12 months) was approximately 16,000 passengers for 2014, which was the most recent full year’s data. The average monthly bicycle ridership for March and April (15,500 monthly riders) represent the annual average. During the summer months of June to September, the monthly average was approximately 50 percent higher than the annual average. The peak months of July and August experienced ferry ridership 80 percent higher than the annual average.

It is important to note that ferry ridership is not proportional to overall bicycle ridership. Although the ferry ridership in the peak month of August was 80 percent higher than the annual average

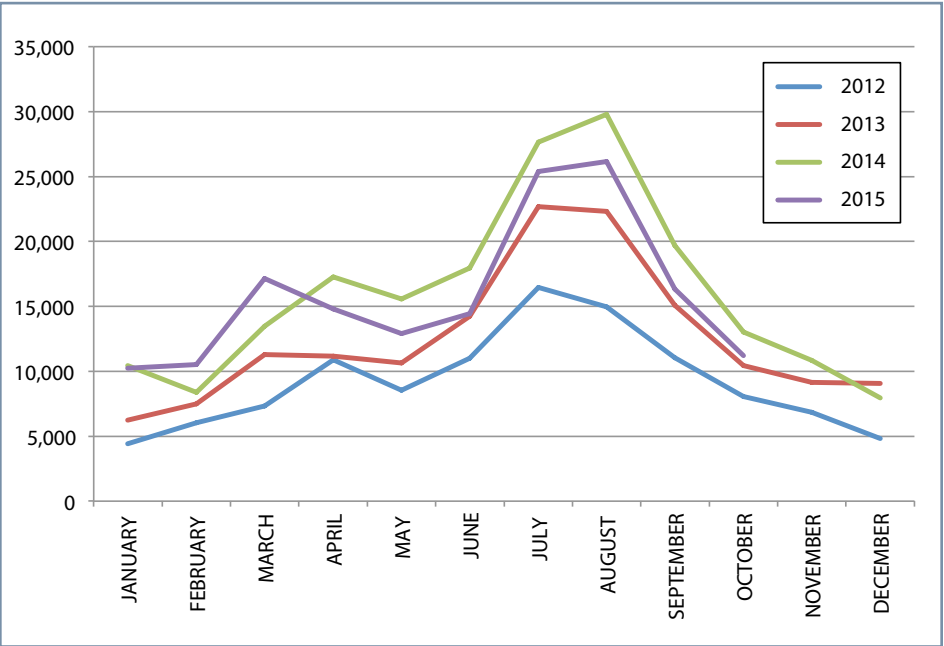


Figure A1: Golden Gate Ferry Monthly Bicycle Counts (Southbound), 2012-2015

Source: Golden Gate Transit, November 2015

(March/April), the overall bicycle activity passing through the South Gateway was only 20 percent higher. There are several reasons for this disproportionality. Tourists represent 40 to 50 percent of the bicycle riders passing through the South Gateway corridor, but are far more likely to ride the ferry back to San Francisco. Ferry ridership is also dependent on the available capacity; both Golden Gate Transit and the Blue & Gold Fleet run more ferries during the summer months.

The following section examines the daily bicycle trends and how they relate to ferry ridership.

Weekday Trends

Many tourists that ride or walk across the Golden Gate Bridge use the ferry service to travel back into San Francisco, which results in northbound (downhill) bicycle volumes that are higher than those in the southbound direction.

Figures A2 and A3 illustrate the relationship between South Gateway bicycle activity and bicycle ferry boardings on a sampled spring Wednesday and summer Thursday in 2015.

On the sampled Thursday in spring 2015, Golden Gate Ferry ran nine ferries and the Blue and Gold Fleet operated five ferries. The total ferry bicycle ridership that day was approximately 650 passengers, which captured approximately 70 percent of the difference between northbound and southbound bicycle traffic (2,200 northbound vs. 800 southbound).

On the sampled Wednesday in summer 2015, Golden Gate Ferry ran 11 ferries and the Blue and Gold Fleet operated seven ferries. The total ferry bicycle ridership that day was approximately 1,300 passengers, which was double the spring bicycle ferry ridership. The ferries captured approximately 95 percent of the difference between northbound and southbound bicycle traffic (3,900 northbound vs. 1,600 southbound).

Some bicyclists that ride through the South Gateway in the northbound direction may also return to San Francisco via the Tiburon Ferry, the Larkspur Ferry, or by taxi.

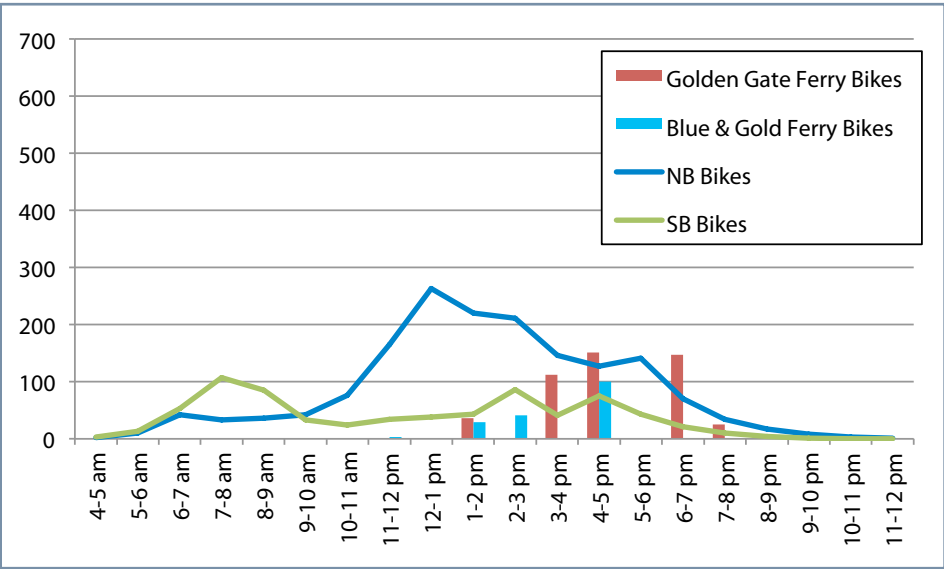


Figure A2: Spring Weekday (Thursdays) Bicycle Traffic vs. SB Ferry Bicycle Passengers

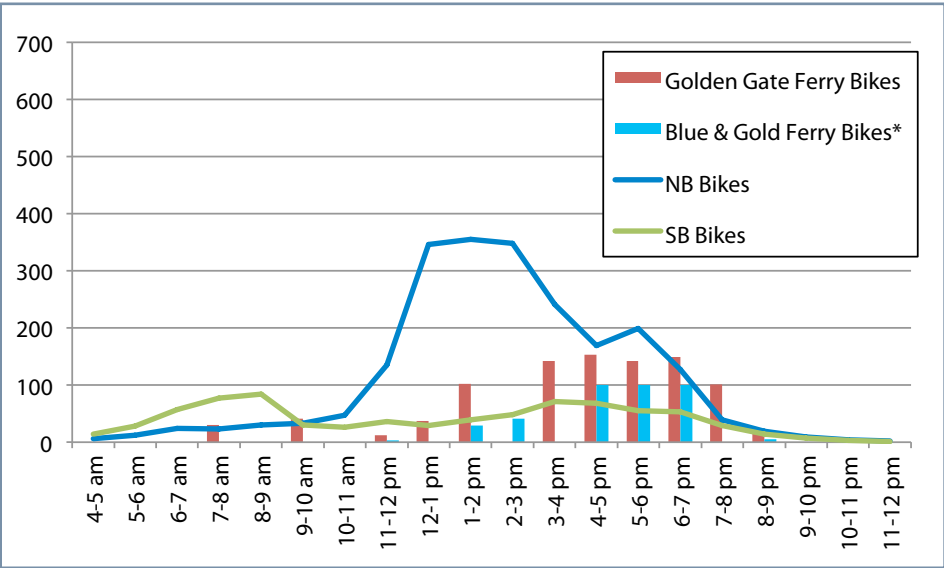


Figure A3: Summer Weekday (Wednesdays) Bicycle Traffic vs. SB Ferry Bicycle Passengers



Source: Bicycle counts: Parisi Transportation Consulting, 3/26 and 8/19/2015;
Ferry ridership: Golden Gate Transit and Blue and Gold Fleet, 3/26 and 8/19/2015;
*Blue and Gold Ferry ridership estimated from 3/26 data with adjustment to reflect summer ferry schedule.

Saturday Trends

Figures A4 and A5 illustrate the relationship on Saturdays between South Gateway bicycle activity and bicycle ferry boardings sampled in spring and summer in 2015.

In spring 2015, Golden Gate Ferry ran eight ferries and the Blue and Gold Fleet operated five ferries. The total ferry bicycle ridership that day was approximately 1,400 passengers, which captured approximately 90 percent of the difference between northbound and southbound bicycle traffic (3,000 northbound vs. 1,500 southbound).

In summer 2015, Golden Gate Ferry ran 10 ferries and the Blue and Gold Fleet operated seven ferries. The total ferry bicycle ridership that day was approximately 1,900 passengers, which was 35 percent higher than the spring Saturday bicycle ferry ridership. The ferries captured approximately 80 percent of the difference between northbound and southbound bicycle traffic (3,900 northbound vs. 1,600 southbound).

As with the weekday condition, some bicyclists that ride in the northbound direction may also return to San Francisco via the Tiburon Ferry, the Larkspur Ferry, or by taxi.

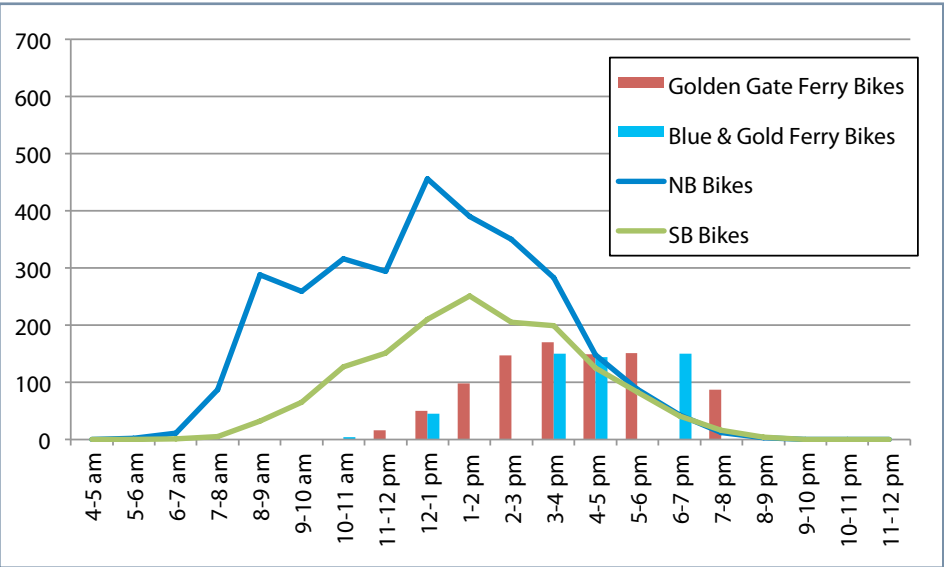


Figure A4: Spring Saturday Bicycle Traffic vs. Ferry Bicycle Passengers

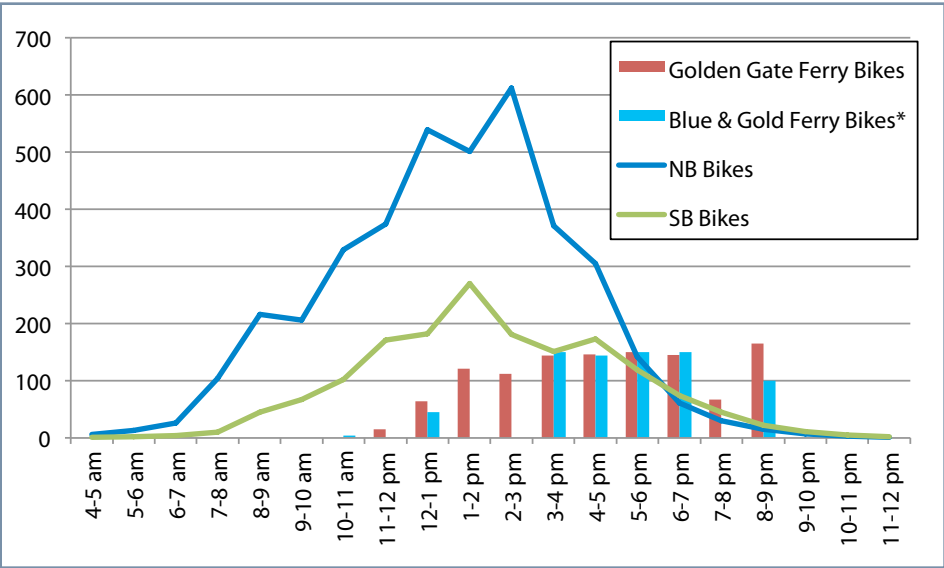


Figure A5: Summer Saturday Bicycle Traffic vs. Ferry Bicycle Passengers

Source: Bicycle counts, Parisi Transportation Consulting, 4/11 and 8/22/2015;
Ferry ridership: Golden Gate Transit and Blue and Gold Fleet, 4/11 and 8/22/2015;
*Blue and Gold Ferry ridership adjusted from spring 2015 data to reflect summer 2015 schedule.



Appendix B: Mill Valley – Sausalito Path Bicycle & Pedestrian Counts



The Mill Valley – Sausalito Path is the north gateway into the City of Sausalito. During the weekdays, it is commonly used by commuter bicyclists from north of Sausalito to travel into San Francisco. The path is also used by tourist and recreational bicyclists riding to and from routes to the north. Some bicyclists take a one-way bicycling trip up the Mill Valley – Sausalito Path and return via the ferry services from the City of Larkspur or Town of Tiburon (or vice versa).

Figures A6 and A7 illustrate the bicycle and pedestrian traffic across 24 hours during a sampled summer weekday and Saturday. On the sampled weekday, there were nearly 1,500 bicyclists and approximately 200 pedestrians observed on the path. Northbound and southbound bicycle traffic was relatively balanced (52 percent NB / 48 percent SB).

The path was nearly twice as busy on the sampled Saturday, with more than 3,000 bicyclists and more than 300 pedestrians counted across a 24-hour period. The Saturday bicycle traffic was more heavily slanted in the northbound direction (58 percent NB / 42 percent SB), indicating more bicyclists taking a one-way trip.

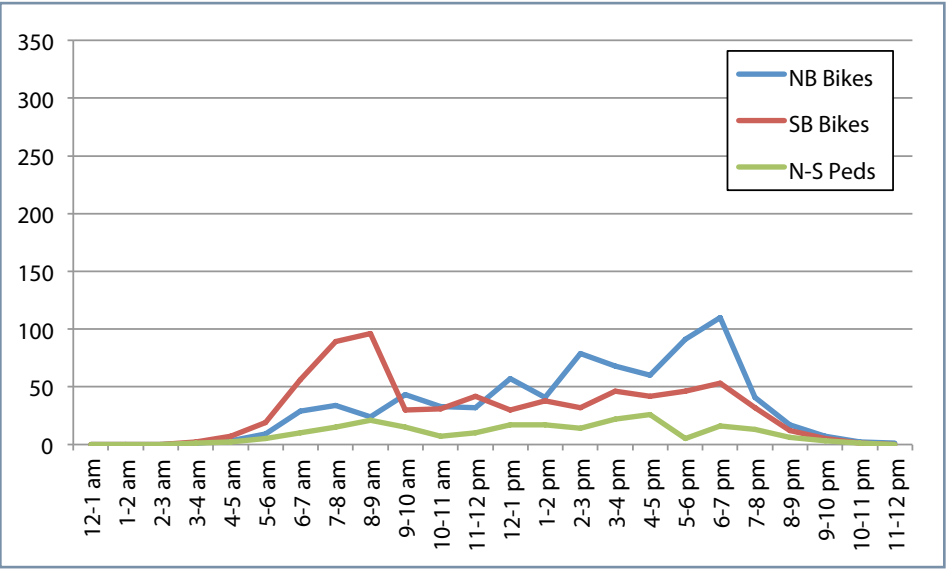


Figure A6: Summer Weekday Bicycle and Pedestrian Traffic

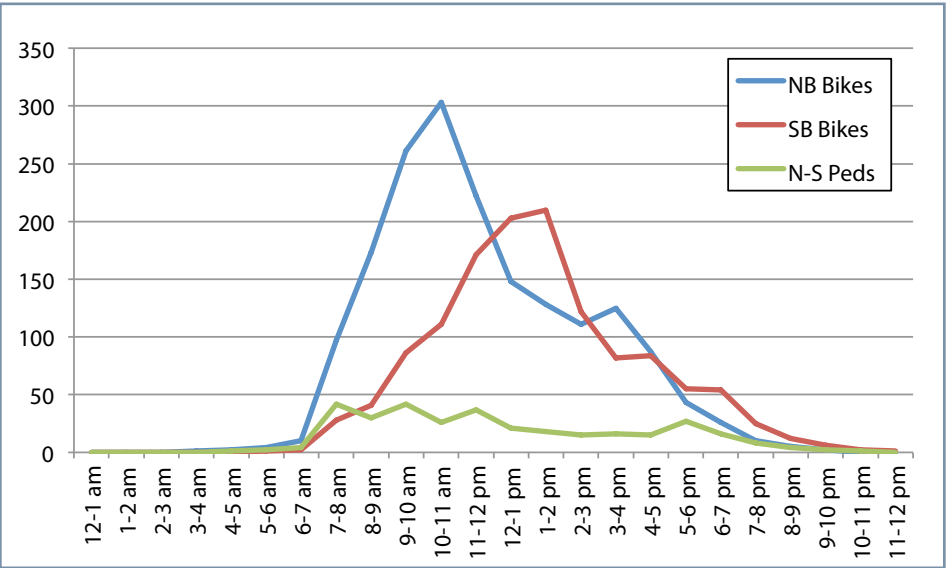


Figure A7: Summer Saturday Bicycle and Pedestrian Traffic

Source: Bicycle counts, Parisi Transportation Consulting, 8/19 and 8/22/2015

Appendix C: Downhill Bike Lane Analysis

The following tables summarize the bike lane capacity analysis referred to in the Bicycle Facilities section of the Existing Conditions Overview. Peak uphill bike traffic is currently less than 300 cyclists per hour and uphill bicyclists travel at relatively low speed that is consistent among most riders. Given these factors, the uphill bike lane on Second Street operates at an estimated bike lane level of service (LOS) C.

If the Second Street bike lane was moved to the downhill direction, the volume of traffic (450-600+ during the peak hour), high mean speed, and large variation between riders would still result in frequent bicycle conflicts. The FHWA methodology predicts a bike lane level of service “F”, meaning bicyclists would continue to use the vehicular lane.

Table A1 - South Gateway Daily Hourly Peak Volumes

	Spring		Summer	
	Uphill (SB)	Downhill (NB)	Uphill (SB)	Downhill (NB)
Weekday	110	275	85	355
Saturday	250	450	270	615

Source: Parisi Transportation Consulting, March/April & August 2015.

Table A2 – South Gateway Uphill / Downhill Bike Lane Level of Service Analysis

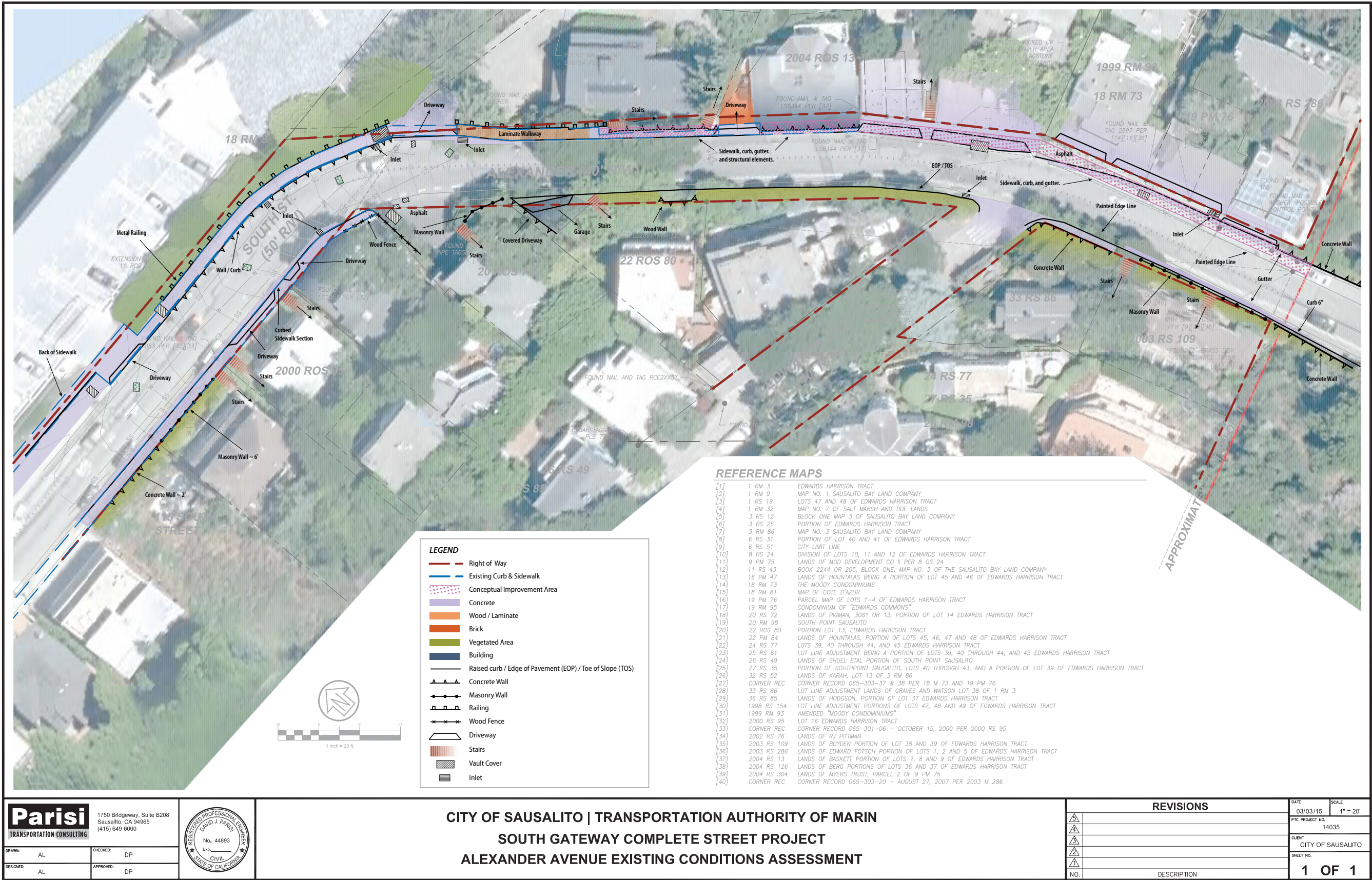
Uphill bike lane
low mean speed and low standard deviation

Downhill bike lane
high mean speed and high standard deviation

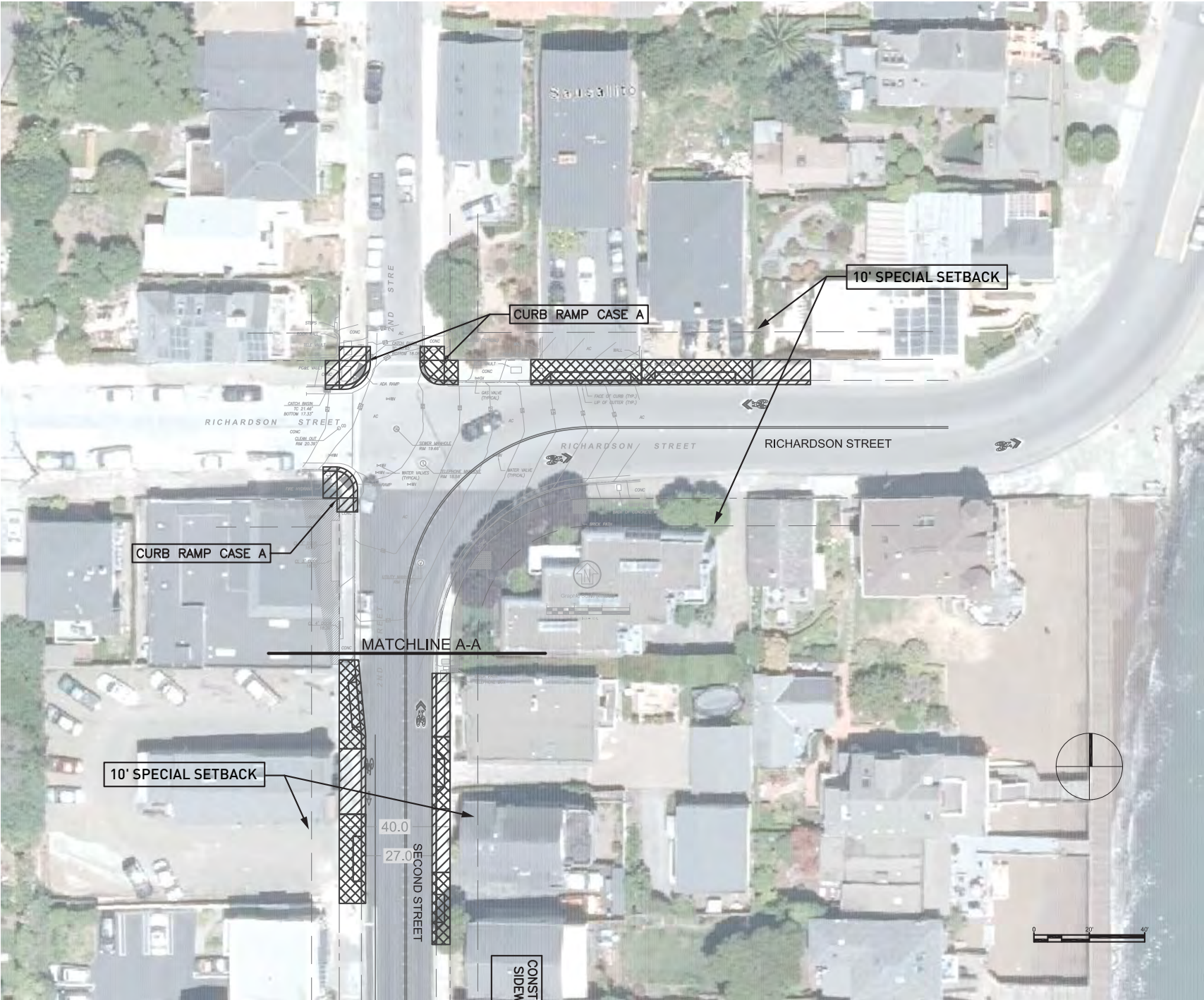
Bicycle flow rate (bike/h)	Standard deviation a (mph)	Number of Bicycle Conflicts and LOS								
		Bicycle Mean Speed (mph)								
		7.5	8.1	8.8	9.4	10	10.6	11.3	11.9	12.5
200	1	56(B)	52(B)	48(B)	45(B)	42(B)	40(B)	38(A)	36(A)	34(A)
200	2	113(D)	104(D)	97(C)	90(C)	85(C)	80(C)	75(C)	71(C)	68(C)
200	3	169(E)	156(E)	145(D)	135(D)	127(D)	119(D)	113(D)	107(D)	102(D)
300	1	85(C)	78(C)	73(C)	68(C)	63(C)	60(C)	56(B)	53(B)	51(B)
300	2	169(E)	156(E)	145(D)	135(D)	127(D)	119(D)	113(D)	107(D)	102(D)
300	3	254(F)	234(F)	218(F)	203(F)	190(E)	179(E)	179(E)	160(E)	152(E)
400	1	112(D)	104(D)	96(C)	92(C)	84(C)	80(C)	76(C)	72(C)	68(C)
400	2	224(F)	208(F)	192(E)	184(E)	168(E)	160(E)	152(E)	144(D)	136(D)
400	3	336(F)	312(F)	288(F)	276(F)	252(F)	240(F)	228(F)	216(F)	204(F)

Source: FHWA (1998) Capacity Analysis of Pedestrian and Bicycle Facilities

Appendix D: Alexander Avenue Detailed Existing Conditions Assessment



Appendix E: Alternative Project Concepts



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TRANSPORTATION CONSULTING

1750 Bridgeway, Suite B208
Sausalito, CA 94965
(415) 649-6000

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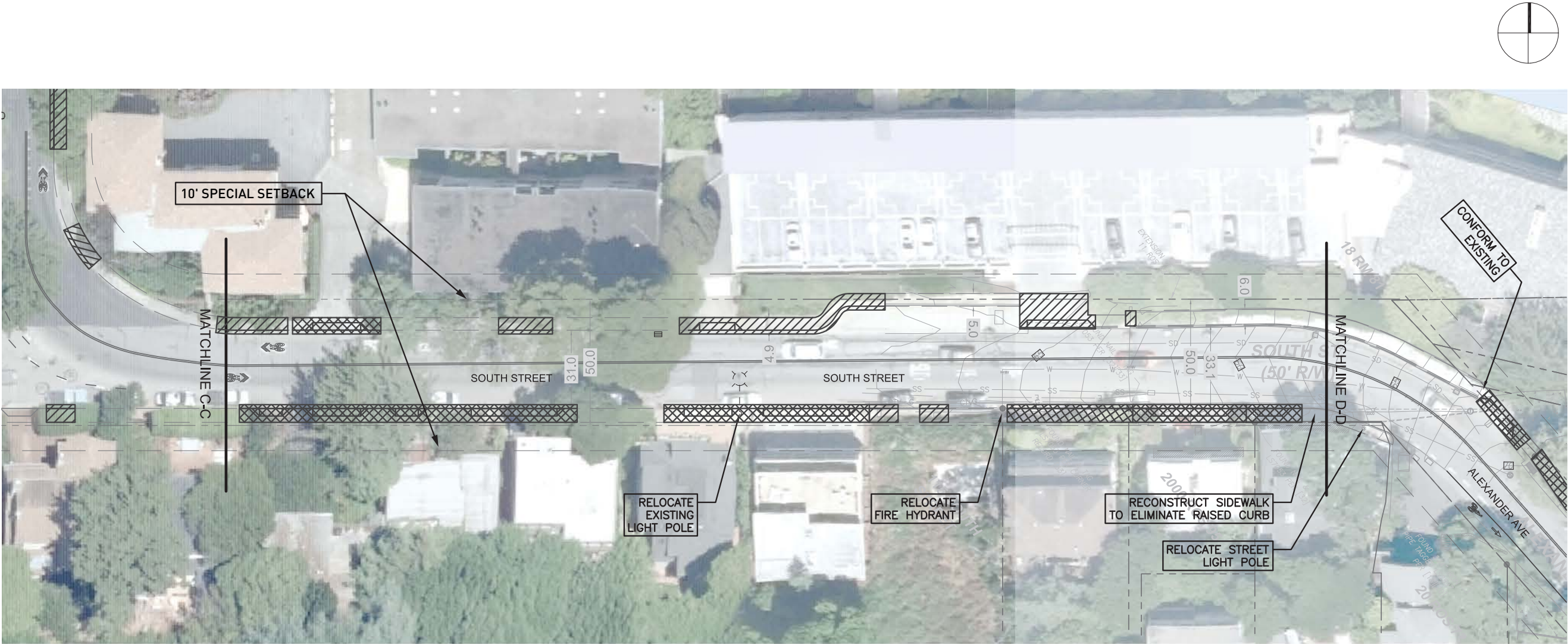
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CHECKED: DP

REGISTERED PROFESSIONAL ENGINEER
DAVID J. PARISI
No. 44893
Exp. 03/16
CIVIL
STATE OF CALIFORNIA

CITY OF SAUSALITO | TRANSPORTATION AUTHORITY OF MARIN
SOUTH GATEWAY COMPLETE STREET PROJECT
SECOND STREET / RICHARDSON STREET / BRIDGEWAY, BASELINE ACCESSIBILITY ASSESSMENT

REVISIONS		DATE	SCALE
1 2 3 4		11/23/15	1" = 20'
		PTC PROJECT NO.	14035
		CLIENT	CITY OF SAUSALITO
		SHEET NO.	1A OF 4
NO.	DESCRIPTION		



LEGEND

SIDEWALK REPAIR

SIDEWALK RECONSTRUCT

0

20'

40'

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1750 Bridgeway, Suite B208

Sausalito, CA 94965

(415) 649-6000

REGISTERED PROFESSIONAL ENGINEER

DAVID J. PARISI

No. 44893

Exp. 03/16

CIVIL

STATE OF CALIFORNIA

CITY OF SAUSALITO | TRANSPORTATION AUTHORITY OF MARIN

SOUTH GATEWAY COMPLETE STREET PROJECT

SOUTH STREET, BASELINE ACCESSIBILITY ASSESSMENT

REVISIONS	
NO.	DESCRIPTION

DATE

11/23/15

SCALE

1" = 20'

PTC PROJECT NO.

14035

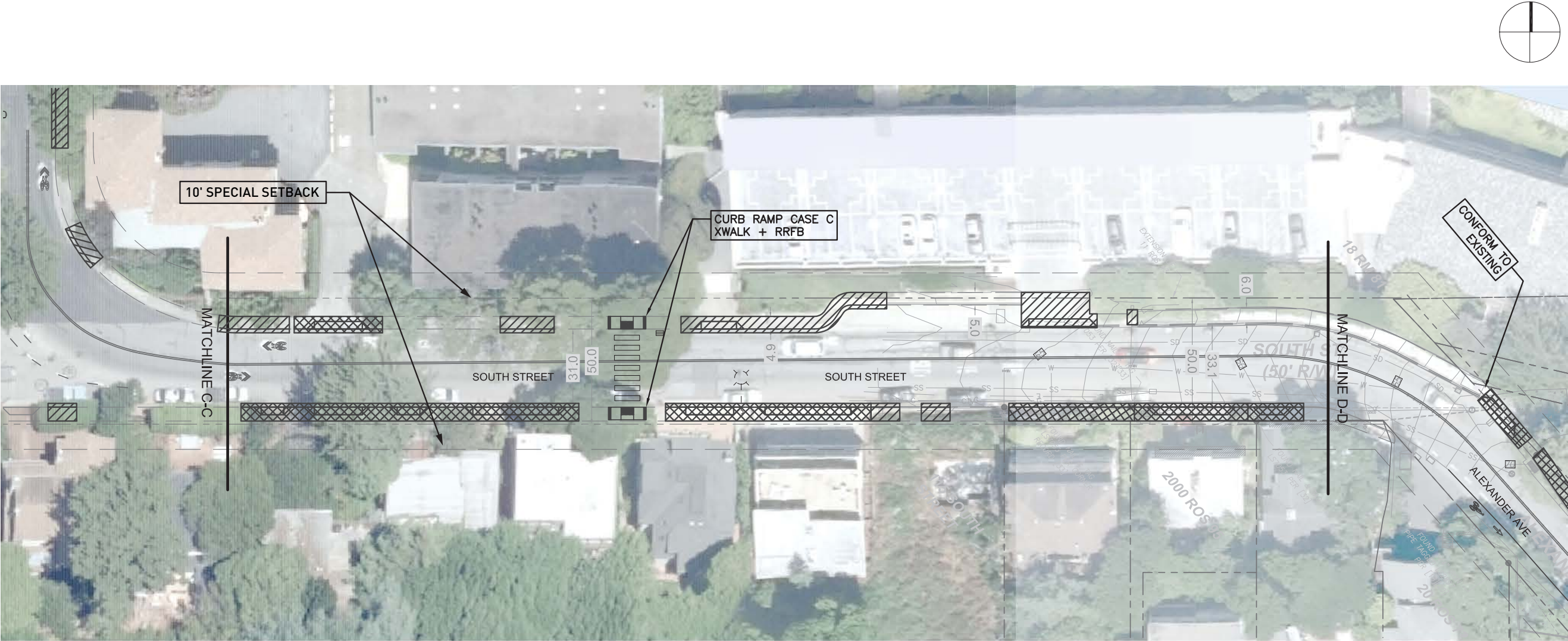
CLIENT

CITY OF SAUSALITO

SHEET NO.

3A OF 4

Item 6B- Attach 1
01-24-17
Page 53 of 58



LEGEND

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SIDEWALK RECONSTRUCT

0 20' 40'



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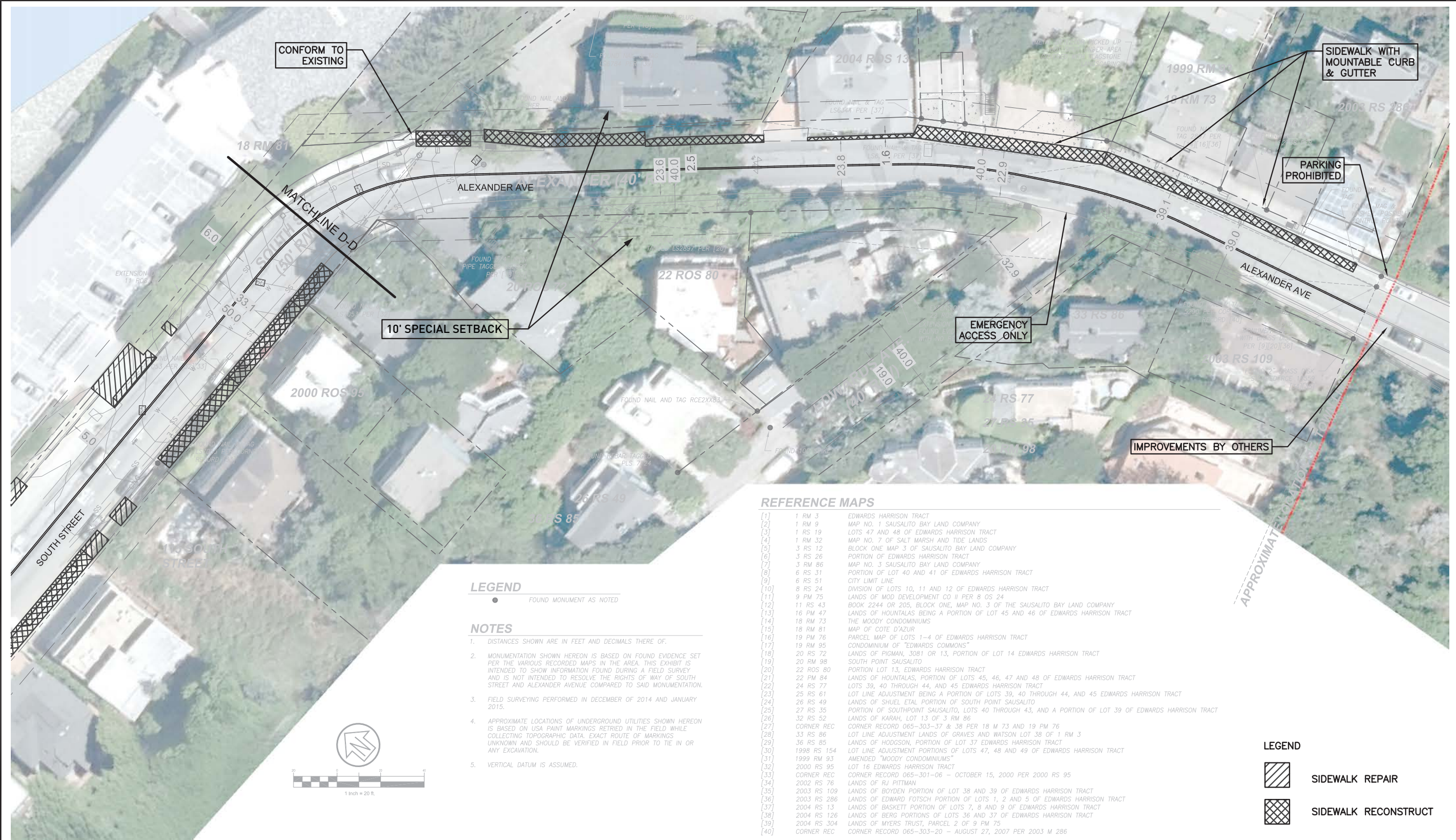
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CITY OF SAUSALITO | TRANSPORTATION AUTHORITY OF MARIN

SOUTH GATEWAY COMPLETE STREET PROJECT

SOUTH STREET, ADDITIONAL IMPROVEMENT CONCEPT 1

REVISIONS		DATE	SCALE
1		11/23/15	1" = 20'
2			
3			
4			
5			
NO.	DESCRIPTION	PTC PROJECT NO.	14035
		CLIENT	CITY OF SAUSALITO
		SHEET NO.	3B OF 4



REFERENCE MAPS

[1]	1 RM 3	EDWARDS HARRISON TRACT
[2]	1 RM 9	MAP NO. 1 SAUSALITO BAY LAND COMPANY
[3]	1 RS 19	LOTS 47 AND 48 OF EDWARDS HARRISON TRACT
[4]	1 RM 32	MAP NO. 7 OF SALT MARSH AND TIDE LANDS
[5]	3 RS 12	BLOCK ONE MAP 3 OF SAUSALITO BAY LAND COMPANY
[6]	3 RS 26	PORTION OF EDWARDS HARRISON TRACT
[7]	3 RM 86	MAP NO. 3 SAUSALITO BAY LAND COMPANY
[8]	6 RS 31	PORTION OF LOT 40 AND 41 OF EDWARDS HARRISON TRACT
[9]	6 RS 51	CITY LIMIT LINE
[10]	8 RS 24	DIVISION OF LOTS 10, 11 AND 12 OF EDWARDS HARRISON TRACT
[11]	9 PM 75	LANDS OF MOD DEVELOPMENT CO II PER 8 OS 24
[12]	11 RS 43	BOOK 2244 OR 205, BLOCK ONE, MAP NO. 3 OF THE SAUSALITO BAY LAND COMPANY
[13]	16 PM 47	LANDS OF HOUNTALAS BEING A PORTION OF LOT 45 AND 46 OF EDWARDS HARRISON TRACT
[14]	18 RM 73	THE MOODY CONDOMINIUMS
[15]	18 RM 81	MAP OF COTE D'AZUR
[16]	19 PM 76	PARCEL MAP OF LOTS 1-4 OF EDWARDS HARRISON TRACT
[17]	19 RM 95	CONDOMINIUM OF "EDWARDS COMMONS"
[18]	20 RS 72	LANDS OF PIGMAN, 3081 OR 13, PORTION OF LOT 14 EDWARDS HARRISON TRACT
[19]	20 RM 98	SOUTH POINT SAUSALITO
[20]	22 ROS 80	PORTION LOT 13, EDWARDS HARRISON TRACT
[21]	22 PM 84	LANDS OF HOUNTALAS, PORTION OF LOTS 45, 46, 47 AND 48 OF EDWARDS HARRISON TRACT
[22]	24 RS 77	LOTS 39, 40 THROUGH 44, AND 45 EDWARDS HARRISON TRACT
[23]	25 RS 61	LOT LINE ADJUSTMENT BEING A PORTION OF LOTS 39, 40 THROUGH 44, AND 45 EDWARDS HARRISON TRACT
[24]	26 RS 49	LANDS OF SHUEL ETAL PORTION OF SOUTH POINT SAUSALITO
[25]	27 RS 35	PORTION OF SOUTHPOINT SAUSALITO, LOTS 40 THROUGH 43, AND A PORTION OF LOT 39 OF EDWARDS HARRISON TRACT
[26]	32 RS 52	LANDS OF KARAH, LOT 13 OF 3 RM 86
[27]	CORNER REC	CORNER RECORD 065-303-37 & 38 PER 18 M 73 AND 19 PM 76
[28]	33 RS 86	LOT LINE ADJUSTMENT LANDS OF GRAVES AND WATSON LOT 38 OF 1 RM 3
[29]	36 RS 85	LANDS OF HODGSON, PORTION OF LOT 37 EDWARDS HARRISON TRACT
[30]	1998 RS 154	LOT LINE ADJUSTMENT PORTIONS OF LOTS 47, 48 AND 49 OF EDWARDS HARRISON TRACT
[31]	1999 RM 93	AMENDED "MOODY CONDOMINIUMS"
[32]	2000 RS 95	LOT 16 EDWARDS HARRISON TRACT
[33]	CORNER REC	CORNER RECORD 065-301-06 - OCTOBER 15, 2000 PER 2000 RS 95
[34]	2002 RS 76	LANDS OF RJ PITTMAN
[35]	2003 RS 109	LANDS OF BOYDEN PORTION OF LOT 38 AND 39 OF EDWARDS HARRISON TRACT
[36]	2003 RS 286	LANDS OF EDWARD FOTSCH PORTION OF LOTS 1, 2 AND 5 OF EDWARDS HARRISON TRACT
[37]	2004 RS 13	LANDS OF BASKETT PORTION OF LOTS 7, 8 AND 9 OF EDWARDS HARRISON TRACT
[38]	2004 RS 126	LANDS OF BERG PORTIONS OF LOTS 36 AND 37 OF EDWARDS HARRISON TRACT
[39]	2004 RS 304	LANDS OF MYERS TRUST, PARCEL 2 OF 9 PM 75
[40]	CORNER REC	CORNER RECORD 065-303-20 - AUGUST 27, 2007 PER 2003 M 286

LEGEND

● FOUND MONUMENT AS NOTED

NOTES

- DISTANCES SHOWN ARE IN FEET AND DECIMALS THERE OF.
- MONUMENTATION SHOWN HEREON IS BASED ON FOUND EVIDENCE SET PER THE VARIOUS RECORDED MAPS IN THE AREA. THIS EXHIBIT IS INTENDED TO SHOW INFORMATION FOUND DURING A FIELD SURVEY AND IS NOT INTENDED TO RESOLVE THE RIGHTS OF WAY OF SOUTH STREET AND ALEXANDER AVENUE COMPARED TO SAID MONUMENTATION.
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LEGEND



SIDEWALK REPAIR



SIDEWALK RECONSTRUCT

REVISIONS

NO.	DESCRIPTION
1	
2	
3	
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5	

DATE	SCALE
11/23/15	1" = 20'
PTC PROJECT NO.	14035
CLIENT	CITY OF SAUSALITO
SHEET NO.	4A OF 4

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1750 Bridgeway, Suite B208
Sausalito, CA 94965
(415) 649-0000

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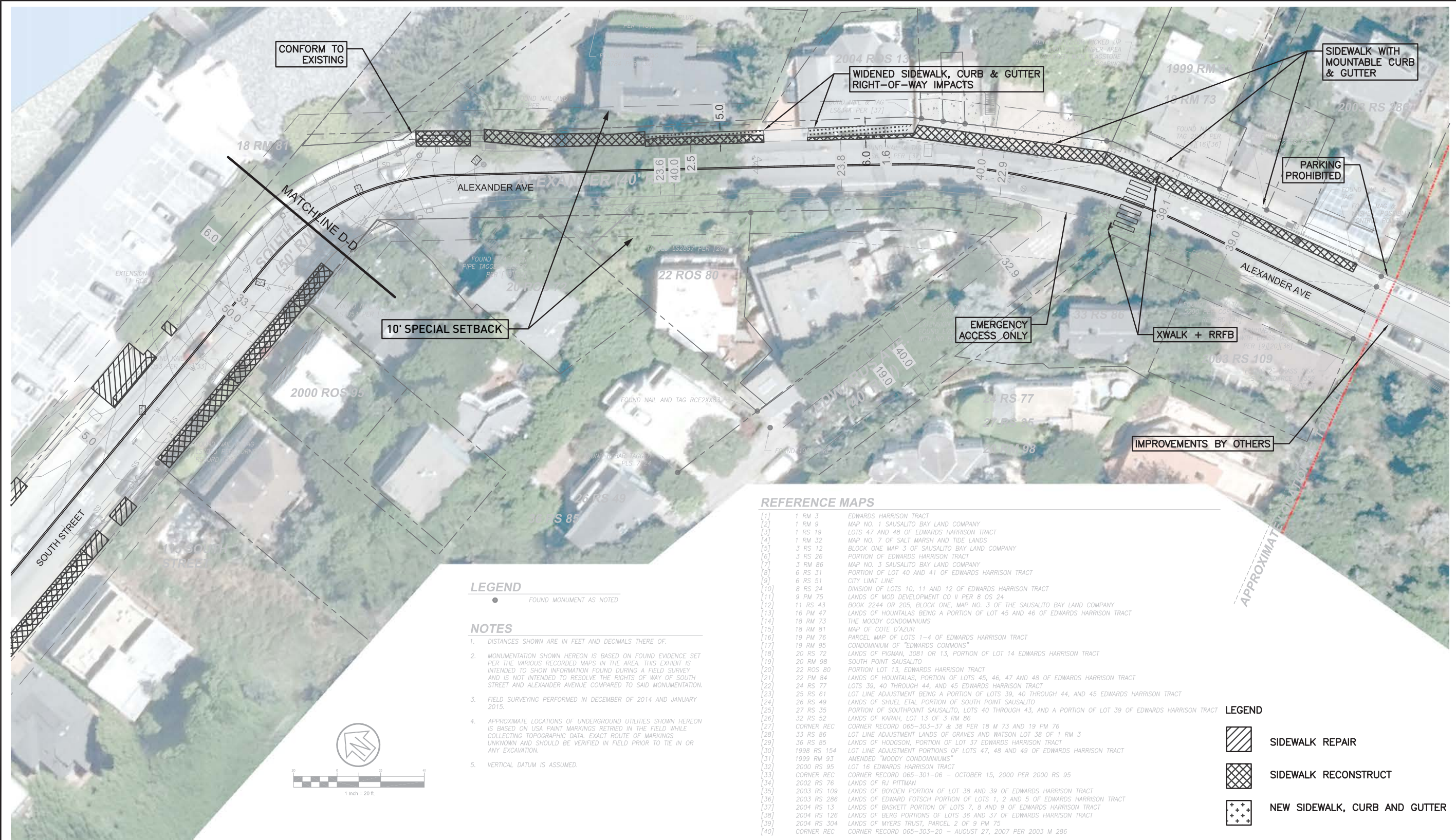
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DESIGNED: AL

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SOUTH GATEWAY COMPLETE STREET PROJECT
ALEXANDER AVENUE, BASELINE ACCESSIBILITY ASSESSMENT



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[39]	2004 RS 304	LANDS OF MYERS TRUST, PARCEL 2 OF 9 PM 75
[40]	CORNER REC	CORNER RECORD 065-303-20 - AUGUST 27, 2007 PER 2003 M 286

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LEGEND

- SIDEWALK REPAIR
- SIDEWALK RECONSTRUCT
- NEW SIDEWALK, CURB AND GUTTER

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1750 Bridgeway, Suite B208
Sausalito, CA 94965
(415) 649-0000

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DESIGNED:	AL	APPROVED:	DP



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ALEXANDER AVENUE, ADDITIONAL IMPROVEMENT CONCEPT 1

REVISIONS		DATE	SCALE
		11/23/15	1" = 20'
		PTC PROJECT NO.	14035
		CLIENT	CITY OF SAUSALITO
		SHEET NO.	4B OF 4
NO.	DESCRIPTION		



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