

Appendix C

Transportation Summary Report



SAN RAFAEL TRANSPORTATION CENTER

Relocation Analysis, Environmental Clearance, and Preliminary Design



DRAFT - Transportation Summary Report

February 2021

Prepared by:

Kimley»Horn

Prepared for:



GOLDEN GATE BRIDGE
HIGHWAY & TRANSPORTATION DISTRICT



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Executive Summary

ES.1 Overview

The Golden Gate Bridge, Highway, and Transportation District (GGBHTD) is currently undertaking a project to identify a new location for the San Rafael Transit Center. Sonoma-Marín Area Rail Transit (SMART) was recently extended to Larkspur, bisecting the existing transit center. This has impacted bus operations and passenger movements, creating the need for a new transit center. Through a community-driven process, several alternatives were developed and screened to identify potential new locations for the transit center. In 2018, a Notice of Preparation (NOP) was issued to begin an environmental analysis process per the requirements of the California Environmental Quality Act (CEQA). The NOP identified five project alternatives. Since the preparation of the NOP, the alternatives have been refined through subsequent design development and the number of build alternatives screened down to three.

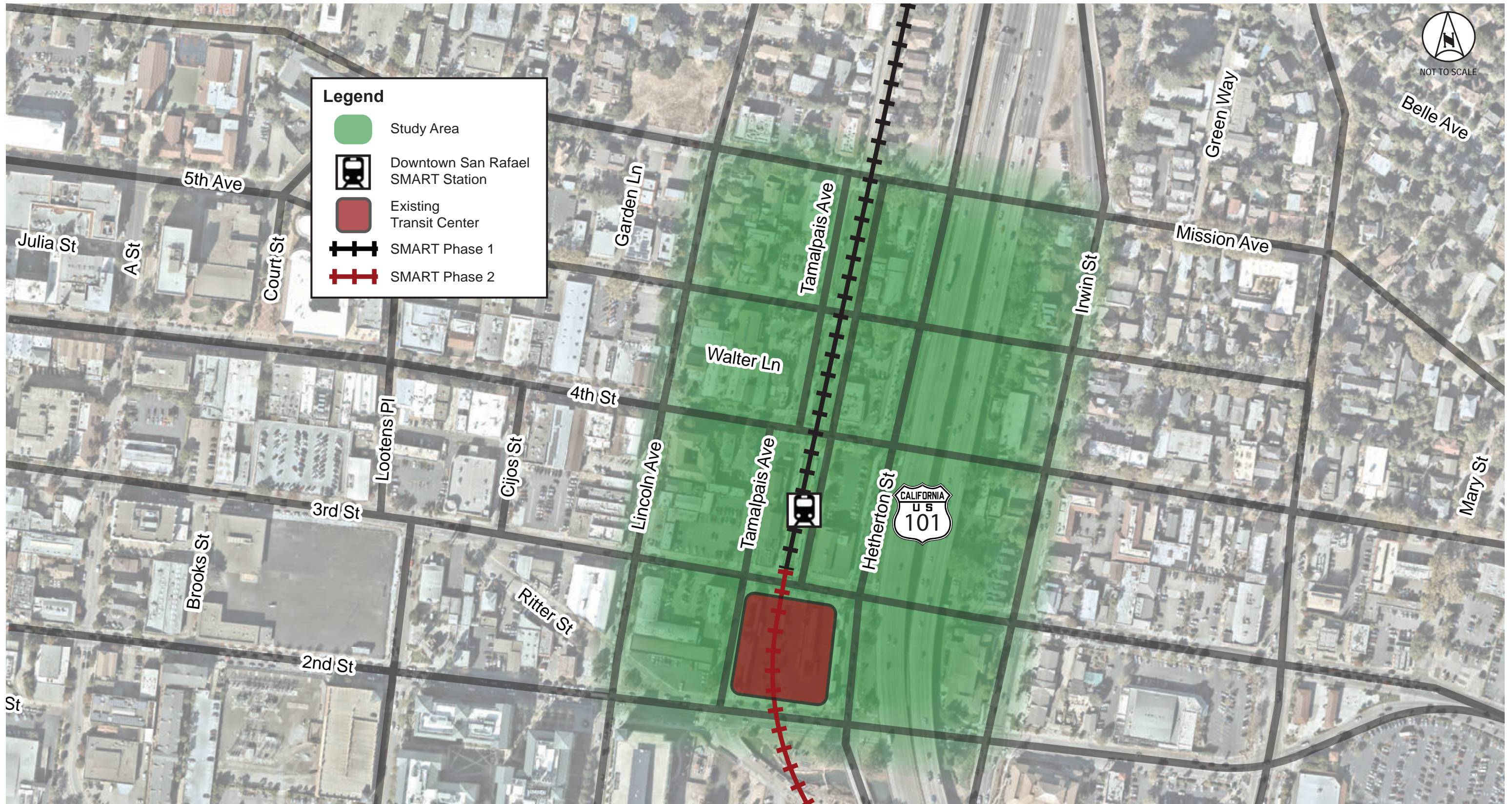
The project team has conducted a detailed transportation evaluation of the three Build alternatives under consideration, plus a no-build alternative. This report documents the evaluation methodology and the results of the analysis.

The San Rafael Transit Center, also known as the C. Paul Bettini Transit Center, is owned by GGBHTD. The District operates Golden Gate Transit (GGT) regional and inter-county bus transit services. The transit center is located in downtown San Rafael at the intersection of 3rd Street and Hetherton Street (see Figure ES-1).



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ES.2 Alternatives

ES.2.1 No-Build Alternative/Existing Transit Center Site

In the No-Build Alternative (shown in Figure ES-2), the transit center would remain at its current location, on the block bound by 2nd Street, Tamalpais Avenue, 3rd Street, and Hetherton Street. The “interim” transit center configuration constructed as part of the SMART extension would remain. Customer service and vendor facilities would remain at their current location on Platform D. Pick-up/drop-off curb space would remain on the west side of Platform D along Tamalpais Avenue. Bus access/egress would continue to occur via driveways along 2nd and 3rd Streets. Buses accessing southbound Highway 101 would continue to berth curbside on the east side of Platform A.

ES.2.2 4th Street Gateway

The 4th Street Gateway alternative is shown in Figure ES-3. This alternative utilizes the two blocks bound by the SMART tracks, 3rd Street, Hetherton Street, and 5th Avenue.

This alternative would include three curbside bays on the west side of Hetherton Street between 4th Street and 5th Avenue. To accommodate these curbside bays, southbound right-turns from Hetherton Street to 4th Street would be precluded. Other bus bays would be accessed via driveways on 3rd and 4th Streets and a driveway on Hetherton Street.

Along Hetherton Avenue, space would be provided for public plazas, bike parking, and building space for customer service and transit-supportive land uses. The segment of the existing Puerto Suello bike path located on the east side of the proposed site between 4th Street and 5th Avenue would be realigned around the transit center site. The existing Victorian homes south of 5th Avenue would either be removed or relocated.

The existing SMART pick-up/drop-off area on East Tamalpais would be removed. Pickup/drop-off space for microtransit, taxis, shuttles, and passenger vehicles would be provided on the east side of West Tamalpais Avenue between 3rd Street and 5th Avenue. Maintenance vehicle parking for five Golden Gate Transit vehicles would be provided on-site at the transit center on the block north of 4th Street, with one additional maintenance vehicle parking space provided on the east side of Tamalpais Avenue between 4th Street and 5th Avenue.

ES.2.3 Under the Freeway

The Under the Freeway alternative is shown in Figure ES-4. This concept utilizes the block bound by 4th Street, Hetherton Street, 5th Avenue, and Irwin Street, and the northern portion of the block bound by Hetherton Street, 3rd Street, 4th Street, and Irwin Street, generally located beneath US-101. Bus bays would be accessed via driveways on 4th Street, Irwin Street, and Hetherton Street.

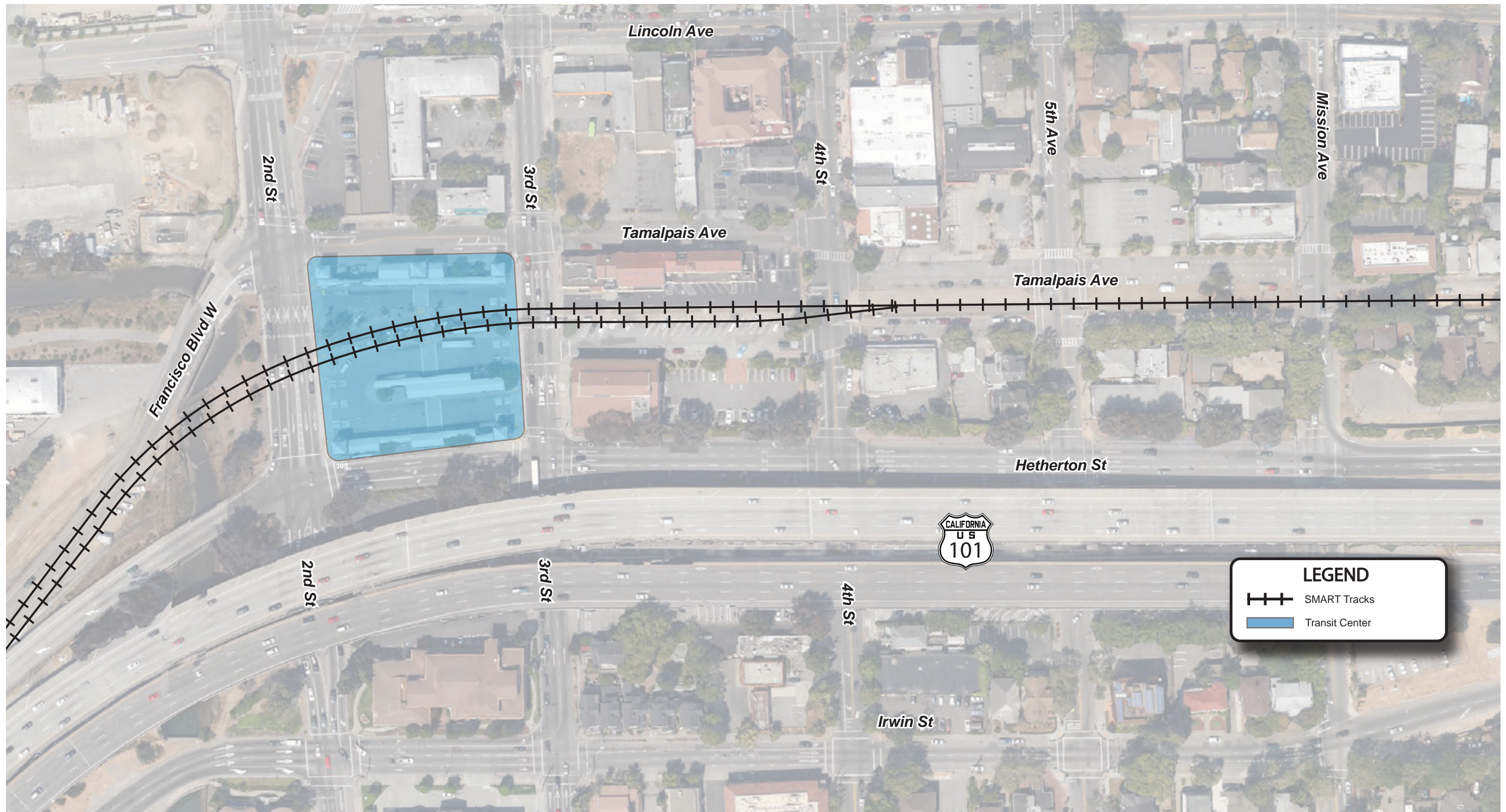
Space would be provided for public plazas, customer service, and/or transit-supportive land uses in the area outside of the US-101 envelope. This alternative would require three bridges/viaducts over Erwin Creek to connect Hetherton Street to the bus bays. Two bridges would be located on the block north of 4th Street and one would be located on the block south of 4th Street.

The under-freeway portions of this alternative are currently occupied by Caltrans-owned and maintained Park & Ride lots; this alternative would result in their removal from this location and relocation to a yet-to-be-determined site. Private property would also need to be acquired. Pickup/drop-off space would be provided on the south side of 5th Avenue between Irwin Street and



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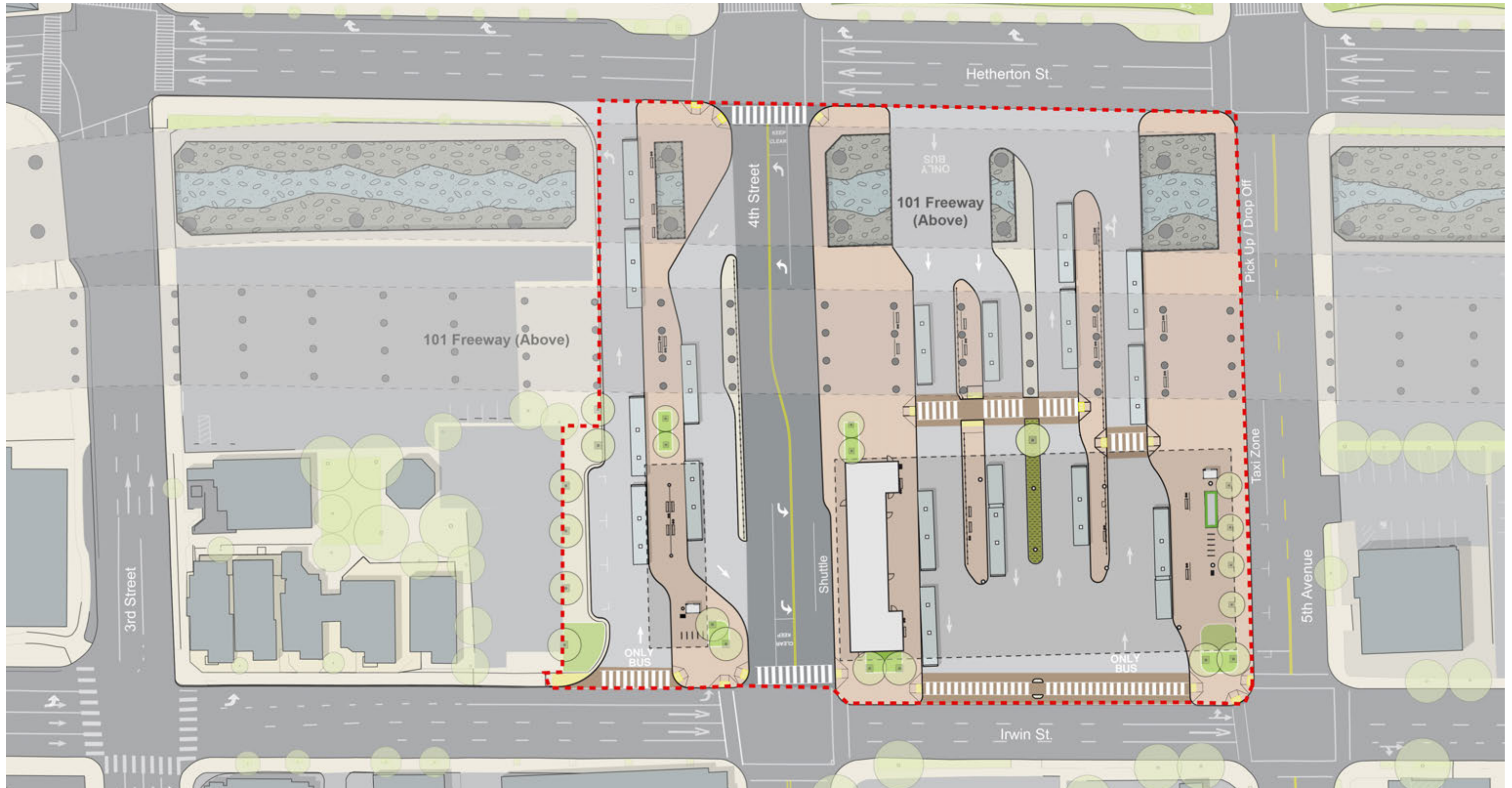
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Hetherton Street. Space for shuttles and microtransit would be provided along the north side of 4th Street, adjacent to the northern portion of the transit center. Maintenance vehicle parking for three Golden Gate Transit vehicles would be provided on the south side of 5th Avenue between Irwin Street and Hetherton Street, and parking for an additional three vehicles would be located on the far southern edge of the site south of 4th Street.

ES.2.4 Whistlestop Block

The Whistlestop Block alternative is shown in Figure ES-5. This alternative co-locates the transit center on the same block as the existing SMART station, by utilizing area from west of West Tamalpais Avenue to 3rd Street, Hetherton Street, and 4th Street. West Tamalpais Avenue between 3rd Street and 4th Street would be limited to buses only, and curbside bays would be provided on both sides of the street. A portion of the curb space on West Tamalpais Avenue would be dedicated to microtransit and shuttles. To the east of the SMART tracks, bus bays would be accessed via driveways on 3rd and 4th Streets. The existing taxi pick-up/drop-off area on East Tamalpais would be relocated to the east side of Tamalpais Avenue between 4th Street and 5th Avenue. The Whistlestop building would remain in place and be modified, renovated, and reconfigured to serve as GGT customer service and operations building space. Some of the space within the building could be allocated for non-GGT uses. Maintenance vehicle parking for five GGT vehicles would be provided on East Tamalpais Avenue between 4th Street and 5th Avenue, and one additional space would be provided on the east side of West Tamalpais Avenue between 4th Street and 5th Avenue.

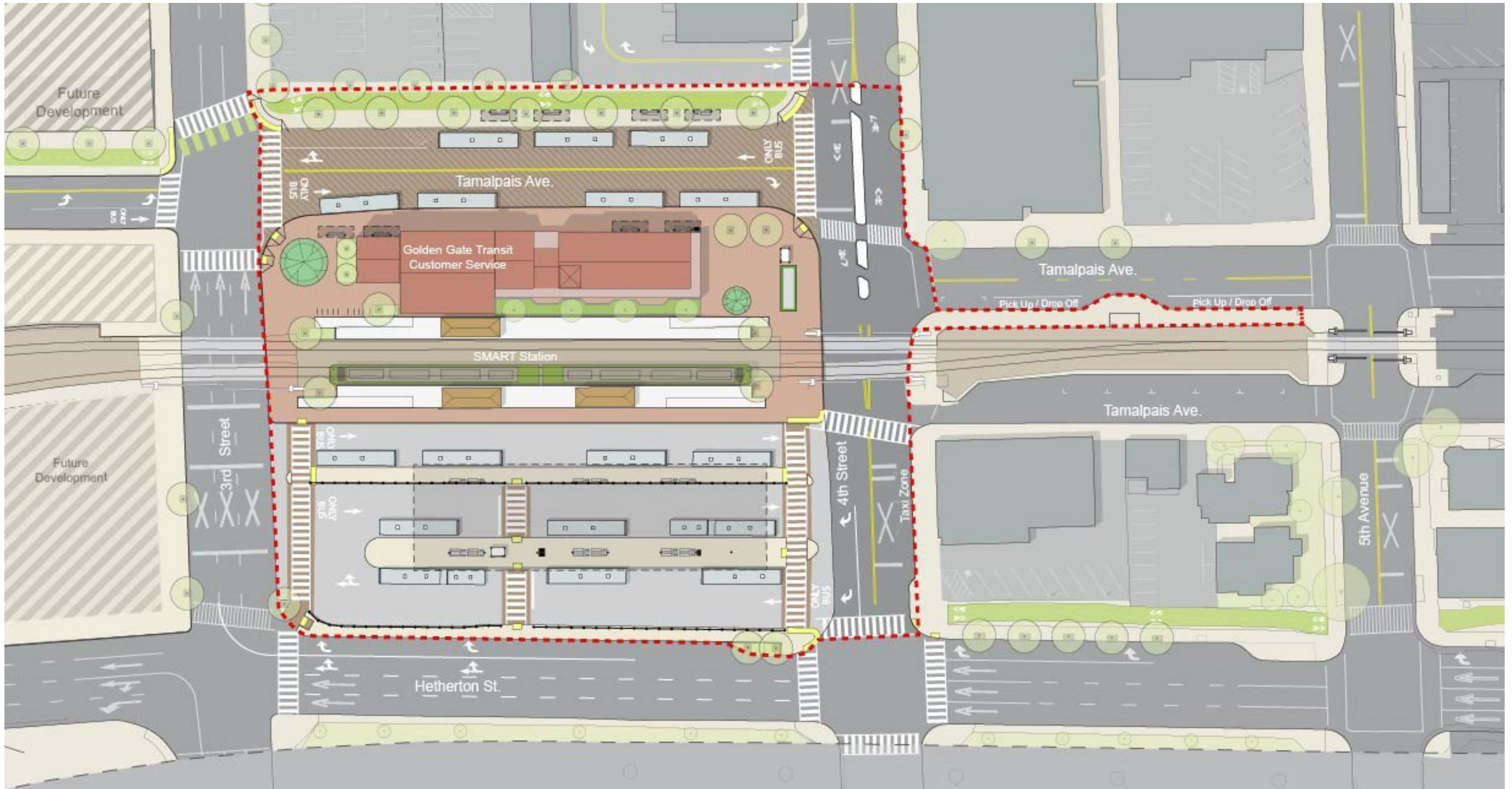
A variation of this alternative, labeled as Move Whistlestop, is shown in Figure ES-6. In this alternative, a portion of the Whistlestop building would be relocated to or rebuilt on the west side of West Tamalpais Avenue between 3rd and 4th Streets. As part of this relocation, West Tamalpais Avenue between 2nd and 4th Streets would be shifted east so that it is directly adjacent to the SMART tracks and more closely aligned with West Tamalpais Avenue north of 4th Street. The relocated or reconstructed building would include GGT customer service and operations building space, as well as supporting retail uses. Space on the southwest corner of the intersection of West Tamalpais Avenue and 4th Street would be provided for public plazas, customer service, bike parking, and/or transit-supportive land uses.

In both variations, a new driveway would be installed on 4th Street between Tamalpais Avenue and Lincoln Avenue to replace the removed driveway on West Tamalpais Avenue that provides access to the condominium complex at Lincoln & 4th Street. In the Move Whistlestop variation, maintenance vehicle parking for six Golden Gate Transit vehicles would be provided along a newly-constructed access road connecting 3rd Street to this new driveway.



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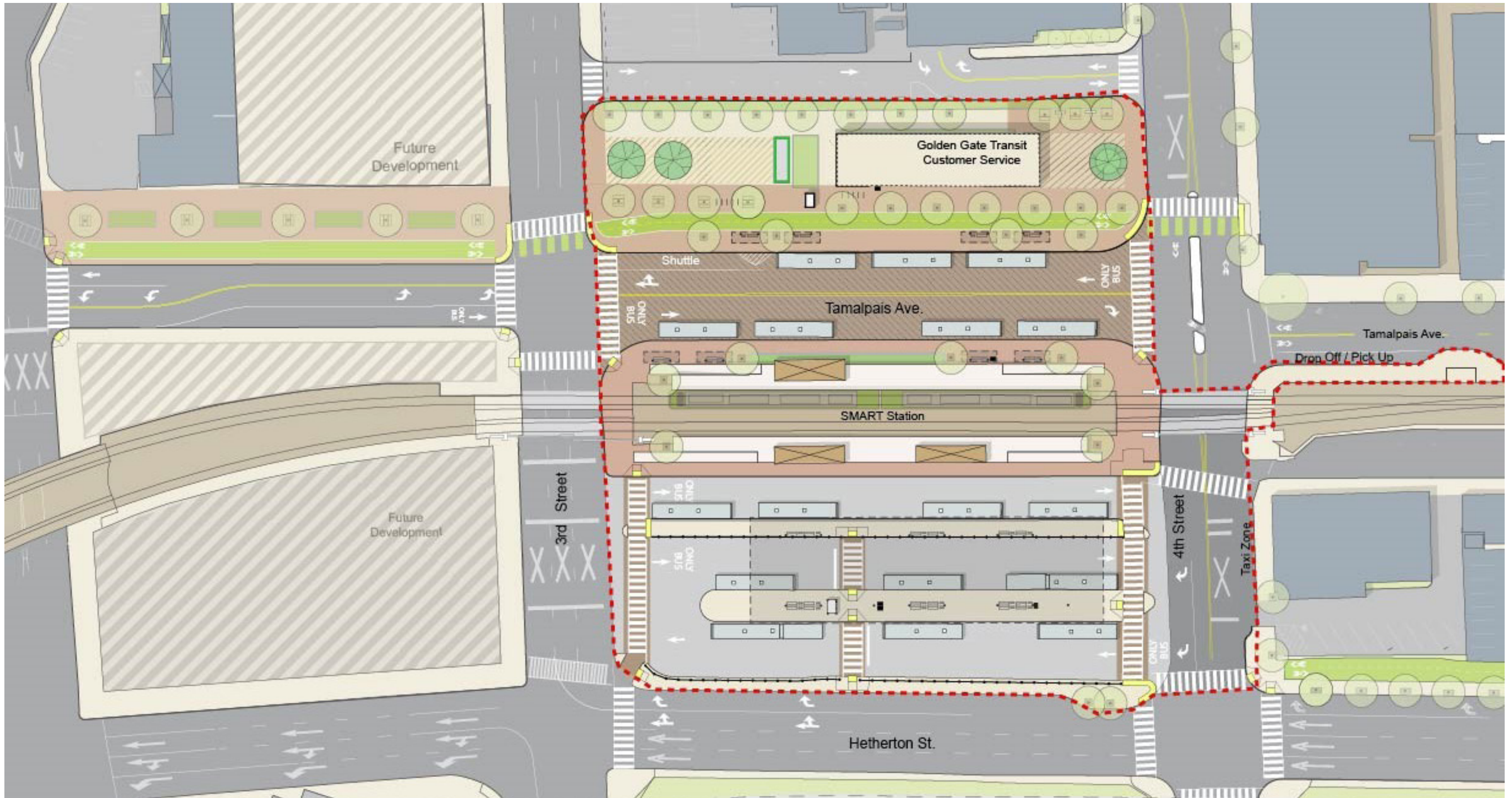
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ES.3 Analysis Methodology

The transportation analysis in this report encompasses a study of transit circulation, vehicular traffic, non-motorized transportation including pedestrians and bicyclists, and parking. All three transit center alternatives, plus a no-build alternative, were analyzed under existing (Year 2020) and Year 2040 conditions.

Roadway geometrics, vehicle/bicycle/pedestrian counts, travel time data, and signal timing data were collected and used as inputs to conduct the transit and traffic analyses. The inputs were applied to VISSIM 9 software package to develop microsimulation models of the no-build and each of the three build alternatives under Existing (Year 2020) and Year 2040 conditions. The modeling produced estimates of changes to circulation time for buses under each alternative as well as changes in vehicle delay and travel time for vehicular traffic. In addition to microsimulation modeling, data on parking, pedestrian volumes, ridership, and transfer activity were utilized to analyze the effects on non-motorized transportation modes and parking.

ES.4 Transit Analysis

Bus circulation was quantified based on the total circulation time of individual bus routes traveling through the microsimulation model for each peak hour; the estimated circulation time for each route was determined by taking the average circulation time of 10 runs of the model.

The total circulation time for all routes, in seconds, is presented in Table ES-1 for existing models and Table ES-2 for year 2040 models. The percent change for delay compared to the baseline (No-Build) analysis is also presented.

Table ES-1: Total Circulation Time in Network – Existing (Year 2020) Conditions

| Total Circulation Time by Routes | | % Change |
|-----------------------------------|------------|----------|
| No-Build A.M. Peak Hour | 27,013 sec | |
| No-Build P.M. Peak Hour | 26,249 sec | |
| 4th Street Gateway A.M. Peak Hour | 25,550 sec | -5% |
| 4th Street Gateway P.M. Peak Hour | 24,133 sec | -8% |
| Under the Freeway A.M. Peak Hour | 21,863 sec | -19% |
| Under the Freeway P.M. Peak Hour | 22,487 sec | -14% |
| Whistlestop Block A.M. Peak Hour | 22,805 sec | -16% |
| Whistlestop Block P.M. Peak Hour | 23,100 sec | -12% |

As shown in the table, in Year 2020 conditions, all Build alternatives would result in a reduction in total circulation time relative to the No-Build condition. The Under the Freeway Alternative and the Whistlestop Block Alternative both result in a greater than fifteen percent reduction in transit travel time in the a.m. peak hour and a greater than ten percent reduction in transit travel time in the p.m. peak hour.

Table ES-2: Total Circulation Time in Network – Year 2040 Conditions

| Total Circulation Time by Routes (s) | | % Change |
|--------------------------------------|------------|----------|
| No-Build A.M. Peak Hour | 35,411 sec | |
| No-Build P.M. Peak Hour | 30,394 sec | |
| 4th Street Gateway A.M. Peak Hour | 38,547 sec | +9% |
| 4th Street Gateway P.M. Peak Hour | 24,416 sec | -20% |
| Under the Freeway A.M. Peak Hour | 29,300 sec | -17% |
| Under the Freeway P.M. Peak Hour | 27,740 sec | -9% |
| Whistlestop Block A.M. Peak Hour | 30,702 sec | -13% |
| Whistlestop Block P.M. Peak Hour | 24,018 sec | -21% |

As shown in the table, in Year 2040 conditions, the Under the Freeway Alternative and the Whistlestop Block Alternative provide a reduction in transit travel time in both the a.m. and p.m. peak hours relative to the No-Build. Both the Under Freeway Alternative and the Whistlestop Alternative provide a greater than ten percent reduction in the a.m. peak hour, but only the Whistlestop Block Alternative provides a greater than ten percent reduction in the p.m. peak hour. The 4th Street Gateway alternative provides a benefit in the p.m. peak hour, but results in a large increase in transit travel time in the a.m. peak hour. This is associated with increased congestion, further discussed in Chapter 4, on several transit corridors.

ES.5 Traffic Analysis

The microsimulation models developed for each transit center alternative were used to analyze Existing (Year 2020) and Year 2040 traffic operations and levels of service. The overall network results for existing conditions are shown in Table ES-3.

Table ES-3: Network Evaluation - Existing Conditions

| Scenario | | Avg Delay/Vehicle | Avg # Stops/Vehicle | Net Change in Delay/Vehicle | Net Change in Delay/Vehicle (%) |
|---------------------|----------------|-------------------|---------------------|-----------------------------|---------------------------------|
| Baseline (No-Build) | A.M. Peak Hour | 176 sec | 4 | | |
| | P.M. Peak Hour | 130 sec | 6 | | |
| 4th Street Gateway | A.M. Peak Hour | 200 sec | 4 | +25 | +14% |
| | P.M. Peak Hour | 144 sec | 6 | +14 | +8% |
| Under the Freeway | A.M. Peak Hour | 170 sec | 4 | -6 | -3% |
| | P.M. Peak Hour | 115 sec | 5 | -15 | -9% |
| Whistlestop Block | A.M. Peak Hour | 180 sec | 4 | +5 | +3% |
| | P.M. Peak Hour | 117 sec | 5 | -13 | -7% |

As shown in the table, the 4th Street Gateway alternative would result in an increase in delay per vehicle in both the a.m. and p.m. peak hours. The other two alternatives have a less than five percent change in the a.m. peak period with a moderate reduction in the p.m. peak period.

The overall network results for Year 2040 conditions are shown in Table ES-4.

Table ES-4: Network Evaluation – Year 2040 Conditions

| Scenario | | Avg Delay/Vehicle | Avg # Stops/Vehicle | Net Change in Delay/Vehicle | Net Change in Delay/ Vehicle (%) |
|----------------------------|----------------|-------------------|---------------------|-----------------------------|----------------------------------|
| Baseline (No-Build) | A.M. Peak Hour | 271 sec | 6 | | |
| | P.M. Peak Hour | 164 sec | 6 | | |
| 4th Street Gateway | A.M. Peak Hour | 313 sec | 7 | +42 | +16% |
| | P.M. Peak Hour | 155 sec | 7 | -8 | -5% |
| Under the Freeway | A.M. Peak Hour | 264 sec | 6 | -7 | -2% |
| | P.M. Peak Hour | 152 sec | 6 | -12 | -7% |
| Whistlestop Block | A.M. Peak Hour | 266 sec | 6 | -5 | -2% |
| | P.M. Peak Hour | 147 sec | 6 | -17 | -10% |

All alternatives result in a moderate decrease in delay per vehicle except for the 4th Street Gateway in the a.m. peak hour. The benefits for the Under the Freeway and Whistlestop Block Alternatives are similar, albeit somewhat greater benefits are seen with the Whistlestop Block alternative in the p.m. peak hour. A portion of the model runs for the 4th Street Gateway Alternative resulted in gridlock which causes a significant increase in average delay for that scenario.

ES.6 Non-Motorized Transportation

The transit center alternatives were analyzed to evaluate their connectivity to downtown and local destinations, as well as their ability to connect passengers between different transit services. The 4th Street Gateway Alternative is nearest to Downtown San Rafael, which is the greatest trip attractor for passengers at the transit center. The Under the Freeway option is located the farthest away from downtown with the additional barrier of Hetherton Street.

The Whistlestop Block Alternative consolidates all bus bays within one block along with SMART and closes a public street, meaning that pedestrians do not have to cross any street open to auto traffic to transfer between buses or between a bus and SMART. The 4th Street Gateway Alternative requires the greatest amount of 4th Street crossings for bus to bus transfers. The Under the Freeway Alternative requires the most challenging transfer to SMART, as it requires crossing busy Hetherton Street for that transfer movement.

For bicycle connections, the Whistlestop Block would best promote the City’s planned bicycle network by constructing two blocks of the proposed Class IV bikeway on Tamalpais Avenue as a high-quality raised two-way Class IV facility. The 4th Street Gateway Alternative would require removal or realignment of one block of the Puerto Suello bike path but would provide strong connections to the Mahon Creek Path and the Puerto Suello bike path. The Under the Freeway Alternative would not closely integrate with the City’s planned network nor would it affect any planned facilities.

ES.7 Parking

The effects of the Whistlestop Block and 4th Street Gateway alternatives are largely limited to the conversion of on-street spaces to curb space used for transit center-related pick-up/drop-off space or maintenance vehicle parking. The Under the Freeway alternative also requires use of some on-street spaces, but also results in the removal of 72 spaces in existing Caltrans park & ride lots under US 101; Caltrans would require that these spaces be relocated to an undetermined location elsewhere.

1.0 Introduction

The Golden Gate Bridge, Highway, and Transportation District (GGBHTD) is currently undertaking a project to identify a new location for the San Rafael Transit Center. Sonoma-Marín Area Rail Transit (SMART) was recently extended to Larkspur, bisecting the existing transit center. This has impacted bus operations and passenger movements, creating the need for a new transit center. Through a community-driven process, several alternatives were developed and screened to identify potential new locations for the transit center. In 2018, a Notice of Preparation (NOP) was issued to begin an environmental analysis process per the requirements of the California Environmental Quality Act (CEQA). The NOP identified five project alternatives. Since the preparation of the NOP, the alternatives have been refined through subsequent design development and the number of build alternatives screened down to three.

The project team has conducted a detailed transportation evaluation of the three build alternatives under consideration, plus a no-build alternative. This report documents the evaluation methodology and the results of the analysis.

1.1 Project Description

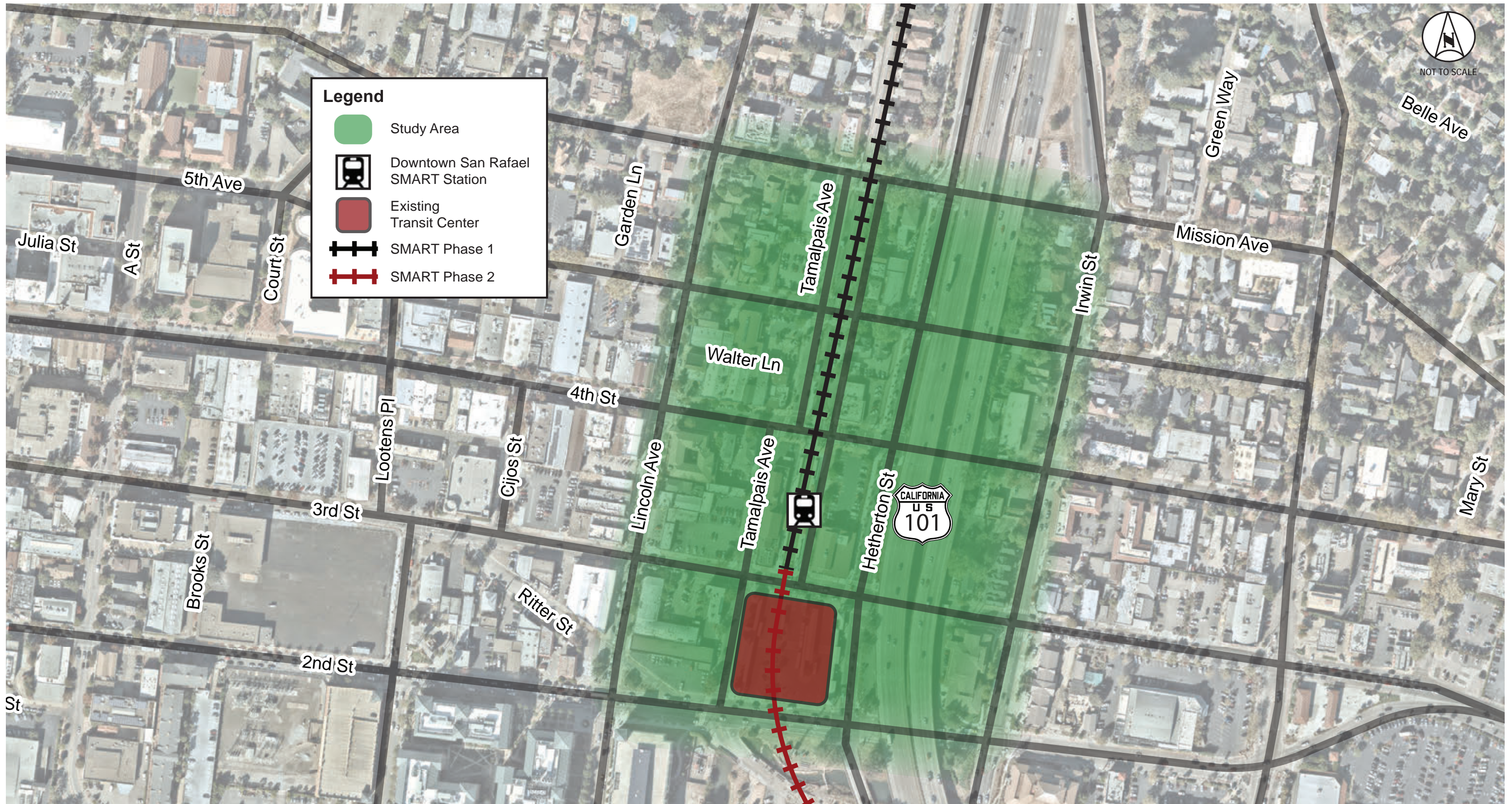
The San Rafael Transit Center, also known as the C. Paul Bettini Transit Center, is owned by GGBHTD. The District operates Golden Gate Transit regional and inter-county bus transit services. The transit center is located in downtown San Rafael at the intersection of 3rd Street and Hetherton Street (see Figure 1-1). With more than 500 bus trips daily and 17 operating bus bays, the transit center is the largest transit hub in Marin County, providing access to the regional transportation network for area residents and a key transfer point for residents, employees, visitors, and students in San Rafael and the greater North Bay region. The transit center primarily serves bus routes operated by Golden Gate Transit and Marin Transit, but it is also served by airporter, Greyhound, and paratransit services. On weekdays, nearly 9,000 people board/alight buses at the transit center to make their necessary transportation connections. Downtown San Rafael is an important destination, with nearly half of the passengers travelling to or from downtown, and the remaining riders making transfers to other destinations. The bus bays currently are fully occupied at times during the peak-period pulse, leaving little room for growth in bus service.

The new transit center (“Project”) will include similar facilities to the existing transit center, with additional amenities planned to upgrade technology, provide connections to emerging transportation modes, and enhanced public spaces. Similar to the existing transit center, 17 bays will be provided along with pick-up/drop-off curb space for private autos, taxis, transportation network companies (TNCs), and microtransit. To support transit center operations, the facility will include parking for maintenance/operations vehicles, relief facilities for drivers and other staff, and public restrooms. Other passenger amenities will include facilities, space for customer service and complementary retail, signage/wayfinding, bike parking, security kiosk(s), and urban design elements.



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1.2 Alternatives

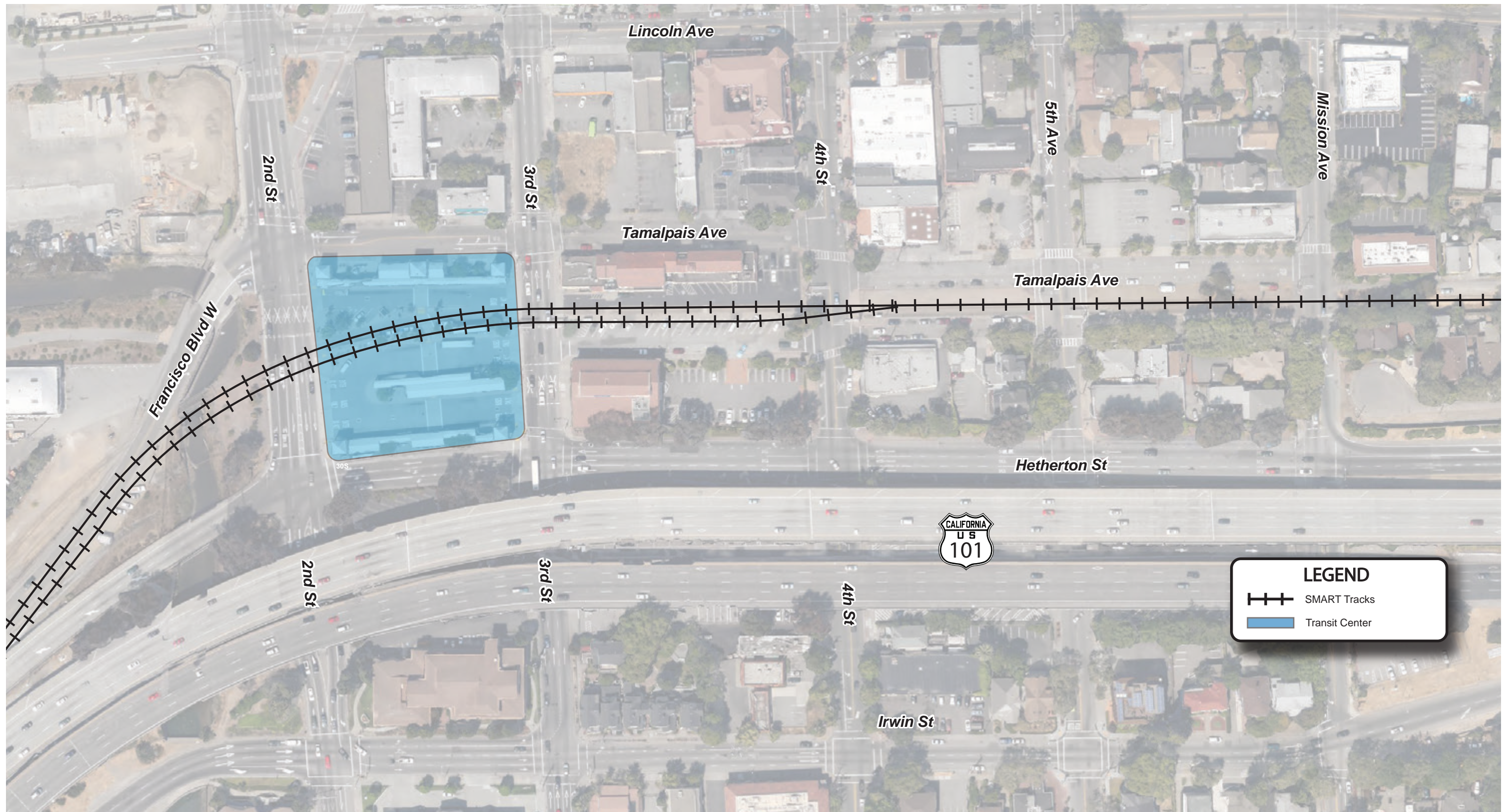
1.2.1 No-Build Alternative/Existing Transit Center Site

In the No-Build Alternative, the transit center would remain at its current location, on the block bound by 2nd Street, Tamalpais Avenue, 3rd Street, and Hetheron Street. The “interim” transit center configuration constructed as part of the SMART extension would remain. Customer service and vendor facilities would remain at their current location on Platform D. Pick-up/drop-off curb space would remain on the west side of Platform D along Tamalpais Avenue. Bus access/egress would continue to occur via driveways along 2nd and 3rd Streets. Buses accessing southbound Highway 101 would continue to berth curbside on the east side of Platform A.



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1.2.2 4th Street Gateway

The 4th Street Gateway alternative is shown in Figure 1-3. This alternative utilizes the two blocks bound by the SMART tracks, 3rd Street, Hetherton Street, and 5th Avenue.

This alternative would include three curbside bays on the west side of Hetherton Street between 4th Street and 5th Avenue. To accommodate these curbside bays, southbound right-turns from Hetherton Street to 4th Street would be precluded. Other bus bays would be accessed via driveways on 3rd and 4th Streets and a driveway on Hetherton Street.

Along Hetherton Avenue, space would be provided for public plazas, bike parking, and building space for customer service and transit-supportive land uses. The segment of the existing Puerto Suello bike path located on the east side of the proposed site between 4th Street and 5th Avenue would be realigned around the transit center site. The existing Victorian homes south of 5th Avenue would either be removed or relocated.

The existing taxi pick-up/drop-off area on East Tamalpais would be removed. A new pickup/drop-off space for microtransit, taxis, shuttles, and passenger vehicles would be provided on the east side of West Tamalpais Avenue between 3rd Street and 5th Avenue. Maintenance vehicle parking for five Golden Gate Transit vehicles would be provided on-site at the transit center on the block north of 4th Street, with one additional maintenance vehicle parking space provided on the east side of Tamalpais Avenue between 4th Street and 5th Avenue.



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1.2.3 Under the Freeway

The Under the Freeway alternative is shown in Figure 1-4. This concept utilizes the block bound by 4th Street, Hetherton Street, 5th Avenue, and Irwin Street, and the northern portion of the block bound by Hetherton Street, 3rd Street, 4th Street, and Irwin Street, generally located beneath US-101. Bus bays would be accessed via driveways on 4th Street, Irwin Street, and Hetherton Street.

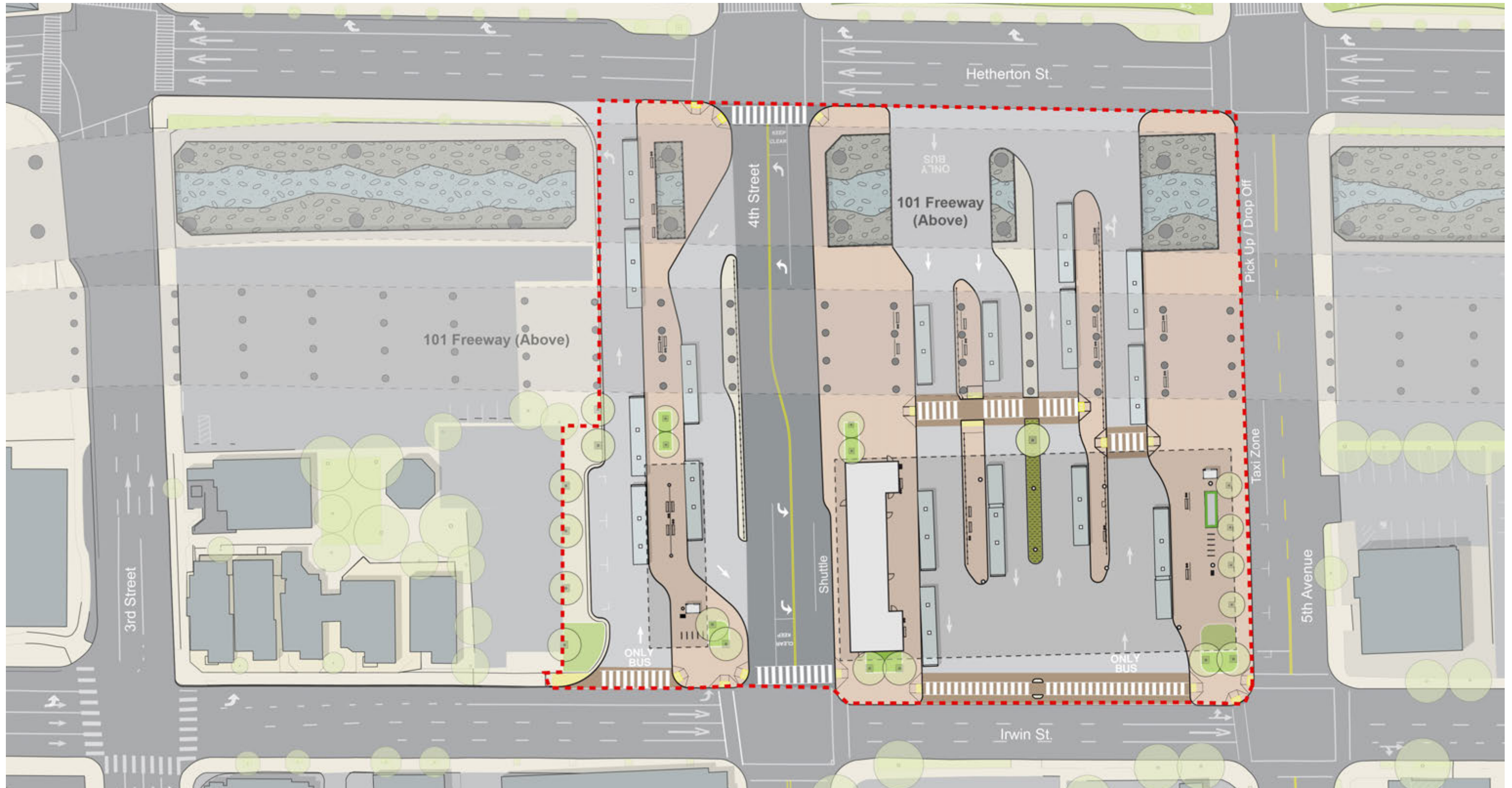
Space would be provided for public plazas, customer service, and/or transit-supportive land uses in the area outside of the US-101 envelope. This alternative would require three bridges/viaducts over Erwin Creek to connect Hetherton Street to the bus bays. Two bridges would be located on the block north of 4th Street and one would be located on the block south of 4th Street.

The under-freeway portions of this alternative are currently occupied by Caltrans-owned and maintained Park & Ride lots; this alternative would result in their removal from this location and relocation to a yet-to-be-determined site. Private property would also need to be acquired. Pickup/drop-off space would be provided on the south side of 5th Avenue between Irwin Street and Hetherton Street. Space for shuttles and microtransit would be provided along the north side of 4th Street, adjacent to the northern portion of the transit center. Maintenance vehicle parking for three Golden Gate Transit vehicles would be provided on the south side of 5th Avenue between Irwin Street and Hetherton Street, and parking for an additional three vehicles would be located on the far southern edge of the site south of 4th Street.



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1.2.4 Whistlestop Block

The Whistlestop Block alternative is shown in Figure 1-5. This alternative co-locates the transit center on the same block as the existing SMART station, by utilizing area from west of West Tamalpais Avenue to 3rd Street, Hetherton Street, and 4th Street. West Tamalpais Avenue between 3rd Street and 4th Street would be limited to buses only, and curbside bays would be provided on both sides of the street. A portion of the curb space on West Tamalpais Avenue would be dedicated to microtransit and shuttles. To the east of the SMART tracks, bus bays would be accessed via driveways on 3rd and 4th Streets. The existing taxi pick-up/drop-off area on East Tamalpais would be relocated to the east side of Tamalpais Avenue between 4th Street and 5th Avenue. The Whistlestop building would remain in place and be modified, renovated, and reconfigured to serve as GGT customer service and operations building space. Some of the space within the building could be allocated for non-GGT uses. Maintenance vehicle parking for five GGT vehicles would be provided on East Tamalpais Avenue between 4th Street and 5th Avenue, and one additional space would be provided on the east side of West Tamalpais Avenue between 4th Street and 5th Avenue.

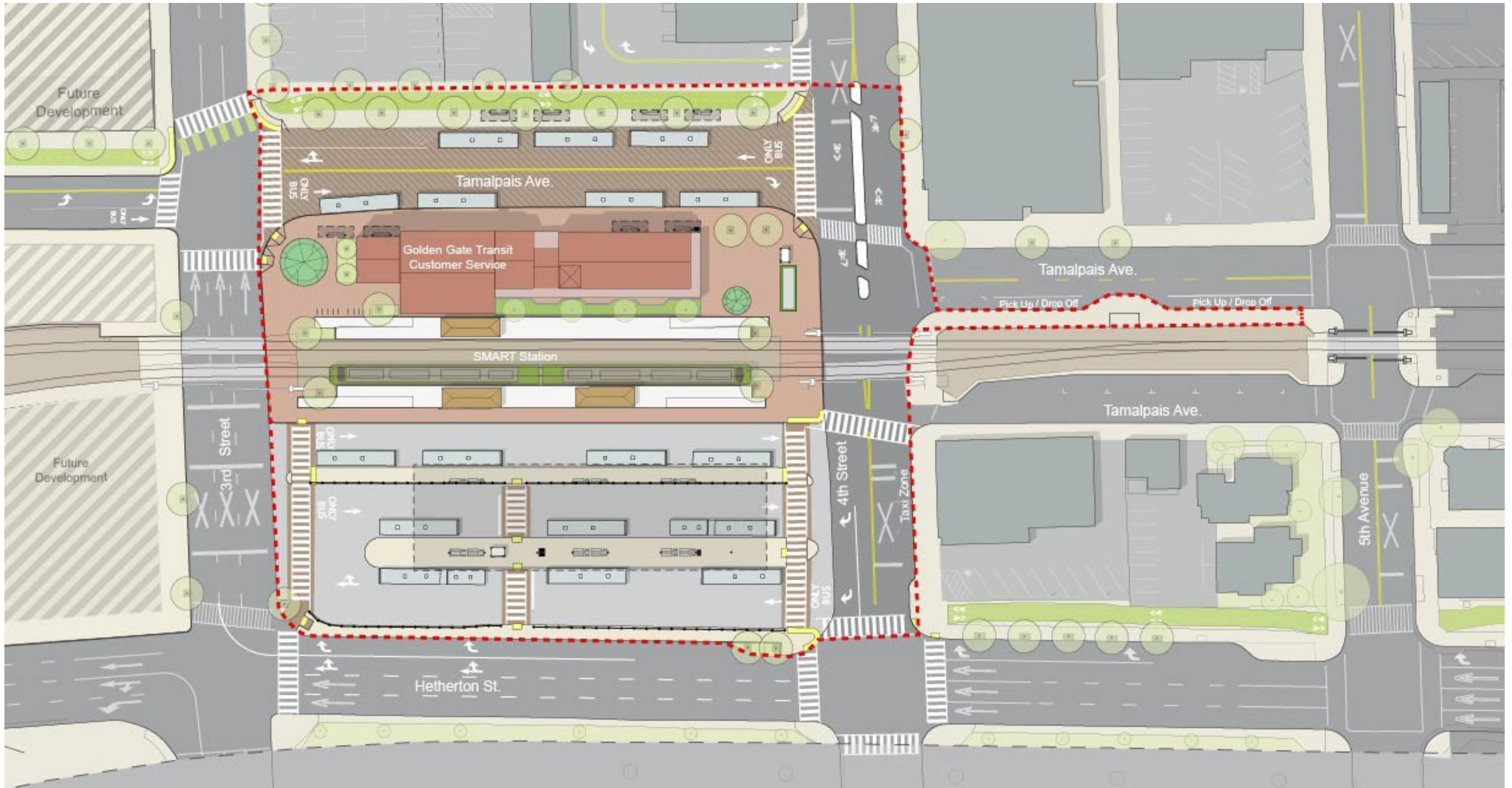
A variation of this alternative, labeled as Move Whistlestop, is shown in Figure 1-6. In this alternative, a portion of the Whistlestop building would be relocated to or rebuilt on the west side of West Tamalpais Avenue between 3rd and 4th Streets. As part of this relocation, West Tamalpais Avenue between 2nd and 4th Streets would be shifted east so that it is directly adjacent to the SMART tracks and more closely aligned with West Tamalpais Avenue north of 4th Street. The relocated or reconstructed building would include GGT customer service and operations building space, as well as supporting retail uses. Space on the southwest corner of the intersection of West Tamalpais Avenue and 4th Street would be provided for public plazas, customer service, bike parking, and/or transit-supportive land uses.

In both variations, a new driveway would be installed on 4th Street between Tamalpais Avenue and Lincoln Avenue to replace the removed driveway on West Tamalpais Avenue that provides access to the condominium complex at Lincoln & 4th Street. In the Move Whistlestop variation, maintenance vehicle parking for six Golden Gate Transit vehicles would be provided along a newly-constructed access road connecting 3rd Street to this new driveway.



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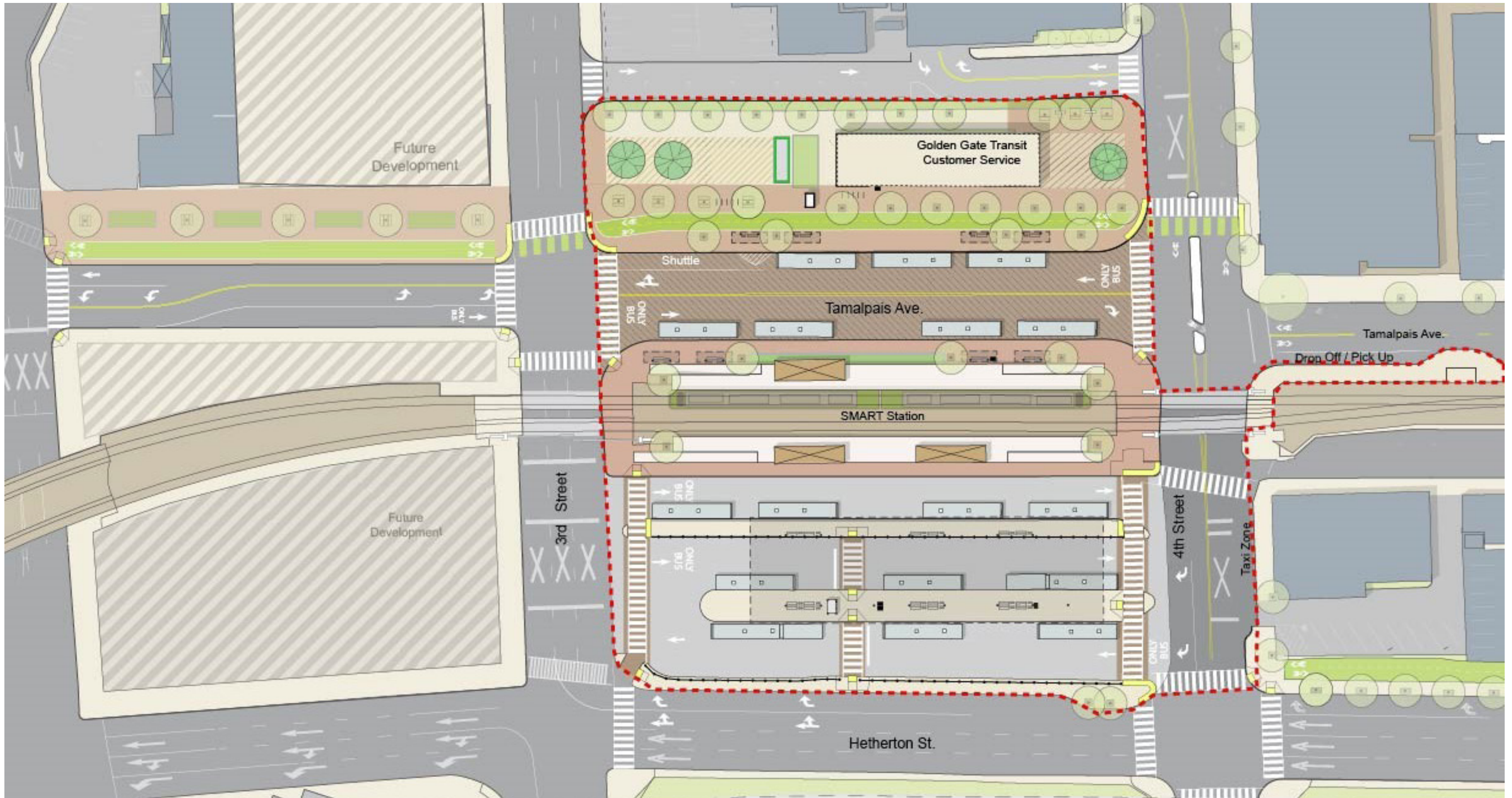
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2.0 Analysis Methodology & Data Collection

2.1 Analysis Scenarios

Intersection operations analyses were performed for Existing no-build and build conditions (Year 2020), and future (Year 2040) no-build and build conditions. The analyses were conducted to study the impact of relocating the transit center to different locations proposed under the three build alternatives. The following analysis scenarios were performed:

- **Existing Conditions (No-Build Alternative)** – Assumes the existing roadway network, traffic volumes, and transit service
- **Existing Conditions – Build Alternatives** – Assumes the changes to the roadway network and transit routing associated with each Build alternative, based on existing traffic volumes
- **Year 2040 Conditions (No-Build Alternative)** – Assumes growth in traffic (auto, bicycle, and pedestrian) volumes to projected Year 2040 conditions. Includes planned changes to the roadway network. Assumes existing transit service, modified as needed based on roadway network changes.
- **Year 2040 Conditions – Build Alternatives** – Assumes the changes to the roadway network and transit routing associated with each Build alternative and planned roadway network modifications, based on projected Year 2040 traffic volumes.

2.2 Existing Conditions Data Collection

The transportation analysis of Existing conditions is based on data collected by the project team and information provided by Golden Gate Transit, Marin Transit, the City of San Rafael, Transportation Authority of Marin (TAM), and SMART.

The project team collected a.m. and p.m. peak hour turning movement volumes, including bicycle and pedestrian volumes, at 42 study intersections in January 2020. These represent conditions prior to the impact of the coronavirus pandemic. Peak period travel times along 2nd Street, 3rd Street, 4th Street, Irwin Street, and Hetherton Street were also collected in the same month to assist in calibrating the analysis. Queue lengths for the US-101 off-ramps at Mission Avenue and 2nd Street were also collected during peak periods.

All transit information documented and analyzed in this report reflects pre-COVID-19 conditions. Golden Gate Transit, Marin Transit, and SMART provided information on existing transit routes and schedules for pre-COVID-19 conditions.

The Metropolitan Transportation Commission (MTC) provided Clipper transfer data, which was supplemented by farebox data provided by Golden Gate Transit and Marin Transit to determine transfer activity at the transit center.

Golden Gate Transit and Marin Transit provided on-board survey data, which was used to determine activity patterns at the transit center and modes of access and egress.

The City of San Rafael provided existing signal timings and information on planned changes to the bicycle, pedestrian, and roadway network to be accounted for in Year 2040 conditions.

The data provided was supplemented by numerous field visits conducted by the project team.

2.3 Year 2040 Conditions Assumptions

The City of San Rafael provided daily and peak hour model volume plots from the TAM activity-based countywide travel demand model for baseline (2019) and future (Year 2040) conditions; the future forecasts incorporated the preferred land use plan from the ongoing 2040 San Rafael General Plan Update. The model plots provided by the City were used to develop traffic volumes for Year 2040 conditions.

The Year 2040 baseline includes the construction of long-term roadway network improvements planned by the City of San Rafael and unrelated to the proposed Project.

- Conversion of B Street, C Street, and D Street from one-way to two-way operations
- Conversion of Francisco Boulevard West to one-way southbound operations between 2nd Street and Rice Drive
- Conversion of the following segments of West Tamalpais Avenue:
 - 2nd Street to 3rd Street – convert to one-way operation southbound
 - 3rd Street to 4th Street – convert to one-way operation northbound
 - 4th Street to 5th Avenue – close to vehicle traffic
 - 5th Avenue to Mission Avenue – convert to one-way operation northbound
- The northbound approach to 2nd Street & Grand Avenue would be converted to two through lanes and a 100-foot right-turn pocket
- Addition of a second northbound right-turn lane at 2nd Street & Irwin Street; removal of the existing crosswalks on the north and east legs of the same intersection and construction of new crosswalks on the south and west legs.
- Completion of the SMART Multi-Use Path to 2nd Street

It should be noted that some of the Build alternatives include modifications to these planned network improvements.

2.4 VISSIM Modeling Platform

Technical analysis of the alternatives was performed using the VISSIM micro-simulation platform, which allows for modeling of individual movements as they travel through the roadway network. This micro-simulation model allows the operations of the entire study area network to be considered in an integrated fashion, allowing for the detailed evaluation of upstream and downstream effects of a set of solutions. A critical component of the analysis was understanding how treatments at the individual intersections interact and affect upstream and downstream locations. The VISSIM platform allows for analysis of the integration of auto, transit, bicycle, and pedestrian modes in a dynamic environment, making it sensitive to the effects of changes in circulation patterns such as those anticipated to result from the Project.

VISSIM is a sophisticated and detailed analysis tool that provides the ability to model complex multimodal traffic interactions, including merge, weave, pedestrian, and bicycle movements. Existing auto, transit, bicycle, and pedestrian activity data was utilized in the micro-simulation model. Roadway geometrics, vehicle/bicycle/pedestrian counts, travel time data, and signal timing data were collected and used as inputs to conduct the operation analysis. The VISSIM analysis calculated metrics such as intersection delay, queuing, corridor travel time, vehicle delay, vehicle travel time, and transit travel

time. Videos created from the VISSIM model allowed for visual demonstration of conditions with the baseline scenario and each build alternative.

Intersection operations are described using a level of service grade, as defined by the *Highway Capacity Manual, 6th Edition* (HCM). The level of service ranges from A to F, with A representing little to no delay and F representing failing conditions with excessive delay. Intersection delay was obtained from the VISSIM model in the form of seconds of delay. This was converted to a level of service using HCM thresholds for delay. It is noted that the VISSIM model does not rely on HCM methodologies and thus the level of service grade provided should be used as a comparative tool only and may not match the findings of an HCM-based analysis.

The VISSIM models created were based on the 1-hour peak period for both the 7:45 to 8:45 a.m. and 4:30 to 5:30 p.m. peak traffic conditions. A 15-minute “seeding” period was added to the beginning of each model run to properly saturate the network. 10 simulation runs were conducted for each model. The results presented in this report are the average of the 10 runs, except where noted.

The models were calibrated to existing conditions in accordance with *FHWA Traffic Analysis Toolbox Volume 3* which is used by Caltrans as guidance for VISSIM model calibration. The models were calibrated to observed traffic volumes and corridor travel time data on 2nd Street, 3rd Street, 4th Street, Hetherton Street, and Irwin Street. To ensure proper calibration, the model’s behavior and characteristics were adjusted for both the morning and afternoon peak so that each of the measured corridors were within 30% of the field-conducted travel times.

2.5 Traffic Conditions

As all build alternatives primarily represent a shifting of bus activity from location to another; the project does not change the amount of bus service to be provided nor are new vehicle trips assumed to be generated by this project. Each of the three build alternatives include some limited changes to the local roadway network, which affect traffic circulation. Additionally, the shifting of the transit center results in a different circulation pattern for buses on local streets.

To determine the impacts associated with the roadway configuration changes, shift in traffic volumes, and shift in bus circulation, intersections were analyzed for Existing and Year 2040 traffic operations.

Delay and intersection level of service (LOS) analyses are provided for both the a.m. and p.m. peak hours. Intersection analysis locations encompass the anticipated area of traffic effects associated with the build alternatives. In total, 42 distinct intersection locations were analyzed during both peak hours for all analysis scenarios. The locations of the study intersections are shown in Figure 2-1.

Count data collected by the project team was used to develop model volumes for existing conditions. Year 2040 volumes for the baseline VISSIM models were developed by applying annual growth rates derived from TAM countywide activity-based travel demand model runs produced based on 2040 San Rafael General Plan Update land uses. Separate annual growth rates were derived separately for four quadrants of the study area; 4th Street delineated between the northern and southern quadrants of the model and Highway 101 delineated between the eastern and western quadrants. The annual growth rates were applied to volumes within each quadrant of the model.

For roadway network changes assumed under the Year 2040 baseline and all of the build alternatives, it was assumed that any vehicular movements which would be affected by network changes would be redistributed through an alternate route through the network. For example, in the instance that a right-turn lane were proposed to be removed, a new route for the right-turn volumes at that location was determined, and volumes for all conditions in which the right-turn lane is removed were adjusted to reflect these redistributed volumes.

The VISSIM models were used to develop movement-level and intersection-level average vehicular delay. These metrics were developed by running multiple instances of the microsimulation model and producing averages for vehicle delay at each intersection.

Based on intersection-level delay, each intersection was assigned a LOS designation from “A” to “F” using the following criteria, which are based on thresholds from the *Highway Capacity Manual, 6th Edition (HCM)*. The HCM includes methodology for estimating average vehicle delay based on inputs related to signal timing, volume, and lane geometry for each individual intersection; for this analysis, the microsimulation models were used in lieu of HCM methodology. The LOS designations assigned to each intersection are thus based only on the following thresholds listed in the HCM:

- LOS A – Negligible delays. No approach phase is fully utilized, and no vehicle waits longer than one red indication. Average control delay is less than 10 seconds per vehicle for both signalized and unsignalized intersections.
- LOS B – Minimal delays. An occasional approach phase is fully used. Drivers begin to feel restricted. Average control delay is 10 to 20 seconds per vehicle for signalized intersections and 10 to 15 seconds per vehicle for unsignalized intersections.
- LOS C – Acceptable delays. Major approach phase may become fully used. Most drivers feel somewhat restricted. Average control delay is 20 to 35 seconds per vehicle for signalized intersections and 15 to 25 seconds per vehicle for unsignalized intersections.
- LOS D – Tolerable Delays. Drivers may wait through no more than one red indication. Queues may develop but dissipate rapidly without excessive delays. Average control delay is 35 to 55 seconds per vehicle for signalized intersections and 25 to 35 seconds per vehicle for unsignalized intersections.
- LOS E – Major Delays. Volumes approaching capacity. Vehicles may wait through several signal cycles and long vehicle queues form in advance of the signal. Average control delay is 55 to 80 seconds per vehicle for signalized intersections and 35 to 50 seconds per vehicle for unsignalized intersections.
- LOS F – Excessive delays. Represents conditions at capacity, with extremely long delays. Queues may block upstream intersections. Average control delay is greater than 80 seconds per vehicle for signalized intersections and greater than 50 seconds per vehicle for unsignalized intersections.

It is noted that LOS is a standard no longer a component in identifying transportation impacts as part of CEQA analysis. This information is provided for information purposes only to identify changes in localized congestion as a result of the project alternatives.



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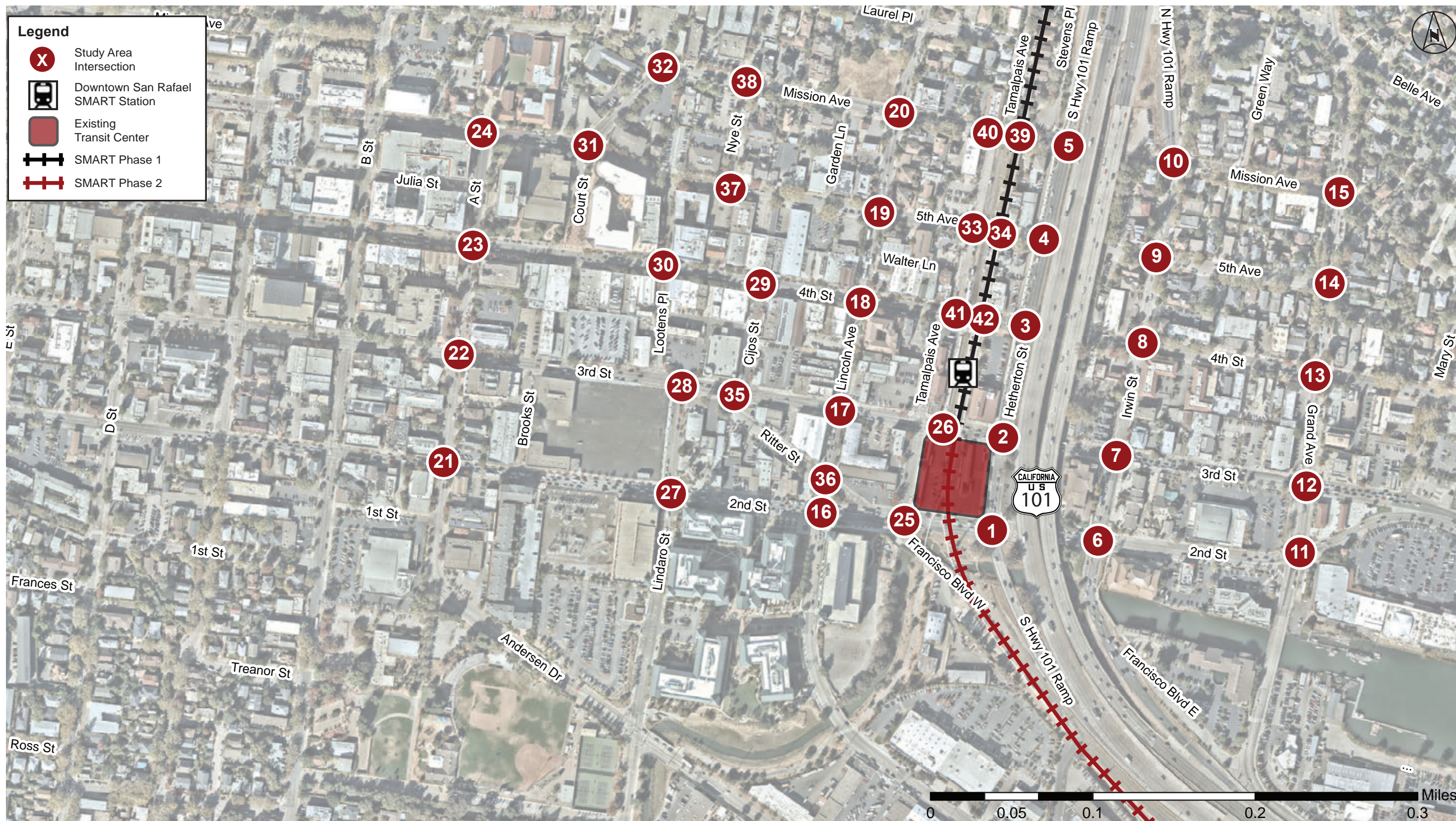


Figure 2-1: Study Intersections

Under CEQA, significance thresholds for transportation impacts are determined based on changes in vehicle miles traveled (VMT) resulting from the project. As a transit-supportive project, this project by nature does not generate any new trips and thus does not increase VMT as a result of new trips.

Localized traffic effects resulting from the minor roadway network changes, and changes to bus circulation patterns, were analyzed and are discussed in this report, but they are assumed to result in negligible VMT effects. As a result, this report largely serves to document an understanding of the project's localized effects on traffic and circulation. The project does not increase VMT and thus does not result in any significant traffic impacts.

2.6 Transit

The Project includes implementation of a new transit center that will benefit riders by providing enhanced amenities, including waiting areas, customer service, lighting, and public spaces. Each transit center is designed with straight bus bay curbs which provide flexibility for future changes in transit fleet composition, such as larger articulated buses or smaller microtransit vehicles. The Project is also intended to improve bus operations by improving operational flexibility, thereby improving functional capacity. By relocating the transit center, bus route alignments will need to change to serve the new location. Modified bus route alignments were developed for each project alternative and included in the respective VISSIM models.

Transit service for Existing conditions reflects service deployed prior to impacts from the COVID pandemic. Transit service for Year 2040 baseline conditions reflects the same level of transit service, with modifications to bus route alignments to reflect planned roadway network changes unrelated to the Project. While it is likely that transit services will change between Year 2020 and Year 2040, the nature of those changes is not known and cannot be reasonably foreseen. Therefore, the Year 2040 scenario reflects current transit service levels on top of future traffic volumes and roadway network.

The transit analysis documented in this report primarily focuses on a quantitative analysis of the effects of each alternative on bus circulation time and reliability. These were determined through the modeling of alternatives in VISSIM. Bus circulation was quantified based on the total circulation time of individual bus routes traveling through the microsimulation model for each peak hour; the estimated circulation time for each route was determined by taking the average circulation time of 10 runs of the model.

2.7 Bicycle and Pedestrian Activity

The effects of the project on bicycle and pedestrian activity were evaluated through a combination of qualitative and quantitative means. Existing bicycle and pedestrian volumes were collected for Existing conditions; Year 2040 pedestrian volumes were projected based on the same quadrant-based annual growth rates derived from the TAM travel demand model that were applied to vehicle volumes.

The alternatives were evaluated against a number of criteria relating to pedestrian and bicycle activity, including:

- Connectivity to downtown
- Connectivity to local destinations
- Pedestrian conflicts on site periphery and pedestrian paths of travel
- Pedestrian connectivity within the transit center

- Pedestrian Connectivity between SMART and buses

2.8 Parking

The build alternatives' effects on parking are limited to the following:

- Loss of on-street public parking as a result of the transit center site utilizing space that is currently used for public on-street parking, or the proposed transit center configuration converts existing public parking space to pick-up/drop-off space or maintenance vehicle parking.
- Loss of off-street public parking as a result of the transit center site utilizing space that is currently used for public parking

The analysis in this report identifies the quantity of parking spaces affected.

3.0 Transit Conditions

3.1 Existing Transit Service

At the time of the Existing conditions analysis period, the transit center was serviced by Golden Gate Transit, Marin Transit, Sonoma-Marín Area Rail Transit (SMART), Sonoma County Transit, Sonoma County Airport Express, and Greyhound. The transit center has 17 bus bays on-site with amenities including bus shelters with benches and trash receptacles, wayfinding, driver facilities, customer service kiosks, retail space, real-time arrival and departure displays. Although most bus bays are located off-street, there are on-street bus bays located on Hetherton Street. Pick-up/drop-off space is located on Tamalpais Avenue. Prior to the extension of SMART to Larkspur, the transit center included space for taxis off-street. Taxis were relocated to East Tamalpais Avenue with the SMART Larkspur extension project.

The analysis described in this report is based on existing transit conditions before the COVID-19 pandemic. Existing bus routing at the transit center is shown in Figure 3-1 and reflects conditions prior to March 2020. Since the pandemic, some services, such as the airport shuttles and Sonoma County Transit, have temporarily halted service to the transit center.

3.1.1 Golden Gate Transit

Golden Gate Transit primarily serves Marin and Sonoma counties, and also provides commute service to San Francisco and Contra Costa County. Golden Gate Transit provides service to San Rafael Transit Center through the following routes: Route 27, Route 30, Route 40/40X, Route 70, and Route 101. Figure 3-2 shows the Golden Gate Transit service map for Marin County.

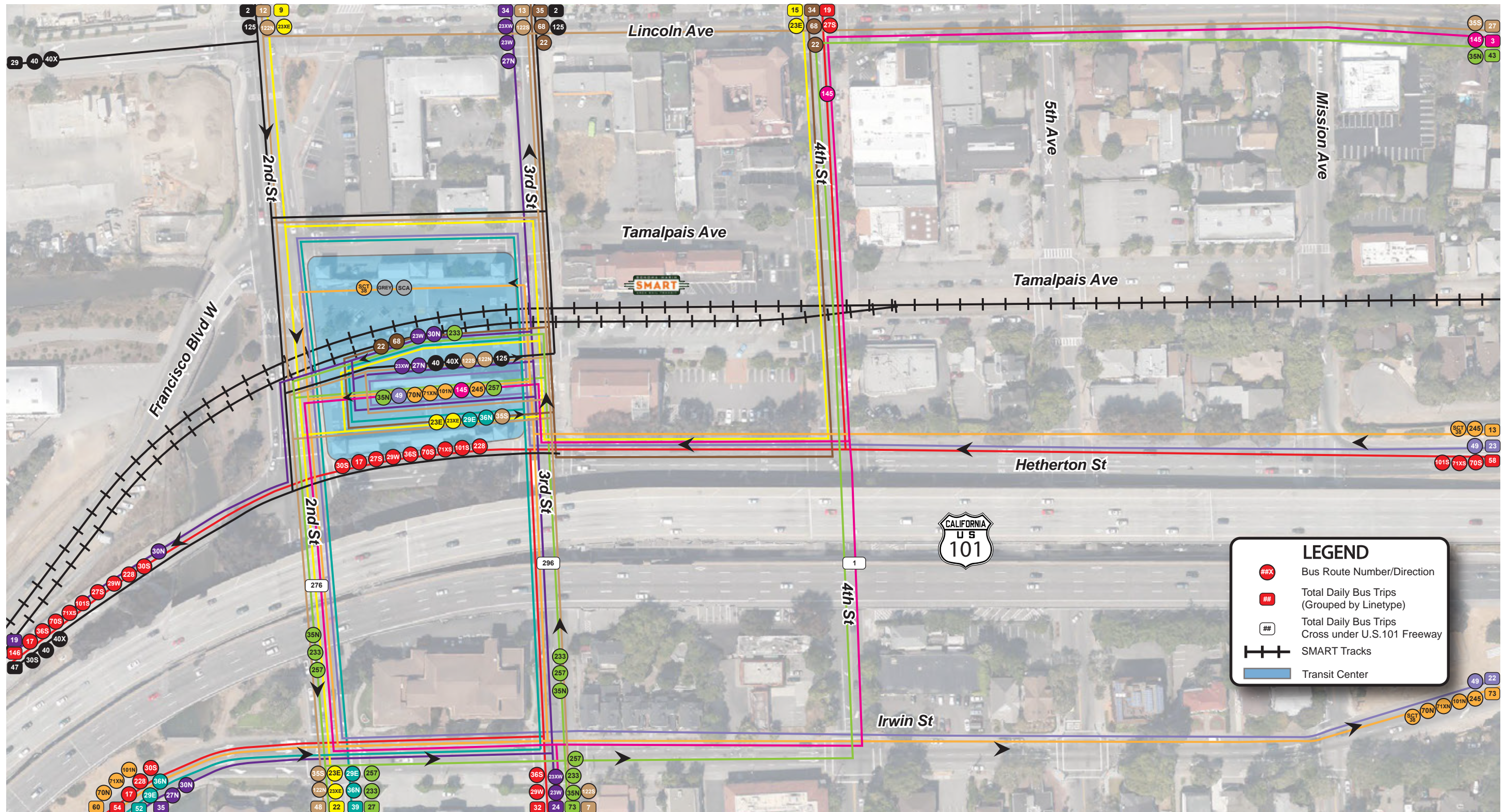
3.1.2 Marin Transit

Marin Transit primarily serves Marin County and provides service to San Rafael Transit Center through the following routes: Route 17, Route 22, Route 23/23X, Route 29, Route 35, Route 36, Route 49, Route 68, Route 71/71X, Route 122, Route 125, Route 145, Route 228, Route 233, Route 245, Route 257. Figure 3-3 shows the Marin Transit service map. They also offer a microtransit service, Marin Transit Connect, which is an on-demand service that operates in a select service area of about 2.5 miles from SMART stations in Marin County. There are additional areas of coverage, all of which can be accessed through the Uber app.



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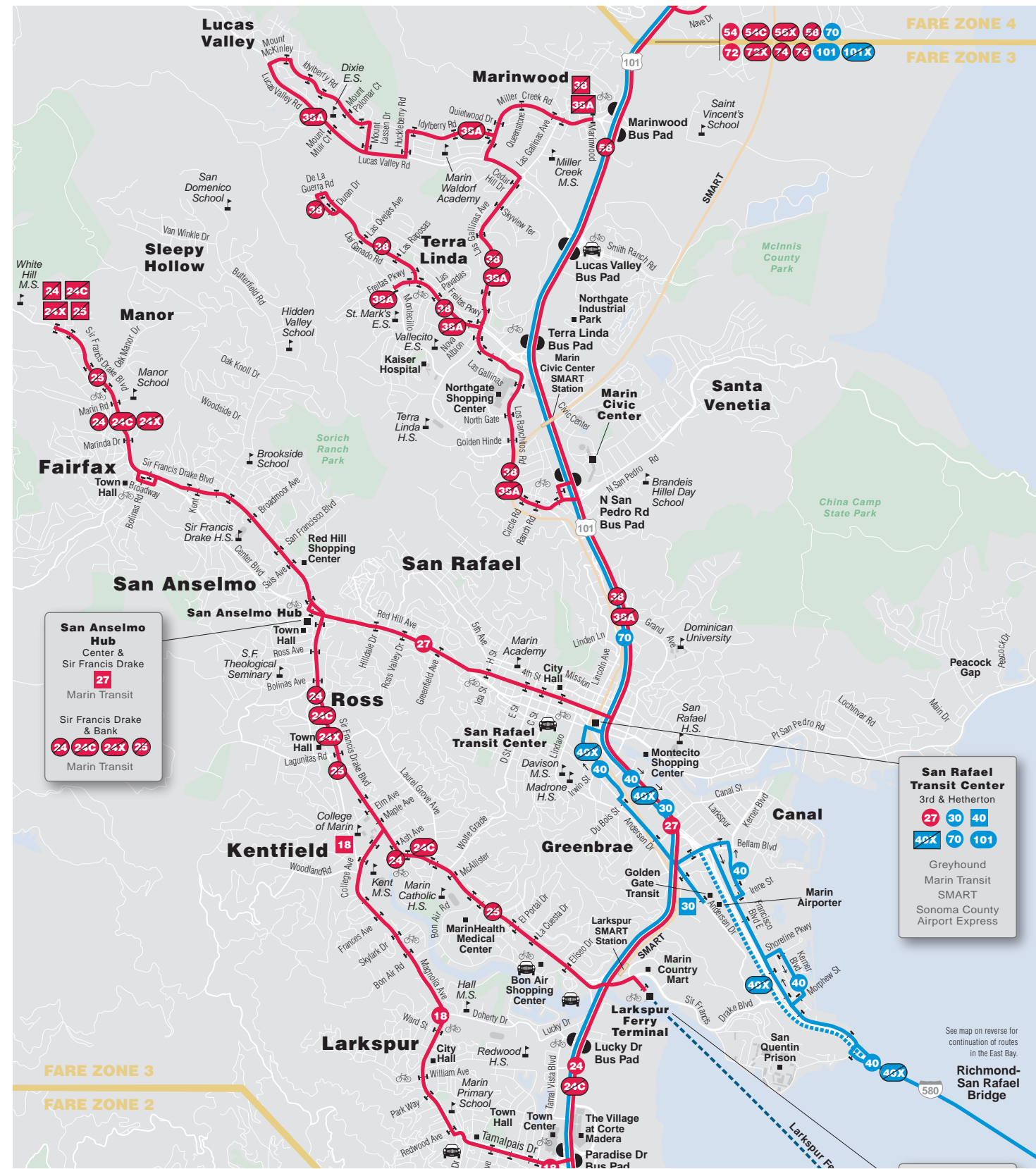


- Route Temporarily Suspended
Updated schedules at goldengate.org
- Commute Routes
- Regional Routes
- Limited Service
- Bus Route Number
- Bus Route Terminus
- Ferry Routes
- Other Ferry Routes
- Bus Stop
- Bus Pad
- Park & Ride
- Bike Rack
- Fare Zone Boundary

Novato
Redwood & Grant
Transfer Point

Call 511 toll free for trip-planning assistance

rev 200913



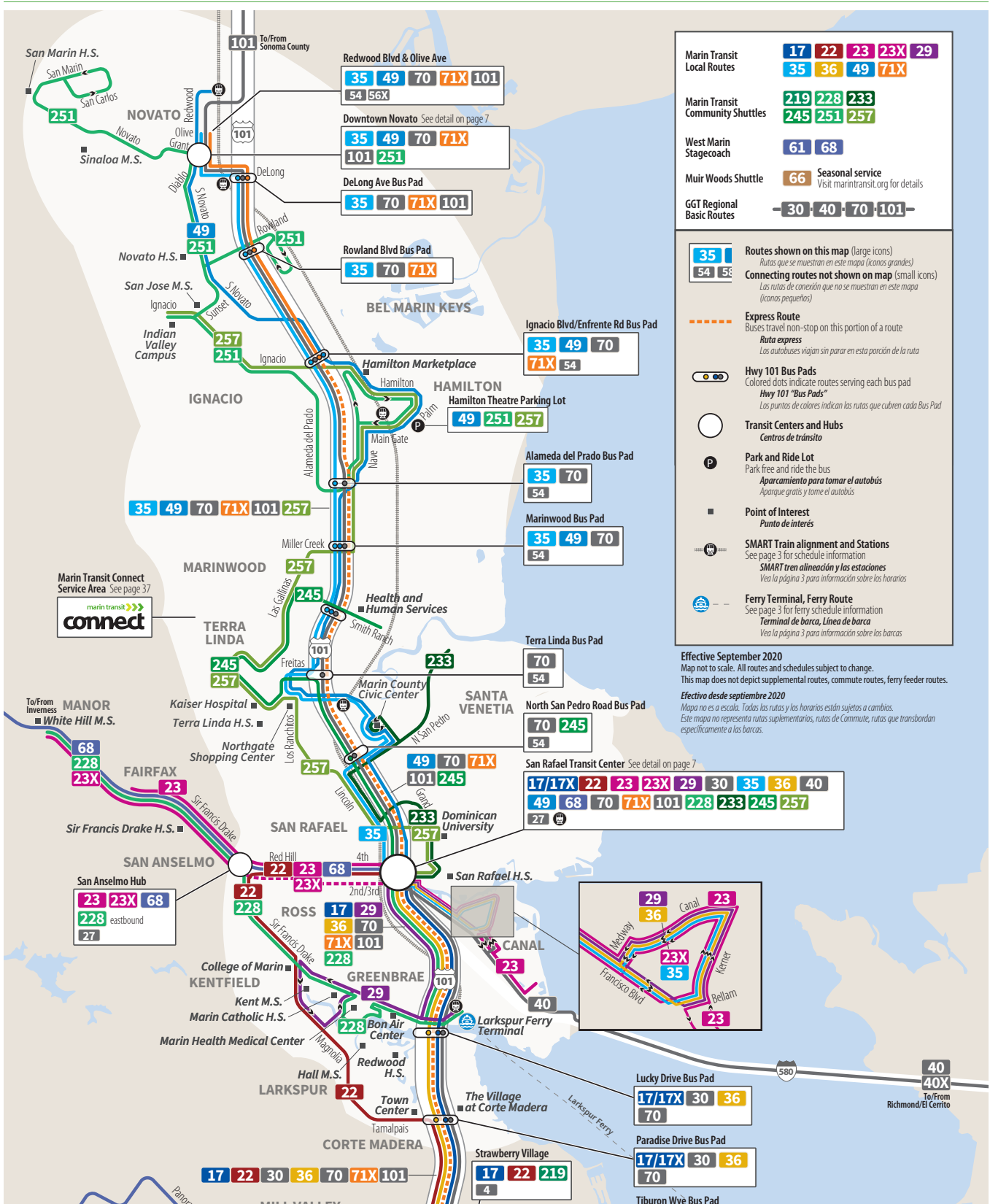
Source: Golden Gate Transit

Figure 3-2: Golden Gate Transit System



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3.1.3 SMART

SMART is a passenger-rail service that provides service in Marin and Sonoma County. The San Rafael SMART station is located at 3rd Street between West and East Tamalpais Avenue. This stop serves as a transfer point for bus riders at San Rafael Transit Center. SMART service terminates to the south near the Larkspur Ferry Terminal and to the north at Sonoma County Airport. Figure 3-4 shows the existing and planned SMART system map.

Figure 3-4: SMART System Map



3.1.4 Sonoma County Transit

Sonoma County Transit provides transit locally within Sonoma County, and also provides select routes connecting to regional destinations. The agency provided one route (Route 38) which terminated at San Rafael Transit Center; this route has been discontinued during the COVID-19 pandemic.

3.1.5 Sonoma County Airport Express

Sonoma County Airport Express provides scheduled transportation from Sonoma County to San Francisco International Airport (SFO) and Oakland International Airport (OAK). The airport express has scheduled stops at San Rafael Transit Center. This service has been temporarily suspended during the COVID-19 pandemic.

3.1.6 Greyhound

Greyhound is an intercity bus carrier serving destinations nationwide throughout the United States. Currently, Greyhound stops at San Rafael Transit Center twice a day.

3.1.7 Boardings and Transfer Activity

A summary of daily boardings for Golden Gate Transit and Marin Transit services at San Rafael Transit Center is provided in Table 3-1. The transit center experiences 4,440 daily boardings on weekdays, not including ridership on airport shuttles, Greyhound buses, Sonoma County Transit Route 38, or SMART. Also not included in the table are taxis or subsidized TNC trips through the Marin Connect program. The busiest transfer activity at the transit center occurs between Marin Transit Routes 35 and 36. Golden Gate Transit Routes 40, 70, and 101 and Marin Transit Route 17 also have strong transfer activity at the transit center.

Table 3-1: Daily San Rafael Transit Center Golden Gate Transit and Marin Transit Bus Boardings

| Route | Average Daily Boardings |
|--------------|-------------------------|
| 17 | 384 |
| 22 | 192 |
| 23 | 234 |
| 23X | 43 |
| 27 | 86 |
| 29 | 140 |
| 30 | 181 |
| 31 | 18 |
| 35 | 835 |
| 36 | 515 |
| 40 | 366 |
| 44 | 7 |
| 49 | 204 |
| 68 | 39 |
| 70 | 336 |
| 71X | 167 |
| 101 | 341 |
| 122 | 47 |
| 125 | 3 |
| 145 | 45 |
| 228 | 79 |
| 233 | 34 |
| 245 | 79 |
| 257 | 65 |
| Total | 4,440 |

Source: Marin Transit and Golden Gate Transit, 2017

Figure 3-5 provides a summary of transfer activity that occurs at the San Rafael Transit Center. The analysis found that on a daily basis, 35 percent of daily bus boardings at the transit center are Golden Gate Transit/Marin Transit transfers. This percentage is based only on transfers that can be tracked through fares; this includes either recorded uses of paper transfer tickets, or transfers recorded in the Clipper system. Riders not utilizing transfer tickets or Clipper to make transfer movements are not captured in this analysis.

The largest driver of transfer activity is transfers between east-west routes and north-south bus routes providing service along US-101. Route 35 is the greatest generator of transfer activity, accounting for 569 transfers to or from that route. Transfer activity at the transit center peaks between 4 p.m. and 5 p.m., with 167 transfers occurring during that hour alone. Morning peak activity occurs between 7 a.m. and 9 a.m., with an average of 136 transfers occurring per hour during that period.

Figure 3-6 shows route-to-route transfer activity at the transit center. The high level of transfers suggests the need to ensure that the transit center facilitates this activity. Strong transfer pairs should



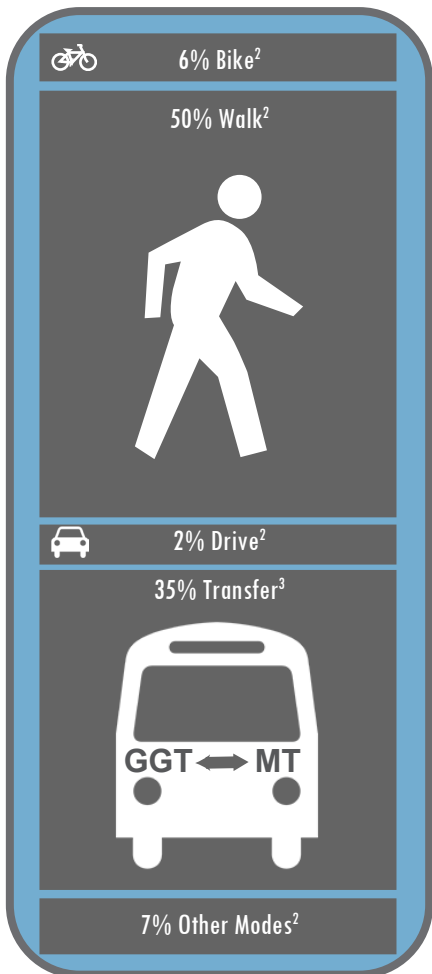
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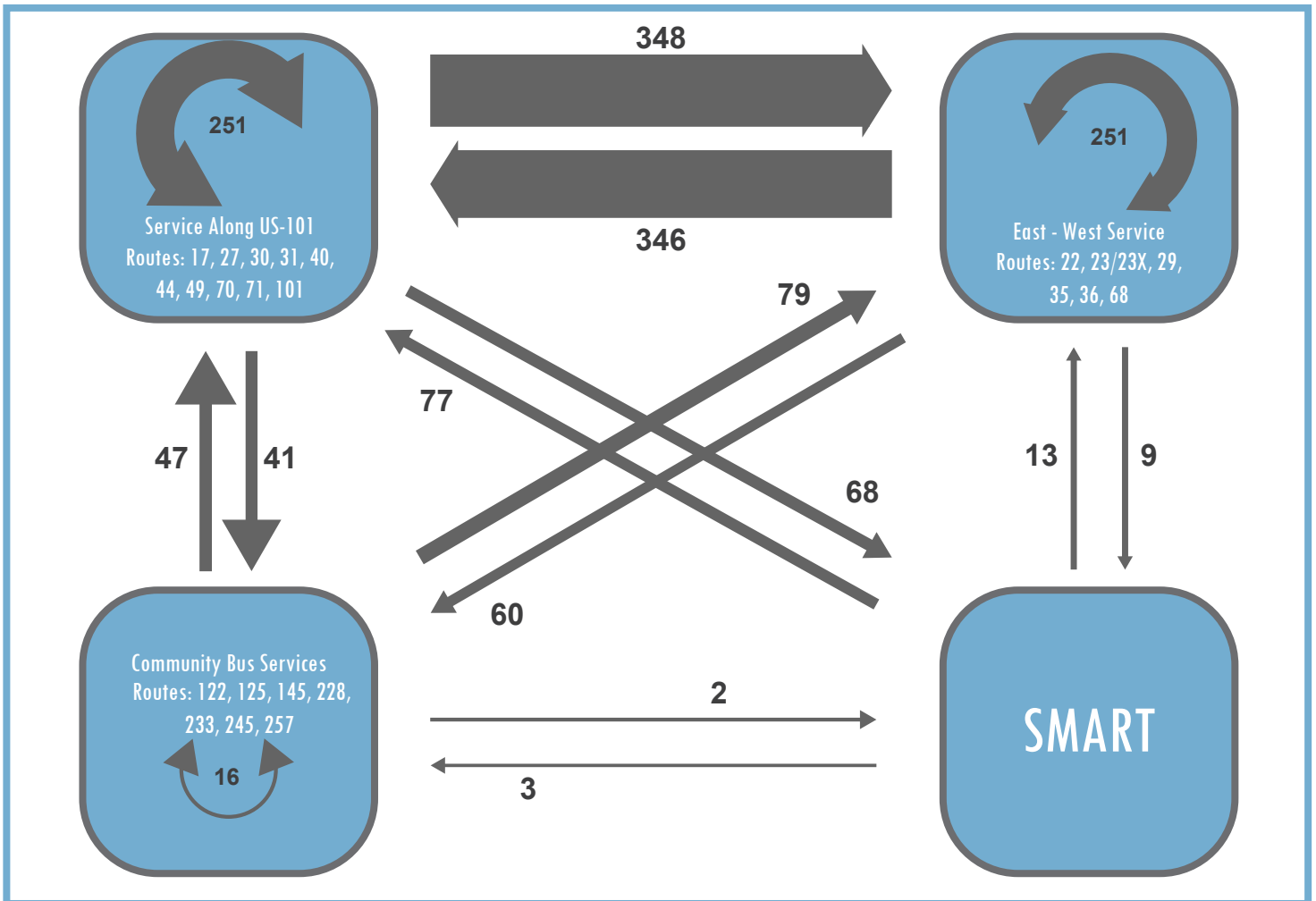
Mode of Access for GGT and MT Bus Boardings at SRTC

Average Daily Boardings: 4,440 Passengers¹



GGT/MT/SCT/SMART Transfer Activity

Average Daily Transfer Activity - 1,612 Passengers³



1 - Golden Gate Transit Ridership from 2017 and Marin Transit Ridership from 2017

2 - Mode splits based on on-board surveys provided by Marin Transit (2017) and Golden Gate Transit (2015)

3 - Golden Gate Transit GFI, Marin Transit GFI, and MTC Clipper Data (each data source from October/November 2017)



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2017 Average Weekday Transfers Between Transit Routes Serving the San Rafael Transit Center

| Transfer Issued | Transfer Received | | | | | | | | | | | | | | | | | | | | | | | | | | Total |
|-----------------|-------------------|------|------|------|-----|------|------|------|------|------|-----|------|-----|------|-----|------|-----|-----|-----|-----|-----|-----|-----|-----|-------|-------|-------|
| | 17 | 22 | 23 | 27 | 29 | 30 | 31 | 35 | 36 | 40 | 44 | 49 | 68 | 70 | 71 | 101 | 122 | 125 | 145 | 228 | 233 | 245 | 257 | 38 | SMART | | |
| 17 | 4.8 | 3.1 | 2.7 | 0.8 | 2.3 | 5.7 | 0.0 | 34.1 | 13.9 | 9.0 | 0.0 | 2.1 | 0.9 | 8.6 | 2.8 | 2.4 | 0.5 | 0.0 | 0.0 | 2.2 | 1.6 | 0.6 | 2.6 | 0.0 | 2.8 | 103 | |
| 22 | 5.0 | 5.2 | 5.5 | 1.4 | 4.1 | 2.6 | 0.1 | 20.2 | 5.0 | 7.2 | 0.0 | 2.4 | 1.8 | 7.0 | 0.2 | 3.7 | 0.4 | 0.3 | 0.0 | 3.0 | 1.2 | 2.0 | 0.8 | 0.0 | 3.3 | 83 | |
| 23 | 8.3 | 2.1 | 2.9 | 2.3 | 0.8 | 0.6 | 0.0 | 11.9 | 12.0 | 4.9 | 0.2 | 6.3 | 1.9 | 5.7 | 0.8 | 16.9 | 0.5 | 0.2 | 0.3 | 3.1 | 0.5 | 0.8 | 0.9 | 0.0 | 1.0 | 85 | |
| 27 | 0.4 | 1.5 | 2.4 | 0.3 | 0.8 | 0.6 | 0.0 | 5.6 | 4.3 | 1.7 | 0.1 | 2.4 | 0.9 | 2.1 | 0.9 | 1.5 | 0.1 | 0.1 | 0.0 | 0.6 | 0.7 | 0.2 | 0.2 | 0.3 | 5.5 | 33 | |
| 29 | 1.8 | 0.3 | 0.6 | 0.1 | 0.1 | 3.0 | 0.1 | 3.0 | 1.6 | 0.4 | 0.1 | 0.4 | 0.0 | 1.6 | 0.2 | 1.0 | 0.0 | 0.0 | 0.1 | 0.3 | 0.2 | 0.9 | 0.1 | 0.0 | 0.6 | 16 | |
| 30 | 2.3 | 2.2 | 2.5 | 0.4 | 0.6 | 2.4 | 0.0 | 27.8 | 6.8 | 5.3 | 0.0 | 1.4 | 0.9 | 5.2 | 2.3 | 2.4 | 0.1 | 0.0 | 0.0 | 0.4 | 0.2 | 0.2 | 0.4 | 0.0 | 3.0 | 67 | |
| 31 | 0.0 | 0.1 | 0.2 | 0.1 | 0.0 | 0.1 | 0.0 | 0.5 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 34.2 | 35 | |
| 35 | 43.4 | 11.3 | 14.9 | 6.0 | 4.1 | 35.1 | 0.2 | 19.6 | 25.4 | 10.0 | 0.1 | 11.9 | 4.4 | 46.4 | 1.3 | 11.8 | 1.4 | 0.1 | 1.5 | 6.0 | 5.4 | 5.0 | 6.6 | 0.0 | 0.4 | 272 | |
| 36 | 24.7 | 10.7 | 18.6 | 2.5 | 2.2 | 6.1 | 0.0 | 31.9 | 10.4 | 6.8 | 0.3 | 11.0 | 2.5 | 14.5 | 3.5 | 15.7 | 2.2 | 0.1 | 3.9 | 2.6 | 1.5 | 5.3 | 0.1 | 0.0 | 3.4 | 181 | |
| 40 | 11.1 | 4.4 | 4.3 | 0.5 | 0.6 | 3.5 | 0.0 | 12.2 | 4.9 | 2.0 | 0.1 | 6.4 | 2.1 | 12.2 | 2.9 | 6.5 | 0.9 | 0.1 | 0.1 | 1.9 | 0.5 | 1.7 | 1.9 | 0.0 | 10.0 | 91 | |
| 44 | 0.1 | 0.1 | 1.0 | 0.0 | 0.1 | 0.3 | 0.0 | 0.4 | 0.9 | 0.0 | 0.2 | 0.0 | 0.0 | 0.1 | 0.0 | 0.2 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.4 | 0.1 | 4 | |
| 49 | 5.7 | 1.3 | 13.3 | 1.6 | 2.1 | 2.1 | 0.0 | 14.8 | 23.6 | 7.6 | 0.1 | 5.0 | 1.4 | 4.3 | 1.0 | 5.4 | 0.7 | 0.0 | 0.1 | 1.9 | 3.0 | 0.8 | 1.6 | 0.0 | 0.2 | 97 | |
| 68 | 0.9 | 0.7 | 2.4 | 0.5 | 0.4 | 1.4 | 0.0 | 6.8 | 4.1 | 2.9 | 0.0 | 1.1 | 1.7 | 2.0 | 0.7 | 1.2 | 0.3 | 0.1 | 0.0 | 1.1 | 0.5 | 0.6 | 0.0 | 0.0 | 0.1 | 29 | |
| 70 | 16.2 | 6.5 | 4.4 | 1.6 | 5.1 | 3.2 | 0.1 | 44.0 | 9.2 | 9.7 | 0.0 | 4.9 | 1.1 | 3.6 | 0.5 | 8.2 | 0.7 | 0.1 | 0.0 | 2.3 | 1.5 | 2.4 | 0.7 | 0.0 | 3.3 | 129 | |
| 71 | 1.2 | 1.1 | 1.5 | 1.3 | 0.7 | 0.2 | 0.1 | 2.9 | 5.6 | 2.4 | 0.0 | 1.1 | 0.2 | 1.6 | 0.1 | 1.4 | 0.1 | 0.0 | 0.0 | 0.2 | 0.1 | 0.2 | 0.2 | 0.0 | 0.6 | 23 | |
| 101 | 8.4 | 3.3 | 19.3 | 1.6 | 3.0 | 1.7 | 0.1 | 19.5 | 16.5 | 7.8 | 0.2 | 8.2 | 1.8 | 12.7 | 1.8 | 4.4 | 1.0 | 0.1 | 0.1 | 2.8 | 0.7 | 0.8 | 2.0 | 0.1 | 8.0 | 126 | |
| 122 | 0.2 | 0.1 | 0.3 | 0.1 | 0.0 | 0.5 | 0.0 | 2.5 | 0.8 | 0.5 | 0.0 | 0.5 | 0.4 | 1.1 | 0.2 | 0.4 | 0.1 | 0.0 | 0.1 | 0.4 | 0.1 | 0.1 | 0.2 | 0.0 | 0.0 | 9 | |
| 125 | 0.1 | 0.1 | 0.3 | 0.0 | 0.1 | 0.1 | 0.0 | 0.3 | 0.2 | 0.4 | 0.0 | 0.4 | 0.1 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 2 | |
| 145 | 0.1 | 0.0 | 2.0 | 0.0 | 0.1 | 0.0 | 0.0 | 1.9 | 2.4 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 1.1 | 0.1 | 0.0 | 0.0 | 0.0 | 8 | |
| 228 | 1.5 | 1.0 | 8.3 | 0.4 | 0.8 | 0.3 | 0.0 | 7.4 | 2.1 | 0.9 | 0.0 | 0.6 | 1.4 | 1.7 | 0.9 | 0.2 | 1.4 | 0.0 | 0.0 | 1.9 | 0.4 | 0.2 | 0.6 | 0.0 | 1.1 | 33 | |
| 233 | 2.5 | 1.0 | 1.0 | 0.7 | 1.3 | 2.6 | 0.0 | 9.0 | 0.8 | 2.2 | 0.1 | 1.0 | 0.3 | 1.6 | 0.1 | 0.8 | 0.1 | 0.0 | 0.0 | 0.3 | 0.5 | 0.7 | 0.2 | 0.0 | 0.1 | 27 | |
| 245 | 1.5 | 1.0 | 2.9 | 0.8 | 2.3 | 3.2 | 0.0 | 7.0 | 3.5 | 2.1 | 0.1 | 0.4 | 0.3 | 0.7 | 0.1 | 2.9 | 0.8 | 0.0 | 0.0 | 0.5 | 1.6 | 1.4 | 0.2 | 0.0 | 0.2 | 33 | |
| 257 | 4.6 | 0.5 | 0.7 | 0.6 | 0.4 | 0.1 | 0.0 | 11.1 | 3.1 | 2.0 | 0.0 | 2.2 | 0.3 | 2.6 | 0.4 | 0.2 | 0.4 | 0.0 | 0.0 | 0.7 | 0.3 | 0.9 | 1.1 | 0.0 | 0.2 | 33 | |
| 38 | 0.0 | 0.0 | 0.0 | 0.5 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 1 | |
| SMART | 3.9 | 4.4 | 2.7 | 12.4 | 0.8 | 5.4 | 29.4 | 2.4 | 2.1 | 12.0 | 0.0 | 0.0 | 0.2 | 6.1 | 0.8 | 6.4 | 0.1 | 0.0 | 0.0 | 2.0 | 0.1 | 0.0 | 0.8 | 0.0 | - | 92 | |
| Total | 149 | 62 | 115 | 37 | 33 | 81 | 30 | 297 | 159 | 98 | 2 | 70 | 25 | 141 | 21 | 94 | 12 | 1 | 6 | 34 | 22 | 25 | 21 | 1 | 78 | 1,612 | |

Key Transfer Route Pairs (Top 20)

Data Source: October 2017 GFI and Clipper Transaction Data. Some transfers shown may occur at locations other than the SRTC.

be located near each other to minimize transfer times. The transit center operates on a pulse system, with multiple routes having coordinated arrival and departure times within a 5-minute pulse period.

Figure 3-5 also identifies mode of access for San Rafael Transit Center passengers; on-board survey data was used to assess modes of access for passengers not making a transfer. With the limited number of surveys received, this information should be considered approximate. Half of all passengers boarding a bus at the transit center arrive by walking, making pedestrian connections to the transit center a critical element of a new transit center. Six percent of passengers access the transit center by bike; providing adequate bike parking and providing connectivity to the San Rafael bicycle network will support improved access for these riders.

At the time of the transit ridership data collection for this project (2017), SMART had recently opened its initial operating segment and had yet to extend to Larkspur. At the time, the SMART system observed an average of 2,100 weekday boardings; detailed station level ridership information was not made available. Anecdotally, the downtown San Rafael station is known to be one of the busiest in the system. Figure 3-7 shows 2017 transfer activity between SMART and the top 5 bus routes with SMART transfer activity. It is anticipated that SMART transfer activity has changed since the period of data collection. With the extension of SMART to Larkspur, Route 31 was eliminated. It is expected that SMART transfer activity to other routes will increase as SMART ridership increases. At the time of the data collection, Route 31 was the route with the highest level of transfer activity with SMART at the San Rafael Transit Center.

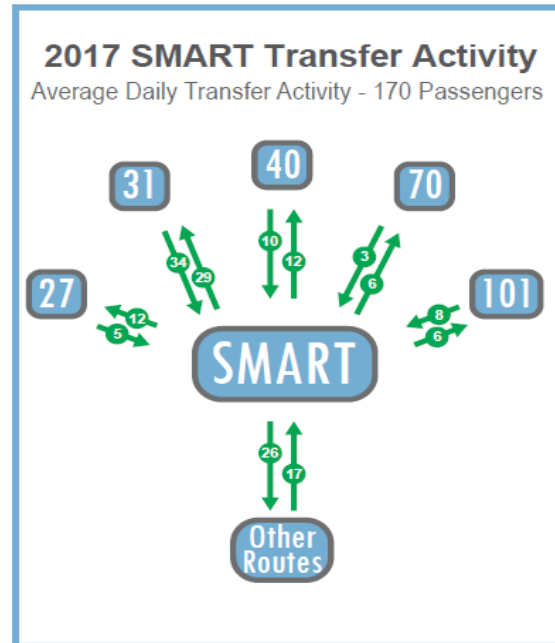


Figure 3-7: SMART Transfer Activity (Data Source: MTC Clipper Data)

3.2 Existing Transit Circulation – Baseline (No-Build Alternative)

Microsimulation results for bus circulation are shown in Table 3-2. Detailed results for bus circulation and reliability by route can be found in Appendix A. The appendix shows the average circulation time through the model for each route as well as the standard deviation of that circulation time. A greater standard deviation represents greater variability in the circulation time through the study area. Greater variability in bus circulation time causes additional operational challenges, often resulting in longer trip times, higher operating cost, and longer wait times for riders. Note that the circulation time does not represent the total travel time for all routes; rather, it represents the total travel time within the model study area only. It is not anticipated that the project will result in changes to bus travel time outside of the model study area. These results serve as a baseline against which the build alternatives and Year 2040 conditions will be compared.

Table 3-2: Existing Baseline Conditions (No-Build) – Total Transit Circulation Time in Network

| | Existing A.M. | Existing P.M. |
|------------------|---------------|---------------|
| Circulation Time | 27,013 sec | 26,249 sec |

3.3 Existing Transit Circulation – Build Alternatives

The primary change from the existing no-build alternative to the existing build alternatives is simply the rerouting of bus alignments to reach the new location of the transit center. The assumed routing changes, and the measured effects on bus circulation, are detailed for each build alternative in their respective sections below.

3.3.1 4th Street Gateway

A bay assignment and local routing scheme were developed for the 4th Street Gateway Alternative and are shown in Figure 3-8. Aside from these changes to route alignments, the only other factor affecting changes to bus circulation in this alternative is the redistribution of auto traffic. Auto traffic patterns are modified due to the remove of the right-turn movement from Hetherton Street to 4th Street and the removal of East Tamalpais Avenue between 3rd Street and 4th Street.

The total bus circulation times are shown in Table 3-3. More detailed results for the alternative can be found in Appendix A.

Table 3-3: 4th Street Gateway (Year 2020) - Total Transit Circulation Time in Network

| Scenario | Existing A.M. | Existing P.M. | 4 th Street Gateway A.M. | 4 th Street Gateway P.M. |
|------------------------|---------------|---------------|-------------------------------------|-------------------------------------|
| Circulation Time | 27,013 sec | 26,249 sec | 25,550 sec | 24,133 sec |
| % Change from Baseline | | | -5% | -8% |

3.3.2 Under the Freeway

A bay assignment and local routing scheme were developed for the Under the Freeway Alternative and are shown in Figure 3-9. This alternative does not include any geometric changes to the network other than the location of transit center driveways.

The total bus circulation times are shown in Table 3-4. More detailed results for the alternative can be found in Appendix A.

Table 3-4: Under the Freeway (Year 2020) - Total Transit Circulation Time in Network

| Scenario | Existing A.M. | Existing P.M. | Under the Freeway A.M. | Under the Freeway P.M. |
|------------------------|---------------|---------------|------------------------|------------------------|
| Circulation Time | 27,013 sec | 26,249 sec | 21,863 sec | 22,487 sec |
| % Change from Baseline | | | -19% | -14% |



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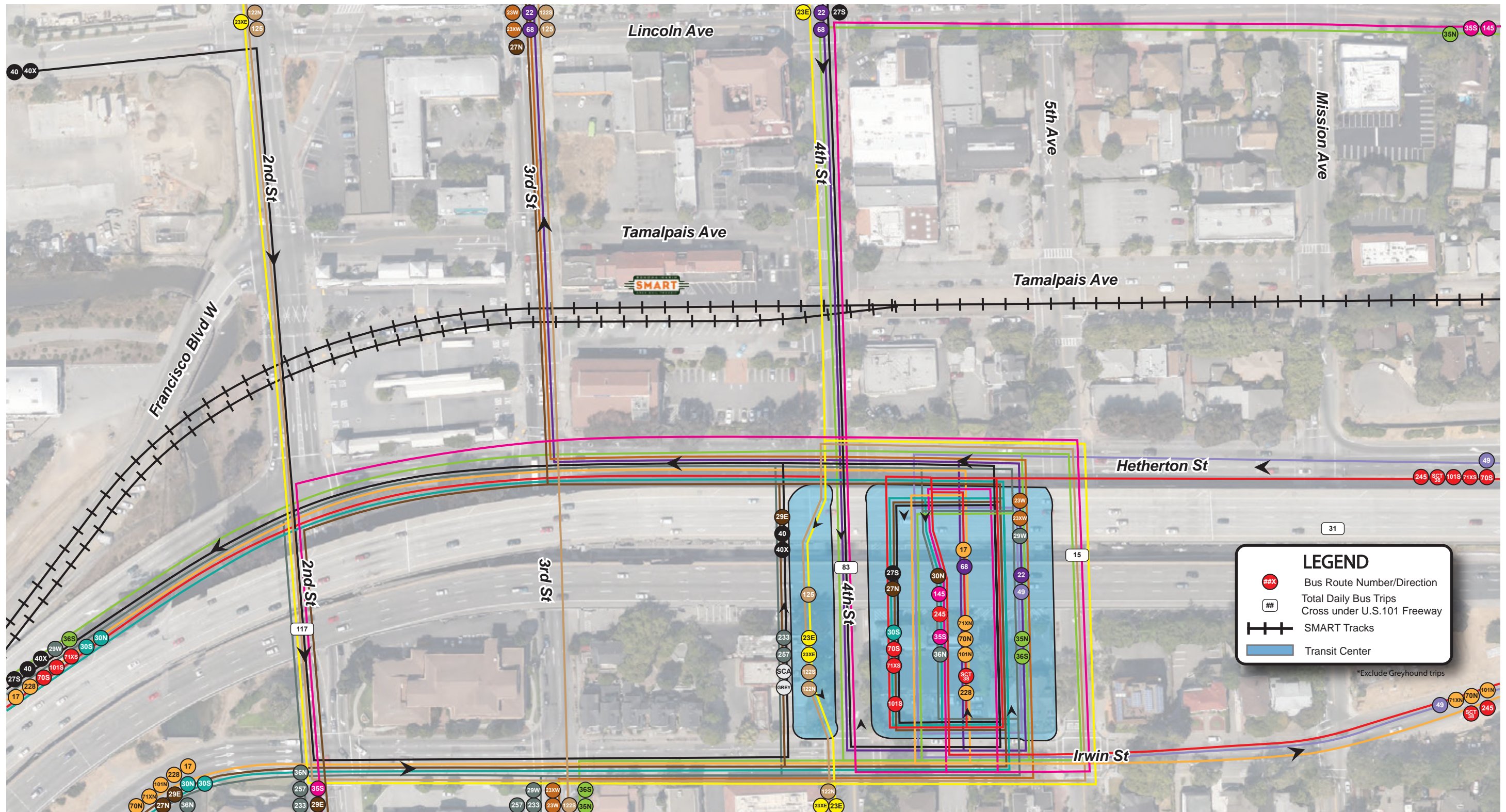


Figure 3-9: Under the Freeway - Existing Bus Routing

3.3.3 Whistlestop Block

A bay assignment and local routing scheme were developed for the Whistlestop Block Alternative and are shown in Figure 3-10. Aside from these changes to route alignments, the only other factor affecting changes to bus circulation in this alternative is the redistribution of existing auto traffic on West Tamalpais Avenue and East Tamalpais Avenue between 3rd Street and 4th Street. Transit circulation between the Whistlestop Block alternative and the Move Whistlestop variant would be comparable, as the variant does not affect bay assignment, transit routing, or background traffic circulation. The location of the bus bays, transit-only driveways, and pedestrian crosswalks are identical, other than the shifted location of the bus-only West Tamalpais Avenue, between the Whistlestop Block alternative and the Move Whistlestop variant.

The total bus circulation times are shown in Table 3-5. More detailed results for the alternative can be found in Appendix A.

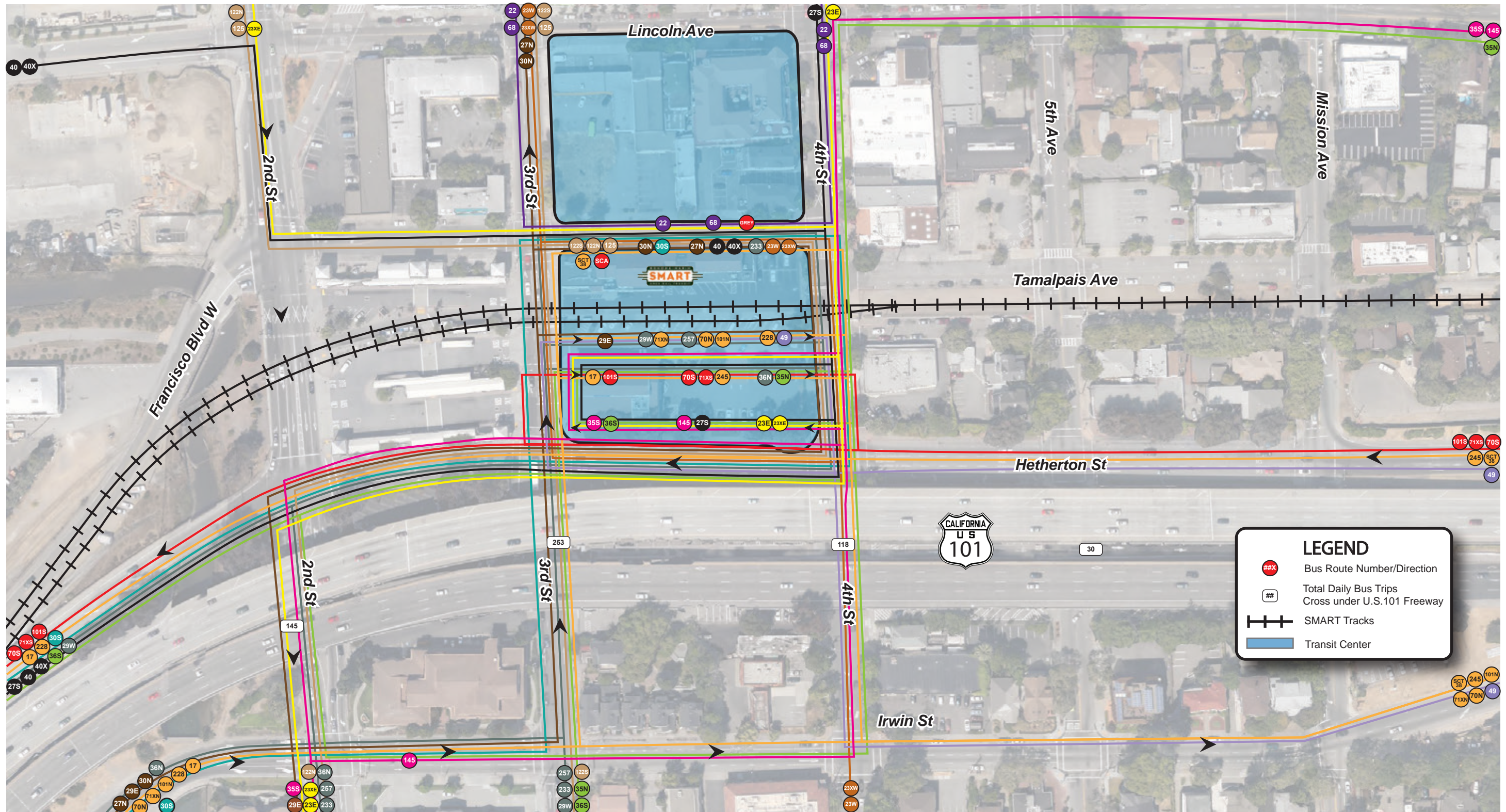
Table 3-5: Whistlestop Block (Year 2020) - Total Transit Circulation Time in Network

| Scenario | Existing A.M. | Existing P.M. | Whistlestop Block A.M. | Whistlestop Block P.M. |
|------------------------|---------------|---------------|------------------------|------------------------|
| Circulation Time | 27,013 sec | 26,249 sec | 22,805 sec | 23,100 sec |
| % Change from Baseline | | | -16% | -12% |



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3.4 Baseline Year 2040 Transit Service (No-Build Alternative)

No changes to transit service levels were assumed between Existing and Year 2040 transit service for the baseline and no-build alternative. The only effects on bus circulation are planned changes to the roadway network (detailed in the Vehicular Traffic section), and the projected growth in traffic volumes throughout the network.

The total bus circulation times are shown in Table 3-6. More detailed results for the alternative can be found in Appendix A.

Table 3-6: Year 2040 Baseline Conditions (No-Build) – Total Transit Circulation Time in Network

| Scenario | Existing A.M. | Existing P.M. | Year 2040 A.M. | Year 2040 P.M. |
|------------------------|---------------|---------------|----------------|----------------|
| Circulation Time | 27,013 sec | 26,249 sec | 35,411 sec | 30,394 sec |
| % Change from Baseline | | | +31% | +16% |

3.5 Year 2040 Transit Service – Build Alternatives

Similar to the Existing build alternatives, the primary change from the Year 2040 no-build alternative to the Year 2040 build alternatives is simply the rerouting of bus alignments to reach the new location of the transit center. The assumed routing changes under Year 2040 conditions, and the measured effects on bus circulation, are detailed for each build alternative in their respective sections below.

3.5.1 4th Street Gateway

A bay assignment and local routing scheme were developed for the 4th Street Gateway Alternative and are shown in Figure 3-11. The routing is similar to the Year 2020 routing, but with modifications to account for planned roadway network changes.

The total bus circulation times are shown in Table 3-7. In this scenario, a select number of individual model runs for the 4th Street Gateway Alternative resulted in network model gridlock due to extensive queueing at certain capacity-constrained locations spilling back and affecting upstream intersections. The a.m. model results reflect the gridlock caused in certain model runs that significantly affect the average results for this alternative. More detailed results for the alternative can be found in **Appendix A**.

Table 3-7: 4th Street Gateway (Year 2040) - Total Transit Circulation Time in Network

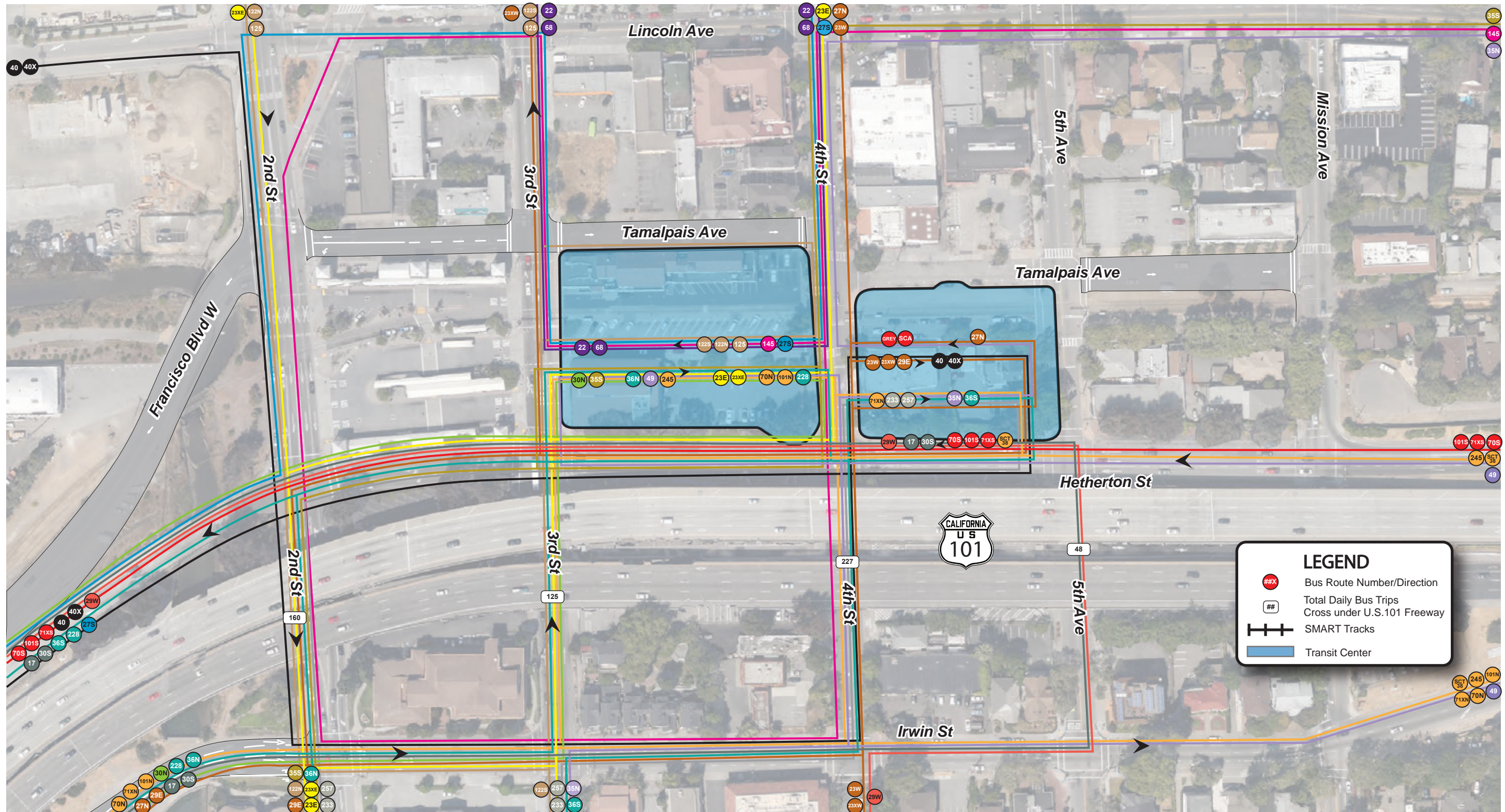
| Scenario | Year 2040 A.M. | Year 2040 P.M. | Year 2040 4 th Street Gateway A.M. | Year 2040 4 th Street Gateway P.M. |
|------------------------|----------------|----------------|---|---|
| Circulation Time | 35,411 sec | 30,394 sec | 38,547 ¹ sec | 24,416 sec |
| % Change from Baseline | | | +9% | -20% |

¹ Does not reflect model runs that were gridlocked and thus did not output results. Actual circulation time may be higher.



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3.5.2 Under the Freeway

A bay assignment and local routing scheme were developed for the Under the Freeway alternative and are shown in Figure 3-12. The routing is similar to the Year 2020 routing, but with modifications to account for planned roadway network changes.

The total bus circulation times are shown in Table 3-8. More detailed results for the alternative can be found in Appendix A.

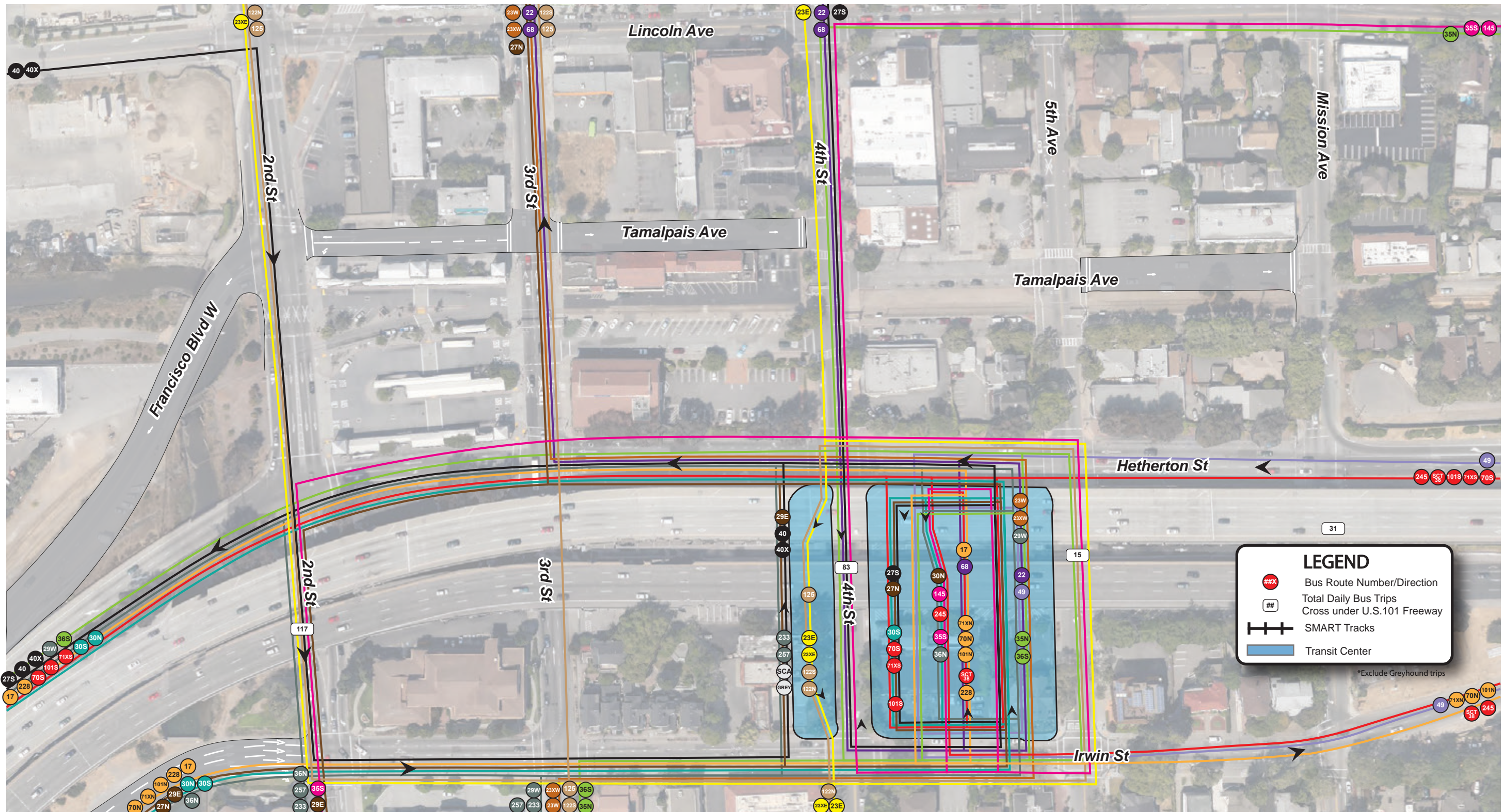
Table 3-8: Under the Freeway (Year 2040) - Total Transit Circulation Time in Network

| Scenario | Year 2040 A.M. | Year 2040 P.M. | Year 2040 Under the Freeway A.M. | Year 2040 Under the Freeway P.M. |
|------------------------|----------------|----------------|----------------------------------|----------------------------------|
| Circulation Time | 35,411 sec | 30,394 sec | 29,300 sec | 27,740 sec |
| % Change from Baseline | | | -17% | -9% |



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3.5.3 Whistlestop Block

A bay assignment and local routing scheme were developed for the Whistlestop Block Alternative under Year 2040 conditions and are shown in Figure 3-13. The routing is similar to the Year 2020 routing, but with modifications to account for planned roadway network changes. With this Alternative, the planned modification of Tamalpais Avenue to be one-way between 2nd and 4th Streets and the closure of Tamalpais Avenue between 4th Street and 5th Avenue would be precluded. Tamalpais Avenue would operate as bus-only between 3rd and 4th Streets and as two-way traffic between 2nd and 3rd Streets and 4th Street and 5th Avenue.

The total bus circulation times are shown in Table 3-9. More detailed results for the alternative can be found in Appendix A.

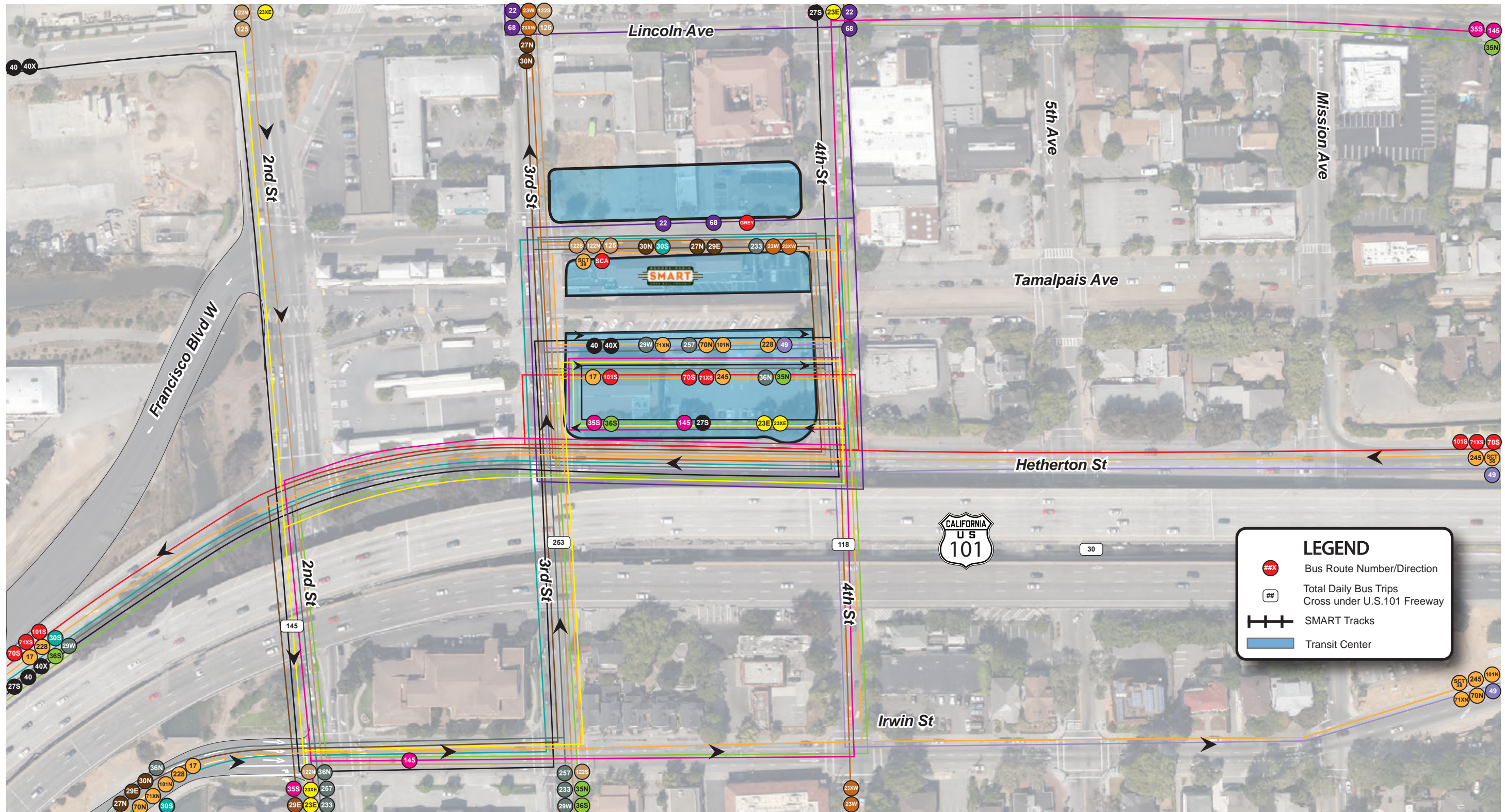
Table 3-9: Whistlestop Block (Year 2040) - Total Transit Circulation Time in Network

| Scenario | Year 2040 A.M. | Year 2040 P.M. | Year 2040 Whistlestop Block A.M. | Year 2040 Whistlestop Block P.M. |
|------------------------|----------------|----------------|----------------------------------|----------------------------------|
| Circulation Time | 35,411 sec | 30,394 sec | 30,702 sec | 24,018 sec |
| % Change from Baseline | | | -13% | -21% |



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3.6 Transit Service – Bus Circulation Analysis Summary

A summary of the total circulation time by all routes for each Alternative is presented in Table 3-10 for Existing (Year 2020) conditions and Table 3-11 for Year 2040 conditions. The percent change for delay for each Build alternative compared to the No-Build Alternative is also presented.

Table 3-10: Total Circulation Time in Network – Existing (Year 2020) Conditions

| Total Circulation Time by Routes | | % Change |
|-----------------------------------|------------|----------|
| No-Build A.M. Peak Hour | 27,013 sec | |
| No-Build P.M. Peak Hour | 26,249 sec | |
| 4th Street Gateway A.M. Peak Hour | 25,550 sec | -5% |
| 4th Street Gateway P.M. Peak Hour | 24,133 sec | -8% |
| Under the Freeway A.M. Peak Hour | 21,863 sec | -19% |
| Under the Freeway P.M. Peak Hour | 22,487 sec | -14% |
| Whistlestop Block A.M. Peak Hour | 22,805 sec | -16% |
| Whistlestop Block P.M. Peak Hour | 23,100 sec | -12% |

As shown in the table, in Year 2020 conditions, all Build alternatives would result in a reduction in total circulation time relative to the No-Build condition. The Under the Freeway Alternative and the Whistlestop Block Alternative both result a greater than fifteen percent reduction in transit travel time in the a.m. peak hour and a greater than ten percent reduction in transit travel time in the p.m. peak hour.

Table 3-11: Total Circulation Time in Network – Year 2040 Conditions

| Total Circulation Time by Routes (s) | | % Change |
|--------------------------------------|------------|----------|
| No-Build A.M. Peak Hour | 35,411 sec | |
| No-Build P.M. Peak Hour | 30,394 sec | |
| 4th Street Gateway A.M. Peak Hour | 38,547 sec | +9% |
| 4th Street Gateway P.M. Peak Hour | 24,416 sec | -20% |
| Under the Freeway A.M. Peak Hour | 29,300 sec | -17% |
| Under the Freeway P.M. Peak Hour | 27,740 sec | -9% |
| Whistlestop Block A.M. Peak Hour | 30,702 sec | -13% |
| Whistlestop Block P.M. Peak Hour | 24,018 sec | -21% |

As shown in the table, in Year 2040 conditions, the Under the Freeway Alternative and the Whistlestop Block Alternative provide a reduction in transit travel time in both the a.m. and p.m. peak hours relative to the No-Build. Both the Under Freeway Alternative and the Whistlestop Alternative provide a greater than ten percent reduction in the a.m. peak hour, but only the Whistlestop Block Alternative provides a greater than ten percent reduction in the p.m. peak hour. The 4th Street Gateway alternative provides a benefit in the p.m. peak hour, but results in a large increase in transit travel time in the a.m. peak hour. This is associated with increased congestion, further discussed in Chapter 4, on several transit corridors.

4.0 Vehicular Traffic

This section presents results of an assessment of potential impacts of the relocation of San Rafael Transit Center on vehicular traffic in the study area.

4.1 Existing Conditions (No-Build Alternative)

Traffic volumes in the study area were obtained from traffic counts conducted for the project in 2020 prior to the COVID-19 pandemic impacts to both the morning and afternoon peak hours. The volumes for both Existing (Year 2020) conditions can be found in Appendix B.

The results of the existing baseline (no-build) alternative are presented in Table 4-1 and Table 4-2.

Table 4-1: Existing Baseline Conditions (No-Build) – Intersection Delay

| ID | Intersection | A.M. Peak Hour | | P.M. Peak Hour | |
|----|-----------------------|---------------------|-----|---------------------|-----|
| | | Average Delay (sec) | LOS | Average Delay (sec) | LOS |
| 1 | 2nd & Hetherton | 17.8 | B | 18.5 | B |
| 2 | 3rd & Hetherton | 30.0 | C | 34.5 | C |
| 3 | 4th & Hetherton | 25.3 | C | 45.1 | D |
| 4 | 5th & Hetherton | 18.5 | B | 26.5 | C |
| 5 | Mission & Hetherton | 27.7 | C | 34.6 | C |
| 6 | 2nd & Irwin | 23.2 | C | 75.1 | E |
| 7 | 3rd & Irwin | 23.3 | C | 34.0 | C |
| 8 | 4th & Irwin | 22.8 | C | 26.9 | C |
| 9 | 5th & Irwin | 10.8 | B | 12.9 | B |
| 10 | Mission & Irwin | 21.1 | C | 24.9 | C |
| 11 | 2nd & Grand | 21.1 | C | 30.7 | C |
| 12 | 3rd & Grand | 17.3 | B | 37.2 | D |
| 13 | 4th & Grand | 32.3 | C | 37.0 | D |
| 14 | 5th & Grand | 5.6 | A | 17.0 | C |
| 15 | Mission & Grand | 21.0 | C | 26.7 | D |
| 16 | 2nd & Lincoln | 42.9 | D | 64.4 | E |
| 17 | 3rd & Lincoln | 18.6 | B | 10.0 | A |
| 18 | 4th & Lincoln | 24.2 | C | 22.8 | C |
| 19 | 5th & Lincoln | 33.0 | C | 16.6 | B |
| 20 | Mission & Lincoln | 34.0 | C | 22.6 | C |
| 21 | 2nd & A | 14.7 | B | 25.0 | C |
| 22 | 3rd & A | 15.8 | B | 16.6 | B |
| 23 | 4th & A | 14.2 | B | 19.0 | B |
| 24 | 5th & A | 19.2 | C | 21.4 | C |
| 25 | 2nd & Tamalpais | 21.6 | C | 33.0 | C |
| 26 | 3rd & Tamalpais | 17.9 | B | 17.2 | B |
| 27 | 2nd & Lindaro | 30.4 | C | 69.3 | E |
| 28 | 3rd & Lindaro | 4.8 | A | 6.5 | A |
| 29 | 4th & Cijos | 8.0 | A | 14.1 | B |
| 30 | 4th & Lootens | 7.8 | A | 20.1 | C |
| 31 | 5th & Court | 27.9 | C | 26.3 | C |
| 32 | Mission & Court | 9.5 | A | 4.9 | A |
| 33 | 5th & Tamalpais | 7.5 | A | 8.1 | A |
| 34 | 5th & E Tamalpais | 4.9 | A | 5.1 | A |
| 35 | 3rd & Ritter | 1.2 | A | 2.2 | A |
| 36 | Ritter & Lincoln | 25.3 | D | 8.9 | A |
| 37 | 5th & Nye | 3.5 | A | 1.9 | A |
| 38 | Mission & Nye | 4.6 | A | 2.8 | A |
| 39 | Mission & E Tamalpais | 4.6 | A | 4.1 | A |
| 40 | Mission & Tamalpais | 6.6 | A | 5.1 | A |
| 41 | 4th & Tamalpais | 15.3 | B | 30.0 | C |
| 42 | 4th & E Tamalpais | 7.1 | A | 10.2 | B |

Table 4-2: Existing Baseline Conditions (No-Build) – Corridor Travel Times

| Route | A.M. Peak Hour | P.M. Peak Hour |
|-------------------------------|----------------------|----------------------|
| 3rd Street - Grand to A | 03:38 | 04:03 |
| 2nd Street - A to Grand | 03:56 | 05:11 |
| 4th Street WB - Grand to A | 03:46 | 05:26 |
| 4th Street EB - A to Grand | 03:55 | 05:42 |
| Irwin Street - 101 to Mission | 02:18 | 03:40 |
| Hetherton Street - 101 to 2nd | 02:14 | 03:14 |

Travel times provided in minutes:seconds format

4.2 Existing Conditions – Build Alternatives

4.2.1 4th Street Gateway

The following roadway geometric changes were associated specifically with the 4th Street Gateway alternative.

- Hetherton Street and 3rd Street – Includes a second southbound right-turn lane
- Hetherton Street and 4th Street – Eliminates southbound right-turn movements.
- E Tamalpais Avenue between 3rd Street and 4th Street – Roadway eliminated
- E Tamalpais Avenue between 4th Street and 5th Avenue – Roadway eliminated

The closure of E Tamalpais Avenue between 3rd Street and 5th Avenue resulted in a redistribution of vehicles. Southbound right-turn movements from Hetherton Street to 4th Street were diverted to similar right-turn movements from Hetherton Street to 3rd Street or Hetherton Street to 5th Avenue. The vehicles are assumed to return to 4th Street via Lincoln Avenue or A Street.

In addition, buses were re-routed to the proposed bays with this alternative. New driveways are provided to access the proposed transit center. The existing eastbound left-turn from 4th Street to Irwin Street was also assumed to be converted from a permissive to a protected left-turn phase.

Intersection level of service and corridor travel time with this alternative is shown in Table 4-3 and Table 4-4, respectively.

Table 4-3: 4th Street Gateway (Year 2020) – Intersection Delay

| | | Existing Baseline | | | | 4th Street Gateway | | | |
|----|-----------------------|---------------------|-----|---------------------|-----|---------------------|-----|---------------------|-----|
| | | A.M. Peak Hour | | P.M. Peak Hour | | A.M. Peak Hour | | P.M. Peak Hour | |
| ID | Intersection | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS |
| 1 | 2nd & Hetherton | 17.8 | B | 18.5 | B | 19.5 | B | 17.4 | B |
| 2 | 3rd & Hetherton | 30.0 | C | 34.5 | C | 29.9 | C | 34.5 | C |
| 3 | 4th & Hetherton | 25.3 | C | 45.1 | D | 18.2 | B | 27.2 | C |
| 4 | 5th & Hetherton | 18.5 | B | 26.5 | C | 22.2 | C | 14.6 | B |
| 5 | Mission & Hetherton | 27.7 | C | 34.6 | C | 31.7 | C | 26.8 | C |
| 6 | 2nd & Irwin | 23.2 | C | 75.1 | E | 23.7 | C | 68.8 | E |
| 7 | 3rd & Irwin | 23.3 | C | 34.0 | C | 21.4 | C | 32.9 | C |
| 8 | 4th & Irwin | 22.8 | C | 26.9 | C | 23.5 | C | 15.7 | B |
| 9 | 5th & Irwin | 10.8 | B | 12.9 | B | 14.0 | B | 11.0 | B |
| 10 | Mission & Irwin | 21.1 | C | 24.9 | C | 22.8 | C | 24.3 | C |
| 11 | 2nd & Grand | 21.1 | C | 30.7 | C | 21.4 | C | 26.9 | C |
| 12 | 3rd & Grand | 17.3 | B | 37.2 | D | 16.8 | B | 36.6 | D |
| 13 | 4th & Grand | 32.3 | C | 37.0 | D | 27.4 | C | 29.8 | C |
| 14 | 5th & Grand | 5.6 | A | 17.0 | C | 4.5 | A | 12.6 | B |
| 15 | Mission & Grand | 21.0 | C | 26.7 | D | 21.5 | C | 25.2 | D |
| 16 | 2nd & Lincoln | 42.9 | D | 64.4 | E | 45.8 | D | 60.5 | E |
| 17 | 3rd & Lincoln | 18.6 | B | 10.0 | A | 16.0 | B | 11.1 | B |
| 18 | 4th & Lincoln | 24.2 | C | 22.8 | C | 26.9 | C | 14.3 | B |
| 19 | 5th & Lincoln | 33.0 | C | 16.6 | B | 33.9 | C | 18.4 | B |
| 20 | Mission & Lincoln | 34.0 | C | 22.6 | C | 35.7 | D | 22.8 | C |
| 21 | 2nd & A | 14.7 | B | 25.0 | C | 15.0 | B | 20.7 | C |
| 22 | 3rd & A | 15.8 | B | 16.6 | B | 15.8 | B | 16.5 | B |
| 23 | 4th & A | 14.2 | B | 19.0 | B | 12.5 | B | 14.8 | B |
| 24 | 5th & A | 19.2 | C | 21.4 | C | 20.5 | C | 24.6 | C |
| 25 | 2nd & Tamalpais | 21.6 | C | 33.0 | C | 22.8 | C | 31.6 | C |
| 26 | 3rd & Tamalpais | 17.9 | B | 17.2 | B | 17.5 | B | 17.9 | B |
| 27 | 2nd & Lindaro | 30.4 | C | 69.3 | E | 33.1 | C | 54.2 | D |
| 28 | 3rd & Lindaro | 4.8 | A | 6.5 | A | 4.6 | A | 6.4 | A |
| 29 | 4th & Cijos | 8.0 | A | 14.1 | B | 7.0 | A | 9.1 | A |
| 30 | 4th & Lootens | 7.8 | A | 20.1 | C | 7.7 | A | 11.0 | B |
| 31 | 5th & Court | 27.9 | C | 26.3 | C | 35.7 | D | 34.3 | C |
| 32 | Mission & Court | 9.5 | A | 4.9 | A | 14.2 | B | 7.3 | A |
| 33 | 5th & Tamalpais | 7.5 | A | 8.1 | A | 6.2 | A | 5.5 | A |
| 34 | 5th & E Tamalpais | 4.9 | A | 5.1 | A | 7.8 | A | 4.2 | A |
| 35 | 3rd & Ritter | 1.2 | A | 2.2 | A | 1.3 | A | 2.2 | A |
| 36 | Ritter & Lincoln | 25.3 | D | 8.9 | A | 20.9 | C | 6.7 | A |
| 37 | 5th & Nye | 3.5 | A | 1.9 | A | 3.8 | A | 4.2 | A |
| 38 | Mission & Nye | 4.6 | A | 2.8 | A | 7.5 | A | 3.1 | A |
| 39 | Mission & E Tamalpais | 4.6 | A | 4.1 | A | 5.5 | A | 3.9 | A |
| 40 | Mission & Tamalpais | 6.6 | A | 5.1 | A | 7.5 | A | 4.6 | A |
| 41 | 4th & Tamalpais | 15.3 | B | 30.0 | C | 7.9 | A | 15.4 | B |
| 42 | 4th & E Tamalpais | 7.1 | A | 10.2 | B | 2.4 | A | 3.0 | A |

As shown in the table, the 4th Street Gateway Alternative does not result in any additional intersections operating at LOS E or F. All intersections operating at LOS E or F in the Existing Baseline scenario either improve in LOS or have a reduction in average delay

Table 4-4: 4th Street Gateway (Year 2020) – Corridor Travel Times

| Route | Existing Baseline | | 4 th Street Gateway | | Change from Baseline | |
|-------------------------------|-------------------|----------------|--------------------------------|----------------|----------------------|----------------|
| | A.M. Peak Hour | P.M. Peak Hour | A.M. Peak Hour | P.M. Peak Hour | A.M. Peak Hour | P.M. Peak Hour |
| 3rd Street - Grand to A | 03:38 | 04:03 | 03:40 | 04:08 | +00:02 | +00:05 |
| 2nd Street - A to Grand | 03:56 | 05:11 | 04:04 | 04:46 | +00:08 | -00:25 |
| 4th Street WB - Grand to A | 03:46 | 05:26 | 03:23 | 04:28 | -00:23 | -00:58 |
| 4th Street EB - A to Grand | 03:55 | 05:42 | 03:04 | 03:39 | -00:51 | -02:03 |
| Irwin Street - 101 to Mission | 02:18 | 03:40 | 02:29 | 03:27 | +00:11 | -00:13 |
| Hetherton Street - 101 to 2nd | 02:14 | 03:14 | 02:17 | 02:24 | +00:03 | -00:50 |

Travel times provided in minutes:seconds format

As shown in the table, the alternative results in improvement in travel time along 4th Street, with a mix of changes in travel time on other corridors.

4.2.2 Under the Freeway

Buses were re-routed to the proposed bays with this alternative. New driveways are provided to access the proposed transit center. The eastbound left-turn from 4th Street to Irwin Street was also assumed to be converted from a permissive to a protected left-turn phase. This alternative does not include any other roadway geometry changes.

There were no roadway network changes associated with this alternative. Intersection level of service and corridor travel time with this alternative are shown in Table 4-5 and Table 4-6, respectively.

Table 4-5: Under the Freeway (Year 2020) – Intersection Delay

| | | Existing Baseline | | | | Under the Freeway | | | |
|----|-----------------------|---------------------|-----|---------------------|-----|---------------------|-----|---------------------|-----|
| | | A.M. Peak Hour | | P.M. Peak Hour | | A.M. Peak Hour | | P.M. Peak Hour | |
| ID | Intersection | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS |
| 1 | 2nd & Hetherton | 17.8 | B | 18.5 | B | 17.6 | B | 17.7 | B |
| 2 | 3rd & Hetherton | 30.0 | C | 34.5 | C | 25.5 | C | 28.4 | C |
| 3 | 4th & Hetherton | 25.3 | C | 45.1 | D | 20.9 | C | 30.1 | C |
| 4 | 5th & Hetherton | 18.5 | B | 26.5 | C | 16.4 | B | 14.2 | B |
| 5 | Mission & Hetherton | 27.7 | C | 34.6 | C | 25.3 | C | 25.5 | C |
| 6 | 2nd & Irwin | 23.2 | C | 75.1 | E | 19.0 | B | 60.6 | E |
| 7 | 3rd & Irwin | 23.3 | C | 34.0 | C | 18.0 | B | 30.6 | C |
| 8 | 4th & Irwin | 22.8 | C | 26.9 | C | 21.4 | C | 17.1 | B |
| 9 | 5th & Irwin | 10.8 | B | 12.9 | B | 10.1 | B | 10.2 | B |
| 10 | Mission & Irwin | 21.1 | C | 24.9 | C | 22.7 | C | 24.1 | C |
| 11 | 2nd & Grand | 21.1 | C | 30.7 | C | 23.5 | C | 25.2 | C |
| 12 | 3rd & Grand | 17.3 | B | 37.2 | D | 18.0 | B | 35.9 | D |
| 13 | 4th & Grand | 32.3 | C | 37.0 | D | 32.4 | C | 27.5 | C |
| 14 | 5th & Grand | 5.6 | A | 17.0 | C | 5.1 | A | 13.0 | B |
| 15 | Mission & Grand | 21.0 | C | 26.7 | D | 24.6 | C | 24.0 | C |
| 16 | 2nd & Lincoln | 42.9 | D | 64.4 | E | 38.9 | D | 62.6 | E |
| 17 | 3rd & Lincoln | 18.6 | B | 10.0 | A | 16.2 | B | 10.3 | B |
| 18 | 4th & Lincoln | 24.2 | C | 22.8 | C | 20.9 | C | 16.0 | B |
| 19 | 5th & Lincoln | 33.0 | C | 16.6 | B | 30.3 | C | 16.3 | B |
| 20 | Mission & Lincoln | 34.0 | C | 22.6 | C | 27.6 | C | 22.6 | C |
| 21 | 2nd & A | 14.7 | B | 25.0 | C | 13.0 | B | 22.7 | C |
| 22 | 3rd & A | 15.8 | B | 16.6 | B | 15.9 | B | 16.7 | B |
| 23 | 4th & A | 14.2 | B | 19.0 | B | 13.5 | B | 16.4 | B |
| 24 | 5th & A | 19.2 | C | 21.4 | C | 19.0 | C | 25.0 | C |
| 25 | 2nd & Tamalpais | 21.6 | C | 33.0 | C | 21.0 | C | 31.7 | C |
| 26 | 3rd & Tamalpais | 17.9 | B | 17.2 | B | 15.3 | B | 16.7 | B |
| 27 | 2nd & Lindaro | 30.4 | C | 69.3 | E | 26.4 | C | 61.4 | E |
| 28 | 3rd & Lindaro | 4.8 | A | 6.5 | A | 4.8 | A | 6.4 | A |
| 29 | 4th & Cijos | 8.0 | A | 14.1 | B | 4.8 | A | 5.5 | A |
| 30 | 4th & Lootens | 7.8 | A | 20.1 | C | 6.8 | A | 12.5 | B |
| 31 | 5th & Court | 27.9 | C | 26.3 | C | 27.6 | C | 29.2 | C |
| 32 | Mission & Court | 9.5 | A | 4.9 | A | 9.2 | A | 5.6 | A |
| 33 | 5th & Tamalpais | 7.5 | A | 8.1 | A | 6.3 | A | 5.4 | A |
| 34 | 5th & E Tamalpais | 4.9 | A | 5.1 | A | 4.8 | A | 4.6 | A |
| 35 | 3rd & Ritter | 1.2 | A | 2.2 | A | 1.3 | A | 2.2 | A |
| 36 | Ritter & Lincoln | 25.3 | D | 8.9 | A | 24.3 | C | 7.6 | A |
| 37 | 5th & Nye | 3.5 | A | 1.9 | A | 2.5 | A | 2.3 | A |
| 38 | Mission & Nye | 4.6 | A | 2.8 | A | 4.5 | A | 2.7 | A |
| 39 | Mission & E Tamalpais | 4.6 | A | 4.1 | A | 4.4 | A | 4.2 | A |
| 40 | Mission & Tamalpais | 6.6 | A | 5.1 | A | 6.3 | A | 4.6 | A |
| 41 | 4th & Tamalpais | 15.3 | B | 30.0 | C | 8.0 | A | 19.0 | B |
| 42 | 4th & E Tamalpais | 7.1 | A | 10.2 | B | 7.9 | A | 9.8 | A |

As shown in the table, the Under the Freeway Alternative does not result in any additional intersections operating at LOS E or F. All intersections operating at LOS E or F in the Existing Baseline scenario, except for Intersection #12: 3rd & Grand either improve in LOS or have a reduction in average delay.

Table 4-6: Under the Freeway (Year 2020) – Corridor Travel Times

| Route | Existing Baseline | | Under the Freeway | | Change from Baseline | |
|--------------------------------------|-------------------|----------------|-------------------|----------------|----------------------|----------------|
| | A.M. Peak Hour | P.M. Peak Hour | A.M. Peak Hour | P.M. Peak Hour | A.M. Peak Hour | P.M. Peak Hour |
| 3rd Street - Grand to A | 03:38 | 04:03 | 03:35 | 03:58 | -00:03 | -00:05 |
| 2nd Street - A to Grand | 03:56 | 05:11 | 03:40 | 04:58 | -00:16 | -00:13 |
| 4th Street WB - Grand to A | 03:46 | 05:26 | 03:44 | 04:53 | -00:02 | -00:33 |
| 4th Street EB - A to Grand | 03:55 | 05:42 | 03:08 | 03:47 | -00:47 | -01:55 |
| Irwin Street - 101 to Mission | 02:18 | 03:40 | 02:13 | 03:23 | -00:05 | -00:17 |
| Hetherton Street - 101 to 2nd | 02:14 | 03:14 | 02:14 | 02:21 | +00:00 | -00:53 |

Travel times provided in minutes:seconds format

As shown in the table, the alternative results in improvement in travel time along most corridors.

4.2.3 Whistlestop Block

The following roadway geometric changes were associated specifically with the Whistlestop Block alternative.

- Hetherton Street and 3rd Street – Includes modifying an existing southbound through lane to a southbound shared through-right lane
- E Tamalpais Avenue between 3rd Street and 4th Street – Removes roadway
- W Tamalpais Avenue between 3rd Street and 4th Street – Converts to bus only for both northbound and southbound vehicles.

Vehicles on both East and West Tamalpais Avenue were re-routed to Lincoln Avenue.

In addition, buses were re-routed to the proposed bays with this alternative. New driveways are provided to access the proposed transit center. The eastbound left-turn from 4th Street to Irwin Street was also assumed to be converted from a permissive to a protected left-turn phase.

Intersection level of service and corridor travel time with this alternative is shown in Table 4-7 and Table 4-8, respectively.

Table 4-7: Whistlestop Block (Year 2020) – Intersection Delay

| | | Existing Baseline | | | | Whistlestop Block | | | |
|----|-----------------------|---------------------|-----|---------------------|-----|---------------------|-----|---------------------|-----|
| | | A.M. Peak Hour | | P.M. Peak Hour | | A.M. Peak Hour | | P.M. Peak Hour | |
| ID | Intersection | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS |
| 1 | 2nd & Hetherton | 17.8 | B | 18.5 | B | 18.1 | B | 17.3 | B |
| 2 | 3rd & Hetherton | 30.0 | C | 34.5 | C | 28.1 | C | 27.9 | C |
| 3 | 4th & Hetherton | 25.3 | C | 45.1 | D | 19.2 | B | 22.5 | C |
| 4 | 5th & Hetherton | 18.5 | B | 26.5 | C | 14.8 | B | 11.2 | B |
| 5 | Mission & Hetherton | 27.7 | C | 34.6 | C | 27.5 | C | 24.5 | C |
| 6 | 2nd & Irwin | 23.2 | C | 75.1 | E | 23.5 | C | 61.9 | E |
| 7 | 3rd & Irwin | 23.3 | C | 34.0 | C | 22.7 | C | 31.1 | C |
| 8 | 4th & Irwin | 22.8 | C | 26.9 | C | 22.4 | C | 14.7 | B |
| 9 | 5th & Irwin | 10.8 | B | 12.9 | B | 9.7 | A | 10.5 | B |
| 10 | Mission & Irwin | 21.1 | C | 24.9 | C | 22.8 | C | 23.7 | C |
| 11 | 2nd & Grand | 21.1 | C | 30.7 | C | 33.9 | C | 26.1 | C |
| 12 | 3rd & Grand | 17.3 | B | 37.2 | D | 24.6 | C | 34.1 | C |
| 13 | 4th & Grand | 32.3 | C | 37.0 | D | 44.1 | D | 27.5 | C |
| 14 | 5th & Grand | 5.6 | A | 17.0 | C | 10.8 | B | 11.5 | B |
| 15 | Mission & Grand | 21.0 | C | 26.7 | D | 28.1 | D | 23.9 | C |
| 16 | 2nd & Lincoln | 42.9 | D | 64.4 | E | 40.0 | D | 61.3 | E |
| 17 | 3rd & Lincoln | 18.6 | B | 10.0 | A | 18.2 | B | 12.7 | B |
| 18 | 4th & Lincoln | 24.2 | C | 22.8 | C | 25.5 | C | 15.1 | B |
| 19 | 5th & Lincoln | 33.0 | C | 16.6 | B | 33.1 | C | 15.6 | B |
| 20 | Mission & Lincoln | 34.0 | C | 22.6 | C | 35.4 | D | 23.1 | C |
| 21 | 2nd & A | 14.7 | B | 25.0 | C | 13.0 | B | 20.1 | C |
| 22 | 3rd & A | 15.8 | B | 16.6 | B | 15.5 | B | 16.4 | B |
| 23 | 4th & A | 14.2 | B | 19.0 | B | 13.6 | B | 16.4 | B |
| 24 | 5th & A | 19.2 | C | 21.4 | C | 19.3 | C | 22.1 | C |
| 25 | 2nd & Tamalpais | 21.6 | C | 33.0 | C | 21.1 | C | 31.0 | C |
| 26 | 3rd & Tamalpais | 17.9 | B | 17.2 | B | 16.9 | B | 17.6 | B |
| 27 | 2nd & Lindaro | 30.4 | C | 69.3 | E | 24.4 | C | 52.1 | D |
| 28 | 3rd & Lindaro | 4.8 | A | 6.5 | A | 4.8 | A | 6.5 | A |
| 29 | 4th & Cijos | 8.0 | A | 14.1 | B | 7.2 | A | 5.0 | A |
| 30 | 4th & Lootens | 7.8 | A | 20.1 | C | 7.7 | A | 12.0 | B |
| 31 | 5th & Court | 27.9 | C | 26.3 | C | 28.8 | C | 30.7 | C |
| 32 | Mission & Court | 9.5 | A | 4.9 | A | 11.7 | B | 6.2 | A |
| 33 | 5th & Tamalpais | 7.5 | A | 8.1 | A | 5.8 | A | 4.7 | A |
| 34 | 5th & E Tamalpais | 4.9 | A | 5.1 | A | 4.5 | A | 4.1 | A |
| 35 | 3rd & Ritter | 1.2 | A | 2.2 | A | 1.3 | A | 2.1 | A |
| 36 | Ritter & Lincoln | 25.3 | D | 8.9 | A | 24.2 | C | 14.9 | B |
| 37 | 5th & Nye | 3.5 | A | 1.9 | A | 4.3 | A | 2.2 | A |
| 38 | Mission & Nye | 4.6 | A | 2.8 | A | 5.5 | A | 3.0 | A |
| 39 | Mission & E Tamalpais | 4.6 | A | 4.1 | A | 4.8 | A | 4.2 | A |
| 40 | Mission & Tamalpais | 6.6 | A | 5.1 | A | 6.9 | A | 4.6 | A |
| 41 | 4th & Tamalpais | 15.3 | B | 30.0 | C | 9.2 | A | 8.7 | A |
| 42 | 4th & E Tamalpais | 7.1 | A | 10.2 | B | 4.9 | A | 6.0 | A |

As shown in the table, the Whistlestop Block Alternative does not result in any additional intersections operating at LOS E or F. All intersections operating at LOS E or F in the Existing Baseline scenario either improve in LOS or have a reduction in average delay.

Table 4-8: Whistlestop Block (Year 2020) – Corridor Travel Times

| Route | Existing Baseline | | Whistlestop Block | | Change from Baseline | |
|-------------------------------|-------------------|----------------|-------------------|----------------|----------------------|----------------|
| | A.M. Peak Hour | P.M. Peak Hour | A.M. Peak Hour | P.M. Peak Hour | A.M. Peak Hour | P.M. Peak Hour |
| 3rd Street - Grand to A | 03:38 | 04:03 | 03:40 | 04:03 | +00:02 | +00:00 |
| 2nd Street - A to Grand | 03:56 | 05:11 | 03:42 | 04:44 | -00:14 | -00:27 |
| 4th Street WB - Grand to A | 03:46 | 05:26 | 04:00 | 04:36 | +00:14 | -00:50 |
| 4th Street EB - A to Grand | 03:55 | 05:42 | 03:15 | 03:22 | -00:40 | -02:20 |
| Irwin Street - 101 to Mission | 02:18 | 03:40 | 02:17 | 03:21 | +00:01 | -00:19 |
| Hetherton Street - 101 to 2nd | 02:14 | 03:14 | 02:15 | 02:09 | +00:01 | -01:05 |

Travel times provided in minutes:seconds format

As shown in the table, the alternative results in improvement in travel time along most corridors, particularly along 4th Street.

4.3 Existing Conditions – Summary

In addition to intersection-level and corridor-level results, the VISSIM model was utilized to capture the network-wide effects of each alternative.

The overall network results for all alternatives are shown in **Table 4-9**.

Table 4-9: Network Evaluation - Existing Conditions

| Scenario | | Avg Delay/Vehicle | Avg # Stops/Vehicle | Net Change in Delay/Vehicle | Net Change in Delay/Vehicle (%) |
|---------------------|----------------|-------------------|---------------------|-----------------------------|---------------------------------|
| Baseline (No-Build) | A.M. Peak Hour | 176 sec | 4 | | |
| | P.M. Peak Hour | 130 sec | 6 | | |
| 4th Street Gateway | A.M. Peak Hour | 200 sec | 4 | +25 | +14% |
| | P.M. Peak Hour | 144 sec | 6 | +14 | +8% |
| Under the Freeway | A.M. Peak Hour | 170 sec | 4 | -6 | -3% |
| | P.M. Peak Hour | 115 sec | 5 | -15 | -9% |
| Whistlestop Block | A.M. Peak Hour | 180 sec | 4 | +5 | +3% |
| | P.M. Peak Hour | 117 sec | 5 | -13 | -7% |

As shown in the table, the 4th Street Gateway alternative would result in an increase in delay per vehicle in both the a.m. and p.m. peak hours. The other two alternatives have a less than five percent change in the a.m. peak period with a moderate reduction in the p.m. peak period.

4.4 Baseline Year 2040 Conditions (No-Build Alternative)

The Year 2040 baseline model includes the City of San Rafael's proposed future roadway network changes and future planned growth with the San Rafael General Plan Update. The modifications associated with Year 2040 conditions are described in Chapter 2.

In addition to the anticipated geometric changes, it was assumed that signalized intersections under future conditions would generally have the same signal timings as existing conditions. Minor phase timing changes were included at a limited number of locations where demand exceeded capacity with projected growth.

Appendix B includes the traffic volumes used in the Year 2040 baseline conditions analysis. Intersection level of service and corridor travel time with this alternative is shown in Table 4-10 and Table 4-11, respectively.

Table 4-10: Year 2040 Baseline Conditions (No-Build) – Intersection Delay

| | | Existing Baseline | | | | Year 2040 Baseline | | | |
|----|-----------------------|---------------------|-----|---------------------|-----|---------------------|-----|---------------------|-----|
| | | A.M. Peak Hour | | P.M. Peak Hour | | A.M. Peak Hour | | P.M. Peak Hour | |
| ID | Intersection | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS |
| 1 | 2nd & Hetherton | 17.8 | B | 18.5 | B | 20.5 | C | 19.3 | B |
| 2 | 3rd & Hetherton | 30.0 | C | 34.5 | C | 33.2 | C | 43.5 | D |
| 3 | 4th & Hetherton | 25.3 | C | 45.1 | D | 48.1 | D | 60.3 | E |
| 4 | 5th & Hetherton | 18.5 | B | 26.5 | C | 28.1 | C | 60.3 | E |
| 5 | Mission & Hetherton | 27.7 | C | 34.6 | C | 49.2 | D | 67.7 | E |
| 6 | 2nd & Irwin | 23.2 | C | 75.1 | E | 40.9 | D | 64.5 | E |
| 7 | 3rd & Irwin | 23.3 | C | 34.0 | C | 25.4 | C | 36.8 | D |
| 8 | 4th & Irwin | 22.8 | C | 26.9 | C | 57.5 | E | 22.7 | C |
| 9 | 5th & Irwin | 10.8 | B | 12.9 | B | 16.0 | B | 24.4 | C |
| 10 | Mission & Irwin | 21.1 | C | 24.9 | C | 31.3 | C | 30.0 | C |
| 11 | 2nd & Grand | 21.1 | C | 30.7 | C | 81.4 | F | 36.2 | D |
| 12 | 3rd & Grand | 17.3 | B | 37.2 | D | 82.4 | F | 30.3 | C |
| 13 | 4th & Grand | 32.3 | C | 37.0 | D | 182.1 | F | 40.5 | D |
| 14 | 5th & Grand | 5.6 | A | 17.0 | C | 76.0 | F | 26.4 | D |
| 15 | Mission & Grand | 21.0 | C | 26.7 | D | 101.2 | F | 36.0 | E |
| 16 | 2nd & Lincoln | 42.9 | D | 64.4 | E | 83.6 | F | 104.3 | F |
| 17 | 3rd & Lincoln | 18.6 | B | 10.0 | A | 16.6 | B | 10.2 | B |
| 18 | 4th & Lincoln | 24.2 | C | 22.8 | C | 40.5 | D | 18.9 | B |
| 19 | 5th & Lincoln | 33.0 | C | 16.6 | B | 47.2 | D | 28.7 | C |
| 20 | Mission & Lincoln | 34.0 | C | 22.6 | C | 99.4 | F | 33.2 | C |
| 21 | 2nd & A | 14.7 | B | 25.0 | C | 47.0 | D | 38.4 | D |
| 22 | 3rd & A | 15.8 | B | 16.6 | B | 17.1 | B | 17.1 | B |
| 23 | 4th & A | 14.2 | B | 19.0 | B | 32.4 | C | 22.3 | C |
| 24 | 5th & A | 19.2 | C | 21.4 | C | 29.8 | D | 46.0 | E |
| 25 | 2nd & Tamalpais | 21.6 | C | 33.0 | C | 28.8 | C | 30.5 | C |
| 26 | 3rd & Tamalpais | 17.9 | B | 17.2 | B | 13.0 | B | 17.0 | B |
| 27 | 2nd & Lindaro | 30.4 | C | 69.3 | E | 123.6 | F | 126.4 | F |
| 28 | 3rd & Lindaro | 4.8 | A | 6.5 | A | 7.0 | A | 8.3 | A |
| 29 | 4th & Cijos | 8.0 | A | 14.1 | B | 34.9 | D | 13.1 | B |
| 30 | 4th & Lootens | 7.8 | A | 20.1 | C | 50.4 | D | 16.5 | B |
| 31 | 5th & Court | 27.9 | C | 26.3 | C | 35.3 | D | 46.5 | D |
| 32 | Mission & Court | 9.5 | A | 4.9 | A | 21.7 | C | 22.2 | C |
| 33 | 5th & Tamalpais | 7.5 | A | 8.1 | A | 9.6 | A | 25.3 | C |
| 34 | 5th & E Tamalpais | 4.9 | A | 5.1 | A | 7.2 | A | 10.3 | B |
| 35 | 3rd & Ritter | 1.2 | A | 2.2 | A | 1.9 | A | 3.3 | A |
| 36 | Ritter & Lincoln | 25.3 | D | 8.9 | A | 18.5 | C | 15.2 | C |
| 37 | 5th & Nye | 3.5 | A | 1.9 | A | 18.1 | C | 27.8 | D |
| 38 | Mission & Nye | 4.6 | A | 2.8 | A | 10.1 | B | 7.6 | A |
| 39 | Mission & E Tamalpais | 4.6 | A | 4.1 | A | 6.3 | A | 5.6 | A |
| 40 | Mission & Tamalpais | 6.6 | A | 5.1 | A | 11.6 | B | 8.0 | A |
| 41 | 4th & Tamalpais | 15.3 | B | 30.0 | C | 32.0 | C | 23.6 | C |
| 42 | 4th & E Tamalpais | 7.1 | A | 10.2 | B | 15.7 | B | 8.9 | A |

Table 4-11: Year 2040 Baseline Conditions (No-Build) – Corridor Travel Times

| Route | Existing Baseline | | 2040 Baseline | |
|--------------------------------------|-------------------|----------------|----------------|----------------|
| | A.M. Peak Hour | P.M. Peak Hour | A.M. Peak Hour | P.M. Peak Hour |
| 3rd Street - Grand to A | 03:38 | 04:03 | 03:35 | 04:09 |
| 2nd Street - A to Grand | 03:56 | 05:11 | 07:00 | 06:19 |
| 4th Street WB - Grand to A | 03:46 | 05:26 | 08:19 | 04:50 |
| 4th Street EB - A to Grand | 03:55 | 05:42 | 07:39 | 04:46 |
| Irwin Street - 101 to Mission | 02:18 | 03:40 | 02:58 | 03:58 |
| Hetherton Street - 101 to 2nd | 02:14 | 03:14 | 03:19 | 05:19 |

Travel times provided in minutes:seconds format

4.5 Year 2040 Conditions – Build Alternatives

4.5.1 4th Street Gateway

The same roadway network changes that were described in the existing conditions section were applied to the future conditions model. The eastbound left-turn from 4th Street to Irwin Street was also assumed to be converted from a permissive to a protected left-turn phase.

Due to the growth in traffic volume and the geometric changes associated with the alternative, several of the individual model runs resulted in gridlock, particularly in the a.m. peak period, resulting in very poor traffic network performance. Gridlock formed in the network in the “box” of intersections formed by Irwin Street, Lincoln Avenue, 4th Street, and 5th Avenue. The left-turning vehicles would begin queueing and back into the downstream intersections. Eventually, this would result in the other approaches backing up as well and since there is a grid network, this effect slowly propagated through the rest of the network, resulting in gridlock.

The results provided in Table 4-12 and Table 4-13 reflect intersection delay and corridor travel times, respectively. The deterioration in LOS at several intersections in the a.m. peak hour is a reflection of the overall network gridlock observed.

Table 4-12: 4th Street Gateway (Year 2040) – Intersection Delay

| | | Year 2040 Baseline | | | | 4th Street Gateway | | | |
|----|-----------------------|---------------------|-----|---------------------|-----|---------------------|-----|---------------------|-----|
| | | A.M. Peak Hour | | P.M. Peak Hour | | A.M. Peak Hour | | P.M. Peak Hour | |
| ID | Intersection | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS |
| 1 | 2nd & Hetherton | 20.5 | C | 19.3 | B | 27.3 | C | 18.8 | B |
| 2 | 3rd & Hetherton | 33.2 | C | 43.5 | D | 39.6 | D | 35.2 | D |
| 3 | 4th & Hetherton | 48.1 | D | 60.3 | E | 40.2 | D | 21.0 | C |
| 4 | 5th & Hetherton | 28.1 | C | 60.3 | E | 57.0 | E | 17.7 | B |
| 5 | Mission & Hetherton | 49.2 | D | 67.7 | E | 101.3 | F | 54.7 | D |
| 6 | 2nd & Irwin | 40.9 | D | 64.5 | E | 70.7 | E | 66.7 | E |
| 7 | 3rd & Irwin | 25.4 | C | 36.8 | D | 34.8 | C | 37.5 | D |
| 8 | 4th & Irwin | 57.5 | E | 22.7 | C | 74.1 | E | 20.6 | C |
| 9 | 5th & Irwin | 16.0 | B | 24.4 | C | 47.5 | D | 23.0 | C |
| 10 | Mission & Irwin | 31.3 | C | 30.0 | C | 43.3 | D | 32.1 | C |
| 11 | 2nd & Grand | 81.4 | F | 36.2 | D | 67.1 | E | 28.9 | C |
| 12 | 3rd & Grand | 82.4 | F | 30.3 | C | 53.9 | D | 26.3 | C |
| 13 | 4th & Grand | 182.1 | F | 40.5 | D | 141.2 | F | 34.0 | C |
| 14 | 5th & Grand | 76.0 | F | 26.4 | D | 43.8 | E | 19.8 | C |
| 15 | Mission & Grand | 101.2 | F | 36.0 | E | 64.9 | F | 39.1 | E |
| 16 | 2nd & Lincoln | 83.6 | F | 104.3 | F | 123.5 | F | 103.2 | F |
| 17 | 3rd & Lincoln | 16.6 | B | 10.2 | B | 21.3 | C | 11.5 | B |
| 18 | 4th & Lincoln | 40.5 | D | 18.9 | B | 53.7 | D | 14.2 | B |
| 19 | 5th & Lincoln | 47.2 | D | 28.7 | C | 71.5 | E | 21.7 | C |
| 20 | Mission & Lincoln | 99.4 | F | 33.2 | C | 140.3 | F | 46.0 | D |
| 21 | 2nd & A | 47.0 | D | 38.4 | D | 61.7 | E | 37.3 | D |
| 22 | 3rd & A | 17.1 | B | 17.1 | B | 17.4 | B | 16.3 | B |
| 23 | 4th & A | 32.4 | C | 22.3 | C | 41.7 | D | 17.8 | B |
| 24 | 5th & A | 29.8 | D | 46.0 | E | 43.3 | E | 47.4 | E |
| 25 | 2nd & Tamalpais | 28.8 | C | 30.5 | C | 36.3 | D | 30.2 | C |
| 26 | 3rd & Tamalpais | 13.0 | B | 17.0 | B | 17.4 | B | 19.2 | B |
| 27 | 2nd & Lindaro | 123.6 | F | 126.4 | F | 158.7 | F | 127.4 | F |
| 28 | 3rd & Lindaro | 7.0 | A | 8.3 | A | 6.2 | A | 7.8 | A |
| 29 | 4th & Cijos | 34.9 | D | 13.1 | B | 38.9 | E | 11.0 | B |
| 30 | 4th & Lootens | 50.4 | D | 16.5 | B | 53.7 | D | 12.5 | B |
| 31 | 5th & Court | 35.3 | D | 46.5 | D | 47.7 | D | 63.3 | E |
| 32 | Mission & Court | 21.7 | C | 22.2 | C | 57.2 | F | 30.0 | D |
| 33 | 5th & Tamalpais | 9.6 | A | 25.3 | C | 15.4 | B | 10.3 | B |
| 34 | 5th & E Tamalpais | 7.2 | A | 10.3 | B | 19.0 | B | 5.8 | A |
| 35 | 3rd & Ritter | 1.9 | A | 3.3 | A | 2.0 | A | 3.4 | A |
| 36 | Ritter & Lincoln | 18.5 | C | 15.2 | C | 16.2 | C | 11.5 | B |
| 37 | 5th & Nye | 18.1 | C | 27.8 | D | 26.3 | D | 24.6 | C |
| 38 | Mission & Nye | 10.1 | B | 7.6 | A | 27.3 | D | 14.0 | B |
| 39 | Mission & E Tamalpais | 6.3 | A | 5.6 | A | 11.0 | B | 8.0 | A |
| 40 | Mission & Tamalpais | 11.6 | B | 8.0 | A | 29.7 | C | 7.5 | A |
| 41 | 4th & Tamalpais | 32.0 | C | 23.6 | C | 37.6 | D | 20.2 | C |
| 42 | 4th & E Tamalpais | 15.7 | B | 8.9 | A | 7.6 | A | 5.7 | A |

As shown in the table, while a number of intersections improve level of service with the 4th Street Gateway Alternative, there are other locations that see a deterioration in level of service to LOS E or F, particularly in the a.m. peak hour.

Table 4-13: 4th Street Gateway (Year 2040) – Corridor Travel Times

| Route | 2040 Baseline | | 4 th Street Gateway | | Change from Baseline | |
|-------------------------------|----------------|----------------|--------------------------------|----------------|----------------------|----------------|
| | A.M. Peak Hour | P.M. Peak Hour | A.M. Peak Hour | P.M. Peak Hour | A.M. Peak Hour | P.M. Peak Hour |
| 3rd Street - Grand to A | 03:35 | 04:09 | 03:47 | 04:14 | +00:12 | +00:05 |
| 2nd Street - A to Grand | 07:00 | 06:19 | 08:04 | 06:17 | +00:64 | -00:02 |
| 4th Street WB - Grand to A | 08:19 | 04:50 | 05:50 | 04:38 | -02:29 | -00:12 |
| 4th Street EB - A to Grand | 07:39 | 04:46 | 08:54 | 03:48 | +01:15 | -00:58 |
| Irwin Street - 101 to Mission | 02:58 | 03:58 | 05:05 | 03:56 | +01:07 | -00:02 |
| Hetheron Street - 101 to 2nd | 03:19 | 05:19 | 04:34 | 02:32 | +00:75 | -01:47 |

Travel times provided in minutes:seconds format

As shown in the table, in the a.m. peak hour, there is a large increase in travel times along several corridors. In the p.m. peak hour, the alternative generally results in a decrease in travel time along most corridors.

4.5.2 Under the Freeway

The Under the Freeway alternative does not require any roadway network changes, other than driveway access to the transit center itself. The eastbound left-turn from 4th Street to Irwin Street was also assumed to be converted from a permissive to a protected left-turn phase. Intersection level of service and corridor travel time with this alternative is shown in Table 4-14 and Table 4-15, respectively.

Table 4-14: Under the Freeway (Year 2040) – Intersection Delay

| | | Year 2040 Baseline | | | | Under the Freeway | | | |
|----|-----------------------|---------------------|-----|---------------------|-----|---------------------|-----|---------------------|-----|
| | | A.M. Peak Hour | | P.M. Peak Hour | | A.M. Peak Hour | | P.M. Peak Hour | |
| ID | Intersection | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS |
| 1 | 2nd & Hetherton | 20.5 | C | 19.3 | B | 20.3 | C | 17.8 | B |
| 2 | 3rd & Hetherton | 33.2 | C | 43.5 | D | 28.9 | C | 38.0 | D |
| 3 | 4th & Hetherton | 48.1 | D | 60.3 | E | 37.5 | D | 51.1 | D |
| 4 | 5th & Hetherton | 28.1 | C | 60.3 | E | 21.6 | C | 42.4 | D |
| 5 | Mission & Hetherton | 49.2 | D | 67.7 | E | 51.7 | D | 55.1 | E |
| 6 | 2nd & Irwin | 40.9 | D | 64.5 | E | 43.1 | D | 64.3 | E |
| 7 | 3rd & Irwin | 25.4 | C | 36.8 | D | 24.2 | C | 35.7 | D |
| 8 | 4th & Irwin | 57.5 | E | 22.7 | C | 57.8 | E | 27.5 | C |
| 9 | 5th & Irwin | 16.0 | B | 24.4 | C | 16.2 | B | 20.3 | C |
| 10 | Mission & Irwin | 31.3 | C | 30.0 | C | 30.3 | C | 27.9 | C |
| 11 | 2nd & Grand | 81.4 | F | 36.2 | D | 83.1 | F | 29.2 | C |
| 12 | 3rd & Grand | 82.4 | F | 30.3 | C | 77.6 | E | 27.7 | C |
| 13 | 4th & Grand | 182.1 | F | 40.5 | D | 173.1 | F | 41.1 | D |
| 14 | 5th & Grand | 76.0 | F | 26.4 | D | 64.9 | F | 22.6 | C |
| 15 | Mission & Grand | 101.2 | F | 36.0 | E | 91.6 | F | 33.4 | D |
| 16 | 2nd & Lincoln | 83.6 | F | 104.3 | F | 79.0 | E | 97.5 | F |
| 17 | 3rd & Lincoln | 16.6 | B | 10.2 | B | 15.4 | B | 10.3 | B |
| 18 | 4th & Lincoln | 40.5 | D | 18.9 | B | 31.2 | C | 16.9 | B |
| 19 | 5th & Lincoln | 47.2 | D | 28.7 | C | 40.3 | D | 21.5 | C |
| 20 | Mission & Lincoln | 99.4 | F | 33.2 | C | 100.8 | F | 32.3 | C |
| 21 | 2nd & A | 47.0 | D | 38.4 | D | 46.1 | D | 31.8 | C |
| 22 | 3rd & A | 17.1 | B | 17.1 | B | 17.0 | B | 15.9 | B |
| 23 | 4th & A | 32.4 | C | 22.3 | C | 16.4 | B | 18.1 | B |
| 24 | 5th & A | 29.8 | D | 46.0 | E | 28.4 | D | 42.5 | E |
| 25 | 2nd & Tamalpais | 28.8 | C | 30.5 | C | 28.3 | C | 29.4 | C |
| 26 | 3rd & Tamalpais | 13.0 | B | 17.0 | B | 13.2 | B | 17.4 | B |
| 27 | 2nd & Lindaro | 123.6 | F | 126.4 | F | 119.9 | F | 113.3 | F |
| 28 | 3rd & Lindaro | 7.0 | A | 8.3 | A | 6.8 | A | 8.3 | A |
| 29 | 4th & Cijos | 34.9 | D | 13.1 | B | 16.2 | C | 9.6 | A |
| 30 | 4th & Lootens | 50.4 | D | 16.5 | B | 14.8 | B | 16.1 | B |
| 31 | 5th & Court | 35.3 | D | 46.5 | D | 41.2 | D | 47.7 | D |
| 32 | Mission & Court | 21.7 | C | 22.2 | C | 27.8 | D | 23.5 | C |
| 33 | 5th & Tamalpais | 9.6 | A | 25.3 | C | 8.3 | A | 16.1 | B |
| 34 | 5th & E Tamalpais | 7.2 | A | 10.3 | B | 5.1 | A | 7.6 | A |
| 35 | 3rd & Ritter | 1.9 | A | 3.3 | A | 2.2 | A | 3.5 | A |
| 36 | Ritter & Lincoln | 18.5 | C | 15.2 | C | 17.1 | C | 12.9 | B |
| 37 | 5th & Nye | 18.1 | C | 27.8 | D | 10.3 | B | 13.3 | B |
| 38 | Mission & Nye | 10.1 | B | 7.6 | A | 14.0 | B | 8.3 | A |
| 39 | Mission & E Tamalpais | 6.3 | A | 5.6 | A | 8.0 | A | 5.7 | A |
| 40 | Mission & Tamalpais | 11.6 | B | 8.0 | A | 11.3 | B | 6.6 | A |
| 41 | 4th & Tamalpais | 32.0 | C | 23.6 | C | 20.1 | C | 20.7 | C |
| 42 | 4th & E Tamalpais | 15.7 | B | 8.9 | A | 10.8 | B | 8.2 | A |

As shown in the table, a number of intersections improve level of service with the Under the Freeway Alternative and no new intersections operate at a LOS E or F. Most locations that operate at LOS E or F in the Year 2040 baseline scenario operate at a reduced level of delay.

Table 4-15: Under the Freeway (Year 2040) – Corridor Travel Times

| Route | 2040 Baseline | | Under the Freeway | | Change from Baseline | |
|-------------------------------|----------------|----------------|-------------------|----------------|----------------------|----------------|
| | A.M. Peak Hour | P.M. Peak Hour | A.M. Peak Hour | P.M. Peak Hour | A.M. Peak Hour | P.M. Peak Hour |
| 3rd Street - Grand to A | 03:35 | 04:09 | 03:36 | 04:08 | -00:01 | +00:01 |
| 2nd Street - A to Grand | 07:00 | 06:19 | 06:43 | 05:52 | -00:17 | -00:27 |
| 4th Street WB - Grand to A | 08:19 | 04:50 | 07:55 | 05:31 | -00:24 | -00:41 |
| 4th Street EB - A to Grand | 07:39 | 04:46 | 04:44 | 04:16 | -02:55 | -00:30 |
| Irwin Street - 101 to Mission | 02:58 | 03:58 | 03:12 | 03:50 | +00:14 | -00:08 |
| Hetherton Street - 101 to 2nd | 03:19 | 05:19 | 02:56 | 04:13 | -00:23 | -00:66 |

Travel times provided in minutes:seconds format

As shown in the table, all corridors experience a decrease in travel time with this alternative in the a.m. peak hour, although several corridors see an increase in travel time in the p.m. peak hour.

4.5.3 Whistlestop Block

The same roadway network changes that were described in the existing conditions section were applied to the future conditions model. In Year 2040 conditions, the planned modifications to West Tamalpais Avenue included in the baseline scenario are not included with this alternative. West Tamalpais Avenue would remain open to two-way traffic between 2nd and 3rd Streets, bus traffic between 3rd and 4th Streets, and two-way traffic between 4th Street and 5th Avenue. The eastbound left-turn from 4th Street to Irwin Street was also assumed to be converted from a permissive to a protected left-turn phase.

Intersection level of service and corridor travel time with this alternative is shown in Table 4-16 and Table 4-17, respectively.

Table 4-16: Whistlestop Block (Year 2040) – Intersection Delay

| | | Year 2040 Baseline | | | | Whistlestop Block | | | |
|----|-----------------------|---------------------|-----|---------------------|-----|---------------------|-----|---------------------|-----|
| | | A.M. Peak Hour | | P.M. Peak Hour | | A.M. Peak Hour | | P.M. Peak Hour | |
| ID | Intersection | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS | Average Delay (sec) | LOS |
| 1 | 2nd & Hetherton | 20.5 | C | 19.3 | B | 20.0 | B | 17.9 | B |
| 2 | 3rd & Hetherton | 33.2 | C | 43.5 | D | 29.3 | C | 32.0 | C |
| 3 | 4th & Hetherton | 48.1 | D | 60.3 | E | 34.0 | C | 28.7 | C |
| 4 | 5th & Hetherton | 28.1 | C | 60.3 | E | 24.8 | C | 17.3 | B |
| 5 | Mission & Hetherton | 49.2 | D | 67.7 | E | 46.3 | D | 43.9 | D |
| 6 | 2nd & Irwin | 40.9 | D | 64.5 | E | 38.9 | D | 51.0 | D |
| 7 | 3rd & Irwin | 25.4 | C | 36.8 | D | 22.4 | C | 33.3 | C |
| 8 | 4th & Irwin | 57.5 | E | 22.7 | C | 52.6 | D | 23.3 | C |
| 9 | 5th & Irwin | 16.0 | B | 24.4 | C | 19.1 | B | 20.2 | C |
| 10 | Mission & Irwin | 31.3 | C | 30.0 | C | 30.9 | C | 31.3 | C |
| 11 | 2nd & Grand | 81.4 | F | 36.2 | D | 96.3 | F | 39.2 | D |
| 12 | 3rd & Grand | 82.4 | F | 30.3 | C | 79.8 | E | 30.2 | C |
| 13 | 4th & Grand | 182.1 | F | 40.5 | D | 161.5 | F | 45.1 | D |
| 14 | 5th & Grand | 76.0 | F | 26.4 | D | 38.7 | E | 27.2 | D |
| 15 | Mission & Grand | 101.2 | F | 36.0 | E | 60.8 | F | 40.3 | E |
| 16 | 2nd & Lincoln | 83.6 | F | 104.3 | F | 85.6 | F | 105.8 | F |
| 17 | 3rd & Lincoln | 16.6 | B | 10.2 | B | 17.5 | B | 11.2 | B |
| 18 | 4th & Lincoln | 40.5 | D | 18.9 | B | 39.7 | D | 15.6 | B |
| 19 | 5th & Lincoln | 47.2 | D | 28.7 | C | 58.4 | E | 18.9 | B |
| 20 | Mission & Lincoln | 99.4 | F | 33.2 | C | 107.3 | F | 34.7 | C |
| 21 | 2nd & A | 47.0 | D | 38.4 | D | 48.2 | D | 34.5 | C |
| 22 | 3rd & A | 17.1 | B | 17.1 | B | 18.7 | B | 16.2 | B |
| 23 | 4th & A | 32.4 | C | 22.3 | C | 23.5 | C | 19.9 | B |
| 24 | 5th & A | 29.8 | D | 46.0 | E | 38.6 | E | 44.5 | E |
| 25 | 2nd & Tamalpais | 28.8 | C | 30.5 | C | 28.3 | C | 29.9 | C |
| 26 | 3rd & Tamalpais | 13.0 | B | 17.0 | B | 14.0 | B | 18.0 | B |
| 27 | 2nd & Lindaro | 123.6 | F | 126.4 | F | 128.0 | F | 115.6 | F |
| 28 | 3rd & Lindaro | 7.0 | A | 8.3 | A | 6.6 | A | 8.1 | A |
| 29 | 4th & Cijos | 34.9 | D | 13.1 | B | 23.1 | C | 7.6 | A |
| 30 | 4th & Lootens | 50.4 | D | 16.5 | B | 22.6 | C | 13.9 | B |
| 31 | 5th & Court | 35.3 | D | 46.5 | D | 39.3 | D | 55.2 | E |
| 32 | Mission & Court | 21.7 | C | 22.2 | C | 18.8 | C | 28.4 | D |
| 33 | 5th & Tamalpais | 9.6 | A | 25.3 | C | 9.3 | A | 11.2 | B |
| 34 | 5th & E Tamalpais | 7.2 | A | 10.3 | B | 9.7 | A | 7.3 | A |
| 35 | 3rd & Ritter | 1.9 | A | 3.3 | A | 2.2 | A | 3.5 | A |
| 36 | Ritter & Lincoln | 18.5 | C | 15.2 | C | 17.1 | C | 14.8 | B |
| 37 | 5th & Nye | 18.1 | C | 27.8 | D | 32.0 | D | 15.9 | C |
| 38 | Mission & Nye | 10.1 | B | 7.6 | A | 9.0 | A | 10.8 | B |
| 39 | Mission & E Tamalpais | 6.3 | A | 5.6 | A | 6.9 | A | 6.6 | A |
| 40 | Mission & Tamalpais | 11.6 | B | 8.0 | A | 11.1 | B | 7.4 | A |
| 41 | 4th & Tamalpais | 32.0 | C | 23.6 | C | 20.0 | C | 12.1 | B |
| 42 | 4th & E Tamalpais | 15.7 | B | 8.9 | A | 8.5 | A | 8.3 | A |

As shown in the table, a number of intersections improve level of service with the Whistlestop Block Alternative and only one intersection deteriorates to LOS E or F. In the p.m. peak hour Intersection #31: 5th & Court would drop from LOS D to LOS F. Most locations that operate at LOS E or F in the Year 2040 baseline scenario operate at a reduced level of delay.

Table 4-17: Whistlestop Block (Year 2040) – Corridor Travel Times

| Route | 2040 Baseline | | Whistlestop Block | | Change from Baseline | |
|-------------------------------|----------------|----------------|-------------------|----------------|----------------------|----------------|
| | A.M. Peak Hour | P.M. Peak Hour | A.M. Peak Hour | P.M. Peak Hour | A.M. Peak Hour | P.M. Peak Hour |
| 3rd Street - Grand to A | 03:35 | 04:09 | 03:40 | 04:12 | +00:05 | +00:03 |
| 2nd Street - A to Grand | 07:00 | 06:19 | 06:55 | 06:07 | -00:05 | -00:12 |
| 4th Street WB - Grand to A | 08:19 | 04:50 | 07:05 | 05:27 | -01:14 | +00:37 |
| 4th Street EB - A to Grand | 07:39 | 04:46 | 05:15 | 03:41 | -02:24 | -01:05 |
| Irwin Street - 101 to Mission | 02:58 | 03:58 | 03:04 | 03:27 | +00:06 | -00:31 |
| Hetherton Street - 101 to 2nd | 03:19 | 05:19 | 02:49 | 02:33 | -00:30 | -01:46 |

Travel times provided in minutes:seconds format

As shown in the table, most corridors experience a decrease in travel time in the a.m. peak hour. The change in travel time is mixed in the p.m. peak period with some large reductions in travel time on two corridors and small increases in travel time on the others.

4.6 Year 2040 Conditions – Summary

The overall network results for all alternatives are shown in Table 4-18.

Table 4-18: Network Evaluation – Year 2040 Conditions

| Scenario | | Avg Delay/Vehicle | Avg # Stops/Vehicle | Net Change in Delay/Vehicle | Net Change in Delay/ Vehicle (%) |
|---------------------|----------------|-------------------|---------------------|-----------------------------|----------------------------------|
| Baseline (No-Build) | A.M. Peak Hour | 271 sec | 6 | | |
| | P.M. Peak Hour | 164 sec | 6 | | |
| 4th Street Gateway | A.M. Peak Hour | 313 sec | 7 | +42 | +16% |
| | P.M. Peak Hour | 155 sec | 7 | -8 | -5% |
| Under the Freeway | A.M. Peak Hour | 264 sec | 6 | -7 | -2% |
| | P.M. Peak Hour | 152 sec | 6 | -12 | -7% |
| Whistlestop Block | A.M. Peak Hour | 266 sec | 6 | -5 | -2% |
| | P.M. Peak Hour | 147 sec | 6 | -17 | -10% |

All alternatives result in a moderate decrease in delay per vehicle except for the 4th Street Gateway in the a.m. peak hour. The benefits for the Under the Freeway and Whistlestop Block Alternatives are similar, albeit somewhat greater benefits are seen with the Whistlestop Block alternative in the p.m. peak hour. A portion of the model runs for the 4th Street Gateway Alternative resulted in gridlock which causes a significant increase in average delay for that scenario.

5.0 Non-Motorized Transportation

5.1 Pedestrian Conditions

5.1.1 Existing Conditions

The transit center is located within Downtown San Rafael, which has high levels of pedestrian activity. The 4th Street corridor represents the primary commercial corridor in downtown, with a number of businesses and shopping destinations, particularly west of Lincoln Avenue. Other important generators of pedestrian activity in the area include San Rafael High School (located on the north side of 3rd Street east of Highway 101) and the BioMarin campus at the southwest corner of Lincoln Avenue and 2nd Street.

Most roadways in the project vicinity, with the exception of portions of the south side of 2nd Street and the east side of Hetherton Street, include sidewalks. Crosswalks are provided at nearly all legs of each intersection, except for certain locations along 2nd Street and 3rd Street. The crosswalk across the south leg of the Hetherton Street and 3rd Street intersection was recently removed by the City of San Rafael and replaced by a new crosswalk across the east leg of the same intersection. Signalized crosswalks are currently provided across both 4th Street and 5th Avenue at each of West and East Tamalpais Avenue.

Intersection pedestrian counts were collected in January 2020 at the project study intersections during the morning (7 a.m. to 9 a.m.) and evening (4 p.m. to 6 p.m.) peak periods concurrent with the vehicle data collection. Peak hour pedestrian volumes are summarized by leg in Appendix C.

5.1.2 Year 2040 Conditions and Build Alternatives

In the Year 2040 baseline scenario, one planned pedestrian network change was assumed: relocation of the existing crosswalks on the east and north legs of the 2nd Street & Irwin Street intersection to the south and west legs. This would be in conjunction with the construction of a new sidewalk on the south side of 2nd Street.

In the build alternatives, the baseline pedestrian volumes were modified to account for the shifting of pedestrian movements resulting from the relocation of the transit center. The estimated pedestrian movements were shifted based on existing pedestrian volumes and ridership data and the location of bays in each alternative.

Year 2040 pedestrian volumes were developed by applying the quadrant-level growth rates (described in the methodology section) to the existing intersection-level pedestrian volumes. The Year 2040 projected baseline peak hour crosswalk volumes are summarized by leg in Appendix C.

5.2 Pedestrian Connectivity to Downtown

To evaluate each alternative's connectivity to downtown, the project team evaluated the pedestrian routes between Downtown San Rafael and the transit center. The team then estimated walk times and utilized existing vehicle volumes to determine the number of conflicting vehicles encountered by pedestrians on their route between the transit center and downtown. For the purposes of this analysis, the pedestrian routes to downtown were represented with a point selected at the intersection of 4th Street and A Street.

5.2.1 4th Street Gateway

Four pedestrian routes to downtown were identified for this alternative; routes were identified between both sides of the transit center on either side of 4th Street. For each side of the transit center, a "long" and "short" route was also identified. The long route is the route taken by pedestrians from the bay farthest from the downtown destination, while the short route is the closest. The routes identified are shown in Figure 5-1. Compared to other alternatives, the 4th Street Gateway alternative has the least amount of conflicting vehicles due to it being closer to downtown. For the north side of the transit center, pedestrian routes include the following:

- *Pedestrian Route 1:* This is the nearest path to downtown, which starts at the southwest corner of the north side of the transit center and follows along the north side of 4th Street. This route is a 10.2-minute walk (0.33 miles).
- *Pedestrian Route 2:* This is the farthest path to downtown from Hetherton Street, coming from the northeast corner of the north side of the transit center and following along the north side of 4th Street. This route is a 11.5-minute walk (0.38 miles).

For both above route options, the total conflicting vehicle volume on 4th Street (from the three-cross streets of Tamalpais Avenue, Lincoln Avenue, and Lootens Place) during the a.m. peak hour is 897 vehicles and during the p.m. peak hour is 1,205 vehicles.

For the south side of the transit center, pedestrian routes include:

- *Pedestrian Route 3:* This is the nearest path to downtown from the northwest corner of the south side of the transit center and along the south side of 4th Street. This option is a 10.7-minute walk (0.32 miles).
- *Pedestrian Route 4:* This is the farthest path to downtown from Hetherton Street, east of the transit center and along the south side of 4th Street. This option is a 12.2-minute walk (0.38 miles).

For the above route options, the total conflicting vehicle volume along 4th Street (from the four cross streets of Tamalpais Avenue, Lincoln Avenue, Cijos Street, and Lootens Place) during the a.m. peak hour is 1,015 vehicles and during the p.m. peak hour is 1,318 vehicles.



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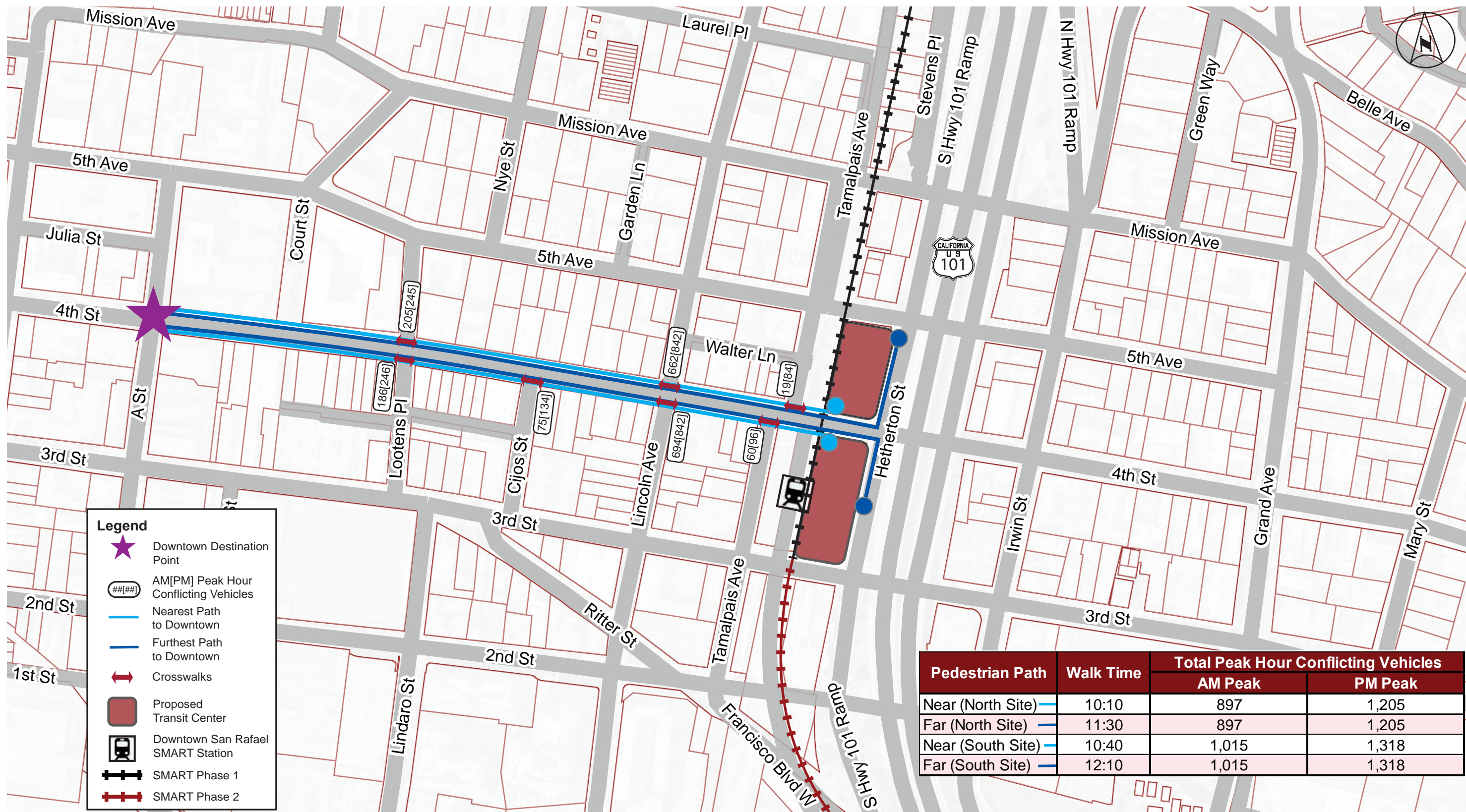


Figure 5-1: 4th Street Gateway Alternative - Pedestrian Connectivity to Downtown

5.2.2 Under the Freeway

Two pedestrian routes to downtown were identified for this alternative, one “long” and one “short” route was identified. The long route is the route taken by pedestrians from the bay farthest from the downtown destination, while the short route is the closest. The routes identified are shown in Figure 5-2. For the north side of the transit center, pedestrian routes include the following:

- *Pedestrian Route 1:* This is the nearest path to downtown from the north side of the transit center, starting at the southernmost bays of the northern site near 4th Street. This option is a 12.3-minute walk (0.38 miles). The total conflicting vehicle volume along 4th Street (from the cross streets of Hetherton Street, West and East Tamalpais Ave, Lincoln Ave, and Lootens Place) during the a.m. peak hour is 1,840 vehicles and during the p.m. peak hour is 2,128 vehicles.
- *Pedestrian Route 2:* This is the farthest path to downtown from north side of the transit center, starting at the corner of Irwin Street and 5th Avenue. This option is a 14-minute walk (0.45 miles). The total conflicting vehicle volume (from the intersection of Hetherton Street/5th Avenue, and the intersections of 4th Street with Hetherton Street, East and West Tamalpais Ave, Lincoln Ave, and Lootens Place) during the a.m. peak hour is 1,840 vehicles and during the p.m. peak hour is 2,128 vehicles.

For the south side of the transit center, pedestrian routes include the following:

- *Pedestrian Route 3:* This is the nearest path to downtown, from the northwest corner of the south side of the transit center at 4th Street and Hetherton Street. This option is a 12.8-minute walk (0.35 miles). The total conflicting vehicle volume on 4th Street (from the six cross streets of Hetherton Street, West and East Tamalpais Ave, Lincoln Ave, Cijos Street, and Lootens Place) during the a.m. peak hour is 2,162 vehicles and during the p.m. peak hour is 2,373 vehicles.
- *Pedestrian Route 4:* This is the farthest path to downtown from the south side of the transit center. This option is a 12.8-minute walk (0.4 miles). The total conflicting vehicle volume on 4th Street (from the six cross streets of Hetherton Street, West and East Tamalpais Ave, Lincoln Ave, Cijos Street, and Lootens Place) during the a.m. peak hour is 2,162 vehicles and during the p.m. peak hour is 2,373 vehicles.



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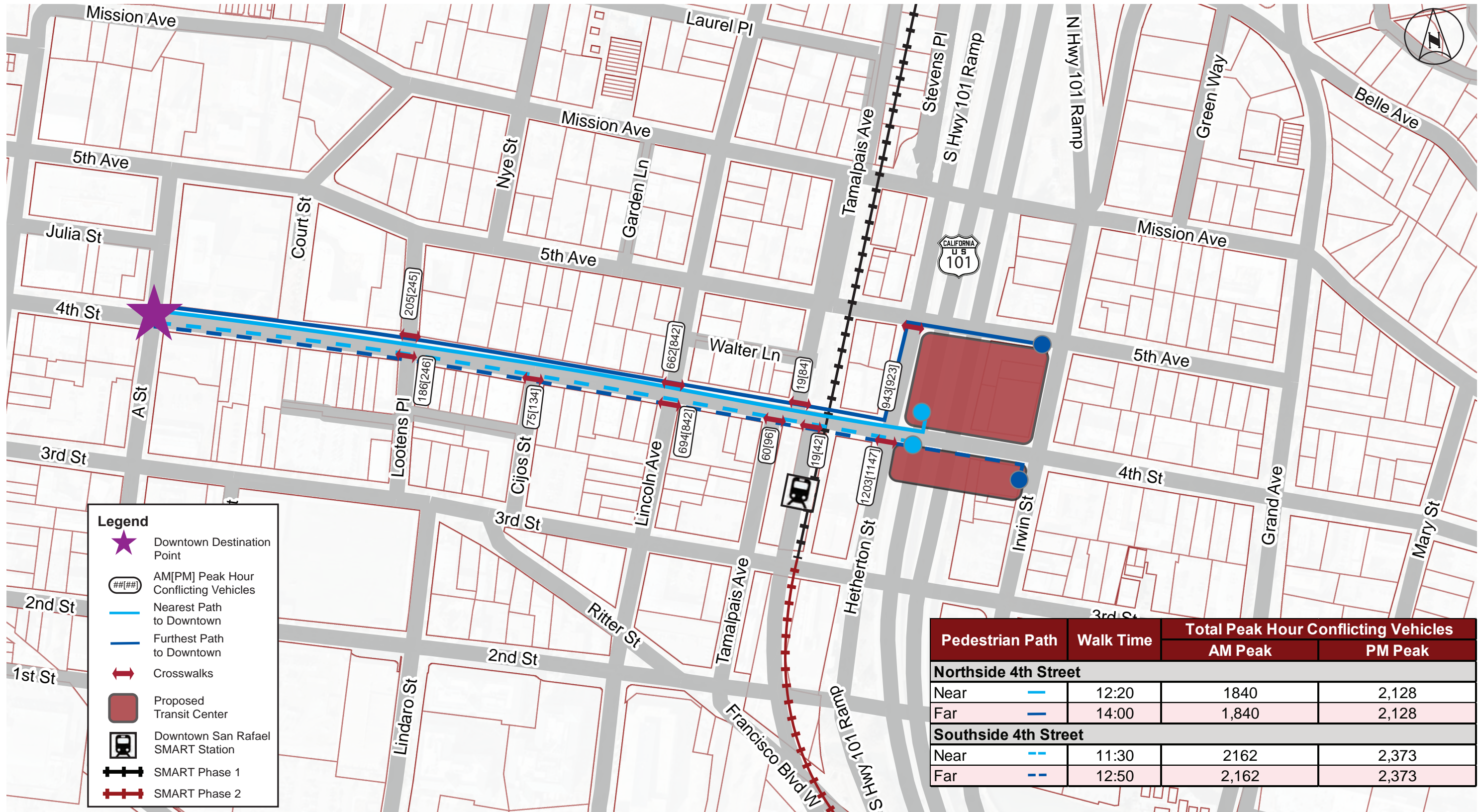


Figure 5-2: Under the Freeway Alternative - Pedestrian Connectivity to Downtown

5.2.3 Whistlestop Block

Two pedestrian routes to downtown were identified for this alternative, one “long” and one “short” route was identified. The long route is the route taken by pedestrians from the bay farthest from the downtown destination, while the short route is the closest. The routes identified are shown in Figure 5-3. Compared to other alternatives, the Whistlestop Block alternative has shortest walk times. The pedestrian routes identified include:

- *Pedestrian Route 1:* This is the nearest path to downtown, from the northeast corner of the transit center, at 4th Street and Tamalpais Ave. This option is a 9.3-minute walk (0.29 miles). The total conflicting vehicle volume on 4th Street (from the four cross streets of Tamalpais Avenue, Lincoln Avenue, Cijos Street, and Lootens Place) during the a.m. peak hour is 955 vehicles and during the p.m. peak hour is 1,222 vehicles.
- *Pedestrian Route 2:* This is the farthest path to downtown from east side of transit center, at the corner of Hetherton Street and 3rd Street. This option is a 12-minute walk time (0.37 miles). The total conflicting vehicle volume on 4th Street (from the four cross streets of Tamalpais Avenue, Lincoln Avenue, Cijos Street, and Lootens Place) during the a.m. peak hour is 1,034 vehicles and during the p.m. peak hour is 1,360 vehicles.



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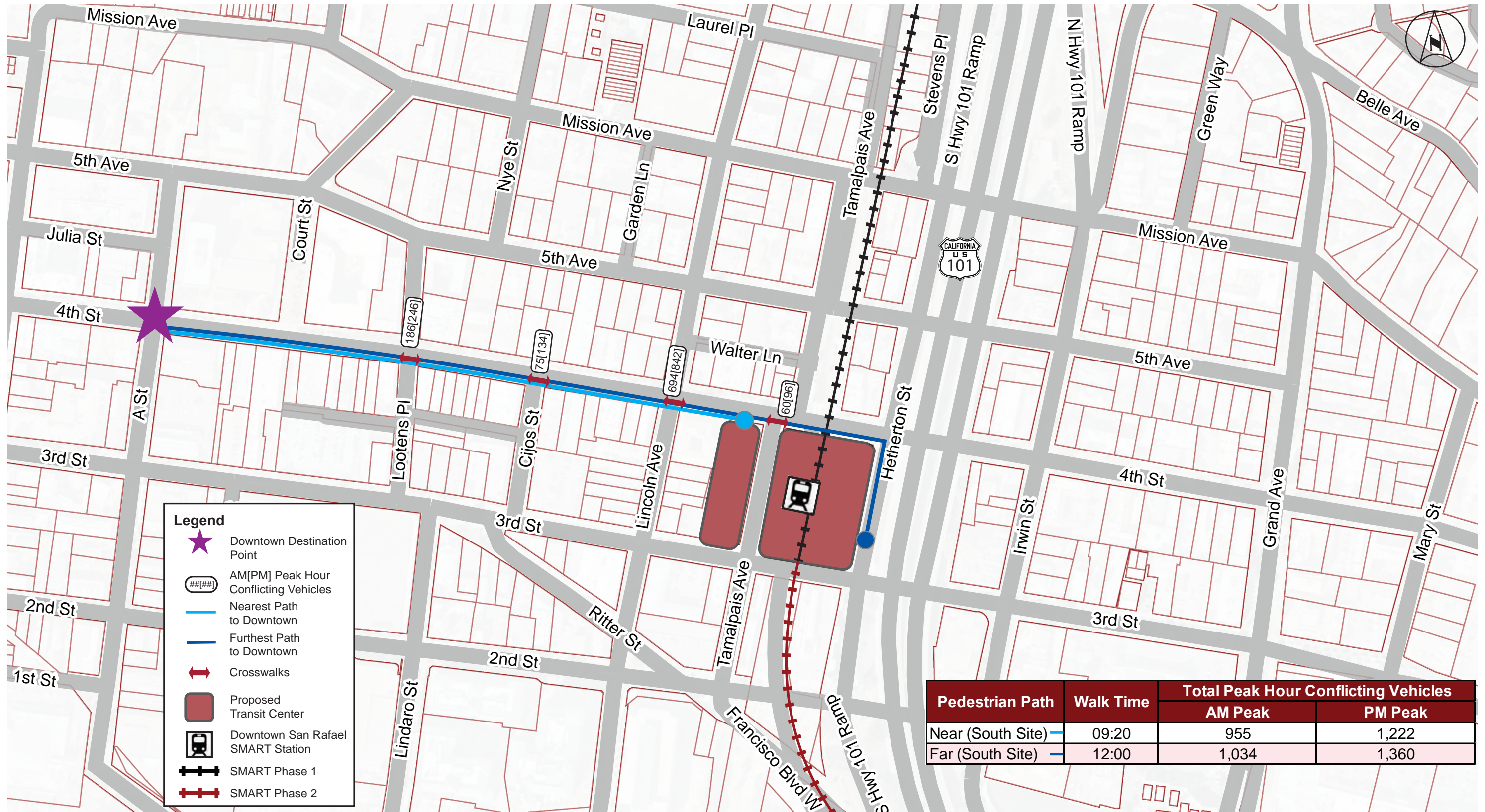


Figure 5-3: Whistlestop Block Alternative - Pedestrian Connectivity to Downtown

5.2.4 Summary

Table 5-1 summarizes the analysis of pedestrian paths to downtown for each alternative. Only the shortest and longest paths for each alternative are shown. As can be seen in the results, the 4th Street Gateway and Whistlestop Block alternatives exhibit a savings in travel time to downtown compared to the Under the Freeway alternative. Notably, the Under the Freeway alternative, being located on the east side of Hetherton Street, leads pedestrians to have to make a greater number of street crossings and encounter conflict with a substantially higher number of vehicles.

Table 5-1: Pedestrian Connectivity to Downtown - Summary

| Alternative | Pedestrian Path | Walk Distance (mi) | Walk Time | Total Peak Hour Conflicting Vehicles | |
|--------------------|-----------------|--------------------|-----------|--------------------------------------|---------|
| | | | | AM Peak | PM Peak |
| 4th Street Gateway | Near (N) | 0.33 | 10:10 | 897 | 1,205 |
| | Far (S) | 0.38 | 12:10 | 1,015 | 1,318 |
| Under the Freeway | Near (S) | 0.35 | 11:30 | 2,162 | 2,373 |
| | Far (N) | 0.45 | 14:00 | 1,840 | 2,128 |
| Whistlestop Block | Near | 0.29 | 09:20 | 955 | 1,222 |
| | Far | 0.37 | 12:00 | 1,034 | 1,360 |

Walk times provided in minutes:seconds format

5.3 Pedestrian Connectivity to Local Destinations

In addition to Downtown San Rafael, other local destinations serve as trip attractors for transit center users. To evaluate each alternative's strength in providing connectivity to non-downtown local destinations, the project team evaluated the pedestrian routes between the transit center and two locations for each alternative:

- San Rafael High School (specifically, the front of the school on 3rd Street between Union Street and Embarcadero Way)
- BioMarin campus (specifically, a point on the campus fronting 2nd Street between Lincoln Avenue and Lindaro Street)

The team then estimated walk times and utilized existing vehicle volumes to determine the number of conflicting vehicles encountered by pedestrians on their route between the transit center and the above destinations.

5.3.1 4th Street Gateway

Two pedestrian routes were identified for this alternative for each of the two local destinations considered, one "long" and one "short" route. The long route is the route taken by pedestrians from the bay farthest from the selected destination, while the short route is the closest. The routes identified are shown in Figure 5-4.

The pedestrian routes identified for San Rafael High School include:

- *Pedestrian Route 1:* This is the nearest path to the school from southern block of the transit center, located at the corner of 3rd Street and Hetherton Street. Pedestrians would utilize north side of 3rd St and proceed east toward the school. This option is a 17-minute walk (0.54 miles). The total conflicting vehicle volume on 3rd Street (from the five cross streets of Hetherton Street, Irwin Street, Grand Avenue, Mary Street, and Union Street) during the a.m. peak hour is 3,351 vehicles and during the p.m. peak hour is 3,762 vehicles.
- *Pedestrian Option 2:* This is the farthest path to the school, from northern block of the transit center near 5th Avenue & Hetherton Street. Pedestrians would utilize Hetherton Street and the north side of 3rd Street to reach the school under this modeled route. This option is a 20.7-minute walk (0.66 miles). The total conflicting vehicle volume (from the crossing volumes at Hetherton & 4th Street, and the four intersections of 3rd Street and Hetherton Street, Irwin Street, Grand Avenue, and Mary Street) during the a.m. peak hour is 4,294 vehicles and during the p.m. peak hour is 4,685 vehicles.

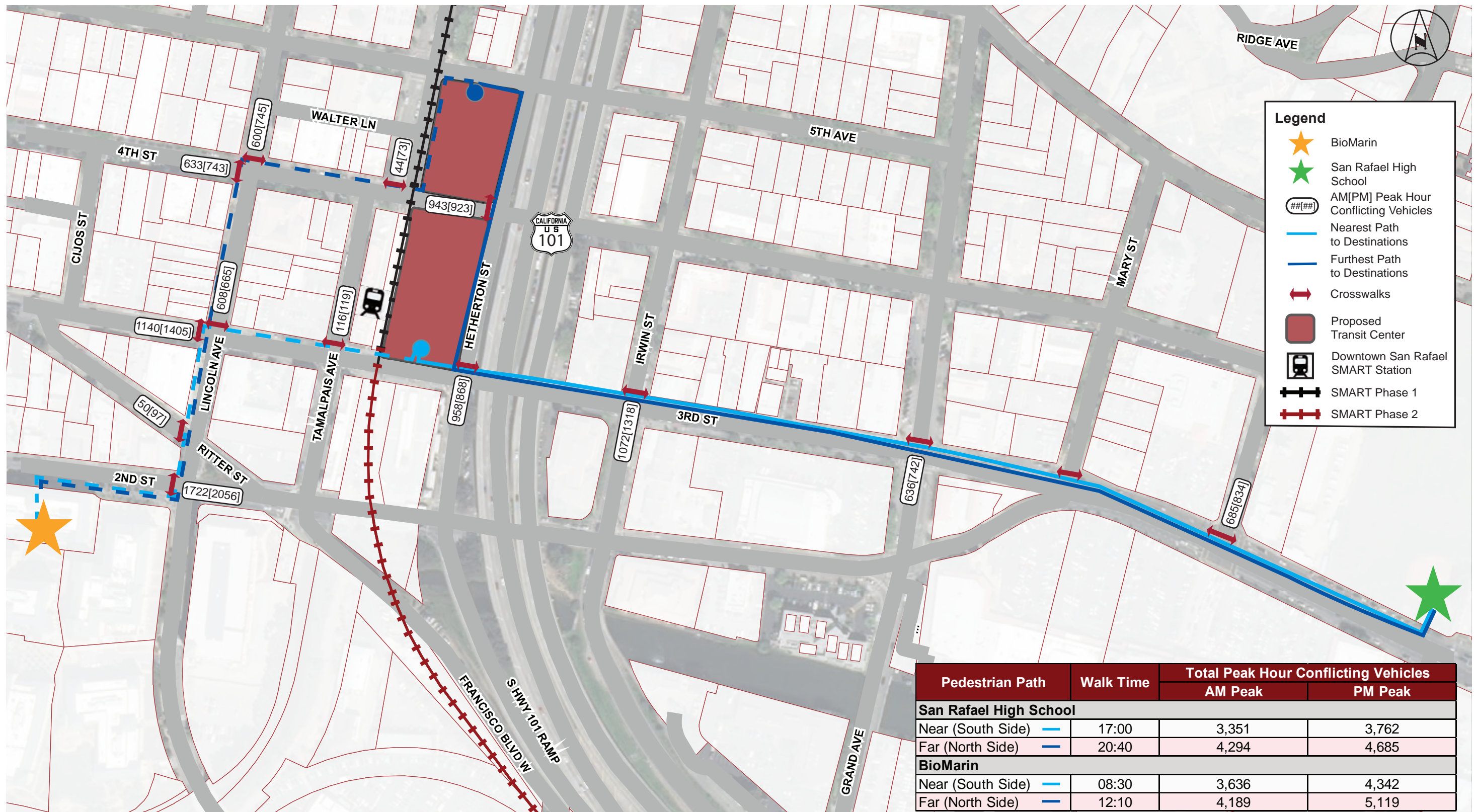
The pedestrian routes identified for the BioMarin campus include:

- *Pedestrian Route 1:* This is the nearest path to BioMarin from southern block of the transit center, located at the corner along 3rd Street. The assumed route would utilize 3rd Street, Lincoln Avenue, and 2nd Street to reach the campus. This option is an 8.5-minute walk (0.21 miles). The total conflicting vehicle volume (from the crossing volumes at 3rd Street & Tamalpais Avenue, 3rd Street & Lincoln Avenue, Lincoln Avenue & Ritter Street, and Lincoln Avenue & 2nd Street) during the a.m. peak hour is 3,636 vehicles and during the p.m. peak hour is 4,342 vehicles.



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- *Pedestrian Option 2:* This is the farthest path to BioMarin from northern block of the transit center near 5th Avenue & Hetherton Street. The assumed route would utilize 4th Street, Lincoln Avenue, and 2nd Street to reach the campus. This option is a 12.2-minute walk (0.32 mile). Total conflict vehicles encounter over five crossings (across Tamalpais Ave, Lincoln Ave, Ritter St, and 2nd St) during the a.m. peak hour is 3,636 vehicles and during the p.m. peak hour is 4,342 vehicles.

5.3.2 Under the Freeway

Two pedestrian routes were identified for this alternative for each of the two local destinations considered, one “long” and one “short” route. The long route is the route taken by pedestrians from the bay farthest from the selected destination, while the short route is the closest. The routes identified are shown in Figure 5-5.

The pedestrian routes identified for San Rafael High School include:

- *Pedestrian Route 1:* This is the nearest path to the school from southern block of the transit center near the corner of 4th Street and Irwin Street. Pedestrians would utilize the west side of Irwin Street and the north side of 3rd Street to reach the school. This option is a 15.5-minute walk (0.55 miles). The total conflicting vehicle volume on 3rd Street (from the crossing volumes at Irwin Street, Grand Avenue, Mary Street, and Union Street) during the a.m. peak hour is 2,393 vehicles and during the p.m. peak hour is 2,894 vehicles.
- *Pedestrian Route 2:* This is the furthest path to the school from northern block of the transit center near the corner of 5th Avenue and Hetherton Street. Pedestrians would utilize on 5th Avenue, Irwin Street, and the north side of 3rd Street to reach the school. This option is a 19-minute walk (0.62 miles). The total conflicting vehicle volume (from the crossing volumes at 4th Street & Irwin Street and the intersections of 3rd Street with Irwin Street, Grand Avenue, Mary Street, and Union Street) during the a.m. peak hour is 3,039 vehicles and during the p.m. peak hour is 3,510 vehicles.

The pedestrian routes identified for the BioMarin campus include:

- *Pedestrian Route 1:* This is the nearest path to BioMarin from southern block of the transit center near Hetherton Street and 4th Street. Pedestrians would utilize south side of 4th Street, turn onto Lincoln Ave, and proceed south toward 2nd Street. This option is a 11.5-minute walk (0.3 miles). The total conflicting vehicle volume (from the crossing volumes at 4th Street & Hetherton Street, 4th Street & East and West Tamalpais Avenue, 4th Street & Lincoln Avenue, Lincoln Avenue & Ritter Street, and Lincoln Avenue & 2nd Street) during the a.m. peak hour is 4,594 vehicles and during the p.m. peak hour is 5,248 vehicles.
- *Pedestrian Route 2:* This is the farthest path to BioMarin from northern block of the transit center near the corner of 5th Avenue and Hetherton Street. Pedestrians would utilize Hetherton Street, the north side of 4th Street, and Lincoln Avenue to reach the campus. This option is a 15-minute walk (0.41 miles). The total conflicting vehicle volume (from the crossing volumes at 4th Street & Hetherton Street, 4th Street & East and West Tamalpais Avenue, 4th Street & Lincoln Avenue, Lincoln Avenue & Ritter Street, and Lincoln Avenue & 2nd Street) during the a.m. peak hour is 5,132 vehicles and during the p.m. peak hour is 6,042 vehicles.



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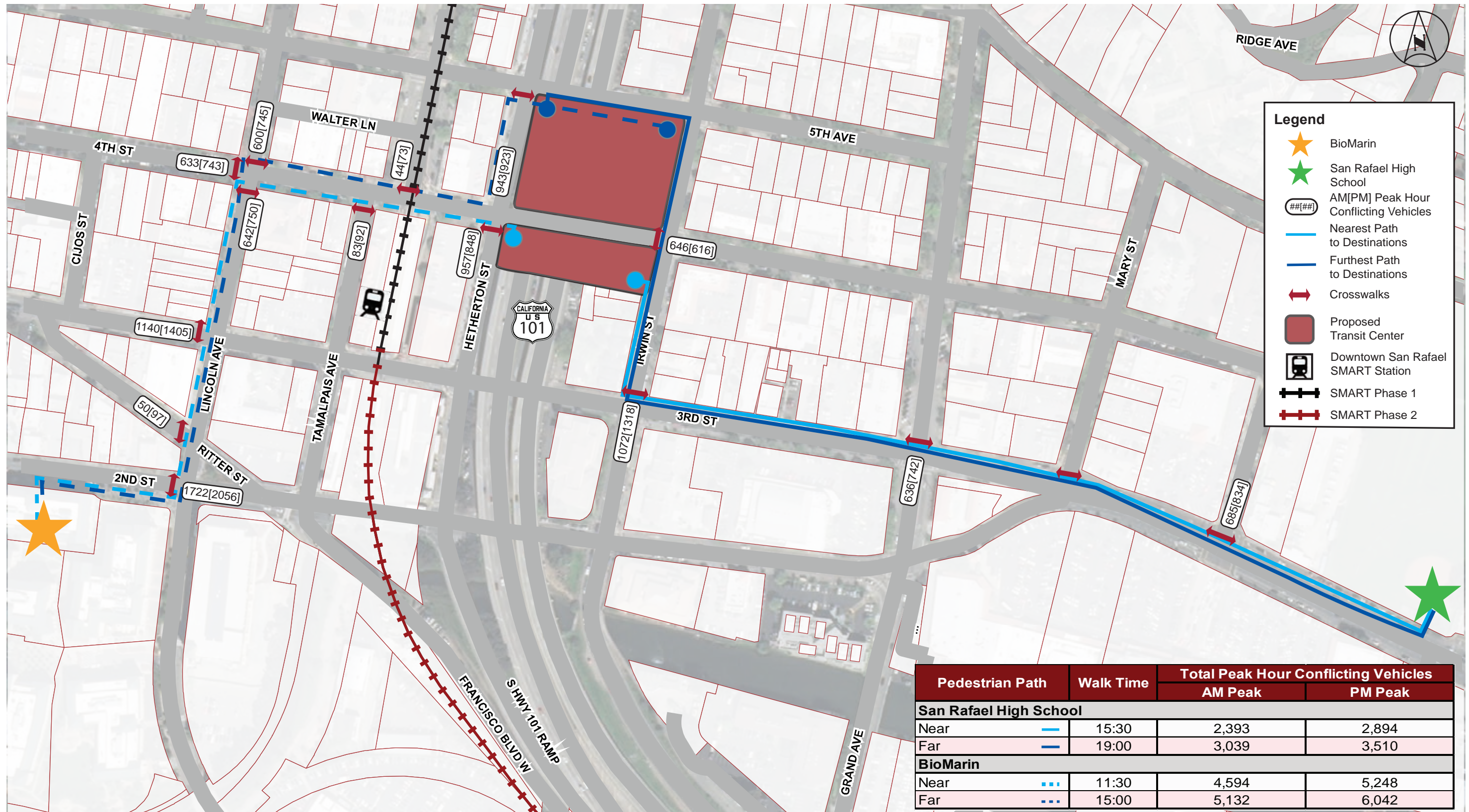


Figure 5-5: Under the Freeway Alternative - Pedestrian Connectivity to Downtown

5.3.3 Whistlestop Block

Two pedestrian routes were identified for this alternative for each of the two local destinations considered, one “long” and one “short” route. The long route is the route taken by pedestrians from the bay farthest from the selected destination, while the short route is the closest. The routes identified are shown in Figure 5-6.

The pedestrian routes identified for San Rafael High School include:

- *Pedestrian Route 1:* This is the nearest path to the school from southern portion of the transit center, located at the corner of 3rd Street and Hetherton Street. Pedestrians would utilize the north side of 3rd Street and proceed east toward the school. This option is a 17.2-minute walk (0.55 miles). The total conflicting vehicle volume on 3rd Street (from the five cross streets of Hetherton Street, Irwin Street, Grand Avenue, Mary Street, and Union Street) during the a.m. peak hour is 3,351 vehicles and during the p.m. peak hour is 3,762 vehicles.
- *Pedestrian Route 2:* This is the farthest path to the school from northern portion of the transit center, at 4th Street and Tamalpais Ave. Pedestrians would utilize Tamalpais Avenue and the north side of 3rd Street to reach the school. This option is a 20.3-minute walk (0.65 miles). The total conflicting vehicle volume on 3rd Street (from the five cross streets of Hetherton Street, Irwin Street, Grand Avenue, Mary Street, and Union Street) during the a.m. peak hour is 3,467 vehicles and during the p.m. peak hour is 3,881 vehicles.

The pedestrian routes identified for the BioMarin campus include:

- *Pedestrian Route 1:* This is the nearest path to BioMarin from south of the station, at Tamalpais Ave and 3rd Street. Pedestrians would utilize 3rd Street, Lincoln Avenue, and 2nd Street to reach the BioMarin campus. This option is a 7-minute walk (0.17 miles). The total conflicting vehicle volume (from the crossing volumes at Lincoln Avenue & 3rd Street, Lincoln Avenue & Ritter Street, and Lincoln Avenue & 2nd Street) during the a.m. peak hour is 3,520 vehicles and during the p.m. peak hour is 4,223 vehicles.
- *Pedestrian Route 2:* This is the farthest path to BioMarin from northeast corner of the station, at 4th Street and Hetherton Street. Pedestrians would utilize 3rd Street, Lincoln Avenue, and 2nd Street to reach the campus. This option is a 10.2-minute walk (0.27 mile). The total conflicting vehicle volume (from the crossing volumes at Lincoln Avenue & 3rd Street, Lincoln Avenue & Ritter Street, and Lincoln Avenue & 2nd Street) during the a.m. peak hour is 3,636 vehicles and during the p.m. peak hour is 4,342 vehicles.



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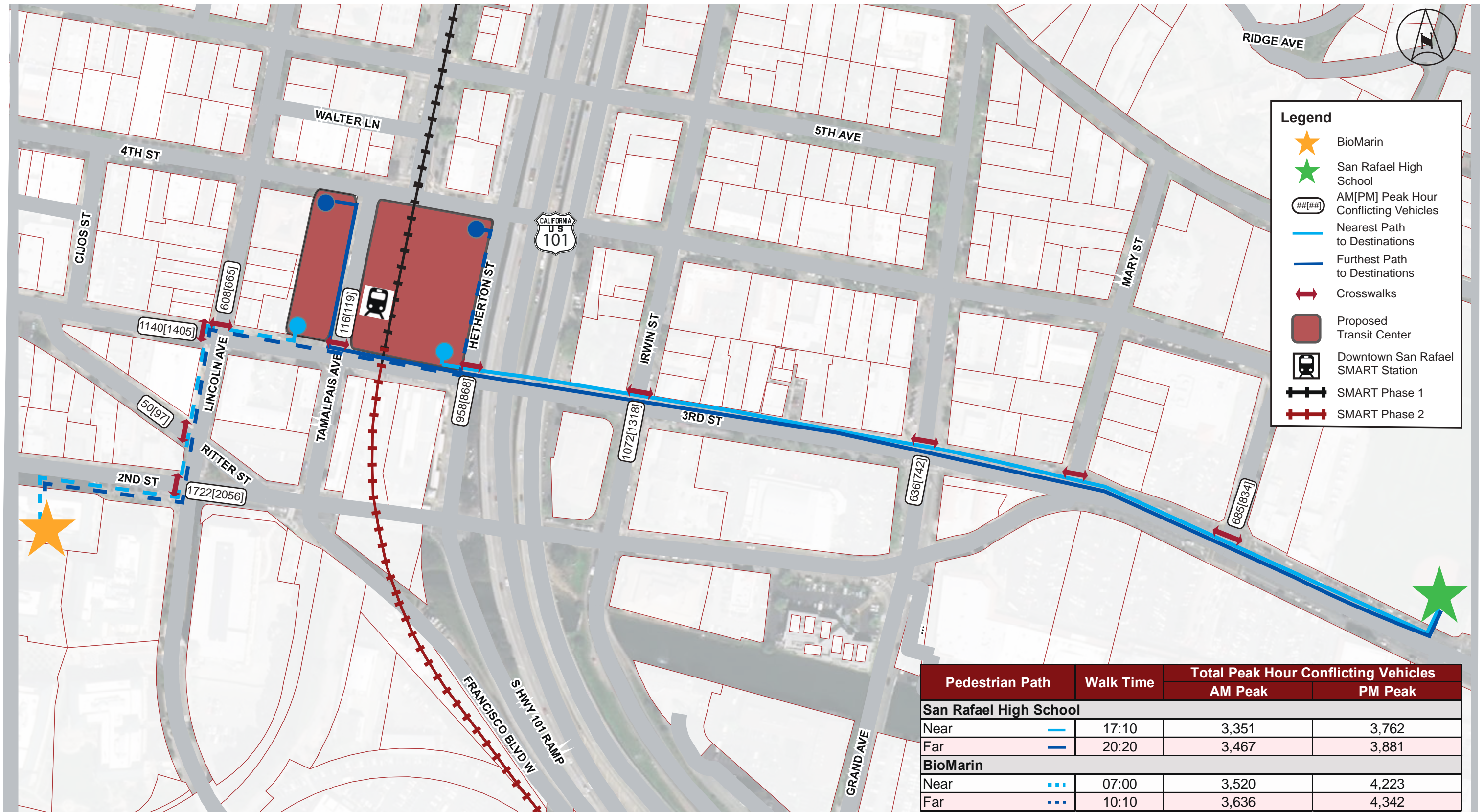


Figure 5-6: Whistlestop Block Alternative - Pedestrian and Bicycle Connectivity to Other Local Destinations

5.3.4 Summary

Table 5-2 summarizes the analysis of pedestrian paths to San Rafael High School for each alternative. As can be seen in the results, the Under the Freeway alternative, by nature of being on the east side of Hetherton Street, requires pedestrians to conflict with fewer vehicles when making street crossings on the way to the school. That alternative also exhibits shorter walk times to the transit center, though passengers coming from the north side of the transit center may experience a walk time similar to those of other alternatives. The 4th Street Gateway alternative, by nature of being the farthest away from the school, exhibits longer walk times and greater conflicting vehicle volumes for pedestrians than the other alternatives.

Table 5-2: Pedestrian Connectivity to Other Destinations – San Rafael High School

| Alternative | Pedestrian Path | Walk Distance (mi) | Walk Time | Total Peak Hour Conflicting Vehicles | |
|--------------------|-----------------|--------------------|-----------|--------------------------------------|---------|
| | | | | AM Peak | PM Peak |
| 4th Street Gateway | Near (S) | 0.54 | 17:00 | 3,351 | 3,762 |
| | Far (N) | 0.66 | 20:40 | 4,294 | 4,685 |
| Under the Freeway | Near | 0.51 | 15:30 | 2,393 | 2,894 |
| | Far | 0.62 | 19:00 | 3,039 | 3,510 |
| Whistlestop Block | Near | 0.55 | 17:10 | 3,351 | 3,762 |
| | Far | 0.65 | 20:20 | 3,467 | 3,881 |

Walk times provided in minutes:seconds format

Table 5-3 summarizes the analysis of pedestrian paths to the BioMarin campus for each alternative. The results show the Whistlestop Block alternative with the shortest walk times to the campus compared to the other alternatives. The Under the Freeway alternative, by nature of being the farthest away from the campus, requires pedestrians to make crossings that conflict with a greater number of vehicles than the other alternatives. Like in other scenarios, this is largely a result of it being located on the east side of Hetherton Street, which is a high-volume street.

Table 5-3: Pedestrian Connectivity to Other Destinations – BioMarin Campus

| Alternative | Pedestrian Path | Walk Distance (mi) | Walk Time | Total Peak Hour Conflicting Vehicles | |
|--------------------|-----------------|--------------------|-----------|--------------------------------------|---------|
| | | | | AM Peak | PM Peak |
| 4th Street Gateway | Near (S) | 0.21 | 08:30 | 3,636 | 4,342 |
| | Far (N) | 0.32 | 12:10 | 4,189 | 5,119 |
| Under the Freeway | Near | 0.30 | 11:30 | 4,594 | 5,248 |
| | Far | 0.41 | 15:00 | 5,132 | 6,042 |
| Whistlestop Block | Near | 0.18 | 07:10 | 3,520 | 4,223 |
| | Far | 0.27 | 10:10 | 3,636 | 4,342 |

Walk times provided in minutes:seconds format

5.4 Pedestrian Connectivity between SMART and Bus

Each alternative’s effectiveness at serving the SMART and Bus connection was evaluated by identifying the major pedestrian barriers (i.e. street crossings) to making this transfer. Using data included in Chapter 3 on existing transfer patterns by route, the number of daily transfers between SMART and bus routes at the transit center that would need to cross a City street to make the transfer was estimated. These transfer volumes are shown in Table 5-4.

Table 5-4. Weekday Daily Average Transfer Volume between SMART and Bus

| Alternative and Street Crossing | Daily SMART/Bus Transfers Required to Make Street Crossings | | | | |
|---|---|--------------|---|------------------------------------|-------|
| | SMART to Bus | Bus to SMART | Longest SMART to Bus Transfer Distance (ft) | Longest SMART to Bus Transfer Time | Total |
| No-Build | 66 | 46 | 625 | 03:40 | 112 |
| 4th Street Gateway (Crossing 4 th Street) | 56 | 39 | 625 | 03:40 | 95 |
| Under the Freeway (Crossing Hetherton Street and/or 4 th Street) | 66 | 46 | 1,050 | 06:30 | 112 |
| Whistlestop Block | 0 | 0 | 500 | 02:25 | 0 |

As can be seen in the above table, the 4th Street Gateway and Under the Freeway alternatives result in similar numbers of SMART transfers having to cross a City street to make the transfer. However, the nature of the street that they have to cross is very different. To quantify the conflict between these added pedestrian crossings and vehicle traffic, a conflict quotient was estimated by multiplying the number of peak hour crossings by the conflicting peak hour vehicle volume. These are shown in Table 5-5 for the p.m. peak hour, which is the hour with the highest SMART and bus transfer activity. The peak hour transfer volume was estimated based on hourly ridership patterns at the transit center.

Notably, while all Build alternatives are better than the No-Build by removing the crossing of 3rd Street, the Under the Freeway alternative produces a greater conflict quotient than the other Build alternatives because it forces all transfers to SMART to cross higher-volume streets (i.e. Hetherton Street) than the other alternatives.

Table 5-5. P.M. Peak Hour SMART – Bus Transfer Conflict Quotients

| Alternative | Peak Hour Transfer Volume | Conflicting Vehicle Volume | Conflict Quotient |
|--------------------|---------------------------|----------------------------|-------------------|
| No-Build | 34 | 1,483 | 50,422 |
| 4th Street Gateway | 29 | 616 | 17,864 |
| Under the Freeway | 34 | 713 | 24,242 |
| Whistlestop Block | 0 | 0 | 0 |

5.5 Pedestrian Connectivity within the Transit Center

While approximately half of the transit center users are destined to or from Downtown San Rafael, the other half are transferring between routes. To identify the effectiveness of the alternatives in meeting the needs of transferring passengers, analysis was performed on the quality of the bus-to-bus transfer.

The 4th Street Gateway Alternative utilizes two blocks separated by 4th Street. The Under the Freeway Alternative uses two blocks also separated by 4th Street. The Whistlestop Block Alternative is on a single block as West Tamalpais Avenue is converted to bus traffic only and East Tamalpais Avenue is closed. To quantify the impact to users for having to cross City streets, the proposed bay assignments, existing pedestrian volumes, and existing transfer activity data were used to estimate the number of pedestrian crossings of city streets. The results are shown in Table 5-6.

Table 5-6. Peak Hour Bus to Bus Transfers and Existing Pedestrian Volume

| Alternative | A.M. Peak Hour | | | P.M. Peak Hour | | | Longest Bus to Bus Transfer Distance (ft) | Longest Bus to Bus Transfer Time |
|--------------------|-------------------------------|----------------------|-------------------|-------------------------------|----------------------|-------------------|---|----------------------------------|
| | Transfer Volume Across Street | Conflicting Vehicles | Conflict Quotient | Transfer Volume Across Street | Conflicting Vehicles | Conflict Quotient | | |
| No-Build | 0 | 0 | 0 | 0 | 0 | 0 | 450 | 2:10 |
| 4th Street Gateway | 93 | 631 | 58,683 | 112 | 616 | 68,992 | 625 | 3:40 |
| Under the Freeway | 32 | 713 | 22,816 | 39 | 718 | 28,002 | 625 | 3:40 |
| Whistlestop Block | 0 | 0 | 0 | 0 | 0 | 0 | 625 | 3:40 |

The No-Build and Whistlestop Block Alternatives, as a result of being located on one contiguous site, do not require transfers across City streets. As the results show, the 4th Street Gateway alternative results in the greatest number of added pedestrian volume to street crossings; this is a result of it being the most evenly bifurcated of the alternatives. The Under the Freeway alternative is divided by 4th Street, but the majority of bays and the majority of heavy-transfer routes are located to the north of 4th Street.

5.6 Bicycle Conditions

5.6.1 Existing Conditions

The following bicycle facilities are located in close proximity to the Project alternatives and are shown in Figure 5-7:

- Puerto Suello Bike Path – A class I north-south off-street trail that runs along the east side Hetherton Street and has a southern terminus at 4th Street
- Mahon Creek Path – A class I east-west off-street trail that runs along the San Rafael Creek and through the BioMarin campus
- Class III east-west bike route on 4th Street throughout the study area, with a gap between Hetherton Street and Irwin Street
- Class III north-south bike route on Lincoln Avenue with a northern terminus at 2nd Street
- Class III north-south bike route on Grand Avenue with a southern terminus at 5th Avenue.

Existing bicycle parking on the current transit center site consists of two racks with a capacity for eight bikes each. Additionally, there are 10 U-shaped bike racks and 4 bike lockers located along the east side of West Tamalpais Avenue, immediately north of 4th Street. Secured bicycle parking is also available in the Caltrans park-and-ride lot under US-101, north of 3rd Street.

5.6.2 Year 2040 Conditions and Build Alternatives

In 2018 the City of San Rafael completed an update to its Bicycle and Pedestrian Master Plan, which included proposed improvements to the bicycle network in the study area. Improvements proposed in close proximity to the Project alternatives, and shown in Figure 5-7 include:

- A Class I bike path along the SMART right-of-way south of 2nd Street.
- A Class IV protected bike facility along Tamalpais Avenue between 2nd Street and Laurel Place

Construction of the build alternatives would include some modifications to the existing bicycle network. All build alternatives are proposed to include at least 20 unsecure and 10 secure bicycle parking spaces on site.

Under the 4th Street Gateway Alternative, the existing Class I path on the west side of Hetherton Street would be removed between 4th Street and 5th Avenue (shown in Figure 5-8). Instead, bikes would use 5th Avenue to connect from the Puerto Suello Bike Path to the planned Class IV facility on Tamalpais Avenue.

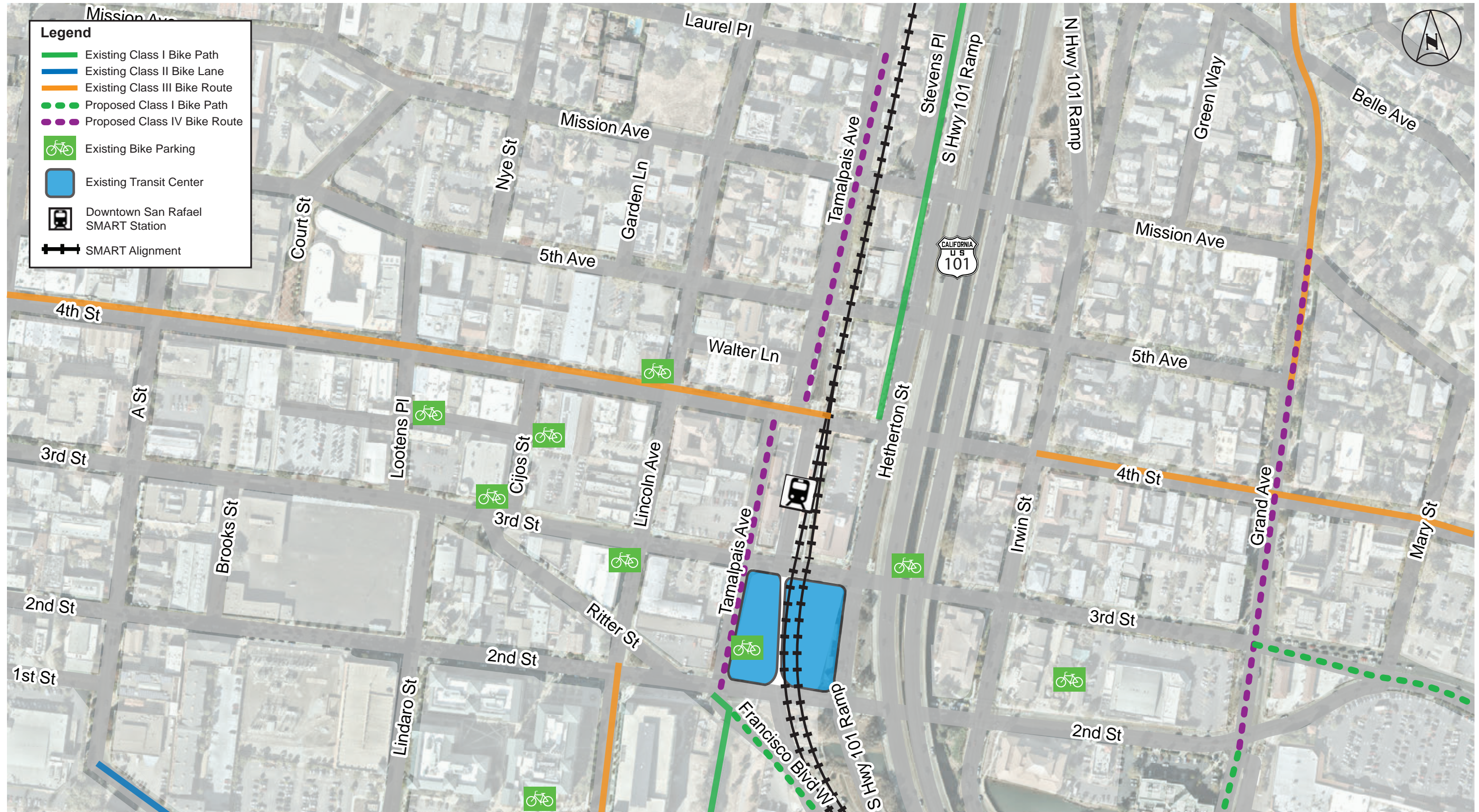
The Under the Freeway alternative does not include any modifications to the existing bike network (shown in Figure 5-9).

The Whistlestop Block Alternative would construct the City's planned bicycle facility on Tamalpais Avenue between 2nd Street and 4th Street (shown in Figure 5-10).



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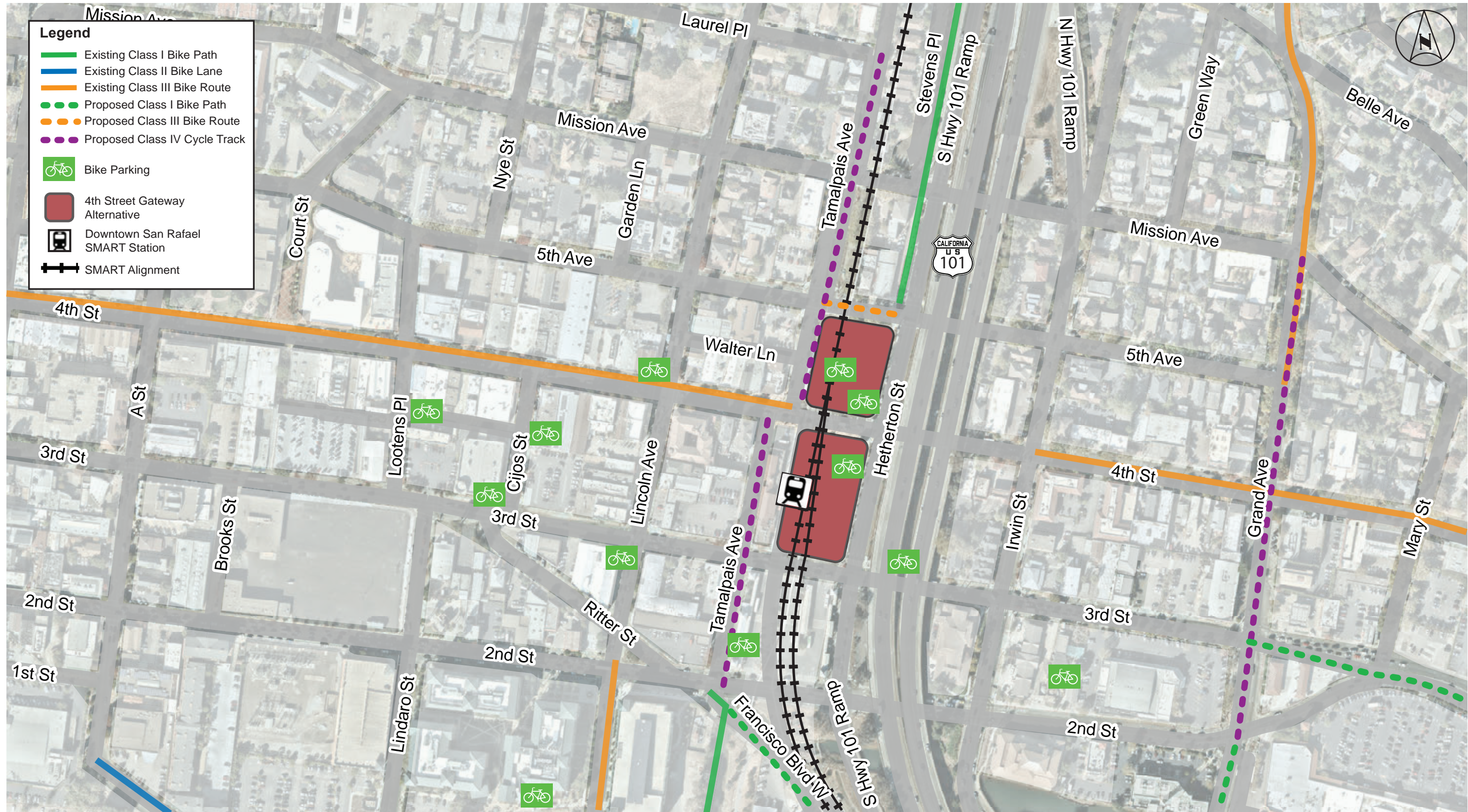
Relocation Analysis, Environmental Clearance, and Preliminary Design





SAN RAFAEL TRANSPORTATION CENTER

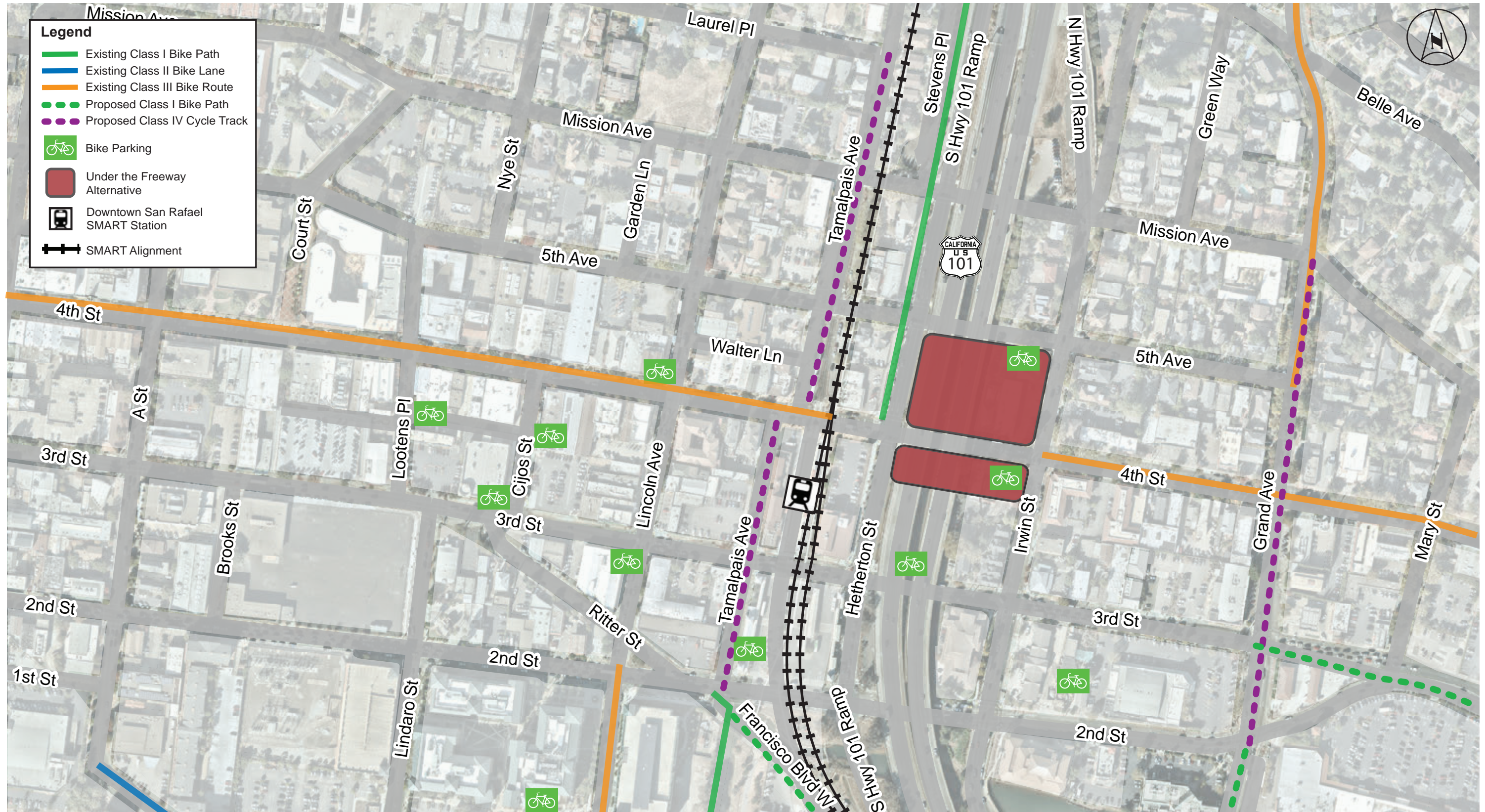
Relocation Analysis, Environmental Clearance, and Preliminary Design





SAN RAFAEL TRANSPORTATION CENTER

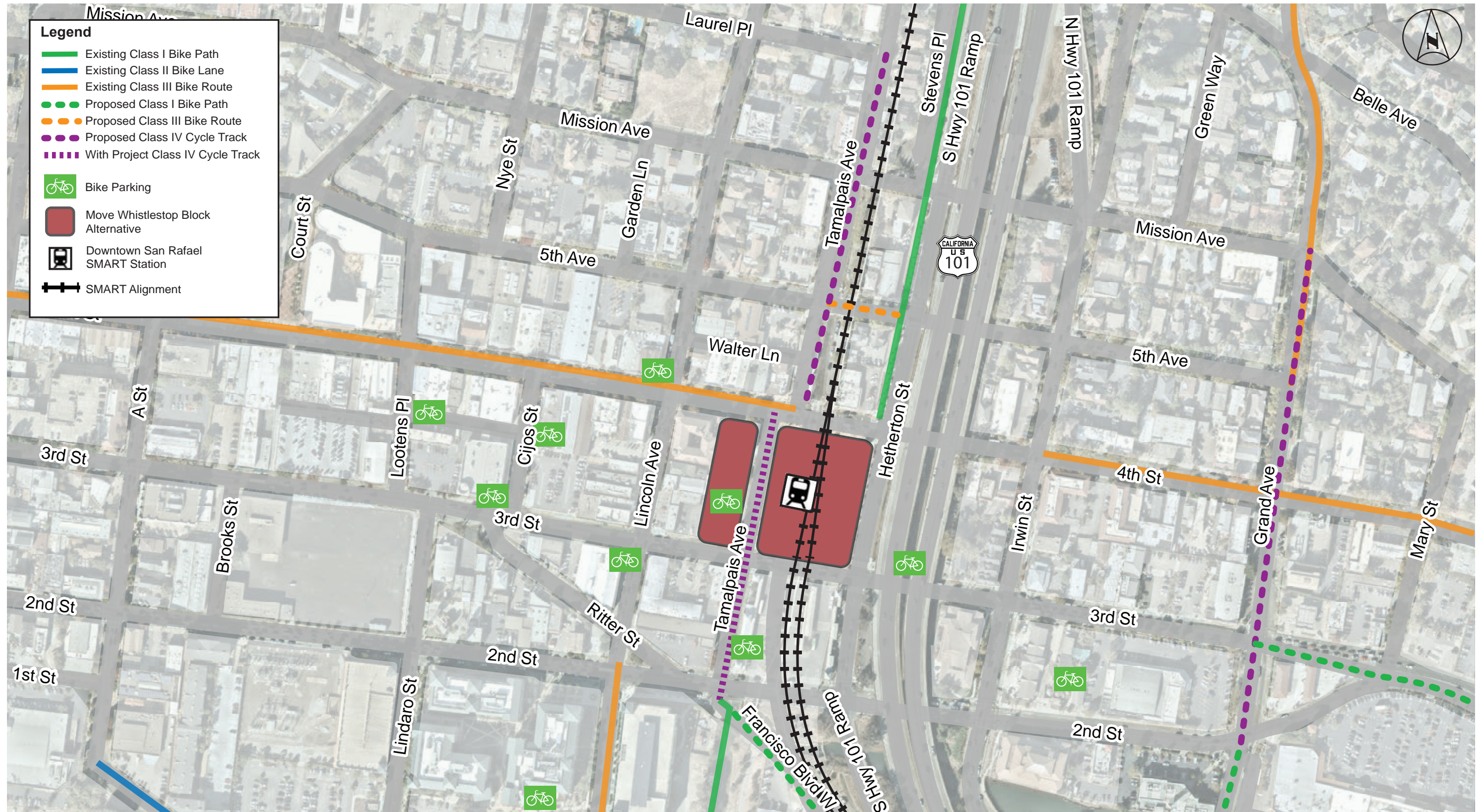
Relocation Analysis, Environmental Clearance, and Preliminary Design





SAN RAFAEL TRANSPORTATION CENTER

Relocation Analysis, Environmental Clearance, and Preliminary Design



6.0 Parking

This section describes the effects of each alternative on parking supply in the study area. The loss of parking is not a significant impact according to CEQA. Parking loss is noted for informational purposes only.

6.1 No-Build Alternative

Under the no-build alternative there would be no effects to the baseline parking supply.

6.2 4th Street Gateway

Under the 4th Street Gateway alternative, six parking spaces on the east side of East Tamalpais Avenue between 3rd Street and 4th Street, which are currently designated for taxicab parking, would be removed to accommodate the transit center site. On the east side of West Tamalpais Avenue between 3rd Street and 4th Street, there are eight existing, curbside parking spaces that are metered as well as a loading zone. This space would be reconfigured to six parking spaces plus a taxi waiting zone.

The eight parking spaces that are metered on the east side of West Tamalpais Avenue between 4th Street and 5th Avenue would be removed to accommodate pick-up/drop-off space and maintenance vehicle parking.

6.3 Under the Freeway

In the Under the Freeway alternative, the new transit center would utilize the entire space currently occupied by the Caltrans park and ride under Highway 101 between 4th Street and 5th Avenue, resulting in a loss of 55 spaces. It would also utilize 17 spaces of the Caltrans park and ride lot under the freeway between 3rd Street and 4th Street. The total resulting loss of off-street parking would be 72 spaces. These spaces will need to be replaced elsewhere.

Five parking spaces on the south side of 5th Avenue between Irwin Street and Hetherton Street would be removed to accommodate maintenance vehicle parking, a taxi zone, and pick-up/drop-off space.

6.4 Whistlestop Block

Under the Whistlestop Block alternative, the conversion of West Tamalpais to transit-only between 3rd Street and 4th Street would result in the removal of 15 metered, curbside parking spaces and the removal of a loading zone on both east and west sides of the street. The six existing metered curbside parking spaces on the west side of West Tamalpais Avenue between 2nd Street and 3rd Street would also be removed. One additional metered parking space would be removed from the south side of 4th Street to accommodate the proposed driveway access for the condo building at Lincoln Avenue and 4th Street.

Six parking spaces on the east side of East Tamalpais Avenue between 3rd Street and 4th Street, which are currently designated for taxicab parking, would be removed to accommodate the transit center site.

Eight metered parking spaces on the east side of West Tamalpais Avenue between 4th Street and 5th Avenue would be removed to accommodate pick-up/drop-off space and maintenance vehicle parking.

Six additional metered parking spaces on the west side of East Tamalpais Avenue between 4th Street and 5th Avenue would be removed to accommodate maintenance vehicle parking.

7.0 Summary

This report documents the four alternatives for the San Rafael Transit Center Project. The project team analyzed the three Build alternatives, plus a no-build alternative, under existing (2020) and future (2040) conditions, focusing on the effects of the alternatives on transit circulation, vehicular traffic, non-motorized transportation, and parking. The analysis included the development of a VISSIM microsimulation model, which was utilized to estimate vehicle delay and transit circulation time for the alternatives. Effects on parking and pedestrian and bicycle circulation were analyzed qualitatively and quantitatively, using data on existing conditions to project conditions under the build alternatives.

The transit circulation analysis indicated that both the Under the Freeway and Whistlestop Block Alternatives achieved reductions in transit travel time and variability in both existing and future conditions in both the a.m. and p.m. peak hours. While the 4th Street Gateway provided moderate benefits in existing conditions, it increased congestion in future a.m. peak hour conditions, thus impacting both transit travel time and variability.

The traffic circulation analysis similarly found that both the Under the Freeway and Whistlestop Block Alternatives achieved reductions in delay at a number of congested intersections in the study area in both existing and future conditions. Both alternatives also achieved moderate reductions (ten percent or less) in overall network-wide vehicle delay in both the existing and future conditions for both the a.m. and p.m. peak hours. Both alternatives resulted in travel time reductions on some corridors, with small increases on other corridors. The 4th Street Gateway Alternative resulted in gridlock in a subset of the VISSIM model runs in the a.m. peak hour in Year 2040 conditions. This represented a degradation of traffic operations relative to the No-Build and other project alternatives.

The Whistlestop Block Alternative was found to provide users the best transfer experience, with no required street crossings either for connections between bus and SMART or connections between bus and bus. The Under the Freeway Alternative was least desirable for SMART and bus transfers due to the requirement to cross busy Hetherton Street. The 4th Street Gateway Alternative was least desirable for bus to bus transfers due to the higher number of transfers across 4th Street.

The 4th Street Gateway Alternative is placed closest to Downtown San Rafael, with the Under the Freeway Alternative is placed closest to San Rafael High School, and the Whistlestop Block Alternative is placed closest to BioMarin.

For bicycle connections, the Whistlestop Block would best promote the City's planned bicycle network by constructing two blocks of the proposed Class IV bikeway on Tamalpais Avenue as a high-quality raised two-way Class IV facility. The 4th Street Gateway Alternative would require removal of one block of the Puerto Suello bike path but would provide strong connections to the Mahon Creek Path and the Puerto Suello bike path. The Under the Freeway Alternative would not closely integrate with the City's planned network nor would it affect any planned facilities.

Appendix A: Transit Circulation Tables

| Existing Baseline: Average Circulation Time in Network (sec) | | | | |
|--|---------------|----------------------------------|---------------|----------------------------------|
| Route # | Existing A.M. | Existing A.M. Standard Deviation | Existing P.M. | Existing P.M. Standard Deviation |
| 17 | 672.1 | 56.9 | 613.2 | 28.3 |
| 22 | 793.2 | 98.4 | 649.6 | 47.5 |
| 23 EB | 892.3 | 182.1 | 1091.9 | 194.6 |
| 23 WB | 690.8 | 144.5 | 540.3 | 40.5 |
| 23X EB | 715.5 | 184.3 | 630.7 | 76.1 |
| 23X WB | 563.7 | 45.9 | 538.1 | 43.5 |
| 27 NB | N/A | N/A | 518.6 | 134.1 |
| 27 SB | 678.0 | 48.2 | 742.4 | 174.7 |
| 29 EB | 1008.8 | 126.1 | 841.4 | 98.9 |
| 29 WB | 813.8 | 42.6 | 707.8 | 63.7 |
| 30 SB | 822.4 | 34.4 | 697.8 | 41.2 |
| 30 NB | 564.8 | 97.9 | 526.2 | 65.4 |
| 35 SB | 844.9 | 89.3 | 768.0 | 59.6 |
| 35 NB | 906.5 | 159.3 | 784.8 | 50.5 |
| 36 NB | 568.7 | 35.0 | 824.8 | 112.8 |
| 36 SB | 651.5 | 59.3 | 801.0 | 77.6 |
| 40 | 576.0 | 42.8 | 531.5 | 19.1 |
| 40X | 471.6 | 27.6 | N/A | N/A |
| 49 | 534.6 | 190.0 | 734.3 | 172.0 |
| 68 | 541.2 | 98.8 | 700.2 | 94.7 |
| 70 NB | 686.8 | 86.1 | 526.8 | 90.3 |
| 70 SB | 501.7 | 27.7 | 620.5 | 47.9 |
| 71X SB | 548.2 | 37.4 | 568.0 | 65.0 |
| 71X NB | 511.9 | 99.7 | 536.2 | 89.4 |
| 101 NB | 581.5 | 259.3 | 705.4 | 96.5 |
| 101 SB | 565.1 | 129.2 | 529.5 | 34.1 |
| 122 NB | N/A | N/A | N/A | N/A |
| 122 SB | N/A | N/A | N/A | N/A |
| 125 | N/A | N/A | 446.5 | 198.7 |
| 145 | 660.9 | 166.4 | N/A | N/A |
| 228 | 270.9 | 98.7 | 559.9 | 61.4 |
| 233 | 585.6 | 83.4 | 399.4 | 25.6 |
| 245 | 639.3 | 72.2 | 728.2 | 145.2 |
| 257 | 475.2 | 83.0 | 405.5 | 15.1 |
| 38 SCT | N/A | N/A | N/A | N/A |
| Greyhound | 349.7 | 25.4 | N/A | N/A |
| Sonoma Airporter | 419.1 | 140.1 | N/A | N/A |

Note: N/A denotes that there was no result recorded since the route does not occur during the specified peak hour.

| Existing 4 th Street Gateway – Average Circulation Time in Network (sec) | | | | | | | | |
|---|---------------|----------------------------------|---------------|----------------------------------|-------------------------------------|--|-------------------------------------|--|
| Route # | Existing A.M. | Existing A.M. Standard Deviation | Existing P.M. | Existing P.M. Standard Deviation | 4 th Street Gateway A.M. | 4 th Street Gateway A.M. Standard Deviation | 4 th Street Gateway P.M. | 4 th Street Gateway P.M. Standard Deviation |
| 17 | 672.1 | 56.9 | 613.2 | 28.3 | 547.1 | 109.4 | 598.9 | 90.5 |
| 22 | 793.2 | 98.4 | 649.6 | 47.5 | 746.8 | 123.2 | 530.6 | 29.3 |
| 23 EB | 892.3 | 182.1 | 1091.9 | 194.6 | 532.1 | 57.6 | 582.5 | 81.9 |
| 23 WB | 690.8 | 144.5 | 540.3 | 40.5 | 530.4 | 108.2 | 601.1 | 69.9 |
| 23X EB | 715.5 | 184.3 | 630.7 | 76.1 | 772.3 | 303.7 | 719.8 | 63.7 |
| 23X WB | 563.7 | 45.9 | 538.1 | 43.5 | 693.2 | 75.7 | 760.6 | 216.0 |
| 27 NB | N/A | N/A | 518.6 | 134.1 | N/A | N/A | 517.9 | 108.1 |
| 27 SB | 678.0 | 48.2 | 742.4 | 174.7 | 722.1 | 113.5 | 545.6 | 42.1 |
| 29 EB | 1008.8 | 126.1 | 841.4 | 98.9 | 647.1 | 53.1 | 612.1 | 92.4 |
| 29 WB | 813.8 | 42.6 | 707.8 | 63.7 | 623.1 | 141.4 | 530.6 | 91.1 |
| 30 SB | 822.4 | 34.4 | 697.8 | 41.2 | 816.1 | 148.4 | 573.3 | 103.1 |
| 30 NB | 564.8 | 97.9 | 526.2 | 65.4 | 712.3 | 87.5 | 734.7 | 99.9 |
| 35 SB | 844.9 | 89.3 | 768.0 | 59.6 | 718.2 | 207.1 | 740.3 | 66.6 |
| 35 NB | 906.5 | 159.3 | 784.8 | 50.5 | 597.0 | 56.5 | 573.1 | 37.1 |
| 36 NB | 568.7 | 35.0 | 824.8 | 112.8 | 554.3 | 62.1 | 654.0 | 97.5 |
| 36 SB | 651.5 | 59.3 | 801.0 | 77.6 | 477.0 | 73.5 | 577.5 | 15.5 |
| 40 | 576.0 | 42.8 | 531.5 | 19.1 | 626.0 | 96.0 | 651.9 | 90.0 |
| 40X | 471.6 | 27.6 | N/A | N/A | 502.3 | 93.7 | N/A | N/A |
| 49 | 534.6 | 190.0 | 734.3 | 172.0 | 512.9 | 86.4 | 552.6 | 75.5 |
| 68 | 541.2 | 98.8 | 700.2 | 94.7 | 484.2 | 59.8 | 490.9 | 132.9 |
| 70 NB | 686.8 | 86.1 | 526.8 | 90.3 | 633.7 | 116.3 | 475.8 | 50.7 |
| 70 SB | 501.7 | 27.7 | 620.5 | 47.9 | 523.7 | 35.6 | 538.7 | 56.3 |
| 71X SB | 548.2 | 37.4 | 568.0 | 65.0 | 499.4 | 142.4 | 619.7 | 28.2 |
| 71X NB | 511.9 | 99.7 | 536.2 | 89.4 | 495.6 | 95.8 | 525.5 | 56.9 |
| 101 NB | 581.5 | 259.3 | 705.4 | 96.5 | 476.3 | 78.6 | 584.7 | 115.8 |
| 101 SB | 565.1 | 129.2 | 529.5 | 34.1 | 511.4 | 61.9 | 722.1 | 43.1 |
| 122 NB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 122 SB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 125 | N/A | N/A | 446.5 | 198.7 | N/A | N/A | 693.1 | 101.4 |
| 145 | 660.9 | 166.4 | N/A | N/A | 863.6 | 164.9 | N/A | N/A |
| 228 | 270.9 | 98.7 | 559.9 | 61.4 | 600.6 | 67.2 | 652.9 | 99.2 |
| 233 | 585.6 | 83.4 | 399.4 | 25.6 | 528.0 | 138.2 | 510.6 | 69.9 |
| 245 | 639.3 | 72.2 | 728.2 | 145.2 | 526.9 | 59.0 | 532.3 | 94.6 |
| 257 | 475.2 | 83.0 | 405.5 | 15.1 | 466.9 | 67.1 | 646.8 | 163.7 |
| 38 SCT | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Greyhound | 349.7 | 25.4 | N/A | N/A | 498.9 | 34.3 | N/A | N/A |
| Sonoma Airporter | 419.1 | 140.1 | N/A | N/A | 473.1 | 3.4 | N/A | N/A |

Note: N/A denotes that there was no result recorded since the route does not occur during the specified peak hour.

San Rafael Transportation Center Relocation Analysis,
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| Existing Under the Freeway - Average Circulation Time in Network (sec) | | | | | | | | |
|--|---------------|----------------------------------|---------------|----------------------------------|------------------------|---|------------------------|---|
| Route # | Existing A.M. | Existing A.M. Standard Deviation | Existing P.M. | Existing P.M. Standard Deviation | Under the Freeway A.M. | Under the Freeway A.M. Standard Deviation | Under the Freeway P.M. | Under the Freeway P.M. Standard Deviation |
| 17 | 672.1 | 56.9 | 613.2 | 28.3 | 481.3 | 15.4 | 588.4 | 86.5 |
| 22 | 793.2 | 98.4 | 649.6 | 47.5 | 645.6 | 56.4 | 640.2 | 90.1 |
| 23 EB | 892.3 | 182.1 | 1091.9 | 194.6 | 398.1 | 26.6 | 569.2 | 79.2 |
| 23 WB | 690.8 | 144.5 | 540.3 | 40.5 | 660.9 | 64.1 | 645.4 | 47.8 |
| 23X EB | 715.5 | 184.3 | 630.7 | 76.1 | 494.9 | 243.7 | 771.5 | 109.2 |
| 23X WB | 563.7 | 45.9 | 538.1 | 43.5 | 679.6 | 157.9 | 658.2 | 85.3 |
| 27 NB | N/A | N/A | 518.6 | 134.1 | N/A | N/A | 528.0 | 103.6 |
| 27 SB | 678.0 | 48.2 | 742.4 | 174.7 | 472.6 | 13.0 | 512.9 | 8.4 |
| 29 EB | 1008.8 | 126.1 | 841.4 | 98.9 | 534.0 | 6.4 | 553.6 | 37.8 |
| 29 WB | 813.8 | 42.6 | 707.8 | 63.7 | 528.0 | 69.9 | 507.5 | 88.8 |
| 30 SB | 822.4 | 34.4 | 697.8 | 41.2 | 751.2 | 53.5 | 602.7 | 82.7 |
| 30 NB | 564.8 | 97.9 | 526.2 | 65.4 | 676.6 | 162.2 | 697.1 | 208.3 |
| 35 SB | 844.9 | 89.3 | 768.0 | 59.6 | 678.0 | 176.7 | 695.3 | 77.9 |
| 35 NB | 906.5 | 159.3 | 784.8 | 50.5 | 741.4 | 214.3 | 661.7 | 71.5 |
| 36 NB | 568.7 | 35.0 | 824.8 | 112.8 | 537.0 | 23.5 | 601.5 | 79.5 |
| 36 SB | 651.5 | 59.3 | 801.0 | 77.6 | 471.5 | 78.0 | 503.3 | 32.5 |
| 40 | 576.0 | 42.8 | 531.5 | 19.1 | 513.8 | 18.1 | 462.7 | 13.3 |
| 40X | 471.6 | 27.6 | N/A | N/A | 417.7 | 14.0 | N/A | N/A |
| 49 | 534.6 | 190.0 | 734.3 | 172.0 | 414.6 | 25.1 | 399.1 | 6.6 |
| 68 | 541.2 | 98.8 | 700.2 | 94.7 | 513.8 | 78.1 | 788.8 | 157.5 |
| 70 NB | 686.8 | 86.1 | 526.8 | 90.3 | 417.3 | 18.0 | 452.5 | 35.4 |
| 70 SB | 501.7 | 27.7 | 620.5 | 47.9 | 463.4 | 27.7 | 498.8 | 67.4 |
| 71X SB | 548.2 | 37.4 | 568.0 | 65.0 | 476.4 | 25.5 | 511.9 | 13.7 |
| 71X NB | 511.9 | 99.7 | 536.2 | 89.4 | 431.7 | 20.7 | 434.1 | 84.4 |
| 101 NB | 581.5 | 259.3 | 705.4 | 96.5 | 440.0 | 28.5 | 435.4 | 37.1 |
| 101 SB | 565.1 | 129.2 | 529.5 | 34.1 | 448.9 | 17.3 | 465.8 | 10.6 |
| 122 NB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 122 SB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 125 | N/A | N/A | 446.5 | 198.7 | N/A | N/A | 805.3 | 82.7 |
| 145 | 660.9 | 166.4 | N/A | N/A | 646.6 | 126.1 | N/A | N/A |
| 228 | 270.9 | 98.7 | 559.9 | 61.4 | 466.4 | 10.8 | 605.7 | 189.9 |
| 233 | 585.6 | 83.4 | 399.4 | 25.6 | 469.9 | 47.3 | 476.0 | 39.8 |
| 245 | 639.3 | 72.2 | 728.2 | 145.2 | 374.5 | 28.0 | 430.6 | 37.9 |
| 257 | 475.2 | 83.0 | 405.5 | 15.1 | 460.4 | 22.9 | 485.2 | 27.3 |
| 38 SCT | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Greyhound | 349.7 | 25.4 | N/A | N/A | 402.2 | 4.6 | N/A | N/A |
| Sonoma Airporter | 419.1 | 140.1 | N/A | N/A | 392.2 | 31.8 | N/A | N/A |

Note: N/A denotes that there was no result recorded since the route does not occur during the specified peak hour.

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| Existing Whistlestop Block - Average Circulation Time in Network (sec) | | | | | | | | |
|--|---------------|----------------------------------|---------------|----------------------------------|------------------------|---|------------------------|---|
| Route # | Existing A.M. | Existing A.M. Standard Deviation | Existing P.M. | Existing P.M. Standard Deviation | Whistlestop Block A.M. | Whistlestop Block A.M. Standard Deviation | Whistlestop Block P.M. | Whistlestop Block P.M. Standard Deviation |
| 17 | 672.1 | 56.9 | 613.2 | 28.3 | 605.3 | 28.8 | 576.6 | 59.5 |
| 22 | 793.2 | 98.4 | 649.6 | 47.5 | 376.2 | 1.9 | 425.9 | 10.3 |
| 23 EB | 892.3 | 182.1 | 1091.9 | 194.6 | 544.3 | 62.3 | 569.3 | 19.4 |
| 23 WB | 690.8 | 144.5 | 540.3 | 40.5 | 510.7 | 11.6 | 608.0 | 83.6 |
| 23X EB | 715.5 | 184.3 | 630.7 | 76.1 | 676.4 | 88.9 | 796.5 | 188.5 |
| 23X WB | 563.7 | 45.9 | 538.1 | 43.5 | 722.9 | 228.7 | 746.2 | 178.1 |
| 27 NB | N/A | N/A | 518.6 | 134.1 | N/A | N/A | 535.0 | 32.2 |
| 27 SB | 678.0 | 48.2 | 742.4 | 174.7 | 470.9 | 29.4 | 495.9 | 10.7 |
| 29 EB | 1008.8 | 126.1 | 841.4 | 98.9 | 648.3 | 59.0 | 582.7 | 40.2 |
| 29 WB | 813.8 | 42.6 | 707.8 | 63.7 | 613.6 | 44.7 | 588.3 | 67.9 |
| 30 SB | 822.4 | 34.4 | 697.8 | 41.2 | 554.9 | 34.6 | 566.3 | 67.0 |
| 30 NB | 564.8 | 97.9 | 526.2 | 65.4 | 669.2 | 74.8 | 758.3 | 158.0 |
| 35 SB | 844.9 | 89.3 | 768.0 | 59.6 | 735.0 | 91.4 | 616.4 | 82.4 |
| 35 NB | 906.5 | 159.3 | 784.8 | 50.5 | 703.1 | 120.5 | 693.7 | 100.8 |
| 36 NB | 568.7 | 35.0 | 824.8 | 112.8 | 542.4 | 38.4 | 657.4 | 96.2 |
| 36 SB | 651.5 | 59.3 | 801.0 | 77.6 | 482.6 | 41.3 | 523.4 | 28.6 |
| 40 | 576.0 | 42.8 | 531.5 | 19.1 | 558.2 | 55.6 | 605.8 | 135.9 |
| 40X | 471.6 | 27.6 | N/A | N/A | 453.9 | 21.9 | N/A | N/A |
| 49 | 534.6 | 190.0 | 734.3 | 172.0 | 495.3 | 31.2 | 576.0 | 58.7 |
| 68 | 541.2 | 98.8 | 700.2 | 94.7 | 409.5 | 14.1 | 439.3 | 14.8 |
| 70 NB | 686.8 | 86.1 | 526.8 | 90.3 | 559.4 | 133.1 | 467.2 | 60.1 |
| 70 SB | 501.7 | 27.7 | 620.5 | 47.9 | 475.3 | 57.9 | 662.0 | 141.1 |
| 71X SB | 548.2 | 37.4 | 568.0 | 65.0 | 446.4 | 24.6 | 434.4 | 13.5 |
| 71X NB | 511.9 | 99.7 | 536.2 | 89.4 | 492.1 | 40.0 | 490.7 | 25.8 |
| 101 NB | 581.5 | 259.3 | 705.4 | 96.5 | 568.4 | 76.7 | 588.9 | 104.0 |
| 101 SB | 565.1 | 129.2 | 529.5 | 34.1 | 455.8 | 68.3 | 458.3 | 7.2 |
| 122 NB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 122 SB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 125 | N/A | N/A | 446.5 | 198.7 | N/A | N/A | 702.2 | 46.9 |
| 145 | 660.9 | 166.4 | N/A | N/A | 467.5 | 44.2 | N/A | N/A |
| 228 | 270.9 | 98.7 | 559.9 | 61.4 | 654.7 | 86.2 | 646.2 | 140.1 |
| 233 | 585.6 | 83.4 | 399.4 | 25.6 | 602.4 | 57.7 | 515.0 | 40.7 |
| 245 | 639.3 | 72.2 | 728.2 | 145.2 | 506.5 | 54.5 | 532.5 | 95.4 |
| 257 | 475.2 | 83.0 | 405.5 | 15.1 | 473.7 | 38.2 | 543.0 | 128.4 |
| 38 SCT | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Greyhound | 349.7 | 25.4 | N/A | N/A | 448.4 | 80.4 | N/A | N/A |
| Sonoma Airporter | 419.1 | 140.1 | N/A | N/A | 461.6 | 106.2 | N/A | N/A |

Note: N/A denotes that there was no result recorded since the route does not occur during the specified peak hour.

San Rafael Transportation Center Relocation Analysis,
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| Year 2040 Baseline - Average Circulation Time in Network (sec) | | | | | | | | |
|--|---------------|----------------------------------|---------------|----------------------------------|----------------|-----------------------------------|----------------|-----------------------------------|
| Route # | Existing A.M. | Existing A.M. Standard Deviation | Existing P.M. | Existing P.M. Standard Deviation | Year 2040 A.M. | Year 2040 A.M. Standard Deviation | Year 2040 P.M. | Year 2040 P.M. Standard Deviation |
| 17 | 672.1 | 56.9 | 613.2 | 28.3 | 715.9 | 40.0 | 698.0 | 52.2 |
| 22 | 793.2 | 98.4 | 649.6 | 47.5 | 1001.9 | 208.3 | 777.4 | 119.5 |
| 23 EB | 892.3 | 182.1 | 1091.9 | 194.6 | 1830.2 | 616.7 | 1006.6 | 317.4 |
| 23 WB | 690.8 | 144.5 | 540.3 | 40.5 | 1677.5 | 751.6 | 531.8 | 74.8 |
| 23X EB | 715.5 | 184.3 | 630.7 | 76.1 | 1058.1 | 339.9 | 892.5 | 151.8 |
| 23X WB | 563.7 | 45.9 | 538.1 | 43.5 | 1233.1 | 530.8 | 637.4 | 169.3 |
| 27 NB | N/A | N/A | 518.6 | 134.1 | N/A | N/A | 619.3 | 93.6 |
| 27 SB | 678.0 | 48.2 | 742.4 | 174.7 | 945.4 | 240.4 | 601.3 | 35.1 |
| 29 EB | 1008.8 | 126.1 | 841.4 | 98.9 | 829.9 | 230.8 | 856.9 | 97.9 |
| 29 WB | 813.8 | 42.6 | 707.8 | 63.7 | 801.1 | 48.5 | 721.8 | 109.9 |
| 30 SB | 822.4 | 34.4 | 697.8 | 41.2 | 1347.6 | 432.1 | 1235.1 | 835.4 |
| 30 NB | 564.8 | 97.9 | 526.2 | 65.4 | 541.2 | 56.4 | 544.4 | 62.0 |
| 35 SB | 844.9 | 89.3 | 768.0 | 59.6 | 1067.4 | 275.5 | 748.5 | 67.0 |
| 35 NB | 906.5 | 159.3 | 784.8 | 50.5 | 1651.6 | 326.2 | 876.9 | 49.7 |
| 36 NB | 568.7 | 35.0 | 824.8 | 112.8 | 566.1 | 23.7 | 765.5 | 80.9 |
| 36 SB | 651.5 | 59.3 | 801.0 | 77.6 | 1025.3 | 198.6 | 833.9 | 124.1 |
| 40 | 576.0 | 42.8 | 531.5 | 19.1 | 599.3 | 30.9 | 650.9 | 64.7 |
| 40X | 471.6 | 27.6 | N/A | N/A | 524.1 | 29.3 | N/A | N/A |
| 49 | 534.6 | 190.0 | 734.3 | 172.0 | 530.2 | 29.6 | 1079.3 | 216.5 |
| 68 | 541.2 | 98.8 | 700.2 | 94.7 | 825.3 | 161.2 | 742.5 | 71.4 |
| 70 NB | 686.8 | 86.1 | 526.8 | 90.3 | 686.5 | 120.0 | 535.3 | 66.4 |
| 70 SB | 501.7 | 27.7 | 620.5 | 47.9 | 606.6 | 166.8 | 1036.4 | 87.8 |
| 71X SB | 548.2 | 37.4 | 568.0 | 65.0 | 530.8 | 15.0 | 729.6 | 181.2 |
| 71X NB | 511.9 | 99.7 | 536.2 | 89.4 | 548.7 | 59.1 | 627.3 | 99.8 |
| 101 NB | 581.5 | 259.3 | 705.4 | 96.5 | 513.9 | 86.1 | 722.4 | 82.6 |
| 101 SB | 565.1 | 129.2 | 529.5 | 34.1 | 594.1 | 61.9 | 676.8 | 249.3 |
| 122 NB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 122 SB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 125 | N/A | N/A | 446.5 | 198.7 | N/A | N/A | 763.7 | 104.9 |
| 145 | 660.9 | 166.4 | N/A | N/A | 1257.2 | 190.2 | N/A | N/A |
| 228 | 270.9 | 98.7 | 559.9 | 61.4 | 340.0 | 86.3 | 667.1 | 101.0 |
| 233 | 585.6 | 83.4 | 399.4 | 25.6 | 638.2 | 182.0 | 388.0 | 3.6 |
| 245 | 639.3 | 72.2 | 728.2 | 145.2 | 869.1 | 109.8 | 1114.7 | 387.4 |
| 257 | 475.2 | 83.0 | 405.5 | 15.1 | 625.1 | 165.7 | 429.9 | 52.5 |
| 38 SCT | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Greyhound | 349.7 | 25.4 | N/A | N/A | 495.4 | 189.0 | N/A | N/A |
| Sonoma Airporter | 419.1 | 140.1 | N/A | N/A | 515.9 | 103.2 | N/A | N/A |

Note: N/A denotes that there was no result recorded since the route does not occur during the specified peak hour.

San Rafael Transportation Center Relocation Analysis,
Environmental Clearance and Preliminary Design

| Year 2040 4 th Street Gateway - Average Circulation Time in Network (sec) | | | | | | | | |
|--|---------------|----------------------------------|---------------|----------------------------------|-------------------------------------|--|-------------------------------------|--|
| Route # | Baseline A.M. | Baseline A.M. Standard Deviation | Baseline P.M. | Baseline P.M. Standard Deviation | 4 th Street Gateway A.M. | 4 th Street Gateway A.M. Standard Deviation | 4 th Street Gateway P.M. | 4 th Street Gateway P.M. Standard Deviation |
| 17 | 715.9 | 40.0 | 698.0 | 52.2 | 794.2 | 185.7 | 550.5 | 70.3 |
| 22 | 1001.9 | 208.3 | 777.4 | 119.5 | 1024.9 | 282.2 | 544.8 | 31.8 |
| 23 EB | 1830.2 | 616.7 | 1006.6 | 317.4 | 1332.6 | 730.9 | 555.3 | 15.5 |
| 23 WB | 1677.5 | 751.6 | 531.8 | 74.8 | 1002.8 | 345.0 | 633.7 | 132.0 |
| 23X EB | 1058.1 | 339.9 | 892.5 | 151.8 | 1497.2 | 357.8 | 776.3 | 56.3 |
| 23X WB | 1233.1 | 530.8 | 637.4 | 169.3 | 1304.4 | 331.7 | 659.8 | 100.0 |
| 27 NB | N/A | N/A | 619.3 | 93.6 | N/A | N/A | 539.9 | 63.8 |
| 27 SB | 945.4 | 240.4 | 601.3 | 35.1 | 887.2 | 192.2 | 568.1 | 58.5 |
| 29 EB | 829.9 | 230.8 | 856.9 | 97.9 | 859.6 | 335.8 | 621.4 | 133.6 |
| 29 WB | 801.1 | 48.5 | 721.8 | 109.9 | 822.3 | 193.8 | 559.3 | 166.0 |
| 30 SB | 1347.6 | 432.1 | 1235.1 | 835.4 | 1575.8 | 434.3 | 925.5 | 363.8 |
| 30 NB | 541.2 | 56.4 | 544.4 | 62.0 | 756.2 | 149.2 | 707.2 | 85.6 |
| 35 SB | 1067.4 | 275.5 | 748.5 | 67.0 | 1013.3 | 693.1 | 704.9 | 44.1 |
| 35 NB | 1651.6 | 326.2 | 876.9 | 49.7 | 1121.5 | 341.0 | 617.1 | 59.3 |
| 36 NB | 566.1 | 23.7 | 765.5 | 80.9 | 730.3 | 79.6 | 673.6 | 73.2 |
| 36 SB | 1025.3 | 198.6 | 833.9 | 124.1 | 891.4 | 254.9 | 641.4 | 110.2 |
| 40 | 599.3 | 30.9 | 650.9 | 64.7 | 1070.5 | 134.0 | 758.8 | 109.7 |
| 40X | 524.1 | 29.3 | N/A | N/A | 943.4 | 251.9 | N/A | N/A |
| 49 | 530.2 | 29.6 | 1079.3 | 216.5 | 812.7 | 131.6 | 513.8 | 46.4 |
| 68 | 825.3 | 161.2 | 742.5 | 71.4 | 862.0 | 285.9 | 481.5 | 87.7 |
| 70 NB | 686.5 | 120.0 | 535.3 | 66.4 | 839.3 | 272.7 | 487.2 | 92.7 |
| 70 SB | 606.6 | 166.8 | 1036.4 | 87.8 | 649.3 | 197.9 | 458.5 | 8.4 |
| 71X SB | 530.8 | 15.0 | 729.6 | 181.2 | 507.1 | 105.2 | 591.3 | 45.9 |
| 71X NB | 548.7 | 59.1 | 627.3 | 99.8 | 823.9 | 95.3 | 512.1 | 37.2 |
| 101 NB | 513.9 | 86.1 | 722.4 | 82.6 | 939.5 | 338.8 | 556.3 | 64.3 |
| 101 SB | 594.1 | 61.9 | 676.8 | 249.3 | 552.3 | 107.7 | 703.8 | 43.8 |
| 122 NB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 122 SB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 125 | N/A | N/A | 763.7 | 104.9 | N/A | N/A | 795.5 | 98.4 |
| 145 | 1257.2 | 190.2 | N/A | N/A | 1670.1 | 651.1 | N/A | N/A |
| 228 | 340.0 | 86.3 | 667.1 | 101.0 | 670.5 | 70.9 | 595.1 | 79.5 |
| 233 | 638.2 | 182.0 | 388.0 | 3.6 | 584.5 | 92.2 | 521.6 | 139.1 |
| 245 | 869.1 | 109.8 | 1114.7 | 387.4 | 973.0 | 261.7 | 496.3 | 69.5 |
| 257 | 625.1 | 165.7 | 429.9 | 52.5 | 597.5 | 229.5 | 512.5 | 41.5 |
| 38 SCT | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Greyhound | 495.4 | 189.0 | N/A | N/A | 522.6 | 54.0 | N/A | N/A |
| Sonoma Airporter | 515.9 | 103.2 | N/A | N/A | 553.0 | 169.6 | N/A | N/A |

Note: N/A denotes that there was no result recorded since the route does not occur during the specified peak hour.

San Rafael Transportation Center Relocation Analysis,
Environmental Clearance and Preliminary Design

| Year 2040 Under the Freeway - Average Circulation Time in Network (sec) | | | | | | | | |
|---|---------------|----------------------------------|---------------|----------------------------------|------------------------|---|------------------------|---|
| Route # | Baseline A.M. | Baseline A.M. Standard Deviation | Baseline P.M. | Baseline P.M. Standard Deviation | Under the Freeway A.M. | Under the Freeway A.M. Standard Deviation | Under the Freeway P.M. | Under the Freeway P.M. Standard Deviation |
| 17 | 715.9 | 40.0 | 698.0 | 52.2 | 532.7 | 70.2 | 810.3 | 132.7 |
| 22 | 1001.9 | 208.3 | 777.4 | 119.5 | 783.5 | 53.4 | 837.9 | 87.7 |
| 23 EB | 1830.2 | 616.7 | 1006.6 | 317.4 | 569.7 | 193.9 | 572.4 | 167.7 |
| 23 WB | 1677.5 | 751.6 | 531.8 | 74.8 | 1676.7 | 470.6 | 863.4 | 199.8 |
| 23X EB | 1058.1 | 339.9 | 892.5 | 151.8 | 836.9 | 124.4 | 683.0 | 84.4 |
| 23X WB | 1233.1 | 530.8 | 637.4 | 169.3 | 1397.8 | 220.6 | 839.5 | 182.0 |
| 27 NB | N/A | N/A | 619.3 | 93.6 | N/A | N/A | 737.4 | 226.0 |
| 27 SB | 945.4 | 240.4 | 601.3 | 35.1 | 514.5 | 40.4 | 530.3 | 36.5 |
| 29 EB | 829.9 | 230.8 | 856.9 | 97.9 | 559.0 | 33.3 | 574.3 | 108.8 |
| 29 WB | 801.1 | 48.5 | 721.8 | 109.9 | 634.7 | 84.6 | 736.9 | 221.6 |
| 30 SB | 1347.6 | 432.1 | 1235.1 | 835.4 | 1306.1 | 381.2 | 940.5 | 200.9 |
| 30 NB | 541.2 | 56.4 | 544.4 | 62.0 | 695.0 | 65.4 | 967.5 | 94.8 |
| 35 SB | 1067.4 | 275.5 | 748.5 | 67.0 | 1067.5 | 156.7 | 979.4 | 83.9 |
| 35 NB | 1651.6 | 326.2 | 876.9 | 49.7 | 1478.4 | 284.9 | 871.7 | 129.6 |
| 36 NB | 566.1 | 23.7 | 765.5 | 80.9 | 589.0 | 72.2 | 673.6 | 141.4 |
| 36 SB | 1025.3 | 198.6 | 833.9 | 124.1 | 1258.5 | 269.0 | 585.7 | 127.3 |
| 40 | 599.3 | 30.9 | 650.9 | 64.7 | 604.6 | 98.7 | 636.1 | 72.1 |
| 40X | 524.1 | 29.3 | N/A | N/A | 487.1 | 75.3 | N/A | N/A |
| 49 | 530.2 | 29.6 | 1079.3 | 216.5 | 406.3 | 83.2 | 430.7 | 102.4 |
| 68 | 825.3 | 161.2 | 742.5 | 71.4 | 494.1 | 58.4 | 1025.3 | 211.2 |
| 70 NB | 686.5 | 120.0 | 535.3 | 66.4 | 407.5 | 79.8 | 599.8 | 204.8 |
| 70 SB | 606.6 | 166.8 | 1036.4 | 87.8 | 498.0 | 83.6 | 733.9 | 244.9 |
| 71X SB | 530.8 | 15.0 | 729.6 | 181.2 | 487.5 | 31.5 | 523.0 | 57.4 |
| 71X NB | 548.7 | 59.1 | 627.3 | 99.8 | 468.9 | 70.4 | 456.4 | 128.4 |
| 101 NB | 513.9 | 86.1 | 722.4 | 82.6 | 495.2 | 118.3 | 468.4 | 62.1 |
| 101 SB | 594.1 | 61.9 | 676.8 | 249.3 | 432.3 | 26.1 | 485.8 | 61.9 |
| 122 NB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 122 SB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 125 | N/A | N/A | 763.7 | 104.9 | N/A | N/A | 983.2 | 176.1 |
| 145 | 1257.2 | 190.2 | N/A | N/A | 1029.5 | 66.6 | N/A | N/A |
| 228 | 340.0 | 86.3 | 667.1 | 101.0 | 573.9 | 109.7 | 968.1 | 187.8 |
| 233 | 638.2 | 182.0 | 388.0 | 3.6 | 487.2 | 53.8 | 474.4 | 98.1 |
| 245 | 869.1 | 109.8 | 1114.7 | 387.4 | 384.5 | 34.3 | 472.6 | 120.0 |
| 257 | 625.1 | 165.7 | 429.9 | 52.5 | 614.8 | 258.1 | 461.8 | 28.9 |
| 38 SCT | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Greyhound | 495.4 | 189.0 | N/A | N/A | 414.3 | 24.6 | N/A | N/A |
| Sonoma Airporter | 515.9 | 103.2 | N/A | N/A | 494.7 | 141.1 | N/A | N/A |

Note: N/A denotes that there was no result recorded since the route does not occur during the specified peak hour.

San Rafael Transportation Center Relocation Analysis,
Environmental Clearance and Preliminary Design

| Year 2040 Whistlestop Block - Average Circulation Time in Network (sec) | | | | | | | | |
|---|---------------|----------------------------------|---------------|----------------------------------|------------------------|---|------------------------|---|
| Route # | Baseline A.M. | Baseline A.M. Standard Deviation | Baseline P.M. | Baseline P.M. Standard Deviation | Whistlestop Block A.M. | Whistlestop Block A.M. Standard Deviation | Whistlestop Block P.M. | Whistlestop Block P.M. Standard Deviation |
| 17 | 715.9 | 40.0 | 698.0 | 52.2 | 685.3 | 72.7 | 573.2 | 44.5 |
| 22 | 1001.9 | 208.3 | 777.4 | 119.5 | 410.1 | 82.6 | 423.3 | 7.4 |
| 23 EB | 1830.2 | 616.7 | 1006.6 | 317.4 | 697.9 | 158.1 | 576.5 | 57.6 |
| 23 WB | 1677.5 | 751.6 | 531.8 | 74.8 | 1352.8 | 592.1 | 632.8 | 82.9 |
| 23X EB | 1058.1 | 339.9 | 892.5 | 151.8 | 936.8 | 158.7 | 796.1 | 111.1 |
| 23X WB | 1233.1 | 530.8 | 637.4 | 169.3 | 1303.4 | 325.9 | 725.6 | 96.6 |
| 27 NB | N/A | N/A | 619.3 | 93.6 | N/A | N/A | 541.9 | 9.3 |
| 27 SB | 945.4 | 240.4 | 601.3 | 35.1 | 540.4 | 69.4 | 514.5 | 2.3 |
| 29 EB | 829.9 | 230.8 | 856.9 | 97.9 | 859.9 | 232.7 | 620.6 | 68.5 |
| 29 WB | 801.1 | 48.5 | 721.8 | 109.9 | 692.9 | 86.1 | 544.0 | 64.4 |
| 30 SB | 1347.6 | 432.1 | 1235.1 | 835.4 | 925.0 | 70.5 | 523.8 | 37.0 |
| 30 NB | 541.2 | 56.4 | 544.4 | 62.0 | 757.8 | 168.6 | 717.8 | 77.2 |
| 35 SB | 1067.4 | 275.5 | 748.5 | 67.0 | 1097.0 | 296.3 | 637.7 | 69.3 |
| 35 NB | 1651.6 | 326.2 | 876.9 | 49.7 | 1291.5 | 263.5 | 727.2 | 110.3 |
| 36 NB | 566.1 | 23.7 | 765.5 | 80.9 | 580.8 | 81.2 | 669.5 | 52.6 |
| 36 SB | 1025.3 | 198.6 | 833.9 | 124.1 | 1215.1 | 347.5 | 609.3 | 157.7 |
| 40 | 599.3 | 30.9 | 650.9 | 64.7 | 635.2 | 121.0 | 689.7 | 46.1 |
| 40X | 524.1 | 29.3 | N/A | N/A | 589.7 | 93.7 | N/A | N/A |
| 49 | 530.2 | 29.6 | 1079.3 | 216.5 | 600.8 | 85.6 | 558.9 | 128.2 |
| 68 | 825.3 | 161.2 | 742.5 | 71.4 | 489.3 | 215.5 | 432.2 | 40.9 |
| 70 NB | 686.5 | 120.0 | 535.3 | 66.4 | 729.5 | 53.9 | 511.8 | 73.1 |
| 70 SB | 606.6 | 166.8 | 1036.4 | 87.8 | 542.2 | 146.9 | 698.0 | 148.5 |
| 71X SB | 530.8 | 15.0 | 729.6 | 181.2 | 465.7 | 30.0 | 496.5 | 105.3 |
| 71X NB | 548.7 | 59.1 | 627.3 | 99.8 | 581.6 | 91.3 | 536.0 | 44.2 |
| 101 NB | 513.9 | 86.1 | 722.4 | 82.6 | 697.0 | 176.2 | 564.6 | 77.9 |
| 101 SB | 594.1 | 61.9 | 676.8 | 249.3 | 480.0 | 78.7 | 548.4 | 220.3 |
| 122 NB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 122 SB | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| 125 | N/A | N/A | 763.7 | 104.9 | N/A | N/A | 884.1 | 123.0 |
| 145 | 1257.2 | 190.2 | N/A | N/A | 961.6 | 243.1 | N/A | N/A |
| 228 | 340.0 | 86.3 | 667.1 | 101.0 | 665.5 | 112.4 | 686.3 | 107.7 |
| 233 | 638.2 | 182.0 | 388.0 | 3.6 | 844.3 | 243.2 | 558.8 | 64.6 |
| 245 | 869.1 | 109.8 | 1114.7 | 387.4 | 555.4 | 86.5 | 556.4 | 129.4 |
| 257 | 625.1 | 165.7 | 429.9 | 52.5 | 668.0 | 117.5 | 513.6 | 60.9 |
| 38 SCT | N/A | N/A | N/A | N/A | N/A | N/A | N/A | N/A |
| Greyhound | 495.4 | 189.0 | N/A | N/A | 539.3 | 151.9 | N/A | N/A |
| Sonoma Airporter | 515.9 | 103.2 | N/A | N/A | 500.5 | 73.7 | N/A | N/A |

Note: N/A denotes that there was no result recorded since the route does not occur during the specified peak hour.

Appendix B: Traffic Volumes

| INT # | Intersection Name | Existing Baseline A.M. Peak Hour | | | | | | | | | | | |
|-------|-------------------------------|----------------------------------|------|-----|-----|-----|-----|-----|------|-----|-----|------|-----|
| | | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR |
| 1 | Hetherton & 2nd | | | | 256 | 843 | | | 1050 | 940 | | | |
| 2 | Hetherton & 3rd | | | | | 727 | 219 | | | | 372 | 1132 | |
| 3 | Hetherton & 4th | | | | 87 | 692 | 161 | | 217 | 130 | 124 | 290 | |
| 4 | Hetherton & 5th | | | | 35 | 737 | 167 | | 209 | 149 | 54 | 234 | |
| 5 | Hetherton & Mission | | | | 180 | 843 | 407 | | 416 | 62 | 34 | 200 | |
| 6 | Irwin & 2nd | | 1346 | 399 | | | | 580 | 726 | | | | |
| 7 | Irwin & 3rd | 807 | 1119 | | | | | | | | | 697 | 66 |
| 8 | Irwin & 4th | 126 | 990 | 69 | | | | 110 | 194 | | | 288 | 65 |
| 9 | Irwin & 5th | 141 | 1010 | 14 | | | | 163 | 81 | | | 147 | 90 |
| 10 | Irwin & Mission | 88 | 1135 | 40 | | | | 347 | 249 | | | 146 | 328 |
| 11 | Grand & 2nd | | 405 | 235 | 18 | 438 | | 112 | 675 | 338 | | | |
| 12 | Grand & 3rd | 203 | 314 | | | 193 | 64 | | | | 263 | 496 | 135 |
| 13 | Grand & 4th | 114 | 275 | 60 | 34 | 160 | 50 | 24 | 165 | 74 | 23 | 189 | 102 |
| 14 | Grand & 5th | 167 | 234 | | | 175 | 70 | 26 | | 69 | | | |
| 15 | Grand & Mission | 134 | 105 | 21 | 43 | 175 | 72 | 25 | 226 | 38 | 32 | 268 | 27 |
| 16 | Lincoln & 2nd | | 124 | 75 | 77 | 273 | | 87 | 1632 | 34 | | | |
| 17 | Lincoln & 3rd | 14 | 172 | | | 258 | 136 | | | | 112 | 1039 | 48 |
| 18 | Lincoln & 4th | 17 | 159 | 44 | 26 | 308 | 36 | 36 | 268 | 31 | 55 | 348 | 19 |
| 19 | Lincoln & 5th | 8 | 177 | 29 | 30 | 285 | 39 | 42 | 281 | 31 | 54 | 327 | 22 |
| 20 | Lincoln & Mission | 2 | 209 | 30 | 64 | 293 | 370 | 147 | 376 | 15 | 46 | 522 | 40 |
| 21 | A & 2nd | | 203 | 25 | 34 | 95 | | 85 | 1567 | 181 | | | |
| 22 | A & 3rd | 166 | 122 | | | 105 | 22 | | | | 24 | 926 | 50 |
| 23 | A & 4th | 18 | 106 | 15 | 20 | 97 | 29 | 43 | 272 | 27 | 37 | 300 | 23 |
| 24 | A & 5th | 55 | | 117 | | | | | 537 | 29 | 117 | 487 | |
| 25 | Tamalpais & 2nd | | 48 | 148 | 90 | 112 | | 11 | 1752 | 21 | | | |
| 26 | Tamalpais & 3rd | 36 | 23 | | | 34 | 7 | | | | 168 | 1156 | 7 |
| 27 | Lindaro & 2nd | | 55 | 180 | 28 | 238 | | 28 | 1545 | 53 | | | |
| 28 | Lindaro & 3rd | 80 | 3 | | | 25 | 4 | | | | 241 | 980 | 13 |
| 29 | Cijos & 4th | 14 | | 20 | | | | | 315 | 1 | 46 | 355 | |
| 30 | Lootens & 4th | 5 | 32 | 20 | 20 | 65 | 25 | 24 | 276 | 7 | 15 | 330 | 24 |
| 31 | Court & 4th | | | | | | | | 307 | | | 360 | |
| 32 | Court & 5th | 4 | | 4 | 31 | 19 | 288 | 282 | 342 | 30 | 40 | 312 | 21 |
| 33 | Court & Mission | 10 | | 293 | | | | | 236 | 29 | 309 | 578 | |
| 34 | Tamalpais & 5th | 3 | 2 | 7 | | 4 | 2 | 1 | 327 | 12 | 1 | 398 | 6 |
| 35 | 5th Ave & E Tamalpais Ave | 7 | 1 | 26 | | | | 2 | 332 | | | 398 | 3 |
| 36 | Ritter & 3rd | 45 | | | | | | | | | | 1189 | |
| 37 | Lincoln & Ritter | 25 | 186 | | | 350 | 20 | | | | | | |
| 38 | Nye & 5th | | | | 17 | | 14 | 40 | 337 | | | 359 | 15 |
| 39 | Nye & Mission | 1 | 30 | 24 | 8 | 3 | 19 | 20 | 506 | 3 | 25 | 867 | 2 |
| 40 | Mission Ave & E Tamalpais Ave | 1 | | 5 | | | | | 473 | | | 607 | |
| 41 | Tamalpais & Mission | | | 9 | | | | | 464 | 6 | | 608 | |
| 42 | Tamalpais & 4th | | | 30 | | | 17 | | 297 | 41 | | 405 | 12 |
| 43 | 4th St & E Tamalpais Ave | | | 20 | | | | | 327 | | | 417 | 34 |

| INT # | Intersection Name | Existing Baseline P.M. Peak Hour | | | | | | | | | | | |
|-------|-------------------------------|----------------------------------|------|-----|-----|-----|-----|-----|------|-----|-----|------|-----|
| | | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR |
| 1 | Hetherton & 2nd | | | | 332 | 785 | | | 1484 | 849 | | | |
| 2 | Hetherton & 3rd | | | | | 736 | 221 | | | | 381 | 1262 | |
| 3 | Hetherton & 4th | | | | 97 | 710 | 202 | | 265 | 151 | 96 | 255 | |
| 4 | Hetherton & 5th | | | | 26 | 776 | 232 | | 265 | 189 | 44 | 195 | |
| 5 | Hetherton & Mission | | | | 228 | 963 | 399 | | 419 | 48 | 23 | 217 | |
| 6 | Irwin & 2nd | | 1278 | 643 | | | | 718 | 1098 | | | | |
| 7 | Irwin & 3rd | 817 | 1179 | | | | | | | | | 826 | 139 |
| 8 | Irwin & 4th | 89 | 1158 | 71 | | | | 155 | 207 | | | 262 | 73 |
| 9 | Irwin & 5th | 116 | 1256 | 14 | | | | 185 | 106 | | | 123 | 93 |
| 10 | Irwin & Mission | 95 | 1400 | 39 | | | | 363 | 284 | | | 145 | 269 |
| 11 | Grand & 2nd | | 494 | 236 | 16 | 431 | | 138 | 972 | 631 | | | |
| 12 | Grand & 3rd | 253 | 379 | | | 157 | 112 | | | | 290 | 600 | 130 |
| 13 | Grand & 4th | 95 | 354 | 60 | 73 | 164 | 42 | 16 | 167 | 95 | 10 | 198 | 70 |
| 14 | Grand & 5th | 165 | 275 | | | 179 | 51 | 20 | | 100 | | | |
| 15 | Grand & Mission | 151 | 124 | 20 | 50 | 169 | 57 | 35 | 245 | 43 | 18 | 206 | 47 |
| 16 | Lincoln & 2nd | | 221 | 160 | 77 | 155 | | 187 | 1821 | 33 | | | |
| 17 | Lincoln & 3rd | 36 | 286 | | | 216 | 174 | | | | 79 | 1205 | 55 |
| 18 | Lincoln & 4th | 23 | 286 | 32 | 35 | 280 | 57 | 35 | 339 | 33 | 77 | 306 | 47 |
| 19 | Lincoln & 5th | 16 | 317 | 35 | 29 | 300 | 41 | 49 | 377 | 28 | 44 | 344 | 44 |
| 20 | Lincoln & Mission | 4 | 370 | 36 | 24 | 312 | 299 | 229 | 396 | 9 | 49 | 493 | 75 |
| 21 | A & 2nd | | 294 | 11 | 112 | 66 | | 99 | 1642 | 142 | | | |
| 22 | A & 3rd | 243 | 150 | | | 112 | 45 | | | | 66 | 1290 | 64 |
| 23 | A & 4th | 41 | 165 | 48 | 32 | 86 | 13 | 31 | 277 | 30 | 14 | 329 | 35 |
| 24 | A & 5th | 55 | | 176 | | | | | 627 | 53 | 78 | 517 | |
| 25 | Tamalpais & 2nd | | 44 | 232 | 85 | 129 | | 39 | 2016 | 26 | | | |
| 26 | Tamalpais & 3rd | 53 | 30 | | | 28 | 27 | | | | 186 | 1259 | 17 |
| 27 | Lindaro & 2nd | | 88 | 268 | 86 | 138 | | 38 | 1687 | 40 | | | |
| 28 | Lindaro & 3rd | 103 | 23 | | | 17 | 13 | | | | 207 | 1304 | 30 |
| 29 | Cijos & 4th | 18 | | 65 | | | | | 342 | 21 | 30 | 356 | |
| 30 | Lootens & 4th | 21 | 53 | 41 | 16 | 49 | 21 | 23 | 306 | 28 | 17 | 336 | 21 |
| 31 | Court & 4th | | | | | | | | 357 | | | 378 | |
| 32 | Court & 5th | 9 | 4 | 50 | 21 | 10 | 207 | 364 | 414 | 25 | 19 | 379 | 22 |
| 33 | Court & Mission | 17 | | 373 | | | | | 263 | 13 | 225 | 570 | |
| 34 | Tamalpais & 5th | 6 | 4 | 17 | 4 | 1 | 3 | 1 | 417 | 23 | 3 | 423 | 5 |
| 35 | 5th Ave & E Tamalpais Ave | 5 | 9 | 16 | | | | | 438 | | | 426 | 1 |
| 36 | Ritter & 3rd | 126 | | | | | | | | | | 1415 | |
| 37 | Lincoln & Ritter | 86 | 322 | | 23 | 232 | 40 | | | | | | |
| 38 | Nye & 5th | | | | 11 | | 32 | 42 | 443 | | | 388 | 13 |
| 39 | Nye & Mission | 2 | 12 | 41 | 6 | 8 | 30 | 34 | 587 | 15 | 13 | 763 | 20 |
| 40 | Mission Ave & E Tamalpais Ave | 2 | | 8 | | | | | 459 | | | 616 | |
| 41 | Tamalpais & Mission | | | 10 | | | | | 449 | 7 | 1 | 617 | |
| 42 | Tamalpais & 4th | | | 47 | | | 27 | | 351 | 55 | | 403 | 27 |
| 43 | 4th St & E Tamalpais Ave | 2 | 1 | 18 | | | | | 398 | | | 428 | 29 |

| INT # | Intersection Name | Year 2040 Baseline A.M. Peak Hour | | | | | | | | | | | |
|-------|-------------------------------|-----------------------------------|------|-----|-----|------|-----|-----|------|------|-----|------|-----|
| | | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR |
| 1 | Hetherton & 2nd | | | | 314 | 908 | | | 1286 | 1145 | | | |
| 2 | Hetherton & 3rd | | | | | 816 | 409 | | | | 406 | 1257 | |
| 3 | Hetherton & 4th | | | | 107 | 915 | 198 | | 266 | 158 | 152 | 355 | |
| 4 | Hetherton & 5th | | | | 40 | 987 | 191 | | 240 | 176 | 57 | 269 | |
| 5 | Hetherton & Mission | | | | 207 | 1114 | 467 | | 478 | 69 | 35 | 230 | |
| 6 | Irwin & 2nd | | 1566 | 420 | | | | 611 | 989 | | | | |
| 7 | Irwin & 3rd | 928 | 1249 | | | | | | | | | 735 | 69 |
| 8 | Irwin & 4th | 203 | 1042 | 73 | | | | 169 | 204 | | | 304 | 68 |
| 9 | Irwin & 5th | 160 | 1104 | 15 | | | | 188 | 92 | | | 166 | 102 |
| 10 | Irwin & Mission | 100 | 1249 | 45 | | | | 403 | 282 | | | 165 | 372 |
| 11 | Grand & 2nd | | 427 | 248 | 19 | 461 | | 118 | 711 | 580 | | | |
| 12 | Grand & 3rd | 214 | 331 | | | 203 | 67 | | | | 277 | 523 | 142 |
| 13 | Grand & 4th | 120 | 290 | 63 | 36 | 168 | 53 | 25 | 174 | 78 | 24 | 199 | 139 |
| 14 | Grand & 5th | 189 | 265 | | | 179 | 79 | 29 | | 78 | | | |
| 15 | Grand & Mission | 152 | 119 | 23 | 49 | 179 | 82 | 28 | 256 | 43 | 36 | 303 | 31 |
| 16 | Lincoln & 2nd | | 185 | 219 | 94 | 374 | | 107 | 2053 | 40 | | | |
| 17 | Lincoln & 3rd | 17 | 220 | | | 355 | 166 | | | | 137 | 1223 | 57 |
| 18 | Lincoln & 4th | 21 | 202 | 54 | 35 | 391 | 44 | 44 | 302 | 63 | 67 | 426 | 19 |
| 19 | Lincoln & 5th | 9 | 227 | 29 | 34 | 372 | 45 | 48 | 323 | 36 | 62 | 375 | 20 |
| 20 | Lincoln & Mission | 2 | 257 | 36 | 73 | 374 | 425 | 169 | 425 | 24 | 53 | 599 | 46 |
| 21 | A & 2nd | | 249 | 31 | 42 | 116 | | 104 | 1919 | 222 | | | |
| 22 | A & 3rd | 204 | 149 | | | 129 | 27 | | | | 29 | 1134 | 61 |
| 23 | A & 4th | 22 | 130 | 18 | 24 | 119 | 24 | 53 | 334 | 33 | 45 | 369 | 28 |
| 24 | A & 5th | 77 | | 134 | | | | | 616 | 33 | 134 | 560 | |
| 25 | Tamalpais & 2nd | | | | 91 | 125 | | | 2340 | 26 | | | |
| 26 | Tamalpais & 3rd | | | | | | | | | | 216 | 1417 | 9 |
| 27 | Lindaro & 2nd | | 93 | 274 | 34 | 292 | | 34 | 1892 | 66 | | | |
| 28 | Lindaro & 3rd | 124 | 3 | | | 31 | 5 | | | | 295 | 1174 | 16 |
| 29 | Cijos & 4th | 17 | | 24 | | | | | 385 | 1 | 56 | 435 | |
| 30 | Lootens & 4th | 6 | 39 | 24 | 24 | 80 | 31 | 29 | 338 | 9 | 18 | 405 | 29 |
| 31 | Court & 4th | | | | | | | | 376 | | | 442 | |
| 32 | Court & 5th | 5 | | 5 | 36 | 22 | 331 | 324 | 392 | 34 | 46 | 358 | 24 |
| 33 | Court & Mission | 12 | | 336 | | | | | 271 | 34 | 355 | 663 | |
| 34 | Tamalpais & 5th | | | | | | | 1 | 385 | | 1 | 457 | 7 |
| 35 | 5th Ave & E Tamalpais Ave | 8 | 1 | 33 | | | | 2 | 383 | | | 457 | 3 |
| 36 | Ritter & 3rd | 79 | | | | | | | | | | 1406 | |
| 37 | Lincoln & Ritter | 55 | 237 | | | 468 | 24 | | | | | | |
| 38 | Nye & 5th | | | | 20 | | 16 | 46 | 387 | | | 412 | 17 |
| 39 | Nye & Mission | 1 | 34 | 28 | 9 | 4 | 22 | 23 | 581 | 3 | 29 | 995 | 2 |
| 40 | Mission Ave & E Tamalpais Ave | 1 | | 5 | | | | | 542 | | | 697 | |
| 41 | Tamalpais & Mission | | | 8 | | | | | 534 | | | 698 | |
| 42 | Tamalpais & 4th | | | 9 | | | 1 | | 391 | | | 511 | |
| 43 | 4th St & E Tamalpais Ave | | | 24 | | | | | 400 | | | 511 | 42 |

| INT # | Intersection Name | Year 2040 Baseline P.M. Peak Hour | | | | | | | | | | | |
|-------|-------------------------------|-----------------------------------|------|-----|-----|------|-----|-----|------|-----|-----|------|-----|
| | | NBL | NBT | NBR | SBL | SBT | SBR | EBL | EBT | EBR | WBL | WBT | WBR |
| 1 | Hetherton & 2nd | | | | 351 | 830 | | | 1591 | 897 | | | |
| 2 | Hetherton & 3rd | | | | | 778 | 286 | | | | 403 | 1383 | |
| 3 | Hetherton & 4th | | | | 103 | 794 | 210 | | 280 | 160 | 110 | 270 | |
| 4 | Hetherton & 5th | | | | 31 | 868 | 279 | | 317 | 186 | 53 | 234 | |
| 5 | Hetherton & Mission | | | | 230 | 1092 | 479 | | 502 | 58 | 28 | 260 | |
| 6 | Irwin & 2nd | | 1385 | 696 | | | | 799 | 1143 | | | | |
| 7 | Irwin & 3rd | 907 | 1277 | | | | | | | | | 879 | 150 |
| 8 | Irwin & 4th | 96 | 1254 | 77 | | | | 159 | 224 | | | 284 | 79 |
| 9 | Irwin & 5th | 153 | 1324 | 15 | | | | 232 | 116 | | | 134 | 101 |
| 10 | Irwin & Mission | 130 | 1484 | 43 | | | | 410 | 322 | | | 158 | 293 |
| 11 | Grand & 2nd | | 535 | 256 | 17 | 467 | | 149 | 1022 | 668 | | | |
| 12 | Grand & 3rd | 274 | 410 | | | 170 | 121 | | | | 314 | 634 | 141 |
| 13 | Grand & 4th | 103 | 383 | 65 | 80 | 178 | 46 | 17 | 181 | 103 | 10 | 214 | 80 |
| 14 | Grand & 5th | 180 | 300 | | | 195 | 55 | 22 | | 109 | | | |
| 15 | Grand & Mission | 165 | 135 | 22 | 55 | 183 | 61 | 51 | 267 | 47 | 20 | 225 | 51 |
| 16 | Lincoln & 2nd | | 265 | 332 | 104 | 225 | | 197 | 1985 | 35 | | | |
| 17 | Lincoln & 3rd | 38 | 313 | | | 312 | 184 | | | | 83 | 1238 | 110 |
| 18 | Lincoln & 4th | 24 | 365 | 34 | 37 | 354 | 60 | 37 | 332 | 61 | 81 | 324 | 46 |
| 19 | Lincoln & 5th | 19 | 387 | 42 | 35 | 364 | 49 | 59 | 412 | 40 | 47 | 413 | 43 |
| 20 | Lincoln & Mission | 5 | 444 | 40 | 29 | 373 | 358 | 274 | 469 | 16 | 59 | 591 | 89 |
| 21 | A & 2nd | | 310 | 12 | 118 | 70 | | 105 | 1713 | 150 | | | |
| 22 | A & 3rd | 257 | 158 | | | 118 | 48 | | | | 70 | 1363 | 68 |
| 23 | A & 4th | 43 | 174 | 51 | 34 | 91 | 31 | 33 | 292 | 31 | 15 | 347 | 37 |
| 24 | A & 5th | 66 | | 178 | | | | | 751 | 63 | 93 | 620 | |
| 25 | Tamalpais & 2nd | | | | 70 | 128 | | | 2418 | 27 | | | |
| 26 | Tamalpais & 3rd | | | | | | | | | | 198 | 1431 | 18 |
| 27 | Lindaro & 2nd | | 109 | 365 | 91 | 146 | | 40 | 1761 | 42 | | | |
| 28 | Lindaro & 3rd | 125 | 24 | | | 18 | 14 | | | | 219 | 1362 | 32 |
| 29 | Cijos & 4th | 19 | | 69 | | | | | 361 | 22 | 32 | 376 | |
| 30 | Lootens & 4th | 22 | 56 | 43 | 17 | 52 | 22 | 24 | 323 | 30 | 18 | 355 | 22 |
| 31 | Court & 4th | | | | | | | | 377 | | | 399 | |
| 32 | Court & 5th | 11 | 5 | 60 | 25 | 12 | 248 | 436 | 463 | 30 | 23 | 454 | 26 |
| 33 | Court & Mission | 20 | | 447 | | | | | 315 | 15 | 270 | 682 | |
| 34 | Tamalpais & 5th | | | | | | | 1 | 488 | | 4 | 503 | 11 |
| 35 | 5th Ave & E Tamalpais Ave | 6 | 11 | 15 | | | | | 488 | | | 512 | 1 |
| 36 | Ritter & 3rd | 153 | | | | | | | | | | 1460 | |
| 37 | Lincoln & Ritter | 111 | 351 | | 24 | 329 | 42 | | | | | | |
| 38 | Nye & 5th | | | | 13 | | 38 | 50 | 498 | | | 465 | 16 |
| 39 | Nye & Mission | 2 | 15 | 49 | 7 | 17 | 36 | 41 | 703 | 18 | 16 | 914 | 24 |
| 40 | Mission Ave & E Tamalpais Ave | 2 | | 10 | | | | | 550 | | | 739 | |
| 41 | Tamalpais & Mission | | | 12 | | | | | 538 | | 2 | 739 | |
| 42 | Tamalpais & 4th | | | 18 | | | | | 403 | | | 451 | |
| 43 | 4th St & E Tamalpais Ave | 2 | 1 | 19 | | | | | 421 | | | 449 | 31 |

Appendix C: Baseline Pedestrian Volumes

| Existing Baseline | | | | | |
|---------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|----------------------|
| Intersection | East X-Walk A.M. [P.M.] | South X-Walk A.M. [P.M.] | West X-Walk A.M. [P.M.] | North X-Walk A.M. [P.M.] | Total A.M. [P.M.] |
| 2nd & A | 12 [12] | 16 [27] | 24 [30] | 16 [18] | 68 [87] |
| 2nd & Grand | 12 [16] | 34 [52] | 18 [39] | - | 64 [107] |
| 2nd & Irwin | 10 [28] | - | - | 31 [36] | 41 [64] |
| 2nd & Lincoln | - | 62 [41] | 15 [23] | 19 [18] | 96 [82] |
| 2nd & Lindaro | 17 [10] | 43 [28] | 5 [4] | 15 [19] | 80 [61] |
| 2nd & Tamalpais | - | - | 66 [78] | 0 [0] | 66 [78] |
| 3rd & A | 55 [50] | 47 [58] | 33 [54] | 43 [50] | 178 [212] |
| 3rd & Grand | 20 [28] | 10 [25] | 7 [40] | 56 [49] | 93 [142] |
| 3rd & Hetherton | - | 14 [35] | 72 [37] | 39 [33] | 125 [105] |
| 3rd & Irwin | 11 [19] | 18 [49] | - | 0 [0] | 29 [68] |
| 3rd & Lincoln | 22 [44] | 22 [69] | 25 [99] | 39 [71] | 108 [283] |
| 3rd & Lindaro | 16 [12] | 22 [30] | - | - | 38 [42] |
| 3rd & Tamalpais | 89 [105] | 87 [105] | 22 [18] | 31 [48] | 229 [276] |
| 4th & A | 2 [38] | 10 [48] | 39 [5] | 34 [93] | 85 [184] |
| 4th & Cijos | 4 [23] | 38 [45] | 12 [28] | - | 54 [96] |
| 4th & Grand | 17 [23] | 23 [43] | 14 [32] | 22 [18] | 76 [116] |
| 4th & Hetherton | 5 [11] | 34 [50] | 24 [16] | 21 [27] | 84 [104] |
| 4th & Irwin | 10 [7] | 25 [22] | 7 [4] | 14 [11] | 56 [44] |
| 4th & Lincoln | 24 [39] | 43 [79] | 49 [132] | 35 [62] | 151 [312] |
| 4th & Lootens | 3 [18] | 24 [105] | 8 [25] | 45 [125] | 80 [273] |
| 4th & Tamalpais | - | 41 [76] | 26 [46] | 19 [40] | 86 [162] |
| 5th & A | 5 [5] | 7 [15] | 14 [5] | - | 26 [25] |
| 5th & Court | 7 [12] | 9 [25] | 18 [31] | 17 [15] | 51 [83] |
| 5th & Hetherton | 7 [1] | 10 [25] | 12 [14] | 12 [4] | 41 [44] |
| 5th & Irwin | 8 [2] | 5 [6] | 2 [9] | 1 [5] | 16 [22] |
| 5th & Lincoln | 9 [17] | 6 [11] | 27 [34] | 6 [9] | 48 [71] |
| 5th & Tamalpais | - | 9 [15] | 9 [15] | 9 [6] | 27 [36] |
| Mission & Hetherton | 0 [0] | 11 [14] | 10 [13] | 5 [2] | 26 [29] |
| Mission & Irwin | 10 [3] | 11 [13] | 0 [4] | - | 21 [20] |
| Mission & Lincoln | 23 [33] | 11 [9] | 12 [15] | 4 [6] | 50 [52] |
| Mission & Tamalpais | 0 [0] | 14 [11] | 2 [13] | 1 [6] | 17 [30] |

San Rafael Transportation Center Relocation Analysis,
Environmental Clearance and Preliminary Design

| Year 2040 Baseline | | | | | |
|---------------------|----------------------------|-----------------------------|----------------------------|-----------------------------|----------------------|
| Intersection | East X-Walk A.M. [P.M.] | South X-Walk A.M. [P.M.] | West X-Walk A.M. [P.M.] | North X-Walk A.M. [P.M.] | Total A.M. [P.M.] |
| 2nd & A | 15 [12] | 20 [28] | 30 [32] | 20 [19] | 84 [91] |
| 2nd & Grand | 13 [18] | 36 [56] | 19 [42] | - | 68 [116] |
| 2nd & Irwin | - | 33 [39] | 10 [30] | - | 43 [69] |
| 2nd & Lincoln | - | 76 [43] | 19 [24] | 24 [19] | 118 [86] |
| 2nd & Lindaro | 21 [10] | 53 [30] | 6 [4] | 19 [20] | 99 [64] |
| 2nd & Tamalpais | - | - | 81 [83] | - | 81 [83] |
| 3rd & A | 67 [53] | 58 [62] | 41 [57] | 53 [53] | 218 [224] |
| 3rd & Grand | 21 [31] | 10 [27] | 7 [43] | 59 [53] | 97 [154] |
| 3rd & Hetherton | - | 17 [36] | 88 [39] | 48 [35] | 153 [110] |
| 3rd & Irwin | 11 [21] | 19 [53] | - | 0 | 30 [121] |
| 3rd & Lincoln | 27 [0] | 27 [73] | 31 [104] | 48 [75] | 133 [253] |
| 3rd & Lindaro | 20 [12] | 27 [32] | - | - | 47 [44] |
| 3rd & Tamalpais | 109 [111] | 107 [111] | 28 [19] | 38 [51] | 281 [292] |
| 4th & A | 3 [40] | 13 [50] | 48 [5] | 42 [99] | 105 [194] |
| 4th & Cijos | 5 [24] | 47 [48] | 15 [30] | - | 67 [101] |
| 4th & Grand | 18 [25] | 25 [47] | 15 [35] | 23 [19] | 80 [125] |
| 4th & Hetherton | 6 [12] | 42 [53] | 30 [17] | 26 [29] | 103 [110] |
| 4th & Irwin | 11 [8] | 26 [24] | 7 [4] | 15 [12] | 59 [47] |
| 4th & Lincoln | 30 [41] | 53 [84] | 60 [140] | 43 [66] | 186 [330] |
| 4th & Lootens | 4 [13] | 30 [111] | 10 [26] | 55 [132] | 98 [288] |
| 4th & Tamalpais | 0 [0] | 51 [81] | 32 [49] | 24 [42] | 106 [171] |
| 5th & A | 6 [6] | 8 [18] | 17 [6] | - | 31 [30] |
| 5th & Court | 8 [15] | 11 [30] | 21 [37] | 20 [18] | 60 [100] |
| 5th & Hetherton | 8 [1] | 12 [30] | 14 [17] | 14 [5] | 48 [53] |
| 5th & Irwin | 10 [2] | 6 [6] | 3 [10] | 1 [5] | 19 [23] |
| 5th & Lincoln | 11 [21] | 7 [13] | 31 [41] | 7 [11] | 56 [86] |
| 5th & Tamalpais | 0 [0] | 11 [18] | 11 [18] | 11 [8] | 32 [44] |
| Mission & Hetherton | - | 13 [17] | 12 [16] | 6 [3] | 31 [35] |
| Mission & Irwin | 12 [3] | 13 [14] | 0 [4] | - | 25 [21] |
| Mission & Lincoln | 26 [27] | 13 [11] | 14 [18] | 5 [7] | 58 [63] |
| Mission & Tamalpais | - | 17 [14] | 3 [16] | 1 [7] | 20 [37] |