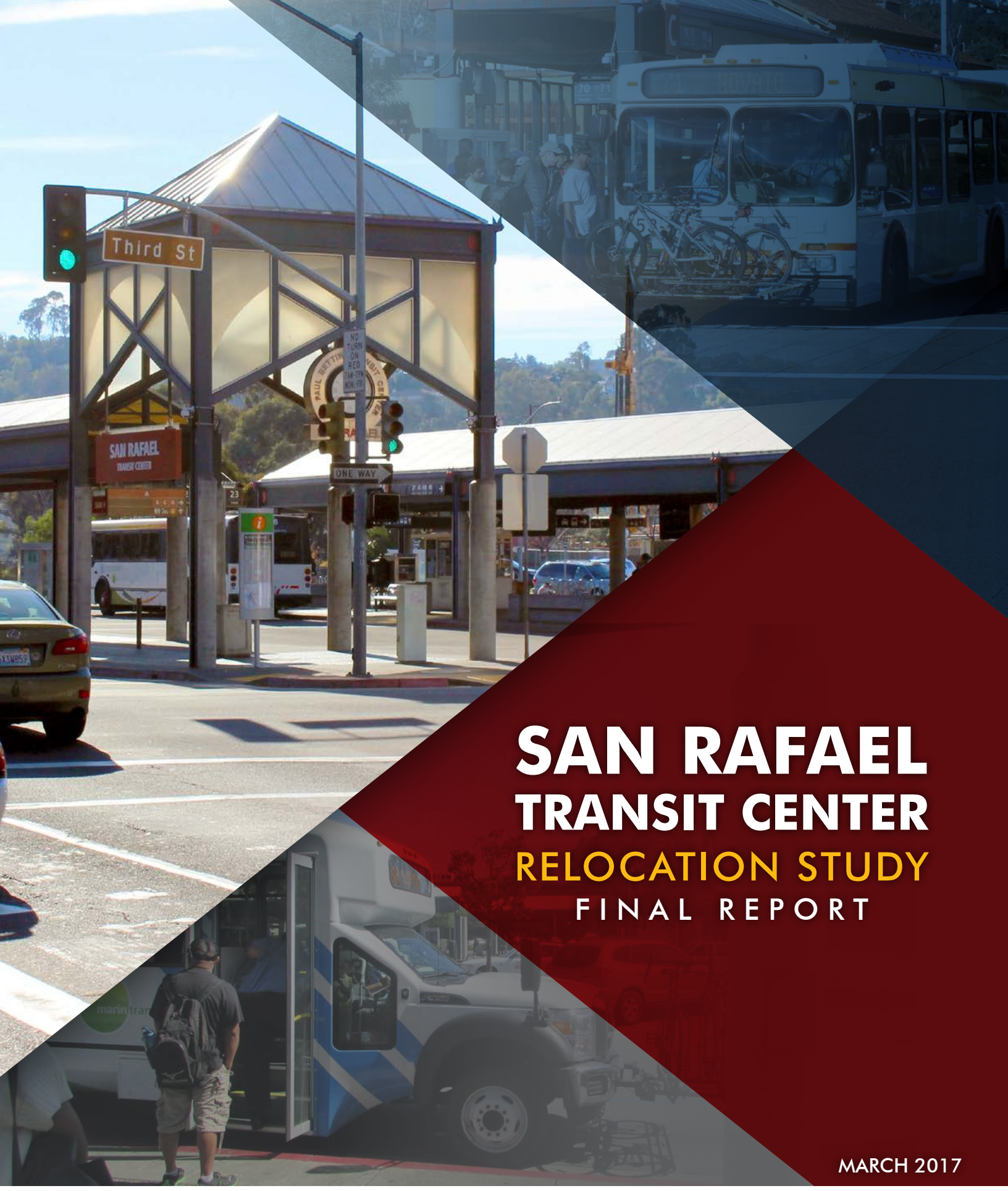

SAN RAFAEL TRANSIT CENTER RELOCATION STUDY

FINAL REPORT

MARCH 2017

Golden Gate Transit

marin transit

City of San Rafael California

TAM Transportation Authority of Marin

Sonoma-Marin SMART Area Rail Transit

MTC Metropolitan Transportation Commission

Kimley»Horn

SAN RAFAEL TRANSIT CENTER RELOCATION STUDY

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SAN RAFAEL TRANSIT CENTER RELOCATION STUDY

ES EXECUTIVE SUMMARY

San Rafael Transit Center ("SRTC"), also known as the C. Paul Bettini Transit Center, is a major regional transit hub for Marin County. Located in Downtown San Rafael, the 16-bay transit center primarily serves bus routes operated by Golden Gate Transit and Marin Transit, but is also used by Sonoma County Transit, Sonoma County Airport Express, Marin Airporter, Greyhound, and taxis. SRTC experiences nearly 9,000 total daily boardings and alightings on weekdays, served by over 500 bus trips daily. The transit center site is owned by the Golden Gate Bridge, Highway and Transportation District, which operates Golden Gate Transit regional and inter-county transit services.

The Sonoma-Marin Area Rail Transit ("SMART") system is a new passenger rail service that is scheduled to begin operations for phase 1 service between Sonoma County Airport and Downtown San Rafael in 2017. The second phase of the SMART project will extend rail service from San Rafael to Larkspur. It will utilize right-of-way within the existing transit center, thus requiring modifications to the transit center to maintain existing bus services. Two phases of solutions are needed for the transit center: 1) an immediate set of modifications to be implemented by the start of construction of SMART Phase 2 to maintain existing service at the transit center; and 2) a longer-term solution to provide a similar or higher level of customer convenience and service flexibility as the existing SRTC.

This study used technical analysis, design feasibility evaluation, and stakeholder input to develop alternatives for a new transit center solution in downtown San Rafael that would address near-term and long-term transit needs while accommodating the implementation of SMART.

Project Purpose

SMART's Phase 1 segment will provide rail service between Sonoma County Airport and Downtown San Rafael. Phase 1, the Initial Operating Segment (IOS), terminates at the Downtown San Rafael station, located north of the existing transit center between 3rd and 4th Streets. SMART's Larkspur Extension (Phase 2) will extend rail service from San Rafael to Larkspur and will construct two sets of tracks through the middle of the existing SRTC site, which impacts bus operations, site functionality, and transit center capacity. SMART Phase 2 will eliminate existing bus platforms, inhibit some bus turning movements, increase queuing during train crossing events, create additional pedestrian activity in the transit center area, and channelize pedestrian circulation within the transit center area. This creates a need for a new transit center configuration in downtown San Rafael that would maintain or enhance the bus service and transfer capabilities of the existing site.

The existing transit center is nearing its capacity as nearly all bus bays are occupied during pulse times in peak periods. A new transit center site is needed to allow for future expansion of the transit network in Marin County, while providing a desirable experience for the transit customer.

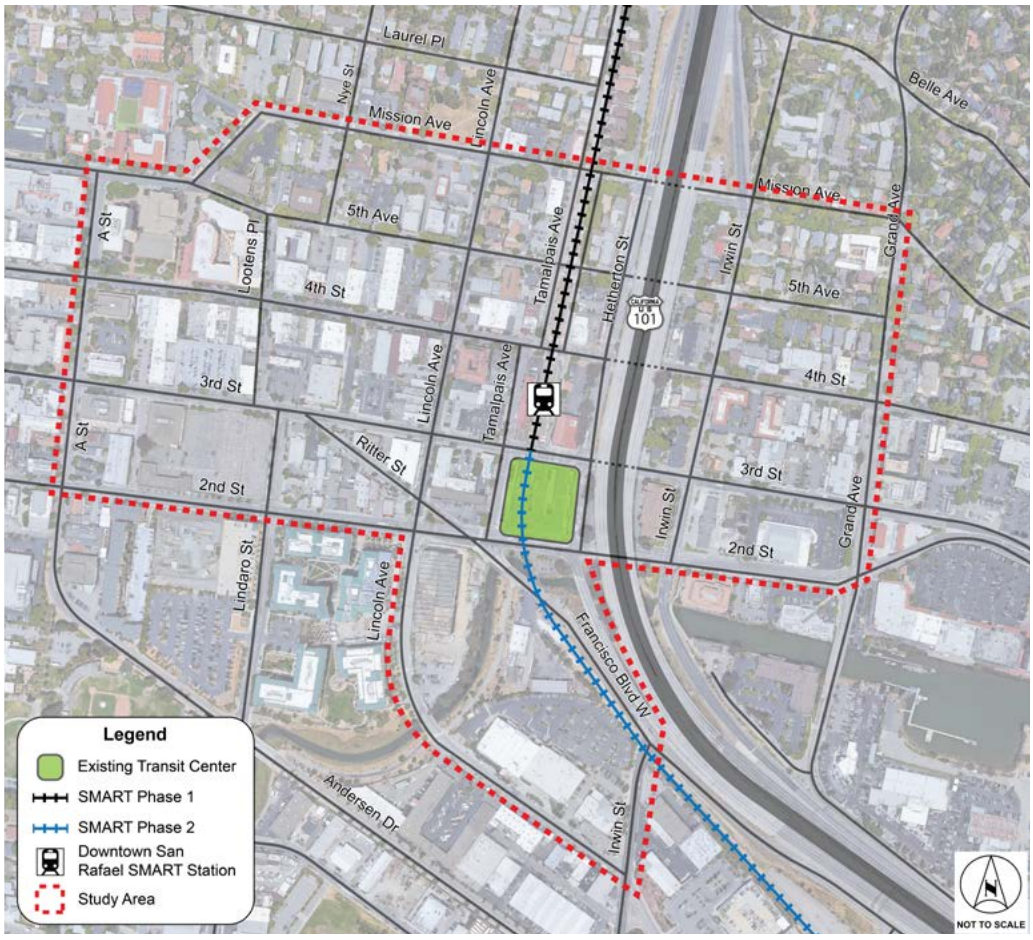
This study sought to identify transit center solutions to address the near-term and long-term needs of transit riders, operators, and agencies. Through a cooperative, multi-agency stakeholder process, the project achieved two main objectives:

1. Identify a near-term solution to maintain existing transit service levels with the start of construction and future operation of SMART Phase 2
2. Identify long-term alternatives for a transit center location and configuration in Downtown San Rafael that would enhance the functionality and desirability of transit service in this area

Study Area and Project Process

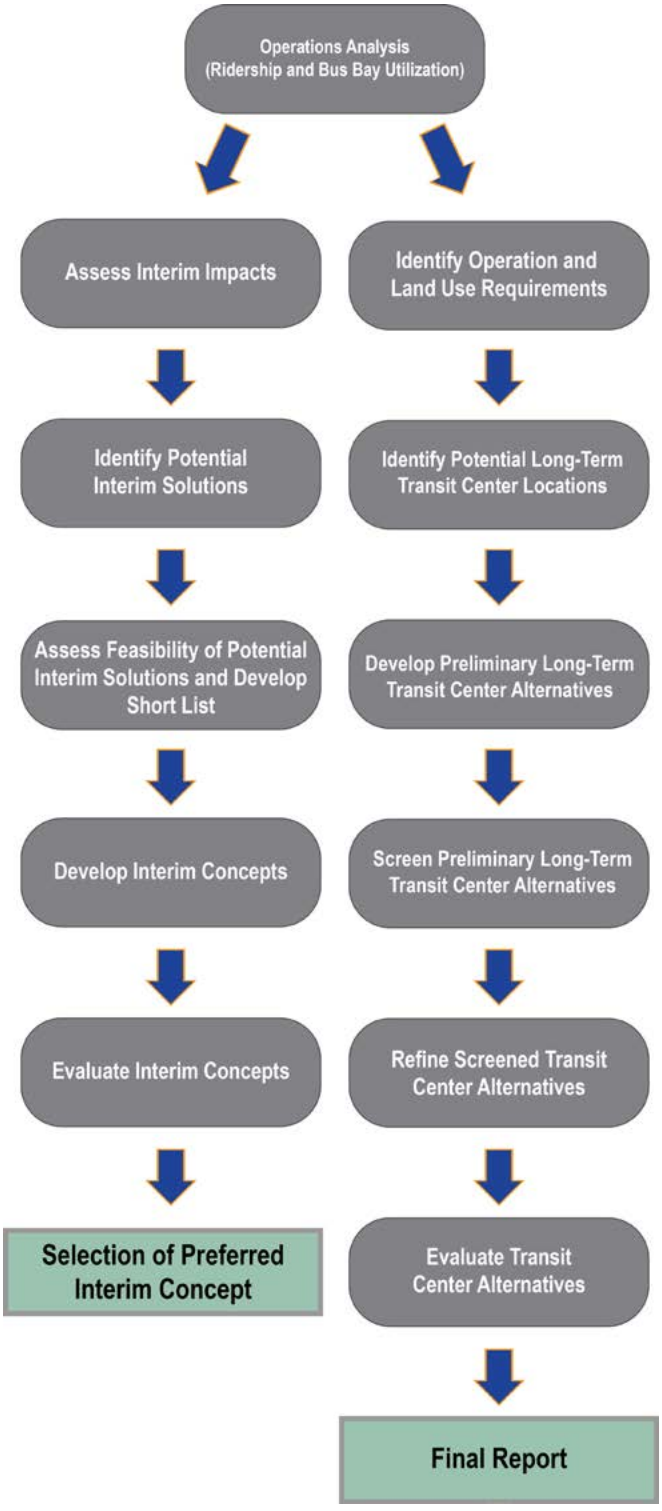
The location of the existing transit center provides a number of operational and user benefits based on its placement at the intersection of major east-west and north-south regional transportation corridors including US-101, SMART, and 2nd/3rd Streets. It also serves downtown San Rafael, which is within walking distance of the current facility. The existing transit center is located adjacent to the heavily trafficked and congested downtown corridors of 2nd Street, 3rd Street, and Hetherton Street. Existing transit ridership is roughly evenly divided between local riders (whose origin or destination is in downtown San Rafael or Montecito) and riders transferring between local and regional bus routes at the transit center. This contributes to the need to continue to provide a major bus transit hub in the vicinity of the current facility. The project study area considered for interim and long-term solutions is shown in **Figure ES-1**.

Figure ES-1: Project Study Area



The project was completed following the general process shown in **Figure ES-2**. Technical analysis and stakeholder input were used to identify the greatest needs and then identify recommended solutions.

Figure ES-2: Project Flow Chart



The project was guided by three tiers of multi-agency coordination groups comprised of the City of San Rafael ("the City"), Golden Gate Transit, Marin Transit, the Transportation Authority of Marin (TAM), the Metropolitan Transportation Commission (MTC), and SMART. The first tier, the project technical group comprised of members at the agency staff level, met monthly throughout the duration of the project to review project deliverables, coordinate ongoing efforts for each agency, and implement project guidance. This group was referred to as the "Joint Project Team" (JPT). The second tier, a project management group at the agency management level (General Managers and City Manager), met as-needed at critical project decision-points to review project direction and provide project guidance. The third tier, a policy advisory group at the elected official level, met at three points during the project to receive project updates and inform the project process. All three tiers included representatives of each participating agency. The City's Bicycle Pedestrian Advisory Committee

Project status updates and alternatives were provided in public forums to agency stakeholder boards and committees by Kimley-Horn during the span of the projects. Presentations were made to the Marin Transit Board (3 presentations), Golden Gate Bridge, Highway & Transportation District Transportation Committee (3 presentations), and San Rafael City Council (1 presentation). Additional presentations were made by agency staff to the board of the Transportation Authority of Marin, as well as various committees and commissions of the City of San Rafael.

At the start of the project, existing conditions and operations at the SRTC were evaluated to identify facility requirements for a new transit center. Throughout the duration of the project, a major focus was placed on identifying and refining the interim solution. With the approaching start of construction of SMART Phase 2, identifying a near-term solution that would allow for uninterrupted operation of existing bus services was paramount. The project team and stakeholder agencies prioritized finding an interim solution that was acceptable to all parties and minimized impacts to transit services, transit riders, and City streets.

A set of eleven preliminary alternatives were developed for a long-term transit center solution. Locations were selected from the needs identified by the existing conditions analysis and land use requirements. Concept maps showing the parcels utilized, an estimated number of bus bays, and bus access/egress patterns for each transit center alternative were prepared and presented to the JPT. Agency staff provided input on the preliminary alternatives to help refine them further and two of the eleven alternatives were removed from further consideration because they did not meet basic project requirements.

The nine remaining preliminary alternatives were then evaluated against a set of screening criteria agreed upon by the JPT. Consideration was given to land requirements and acquisition cost, bus operations, site functionality, connectivity, and local circulation. Kimley-Horn prepared a qualitative evaluation matrix identifying how each alternative scored against the screening criteria. Based on this evaluation, the JPT and project management groups agreed to carry forward three of the nine preliminary alternatives to further development and evaluation.

The three preliminary alternatives carried forward were then developed in further engineering detail. Concept-level plan view drawings were created for each alternative. The conceptual designs included curb lines, driveway locations, bicycle and pedestrian facilities, and space for customer service or transit-related land uses. Changes to the local street network were identified and shown in the concepts. Opinions of probable cost were prepared. The alternatives were further refined based on input from the JPT and project management groups. A real estate analysis was performed to assess the reuse potential and land value of the existing transit center site.

After finalizing the three refined alternatives, Kimley-Horn prepared an evaluation matrix identifying how each alternative scored against a set of detailed evaluation criteria agreed upon by the JPT. Included in this evaluation was analysis of land acquisition and construction cost; development potential; traffic impacts; bus operations; connectivity to downtown and other transit services; bus operations; and bicycle and pedestrian access.

Interim Solution

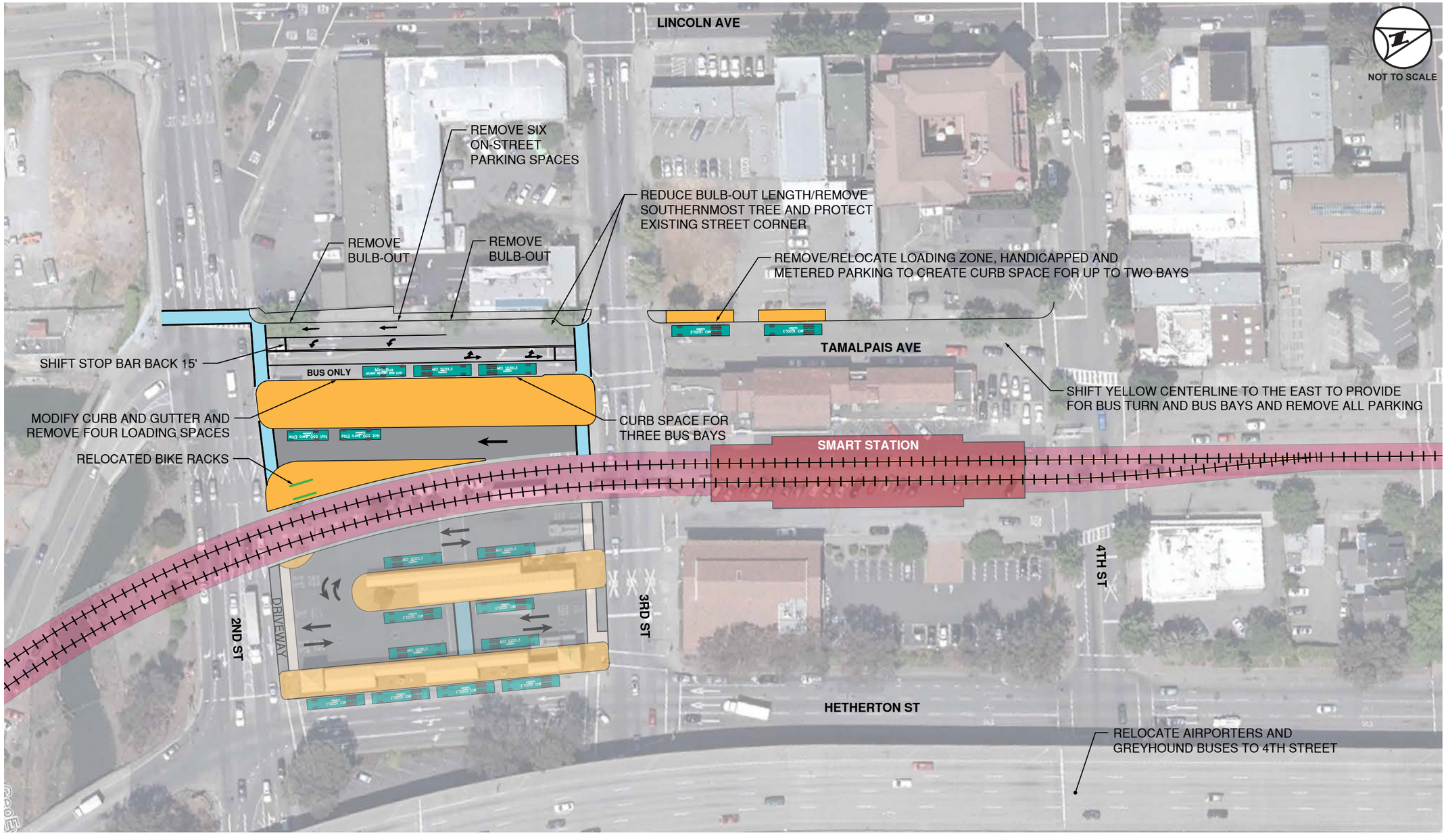
While this report focuses on the long-term alternatives development process and findings in order to guide subsequent efforts on the long-term transit center, a significant component of this project was the development of an interim solution. This required assessing the impacts of SMART Phase 2 construction on the existing transit center, including its effects on bus bay availability, internal circulation, pedestrian circulation, and transit center access. After identifying the impacts, the project team translated those impacts to needs, in terms of number of bays/linear feet of curb needed to replace the impacted portions of the transit center.

Tamalpais Avenue between 2nd and 3rd Streets

To address the identified needs, the project team considered numerous locations within several blocks of the existing transit center as part of the interim solution. Detailed concept plans were developed for locations deemed feasible from transit operations, customer experience, street impact, safety and implementation perspectives. These concept plans were vetted and refined with input from each of the three tiers of the project's agency coordination groups to minimize impact to operations and traffic circulation. The interim concepts were evaluated and cost estimates prepared. A final interim concept was developed based on the evaluation and stakeholder input.

The final interim concept is shown in **Figure ES-3**. The interim concept modifies Tamalpais Avenue to provide three bus bays along northbound Tamalpais Avenue between 2nd and 3rd Streets and two bus bays along southbound Tamalpais Avenue between 3rd and 4th Streets. All parking on these two blocks is removed. The new bus bays will include shelters, benches, security elements, and concrete bus pads. Signal modifications are needed at Tamalpais Avenue & 2nd Street to accommodate changes to curbs and a shift in lane alignment, and at Tamalpais Avenue & 3rd Street to accommodate a bus-only phase and a shift in lane alignment.

Figure ES-3: Interim Concept



Improvements are also included along Cijos Street to facilitate bus access to 4th Street. Since the start of SMART Phase 1 construction, buses exiting the transit center to 4th Street have had to circuitously route through the US-101 interchange area due to geometric constraints on turning movements along 3rd Street. In order to provide a more direct path of travel from the transit center to 4th Street, reduce traffic through the interchange area, and reduce transit travel times, an improvement is recommended to increase the curb radius at the northeast corner of Cijos Street & 3rd Street to allow for a bus turning movement. This will result in the loss of up to three on-street metered parking spaces on the east side of Cijos Street, up to two off-street parking spaces in the adjacent City-owned lot, and potentially one metered on-street parking space on 4th Street. Curb modifications will be needed along 4th Street between Hetherton Street and Irwin Street (beneath US-101) to relocate airporter and Greyhound services to both sides of the street on that block.

The projected cost of the interim solution is $3.25 Million. An additional $200,000 is estimated to be required after the long-term solution is constructed to remove the interim improvements along Tamalpais Avenue. The improvements along Cijos Street and 4th Street may remain, depending on the configuration and location of the long-term solution.

To address alignment challenges south of the transit center, a modified track alignment was provided by SMART in August 2016 that changed the area of impact from SMART Phase 2 through the transit center. The effects of the modified alignment on the transit center were tested in the field using transit vehicles operated by Golden Gate Transit and Marin Transit. The field test indicated that the modified alignment created additional impacts beyond those initially identified by Kimley-Horn. Agencies partnered to reconfigure bus bay assignments to maintain the feasibility of the interim solution with the new alignment.

The construction of the interim concept would have the following primary outcomes:

- Three new bus bays would be constructed along northbound Tamalpais Avenue between 2nd and 3rd Streets and two new bus bays would be constructed along southbound Tamalpais Avenue between 3rd and 4th Streets;
- The curb radius at the northeast corner of Cijos Street & 3rd Street would be increased, and up to three on-street parking spaces on Cijos Street and one on-street parking space on 4th Street would be removed;
- Bus operations would be allowed to continue at or near the current transit center site, but with some bus routes modified to accommodate a new bay configuration;
- All on-street parking on Tamalpais Avenue from 2nd Street to 4th Street would be removed;
- The existing pick-up/drop-off space adjacent to the transit center on the east side of Tamalpais Avenue between 2nd and 3rd Streets and the loading area on the east side of Tamalpais Avenue between 3rd and 4th Streets would be removed;
- The existing bicycle parking at the transit center would be relocated;
- The existing roadway capacity near the transit center would be maintained; and
- The traffic signal at 3rd Street/Tamalpais Avenue would be modified to include a bus-only phase.

The interim concept results in a number of buses berthing on City streets in the area surrounding the transit center. While functional, this is less desirable than the existing condition for bus operations and for the transit user experience. It also impacts parking availability in downtown San Rafael and adds friction to City streets. This project examined and evaluated a wide range of interim solution alternatives, each with a greater negative impact than the recommended interim solution. For these reasons, both the transit operators and the City are committed to expeditiously pursuing a long-term transit center solution in downtown San Rafael and minimizing the duration of the interim solution.

Long-Term Alternatives Considered

A set of eleven preliminary transit center alternatives were developed and screened down to three final long-term alternatives to undergo further refinement and evaluation. For continuity with the preliminary screening effort, the final transit center alternatives are numbered 2, 4, and 5 to match the numbering system used for the eleven initial alternatives. Descriptions of these refined alternatives are provided below.

Alternative 2 – Citibank Site plus Portion of Existing Site

Figure ES-4 depicts the configuration of Alternative 2. This concept utilizes two sites: the existing portion of San Rafael Transit Center east of the SMART tracks, plus the parcel located across 3rd Street ("Citibank site"). In this configuration, driveways would be located on 2nd, 3rd, and 4th Streets. A total of 17 bus bays would be provided. Four curbside bus bays would be located on Hetherton Street between 2nd Street and 3rd Street to accommodate routes coming to and from US-101. This alternative includes an overhead pedestrian crossing across 3rd Street to provide a grade-separated pedestrian connection between the two portions of the transit center.

The provision of a pedestrian overcrossing above 3rd Street would serve a critical pedestrian need for transfers between bus routes serving the different blocks of the transit center and between bus routes and SMART. The Hetherton Street/3rd Street intersection is a high-volume intersection with a high rate of collisions. However, the longer path of travel and vertical circulation required to utilize the overcrossing is likely to result in a significant contingent of transferring riders to instead continue to utilize the at-grade signalized crosswalk, reducing the ability of the overcrossing to address one of the fundamental challenges with this alternative. The evaluation and cost estimates for Alternative 2 included in this study assume inclusion of the overhead pedestrian crossing; however, it is not a requirement of this alternative.

Alternative 4 – 5th Avenue to 3rd Street

Figure ES-5 depicts the configuration of Alternative 4. This concept utilizes the Citibank site, plus the area bounded by the SMART tracks, 5th Avenue, Hetherton Street, and 4th Street. The alternative requires vacancy of East Tamalpais Avenue between 3rd Street and 5th Avenue. In this configuration, driveways would be located on 3rd Street, 4th Street, and 5th Avenue. A total of 16 bus bays would be provided. Two of those bays would be located on a raised transit island on Hetherton Street north of 4th Street.

Alternative 5 – Mission to 4th Street

Figure ES-6 depicts the configuration of Alternative 5. This concept would create one continuous site bounded by Tamalpais Avenue, 4th Street, Hetherton Street, and Mission Avenue. The alternative requires vacancy of the existing East Tamalpais Avenue between 4th Street and Mission Avenue. In this configuration, 5th Avenue would be closed to vehicle traffic between West Tamalpais Avenue and Hetherton Street. A total of 20 bus bays would be provided, including two curbside bus bays on the east side of West Tamalpais Avenue south of Mission Avenue and four curbside bus bays on the west side of Hetherton Street north of 5th Avenue.

This alternative could allow for the Downtown San Rafael SMART Station to be relocated into the transit center site. A relocated SMART station would provide a fully consolidated transit center and allow for a longer SMART train consist. The short length of the platform at the current Downtown San Rafael SMART station limits the current SMART train consist systemwide to a maximum of three cars. The relocated station would allow for train consists of up to five cars, increasing the capacity of the overall SMART system.

The relocation of the SMART station would require further analysis to assess its feasibility and cost; therefore, while noted as an opportunity unique to Alternative 5, it is not assumed for the purposes of the cost estimate and evaluation in this report. An outline is shown in **Figure ES-6** to illustrate the footprint of a potential relocated and lengthened SMART station platform within the transit center.

Figure ES-4: Alternative 2 Layout

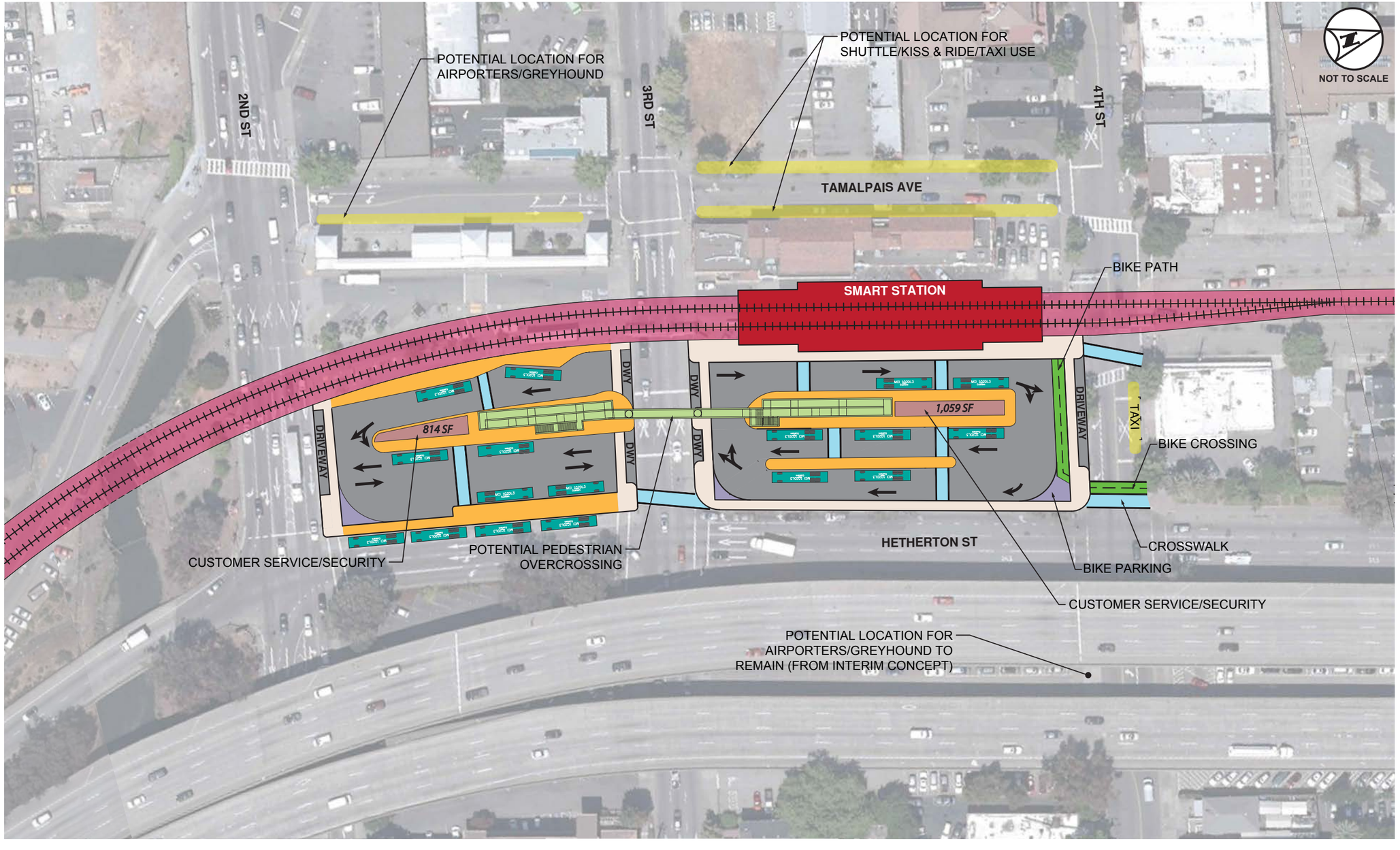


Figure ES-5: Alternative 4 Layout

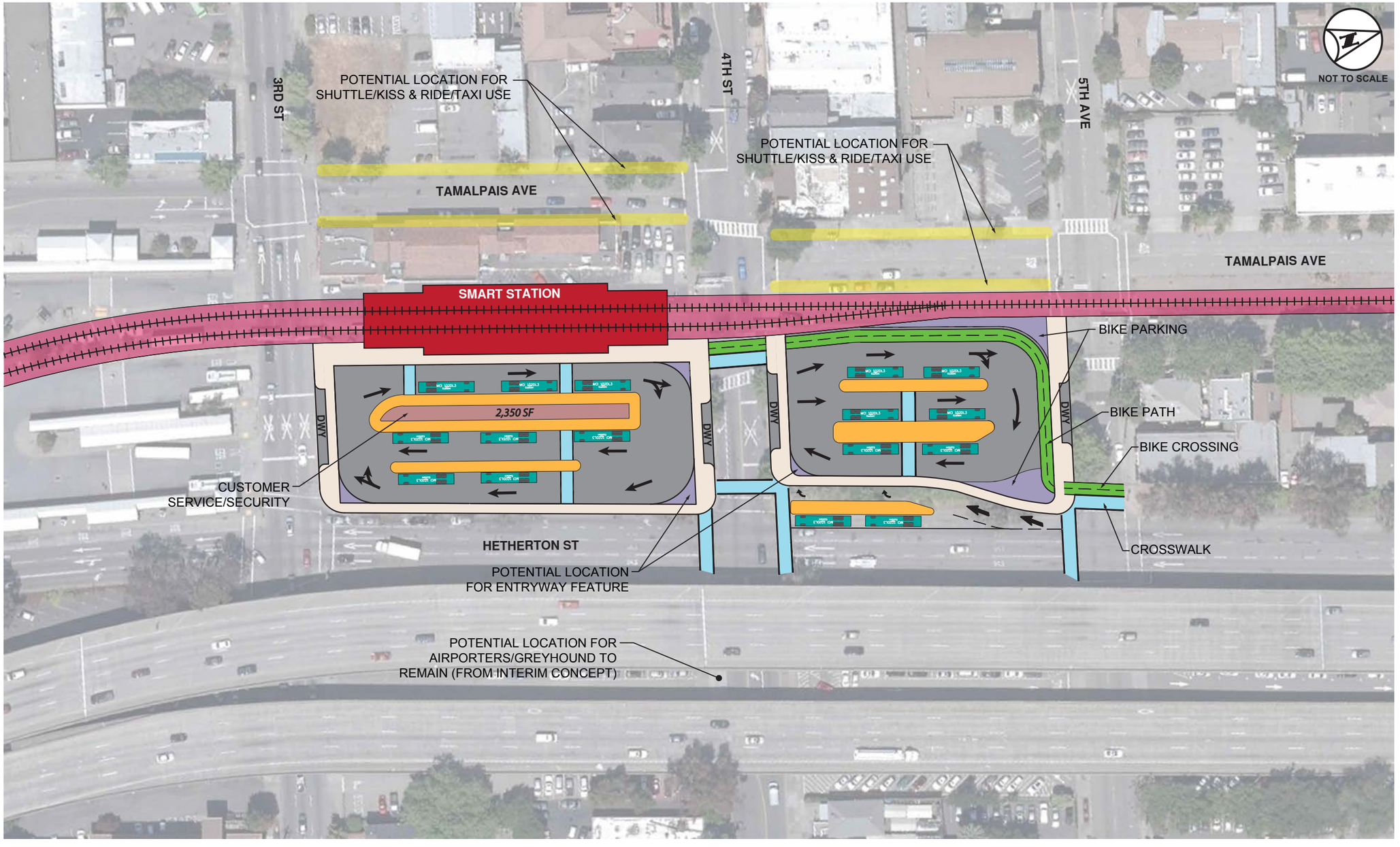
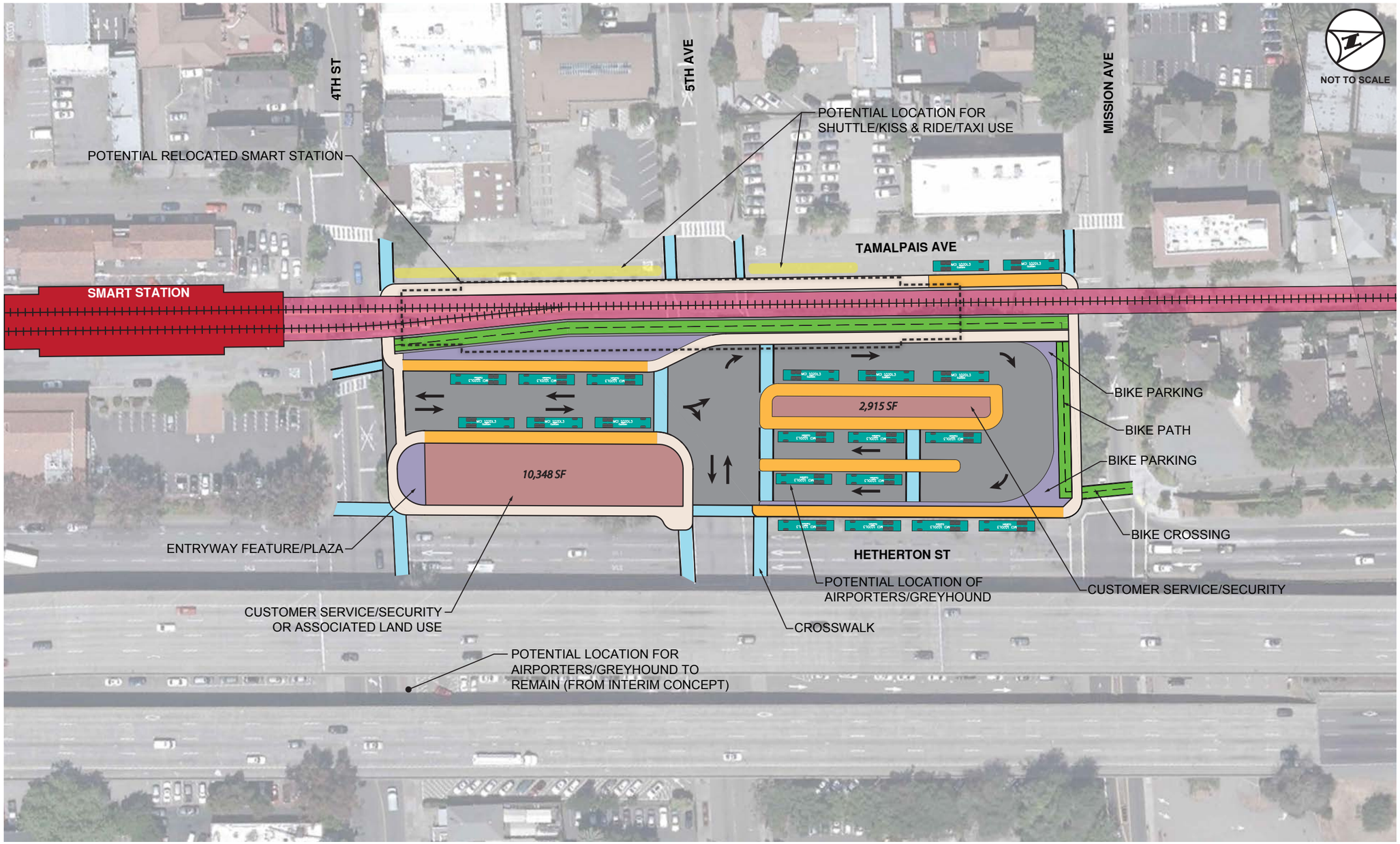


Figure ES-6: Alternative 5 Layout



Long-Term Alternatives Evaluation

There are various relative advantages and disadvantages associated with each of the long-term alternatives. All alternatives represent an improvement to the interim conditions by providing additional bus bays, removing buses from berthing on public streets, reducing out-of-direction travel for buses, improving wayfinding for users, restoring parking loss with the interim concept, and providing an increased customer service area. **Table ES-1** briefly summarizes the trade-offs associated with the various alternatives.

Table ES-1: Long-Term Alternatives Evaluation Summary

Alternative	Description	Advantages	Disadvantages
Alternative 2	• Uses eastern portion of existing transit center, plus the Citibank site • Closes E Tamalpais Avenue between 3rd and 4th Streets • Pedestrian overcrossing over 3rd Street • Maintains existing curbside bus bays on Hetherton Street • Transit center driveways on 2nd, 3rd, 4th Street	• Requires minimal property acquisition • Lowest cost of the three long-term alternatives • Least amount of bus route alignment diversion	• Poor location for pedestrian circulation and access, introducing new hazards for patrons transferring between routes • Safety and delay concerns at major downtown congestion points • Inadequate space for customer service and other transit-related uses
Alternative 4	• Uses the Citibank site, plus the block bound by SMART tracks, 5th Avenue, Hetherton Street, and 4th Street • Closes E Tamalpais Avenue between 3rd Street and 5th Avenue • Two bus bays on an island platform on Hetherton Street • Driveways on 3rd Street, 4th Street, and 5th Avenue	• Beneficially located for pedestrian and bicycle access to SMART and Downtown San Rafael • Introduces transfers across 4th Street, more desirable than across 3rd Street	• Least flexibility to accommodate future changes or expansion of bus service • Most difficult for buses to access/egress site due to constrained driveway locations and limited bays along Hetherton St
Alternative 5	• Continuous site bound by SMART tracks, 4th Street, Hetherton Street, and Mission Avenue • Closes E Tamalpais Avenue between 4th Street and Mission Avenue • Closes 5th Avenue between SMART tracks and Hetherton Street • Four curbside bus bays on Hetherton Street • Two curbside bus bays on W Tamalpais Avenue	• Allows for a fully consolidated site for bus operations • Provides significant additional space for future bus service expansion and transit-related land uses • Optimal location and site for pedestrian safety and circulation • May reduce congestion in 2nd Street/3rd Street/ Hetherton Street area	• Requires more property acquisition than other alternatives • Highest cost of the three long-term alternatives • Closure of 5th Avenue at SMART tracks may worsen congestion in downtown San Rafael by redistributing traffic to other downtown streets • Likely most difficult to implement due to traffic and property acquisition challenges

For all three alternatives, high/medium/low ratings were prepared for each evaluation criterion. The evaluation criterion used include:

- **Customer Connectivity (Mode-to-Mode):** Ease and safety of transfers between bus routes and between bus and SMART. Long distances and barriers such as street crossings negatively impacted customer connectivity. This also includes access to the customer service area.
- **Pedestrian Access Comfort/Accessibility:** Convenience and safety of access for pedestrians to the transit center. Over half of all boardings at the transit center are associated with trips originating from downtown San Rafael and Montecito.
- **Traffic:** Effects on traffic and parking in the area around the transit center. Ratings based on traffic analysis provided by the City of San Rafael.
- **Bus Operations:** Includes several factors such as: efficiency of bus routing into and out of the transit center, flexibility for future changes in service, space for customer service and security, and delays to buses accessing/egressing the transit center.
- **Community Impacts/Implementation:** Significance of barriers to implementation. This is primarily associated with right-of-way acquisition, business relocation, and cost. Alternatives with lower costs and fewer anticipated property acquisition impacts are rated higher.
- **SRTC Redevelopment Potential:** The ability to redevelop the existing transit center site. Only possible with vacating a portion or the entirety of the existing site.
- **Land Acquisition and Construction Cost:** Provides an estimated range based on conceptual design only. Does not include business or resident relocation costs. Costs based on a Year 2022 expenditure (Year 2017 for interim condition).

Table ES-2 summarizes the ratings given to each alternative, where a “high” rating indicates a desirable outcome and a “low” rating indicates an undesirable outcome; ratings are provided for the interim condition to provide a baseline point of comparison against the long-term alternatives. Detailed justifications of these ratings are provided in **Appendix M.**

All three alternatives achieve the minimum land use requirements established by the agency-stakeholder group and are considered operable as they provide a minimum level of accessibility and circulation for transit and pedestrian modes. Feedback provided by members of the City of San Rafael City Council indicate that the City does not support the closure of 5th Avenue in Alternative 5 due to anticipated community impacts. The feasibility of implementation of all long-term alternatives presented may depend on the property acquisition process.

Table ES-2: Interim and Long-Term Alternatives Evaluation Summary

Category	Interim Solution	Alternative 2 2nd to 4th	Alternative 4 3rd to 5th	Alternative 5 4th to Mission
Customer Connectivity (Mode-to-Mode)	Low	Low	Low/Medium	High
Pedestrian Access Comfort/Accessibility	Low/Medium	Low	Medium	High
Traffic*	Low	Medium	Medium	Low/Medium
Bus Operations	Very Low	Medium	Low/Medium	Medium
Community Impacts/Implementation	Medium/High	Medium	Medium	Low
SRTC Redevelopment Potential	N/A	Low	High	High
Land Acquisition and Construction Cost	$3.5 Million	$22-$25 Million	$23-27 Million	$27-$32 Million

**An expanded traffic analysis would be required to comprehensively assess the extent of impacts associated with each alternative.*

Conclusion and Next Steps

The San Rafael Transit Center Relocation Study coordinated a collaborative, multi-agency process to understand the impacts of SMART Phase 2 and identify an agreeable interim solution to maintain transit connectivity while allowing for the extension of SMART to Larkspur. In order to accommodate the construction of SMART Phase 2, which will close Platform C at the existing transit center and inhibit other transit center activities, the completion of the interim solution will be required prior to the start of construction at the transit center of SMART Phase 2 extension to Larkspur. The interim solution includes modifications to Tamalpais Avenue and 4th Street to provide replacement bus bays and Cijos Street to accommodate bus turning radii. SMART will take the lead on the interim concept as it relates to SMART Phase 2 construction. This will include further design development, environmental clearance, and ultimately construction. The design/builder for SMART Phase 2 is planned to be selected in the coming months. Pending an agreement between SMART and Golden Gate Transit, SMART's design/build contractor will be responsible for completing the interim concept design and constructing it prior to the start of construction through the transit center. SMART Phase 2 construction is currently scheduled to start in summer 2017, although when construction will impact the transit center will not be known until after the design/build contractor has prepared a detailed project schedule.

The long-term transit center alternatives will require further analysis and evaluation prior to selection of a preferred alternative. The San Rafael Transit Center Relocation Study identified near-term and long-term transit center needs, facility requirements, and screened potential long-term transit center sites. It provided a technical basis to support the development and evaluation of both interim and long-term transit center concepts. Three alternatives have been identified that achieve the minimum functional needs of the long-term transit center, including functionality for both users and operators. As the project did not include a community engagement process or environmental analysis, this study does not provide a recommendation for a preferred long-term alternative. It is recommended to carry the identified alternatives forward into an environmental process. The environmental process will include additional technical analysis, an extensive stakeholder and public outreach process to further vet and refine the alternatives, and may include the consideration of new alternatives. This process will ultimately lead towards selection of a locally preferred alternative.

SAN RAFAEL TRANSIT CENTER RELOCATION STUDY

1 INTRODUCTION

San Rafael Transit Center ("SRTC"), also known as the C. Paul Bettini Transit Center, is a major regional transit hub for Marin County. Located in Downtown San Rafael, the transit center primarily serves bus routes operated by Golden Gate Transit and Marin Transit, but is also used by Sonoma County Transit, Sonoma County Airport Express, Marin Airporter, and Greyhound. SRTC experiences nearly 9,000 total daily boardings and alightings on weekdays, served by over 500 bus trips daily. The transit center site is owned by the Golden Gate Bridge, Highway and Transportation District, which operates Golden Gate Transit regional and inter-county transit services.

The Sonoma-Marin Area Rail Transit ("SMART") system is a new passenger rail service scheduled to begin operations for phase 1 service between Sonoma County Airport and Downtown San Rafael in 2017. The second phase of the SMART project will extend rail service from San Rafael to Larkspur. It will utilize right-of-way within the existing transit center, thus requiring modifications to the transit center to maintain existing bus services. Two phases of solutions are needed for the transit center. An immediate set of modifications is needed to be implemented by the start of construction of SMART Phase 2 to maintain existing service at the transit center. A longer-term solution is desired to provide a similar or higher level of customer convenience and service flexibility as the existing SRTC.

This study used technical analysis, design feasibility evaluation, and stakeholder input to develop alternatives for a new transit center solution in downtown San Rafael to would address near-term and long-term transit needs while accommodating the implementation of SMART.

1.1. Project Purpose

SMART's Phase 1 segment will provide rail service between Sonoma County Airport and Downtown San Rafael. The impacts of the Phase 1 segment on SRTC are expected be minimal, as the segment terminates at the Downtown San Rafael station, located north of the existing transit center between 3rd and 4th Streets. SMART Phase 2 will extend rail service from San Rafael to Larkspur and will construct two sets of tracks through the middle of the existing SRTC site. The space needed for the tracks and train operations through the transit center impacts bus operations, site functionality, and transit center capacity. This creates a need for a new transit center configuration in Downtown San Rafael to maintain or enhance the bus service and transfer capabilities of the existing site.

The existing transit center is nearing its capacity as nearly all bus bays are occupied during pulse times in peak periods. A new transit center site is needed to allow for future expansion of the transit network in Marin County, while providing a desirable experience for the transit customer.

SAN RAFAEL TRANSIT CENTER RELOCATION STUDY

This study sought to identify transit center solutions to address the near-term, medium-term, and long-term needs of transit riders, operators, and agencies. Through a cooperative, multi-agency stakeholder process, the project achieved two main objectives:

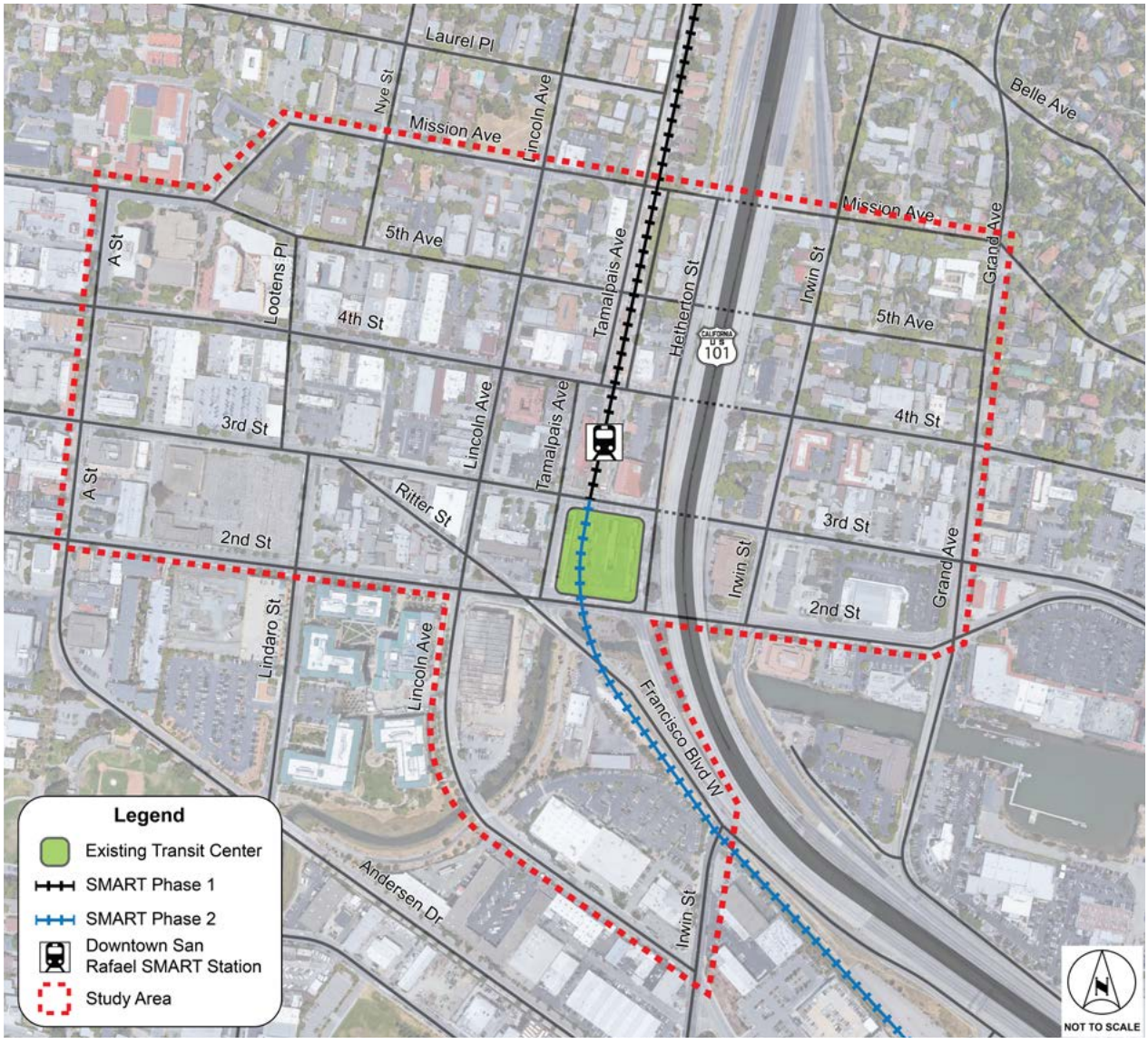
1. Identify a near-term solution to maintain existing transit service levels with the start of construction and future operation of SMART Phase 2
2. Identify long-term alternatives for a transit center location and configuration in Downtown San Rafael that would enhance the functionality and desirability of transit service in this area

2 PROJECT METHODOLOGY

2.1. Study Area

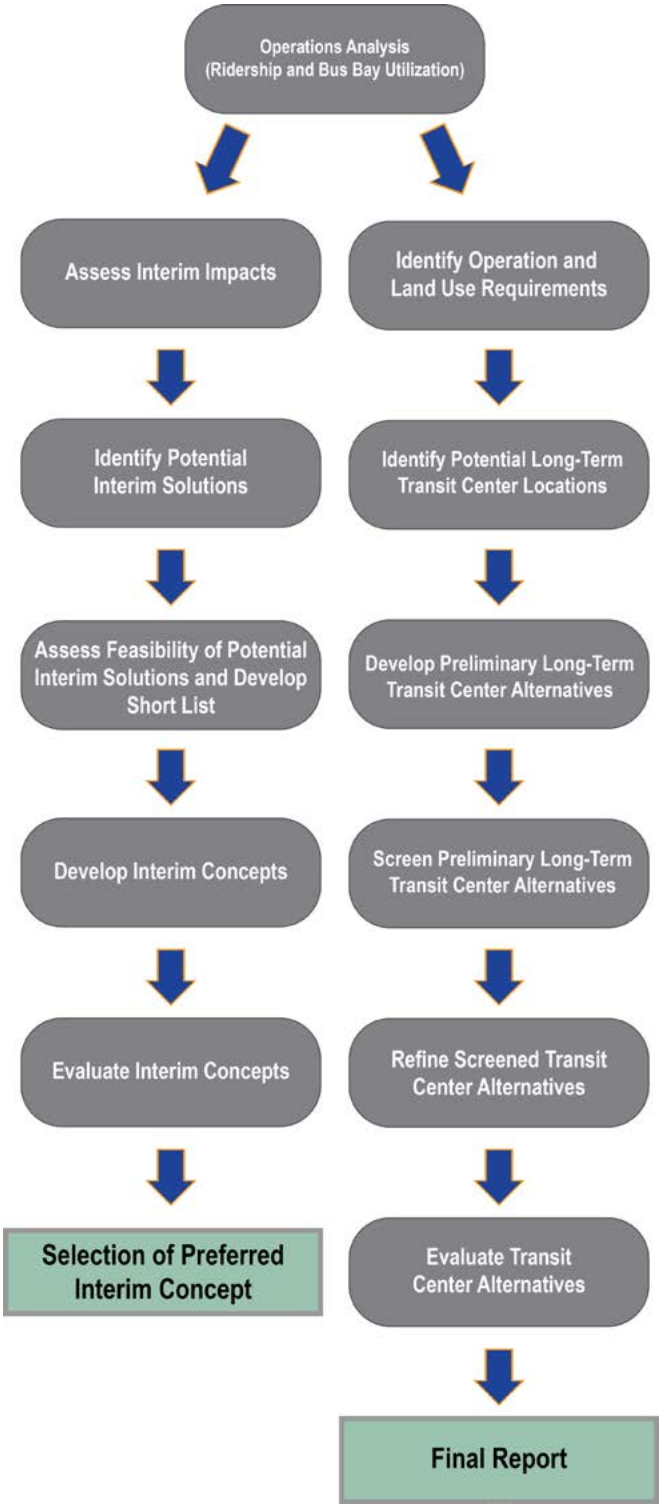
The location of the existing transit center provides a number of operational and user benefits based on its placement at the intersection of major east-west and north-south regional transportation corridors including US-101, SMART, and 2nd/3rd Streets. It also serves downtown San Rafael, which is within walking distance of the current facility. Existing transit ridership is approximately split between local riders (whose origin or destination is in downtown San Rafael and Montecito) and riders transferring between bus routes at the transit center. Thus, it was desired to continue to provide a major bus transit hub in the approximate vicinity of the current facility. The project study area considered for interim and long-term solutions is shown in **Figure 2-1**.

Figure 2-1: Project Study Area



2.2. Project Process

Figure 2-2: Project Flow Chart



The project was completed following the general process shown in **Figure 2-2**. Technical analysis and stakeholder input were used to identify the greatest needs and then identify recommended solutions.

The project was guided by three tiers of multi-agency coordination groups comprised of the City of San Rafael ("the City"), Golden Gate Transit, Marin Transit, the Transportation Authority of Marin (TAM), the Metropolitan Transportation Commission (MTC), and SMART. The project technical group, including members at the agency staff level, met monthly throughout the duration of the project to review project deliverables, coordinated ongoing efforts for each agency, and implement project guidance. This group was referred to as the "Joint Project Team" (JPT). A project management group, at the agency management level (General Managers and City Manager), met as-needed at critical project decision-points to review project direction and provide project guidance. A policy advisory group, at the elected official level, met at three points during the project to receive project updates and inform the project process. All three tiers included representatives of each participating agency.

Project status updates and alternatives were provided in public forums to agency stakeholder boards and committees by Kimley-Horn during the span of the projects. Presentations were made to the Marin Transit Board (3 presentations), Golden Gate Bridge, Highway & Transportation District Transportation Committee (3 presentations), and San Rafael City Council (1 presentation). Additional presentations were made by agency staff to the board of the Transportation Authority of Marin, as well as various committees and commissions of the City of San Rafael.

At the start of the project, existing conditions and operations at the SRTC were evaluated to identify facility requirements for a new transit center. Throughout the duration of the project, a major focus was placed on identifying and refining the interim solution. With the approaching start of construction of SMART Phase 2, identifying a near-term solution that would allow for uninterrupted operation of existing bus services was paramount. The project team and stakeholder agencies prioritized finding an interim solution acceptable to all parties while minimizing impacts to transit services, transit riders, and City streets.

A set of eleven preliminary alternatives were developed for a long-term transit center solution. Locations were selected from the needs identified by the existing conditions analysis and land use requirements. Concept maps showing the parcels utilized, an estimated number of bus bays, and bus access/egress patterns for each transit center alternative were prepared and presented to the JPT. Agency staff provided input on the preliminary alternatives to help refine them further and two of the eleven alternatives were removed from further consideration because they did not meet basic project requirements.

The nine remaining preliminary alternatives were then evaluated against a set of screening criteria agreed upon by the JPT. Consideration was given to land requirements and acquisition cost, bus operations, site functionality, connectivity, and local circulation. Publicly available assessor data was used to estimate land area and cost. Existing and planned route alignments provided by Golden Gate Transit and Marin Transit were used to identify potential future route alignments for each alternative; this was used to determine the effects of each alternative on bus operations and local circulation. Transfer paths and relative transfer relationship between routes was used to evaluate the customer experience with each alternative. Bus vehicle types and routing were used to estimate the number of bus bays each alternative could provide. Kimley-Horn prepared a qualitative evaluation matrix identifying how each alternative scored against the screening criteria. Based on this evaluation, the JPT and project management groups agreed to carry forward three of the nine preliminary alternatives to further development and evaluation.

The three preliminary alternatives carried forward were then developed in further engineering detail. Concept-level plan view drawings were created for each alternative. The conceptual designs included curb lines, driveway locations, bicycle and pedestrian facilities, and space for customer service or transit-related land uses. Changes to the local street network were identified and shown in the concepts. Opinions of probable cost were prepared. Route timetables, transfer activity, and bus vehicle type information was used to create detailed bus bay assignments for each alternative. Transfer activity was estimated by applying transfer patterns on existing routes to the new configurations of each alternative. Impacts on bus circulation were determined by determining access and egress routes for each bus, while considering the turning ability of different bus vehicles and the geometry of local streets. The City used its in-house VISSIM base model to create models of each of the refined alternatives, taking into account changes in bus and pedestrian activity, and analyzed changes in delay and vehicle queuing in downtown intersections. The alternatives were further refined based on input from the JPT and project management groups. A real estate analysis was performed to assess the reuse potential and land value of the existing transit center site.

After finalizing the three refined alternatives, Kimley-Horn prepared an evaluation matrix identifying how each alternative scored against a set of detailed evaluation criteria agreed upon by the JPT. Included in this evaluation was analysis of land acquisition cost; construction cost; development potential; traffic impacts; bus operations; connectivity to downtown; connectivity to SMART; transfer convenience; site functionality; bus circulation; and bicycle and pedestrian access.

2.3. Baseline Operations Analysis

The baseline transit center operations analysis examined existing and future passenger activity levels, the transfer relationship between existing and planned transit services, mode of access for users of the transit center, existing and future bus bay utilization, and bus circulation routing. The analysis relied upon existing boarding and alighting data from Golden Gate Transit and Marin Transit; Clipper & farebox data (provided by the transit agencies and MTC); on-board survey data from Golden Gate Transit and Marin Transit (collected by MTC); route timetables and bus vehicle types; bus route alignment information; and input from the JPT. At the time of the baseline analysis, each agency was planning service changes (since implemented in 2016). The planned service changes were incorporated into the bus bay utilization and routing analysis.

Kimley-Horn performed multiple site visits to observe pedestrian, vehicle, and bus circulation; document existing intersection and roadway geometrics; and observe customer service and maintenance facilities at the transit center. Data utilized in performing the baseline operations analysis is discussed below.

On-Board Survey

Marin Transit and Golden Gate Transit supplied on-board surveys from 2012 and 2013, respectively. The surveys provide customer responses to a range of questions, including information about trip origins and destinations, transit routes utilized, and modes of access. The on-board survey was used to establish the distribution of modes of access and trip origins/destinations for riders utilizing the SRTC. The on-board survey data was also used to identify the magnitude of potential shift of bus ridership to SMART service once operational. Note that the Marin Transit on-board survey did not include the boarding and alighting location of the trip surveyed. Therefore, only Golden Gate Transit surveys could be utilized to analyze boarding and alighting locations, including isolating records associated with activity at the SRTC.

Farebox and Clipper Data

Marin Transit, Golden Gate Transit, and MTC supplied farebox transaction data for the period between April 5 and April 18, 2015. Marin Transit and Golden Gate Transit provided data from the on-board farebox. MTC provided transfer activity data from the Clipper card readers on Marin Transit and Golden Gate Transit buses. The data provided by Marin Transit and Golden Gate Transit represented all farebox transactions within that date range, including issuance and acceptance of transfers. This allowed for development of a transfer matrix, quantifying the number of people transferring from and to every bus route in the system. The time component of the data also allows for a temporal analysis of transfer activity. Transaction data onboard Marin Transit buses is not accompanied by any geo-spatial information. Therefore, transfers between two Marin Transit routes both serving the SRTC were presumed to occur at the SRTC, although for a few routes some of these transfers may occur elsewhere along the route. Clipper data provided by MTC only included transactions involving a transfer at the SRTC, not including any transactions using Clipper to make the first boarding of their trip at the SRTC. Clipper transactions are not redundantly recorded in the farebox database.

Ridecheck

While boardings and alightings at the SRTC can be surmised from the on-board survey and farebox data, the best source for isolating activity occurring at the SRTC for Marin Transit is Ridecheck data. Ridecheck involves surveyors tabulating boardings and alightings at each bus stop on each trip in the system. This was last performed for Marin Transit in 2011. The information was utilized in conjunction with stop-level ridership data from 2014 provided by Golden Gate Transit to quantify total and route-level boardings and alightings at the transit center.

Route Timetables and On-Time Performance

Route timetables and on-time performance reports, provided by Golden Gate Transit and Marin Transit, were used to build an understanding of bus bay utilization at SRTC. Due to the system's pulse scheduling, where many buses enter and depart the station at the same time to accommodate transfer activity, the number of bays needed is controlled by the peak number of buses at a pulse. Routes are assigned to one or more pulses, with bays shared by multiple routes assigned to different pulses. Bus arrival and departure times for all public and private routes at the SRTC were logged into a platform utilization matrix. This data was utilized to create charts for each individual platform at the SRTC, showing bay utilization throughout the day. On-time performance data provided an indication of variance for individual routes within the pulse and a reasonable range for projecting actual bus arrivals and departures.

Traffic Volumes

Peak hour segment volumes, turning movement volumes, pedestrian volumes, and intersection level of service in the vicinity of the SRTC was provided by the City of San Rafael or sourced from the Sonoma-Marin Area Rail Transit San Rafael – Larkspur Segment Transportation Impact Study Draft Report (AECOM, June 2014). Count data was collected between 2011 and 2014.

SMART

The Draft Environmental Assessment for the second phase of SMART was used to incorporate future ridership boardings and alightings at the SRTC into the pedestrian flows analysis. The Sonoma-Marin Area Rail Transit San Rafael – Larkspur Segment Transportation Impact Study Draft Report projected 1,030 peak period boardings and alightings on SMART at the Downtown San Rafael Station by 2040 with the Larkspur extension.

Information on planned operations of the grade crossings and accompanying traffic controls on 3rd Street, 4th Street, and 5th Avenue was provided by SMART and the City of San Rafael as part of the Regional Transportation System Enhancements project being developed by Kimley-Horn.

SMART provided preliminary design drawings of the Phase 2 extension to Larkspur and base maps of the study area; these drawings were used to develop conceptual designs for the interim and long-term alternatives.

Bus Turning Movement Paths

Golden Gate Transit and Marin Transit provided a list of bus vehicle types by route. The vehicle makes and models were used to determine the appropriate turning movement paths of the buses for each route. The MCI 45' coach vehicle turning radius was obtained from the Comparison of Turning Radius Specifications and Measurements for a 45' Bus Final Report provided by Golden Gate Transit (TY LIN, August 2005). All bus paths were simulated using AutoTurn software with design vehicles similar in characteristic to those utilized. These turning movement paths were used as a basis to create conceptual designs of transit center alternatives.

Right-of-Way

No new survey was conducted as part of this analysis. Right-of-way lines for downtown San Rafael parcels were based on a GIS parcel file provided by the City of San Rafael. Right-of-way lines at the SRTC were based on a Record of Survey (July 2012) provided by Golden Gate Transit and design files provided by SMART.

2.4. Traffic Analysis

The City of San Rafael completed a multi-modal traffic analysis of the baseline, interim and long-term alternatives. The traffic analysis was performed using the VISSIM software package. The model included simulation of SMART train movements and accompanying queue cutter signals, bicycle activity, bus activity, pedestrian activity, current signal timing parameters, and vehicle activity. Current bus routes and schedules along with the planned SMART operating schedule were included in the network. The results from the traffic analysis are included in **Appendix A**. The analysis was performed for each of the following transportation network scenarios:

- Existing Conditions
- Existing Conditions plus SMART Phase 1
- Existing Conditions plus SMART Phase 2 w/ Interim Concept
- Existing Conditions plus SMART Phase 2 w/ Long-Term Alternatives

The traffic model was utilized to forecast morning and evening peak period operations under each of those scenarios. Metrics tabulated from the model results include:

- Approach and intersection delay
- Approach queues
- Bus travel time
- Total network delay
- Average vehicle delay
- Vehicles denied entry

2.5. Real Estate Analysis

Strategic Economics, an urban economics consulting firm, prepared a real estate evaluation of the existing SRTC site. The analysis assessed feasible land use alternatives if the transit uses were to be relocated from the existing site and the site made available for redevelopment. Kimley-Horn and Strategic Economics reviewed current zoning codes and consulted local architects to identify potential land use plans for the site. Strategic Economics evaluated the economic potential of those land use plans and identified a highest and best use of the site. The analysis was summarized in two reports: Reuse Options for the Existing San Rafael Center Property (June 2016) and Residual Land Value Analysis for Reuse of the Existing San Rafael Transit Center Site (June 2016). These reports are included as **Appendix B**.

In addition, Strategic Economics identified potential right-of-way acquisition costs associated with parcels identified for the initial and the final set of long-term transit center alternatives. Strategic Economics identified the lot area, improved area, existing use, existing owner, and used recent and relevant transaction history to estimate property acquisition costs. That analysis is included in the long-term alternative cost estimates.

2.6. Cost Estimates

Construction cost estimates for the interim and long-term concepts are based on conceptual engineering only. Further design development, utility investigation, and topographical survey will be required to refine the estimates. Unit costs were based on contractor bids received by the City of San Rafael in 2015 on the Regional Transportation System Enhancements project, wayfinding signage costs from the MTC Regional Transit Wayfinding Guidelines & Standards, and transit facility information provided by Golden Gate Transit. All cost estimates include a 30 percent contingency. Property acquisition costs (for long-term alternatives only) is based on property acquisition estimates prepared by Strategic Economics, based on real estate transaction information provided by the City of Rafael Economic Development department from 2008 to 2015.

Costs are escalated to anticipated year of expenditure (Year 2017 for interim concept and Year 2022 for long-term concept) based on Caltrans Construction Cost Indices & Forecast (2015).

Construction costs have fluctuated significantly in San Rafael over the past few years due to a variety of factors.

Economic conditions at the time of construction may have significant bearing on the actual construction cost and bids received. Cost estimates are presented as the engineer's opinion based on the information currently available at the time of this study and may not be reflective of actual costs at the time of construction.

2.7. Public Presentations

The project was presented at public meetings at key milestones. Three presentations were made to each of the Transportation Subcommittee of the Golden Gate Bridge, Highway & Transportation District and the Marin Transit Board of Directors, and one presentation was made to City of San Rafael City Council. The first set of presentations to the transit operators discussed the impacts associated with the SMART extension through the transit center. The second set of presentations identified potential interim solutions. The third set of presentations, including the presentation to City Council, included the long-term alternatives. Additional project updates were provided to the TAM board. City of San Rafael staff provided additional project updates to groups such as the Downtown SMART Station Area Advisory Committee and the Bicycle and Pedestrian Advisory Committee.

PowerPoint slides used in the presentations are included in **Appendix C**.

3 BASELINE CONDITIONS

3.1. Existing Facilities

An aerial view of the configuration of the existing transit center is shown in **Figure 3-1**. The transit center has four platforms, lettered A through D. It has a total of 16 bus bays; however, while four bus bays are identified on Platform D, the platform has an operational maximum of three buses due to challenges in buses aligning with the curb and partial first-in/first-out operation. Platforms B, C, and D are located off-street within the footprint of the transit center. On the east side of Platform A are four curbside bus bays located on Hetherton Street; buses which utilize these bays all depart to US-101.

A single rail track within SMART right-of-way runs adjacent Platform C. This area is currently used as a taxi staging and pick-up/drop-off area. A customer service desk, two retail vendor areas, and limited maintenance facilities are located on Platform D. Bicycle racks are located on Platforms B, C, and D. A security kiosk is located on Platform B.

Golden Gate Transit transferred rights to the swath of the SRTC where the rail tracks currently exist to SMART in a Memorandum of Understanding (October 25, 2005). Golden Gate Transit retained the right to continue to operate in the transferred right-of-way via an exclusive easement until SMART begins construction of the Phase 2 extension to Larkspur. Golden Gate Transit has access to the Caltrans right-of-way along Hetherton Street through an encroachment permit. Right-of-way boundaries are depicted in **Figure 3-2**.

3.2. Existing Operations

The primary transit operators at SRTC are Golden Gate Transit and Marin Transit. In addition to these two agencies, the transit center is also utilized by one Sonoma County Transit route, Marin Airporter, Sonoma County Airport Express Shuttles, and Greyhound. All routes not operated by the two primary transit operators berth at Platform D; Golden Gate Transit and Marin Transit utilize bays on all four platforms.

Figure 3-3 depicts route alignments for routes currently serving the transit center. **Figure 3-4** depicts bay assignment at the existing transit center. Nearly all routes operate on “pulse” scheduling, in which multiple routes arrive at the transit center at the same time and dwell for five minutes to allow for easy transfers between bus routes. These pulses occur every 15 minutes, with the busiest pulses occurring at the top and bottom of the hour.

Figure 3-1: Existing SRTC Configuration

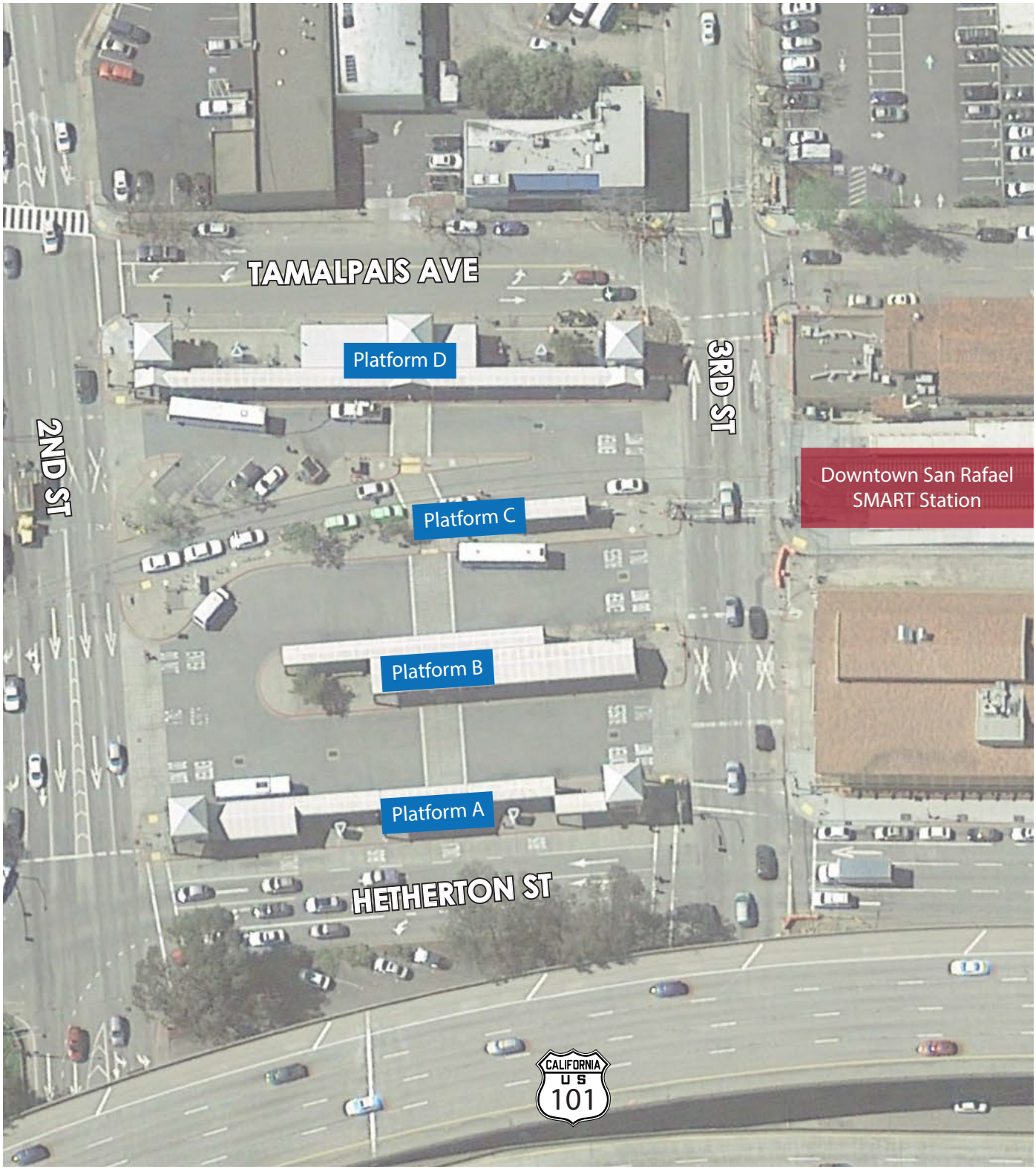


Figure 3-2: SRTC Right-of-Way Boundaries

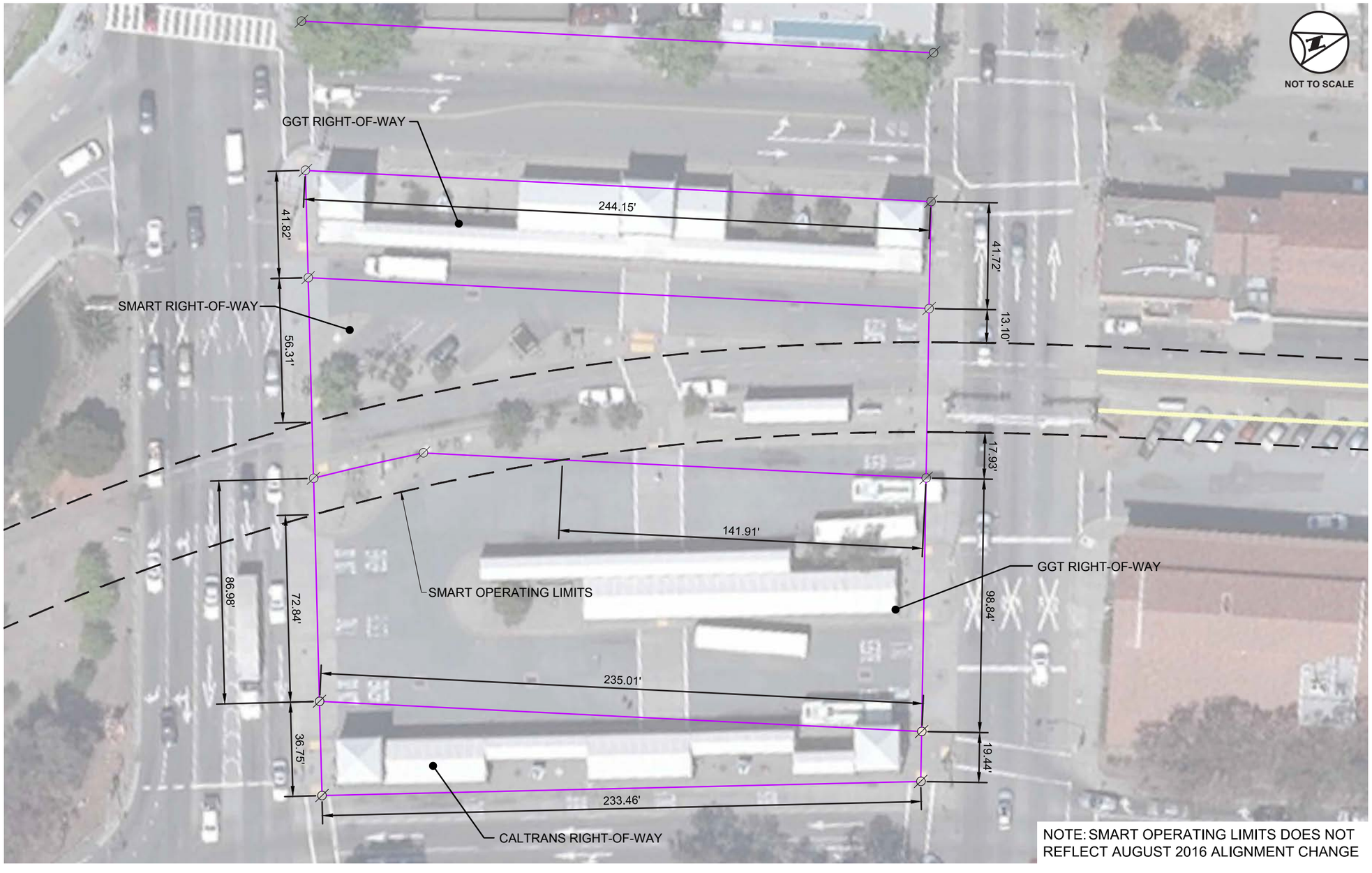


Figure 3-3: SRTC Route Alignments

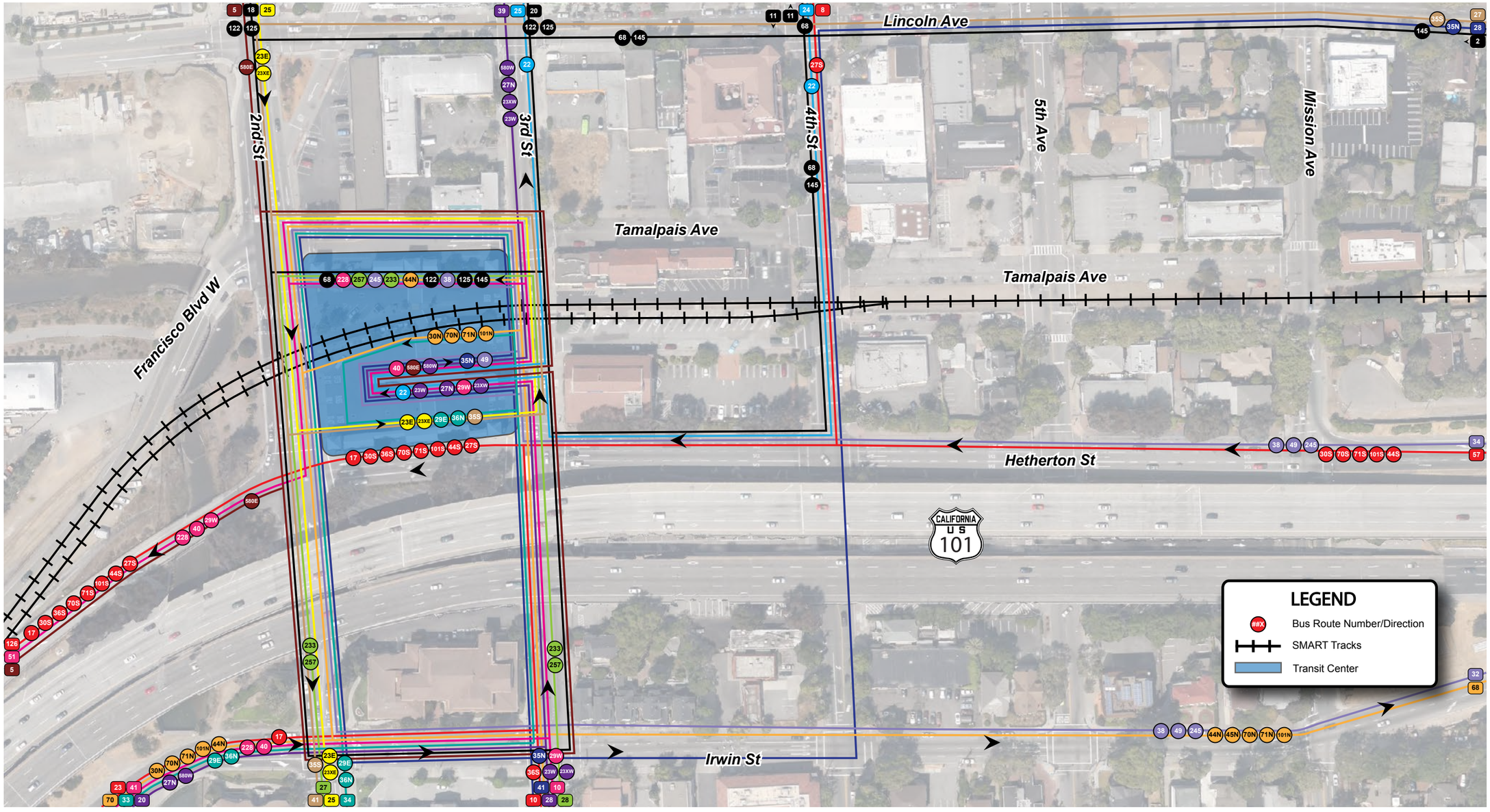
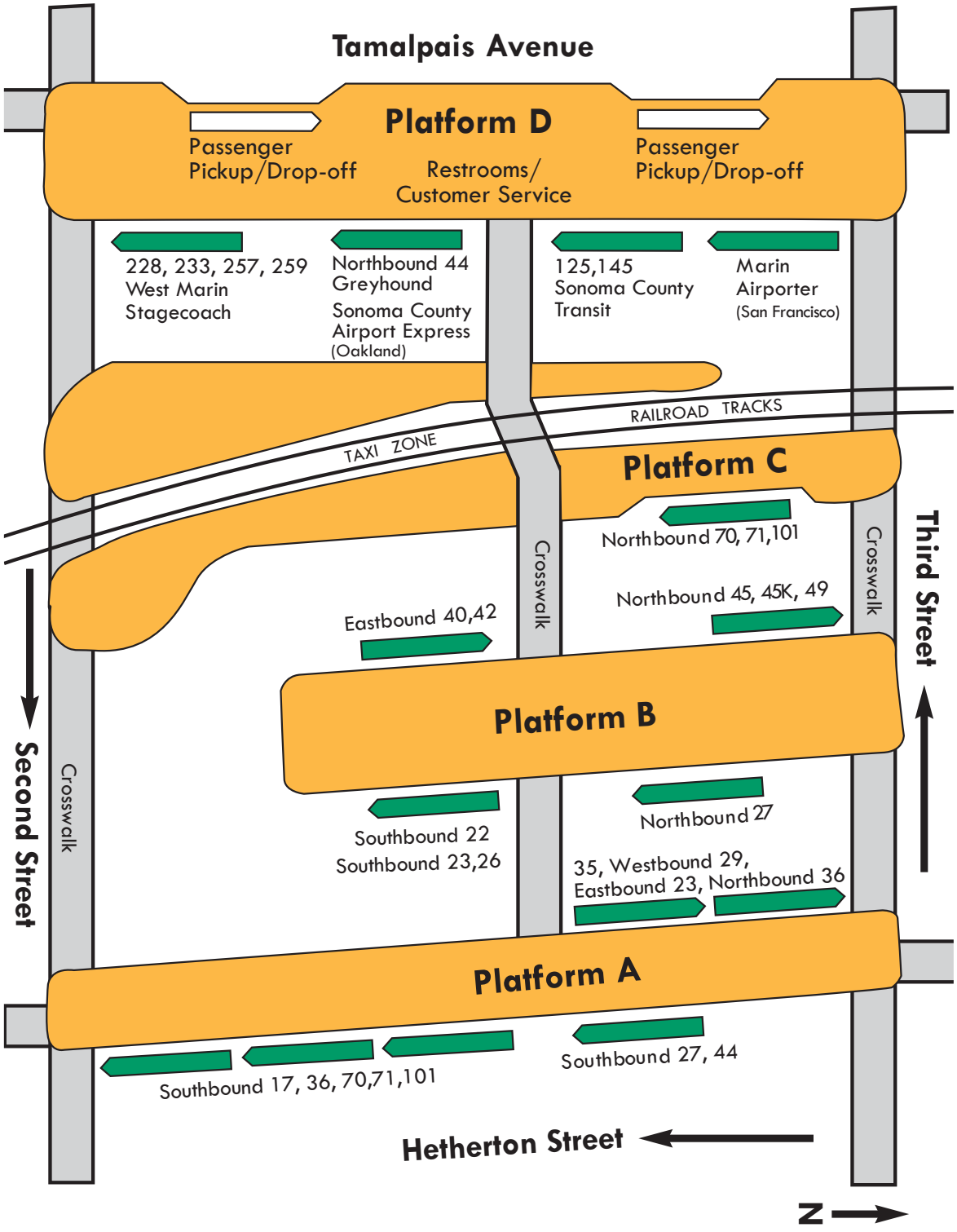


Figure 3-4: SRTC Bus Berths



Summary of Activity

A summary of daily passenger activity at the SRTC is provided in **Figure 3-5**. The SRTC experiences nearly 9,000 total daily boardings and alightings on weekdays. Detailed ridership information is provided in **Appendix D**.

Figure 3-5 and **Figure 3-6** also provide a summary of transfer activity occurring at the SRTC. Underscoring the importance of transfer activity for network connectivity, the analysis found that approximately 45 percent of weekday riders who pass through the SRTC are making transfers. Note that this percentage is based on riders being issued and utilizing transfers between routes serving the SRTC. Riders not utilizing transfer tickets or Clipper to make transfer movements are not captured in this analysis.

Transfer activity at the transit center peaks between 6 AM and 7 AM with over 200 transfers occurring during that hour. Afternoon peak activity occurs between 2 PM and 4 PM, with over 175 transfers per hour during that period.

Figure 3-5 and **Figure 3-6** identifies mode of access for each of Marin Transit and Golden Gate Transit passengers, based on the on-board survey data. With the limited number of surveys received, this information should be considered approximate. As shown on the fact sheet, 75 percent of Marin Transit riders boarding at SRTC arrived on another bus and completed a transfer at the SRTC, while nearly a quarter, or 22 percent, of riders walked to SRTC, with the remaining 3 percent biking to the transit center. For Golden Gate Transit riders, 51 percent walked to the center, with 19 percent completing a transfer, 6 percent biking, and 9 percent driving alone. The remaining 15 percent did not respond or responded as “other.” Given the longer-distance nature of Golden Gate Transit trips and the structure of routes provided by each agency, it is not surprising to find there is greater walk access for Golden Gate Transit services and more transfers associated with the Marin Transit services. This information suggests the need for quality pedestrian access for all services at the SRTC and facilitating transfers between Marin Transit and Golden Gate Transit services.

Route Profiles

Route profile sheets were created for each route currently serving the transit center (as of 2015). The route profile sheets contain route alignments, average daily ridership, vehicle type, average daily weekday transfer numbers between routes, planned modifications to the routes, service characteristics such as peak and off-peak service frequencies, the transit center pulses which the route operates on, the span of service, and the number of bus trips through the SRTC each day. Route profile sheets are included as **Appendix E.**

Transfers

The SRTC is the main transfer location in the Marin County transit network, providing connectivity between most routes operated by Marin Transit and Golden Gate Transit. Using farebox and Clipper data, a transfer matrix, shown in **Figure 3-7**, was created to show the average daily number of weekday riders transferring from one route to another. The matrix is directional, indicating both the transferring from and the transferring to routes.

Figure 3-5: Existing Conditions Fact Sheet

Overall Daily Statistics

Daily Boardings..... 4,556 passengers
Total Daily Activity .. 8,616 passengers
Total Transfers ..... 2,060 transfers
Transfer Share 45%
(of daily boardings)

Source: Golden Gate Transit Ridership from 2015
Marin Transit Ridership from 2011/2012
Transfer Data from 2015 GFI and Clipper Data

Mode of Access

Marin Transit
Inferred activity at SRTC
22% - Walked
75% - Transfer
3% - Bike

Source: 2012 Marin Transit On-Board Survey

Golden Gate Transit
Boardings within a 1/4 mile of SRTC
51% Walked 9% Drove Alone
19% Transfer 15% Missing/Other
6% Bike

Source: 2013 Golden Gate Transit On-Board Survey

Transfers with SMART

Origin-Destination patterns indicate that up to 322 existing daily bus passengers at the SRTC have trip destinations that are accessible via a transfer to SMART. SMART forecasts 1,030 boardings and alightings at the SRTC in Year 2040.

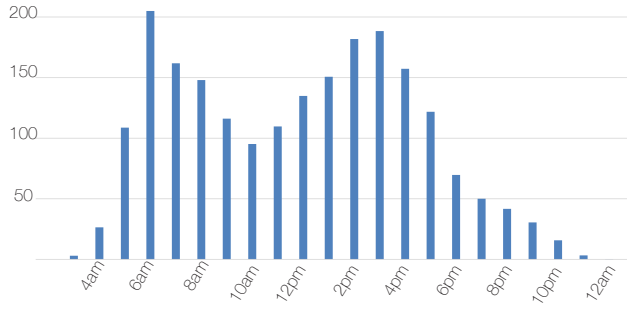
Source: SMART Larkspur Extension EA (Dec. 2014)

Routes with highest propensity for transfer to SMART service

Route	Percent of Ridership
Route 45	6%
Route 29	3%
Route 49	3%
Route 71	3%
Route 22	2%
Route 35	2%
Route 233	2%
Route 17	2%

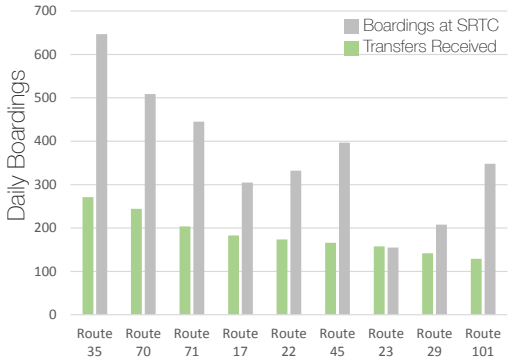
Propensity based on stated origins and destinations from on-board surveys

Transfers By Hour at SRTC

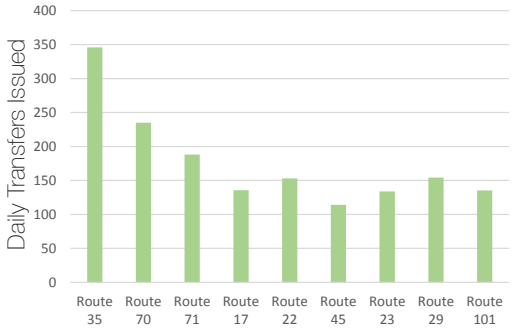


Average Weekday Transfer Activity by Route

Transfers Received by Route



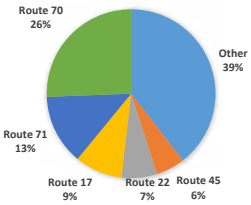
Transfers Issued by Route



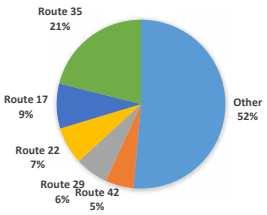
Transfer Sources: Golden Gate Transit GFI, Marin Transit GFI, MTC Clipper Data

Transfer Relationships for High Volume Routes

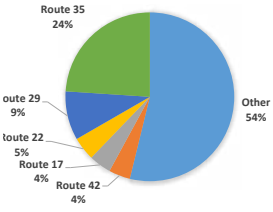
TRANSFERS TO ROUTE 35



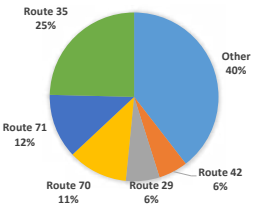
TRANSFERS TO ROUTE 70



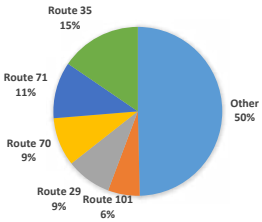
TRANSFERS TO ROUTE 71



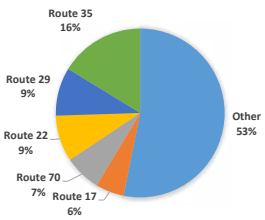
TRANSFERS TO ROUTE 17



TRANSFERS TO ROUTE 22



TRANSFERS TO ROUTE 45



Origin-Destination Maps

Mapping of on-board survey responses was performed to examine origin-destination patterns for users of the SRTC. These maps consider riders who use the SRTC as the beginning or end of the trip, excluding transfers at the SRTC. The Golden Gate Transit map, **Figure 3-8**, depicts the origin-destination patterns of riders who board a Golden Gate Transit bus within ¼ mile of the SRTC, depicting travel patterns of riders starting and end trips near the SRTC. As shown in this map, the highest concentration of origins is from Downtown San Rafael near 3rd and 4th Streets. The Marin Transit map, **Figure 3-9**, depicts the origin-destination patterns of all riders whose trips do not involve a transfer; transfer trips were excluded from this map to gain an understanding of major origin/destination points in the SRTC area. This map also shows a high concentration of trips from the 4th Street area of Downtown San Rafael, but with an additional strong ridership center around the Canal and Northgate areas. These riders from the Canal area are primarily taking short transit trips to the SRTC or continuing on routes passing through the SRTC.

Figure 3-10 considers the origin-destination patterns of riders on either Golden Gate Transit or Marin Transit systems, including origins and destinations for trips that did include transfers, likely at the SRTC. Intensities of origins/destinations are noted around SRTC (likely a product of survey noise), Canal, Northgate, Civic Center, Tierra Lindo, and Novato. Shown on the map are the future SMART stations. As shown on the map, a number of the existing trips with a transfer currently occurring at the SRTC may be alternatively completed using SMART in the future.

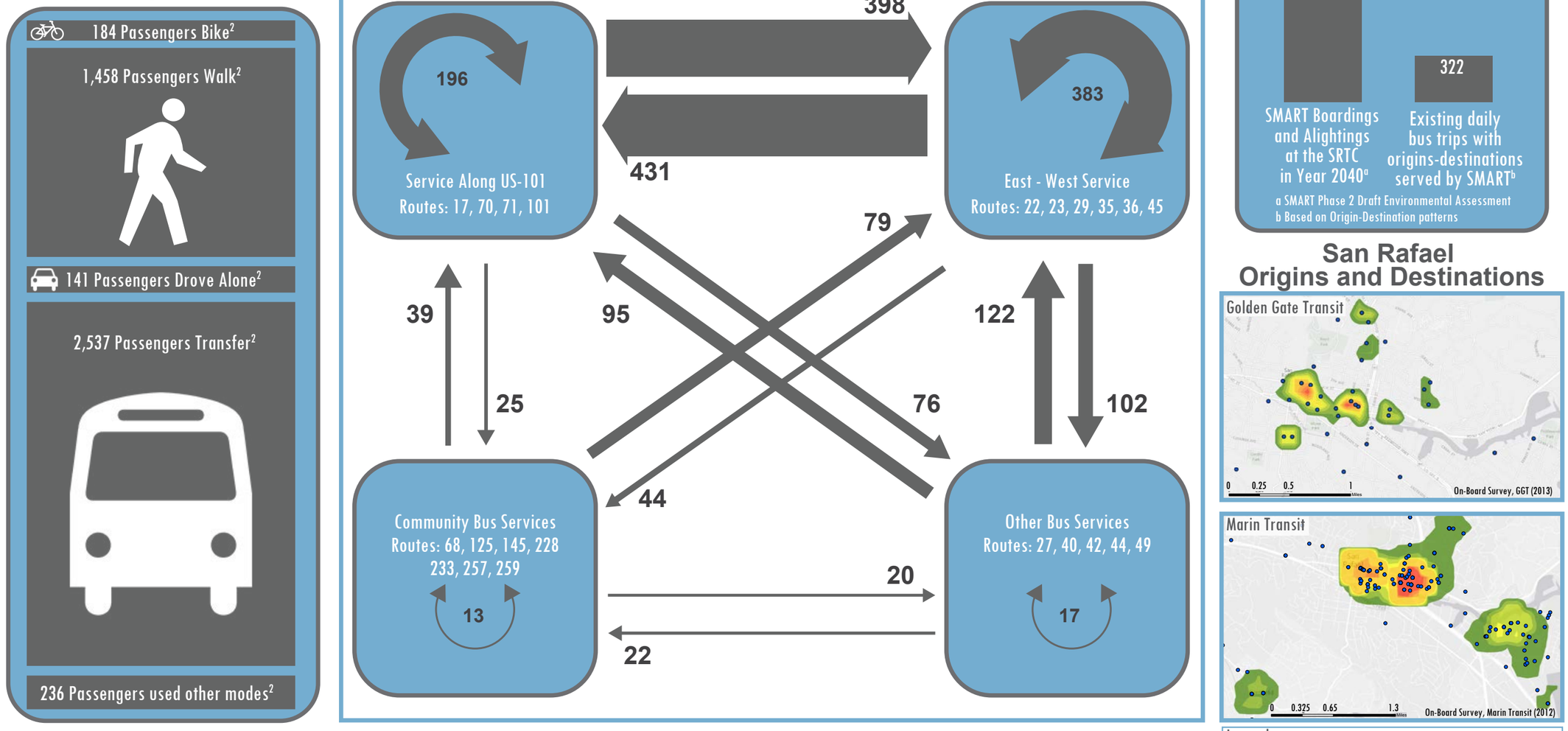
Approximation of Anticipated Transfer Propensity between Buses and SMART

Based on the information shown in **Figure 3-9**, routes which serve passengers who have trip destinations or origins that will be accessible by SMART were identified, and are shown back in **Figure 3-5**. An estimated 322 passengers who currently transfer between bus routes at the SRTC have trip origins or destinations within ½-mile of a SMART station. It should be noted that given SMART's peak-period-only service and higher cost, trips may continue to be made via bus even with the start of SMART operation. However, longer-distance trips, for example to Novato and points north, are likely candidates to involve transfers to/from SMART at the SRTC. Amongst this pool of passengers are potential candidates to transfer at the SRTC between buses and SMART. It does not reflect passengers who may make a two-transfer trip (i.e., a transfer at the SRTC to SMART and a transfer to another bus at the destination SMART destination), nor does it reflect the recent Marin Transit route modifications to Routes 35 and 45 (consolidated into Route 35) that now provides direct service between the Canal and Civic Center/Northgate areas. While the total number of bus to rail transfers cannot be projected, this analysis may indicate which routes currently serve trip patterns that in the future will also be served by SMART. The list of routes in **Figure 3-5** with the highest propensity for trips that may shift to SMART includes some services operating parallel to SMART and thus may not be good candidates to generate transfer activity. However, others such as Route 29 and Route 22 may generate a greater amount of transfers to SMART than other routes serving the SRTC.

Several varying ridership forecasts have been completed for SMART since 2002. Those forecasts provide a wide range of projections for ridership at the San Rafael Downtown station based on varying land use forecasts and project definitions. The most recent forecast is included in the SMART Downtown San Rafael to Larkspur Extension Environmental Assessment (December 2014), which projects 1,030 daily boardings and alightings at the station in the Year 2040. Based on that forecast, SMART may generate passenger activity on par with some of the higher ridership routes currently serving the SRTC, but less activity than the highest ridership routes, including Route 35 and Route 70.

While this analysis is speculative given the potential for travel patterns to change with the implementation of SMART, it can be deduced that SMART will generate some magnitude of transfer activity to the buses serving the SRTC; however, it is anticipated to be to a lesser extent than the total bus-to-bus transfer activity already occurring at the SRTC. As noted above, 1,887 daily weekday transfers currently occur at the SRTC. Route 35 and Route 70 each have approximately 300 daily transfers at the SRTC, with Route 70 and Route 17 not far behind. Therefore, priority will be placed on continuing to ensure seamless route-to-route transfers amongst these high-volume routes, while considering the significant pedestrian activity generated with each SMART train arrival/departure.

Figure 3-6: Pedestrian Flows at San Rafael Transit Center



1 - Golden Gate Transit Ridership from 2015 and Marin Transit Ridership from 2011/2012

2 - Mode splits based on on-board surveys provided by Marin Transit (2012) and Golden Gate Transit (2013)

3 - Golden Gate Transit GFI, Marin Transit GFI, and MTC Clipper Data (each data source from April 2015)

Figure 3-7: Transfer Matrix

Average Weekday Transfers Occurring at the San Rafael Transit Center

	Transfer Received																					
Transfer Issued	**17**	**22**	**23**	**27**	**29**	**35**	**36**	**40**	**42**	**44**	**45**	**49**	**68**	**70**	**71**	**101**	**125**	**145**	**228**	**233**	**257**	**259**	**Total**
17	5.4	11.4	4.5	0.4	7.8	27.9	6.4	3.2	10.6	0.0	11.5	1.5	0.4	27.0	11.7	2.9	0.0	0.0	0.0	1.7	0.8	0.6	**136**
22	7.0	7.5	8.1	1.2	19.1	20.8	2.0	3.5	9.5	0.7	18.7	1.9	2.0	22.5	12.3	7.3	0.0	0.0	0.0	4.8	3.4	0.7	**153**
23	9.6	7.4	3.6	1.2	8.7	9.9	7.4	2.8	5.0	0.0	7.1	14.6	2.5	10.4	9.8	29.9	0.1	0.1	0.0	1.5	2.1	0.2	**134**
27	0.6	2.1	2.8	0.8	3.8	4.7	2.3	0.0	1.1	0.0	4.8	0.9	2.1	3.1	3.5	2.0	0.0	0.0	0.0	1.2	0.7	0.7	**37**
29	12.9	17.0	15.0	3.2	7.0	11.2	2.1	1.4	5.5	0.8	19.5	2.4	3.0	19.9	25.7	3.2	0.2	0.0	0.0	3.4	0.7	0.2	**154**
35	49.2	30.3	22.8	7.8	12.6	4.2	12.9	2.4	3.5	0.2	34.3	6.3	3.2	66.2	65.8	17.4	0.0	0.0	0.0	2.9	3.3	0.7	**346**
36	8.3	2.0	5.5	1.6	1.4	3.8	1.4	0.6	2.9	0.1	7.7	4.5	0.6	5.9	3.3	7.2	0.0	0.0	0.0	0.8	0.1	0.6	**58**
40	3.0	4.8	4.1	0.0	1.8	0.5	0.7	0.3	0.5	0.0	2.9	1.0	0.3	6.1	3.2	1.1	0.0	0.0	0.0	0.2	0.8	0.1	**31**
42	11.2	11.4	3.4	1.6	5.0	4.8	3.1	0.1	1.2	0.0	10.9	1.6	1.1	17.0	11.3	4.4	0.0	0.0	0.0	1.7	2.8	4.5	**97**
44	0.0	0.3	0.3	0.0	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	**1**
45	10.5	11.7	5.4	4.9	10.3	16.9	1.7	2.2	5.0	0.1	5.8	6.4	0.4	12.3	8.2	5.7	0.0	0.1	0.0	3.4	0.7	2.4	**114**
49	3.1	5.7	24.4	0.7	3.5	6.8	3.8	2.3	2.7	0.0	3.4	1.7	0.2	4.7	7.2	13.1	0.0	0.0	0.0	1.3	1.3	2.9	**89**
68	0.4	2.4	1.9	1.5	2.5	2.8	3.7	0.2	1.6	0.0	0.9	0.1	1.1	3.9	2.2	2.2	0.2	0.0	0.0	0.3	0.1	1.0	**29**
70	22.9	18.2	11.3	2.4	17.4	78.3	4.3	2.7	12.7	0.2	14.8	4.9	2.5	10.9	8.8	14.8	0.0	0.0	0.0	2.6	3.2	2.2	**235**
71	24.7	21.2	6.6	2.1	23.3	41.2	6.3	3.2	9.6	0.0	10.0	4.1	1.8	10.3	10.3	8.6	0.0	0.0	0.0	1.8	1.8	1.4	**188**
101	8.4	11.9	32.4	0.4	4.5	14.7	7.6	2.2	2.9	0.1	4.4	12.3	1.1	13.2	11.0	5.0	0.0	0.0	0.0	0.9	1.0	1.3	**135**
125	0.0	0.1	0.1	0.0	0.1	0.2	0.1	0.0	0.0	0.0	0.2	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**1**
145	0.0	0.0	1.0	0.0	0.1	0.0	0.8	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**2**
228	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**0**
233	2.8	2.1	2.3	0.6	4.9	3.8	0.9	0.2	3.0	0.5	3.0	1.3	0.0	3.5	2.8	1.1	0.0	0.0	0.0	0.6	0.2	0.7	**34**
257	1.9	4.7	1.1	0.9	2.2	7.5	0.6	0.4	0.8	0.0	2.6	1.1	0.3	1.7	3.0	1.2	0.0	0.0	0.0	0.6	1.3	1.3	**33**
259	1.0	1.6	1.2	2.2	6.0	10.7	3.2	0.1	2.7	0.0	3.4	3.2	1.8	5.4	3.4	1.8	0.0	0.0	0.0	1.1	1.1	0.9	**51**
Total	**183**	**174**	**158**	**34**	**142**	**271**	**71**	**28**	**81**	**3**	**166**	**70**	**25**	**244**	**204**	**129**	**1**	**0**	**0**	**31**	**25**	**22**	**2,060**

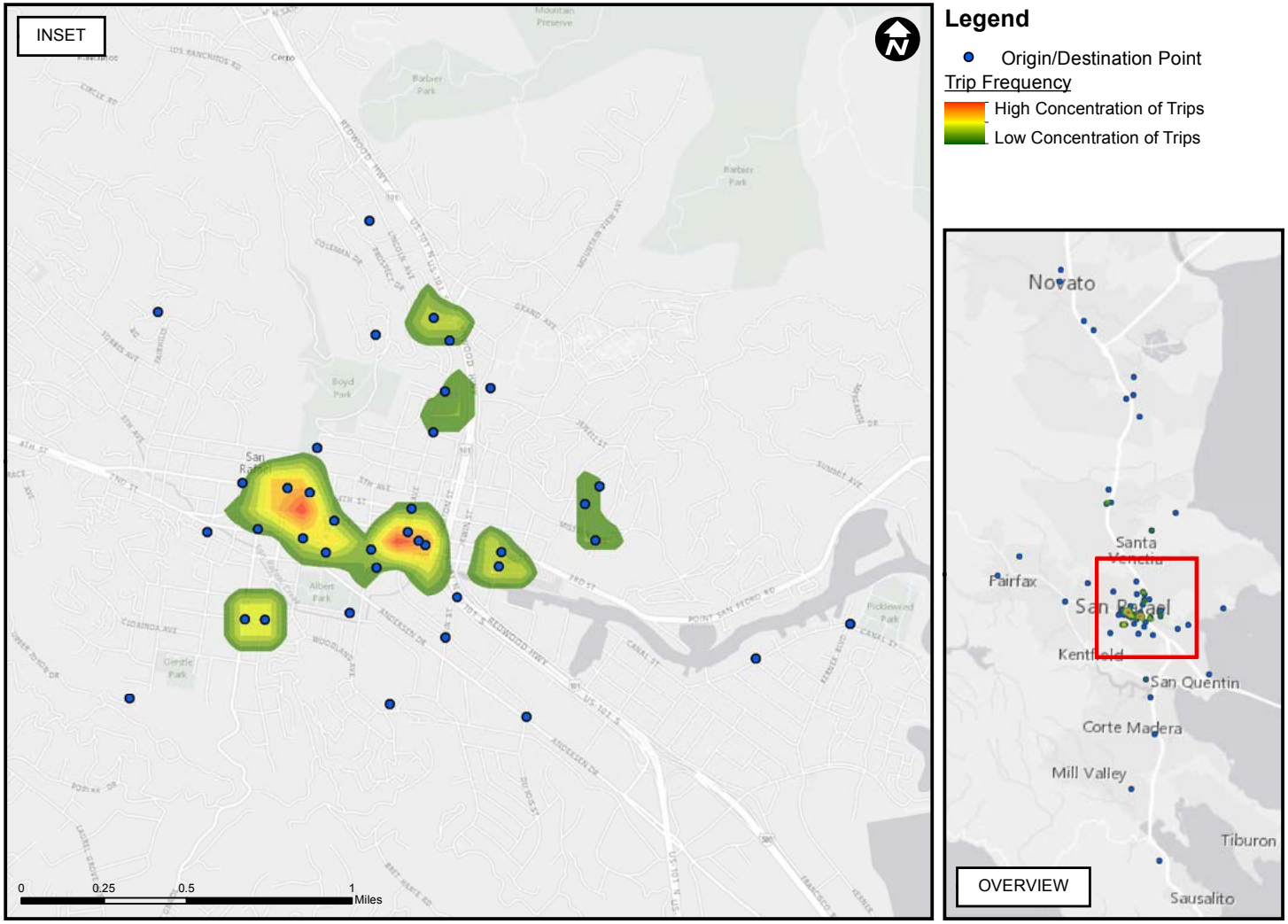
Key Transfer Route Pairs (Top 20)

Data Source: April 2015 GFI and Clipper Transaction Data. Some transfers may occur at locations other than the SRTC

As shown in the matrix, Routes 17, 22, 35, 45, 70, and 71 generate significant transfer activity. A third of transfers to Route 71 come from Route 35. Note that the transfer matrix is based on ridership information prior to the most recent service change by GGT and MT. Routes 35 and 45 have since been consolidated into a single route.

Figure 3-8: Golden Gate Transit Origin and Destination Points at SRTC

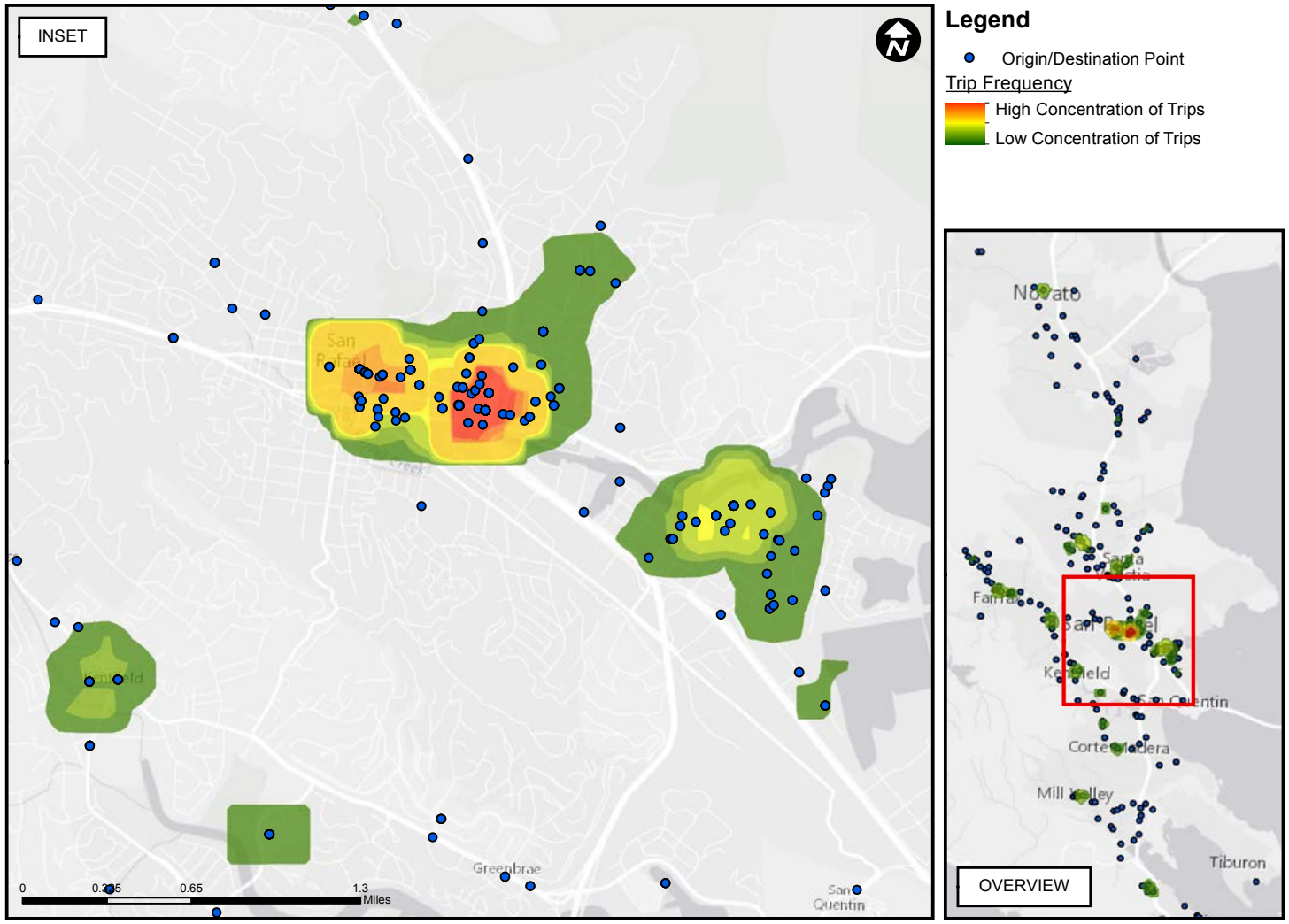
Weekday Trips without a Transfer, Boarding/Alighting at San Rafael Transit Center



Source: On-Board Survey, Golden Gate Transit (2013)

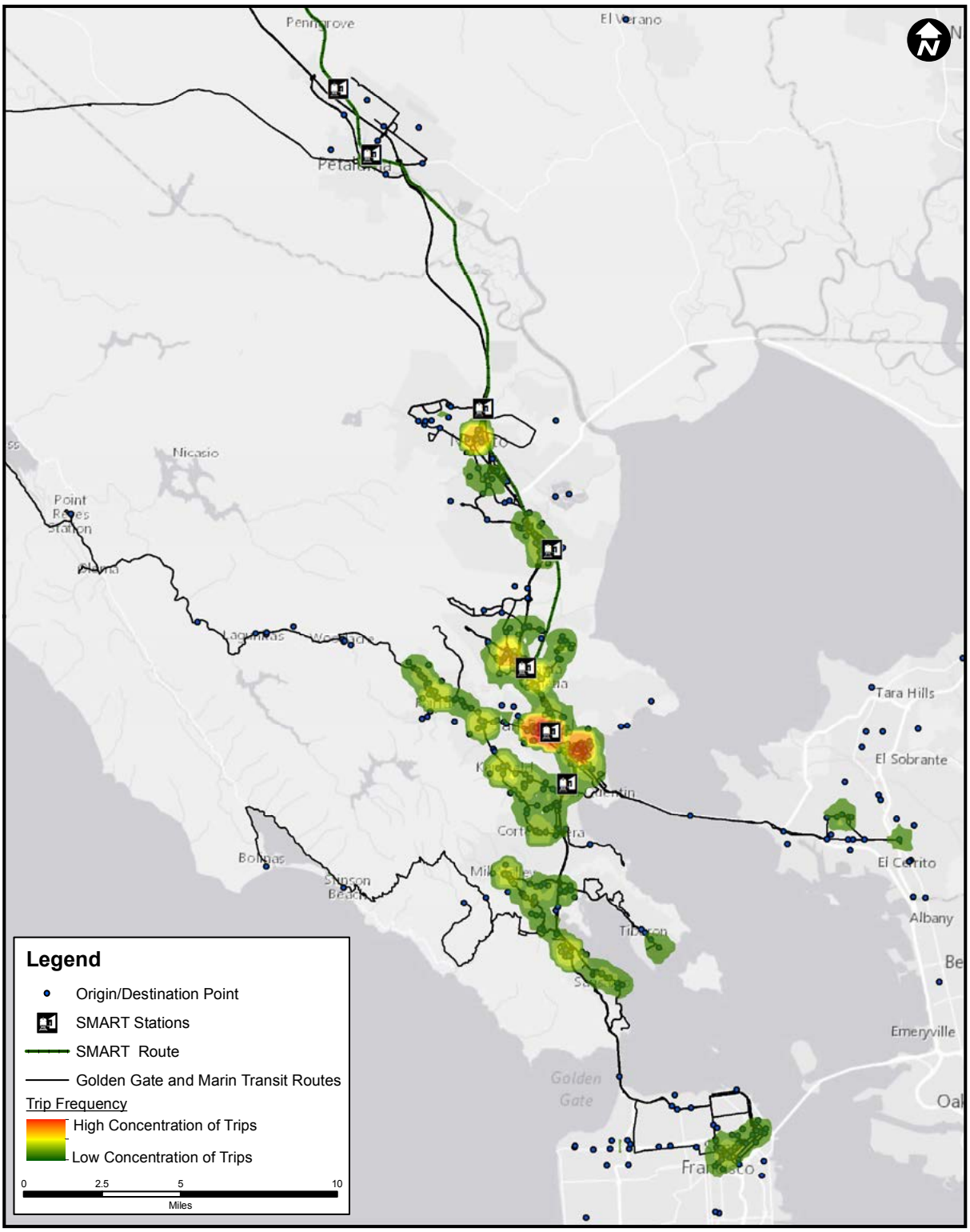
Figure 3-9: Marin Transit Systemwide Origin and Destination Points

Weekday Trips without a Transfer



Source: On-Board Survey, Marin Transit (2012)

Figure 3-10: Origin and Destination Points for Trips with a Transfer (Golden Gate Transit and Marin Transit)



SRTC Bay Utilization

Platform bay utilization dictates the number of bays required for the interim and long-term transit center. The pulse system utilized by Marin Transit and Golden Gate Transit for SRTC operations creates peak five minute periods where a large number of bus bays are utilized, followed by low points where there is little to no bus activity at the transit center. Using timetables provided by the transit agencies and adding a buffer to each arrival/departure to account for travel time variability, **Figure 3-11** shows the number of bays at the SRTC utilized throughout a typical weekday. As shown in the figure, the peak usage is 13 bus bays, reached once in the AM peak and once in the PM peak. On-time performance by route as provided by Golden Gate Transit and Marin Transit is provided in **Appendix F**.

Bay utilization was analyzed at the platform level throughout the day to identify the peak utilization for each platform. These charts are also included in **Appendix G**. As shown in these graphics, there is heavy demand for the east side of Platform A during the larger pulses. The west side of Platform B may experience demand stressing its available capacity at a few points in the morning and afternoon/evening peak periods. A map of bus circulation in the vicinity of the SRTC is included in **Figure 3-12**. **Appendix H** includes charts of bus bay utilization by arrival and departure directions. As shown on these charts, the greatest demand is for bays to accommodate bus arrivals and departures to/from the south, although there is consistent demand throughout the day for buses accessing from all directions.

Figure 3-13 depicts bay utilization by the type of vehicle using the bays. The chart clearly shows that 40-foot buses are predominately used at the transit center. No more than two each of larger buses (45-foot and 60-foot) are utilizing the transit center at any point in the day.

Transportation Circulation

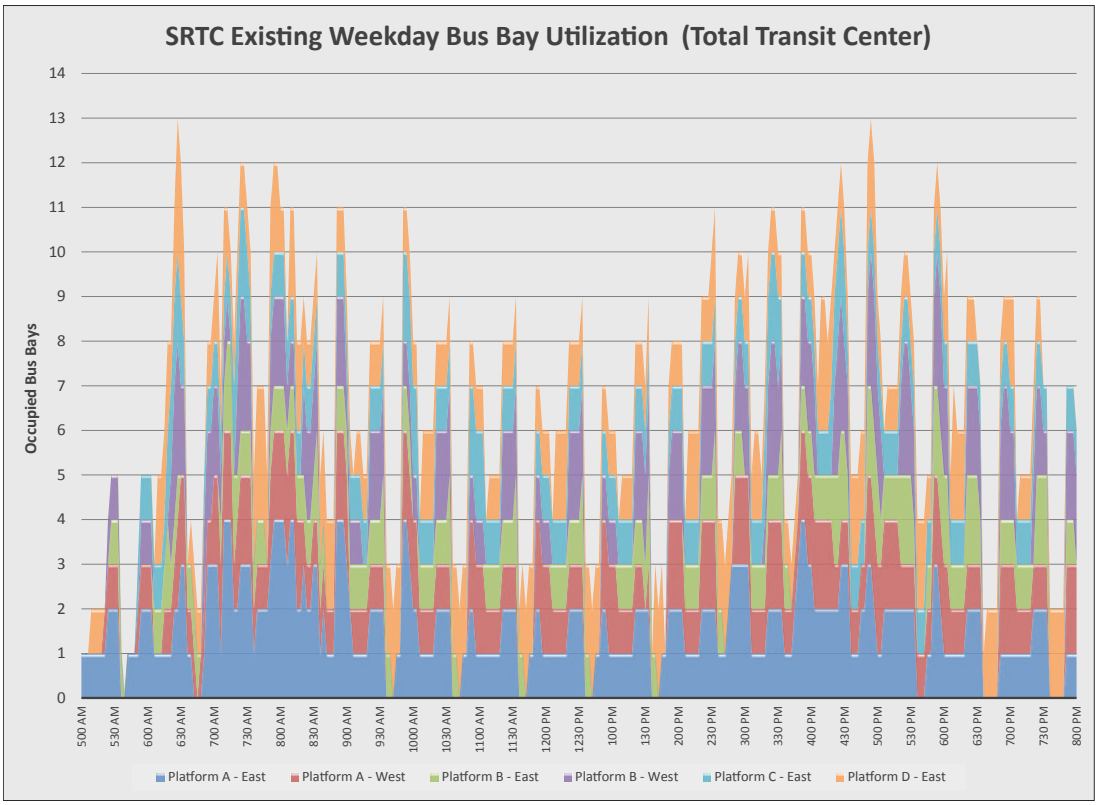
Figure 3-14 highlights both existing utilization of the transportation network and planned near-term modifications to that network. Shown are peak hour traffic and pedestrian volumes on streets in the vicinity of the SRTC. 2nd Street and 3rd Street are the busiest corridors in the vicinity of the SRTC, with over 1,500 vehicles in each peak hour on each street. Hetherton Street and Irwin Street each experience between 1,000 and 1,500 vehicles in each peak hour. Hourly pedestrian volumes are high in the vicinity of the SRTC, particularly using the crosswalks at the intersections of 3rd Street with Tamalpais Avenue and with Hertherton Street.

In addition, gate down times associated with Phase 1 SMART train crossing events are noted on the figure. As shown on the figure, gate down times are anticipated to be as long as 80 seconds, which will occur for northbound train movements at the 4th Street grade crossing. Phase 2 gate down times have not yet been calculated.

Recently implemented modifications to the transportation network include raised medians on 4th Street to limit turning movements into/out of Tamalpais Avenue to right-turn only and construction of an off-street bike path on the west side of Hetherton Street between Mission Avenue and 4th Street to extend the Puerto Suello Hill Bike Path to the vicinity of the SMART station and the SRTC. These improvements were implemented over the course of the study and are included in this analysis.

Figure 3-11: Bus Bay Utilization (Total Transit Center)

SRTC Bay Utilization and Needs



Assumptions:

- Bay utilization assessment based on existing weekday operating schedules, assuming a 3-5 minute buffer for arrivals and departures
- Evaluation includes ancillary services (Marin Airporter, Sonoma Transit, Sonoma County Airport Express), but excludes Greyhound bus service.

Existing Peak Weekday Bus Bay Utilization:

- For existing weekday operations, a maximum of 13 bus bays are utilized during the highest-demand pulses

Bus Bay Needs with Planned Service Changes:

- Planned Marin Transit Route 122 serving College of Marin is anticipated to utilize the bay at the west side of Platform A and will add demand at this paltform
- Planned Marin Transit service modifications to Routes 35/45 are anticipated to reduce the peak bay utilization at the SRTC by one bay
- Planned Golden Gate Transit service frequency increases on Routes 40/42 and 101 may require one additional bay at the SRTC

Figure 3-12: Bus Volumes by Approach Direction

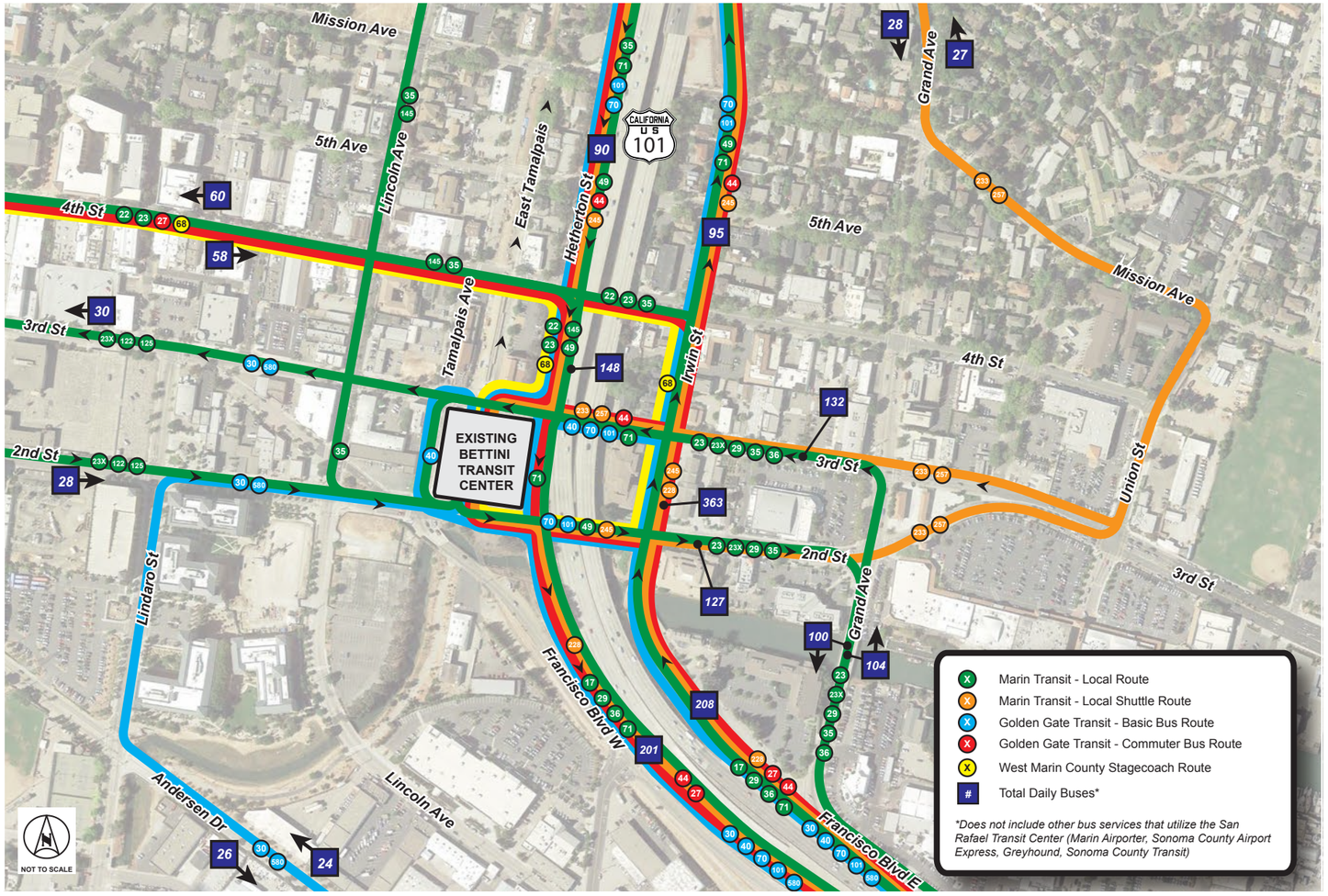


Figure 3-13: Bus Bay Utilization by Vehicle Size

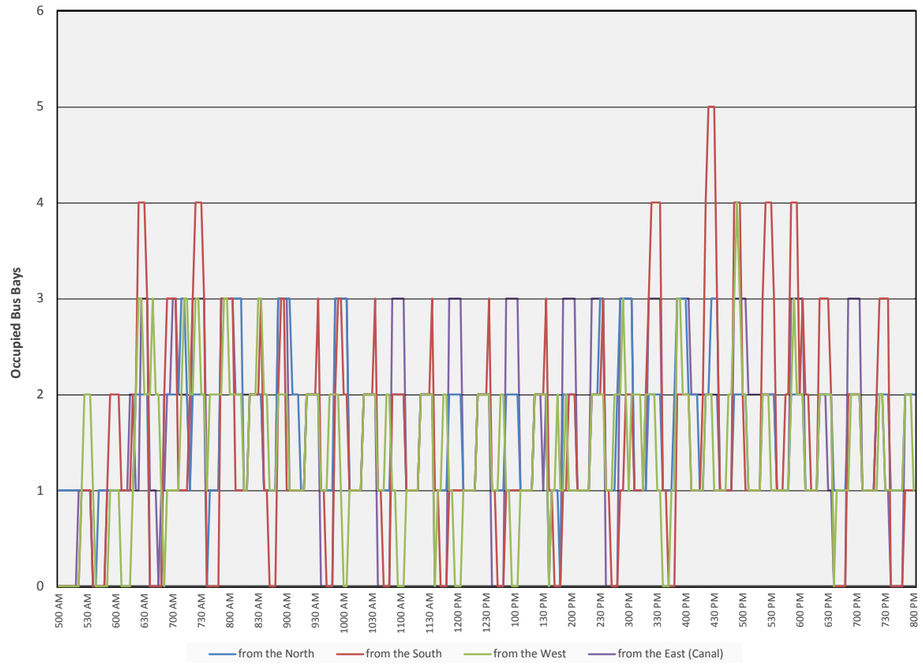
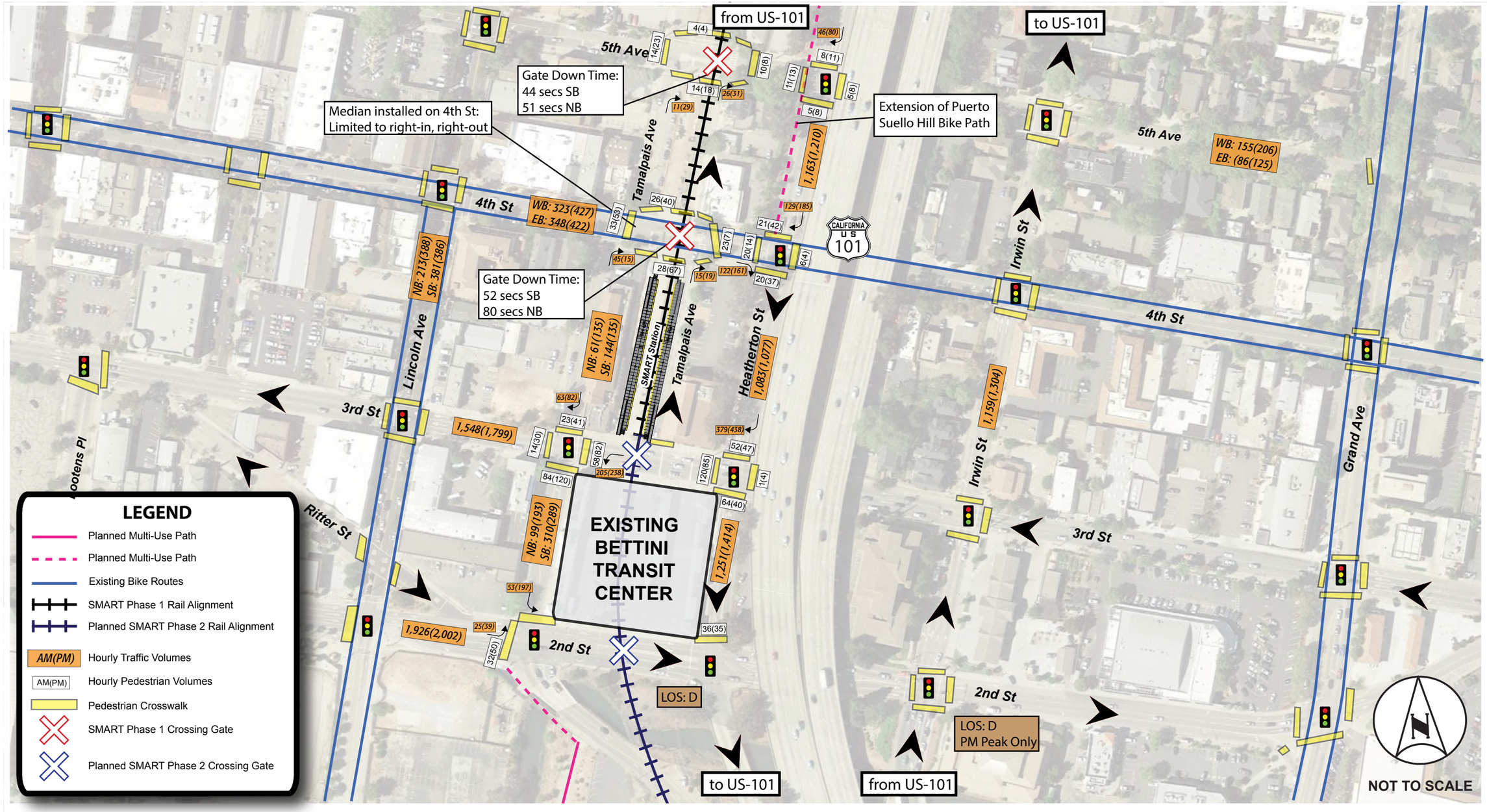


Figure 3-14: Baseline Circulation



3.3. Land Use Requirements

Based on the existing conditions analysis, and through discussions with the agency-stakeholder group, a set of elements and operational needs at the transit center were agreed upon for both the immediate and long-term needs of the site. These requirements are listed below. Those items listed under "required" were determined to be essential to be provided within or in close proximity to the transit center. Those items listed under "other considerations" were considered desirable to be included within or in close proximity to the transit center or provide guidance on the configuration of the transit center and the surrounding area.

Required:

- 16 bus bays dedicated to Golden Gate Transit and Marin Transit operations (additional bus bays desirable for future service flexibility and/or expansion)
- Bus operator restrooms
- Curb space for an employee van (27 feet), a supervisor car, and paratransit vehicles. These facilities can be accommodated on the street, although in close proximity to the transit center. Space for at least two vehicles is required.
- Customer service center, located on-site or at most within a block of the transit center, of approximately the same size as existing
- Curb space for a "bus bridge" operation in the event SMART service is interrupted. This could be accommodated on-street and along curb space otherwise utilized for on-street parking, but would need to be in close proximity to the transit center. At this time, it is estimated that space for three buses would be required.
- Security kiosk of approximately the same size as existing

Other Considerations:

- The transit center should be able to accommodate a bus fleet of a similar makeup (size and turning capabilities) to the existing fleet, with a desire to maintain operational flexibility
- Bus bays can be either sawtooth or straight curb, depending on the configuration of the transit center and route assignment, with the desire for operational flexibility
- Limiting bus crossings of the SMART tracks is desirable
- Current bike racks are well utilized. SMART is currently conducting a study to determine the need for additional bike capacity in the proximity at all stations. Additional bike parking is desired.
- Strong pedestrian connections to surrounding land uses and pedestrian facilities, as supported by the pedestrian flows analysis.
- Airporters, Greyhound, and taxis should not be allotted space in the new transit center
- Private shuttles and SMART feeder service do not need to be accommodated in the new transit center
- A location to be used by San Quentin for drop-offs may need to be considered, although it is not required to be provided within the transit center
- Private transportation services should be accommodated in some fashion in relative proximity to the SMART station and the transit center

- The need for public restrooms has not yet been determined
- Space does not need to be preserved for concessionaires

4 EFFECTS OF SMART ON SRTC

4.1. SMART Phase 1 Operation

SMART's Phase 1 segment will provide rail service between Sonoma County Airport and Downtown San Rafael. The Downtown San Rafael Station will be located north of the existing transit center, between 3rd and 4th Street. The impacts of SMART Phase 1 on the transit center are expected to be minimal relative to the impacts of Phase 2. At-grade rail crossings will be located on 4th Street, 5th Avenue, and Mission Avenue between West Tamalpais Avenue and Hetherton Street. With trains expected every 30 minutes, crossing events may increase delay for some bus routes accessing or egressing the transit center.

As a result of the construction of the Downtown San Rafael SMART Station, East Tamalpais Avenue between 3rd and 4th Street was narrowed, and center medians were installed on 4th Street, precluding left turns from W Tamalpais Avenue to 4th Street. Bus routes which previously utilized Tamalpais Avenue to access westbound 4th Street have been re-routed to accommodate these changes.

SMART Phase 1 will introduce additional pedestrian activity adjacent to the SRTC at the Downtown San Rafael Station across 3rd Street. Passengers transferring between SMART and the SRTC will need to cross 3rd Street. Additional pedestrian activity across 3rd Street may further increase congestion at the intersection of Hetherton Street & 3rd Street, thereby increasing delays for buses accessing/egressing the transit center.

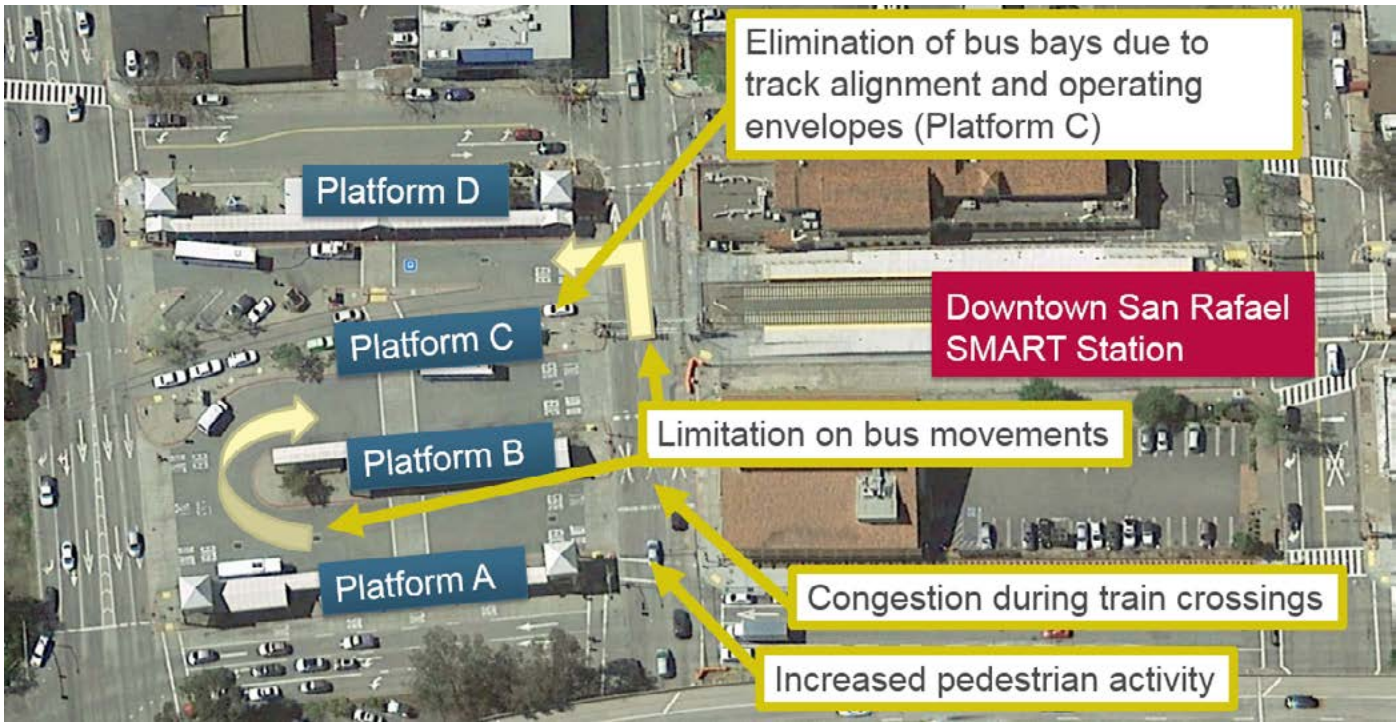
4.2. SMART Phase 2 Construction

SMART Phase 2 will construct a rail segment between Downtown San Rafael and Larkspur. This will require reconstruction of tracks through the existing transit center. The following impacts are anticipated from the construction of Phase 2:

- The placement of the tracks and the required rail operating and construction envelopes would eliminate the bus bays and the taxi pick-up/drop-off area on Platform C.
- The provision of any vertical elements (such as pedestrian gates, vehicle gates, pedestrian refuges, or track fencing) on the south side of 3rd Street, immediately west of the tracks, may conflict with the turning path of buses from 3rd Street into Platform D.
- Some buses accessing bays on Platform B and the west side of Platform A circulate internally when accessing or egressing the transit center (i.e. they make a U-turn around Platform B). The placement of tracks and the required rail operating and construction envelopes will constrain the movement of these buses by reducing the width available for buses to make a U-turn.
- The fencing of the rail right-of-way and the elimination of the ability to cross the tracks may increase pedestrian transfer times and inconvenience for riders transferring between routes on Platform D and all other routes, or in accessing the customer service center and vendor facilities on Platform D.

These anticipated construction impacts are depicted in **Figure 4-1**.

Figure 4-1: SMART Construction Impacts at SRTC



4.3. SMART Phase 2 Operation

Once SMART Phase 2 is operational and trains are running on their normal schedule, at-grade train crossings will begin to occur on 2nd Street and 3rd Street. In addition to the impacts caused by the construction of Phase 2, the beginning of train operations may contribute to delays to bus, auto, and pedestrian movements associated with the at-grade crossings on 2nd Street and 3rd Street. Initial operations call for grade-crossing events to occur every 30 minutes during the peak periods, coinciding with the bus pulse periods. Therefore, train crossing events may affect bus access/egress at the existing transit center.

5 INTERIM TRANSIT CENTER SOLUTION

While this report primarily focuses on the development of a long-term solution for the transit center, a significant component of the project was the development of the interim solution to support current transit service levels with the start of construction of SMART Phase 2 through the transit center. Since the construction of SMART Phase 2 will have impacts on the transit center (these impacts are discussed in Chapter 4), an interim solution is needed for the period between the start of construction of SMART Phase 2 at the transit center and the completion of the long-term transit center. The impacts to the transit center outlined in Chapter 4 were translated to a list of replacement facility requirements needed to maintain the current level of operations at the transit center.

To address these requirements, the project team considered numerous locations within several blocks of the existing transit center as part of the interim solution. Detailed concept plans were developed for locations deemed feasible from transit operations, customer experience, street impact, and implementation perspectives. Concept plans were vetted and refined with input from each of the three tiers of the project's agency coordination groups, evaluated, and cost estimates prepared. A final interim concept was developed based on that evaluation and stakeholder input.

The final interim concept is shown in **Figure 5-1**. The interim concept modifies Tamalpais Avenue to provide three bus bays along northbound Tamalpais Avenue between 2nd and 3rd Streets and two bus bays along southbound Tamalpais Avenue between 3rd and 4th Streets. Specific elements of the interim concept include the following:

- Modify the curb and gutter along the east side of Tamalpais Avenue between 2nd and 3rd Streets, removing the four pick-up/drop-off spaces and accommodating three curbside bus bays.
- Provide four bus shelters with furnishings and CCTV cameras: two on Tamalpais Avenue between 2nd and 3rd Street; and two Tamalpais Avenue between 3rd Street and 4th Street.
- Remove two bulb-outs along on the west side of Tamalpais Avenue between 2nd Street and 3rd Street. Reduce the length of the bulb-out at the southwest corner of 3rd Street and Tamalpais Avenue.
- Remove all on-street parking on Tamalpais Avenue between 2nd Street and 4th Street.
- Shift the yellow centerline on Tamalpais Avenue to provide adequate space for turning and dwelling buses.
- Relocate bike racks on Platform C adjacent to SMART.
- Provide concrete bus pads for the bus bays on Tamalpais Avenue.
- Relocate street lights, signs, trees, and drainage inlets to accommodate curb modifications.

Tamalpais Avenue between 2nd and 3rd Streets

Southbound Tamalpais Avenue between 3rd and 4th Streets

- Modify the traffic signal at 2nd Street/Tamalpais Avenue to accommodate changes to the curbs and lane alignments. Modify the traffic signal at 3rd Street/Tamalpais Avenue to accommodate a bus-only phase and modified lane alignments.

In addition, improvements are included along Cijos Street to facilitate bus access to 4th Street (shown in **Figure 5-2**). Currently, buses exiting the transit center and departing to 4th Street (Routes 22, 23, 27, and 68) must travel east to Irwin to access 4th Street due to narrow streets and tight turning radii in downtown San Rafael. This results in significant bus delay due to the congestion in the US-101 interchange area. Prior to the start of SMART construction of SMART, buses exited the transit center to Tamalpais Avenue and then turned left onto 4th Street. The improvements included as part of the interim concept would modify the curb radius at Cijos Street to allow for buses to turn from 3rd Street to Cijos Street to access 4th Street in a much more direct path, reducing travel times for customers, saving operating costs for the operators, and reducing bus traffic through the interchange area.

Figure 5-1: Interim Concept

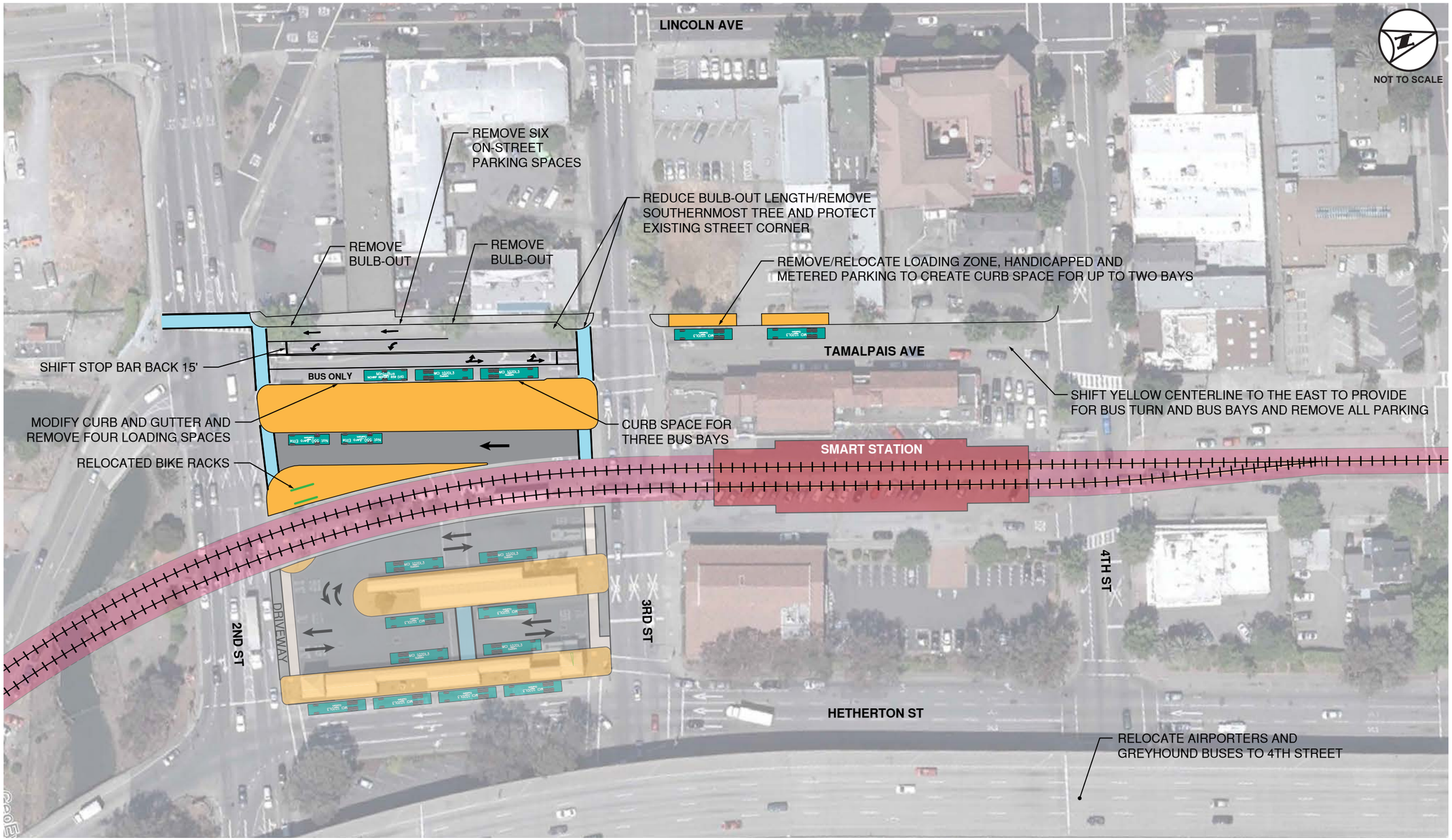
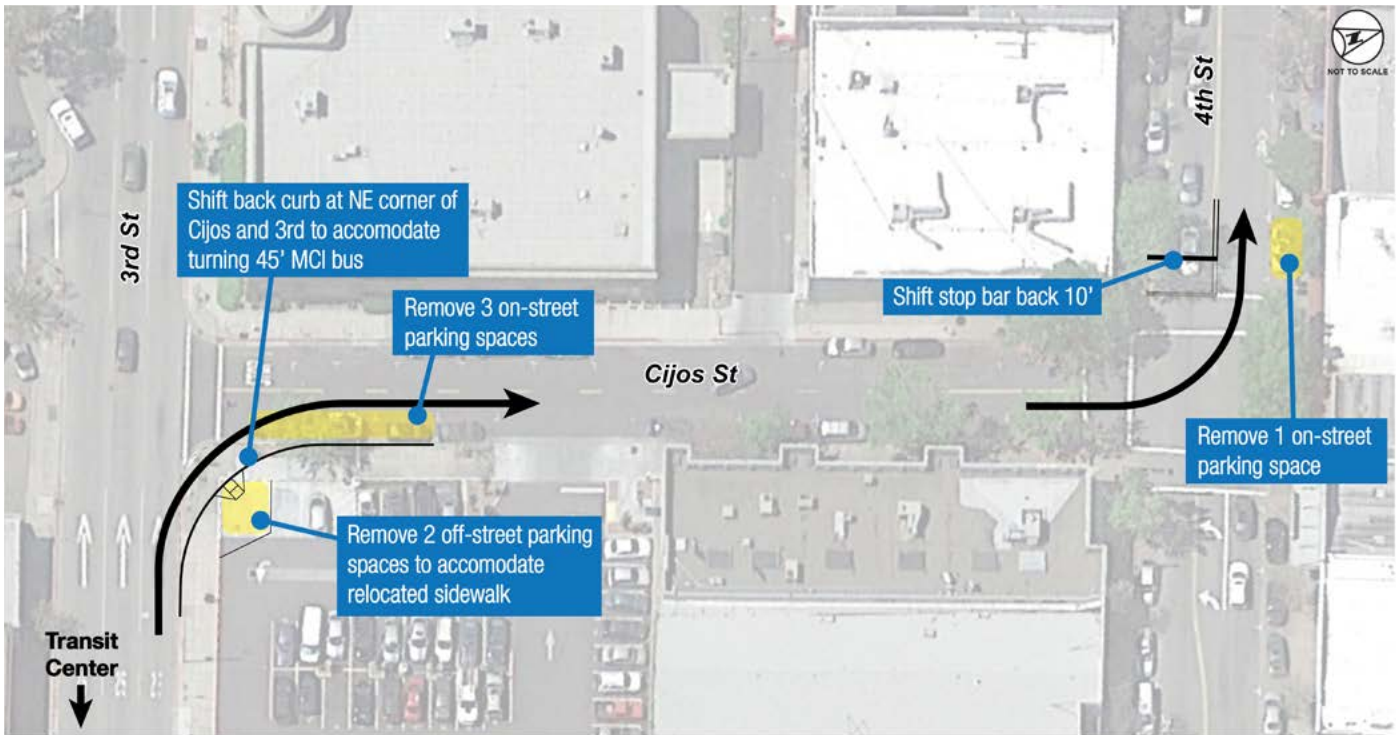


Figure 5-2: Cijos Street Modifications



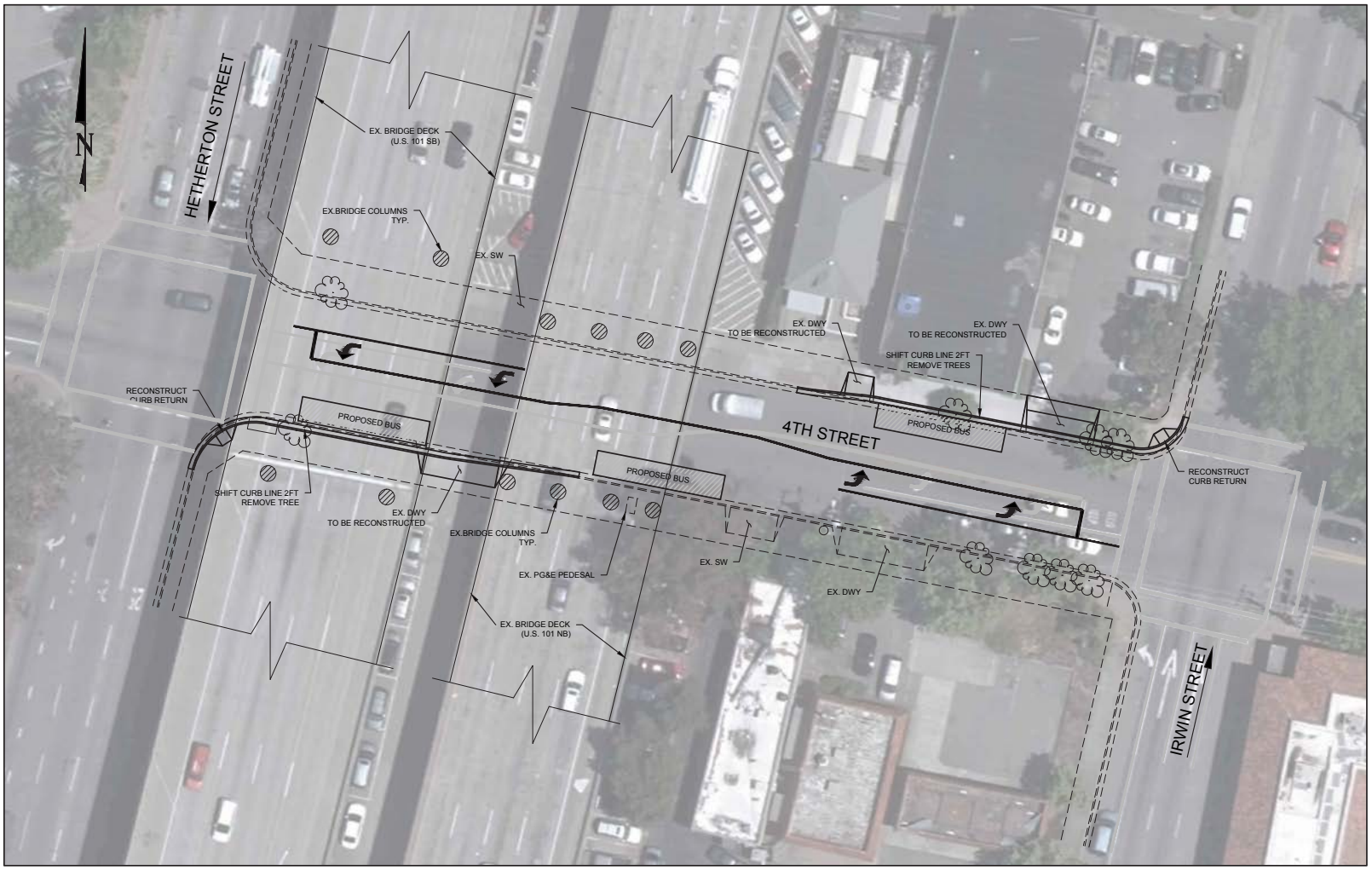
Additionally, three curbside bus bays would be provided on 4th Street between Hetherton Street and Irwin Street (beneath US-101) for Marin Airporter, Sonoma County Airport Express, and Greyhound buses. Two bus bays would be provided on along the south side of the street and one bus bay along the north side of the street. This will require a slight modification to the curb alignment on both sides of 4th Street and to the double-yellow centerline along 4th Street, but will not require any changes to the US-101 overhead structure. 4th Street improvements are shown in **Figure 5-3**.

The projected cost of the interim solution is $3.25 Million. An additional $200,000 is estimated to be required after the long-term solution is constructed to remove the interim improvements along Tamalpais Avenue and restore the roadways to their current configurations. A detailed cost breakdown is provided in **Appendix I**. The improvements along Cijos Street and 4th Street may provide utility beyond the timeframe of the interim concept, depending on the configuration and location of the long-term solution.

An anticipated bus bay assignment configuration for the interim solution is shown in **Figure 5-4**. In selecting interim bay locations, the project team prioritized keeping high-volume and high-transfer routes within the existing transit center and moved routes with more irregular schedules to the interim bays on Tamalpais Avenue. For the buses relocated to Tamalpais Avenue, a modified approach route to/from the transit center is required. The routing of the buses shifted to the proposed facilities along Tamalpais Avenue is shown in **Figure 5-5**.

In August 2016, as SMART's design was moved past 20 percent, SMART provided a redesigned track configuration, modifying the track alignment approximately 3 feet to the east. While this modification provides more space for vehicles to pass on Platform D, bus movements around Platform B were further affected, inhibiting the movements of some routes. To determine which vehicles could be reassigned to different bays, Golden Gate Transit, Marin Transit, and SMART staff conducted a field test using transit vehicles operated by Golden Gate Transit and Marin Transit. The outcome of the field test resulted in the reconfiguration of bus bay assignments to maintain the feasibility of the interim solution with the new alignment. The revision to the SMART alignment is shown in **Figure 5-6**.

Figure 5-3: 4th Street Modifications



GRAPHIC SCALE

50 0 25 50 100

(IN FEET)
1 inch = 50 ft.

Figure 5-4: Interim Solution Bay Configuration

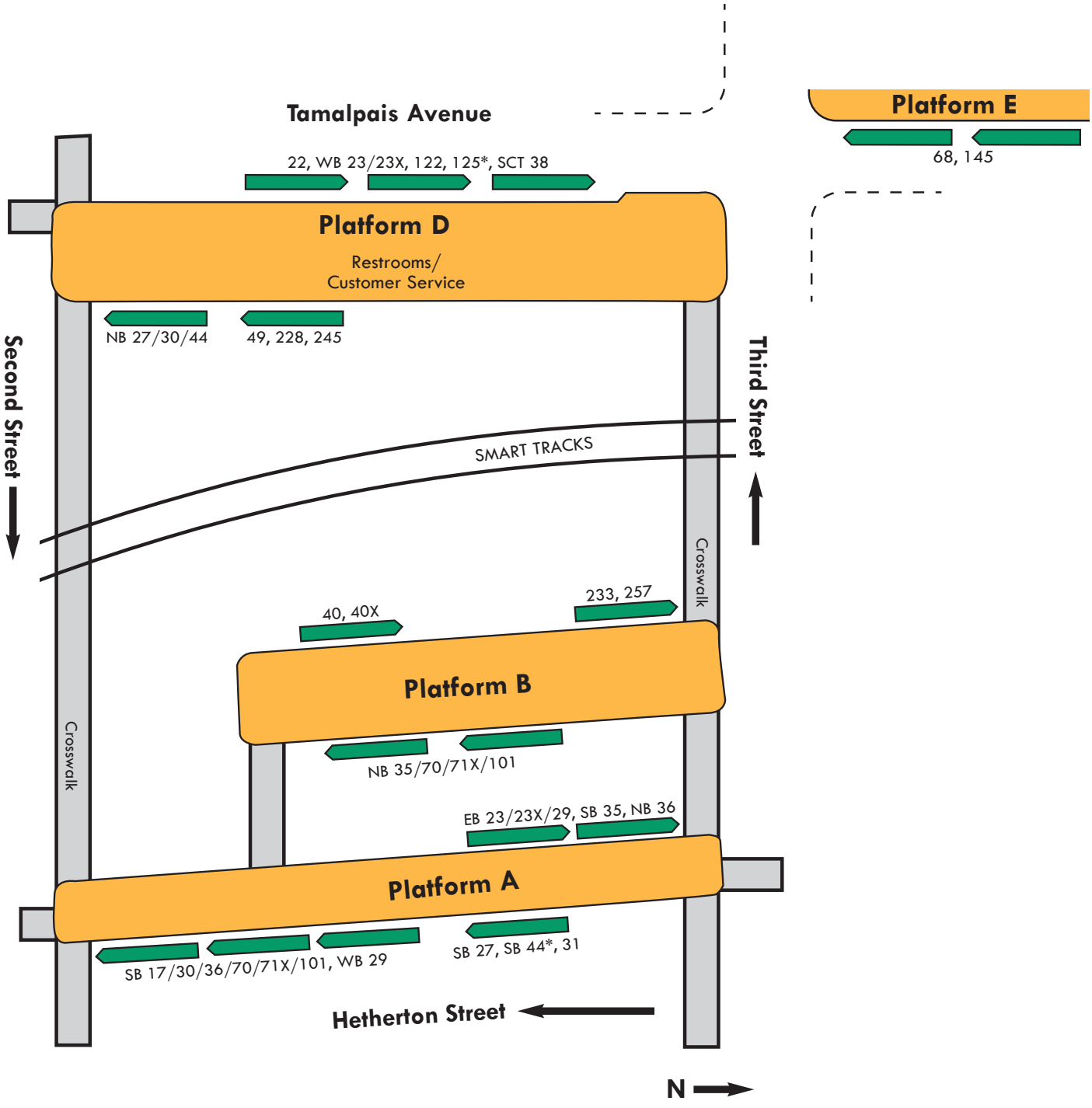


Figure 5-5: Interim Solution Bus Routing

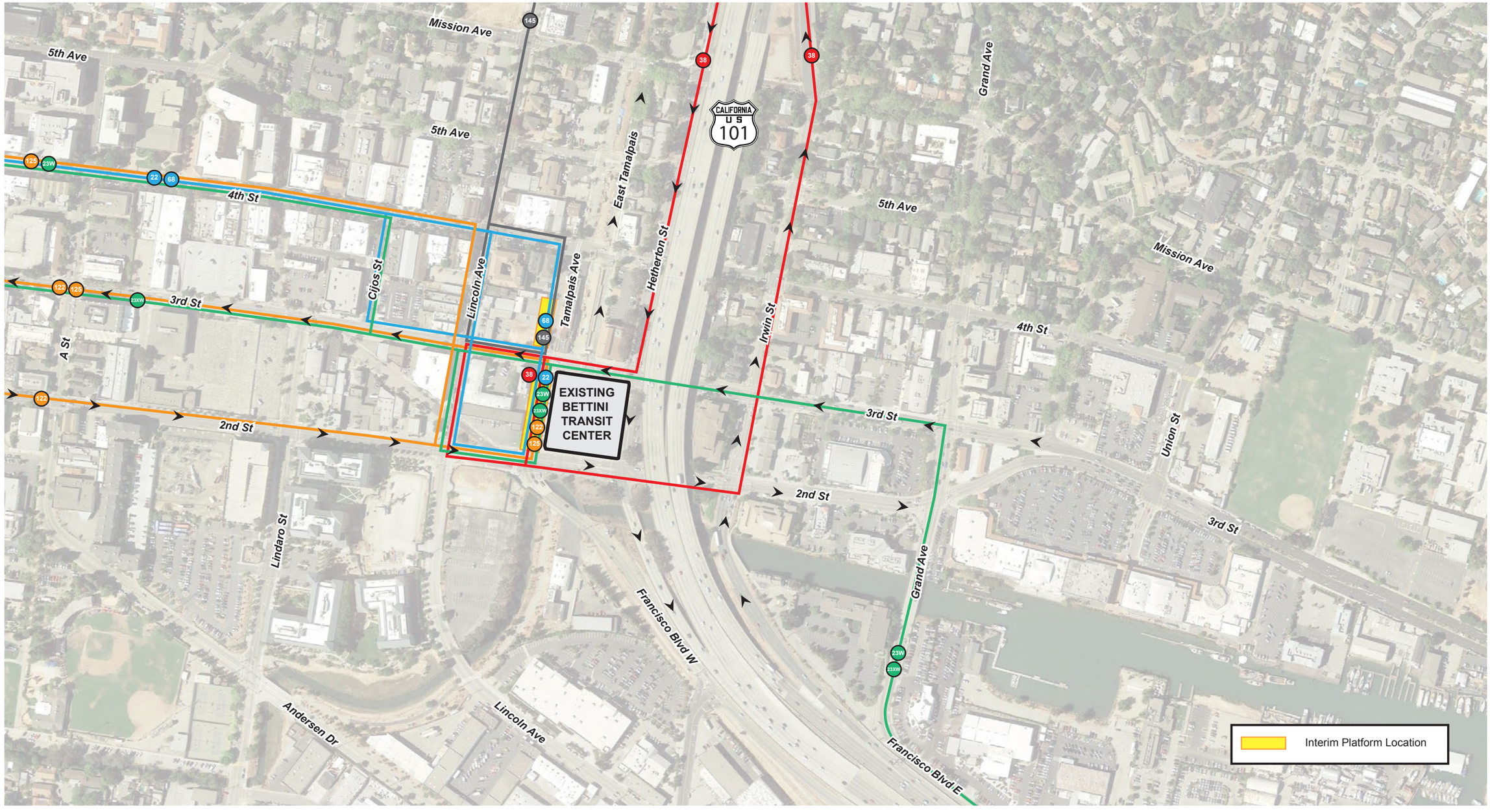
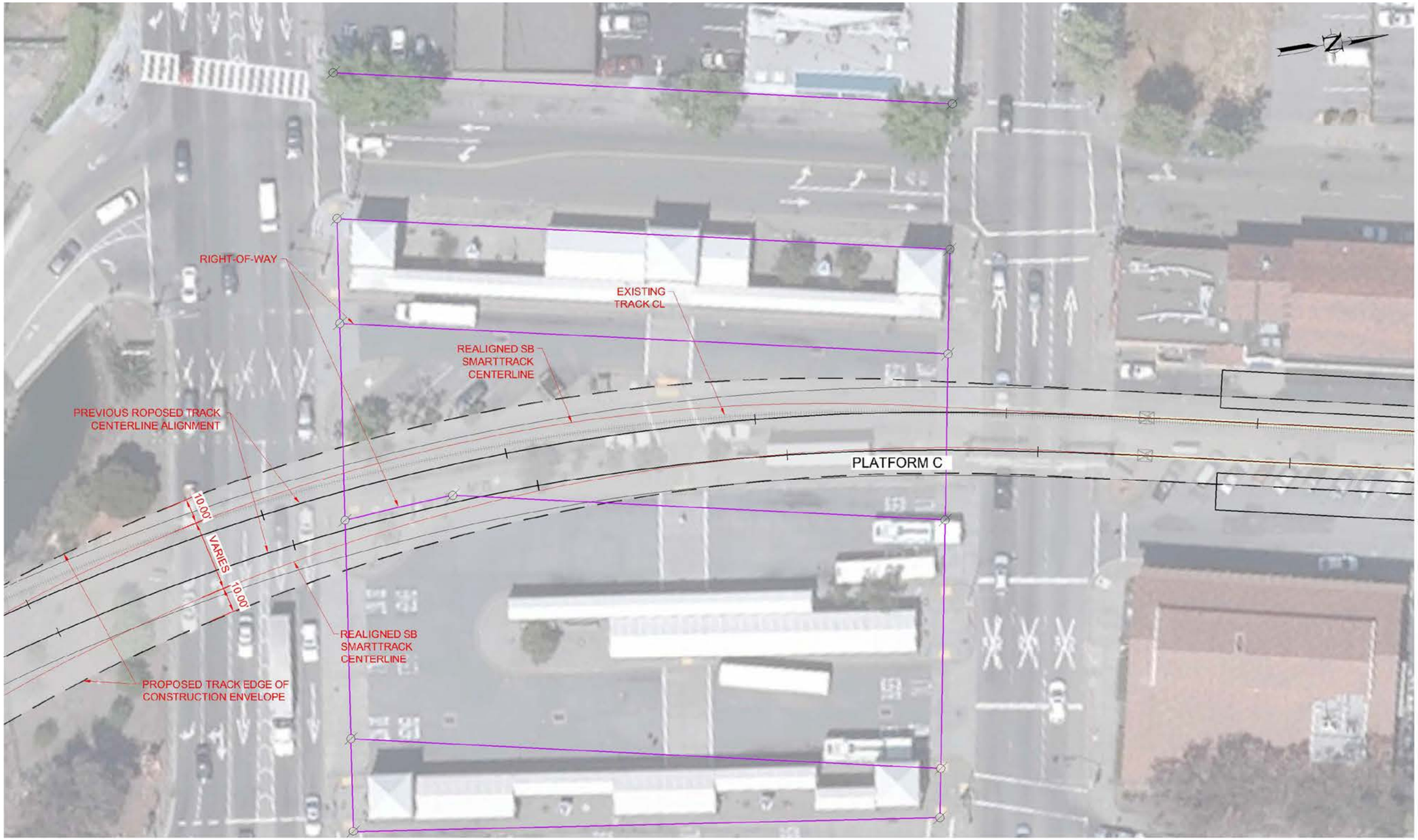


Figure 5-6: August 2016 Changes to SMART Alignment



6 PRELIMINARY LONG-TERM ALTERNATIVES

6.1. Range of Alternatives

The project team first identified a set of properties in the study area for potential use in a future transit center. The study area was limited to the area on the eastern portion of Downtown San Rafael, west of US-101. This area provides an optimal location both at the intersection of the county's major east-west and north-south routes and proximate to the transportation demand generated by downtown San Rafael. Initially, more than 25 properties in the vicinity of the SRTC were identified as potential sites for the future transit center.

After initial review of potential on-site circulation, capacity, and street access, properties were clustered to provide sufficient space for off-street transit operations. The land use requirements identified in Chapter 3 were utilized to identify the number of properties needed to meet the service capacity demands of the transit center. Sites were selected based on their ability to meet space requirements and their ability to meet the circulation, operations, and land use goals of the project.

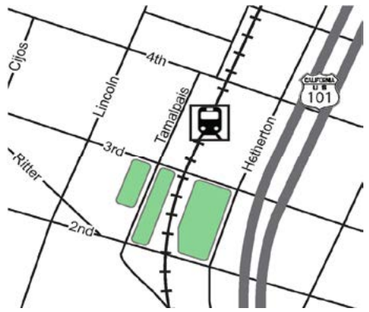
Initially, a total of eleven groups of parcels were considered for the long-term transit center. Three of the eleven groups of parcels had portions of the transit center located south of 2nd Avenue. After reviewing the opportunities and constraints for all the sites, the JPT agreed to eliminate two of the potential sites located south of 2nd Avenue. Those sites were deemed too far from downtown San Rafael and not easily accessible for the numerous bus routes operating on US-101 or those operating on 4th Street. One site was selected to remain for further study due to its location adjacent to the SMART alignment.

Descriptive summaries and schematic maps of the nine alternatives selected for the screening evaluation are provided in **Figure 6-1**. Several alternatives included at least a partial re-use of the existing transit center. Full illustrations of the parcels included in each alternative are provided in **Appendix J**.

Figure 6-1: Long-Term SRTC Site Preliminary Alternatives

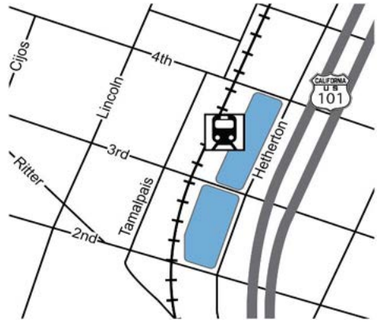
ALTERNATIVE 1

Expand Bettini West – Utilizes the remaining useable area of Bettini Transit Center—both the east and west portions. Space for displaced platforms/services would be identified through two properties: 1) the eastern curb of Tamalpais Ave, and 2) the property on the southwest corner of 3rd St & Tamalpais Ave.



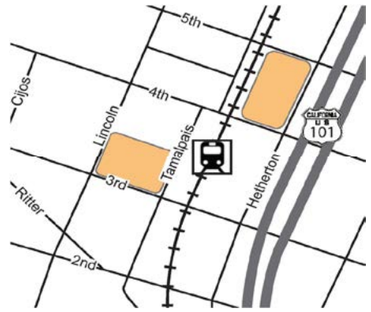
ALTERNATIVE 2

Expand Bettini North – Utilizes the remaining eastern portion of Bettini Transit Center plus the Citibank property. No public transit facilities would be provided west of the SMART tracks



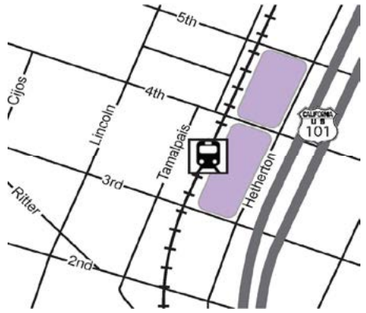
ALTERNATIVE 3

Two Node Transit Center – Utilizes the southern half of the block bordered by 3rd St, Lincoln Ave, 4th St, and Tamalpais Ave. Limits bus crossings of the SMART tracks by providing two separate transit areas where two objectives were achieved: 1) transit customers do not need to cross a 2nd or 3rd Streets to access SMART or other transit services; 2) locations provided multiple paths for buses to access to the site while not crossing the tracks. The Puerto Suello Bike Path may need to be relocated from Hetherton St. to East Tamalpais Ave. to allow transit vehicles to use the west curb of Hetherton St. Includes the portion of E. Tamalpais Ave between 4th St and 5th Ave to achieve this shift.



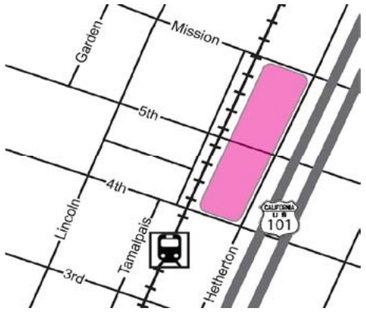
ALTERNATIVE 4

3rd to 5th – Utilizes the area between 3rd St, the SMART tracks, 5th Ave, and Hetherton St. Limits pedestrian crossings of 3rd St for transit patrons accessing downtown and SMART. It would include use of E. Tamalpais Ave between 3rd St and 5th St as well. Due to its prominence as an entrance into downtown San Rafael, 4th St would remain open for all traffic. The Puerto Suello Bike Path would need to be shifted from Hetherton St to adjacent to the SMART tracks to allow transit vehicles to use the west curb of Hetherton St.



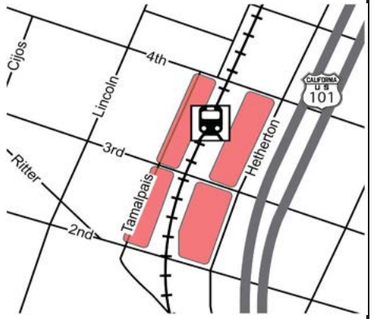
ALTERNATIVE 5

5th Avenue – Utilizes the area bounded by 4th St, the SMART tracks, Mission Ave, and Hetherton St. Provides convenient pedestrian access between the transit center, SMART, and downtown. 5th Ave would be incorporated into the transit center —providing an access point for buses only and avoiding a trafficked public street running through the transit center. The Puerto Suello Bike Path would be relocated from Hetherton St to E. Tamalpais Ave or into the transit center to allow transit vehicles to use the west curb of Hetherton St. This alternative may limit the grade crossing at 5th St to bus only or completely close the grade-crossing to vehicles altogether.



ALTERNATIVE 6

Four Quadrant Transit Center – Utilizes the remaining useable area of Bettini Transit Center—both the east and west parcels. Also includes the "Citibank" parcel (the property east of the SMARstation) and the "Whistlestop" property. This configuration would allow routes that terminate at the SRTC or operate on US-101 to avoid from having to cross the tracks. It would also allow for the re-alignment of Tamalpais to eliminate the jog at 4th Street and more efficiently use the area west of the tracks.

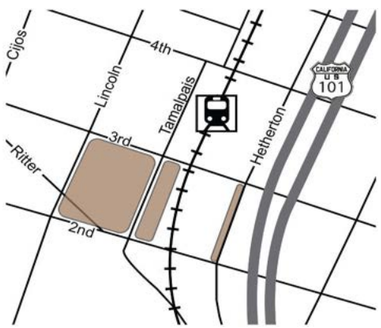


ALTERNATIVE 7

Ritter St – Utilizes Ritter St, the parcels to the northwest to 3rd St and Lincoln Ave, and adjacent parcels with access only via Ritter St. Access would be provided via Lincoln Ave, 3rd St, and Lindaro St. Ritter St would be closed to mixed flow traffic. All US-101 services would be required to cross the SMART tracks to access/egress the transit center.

ALTERNATIVE 8

Tamalpais/Lincoln – Utilizes the entire block bounded by 2nd St, Lincoln Ave, 3rd St, and Tamalpais Ave. The diagonal Ritter St connection would be repurposed as needed for the transit center. The remaining portion of the Bettini transit center west of the SMART tracks and the Hetherton St curb would be utilized for transit operations.



ALTERNATIVE 9

Southern Transit Center – Utilizes parcels south of Francisco Blvd W., south of 2nd St, including the Glass & Sash property and the Sprouts/Staples parking lot. With the flip of the SMART tracks and Francisco Blvd W., the roadway would provide direct access to those parcels. Would allow for the relocation of the SMART station south to be adjacent to this site.

6.2. Screening of Alternatives

Screening Criteria

Screening criteria were developed to evaluate the nine preliminary alternatives in the initial screening. The criteria for the initial screening were primarily qualitative in nature and are summarized below:

- Land Requirements
  - » Land Acquisition Cost
  - » Alignment with Land Use and Economic Development Goals
- Site Functionality
  - » Number of Bays
  - » Overall Integration of Transit Center Facilities
- Bus Operations
  - » Efficiency in Bus Route Access/Egress
  - » Interaction with Vehicle and Grade-Crossing Delays
- Connectivity Between Transit Services
  - » Transfer Convenience between Bus Transit Routes
  - » Connectivity to SMART
- Local Circulation
  - » Bicycle and Pedestrian Accessibility
  - » Effects on Vehicle and Pedestrian Circulation

Each preliminary alternative was rated on a qualitative high-medium-low scale for each screening criterion. A high rating represents a desirable score for each alternative, while a low rating represents an undesirable score for each alternative. Definitions of high, medium, and low ratings for each criterion are provided in **Figure 6-2** and are summarized in the sections below.

Real Estate

As part of the preliminary screening process, the existing site characteristics of each parcel included in each alternative were identified. Sub-consultant Strategic Economics assembled information on the total site area, current property ownership, acquisition area required, and assessed value of the acquisition are for each alternative. This information is summarized in **Table 6-1**.

Property ownership information and assessed value was obtained from publicly available assessor data. Some of the alternatives place buses along public streets or include the dedication of public streets for transit-only uses. While the public right-of-way for these alternatives may not require acquisition cost, they may result in a traffic or circulation impact. This land use data informed the qualitative evaluation of alternatives in the preliminary screening process.

Table 6-1: Preliminary Screening Ratings Definitions

Criteria		High	Medium	Low
Land Requirements	**Land Acquisition**	Low cost of land acquisition. Minimal acquisition risk due to a low number of property owners or parcels needed.	Moderate assessed value of required land acquisition. Medium acquisition risk due to a moderate number of property owners or parcels.	High assessed value of required land acquisition. High acquisition risk due to a high number of parcels or property owners.
	Alignment with Land Use & Economic Development Goals	Little or no impact on opportunity sites.	Some encroachment on opportunity sites.	Significant impact on one or more opportunity sites.
Bus Operations	**Efficiency in Bus Route Access/Egress**	Buses approaching from all directions have easy access to and from the transit center. Bays within the transit center align with routes.	Bays mostly align with routes approaching from different directions. Some buses have to deviate off course or loop around when arriving or departing.	Many buses have to take circuitous routes or deviate significantly from their shortest path when arriving or departing.
	Interaction with Vehicle and Grade-Crossing Delays	Vehicle queuing at SMART grade crossings has little to no effect on bus access/egress. Configuration minimizes bus crossings of the SMART alignment.	Configuration incurs mild delays from buses making extra SMART crosings and/or vehicles queuing in front of access/egress points	Configuration requires many routes to cross SMART multiple times. Queuing in front of SMART crossings would delay access/ egress to the transit center.
Site Functionality	**Number of Bays**	Preliminary bay configurations include 18 or more bays.	Preliminary bay configurations include 16-17 bays.	Site is not adequate to provide at least 16 bays.
	Overall Integration of Transit Center Facilities	All transit center facilities can fit within one continous site area.	Transit center spans across multiple blocks, separated by roadways.	Transit center requires multiple sites that have significant distance between them.
Connectivity Between Transit Services	**Transfer Convenience between Bus Transit routes**	Passengers can make most or all transfers without having to make street or rail crossings.	Some transfers require passengers to cross a street or rail alignment. Heavy transfer routes can be located in the same area.	Passengers have to cross major streets and the rail alignment and/or travel longer distances to transfer between routes.
	Connectivity to SMART	Site located directly adjacent to planned SMART station.	Configuration requires passengers to cross light or medium traffic streets to reach the SMART station.	Configuration requires most or all passengers to cross heavily trafficked streets, e.g. 2nd and 3rd Street, to reach the SMART station.

Criteria			High	Medium	Low
Local Circulation	Bicycle and Pedestrian Accessibility	**Connectivity to Downtown San Rafael**	All or most portions of the transit center have direct access to sidewalks on 4th St, which connect pedestrians to and from downtown San Rafael.	Configuration requires pedestrians to walk one or two blocks to reach 4th St and the downtown core.	Configuration requires pedestrians to walk significant distances to reach 4th St and the downtown core.
		Accessibility from Bike Paths	Major bicycle facilities are directly accessible to and from all or most portions of the site	Bicycle facilities accessible within one or two blocks of the site.	Bicycle facilities only accessible by traveling more than two blocks, or requires bicyclists to travel in heavy traffic to access the site.
	Effects on External Circulation	**Effects on Vehicle Circulation**	Few bus turning movements on high-volume streets. Configuration does not close any streets to vehicle traffic.	Some additional bus turning movements created on high volume streets. May close low volume streets to vehicle traffic.	Frequent bus turning movements created on high volume streets.
		Effects on Pedestrian Circulation	Configuration adds a minimal number of driveways, or driveways located on low volume pedestrian facilities. Minimizes pedestrian/vehicle conflicts.	Configuration adds a moderate number of driveays, or creates a moderate amount of pedestrian vehicle/conflicts.	Configuration adds multiple driveways to significant pedestrian throughways and creates numerous pedestrian/ vehicle conflicts.

Table 6-2: Summary of Parcel Data by Alternative

Alternative	# of Private Parcels	# of Property Owners	Total Land Area (SF)	Total Private Land Area (SF)	Total Private Assessed Value	Utilizes all or Part of SRTC?	Utilizes Public ROW?
Alternative 1	1	1	40,370	7,000	$1,050,000	Yes	No
Alternative 2	2	2	46,387	23,184	$2,651,088	Yes	Yes
Alternative 3	10	9	64,193	53,693	$6,746,859	No	Yes
Alternative 4	4	5	68,093	43,093	$5,048,987	No	Yes
Alternative 5	9	10	78,009	47,509	$5,679,101	No	Yes
Alternative 6	2	4	102,054	38,184	$5,083,561	Yes	No
Alternative 7	7	7	71,700	44,700	$4,087,347	No	Yes
Alternative 8	3	5	80,367	54,000	$4,448,124	Yes	Yes
Alternative 9	4	4	199,300	199,300	$8,808,086	No	No

Alternatives requiring significant land acquisition, involved many property owners, or utilized parcels with a high assessed value were rated poorly. Alternatives more cost-effective to acquire, or utilized the existing transit center, were rated highly.

Strategic Economics, Kimley-Horn, and the City of San Rafael reviewed near-term development opportunities, adopted zoning, opportunity sites identified the San Rafael Transit Area Specific Plan, and the economic development goals of the City to assess the impact of each alternative on near-term and long-term development potential in the vicinity of the transit center. Alternatives not significantly affecting redevelopment goals or helped promote those goals were rated highly, while those precluding planned redevelopment were rated poorly.

Bus Operations

Alternatives were rated in terms of their efficiency in bus route access/egress and interaction with vehicle and grade-crossing delays. A number of routes serving the transit center approach via US-101. Alternatives requiring these routes to travel further from US-101 were generally rated low. Due to the number of one-way streets in downtown San Rafael, access/egress for some parcels is limited. Alternatives where a number of routes would be required to travel extensively out of direction or make a number of left-turns generally rated poorer than those with more flexibility in providing access/egress from all directions.

The construction of SMART in downtown San Rafael is introducing new grade-crossings at all major east-west streets in the study area. These grade-crossings will delay all vehicular traffic during grade-crossing events, likely resulting in periods of queuing on downtown streets. This queuing has the potential to delay buses on routes that cross the tracks and affect the ability of buses to enter/exit driveways located near the tracks. Some alternatives were configured in a way requiring some bus routes to cross the tracks multiple times in accessing/egressing the transit center. Alternatives where the grade-crossings would have significant potential to delay buses or create variability in bus travel times were rated low.

Site Functionality

The land use requirements identified the need for 16-18 bays at the long-term transit center. Preliminary conceptual layouts were prepared for each of the alternatives to identify the quantity of bays that could be provided within the identified boundary of each alternative. In determining the bay quantities at each site, consideration was given to on-site vehicle circulation and driveway placement. **Appendix J** includes figures depicting the preliminary circulation pattern for each site and the number of bays feasible within each block of each alternative. The actual number of bays that could be accommodated on each block is anticipated to be at the lower end of each range due to the need to provide pedestrian circulation, refinements to driveway placement and bay orientation, and the inclusion of ancillary facilities and functions. Alternatives were rated high if they were anticipated to provide at least 18 bays, given the preliminary level of concept development undertaken. Alternatives were rated low if they would not would be expected to provide at least 16 bays.

One element included in the evaluation criteria was the integration of the transit center facilities. It is desired to have a consolidated transit facility, as having the transit facilities in a contiguous space provides benefits for transferring passengers, preserves the functionality of the pulse system and maintains operational efficiencies for security and other amenities. Alternatives were rated high if they included an integrated transit center not segmented by major roadways or other uses. Alternatives were rated low if they were separated by one block or greater of other uses and major roadways.

Connectivity Between Transit Services

The transit center is used as a transfer point for approximately half of its users. Transfers are currently almost exclusively bus-to-bus transfers, but with the addition of SMART, some users will be transferring between rail and bus services. Given the large number of transfers, and the importance placed on transfers with the pulse system, facilitating a seamless transfer from one bus to another is paramount with the long-term transit center solution. Alternatives with a contiguous site, do not have major impediments to transferring between bays, and allow for the nearby berthing of buses with significant transfer activity were rated highly. Alternatives with transit centers bifurcated with major impediments were rated low.

While SMART is not anticipated to be a transfer generator on the order of the existing bus-to-bus transfer magnitude, it will provide a new transit connection opportunity for a number of riders. The ability to easily and quickly connect to SMART, which will be incorporated into the pulse system, will benefit those transferring passengers as well as bus operations within the pulse. Longer transfer times may require a longer pulse period and may carry operating cost impacts. Alternatives allowing for a quick transfer to SMART without a major roadway impediment along the transfer path were rated high. Alternatives requiring a long walk distance and the crossing of major roadways to transfer to/from SMART were rated low.

Local Circulation

The existing downtown San Rafael street network is congested with vehicles during the peak period. The capacity of the street network and multi-modal connectivity will be tested with the addition of SMART grade-crossings. The ability to maintain multi-modal and vehicle circulation with the provision of the long-term transit center is important to the City of San Rafael and its residents.

The Puerto Suello bike path provides access to downtown from areas to the north. The Mahon Creek bike path provides access to downtown from areas to the south. 4th Street is a designated east-west bike route by the City of San Rafael. Pedestrian activity is also centered along 4th Street, the main downtown commercial corridor. Alternatives providing easy access to these bicycle facilities and the main pedestrian corridor were rated high. Alternatives requiring a longer and more challenging path for bicycles and pedestrians were rated low.

2nd Street, 3rd Street, and Hetherton Street are all heavily utilized during the peak periods. Periods of queuing and delay will likely be experienced during and after grade-crossing events. In addition, the existing street network has a limited number of north-south through routes. These may experience more traffic as drivers attempt to avoid grade-crossing delays. Alternatives not expected to generate large numbers of bus turning movements on major roadways and would not impact the existing street network were rated high. Alternatives increasing the number of bus turning movements on major roadways or eliminating critical connections in the existing street network were rated low.

Screening Results

Evaluation sheets documenting the individual category ratings and corresponding explanations for each alternative are provided in **Appendix E**.

Figure 6-3 shows a summary of the ratings for all nine alternatives for each of the above-described evaluation categories.

As shown in the figure, a couple of the alternatives consistently rated low across multiple categories. A few alternatives comparatively rated better than other alternatives, although there is no one alternative consistently rated higher than all other alternatives. Based on this preliminary screening, three alternatives were selected for further study, while the others were eliminated from further consideration.

Alternatives 2, 4, and 5 were selected to be carried forward for detailed evaluation. All three alternatives had the potential to provide a sufficient number of bays to meet the anticipated future transit demands at the transit center. All three alternatives also would utilize one continuous site or two adjacent sites, providing a well-integrated facility. In addition, all three alternatives primarily utilize sites located east of the SMART alignment, adjacent to Hetherton Street. A transit center in this area was deemed most consistent with the economic development goals of the City and best aligned with the circulation paths of bus routes serving the transit center. Additional highlights of the alternatives carried forward include:

- **Alternative 2** aligns well with land use and economic development goals, as it would utilize the remaining eastern portion of Bettini in addition to the area bordered by 3rd Street, 4th Street, Hetherton Street, and the SMART tracks.
- **Alternative 4** would be directly adjacent to SMART and would provide easy access to the downtown core. The two blocks comprising the transit center would be separated by 4th Street, a lower volume street than either 2nd or 3rd Streets.
- **Alternative 5** would consolidate bus operations onto one contiguous area, providing easy transfer access for passengers and greater flexibility in operations for the transit operators. It would also provide easy access to 4th St and the Puerto Suello Bike Path. This configuration would provide an opportunity to potentially shift the SMART station one block north, which would locate all public transit facilities on one contiguous site.

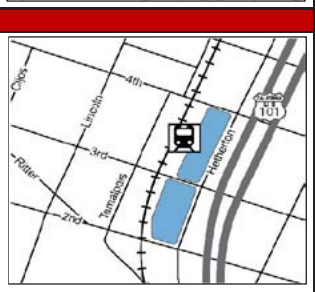
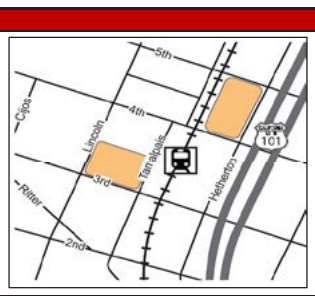
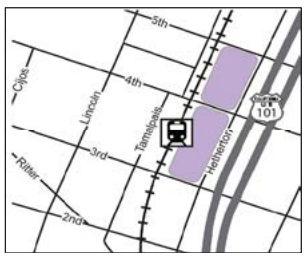
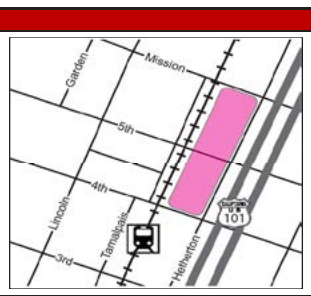
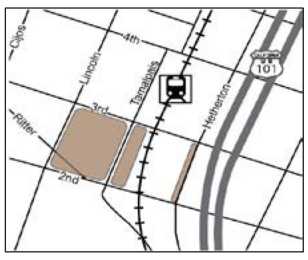
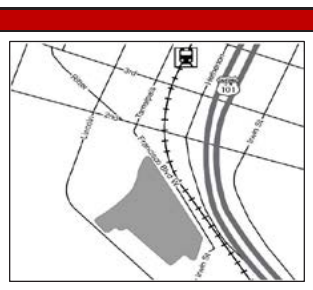
The remaining six alternatives were eliminated from further consideration for reasons including the following:

- **Alternative 1** would be a poorly integrated facility, as it would be split into three different facilities by the SMART alignment and Tamalpais Ave. It would also require a crossing of 3rd Street for all transfers to/from SMART.
- **Alternative 3** utilizes two completely separated sites, without line of site between the two locations. A number of bus-to-bus and bus-to-train transfers would have to cross the SMART tracks as well as 4th Street and/or Tamalpais Ave.
- **Alternative 6** would be separated into four different facilities separated by highly trafficked 3rd Street or the SMART tracks, making it challenging for transfers. It would also require the acquisition and demolition of the Whistlestop site, which at the time of the screening analysis had an active development proposal.
- **Alternative 7** would require extensive land acquisition in an area identified by the City as having significant economic potential. The shape of the site as identified would limit the efficiency of bus operations and access and it would require out-of-direction travel for routes on US-101. It would also have poor connectivity to the SMART station (2 blocks away), making bus-to-train transfers more difficult.
- **Alternative 8** similar to Alternative 1, would be a poorly integrated facility, as it would utilize three sites separated by the SMART alignment and Tamalpais Ave. US-101 routes would remain on Hetherton Street and thus would be separated from the other transit routes by the SMART tracks. It also would require crossing 3rd Street for all bus-to-rail transfers.
- **Alternative 9** would require the most extensive land acquisition, impacting the existing shopping center. It would require extensive out-of-direction travel for nearly all bus routes, adding significant delay for buses and congestion to 2nd Street. It would result in an increase to bus operations cost due to the additional travel time associated with accessing the facility. It would be located far away from downtown San Rafael, which is the origin/destination for many of the existing users of the transit center, making it inconvenient for many users. One option considered was to also shift the SMART station down to adjacent to the bus transit center in Alternative 9, but in addition to the problems noted above, this would also relocate the SMART station further away from the trip attractors in downtown San Rafael.

Figure 6-3: Preliminary Screening Summary Matrix

Legend

● High Rating ◑ Medium Rating ○ Low Rating

	Land Requirements		Bus Operations		Site Functionality		Connectivity Between Transit Services		Local Circulation	
	Land Acquisition	Alignment w/ Land Use & Econ. Development Goals	Efficiency in Bus Route	Access/Egress Interaction w/ Vehicle & Grade-Crossing Delays	Number of Bays	Overall Integration of Transit Center Facilities	Transfer Convenience between Bus Routes	Connectivity to SMART	Bicycle and Pedestrian Accessibility	Effects on External Circulation
ALTERNATIVE 1										
Expand Bettini West – Utilizes the remaining useable area of Bettini Transit Center—both the east and west portions. Space for displaced platforms/services would be identified through two properties: 1) the eastern curb of Tamalpais Ave, and 2) the property on the southwest corner of 3rd St & Tamalpais Ave. 	●	●	◑	◑	◑	◑	◑	○	◑	◑
ALTERNATIVE 2										
Expand Bettini North – Utilizes the remaining eastern portion of Bettini Transit Center plus the Citibank property. No public transit facilities would be provided west of the SMART tracks 	●	●	◑	○	●	◑	◑	◑	◑	◑
ALTERNATIVE 3										
Two Node Transit Center – Utilizes the southern half of the block bordered by 3rd St, Lincoln Ave, 4th St, and Tamalpais Ave. Limits bus crossings of the SMART tracks by providing two separate transit areas where two objectives were achieved: 1) transit customers do not need to cross a 2nd or 3rd Streets to access SMART or other transit services; 2) locations provided multiple paths for buses to access to the site while not crossing the tracks. The Puerto Suello Bike Path may need to be relocated from Hetherton St. to East Tamalpais Ave. to allow transit vehicles to use the west curb of Hetherton St. Includes the portion of E. Tamalpais Ave between 4th St and 5th Ave to achieve this shift. 	○	○	●	●	◑	○	○	◑	●	●
ALTERNATIVE 4										
3rd to 5th – Utilizes the area between 3rd St, the SMART tracks, 5th Ave, and Hetherton St. Limits pedestrian crossings of 3rd St for transit patrons accessing downtown and SMART. It would include use of E. Tamalpais Ave between 3rd St and 5th St as well. Due to its prominence as an entrance into downtown San Rafael, 4th St would remain open for all traffic. The Puerto Suello Bike Path would need to be shifted from Hetherton St to adjacent to the SMART tracks to allow transit vehicles to use the west curb of Hetherton St. 	◑	◑	◑	○	●	◑	◑	●	●	◑
ALTERNATIVE 5										
5th Avenue – Utilizes the area bounded by 4th St, the SMART tracks, Mission Ave, and Hetherton St. Provides convenient pedestrian access between the transit center, SMART, and downtown. 5th Ave would be incorporated into the transit center —providing an access point for buses only and avoiding a trafficked public street running through the transit center. The Puerto Suello Bike Path would be relocated from Hetherton St to E. Tamalpais Ave or into the transit center to allow transit vehicles to use the west curb of Hetherton St. This alternative may limit the grade crossing at 5th St to bus only or completely close the grade-crossing to vehicles altogether. 	○	●	◑	◑	●	●	●	◑	●	◑
ALTERNATIVE 6										
Four Quadrant Transit Center – Utilizes the remaining useable area of Bettini Transit Center—both the east and west parcels. Also includes the "Citibank" parcel (the property east of the SMARstation) and the "Whistlestop" property. This configuration would allow routes that terminate at the SRTC or operate on US-101 to avoid from having to cross the tracks. It would also allow for the re-alignment of Tamalpais to eliminate the jog at 4th Street and more efficiently use the area west of the tracks. 	◑	○	●	◑	●	◑	◑	◑	◑	◑
ALTERNATIVE 7										
Ritter St – Utilizes Ritter St, the parcels to the northwest to 3rd St and Lincoln Ave, and adjacent parcels with access only via Ritter St. Access would be provided via Lincoln Ave, 3rd St, and Lindaro St. Ritter St would be closed to mixed flow traffic. All US-101 services would be required to cross the SMART tracks to access/egress the transit center. 	◑	○	○	○	○	●	●	○	◑	◑
ALTERNATIVE 8										
Tamalpais/Lincoln – Utilizes the entire block bounded by 2nd St, Lincoln Ave, 3rd St, and Tamalpais Ave. The diagonal Ritter St connection would be repurposed as needed for the transit center. The remaining portion of the Bettini transit center west of the SMART tracks and the Hetherton St curb would be utilized for transit operations. 	◑	◑	◑	○	◑	○	◑	○	◑	●
ALTERNATIVE 9										
Southern Transit Center – Utilizes parcels south of Francisco Blvd W., south of 2nd St, including the Glass & Sash property and the Sprouts/Staples parking lot. With the flip of the SMART tracks and Francisco Blvd W., the roadway would provide direct access to those parcels. Would allow for the relocation of the SMART station south to be adjacent to this site. 	○	◑	○	○	●	●	●	○	○	○

7 REFINED ALTERNATIVES

After the initial screening of the nine potential long-term alternative sites, three concepts were selected for further refinement and evaluation. For continuity with the preliminary screening effort, these alternatives are numbered 2, 4, and 5 to match the numbering system used for the nine initial alternatives. Descriptions of these refined alternatives are provided below.

These alternatives are developed to a conceptual level of design only. They are intended to represent a potential configuration of the transit center with utilization of the identified areas. Further modifications to the configuration of bus bays, circulation, and supporting transit amenities will occur during the environmental and design phases of the project.

Preliminary bus bay configurations and assignments were developed for each alternative. Assignments were developed in coordination with the transit operators and based on service schedules planned to be implemented in mid-2016. Refinements to configurations and bay assignments will likely be needed prior to implementation of the alternatives as further design is completed and system configurations are modified.

7.1. Alternative 2

Figure 7-1 depicts the configuration of Alternative 2. This concept utilizes two sites: the existing portion of the SRTC east of the SMART tracks, plus the parcel located across 3rd Street ("Citibank site"). In this configuration, driveways would be located on 2nd, 3rd, and 4th Streets. A total of 17 bus bays would be provided[2]. Four curbside bus bays would be located on Hetherton Street between 2nd Street and 3rd Street to accommodate routes coming to and from Route 101. This alternative includes an overhead pedestrian crossing across 3rd Street to provide a grade-separated pedestrian connection between the two portions of the transit center. The alternative could be implemented without the overhead pedestrian crossing and pedestrian activity shifted to the signalized crossing of 3rd Street at Hetherton Street. For this study, the evaluation and cost estimates for Alternative 2 were completed with the overhead pedestrian crossing included. An anticipated bus bay assignment configuration for Alternative 2 is shown in **Figure 7-2**.

This alternative would provide two locations (one on each side of 3rd Street) for customer service or security space, with a total of 1,873 square feet of space provided. Curb space for kiss-and-ride and shuttle access to the transit uses and SMART could be provided along Tamalpais Avenue between 3rd Street and 4th Street. The existing taxi staging area within SRTC would be need to be relocated to a facility outside of the new transit center; potentially on Tamalpais Avenue. The airporters and Greyhound buses would likely need to remain in the location proposed for the interim solution (4th Street between Hetherton Street and Irwin Street).

A limited amount of bike parking for the transit center may be available in the northeast and southeast corners of the Citibank site. This area may be sufficient for bike racks or a limited number of bike lockers. SMART has also recently concluded a study on bike parking placement for rail users at the Downtown San Rafael Station; bike parking recommendations for this station will be planned for in the future as additional right-of-way and City partners are needed to develop high-capacity parking facilities.

The western portion of the existing transit center could be utilized for redevelopment or for other transit supportive uses, such as shuttles, pick-up/drop-off, or airporters/Greyhound services.

2. The original design included 18 bus bays. The modified SMART alignment through the transit center prepared in August 2016 precluded one of the bays.

Figure 7-1: Alternative 2 Layout

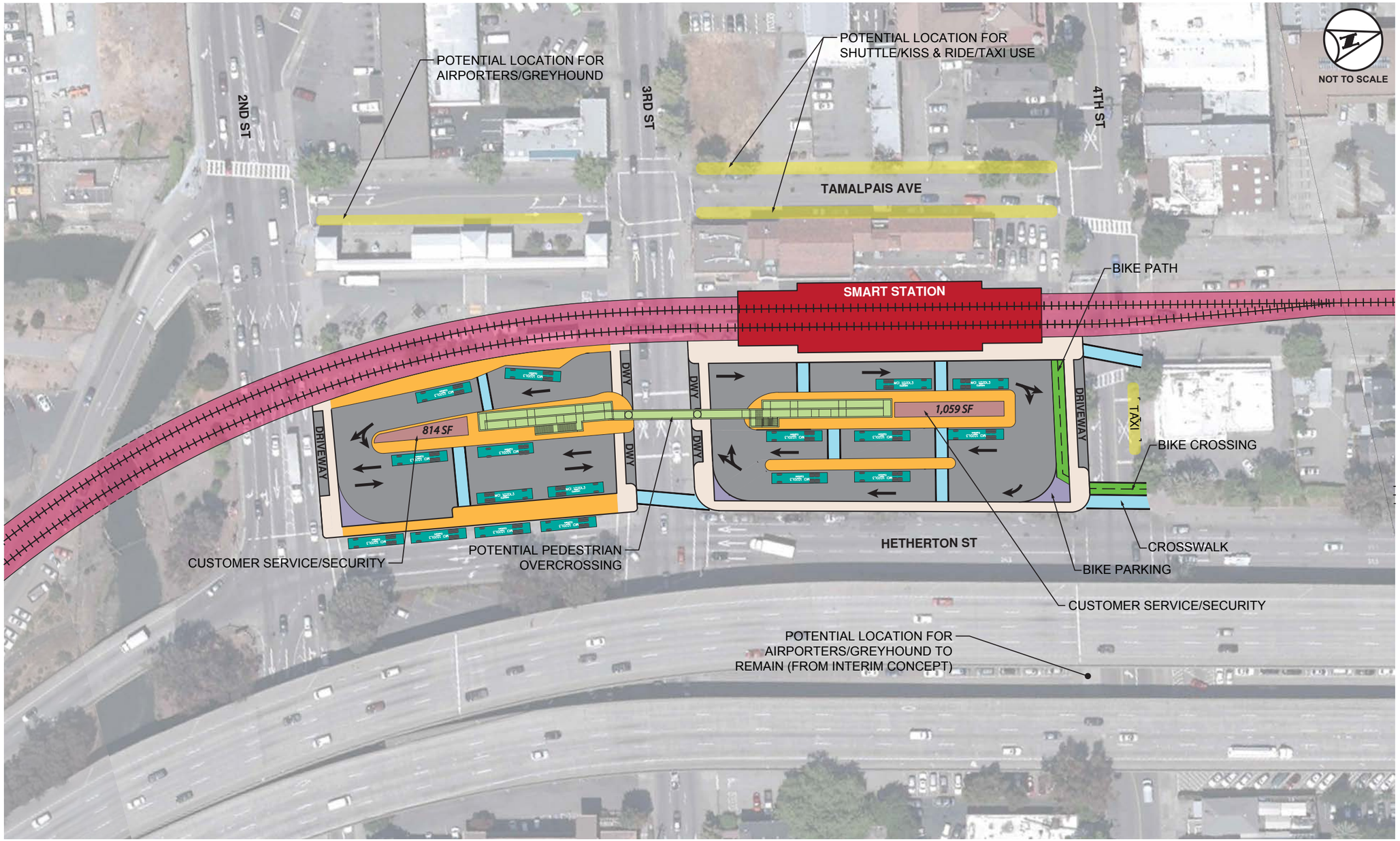
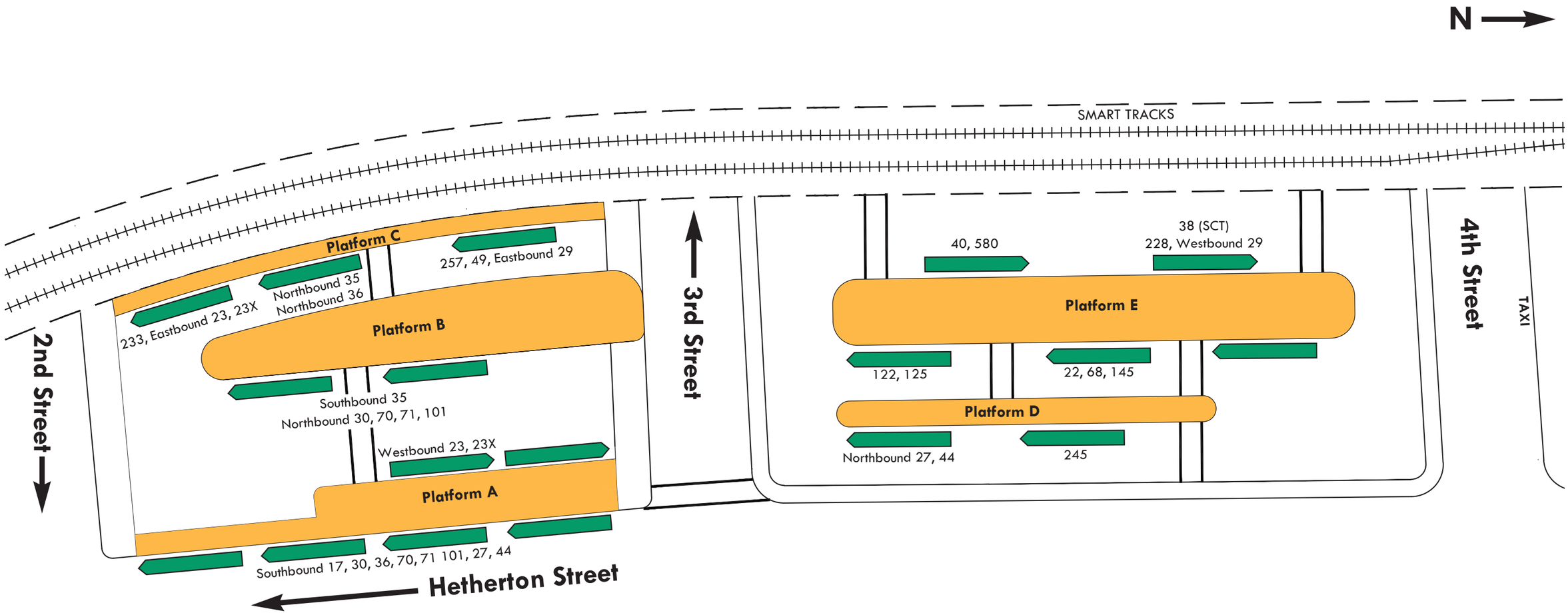


Figure 7-2: Alternative 2 Bay Assignments



7.2. Alternative 4

Figure 7-3 depicts the configuration of Alternative 4. This concept utilizes the Citibank site, plus the area bounded by SMART, 5th Avenue, Hetherton Street, and 4th Street. The alternative requires vacancy of the existing East Tamalpais Avenue between 3rd Street and 5th Avenue. In this configuration, driveways would be located on 3rd Street, 4th Street, and 5th Avenue. A total of 16 bus bays would be provided. Two of those bays would be located on a raised transit island on Hetherton Street north of 4th Street. An anticipated bus bay assignment configuration for Alternative 4 is shown in **Figure 7-4**.

Two versions of Alternative 4 were considered and refined before a final version was selected. The alternate version of this alternative included four curbside bus bays on Hetherton Street between 4th Street and 5th Avenue, and precluded right-turns from southbound Hetherton Street to westbound 4th Street. This version was ultimately removed from consideration due to the expected negative impact associated with the removal of right-turn traffic to 4th Street on downtown San Rafael.

This alternative would provide 2,350 square feet of customer service and/or security space in the middle of the Citibank site. Curb space for kiss-and-ride, taxi, and shuttle access to the transit uses and SMART could be provided along Tamalpais Avenue between 3rd Street and 5th Avenue. The airporters and Greyhound buses would likely remain the location proposed for the interim solution (4th Street between Hetherton Street and Irwin Street).

Bike parking for the transit center, including SMART, may be available in the northeast and northwest corners of the northern block of the transit center. Bike lockers and bike racks could be provided in this area. The Puerto Suello bike path, recently constructed along the west side of Hetherton between Mission Avenue and 4th Street, would possibly be relocated to reduce crossing conflicts with bus passengers. It could be shifted adjacent to the SMART alignment and cross 4th Street at the recently installed queue cutter signal. From there it would have access to the SMART station and the planned Tamalpais Avenue bike route via 4th Street.

Space would be available in the southeast corner of the northern portion and the northeast corner of the southern portion to locate an entryway/gateway feature for downtown San Rafael.

Figure 7-3: Alternative 4 Layout

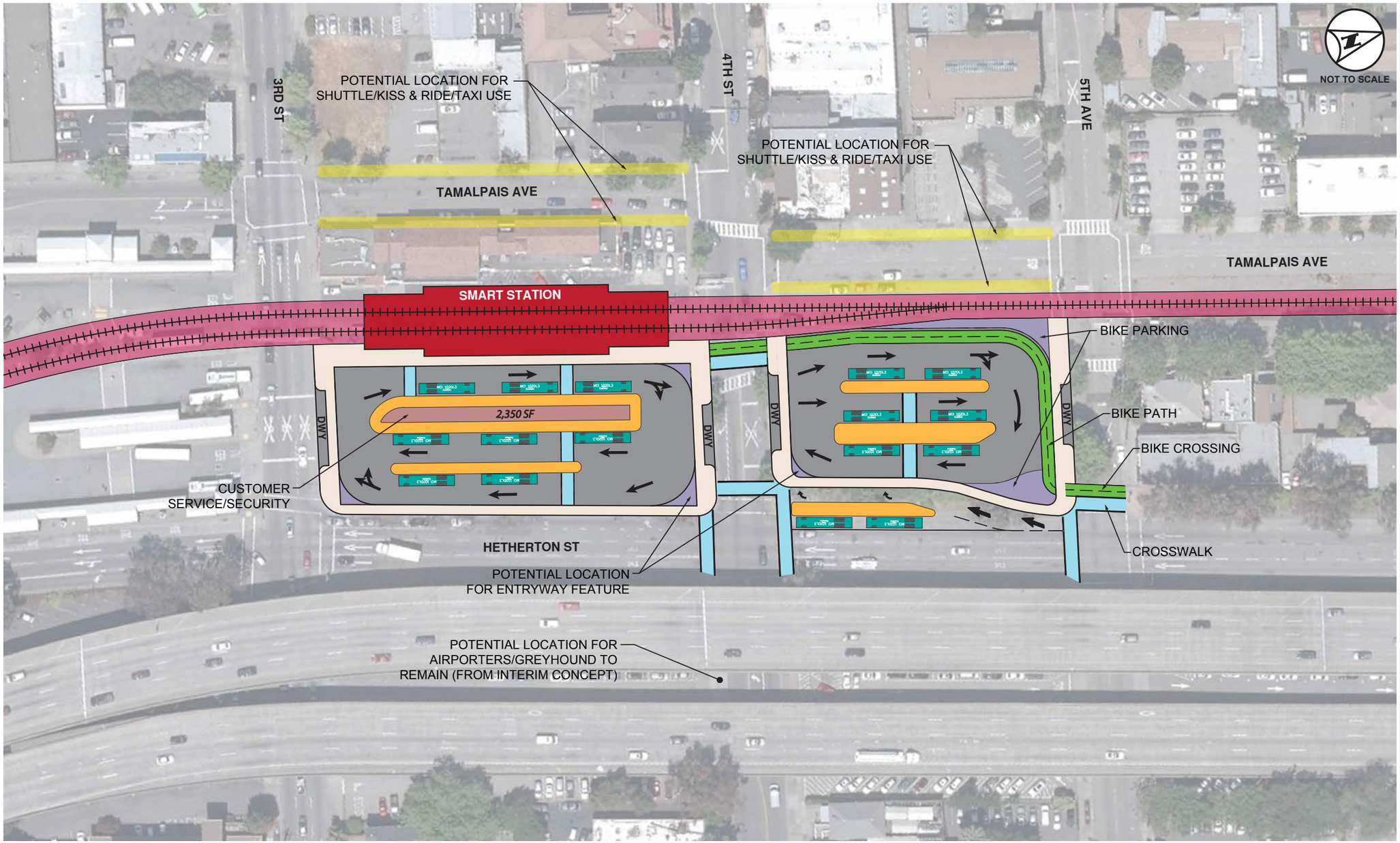
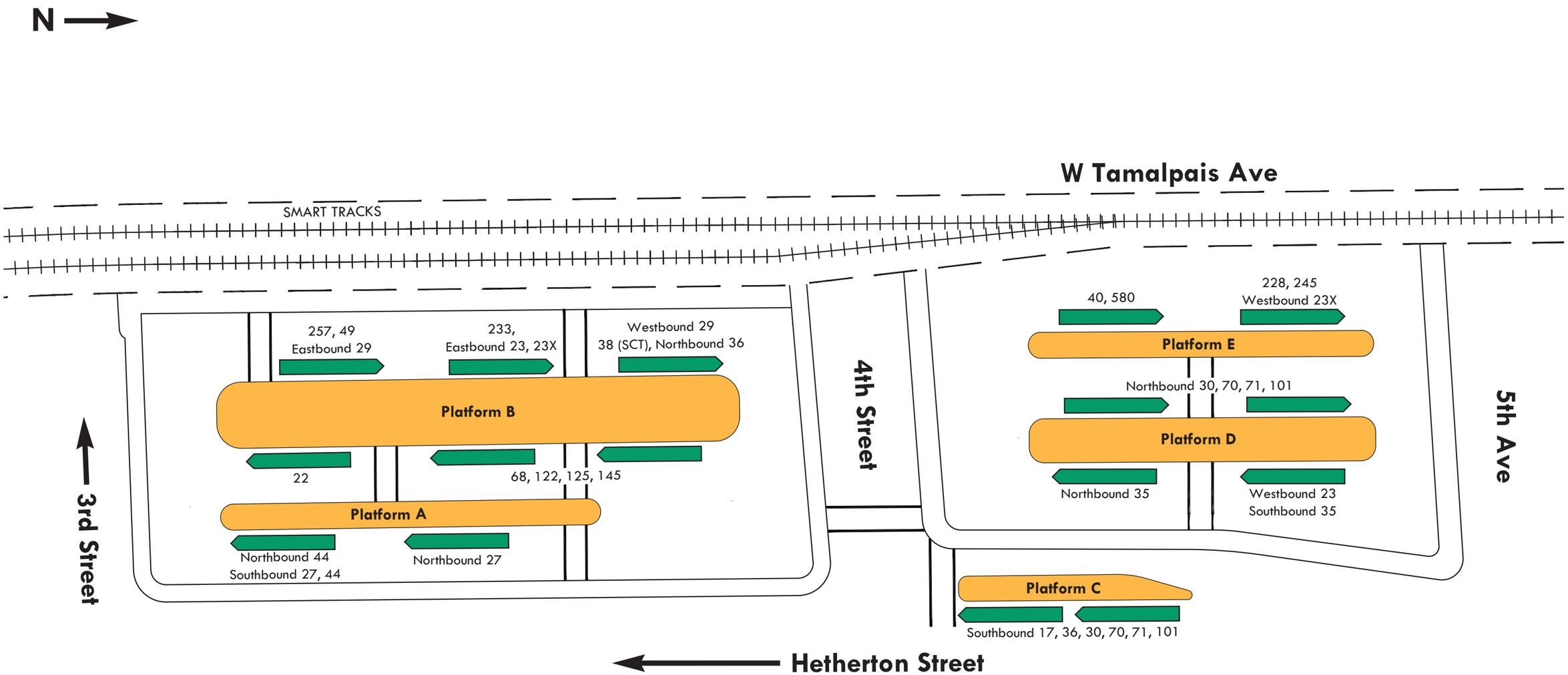


Figure 7-4: Alternative 4 Bay Assignments



7.3. Alternative 5

Figure 7-5 depicts the configuration of Alternative 5. This concept would create one continuous transit center site bounded by Tamalpais Avenue, 4th Street, Hetherton Street, and Mission Avenue. The alternative requires vacancy of the existing East Tamalpais Avenue between 3rd Street and 5th Avenue. In this configuration, 5th Avenue would be closed to auto traffic between Tamalpais Avenue and Hetherton Street. A total of 20 bus bays would be provided, including two curbside bus bays on the east side of Tamalpais Avenue south of Mission Avenue and four curbside bus bays on the west side of Hetherton Street north of 5th Avenue. An anticipated bus bay assignment configuration for Alternative 5 is shown in **Figure 7-6**.

This alternative would allow for the future relocation of the Downtown San Rafael SMART Station to the transit center site. A relocated SMART station would allow for a consolidated multi-modal transit center and a longer SMART train consist. The short length of the platform at the current Downtown San Rafael SMART station is the only geometric constraint in the rail system limiting the SMART train consist to a maximum of three cars. The relocated station would allow for train consists of up to five cars, increasing the potential capacity of the entire north-south system.

Alternative 5 was developed with considerations of both the SMART station relocating to the transit center block and remaining where it is currently located. **Figure 7-5** depicts the configuration without the relocated SMART station, although the outline of a potential relocated station is shown. For this study, the potential relocation of the SMART station is not included in the cost estimates or in the evaluation of Alternative 5, beyond identifying it as a potential future option. If this concept is selected, the SMART station relocation could still be accommodated subsequent to the start of operations of the transit center with some relatively minor modifications to bay configurations. The estimated cost of relocating the SMART station has not been determined at this time, as it will require further engineering evaluation of track reconfiguration.

This alternative would provide 2,915 square feet of space for customer service, retail, and/or security uses. In addition, a 10,348-square foot contiguous area would remain in the southeast corner of the site. Property line boundaries do not allow for a reduction in property needs with this configuration; however, the remaining area could be utilized for retail, redevelopment, public space, or other transit-supportive downtown use.

Curb space for kiss-and-ride, taxi, and shuttle access to the transit uses and SMART could be provided along Tamalpais Avenue between 4th Street and Mission Avenue. The airporters and Greyhound could either remain on 4th Street between Hetherton Street and Irwin Street, as proposed with the interim concept, or be relocated into the transit center. This is the only alternative where the airporters and Greyhound could be consolidated with the other transit services as they are today.

Bike parking for the transit center, including SMART, may be available in the northeast, northwest, or southwest corners of the transit center. Bike lockers and bike racks could be provided in this area. Sufficient space may be available in the southwest portion of the site to provide for an enclosed facility for the storage and repair of bicycles. These types of facilities (commonly known as BikeStations) are manned or unmanned and allow for a more efficient and secure storage of bicycles. An opportunity would be provided to shift the Puerto Suello bike path adjacent to the SMART tracks. This would reduce conflicts across the path (eliminating the crossing of 5th Avenue existing today). It would also allow for bike parking adjacent to the path. Bikes on the path would be able to cross 4th Avenue at the queue cutter signal or at Tamalpais Avenue to access the planned Tamalpais Avenue bike route.

Space in the southeast corner of the site (adjacent to 4th Street) could be utilized to create an entryway/gateway feature for Downtown San Rafael, retail frontage and/or a plaza area.

Figure 7-5: Alternative 5 Layout

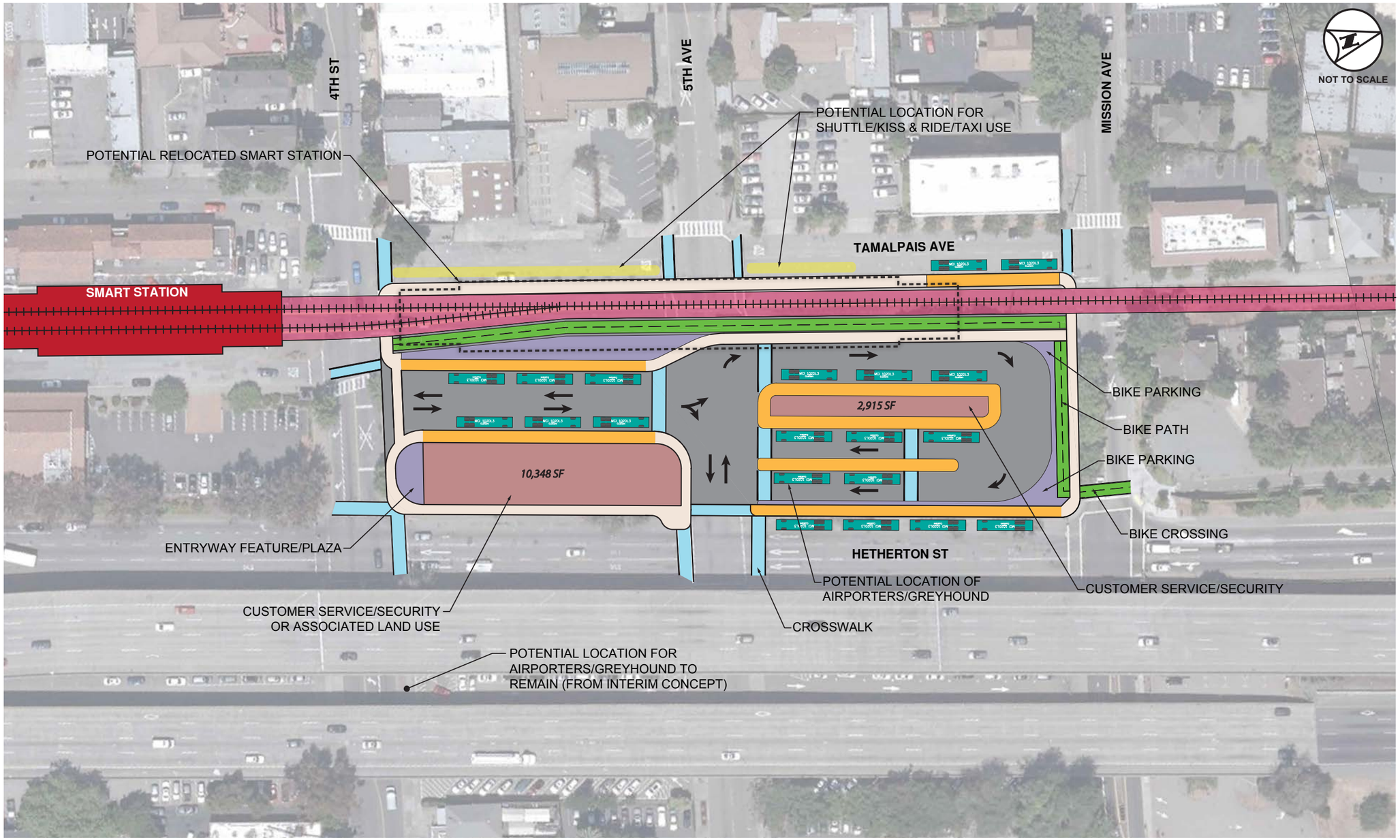
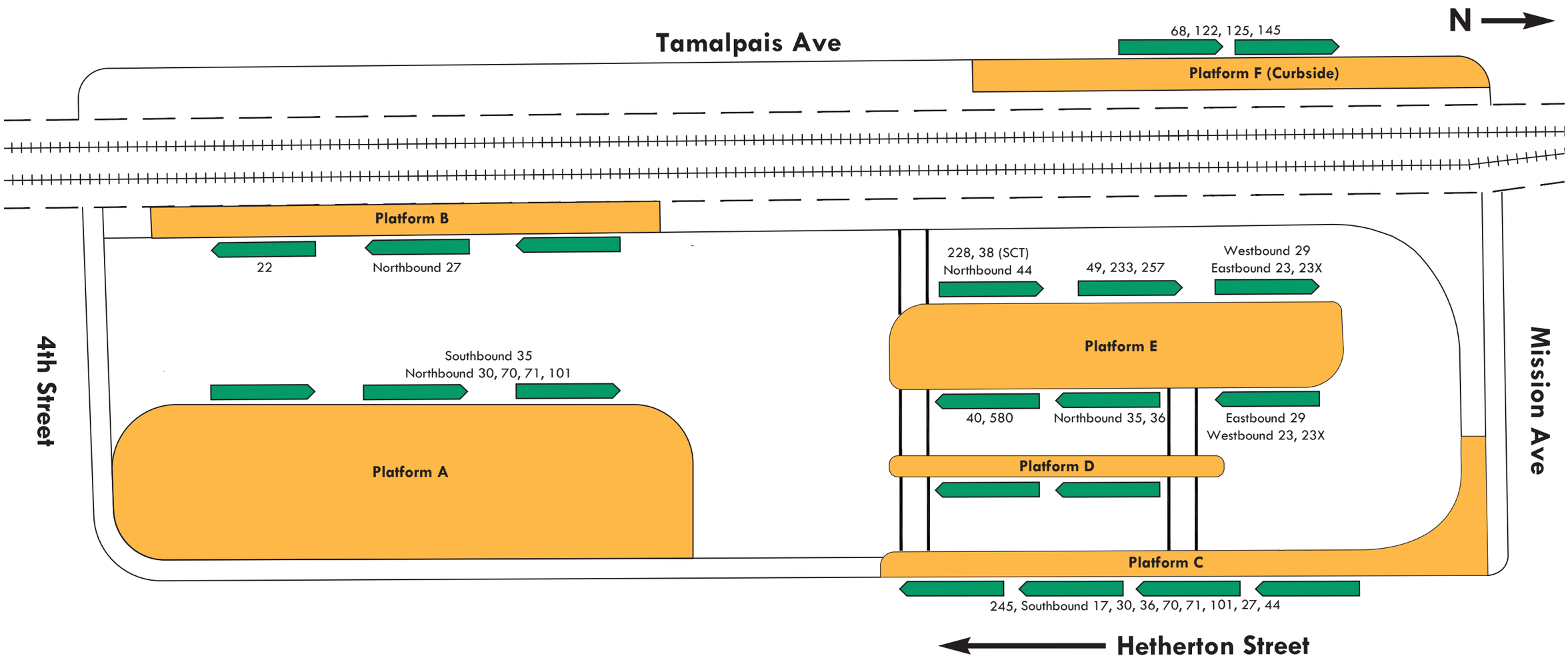


Figure 7-6: Alternative 5 Bay Assignments



8 EVALUATION OF LONG-TERM TRANSIT CENTER ALTERNATIVES

The evaluation of the long-term alternatives consisted of both qualitative and quantitative analysis. Quantitative analysis included development of cost estimates, identification of property acquisition needs, transfer activity, customer service area, change in service miles and service hours, and traffic analysis. Qualitative analysis included consideration of the pedestrian environment, bike path accessibility, bus bay flexibility, and bus bay accessibility. In addition, a real estate reuse analysis was completed to assess the viability of redeveloping the existing transit center site if the transit center were to be relocated.

8.1. Evaluation Criteria

The following criteria were utilized as part of the detailed evaluation:

- Land Requirements and Construction Costs
  - » Land Acquisition
  - » Development Potential of Sites
  - » Construction Cost
- Pedestrian Circulation
  - » Distance/major barriers to SMART
  - » Distance/major barriers to Downtown
- Transfer Convenience
  - » Number of Transfers per day required to cross major/minor streets
  - » Conflict points/obstructions for transfers between public transit services
- Site Functionality
  - » Number of bays
  - » Flexibility in vehicle sizing/utilization of bays
  - » Available space for transit-related land use
- Bus Operations
  - » Accessibility of bays from all key directions of travel
  - » Effects on bus circulation
- Local Circulation
  - » Accessibility from bike paths
  - » Change in vehicle delay due to any circulation changes
  - » Effects on pedestrian circulation

8.2. Alternative 2

Land Requirements and Construction Costs

Alternative 2 utilizes the eastern portion of the existing transit center and the Citibank site. The total land area of this alternative, including both parcels, is 1.72 acres. Implementation of Alternative 2 would require the acquisition of the 23,184-square foot Citibank site and the relocation of the one business (Citibank) on-site. The fair market value of the property necessary to be acquired is estimated to range from $2.9 Million (low estimate) to $4.1 Million (high estimate).

The assessment of site development potential for each alternative considered both the opportunity cost of utilizing specific sites for the transit center (instead of preserving them for potential development) and the development potential of any portions of the existing transit center left vacant by the new configuration. As part of Alternative 2, the portion of the existing transit center west of SMART would become available for development, while the portion of the existing transit center east of SMART and the Citibank site would be utilized for the transit center. The portion of the existing transit center west of the SMART tracks could be redeveloped as a combination of residential, office, and retail uses. It would require re-zoning to maximize its development potential. Potential development scenarios are discussed later in this section.

The two parcels used for the transit center are among the largest in the area and thus may be easier to redevelop than other nearby sites, as they don't require the aggregation of multiple smaller parcels. However, these sites are constrained as they are surrounded by high-volume, one-way streets making them difficult to access. Additionally, the geometry of these parcels would make it difficult for developers to provide adequate parking on-site. The portion of the existing transit center west of SMART, which would be available as part of this alternative, could accommodate a 12,900-square foot building footprint, but only if parking were provided off-site.

Estimates of probable capital costs were prepared for Alternative 2. Estimates account for construction costs, soft costs (environmental/permitting fees, construction management, final design & engineering), a 30% contingency, and property acquisition. To provide a more conservative cost estimate, the high-end estimate of the properties' fair market value was used. Estimated property acquisition costs do not include any relocation costs or legal costs associated with property acquisition, which may be significant.

The cost to implement Alternative 2 in Year 2023 dollars is estimated at $22.8 Million. A detailed cost breakdown is included in **Appendix L**.

Pedestrian Circulation

In Alternative 2, the northern portion of the transit center would be located directly adjacent to the future SMART station between 3rd and 4th Streets, enabling passengers to transfer without crossing any streets or major barriers. Transfers between SMART and routes stopping in the southern portion of the site would require passengers to cross 3rd Street at-grade or utilize the pedestrian overcrossing. 3rd Street is a heavily traveled and congested roadway and is considered a major obstacle for pedestrians. The longest potential transfer distance (from the southernmost bay on the east side of Platform A to the SMART platform west of the tracks) is approximately 450 feet for pedestrians crossing 3rd Street at-grade, and 1,050 feet when utilizing the pedestrian overcrossing. Accounting for the crossing of 3rd Street, this transfer connection time may be approximately three minutes for pedestrians crossing at-grade and five minutes via the pedestrian overcrossing. Some transit users may choose to use the overcrossing due to its comfort and safety benefits, while many others would continue to use the at-grade connection due to its shorter walk distance and level path.

The northern portion of the transit center would be located directly adjacent to 4th Street, the major pedestrian corridor providing access to the downtown core of San Rafael. Pedestrians accessing the downtown from the southern portion of the transit center would have to cross 3rd Street at-grade or utilize the pedestrian overcrossing. The longest potential distance between a bus bay and 4th Street (from the southernmost bay on the east side of

Platform A to the sidewalk on the south side of 4th Street) is approximately 600 feet for pedestrians crossing 3rd Street at-grade, and 1,150 feet when utilizing the pedestrian overcrossing. The maximum walking time to 4th Street may be approximately 3.5 minutes for pedestrians crossing at-grade (including delay associated with the crosswalk) and 5.5 minutes via the pedestrian overcrossing, assuming a typical walking speed of 3.5 feet per second.

Transfer Convenience

Alternative 2 locates 13 routes in the northern portion of the transit center and 23 routes in the southern portion. Transfers between routes on different portions of the transit center will require passengers to cross 3rd Street. Wayfinding signs will be required to assist passengers in locating their desired transfer routes, and to navigate to the pedestrian overcrossing. Based on April 2015 ridership data provided for routes in existence at that time, the number of transfers crossing 3rd Street would be 463 out of 1,572 daily transfers (29 percent). This is an approximation, as transfer activity associated with Sonoma County Transit Route 38 is not available, Routes 35/45, 122, 125, and 145 will undergo significant changes with the next bus service change, and Route 245 did not exist at that time. The actual number of transfers crossing 3rd Street will differ with the planned service changes.

The longest potential transfer distance for passengers utilizing the pedestrian overcrossing (from the southernmost bay on the east side of Platform A to southernmost bay on the east side of Platform D) is 1,150 feet. This transfer connection time may be approximately 5.5 minutes, assuming a typical walking speed of 3.5 feet per second. The 5.5-minute transfer time exceeds the length of the current pulse at the SRTC; this would encourage passengers making longer transfers to cross 3rd Street at-grade to shorten their transfer time. A total of 463 out of 1,572 daily transfers would require at least a three-minute walk (29 percent).

The longest potential transfer distance for passengers crossing 3rd Street at-grade (from the southernmost bay on the east side of Platform C to northernmost bay on the west side of Platform E) is 750 feet. Accounting for the delay associated with the crosswalk at 3rd Street, this transfer connection time may be approximately 4.5 minutes. This transfer time is only slightly less than the length of the current pulse at the SRTC, providing limited to no buffer time to complete the transfer.

Site Functionality

The land use requirements identified a minimum of 16 bays required to accommodate existing demands and planned service changes. A total of 18 bays would be provided in Alternative 2, allowing two excess bays for future expansion, service changes, and flexibility in bay assignments. Driveways would be located on 2nd, 3rd, and 4th Streets; driveways on 4th Street would be right-in/right-out only for buses. Both the northern and southern portions of the transit center allow for internal circulation of buses, except for buses entering the southern portion of the site from 2nd Street, which would not be able to circulate internally.

An estimated 1,873 square feet of customer service and security space would be provided in Alternative 2. This is only slightly larger than the space available at the existing transit center, which has approximately 1,550 square feet of customer service space and a security kiosk. Additionally, this space would be split between two areas, one on each of the two portions of the site. Since the facilities at the existing transit center are considered inadequate, this alternative would not provide a desirable amount of space for operational purposes. In addition, there would be no space to relocate the existing retail uses at the transit center. Additional off-site facilities will likely be required to accommodate the need for bathrooms, customer service, and security space.

Bus Operations

Since Alternative 2 provides driveways on 2nd, 3rd, and 4th Street, it allows for buses to efficiently access and egress the transit center from multiple directions without excessive external circulation. Many buses will approach the transit center via 3rd Street, requiring routes to pass through the 3rd Street & Hetherton Street intersection, which is one of the most congested intersections in San Rafael. This has the potential to delay buses when approaching the transit center. By providing access via 4th Street and improved internal circulation, bus routing becomes more

efficient with this alternative compared with the existing condition. The distance traveled for buses approaching and leaving the transit center decreases by 42.1 daily revenue service miles. This will save operating cost and benefit local street circulation by reducing vehicle miles traveled. The routing of buses to and from their anticipated bay in the immediate vicinity of the SRTC is depicted in **Figure 8-1**.

SMART trains are expected to arrive/depart at the Downtown San Rafael station every half hour on either side of the :00/:30 minute marks during the peak periods. Some of the bus routes will be arriving or departing the transit center at these times. Routes crossing the SMART at-grade crossings at the same time the trains are crossing may be delayed when the gates are lowered to allow for the train to clear the intersection. Buses exiting the transit center to 3rd Street may be delayed due to train crossings. A total of 137 daily bus trips are scheduled to make this movement during train crossings and may be affected by the crossing events.

Alternative 2 includes two exit and three entrance driveways on 3rd Street. The ability of buses to access/egress the transit center using these driveways may be limited due to proximity to the rail crossings, planned pre-signals on 3rd Street, and anticipated vehicle queuing. This may result in buses queuing back into the transit center, particularly during grade-crossing events. The entrance/exit driveway at 4th Street is located very close to the Hetherton Street & 4th Street intersection. Queues along 4th Street from this signal may limit the ability of buses to enter/exit via this driveway, particularly during peak periods.

Local Circulation

As part of Alternative 2, the Puerto Suello bike path would be integrated into the northern portion of the transit center, connecting the current terminus of the path at 4th Street and Hetherton Street to Tamalpais Avenue. To access the southern portion of the transit center, cyclists would have to cross 3rd Street. 3rd Street is a heavily traveled and congested roadway and is considered a less-friendly bicycle crossing.

Since the transit center would be located on both sides of 3rd Street, a significant number of bus trips would continue to use the congested 3rd Street/Hetherton Street intersection. Additionally, the provision of right-in/right-out only driveways on 4th Street could increase queuing on the eastbound approach of the 4th Street/Hetherton Street intersection.

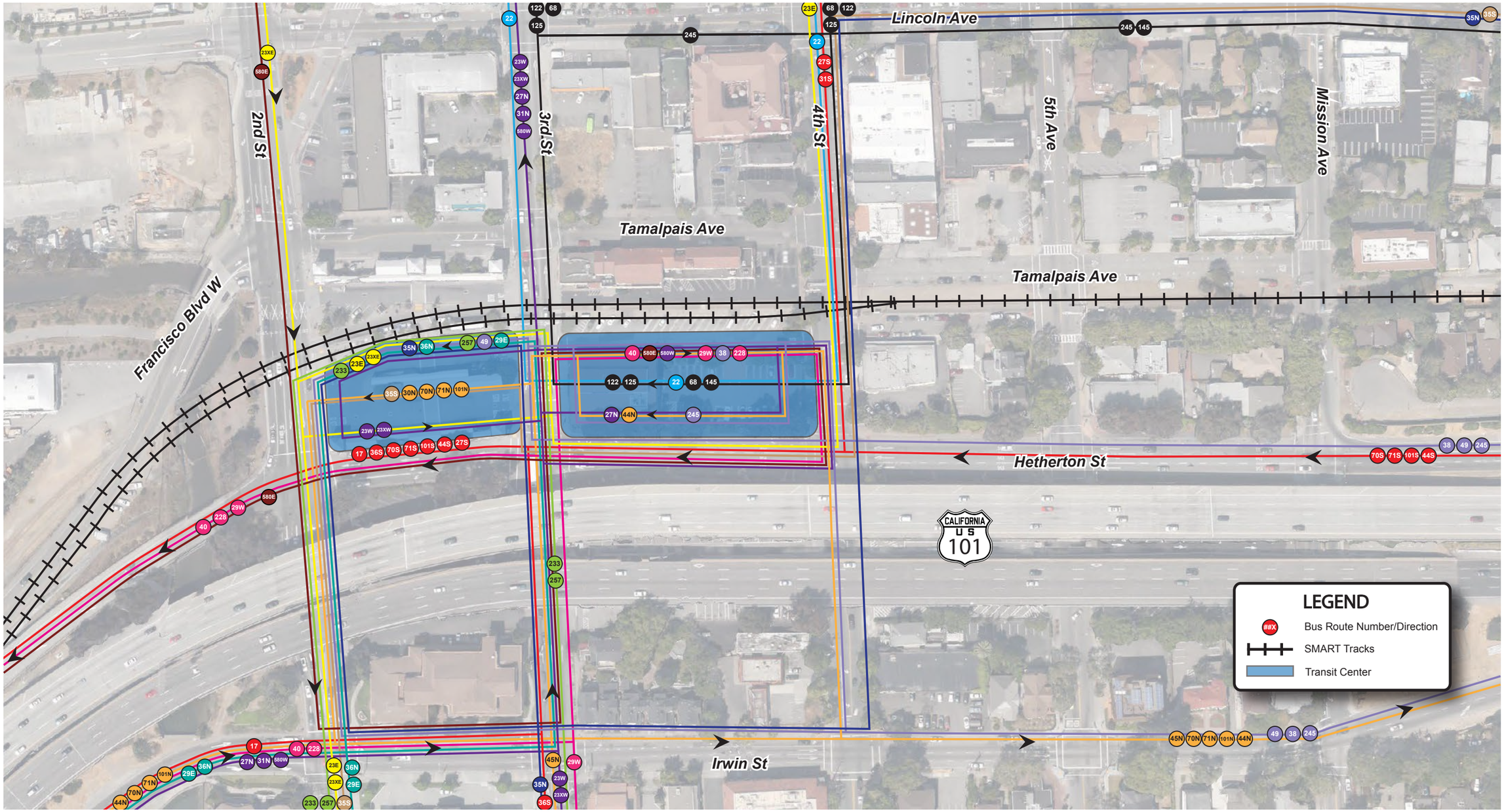
The transit center configuration in Alternative 2 includes six separate driveways on 2nd, 3rd, and 4th Streets. This increases the number of pedestrian-bus conflicts, and the large number of driveways results in a large pedestrian-bus conflict area. Additionally, the transfer activity between the northern and southern portions of the transit center would increase pedestrian volumes at the 3rd Street/Hetherton Street intersection, which is already severely congested. Additional pedestrian crossings at this location may increase congestion and delay for the very heavy southbound right-turn movement from Hetherton Street to 3rd Street.

Ancillary Uses

Curb space for kiss-and-ride and shuttle access to the transit uses and SMART could be provided along Tamalpais Avenue between 2nd Street and 4th Street. Use of these zones for vehicles approaching from the east would require multiple crossings of the SMART tracks. The existing taxi staging area within the SRTC would need to be relocated to a new facility outside of the boundaries of the alternative. The airporters and Greyhound would remain on 4th Street between Hetherton Street and Irwin Street, as proposed with the interim concept.

A limited amount of bike parking for the transit center may be available in the northeast and southeast corners of the Citibank site. This area may be sufficient for bike racks or a limited number of bike lockers. SMART is currently conducting a study on bike parking placement for rail users that may identify additional areas near the station.

Figure 8-1: Alternative 2 Bus Route Alignments



8.3. Alternative 4

Land Requirements and Construction Costs

Alternative 4 utilizes the area bounded by SMART, 5th Avenue, Hetherton Street, and 4th Street and the Citibank site. The total land area of this alternative is 1.76 acres. Implementation of Alternative 4 would require the acquisition of 43,093 square feet of private property, including four individual parcels, and the relocation of four businesses on those parcels. The total fair market value of the properties is estimated to range from $6.0 Million (low estimate) to $7.2 Million (high estimate).

The assessment of site development potential for each alternative considered both the opportunity cost of utilizing specific sites for the transit center (instead of keeping them available for potential development) and the development potential of any portions of the existing transit center left vacant by the new configuration. As part of Alternative 4, the existing transit center would become available for development, while the area bound by Hetherton Street, 3rd Street, SMART, and 5th Avenue would be utilized for the transit center. The parcels used for the transit center would have a desirable proximity to downtown and would have good accessibility, and the large size of the Citibank site would make it easier to develop. However, the northern portion of the transit center has three parcels under separate ownership, which may be challenging for a potential developer to aggregate. The area vacated by the existing transit center could accommodate a range of potential development scenarios; these scenarios are discussed later in this section.

Estimates of probable cost were prepared for Alternative 4. Estimates accounted for construction costs, soft costs (environmental/permitting fees, construction management, final design & engineering), a 30% contingency, and property acquisition. To provide a more conservative cost estimate, the high-end estimate of the properties' fair market value was used. Estimated property acquisition costs do not include any relocation costs or legal costs associated with property acquisition, which may be significant.

The cost to implement Alternative 4 in Year 2023 is estimated at $23.9 Million. A detailed cost breakdown is included in **Appendix L**.

Pedestrian Circulation

In Alternative 4, the southern portion of the transit center would be located directly adjacent to the future SMART station between 3rd and 4th Streets, enabling passengers to transfer without crossing any streets or major barriers. Transfers between SMART and routes stopping in the northern portion of the site would require passengers to cross 4th Street. The longest potential transfer distance (from the northernmost bay on the west side of Platform E to the SMART platform west of the tracks) is approximately 450 feet. Accounting for the crossing of 3rd Street, this transfer connection time may be approximately 3 minutes (including delay associated with the crosswalk), assuming a typical walking speed of 3.5 feet per second.

Both portions of the transit center would be located directly adjacent to 4th Street, the major pedestrian corridor providing access to the downtown core of San Rafael. The longest potential distance between a bus bay and 4th Street (from the southernmost bay on the east side of Platform A to the sidewalk on the south side of 4th Street) is approximately 300 feet. The maximum walking time to 4th Street may be approximately 1.5 minutes, assuming a walking speed of 3.5 feet per second. Placing the transit center across 4th Street ensures easy access to downtown San Rafael from all bays at the transit center.

Transfer Convenience

Alternative 4 locates 18 routes in the northern portion of the transit center and 18 routes in the southern portion. Transfers between routes on different portions of the transit center will require passengers to cross 4th Street; transfers going to and from bays on the transit island on Hetherton Street would have to cross in front of a one-lane right-turn lane. Based on April 2015 ridership data provided for routes in existence at that time, the number

of transfers crossing 4th Street would be 625 out of 1,572 daily transfers (40 percent). This is an approximation, as transfer activity associated with Sonoma County Transit Route 38 is not available, Routes 35/45, 122, 125, and 145 will undergo significant changes with the next bus service change, and Route 245 did not exist at that time. The actual number of transfers crossing 4th Street will differ with the planned service changes.

The longest potential transfer distance (from the southernmost bay on the east side of Platform A to northernmost bay on the west side of Platform E) is 580 feet. This transfer connection time may be approximately 3.5 minutes, assuming a typical walking speed of 3.5 feet per second and including delay associated with the 4th Street crosswalk. The 3.5-minute transfer time is less than the length of the current pulse at the SRTC, providing some buffer time for passengers to complete their transfer. A total of 620 out of 1,572 daily transfers would require at least a three-minute walk (39 percent).

Site Functionality

The land use requirements identified a minimum of 16 bays required to accommodate existing demands and planned service changes. A total of 16 bays would be provided in Alternative 4, which meets the minimum requirement, but does not allow additional space for future expansion, service changes, and flexibility in bay assignments. Driveways would be located 3rd Street, 4th Street, and 5th Avenue; all driveways would be right-in/right-out only for buses. Both the northern and southern portions of the transit center allow for internal circulation of buses.

An estimated 2,350 square feet of customer service space would be provided in Alternative 4. The space would all be located on the southern portion of the transit center, although some space for a security kiosk may be available on the northern portion of the site. This is approximately the same amount of total space for customer service and retail space as the existing transit center, although would allow an expansion (by 52 percent) of the current customer service area if no retail space is provided.

Bus Operations

Since Alternative 4 is not located adjacent to 2nd Street, routes currently approaching or departing via 2nd Street would be diverted from their normal route to reach the transit center. The provision of only two bus bays on Hetherton Street means some routes going to and from Route 101 would use an off-street bay and see increased delay as they circulate into and out of the off-street facility. Some routes will approach the transit center via 3rd Street, requiring them to pass through the congested 3rd Street & Hetherton Street intersection. This has the potential to delay buses when approaching the transit center. Overall, a greater efficiency in routing for buses approaching and leaving the transit center decreases local bus circulation by 32.7 daily revenue service miles. This will save operating cost and benefit local street circulation by reducing vehicle miles traveled. The local routing of buses to and from their anticipated bay is depicted in **Figure 8-2**.

SMART trains are expected to arrive/depart at the Downtown San Rafael station every half hour on either side of the :00/:30 minute marks during the peak periods. Some of the bus routes will be arriving or departing the transit center at these times. Routes crossing the SMART tracks at the same time the trains are crossing will be delayed when the gates are lowered to allow for the train to clear the intersection. Buses existing the transit center to 3rd Street from the southern portion or to 4th Street from the northern portion may be particularly affected by train crossings. A total of 137 daily bus trips are scheduled to make these movements during train crossings and may be affected by the crossing events.

Alternative 4 includes four entrance and exit driveways on 3rd Street, 4th Street, and 5th Avenue. These driveways are very closely spaced to both the SMART grade crossings and signalized intersections of each of those streets with Hetherton Street. The ability of buses to access/egress the transit center using these driveways may be limited due to proximity to the rail crossings, pre-signals/queue cutters, and anticipated vehicle queuing. This may result in buses queuing back into the transit center, particularly during grade-crossing events and during peak periods of traffic. In particular, the entrance/exit driveway at 4th Street is located very close to the Hetherton Street & 4th Street intersection. Queues along 4th Street from this signal may limit the ability of buses to enter/exit via this driveway, particularly during peak periods.

Local Circulation

As part of Alternative 4, the Puerto Suello bike path would be redirected from its current location along Hetherton Street south of 5th Avenue to run parallel to the SMART tracks to 4th Street. This enables cyclists to directly access the transit center and to avoid pedestrian activity to/from the transit islands along Hetherton Street. The path would terminate after crossing 4th Street, providing cyclist access to the southern portion of the transit center and to Tamalpais Avenue.

Since Alternative 4 would be located on both sides of 4th Street, it would add a number of bus trips to 4th Street and potentially increase delay in the vicinity of the transit center. Queueing on the eastbound approach to the 4th Street/Hetherton Street intersection would be impacted by bus access/egress to/from the southern portion of the transit center. Additionally, the channelized southbound right turn at the 4th Street/Hetherton Street intersection may create confusion for drivers and result in unsafe maneuvers, such as drivers making right turns out of a through lane or the bus bay area.

The transit center configuration in Alternative 4 includes four separate driveways on 3rd Street, 4th Street, and 5th Avenue. The wide driveways on 4th Street would create a number of pedestrian-bus conflicts, as 4th Street would be the primary route connecting pedestrians to destinations in downtown.

San Rafael. The pedestrian crossing between the transit island on Hetherton Street and the northern portion of the transit center presents safety concerns. The short distance of the crossing may tempt pedestrians to either cross when they do not have the right-of-way, or cross the right-turn lane outside of the striped crosswalk, increasing the likelihood of a pedestrian-vehicle collision. Signage and barriers would need to be considered as part of Alternative 4 to mitigate these concerns. The channelized right turn also increases the total length of the pedestrian crossing on the north leg of the 4th Street/Hetherton Street intersection, increasing crossing time and the potential for additional vehicle delay.

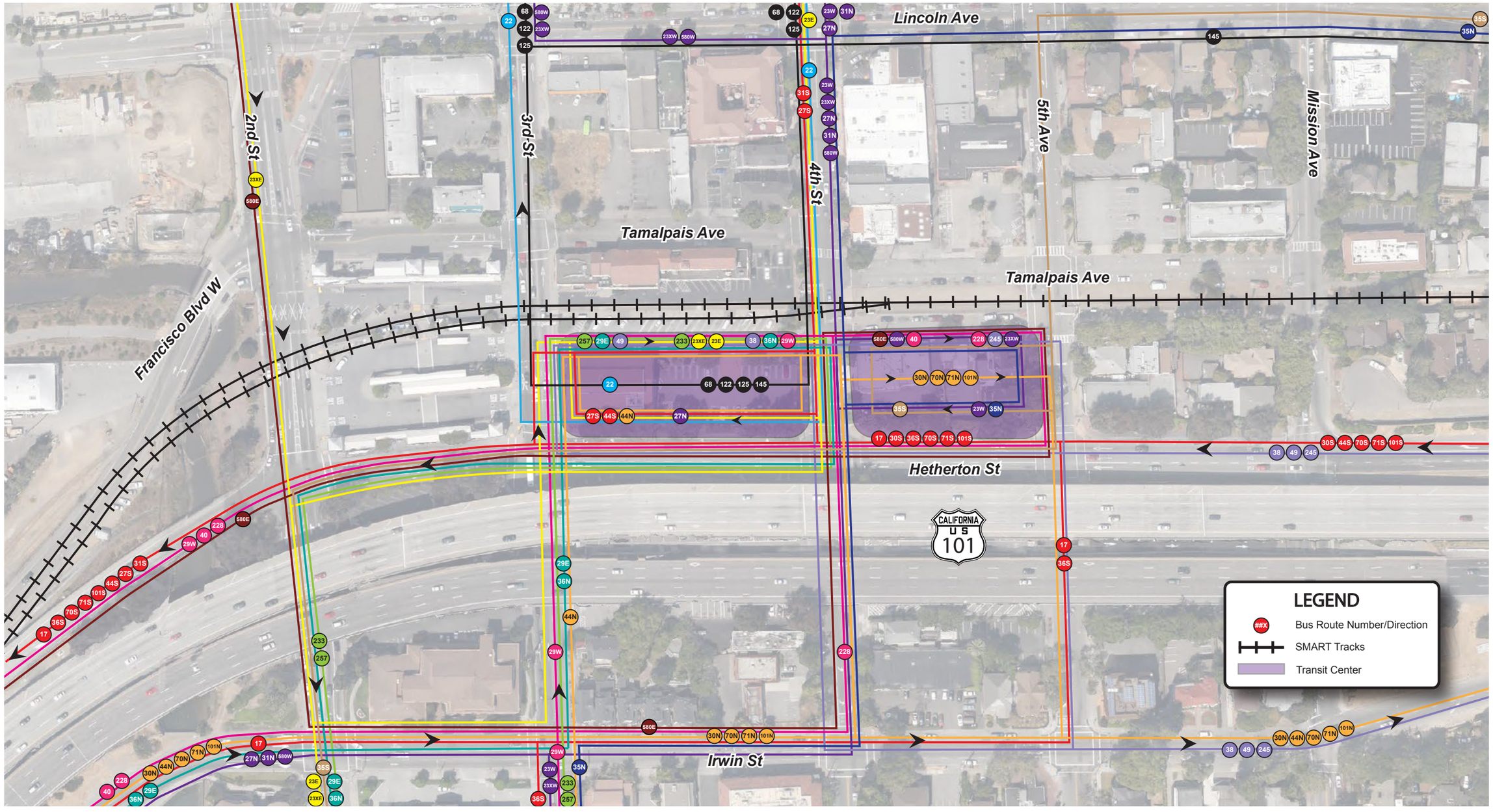
Ancillary Uses

Curb space for kiss-and-ride and shuttle access to the transit uses and SMART could be provided along Tamalpais Avenue between 3rd Street and 5th Avenue. Use of these zones for vehicles approaching from the east would require multiple crossings of the SMART tracks. The existing taxi staging area within the SRTC would need to be relocated to a new facility outside of the boundaries of the alternative. The airporters and Greyhound would likely remain on 4th Street between Hetherton Street and Irwin Street, as proposed with the interim concept.

Bike parking for the transit center, including SMART, may be available in the northeast and northwest corners of the northern portion of the transit center. Bike lockers and bike racks could be provided in this area.

Space in the southeast corner of the northern portion and the northeast corner of the southern portion could be utilized to create an entryway/gateway feature for Downtown San Rafael. An archway, small plaza, and/or architectural feature could be placed in these areas to enhance the 4th Street corridor.

Figure 8-2: Alternative 4 Bus Route Alignments



8.4. Alternative 5

Land Requirements and Construction Costs

Alternative 5 utilizes the entirety of the blocks between East Tamalpais Street, 5th Avenue, Hetherton Street, and 4th Street. The total land area of this alternative, including both parcels, is 2.04 acres. Approximately 0.24 acres would be available for redevelopment or transit-related uses, resulting in a total transit space of 1.80 acres. Implementation of Alternative 5 would require the acquisition of the 47,509 square feet of private property, including 9 individual parcels. Acquisition would require the relocation of 6 business and an estimated 9 households (8 living in multi-family dwelling units and one in a single-family dwelling unit). The fair market value of the property is estimated to range from $8.3 Million (low estimate) to $10.4 Million (high estimate).

The assessment of site development potential for each alternative considered both the opportunity cost of utilizing specific sites for the transit center (instead of keeping them available for potential development) and the development potential of any portions of the existing transit center left vacant by the new configuration. As part of Alternative 5, the existing transit center would become available for development, while the area bound by Hetherton Street, 4th Street, SMART, and Mission Avenue would be utilized for the transit center. The parcels used for the transit center would have a desirable proximity to downtown, are in a less congested part of town, and would have good accessibility; however, the large number of small parcels and presence of a mix of commercial and residential uses may make it difficult to consolidate enough property to provide a desirable site for development. If developed as one site, the area vacated by the existing transit center could accommodate a range of potential development scenarios; these scenarios are discussed later in this section.

Estimates of probable cost were prepared for Alternative 5. Estimates accounted for construction costs, soft costs (environmental/permitting fees, construction management, final design & engineering), a 30% contingency, and property acquisition. To provide a more conservative cost estimate, the high-end estimate of the properties' fair market value was used. Estimated property acquisition costs do not include any relocation costs or legal costs associated with property acquisition, which may be significant.

The cost to implement Alternative 5 in Year 2023 is estimated at $28.9 Million. A detailed cost breakdown is included in **Appendix L**.

Pedestrian Circulation

In Alternative 5, with the current SMART station location, transfers to/from SMART would require a crossing of 4th Street. A signalized mid-block crossing of 4th Street is being installed as part of SMART Phase 1, which will facilitate that movement. The longest potential transfer distance (from the northernmost bay on Platform C to the SMART platform west of the tracks) is approximately 750 feet. This transfer connection time may be approximately 4.5 minutes (including delay associated with the crosswalk), assuming a typical walking speed of 3.5 feet per second. The relocation of the SMART station to a consolidated transit center north of 4th Street would greatly improve pedestrian circulation between SMART and the bus services.

The transit center would be located directly adjacent to 4th Street, the major pedestrian corridor providing access to the downtown core of San Rafael. Pedestrians would be able to access the 4th Street corridor by circulating internally within the transit center. The longest potential distance between a bus bay and 4th Street (from the northernmost bay on the west side of Platform E to the sidewalk on the north side of 4th Street) is approximately 530 feet. The maximum walking time to 4th Street may be approximately 2.5 minutes, assuming a typical walking speed of 3.5 feet per second.

Transfer Convenience

In Alternative 5, 32 routes are located east of the SMART tracks in a consolidated transit center, and 4 routes are located at the bays on Platform F, west of the SMART tracks. Transfers between routes on Platform F and the rest of

the transit center will require passengers to cross the SMART tracks. However, routes serving Platform F only have a very limited number of trips occurring when SMART trains would be arriving/departing the Downtown San Rafael station. Based on April 2015 ridership data provided for routes in existence at that time, the number of transfers crossing SMART would be 43 out of 1,572 daily transfers (three percent). This is an approximation, as transfer activity associated with Sonoma County Transit Route 38 is not available, Routes 35/45, 122, 125, and 145 will undergo significant changes with the next bus service change, and Route 245 did not exist at that time.

The longest potential transfer distance (from the northernmost bay on Platform F to the southernmost bay on Platform A) is 860 feet. This transfer connection time may be approximately 4 minutes, assuming a typical walking speed of 3.5 feet per second. The four-minute transfer time is less than the length of the current pulse at the SRTC, providing some buffer time for passengers to complete their transfer. As noted above, the routes serving Platform F generate a very limited number of transfers. A total of only 11 out of 1,572 daily transfers would require at least a three-minute walk (one percent).

Site Functionality

The land use requirements identified a minimum of 16 bays required to accommodate existing demands and planned service changes. A total of 20 bays would be provided in Alternative 5, allowing four excess bays for future expansion, service changes, and flexibility in bay assignments. Two curbside bus bays would be located on the northbound side of Tamalpais Avenue south of Mission Avenue. Four curbside bus bays would be located on the west side Hetherton Street between 5th Avenue and Mission Avenue to accommodate routes coming to and from Route 101. One right-in/right-out only driveway would be located on 4th Street, and one driveway would be located on Hetherton Street as the western leg of the signalized Hetherton Street/5th Avenue intersection. Buses would be able to circulate internally within the transit center, allowing buses to access each of the 14 off-street bays from either driveway. This would be particularly valuable if buses need to use alternate bays due to schedule deviations.

An estimated 2,915 square feet of customer service space would be provided within the transit center in Alternative 5. This is significantly more space than the existing transit center, which has approximately 1,550 square feet of customer service space in addition to limited retail space (an 88 percent increase). The available space in this alternative would accommodate all operational needs related to the transit center (customer service, security, bathrooms).

An additional 10,348 square feet of space would be available for redevelopment or transit-supportive uses. This space could be utilized for a variety of uses including retail or office. The additional space would likely be limited to off-site parking only but would have good visibility and pedestrian access given its proximity to Hetherton Street, 4th Street, and the transit center.

Bus Operations

Since Alternative 5 is located north of 4th Street, routes currently utilizing 2nd or 3rd Streets would have to divert from their normal route to reach the transit center. Two bays located on Platform F would allow routes coming to and from the west of the transit center to avoid having to cross the SMART tracks. Overall, Alternative 5 reduces bus circulation in the vicinity of the transit center by 3.3 daily revenue service miles compared to the existing transit center. This would result in a slight reduction in bus operating costs. The alternative shifts bus activity from the intensely congested 2nd Street and 3rd Street corridors to the less congested 5th Street area. This will serve to reduce bus activity in the congested areas, reducing congestion levels and delays to buses. The local routing of buses to and from their anticipated bay is depicted in **Figure 8-3**.

SMART trains are expected to arrive at the Downtown San Rafael station every half hour at the :00/:30 minute marks during the peak periods. Some of the bus routes will be arriving or departing the transit center at these times. Routes crossing the SMART at-grade crossings at the same time the trains are crossing will be delayed when the gates are lowered to allow for the train to clear the intersection. A total of 129 bus trips will be affected by train crossing events, a reduction by eight from Alternatives 2 and 4.

Alternative 5 provides its main access/egress point at the Hetherton Street and 5th Avenue. Unlike all of the driveways in both Alternatives 2 and 4, this driveway will not be significantly affected by queuing resulting from SMART train crossing events. Buses are anticipated to be able to access/egress the site without being affected by congestion associated by the grade crossings. One driveway is provided along 4th Street. The ability of buses to access/egress the transit center at this driveway driveways may be limited due to proximity to the queue cutter signal on 4th Street. However, unlike other alternatives, access/egress would not be affected by vehicle queuing on cross-streets approaching Hetherton Street.

Local Circulation

As part of Alternative 5, the Puerto Suello bike path would be integrated into the transit center, shifting the existing path between 4th Street and Mission Avenue towards the SMART alignment. The soon-to-be-implemented signalized mid-block crossing of 4th Street would provide access from the southern end of the path to the existing SMART station or to Tamalpais Avenue. Reduction in bus activity along Tamalpais Avenue south of 4th Street would enhance the viability of that corridor as a bike connection to the Mahon Creek path south of 2nd Street. This alternative would benefit the Puerto Suello bike path by eliminating an existing conflict point at 5th Avenue, shifting it away from busy Hetherton Street, and providing an enhanced connection to Tamalpais Avenue.

This alternative would require the closure of 5th Avenue to vehicle through traffic between Hetherton Street and West Tamalpais Avenue. 5th Avenue is currently used as an alternative to busier 3rd Street, 4th Street, and Mission Avenue for access to downtown San Rafael and the neighborhoods to the northwest. Traffic would likely shift to 4th Street and Mission Avenue, increasing delay at nearby intersections. The closure of the 5th Avenue at-grade rail crossing is considered a significant safety benefit by eliminating a major conflict point. The current plan as shown does not maintain a pedestrian and bicycle connection across the tracks at the current 5th Avenue crossing location. However, if desired, modifying the plan to maintain the connection at 5th Avenue would be feasible, pending California Public Utilities Commission review.

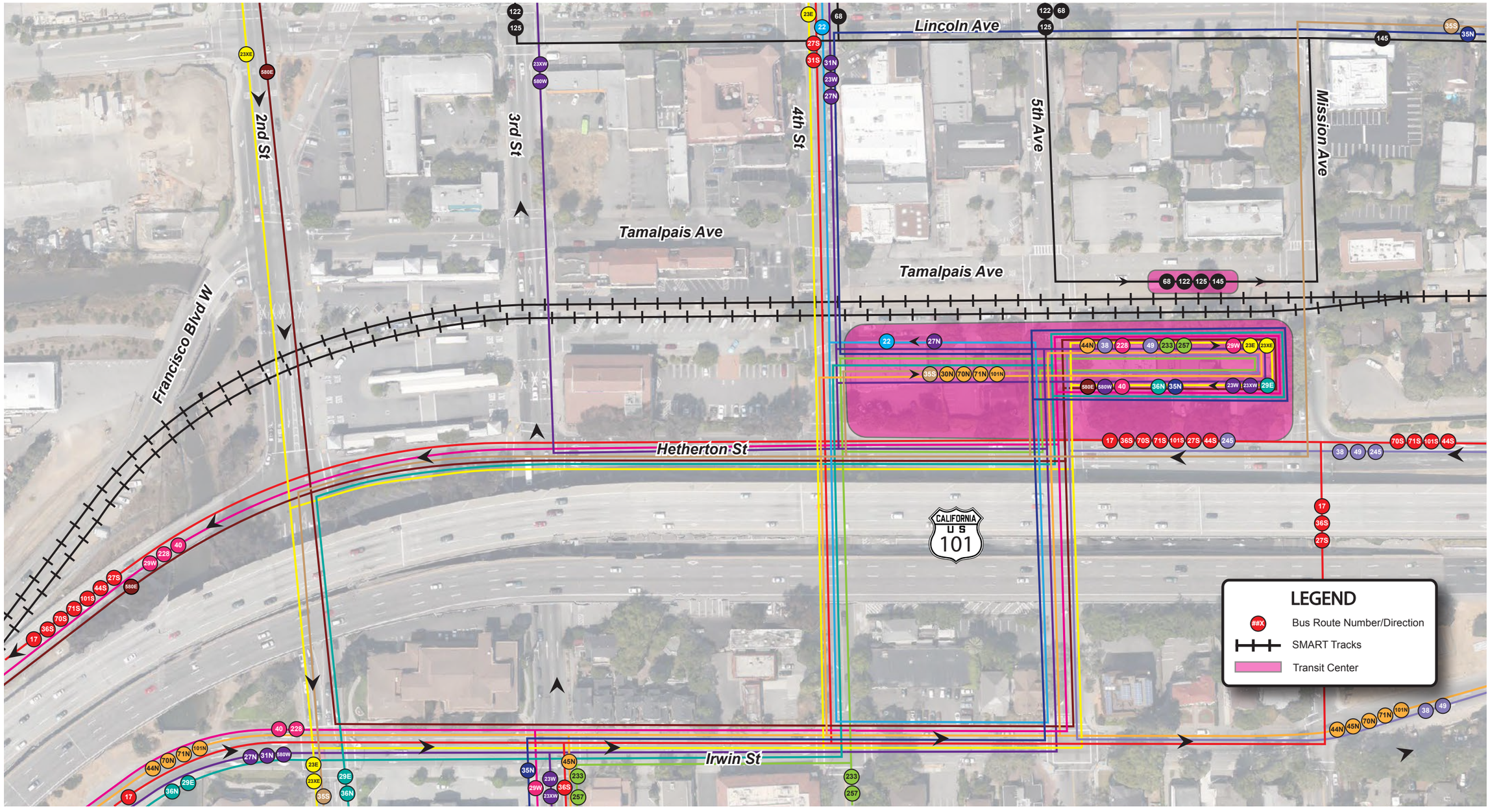
By shifting the transit center to the north, this alternative would divert bus and pedestrian traffic away from congested intersections on 2nd Street and 3rd Street. The City of San Rafael is also considering the addition of the second southbound right turn lane at the 3rd Street/Hetherton Street intersection to alleviate congestion; the shifting of bus and pedestrian activity away from this intersection would make such an improvement feasible. Thus, congestion in the 2nd Street and 3rd Street corridors may be lessened with this alternative compared to both existing conditions and the other alternatives. The reduction in delay on these corridors may serve to offset some or all of the traffic volume increase on 4th Street and Mission Avenue with the 5th Avenue closure.

Since the transit center would only have two driveways, one of which at a signalized intersection, the number of bus-pedestrian conflicts would be minimized relative to the other alternatives and to existing conditions. The consolidation of transit center activity within one continuous site may reduce the increase in pedestrian crossings at congested intersections that would occur with the other alternatives.

Ancillary Uses

Curb space for kiss-and-ride and shuttle access to the transit uses and SMART could be provided along Tamalpais Avenue between 4th Street and Mission Avenue. Use of these zones for vehicles approaching from the east would require multiple crossings of the SMART tracks. The existing taxi staging area within the SRTC would need to be relocated to a new facility on Tamalpais Avenue or outside of the boundaries of the alternative. The airporters and Greyhound could either remain on 4th Street between Hetherton Street and Irwin Street, as proposed with the interim concept, or be relocated into the transit center (Platform D). This is the only alternative where the airporters and Greyhound could be consolidated with the other transit services as they are today.

Figure 8-3: Alternative 5 Bus Route Alignments



Bike parking for the transit center, including SMART, may be available in the northeast, northwest, or southwest corners of the transit center. Bike lockers and bike racks could be provided in this area. Sufficient space may be available in the southwest portion of the site to provide for a BikeStation type facility for the storage and repair of bicycles.

Space in the southeast corner of the site (adjacent to 4th Street) could be utilized to create an entryway/gateway feature for Downtown San Rafael, retail frontage and/or a plaza area.

8.5. Traffic Analysis

The City of San Rafael completed a detailed traffic circulation analysis for the baseline, interim, and long-term scenarios. The traffic analysis was completed using the VISSIM software tool. The analysis reflected bus routing with each of the long-term alternatives. The model analyzed one hour in the morning and one hour in the evening. The first 15 minutes of each peak hour were used to "seed" the model. Thus, the results reflect only the average of the peak 45 minutes. The model included the modifications to 5th Avenue associated with Alternative 5.

The full set of analysis results are included as **Appendix I**. A summary of the analysis results is included in **Table 8-1**.

Table 8-1: Traffic Analysis Results Summary

Alternative	Average Vehicle Delay (sec)		% Not In Model		# of Deficient Intersections	
	AM	PM	AM	PM	AM	PM
Baseline (Interim Concept)	91.1	91.1	2.4%	2.6%	5	1
Alternative 2	84.8	90.7	2.3%	3.1%	3	1
Alternative 4	85.7	90.4	2.2%	2.8%	3	2
Alternative 5	81.4	92.2	3.1%	3.8%	3	3

As shown in the table, all three alternatives represent an improvement upon the baseline condition (interim concept) in the AM peak hour. However, the closure of 5th Avenue in Alternative 5 results in increased congestion in the PM peak hour. The % Not In reflects the percentage of vehicles who are unable to enter the model area due to vehicle queuing extending beyond the modeled area. The higher "Not In" percentage seen with Alternative 5 is associated with increased congestion on eastbound 5th Avenue approaching Lincoln Avenue, on eastbound 4th Street approaching Cijos Street, and southbound Lincoln Avenue approaching Mission Avenue. With implementation of Alternative 5, vehicles will likely modify their routing to avoid these congested streets or downtown San Rafael in general. In order to fully assess the effects of Alternative 5, a larger study area is needed.

8.6. Existing Transit Center Property Reuse Options

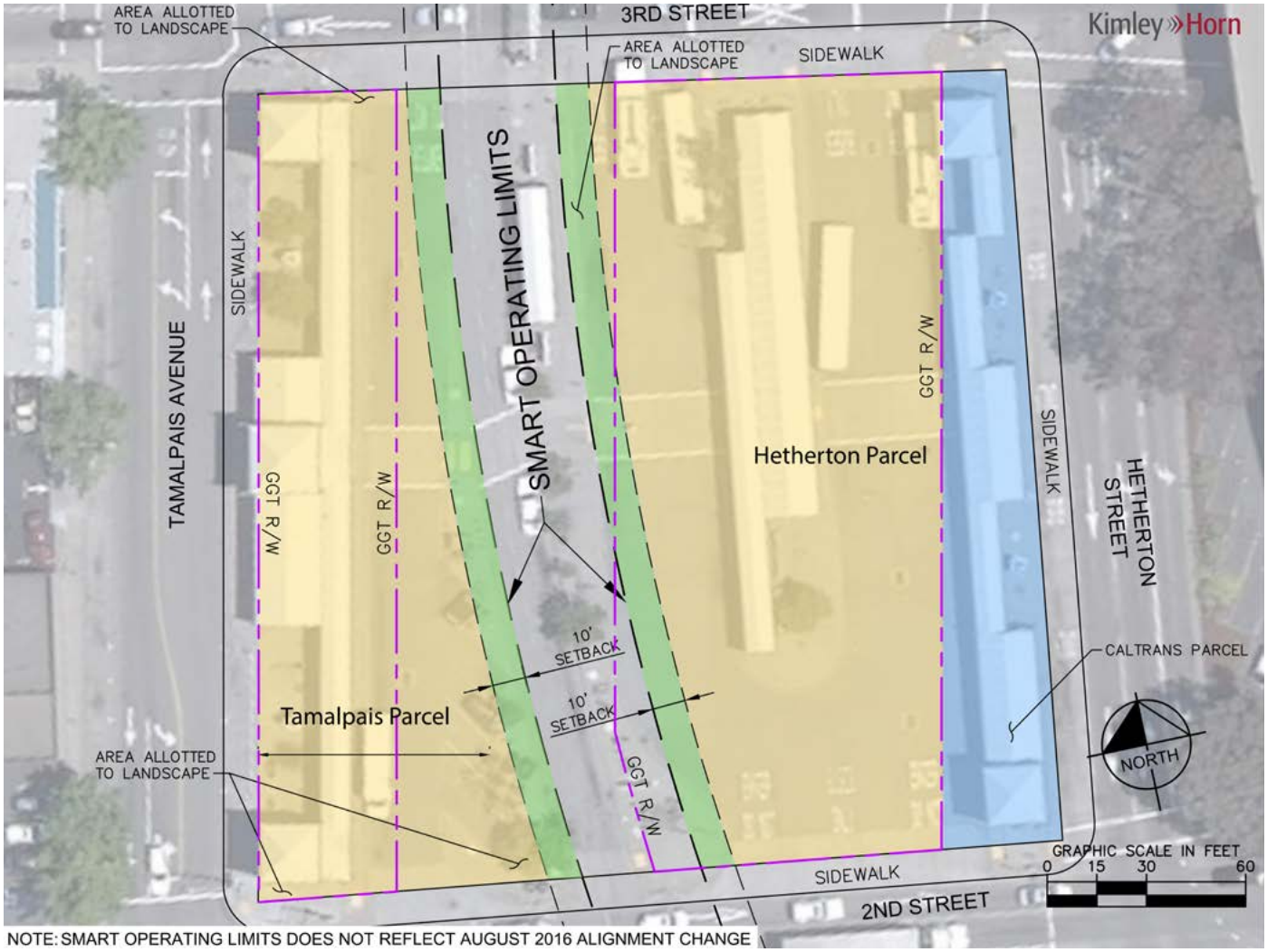
For each of the long-term alternatives, all or part of the existing transit center site would be vacated. As part of this study, Kimley-Horn and subconsultant Strategic Economics studied various redevelopment scenarios for the properties at the existing transit center site. The full report on the evaluation of redevelopment scenarios and an evaluate of the residual value is provided in **Appendix J**.

The current transit center site consists of four parcels, two owned by Golden Gate Transit, one owned by SMART, and a smaller parcel owned by Caltrans. The SMART parcel is part of the original rail right-of-way of the Northwest Pacific Railroad, and will be used for Phase 2 of SMART operations. The SMART parcel runs north-south between the two Golden Gate Transit parcels. Caltrans owns a narrow (approximately 2,300 square foot) strip of land on the eastern side of the site fronting Hetherton Street (referred to as "the Caltrans parcel"). Golden Gate Transit currently has an encroachment permit allowing the agency to construct "canopies, sidewalk curb, and gutter" on the Caltrans parcel.

The future SMART operating envelope deviates from the parcel currently owned by SMART and SMART rail operations will not require use of the entire SMART parcel. Therefore, for the purpose of this analysis, the site is defined to include two irregularly shaped parcels divided by the SMART operating limits, and encompassing some SMART property (**Figure 8-4**):

- **Tamalpais Parcel:** A parcel of approximately 16,900 square feet located west of the railroad ROW.
- **Hetherton Parcel:** A parcel of approximately 23,500 square feet located east of the railroad ROW[2].

Figure 8-4: San Rafael Transit Center Site Parcels



2 Modifications were made to the SMART Phase 2 alignment after the real estate analysis was completed. The size of the Hetherton redevelopment parcel would be slightly reduced with the new alignment; the change is not anticipated to substantively affect the findings of the analysis.

Each of the long-term transit center alternatives under consideration provide potential development sites on one or both of the Tamalpais and Hetherton parcels.

Reflecting its use as a public facility, the current zoning of the site is Public/Quasi-Public. This zoning designation includes the following requirements:

- Maximum height limit: 36 feet
- Maximum density: 24 dwelling units per acre
- Maximum non-residential floor-area-ratio (FAR): 1.0
- Minimum parcel width: 60 feet

While the site is currently subject to the Public/Quasi-Public zoning designation, the Downtown San Rafael Station Area Plan (DSAP), approved in 2012, envisions significantly higher density development. The development concept included in the DSAP includes office development on the Hetherton parcel and affordable residential on the Tamalpais parcel, with ground floor retail on both parcels. To accommodate this, the plan recommends rezoning the site to "Hetherton Office" (the current zoning designation for surrounding parcels), which allows development up to 66 feet in height, and 72.6 dwelling units per acre. The DSAP calls for all parking to be accommodated in a nearby structure off-site.

While the site's Downtown location, visibility, and access enhance its value for new development, the site's proximity to the elevated highway US-101 and the SMART train running through the middle of the site pose some challenges for development. To mitigate the impacts of environmental noise, vibration, and air quality, any development may require special windows and HVAC systems.

Reuse Objectives

GGTs goals and objectives for the site will influence the disposition strategy, and should be clearly defined in advance of the developer solicitation process (Request for Proposals or Request for Qualifications).

Potential objectives include:

- **Maximizing value.** Relocation of the transit center is expected to cost between $22.8 and $28.9 million dollars, including the costs of property acquisition but exclusive of the cost to relocate existing owners and tenants. By selecting a development program maximizing the value of the site, GGT may be able to offset some of the relocation cost. However, note that the transit center will need to be relocated before the site becomes available for development, creating a timing challenge for any strategy for financing the transit center relocation that relies on the sale or lease of the existing transit center site. This challenge is discussed in more detail below, under "Transaction Options."
- **Supporting transit ridership and transit-oriented development (TOD).** Redevelopment of the site presents an opportunity to promote transit-supportive development and enhance ridership of both bus and future SMART rail service. As discussed later in this memo, the location is well suited as a site for affordable housing, because of its location near transit and ability to leverage affordable housing funding sources such as the state Affordable Housing and Sustainable Communities Program.
- **Supporting implementation of the DSAP vision.** Beyond the specific development concept shown in the DSAP, the Plan envisions new development on the site promoting transit ridership, supporting a strong sense of place, thriving retail businesses, and pedestrian activity.

Transaction Options

If the existing transit center is relocated, GGT may choose to offer the property for sale or enter into a long-term ground lease with an entity who develops the site. Some transit agencies prefer to lease property because this allows them to maintain long-term control over the asset, and/or because they prefer a steady revenue stream over time instead of a one-time payment. However, it is important to note that choosing to dispose of the property via a ground lease may pose some additional challenges; developers may find it more difficult to obtain financing for development on a ground lease due to the perception of increased risk. In addition, unless it were prepaid, a ground lease would not generate funding up front to offset the cost of the new transit center.

Strategic Economics also considered the potential for GGT to include the site as part of a public-private partnership (PPP), wherein GGT would contribute the site to a private developer, who in exchange would agree to deliver the new transit center. However, this strategy would face significant challenges. As noted previously, the total cost to deliver the new transit center is estimated to be between $22.8 and $28.9 million. The majority of this cost consists of land acquisition and assembly, including relocation of existing businesses and/or residents. The estimated value of the existing transit center property is less than 20 percent of the estimated cost to acquire the properties needed for a new transit center, and thus insufficient to compensate a private developer for the challenges associated with building the new transit center. Furthermore, the new transit center will need to be completed before the site of the existing transit center can be made available for development, and land assembly and relocation of existing businesses and residents is likely to take some time to complete. Thus, a PPP approach would require GGT to complete property acquisition for the new transit center before entering into an agreement with a developer. Even then, GGT would be required to contribute additional funds above and beyond the property, to make it worthwhile for a developer to participate. Given the additional complexity of this transaction, a PPP approach is unlikely to be successful.

Development Scenarios

The development scenarios studied for the site included various combinations of market rate and affordable housing, retail, office, parking garage, and hotel uses; the evaluation also considered potential changes to existing zoning to accommodate some scenarios. The evaluation found that the development potential of the existing transit center site depends on Golden Gate Transit's ultimate goals and objectives of the site; these would need to be clearly defined before developers are solicited for any development of the site. To maximize opportunity for redevelopment, Golden Gate Transit should begin working with Caltrans to discuss obtaining the rights to the Caltrans parcel, and should also work closely with the FTA to ensure that any reuse of the site would be consistent with the agency's joint development policy. Additionally, Golden Gate Transit would need to work with the City to clarify any potential zoning changes that would be needed to enhance the site's development potential.

A major constraint on the development of the site is parking. The size and shape of the Hetherton and Tamalpais parcels limit the amount of parking that could be provided on either site, impacting the marketability of any potential development. On-site parking would need to be provided to make the parcels attractive for market rate housing developers; an affordable housing development could be built with a lower parking ratio and would allow for greater residential density. Off-site parking could be provided for office or other commercial uses, but would still require some on-site parking to make the site attractive to developers.

A summary of the trade-offs between uses is provided in **Table 8-2**.

Table 8-2: Summary of Land Use Considerations

Use	Opportunities	Challenges
Market-Rate Residential	• Strong market for housing, likely to be the highest value use • Proximity to transit and Downtown make the site highly attractive for housing	• At least one parking space per unit will be required to successfully market the site for development • Residential density is limited by the need for parking
Affordable Residential	• Site is likely to be highly competitive for affordable housing subsidies • Likely to require fewer parking spaces than market-rate housing (0.5 spaces/unit assumed), maximizing the potential density	• Feasibility and ability to pay for land depends on availability of public subsidies; project may also require significant land subside
Office	• Brings more jobs downtown • Freeway, SMART access, proximity to BioMarin could help attract office use	• Likely to generate lower land value than market-rate housing, although this may change as the office market improves • Limited ability to provide parking on-site makes office less competitive with nearby properties
Hotel	• Proximity to BioMarin and other offices suggest there is demand for business lodging	• Hotel developers typically require a larger site (2 acres or more) and significant on-site parking
Ground Floor Retail	• Creates an active street frontage	• Unlikely to generate significant revenues for developer
Parking	• Could help enable TOD on other nearby parcels	• Feasibility and ability to pay for land depends on availability of public subsidies; project may also require significant land subsidy • May not be consistent with GGT's vision for the site

Highest and Best Use

From the perspective of maximizing revenues from a ground lease or sale of the property, market rate residential housing is the highest and best use of the existing transit center site. The site is also well-suited for affordable residential development, particularly if providing affordable housing near transit is a priority for Golden Gate Transit. The evaluation also found that the market is expected to support a maximum building height of four to six stories. The residual value of the property for a residential use (with ground floor retail) was estimated at $3 Million to $4 Million. This is the projected revenue potential of the site to Golden Gate Transit, not accounting for any credits or reductions associated with affordable housing. A development including office would have a lower residual value.

8.7. Summary of Alternatives Evaluation

Each of the refined alternatives achieve the functional requirements of the long-term transit center. They also all represent improvement from the existing and interim conditions by removing buses from public streets, reducing out-of-direction travel for buses, improving wayfinding for users, enhancing modal and bus transfers, and providing increased customer service area. However, the alternatives provide varying levels of benefits to users, impacts to the surrounding network, and challenges to implementation. The alternatives evaluation reflects these trade-offs.

Alternative 2 would likely be the easiest to implement as it requires minimal property acquisition and has the lowest cost. It also provides the greatest benefit to bus circulation by reducing total bus miles traveled and travel time. However, it is the least advantageous for the user, with a poor location for pedestrian circulation and access and inadequate space for customer service and other transit-related uses. The provision of a pedestrian overcrossing above 3rd Street would provide a critical pedestrian connection for transfers between bus routes serving the different blocks of the transit center and between bus routes and SMART. The Hetherton Street/3rd Street intersection is a high-volume intersection with a high rate of collisions. However, the longer path of travel and vertical circulation required to utilize the overcrossing is likely to result in a significant contingent of transferring riders to instead continue to utilize the at-grade signalized crossing, reducing the ability of the overcrossing to address one of the fundamental challenges with this alternative.

Alternative 4 is beneficially located for access to SMART and Downtown San Rafael. However, it provides the least amount of flexibility to accommodate future service changes or expansion of bus service and may result in significant challenges for buses in accessing/egressing the transit center due to constrained driveway locations.

Alternative 5 allows for the provision of a fully integrated transit center site, would provide significant additional space for future bus service expansion and transit-related land uses, would be optimal for pedestrian safety and circulation. It also would allow for the potential future relocation of SMART and expansion of SMART capacity systemwide. The relocation of the SMART station would require further analysis to assess its feasibility and cost; therefore, while noted as an opportunity unique to Alternative 5, it is not assumed for the purposes of the cost estimate and evaluation in this report. Alternative 5 would be the most difficult to implement due to the comparatively greater property acquisition and relocation needed. It would also have the potential to significantly impact traffic circulation in downtown San Rafael, which is of significant concern to the City and its elected officials.

There are various relative advantages and disadvantages associated with each of the long-term alternatives. All alternatives represent an improvement to the interim conditions by providing additional bus bays, removing buses from berthing on public streets, reducing out-of-direction travel for buses, improving wayfinding for users, restoring parking loss with the interim concept, and providing an increased customer service area. **Table 8-3** briefly summarizes the trade-offs associated with the various alternatives.

Table 8-3: Summary of Land Use Considerations

Alternative	Description	Advantages	Disadvantages
Alternative 2	• Uses eastern portion of existing transit center, plus the Citibank site • Closes E Tamalpais Avenue between 3rd and 4th Streets • Pedestrian overcrossing over 3rd Street • Maintains existing curbside bus bays on Hetherton Street • Transit center driveways on 2nd, 3rd, 4th Street	• Requires minimal property acquisition • Lowest cost of the three long-term alternatives • Least amount of bus route alignment diversion	• Poor location for pedestrian circulation and access, introducing new hazards for patrons transferring between routes • Safety and delay concerns at major downtown congestion points • Inadequate space for customer service and other transit-related uses
Alternative 4	• Uses the Citibank site, plus the block bound by SMART tracks, 5th Avenue, Hetherton Street, and 4th Street • Closes E Tamalpais Avenue between 3rd Street and 5th Avenue • Two bus bays on an island platform on Hetherton Street • Driveways on 3rd Street, 4th Street, and 5th Avenue	• Beneficially located for pedestrian and bicycle access to SMART and Downtown San Rafael • Introduces transfers across 4th Street, more desirable than across 3rd Street	• Least flexibility to accommodate future changes or expansion of bus service • Most difficult for buses to access/egress site due to constrained driveway locations and limited bays along Hetherton St
Alternative 5	• Continuous site bound by SMART tracks, 4th Street, Hetherton Street, and Mission Avenue • Closes E Tamalpais Avenue between 4th Street and Mission Avenue • Closes 5th Avenue between SMART tracks and Hetherton Street • Closes 5th Avenue between SMART tracks and Hetherton Street • Four curbside bus bays on Hetherton Street	• Allows for a fully consolidated site for bus operations • Provides significant additional space for future bus service expansion and transit-related land uses • Optimal location and site for pedestrian safety and circulation • May reduce congestion in 2nd Street/3rd	• Requires more property acquisition than other alternatives • Highest cost of the three long-term alternatives • Closure of 5th Avenue at SMART tracks may worsen congestion in downtown San Rafael by redistributing traffic to other downtown streets • Likely most difficult to implement due to traffic

For all three alternatives, high-medium-low ratings were prepared for each evaluation criterion. The evaluation criterion used include:

- Customer Connectivity (Mode-to-Mode): Ease and safety of transfers between bus routes and between bus and SMART. Long distances and barriers such as street crossings negatively impacted customer connectivity. This also includes access to the customer service area.
- Pedestrian Access Comfort/Accessibility: Convenience and safety of access for pedestrians to the transit center. Over half of all boardings at the transit center are associated with trips originating from downtown San Rafael and Montecito.
- Traffic: Effects on traffic and parking in the area around the transit center. Ratings based on traffic analysis provided by the City of San Rafael.
- Bus Operations: Includes several factors such as: efficiency of bus routing into and out of the transit center, flexibility for future changes in service, space for customer service and security, and delays to buses accessing/egressing the transit center.
- Community Impacts/Implementation: Significance of barriers to implementation. This is primarily associated with right-of-way acquisition, business relocation, and cost. Alternatives with lower costs and fewer anticipated property acquisition impacts are rated higher.
- SRTC Redevelopment Potential: The ability to redevelop the existing transit center site. Only possible with vacating a portion or the entirety of the existing site.
- Land Acquisition and Construction Cost: Provides an estimated range based on conceptual design only. Does not include business or resident relocation costs. Costs based on a Year 2022 year of expenditure (Year 2017 for interim condition).

Table 8-4 summarizes the ratings given to each alternative, where a "high" rating indicates a desirable outcome and a "low" rating indicates an undesirable outcome; ratings are provided for the interim condition to provide a baseline point of comparison. Detailed explanations of these ratings are provided in Appendix M.

Table 8-4: Interim and Long-Term Alternatives Evaluation Summary

Category	Interim Solution	Alternative 2 2nd to 4th	Alternative 4 3rd to 5th	Alternative 5 4th to Mission
Customer Connectivity (Mode-to-Mode)	Low	Low	Low/Medium	High
Pedestrian Access Comfort/Accessibility	Low/Medium	Low	Medium	High
Traffic*	Low	Medium	Medium	Low/Medium
Bus Operations	Very Low	Medium	Low/Medium	Medium
Community Impacts/Implementation	Medium/High	Medium	Medium	Low
SRTC Redevelopment Potential	N/A	Low	High	High
Land Acquisition and Construction Cost	$3.5 Million	$22-$25 Million	$23-27 Million	$27-$32 Million

**An expanded traffic analysis would be required to comprehensively assess the extent of impacts associated with each alternative.*

All three alternatives achieve the minimum land use requirements established by the agency-stakeholder group. All three alternatives are considered operable as they provide a minimum level of accessibility and circulation for transit and pedestrian modes. The feasibility of implementation may depend on the property acquisition process.

9 CONCLUSION AND NEXT STEPS

The San Rafael Transit Center Relocation Study coordinated a collaborative, multi-agency process to understand the impacts of SMART Phase 2 and identify an agreeable interim solution to maintain transit connectivity while allowing for the extension of SMART to Larkspur. In order to accommodate the construction of SMART Phase 2, which will close Platform C at the existing transit center and inhibit other transit center activities, the completion of the interim solution will be required prior to the start of construction of SMART Phase 2 extension to Larkspur at the transit center. The interim solution includes modifications to Tamalpais Avenue and 4th Street to provide replacement bus bays and Cijos Street to accommodate bus turning radii. SMART will take the lead on the interim concept as it relates to SMART Phase 2 construction. This will include further design development, environmental clearance, and ultimately construction. The design/builder for SMART Phase 2 is planned to be selected in the coming months. Pending an agreement between SMART and Golden Gate Transit, SMART's design/build contractor will be responsible for completing the interim concept design and constructing it prior to the start of construction through the transit center. SMART Phase 2 construction is currently scheduled to start in summer 2017, although when construction will impact the transit center will not be known until after the design/build contractor has prepared a detailed project schedule.

The long-term transit center alternatives will require further analysis and evaluation prior to selection of a preferred alternative. The San Rafael Transit Center Relocation Study identified near-term and long-term transit center needs, facility requirements, and screened potential long-term transit center sites. It provided a technical basis to support the development and evaluation of both interim and long-term transit center concepts. Three alternatives have been identified that achieve the minimum functional needs of the long-term transit center, including functionality for both users and operators. As the project did not include a community engagement process or environmental analysis, this study does not provide a recommendation for a preferred long-term alternative. It is recommended to carry the identified alternatives forward into an environmental process. The environmental process will include additional technical analysis, an extensive stakeholder and public outreach process to further vet and refine the alternatives, and may include the consideration of new alternatives. This process will ultimately lead towards selection of a locally preferred alternative.

Next steps include environmental analysis, refinement of the alternatives and additional analysis, further design development, public outreach, and development of a funding plan. Potential funding partners will need to be involved in the next step, including MTC and the Federal Transit Administration (FTA). As the owner and operator of the existing facility, Golden Gate Transit will take the lead on the next steps on the long-term solution. The next steps will include continuation of the close partnership between study participants to ensure a long-term solution benefitting all parties.