

# Alternatives Report

July 2018

Prepared by

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# I Introduction

The City of San Bruno is undertaking a Specific Plan planning process for the Bayhill district, home to the largest cluster of offices in San Bruno, including the headquarters of YouTube, as well as other office, retail, and hotel uses. The Bayhill Specific Plan will outline a cohesive, long-term (to year 2040), community-driven vision for this key San Bruno district, and ensure that YouTube's plans for campus expansion are integrated into an attractive setting that benefits all of Bayhill's property owners, as well as the broader San Bruno community.

This Alternatives report represents a key step in the Specific Plan process. Four alternative land use possibilities, with a horizon to year 2040, are presented here. The Alternatives explore different ways in which office uses, retail, housing, and public and civic spaces could be distributed among the Bayhill district, framing the area's development. The Alternatives were developed using the vision statement and guiding principles resulting from community outreach activities conducted in the summer of 2017, the existing conditions work completed in the fall of 2017, as well as information received from YouTube for Alternative 4. The Alternatives were also designed to bracket a range of choices that would allow for an evaluation of the impacts associated with different land use allocations. Each scenario has thus been

analyzed for its impacts on traffic and the City's fiscal circumstances or "balance sheet". A summary of these impacts is included in this report.

In the coming months, the Alternatives and their implications will be shared with the broader San Bruno community. Community members will have ample opportunity, through both a community workshop as well as an online survey, to weigh in on what aspects of the four Alternatives they like, impacts that may concern them, and how they might balance and prioritize different impacts. Property owners will also be engaged for their input.

Following community input, direction on a Preferred Plan will be provided by the Planning Commission and the City Council. Both the technical analysis and feedback from the public will help decision-makers arrive at a Preferred Plan, on which the final Specific Plan will be based. The Preferred Plan may be one of the four Alternatives in this report, or may be a hybrid of two or more Alternatives.



## 1.1 Location and Planning Area

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San Bruno is located in northern San Mateo County, just west of the San Francisco International Airport (SFO). The Bayhill district is centrally located in the city and enjoys exceptional regional automobile and transit access. It is within a half mile of Downtown, City Hall, the San Bruno Caltrain and BART stations, and the Tanforan shopping center. See Figure 1-1 for a map of the city and the location of the Bayhill district.

The Planning Area is approximately 98 acres in size. As shown in Figure 1-2, it is bounded by Interstates 280 to the west and 380 to the north, El Camino Real to the east, and San Bruno Avenue West to the south. It features a downward slope of approximately 140 feet, generally from the western edge down toward El Camino Real. In addition, the entire Bayhill Specific Plan Area is classified as a Priority Development Area, which is a designation approved by regional agencies upon application by cities of areas for investment, new homes and job growth. These areas represent the foundation for sustainable regional growth.



■■■■■ Planning Area

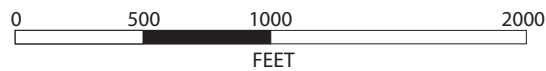
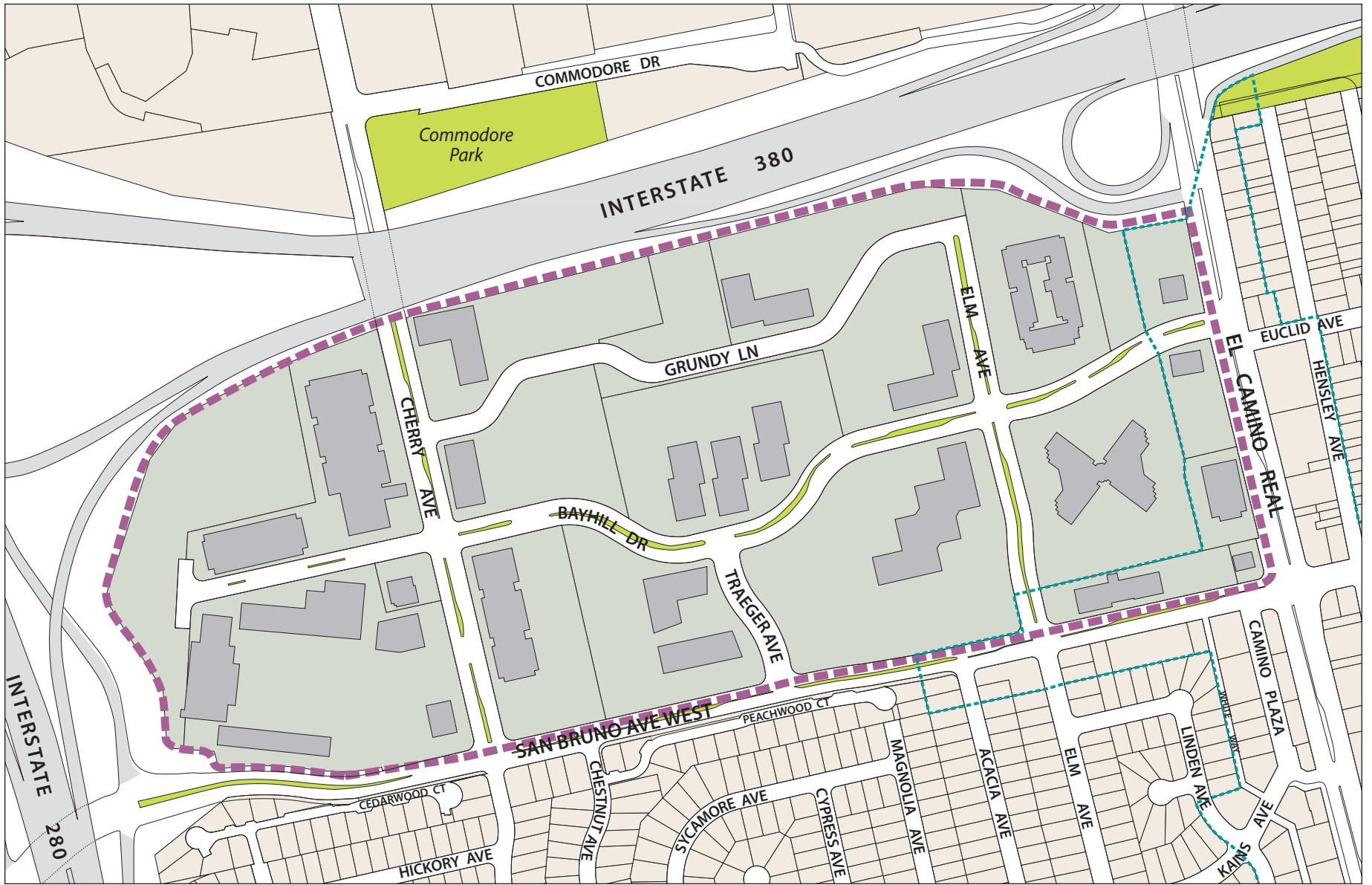


Figure 1-1: Location



- Planning Area
- Transit Corridor Specific Plan

**Figure 1-2: Planning Area**



## 1.2 Specific Plan Process

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Key steps in the Specific Plan process completed prior to this report include:

- **Community Visioning and Outreach.** Community outreach consisted of a visioning workshop as well as a joint session of the City Council and Planning Commission, stakeholder interviews, and a property owner forum held in the summer of 2017. The input received during this phase served as the foundation for the Bayhill Vision and Guiding Principles.
- **Existing Conditions Research.** Background research on the key issues and opportunities to be addressed by the Specific Plan was conducted concurrently with community outreach, and summarized in an Existing Conditions Report completed in the fall of 2017.

Next steps in the Specific Plan process include:

- **Alternatives Outreach and Preferred Plan.** The Alternatives will be presented to the community at a community workshop, through an online survey, and at a second property owner forum. Following this public outreach and subsequent decision-maker input, the options will be narrowed to a single “Preferred Plan.”
- **Draft Specific Plan and Environmental Review.** Based on the Preferred Plan, a public review draft of the Bayhill Specific Plan will be prepared along with an Environmental Impact Report (EIR) that analyzes the effects of Specific Plan policies and development potential on the environment.

- **Adoption.** Following a public review period, a revised Specific Plan will be presented to the Planning Commission and the City Council for adoption at public hearings.

## 1.3 Vision and Guiding Principles

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The Vision Statement and Guiding Principles were developed based on the initial community outreach efforts, which included the first Property Owner Forum, a joint meeting with the City Council and Planning Commission, the first Community Workshop, and Stakeholder Meetings. The Vision Statement and Guiding Principles are presented on the following pages.

# vision & guiding principles



*The Bayhill Specific Plan will serve as the land use, circulation, and infrastructure regulatory document that governs development within the 98-acre area bounded by San Bruno Avenue, El Camino Real, Interstate 280, and Interstate 380.*

## vision statement

Bayhill is a vibrant mixed-use district that supports a diversity of uses benefitting Bayhill tenants as well as the broader San Bruno community. Attractive streetscape and urban design make for a lively public realm with inviting spaces for working, living, learning, dining, gathering, and recreation. Access and connectivity are enhanced to encourage residents, visitors, and workers to walk, bike, and take transit to and within the Bayhill district.

# guiding principles

The following Guiding Principles emerged from community, property owner, and decision-maker input throughout the Bayhill Specific Plan's community engagement process. Together, these Guiding Principles support the overall vision for Bayhill and will be reflected in the goals, policies, and implementation measures of the Specific Plan.

## 1 Promote a Vibrant Mixed-Use Walkable District

Maintain Bayhill's position as San Bruno's premier employment hub, enabling existing businesses to thrive and expand. Promote a richer array of activities and uses, including flexible office space, retail, dining, residential, hotels, and other compatible uses to foster a vibrant, walkable, 21st century mixed-use district. Ensure that commercial uses at Bayhill are complementary to Downtown and the Tanforan shopping center, while maintaining neighborhood-serving commercial uses at the Bayhill Shopping Center.

## 2 Enhance the Public Realm & Promote Quality Design

Establish a cohesive image for Bayhill with consistent streetscapes and improved sidewalks within the district and along adjacent streets. Enhance the public realm, including with new paths/trails and open spaces. Encourage design diversity and visual richness by promoting a variety of architectural building styles, responding to the site's topography, and focusing on sustainability and flexibility to accommodate a range of uses and changes over time.

## 3 Improve Multimodal Mobility

Improve connectivity, accessibility, and safety for all modes of transportation. Enhance pedestrian, transit, shuttle, and bike connectivity to destinations in San Bruno including Downtown, and the BART and Caltrain stations. Promote safer pedestrian crossing of El Camino Real and San Bruno Avenue through visible crosswalks, sidewalk bulbouts, stoplights/signs, and signal timing. Actively manage parking in Bayhill to encourage drivers to access the area via alternative modes or to "park once" and walk or bike to destinations. Periodically evaluate parking standards to respond to technological changes.

## 4 Foster Housing Development

Promote the development of housing at Bayhill and elsewhere in San Bruno to balance the growing Bayhill workforce and its impacts. Encourage a variety of housing types affordable to a range of income levels to meet the community's evolving needs.

## 5 Integrate Bayhill with the Greater San Bruno Community

Ensure that Bayhill is cohesively integrated with the surroundings. Promote "soft edges" with streets, bikeways, pedestrian trails, and open spaces that invite the surrounding community in, while encouraging Bayhill workers to engage with and set roots down in the broader San Bruno community.

## 6 Incorporate Public Amenities

Promote Bayhill as a destination through public amenities that benefit all community members, including workers, neighbors, families, and students. Explore the feasibility of locating a civic use—such as a new technology-oriented City library or a community gathering space—at Bayhill.

## 7 Ensure Net Positive Fiscal Impact

Ensure that changes in Bayhill over time, including the expansion of YouTube and loss of the other uses that contribute positively to City revenue, result in a net fiscal benefit to the City.

## 8 Promote Optimal Long-Term Development Patterns

Consider a range of opportunities to achieve optimal use of the Specific Plan area, including augmenting allowable building heights, parking standards, and other development regulations to capitalize on Bayhill's strategic location and enable realization of its long-term development potential.



## 1.4 Summary of Alternatives

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The Bayhill Office Park was laid out in the 1970s. While some of the buildings have been built more recently, the business park's overall structure follows a suburban, automobile-dominant style of development, with individual buildings surrounded by expanses of surface parking. There are no residential buildings, or mixing/close integration of different uses. The Alternatives have been designed to respond to the community Vision, which calls for a vibrant, mixed-use pedestrian oriented district. While office will be the dominant use in the district in the future, the Alternatives seek to enliven Bayhill with the addition of residential and supporting uses, as well as parks, plazas, civic spaces, and enhanced pedestrian connections. The four Alternatives are summarized below and are further described in Chapter 2:

- **Alternative 1 (Central Spine):** In Alternative 1, Bayhill Drive acts as a primary organizing element for development and circulation within the Planning Area. Jogs in its existing alignment are “filled in” with green space to create a central pedestrian “spine” aligned with Euclid Avenue, with an enhanced crossing across El Camino Real. A Gateway Plaza is located at the corner of El Camino Real and this new spine, anchored by a new civic space, and residential uses are clustered along San Bruno Avenue and El Camino Real. Opportunities for residential and mixed-use development exist along both San Bruno Avenue West and El Camino Real.
- **Alternative 2 (Bayhill Square):** Alternative 2 proposes a reconfiguration of the central part of Bayhill Drive to create a one-way traffic loop around a three-acre central square, part of which may be paved to accommodate an area for food trucks, a farmers’ market, outdoor

performances, and a civic use. Pathways internal to large blocks break up the blocks and provide direct pedestrian access to the central square. The El Camino Real and San Bruno Avenue West “edges” of the Planning Area are defined by mixed-use development and residential uses, respectively.

- **Alternative 3 (Cherry Plaza):** Alternative 3 establishes two residential mixed-use areas within Bayhill: one at its east end, centered on the corner of El Camino Real and San Bruno Avenue, and one at its west end, along Cherry Avenue between Bayhill Drive and San Bruno Avenue West. This Alternative features a mixed-use area along El Camino Real and a new civic use along San Bruno Avenue West. The mixed-use area along Cherry Avenue would face a landscaped public plaza over a segment of Cherry Avenue that is closed to vehicular traffic. Alternative 3 also establishes a series of publicly-accessible open spaces across the Planning Area, enhancing connectivity and openness throughout the site.
- **Alternative 4 (Greenway Connection, Based on YouTube’s Proposal):** Alternative 4 is a property owner-driven Alternative that establishes office uses on all YouTube-owned properties complemented by continuous green spaces along select block frontages that together make up a greenway, or linear park, along Bayhill Drive and Elm Avenue south of Bayhill Drive. For non-YouTube owned properties, land uses mirror those found in Alternative 2, though residential and mixed used residential are extended along the length of El Camino Real. In this Alternative, residential and retail uses are generally confined to the El Camino Real and San Bruno Avenue West “edges” of the Planning Area.

## 1.5 Summary of Potential Development and Impacts

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### DEVELOPMENT SUMMARY

Alternatives 1 and 3 offer the greatest number of housing units (730 and 980 units, respectively) and the greatest amount of public space (6.2 and 8.4 acres, respectively).<sup>1</sup> Meanwhile, Alternatives 2 and 4 provide the most office development potential (up to 1,200,000 more square feet than Alternatives 1 and 3). For any of the Alternatives, it is possible that housing, civic uses, or other community benefits may be developed offsite.

### TRAFFIC IMPACTS

Analysis of impacts to key intersections indicates that all four alternatives would result in impacts to the traffic network that will cause operational level of service during the PM peak hour to deteriorate below City of San Bruno and/or Caltrans standards. Overall, Alternatives 1 and 3 result in the least additional delay at the eight intersections that were evaluated for traffic impacts. This is due to the fact that these Alternatives produce fewer peak hour project trips than Alternatives 2 and 4, while also achieving the highest amount of internalization and mode shift due to the diverse land use programs proposed. It should be noted some of the impacts from Alternative 3 are also a result of the proposed closure of Cherry Avenue to automobile traffic in this Alternative.

Regardless of the land use Alternative, intersection mitigations would need to be identified at four to five of the study intersections evaluated. Traffic demand management strategies should be considered for implementation and mitigation.

### FISCAL IMPACTS

All four Alternatives are estimated to have a positive net fiscal impact on the City's General Fund at buildout. Alternatives 1, 2, and 4 are estimated to be marginally positive in terms of net impact to the General Fund. Alternative 3 includes a new hotel, and is estimated to be more positive in terms of net impact to the General Fund.

Table 1-1 summarizes projected development yield as well as transportation impacts for each Alternative at buildout. Additional discussion regarding fiscal impacts can be found in Section 3.3 of this report.

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<sup>1</sup> The buildout numbers presented within this report have been rounded.



**Table I-1: Summary of Potential Development and Impacts<sup>1</sup>**

	Existing	Alternative 1	Alternative 2	Alternative 3	Alternative 4
<b>Development Summary</b>					
Housing Units	-	730	570	980	570
Non-Residential Development (sq. ft.)					
Office	1,594,000	2,679,000	3,754,000	3,066,000	3,895,000
Retail	145,000	154,000	172,000	166,000	166,000
Hotel	79,000	79,000	79,000	145,000	79,000
Public Open Space (AC)	-	6.2	4.2	8.4	4.5
Civic Use (AC)	-	1.7	1.0	2.1	-
<b>Transportation Impacts</b>					
AM Peak Hour Trip Generation <sup>2,3</sup>	-	3,217	4,376	3,934	4,447
PM Peak Hour Trip Generation <sup>2,3</sup>	-	3,746	4,864	4,493	4,644
Number of intersections operating below City or Caltrans LOS standard	2	4	5	4	5

Notes:

1. Numbers may not add due to rounding.
2. Existing trips were credited to the project to determine net new trips and project impacts.
3. After MainStreet reduction. MainStreet is a trip generation tool which is based on MXD methodology, developed for and approved by the US Environmental Protection Agency (EPA) for use in evaluating trip generation at mixed-use projects.

Source: Dyett & Bhatia, 2018, Fehr & Peers, 2018, EPS, 2018

## 2 Alternatives Descriptions

### 2.1 Alternative I: Central Spine

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As shown in Figures 2-1 and 2-2, in the Central Spine Alternative, Bayhill Drive, in its existing alignment, is the primary organizing element for development and circulation within the Planning Area. Jogs in its existing alignment are “filled in” with green space to create a central pedestrian “spine” aligned with Euclid Avenue, with an enhanced crossing across El Camino Real. A Gateway Plaza is located at the corner of El Camino Real and this new spine, anchored by a new civic space. The spine would extend from El Camino Real to Cherry Avenue and include a wide pedestrian pathway lined with trees. Along the spine, a 2.75-acre open space opposite Traeger Avenue would be visible from El Camino Real, San Bruno Avenue, and the Bayhill Shopping Center.

Special paving at intersections, a potential amphitheater within the central open space, and building entrances directly off Bayhill Drive focus activity and attention on this primary spine, while cafés/YouTube dining facilities, building entrances and other active uses reinforce its central edge. Access to parking would generally be from a straightened-out Grundy Lane.

The Planning Area is envisioned to be built out primarily with office uses, with expanded opportunities for residential, mixed-use development, and civic uses along San Bruno Avenue and El Camino Real.



**Table 2-1: Alternative I Central Spine: Build-out Summary**

<i>Land use</i>	<i>Acres<sup>1</sup></i>	<i>Density</i>	<i>Avg. Non-residential FAR<sup>2</sup></i>	<i>Existing</i>	<i>Existing To Go</i>	<i>Net New</i>	<b><i>Total</i></b>
<b>Residential (units)</b>	10.5					730	<b>730</b>
High-Density Residential (Max. 50 ft)	6.6	60				390	<b>390</b>
High-Density Residential, within Transit Corridor (Max. 70 ft)	2.7	90				240	<b>240</b>
High-Density Residential Mixed-Use within Transit Corridor	1.3	75				100	<b>100</b>
<b>Civic Use</b>	1.7					1.7	<b>1.7</b>
<b>Park/ Plaza (acres)</b>	6.2					6.2	<b>6.2</b>
<b>Office (square feet)</b>	49.3		1.24	1,594,000	728,000	1,086,000	<b>2,679,000</b>
<b>Retail (square feet)</b>	12.8		0.3 – 0.4	145,000	23,000	9,000	<b>154,000</b>
High-Density Residential Mixed-Use Retail within Transit Corridor	1.3		0.3	17,000	17,000	(400)	<b>17,000</b>
Other Retail	11.5		0.4	128,000	6,000	9,000	<b>137,000</b>
<b>Hotel (square feet)</b>	4.3			79,000			<b>79,000</b>

Notes:

1. Totals may not add due to rounding
2. This pertains to new development only, excluding planned development or existing development that is to remain, such as the YouTube Phase I development and Bayhill Shopping Center.

Figure 2-1: Alternative 1 Central Spine - Land Use

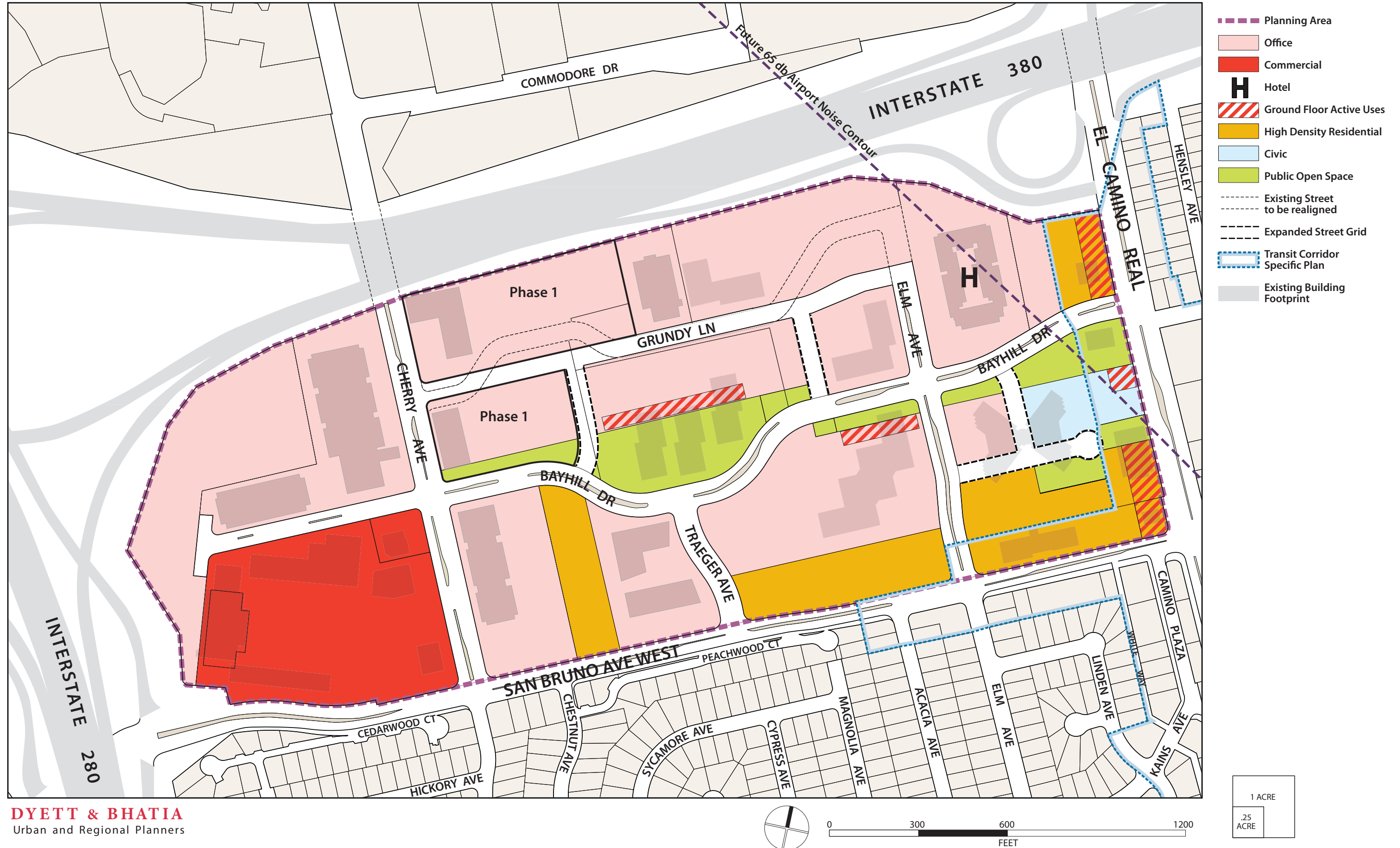
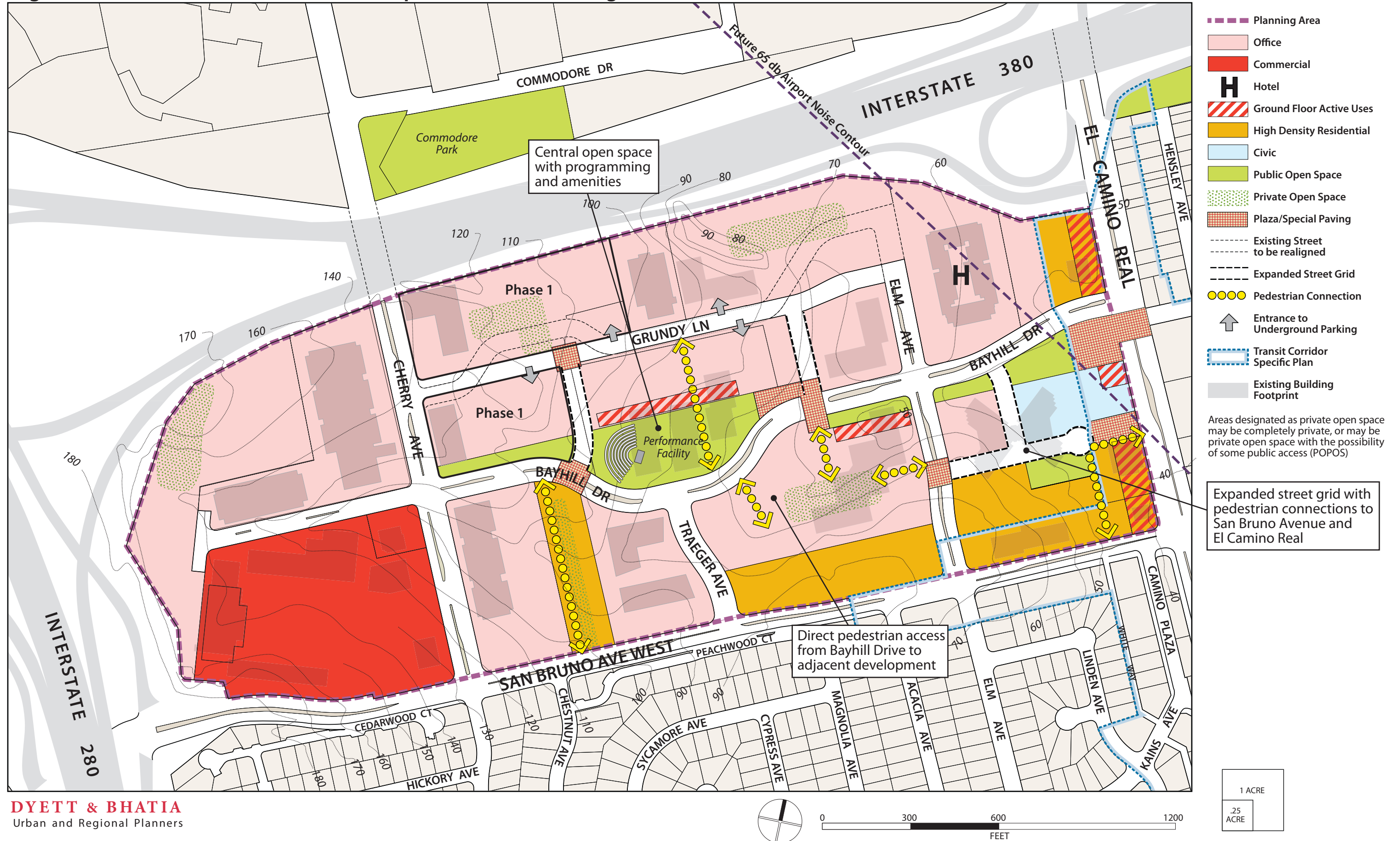


Figure 2-2: Alternative 1 Central Spine - Urban Design



## 2.2 Alternative 2: Bayhill Square

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Alternative 2 focuses on both the center and the edges of the Planning Area: office and retail development is organized around a central open space, while the El Camino Real and San Bruno Avenue “edges” of the Planning Area are defined by mixed-use development and residential uses, respectively.

As shown in Figures 2-3 and 2-4, the central part of Bayhill Drive is re-configured to create a one-way traffic loop around a three-acre central square (Bayhill Square), part of which may be paved to accommodate an area for food trucks, a farmers’ market, outdoor performances, and a civic use. The Traeger Avenue entrance to Bayhill from the surrounding neighborhood is improved with a linear open space that functions as an extension of Bayhill Square.

Pathways internal to the large blocks break up the blocks and provide direct pedestrian access to the central square. Among these is an east-west green corridor connecting Grundy Lane with Bayhill Drive, which preserves the view to the hills, as well as physical access to office development along the Bayhill Drive alignment. Like in Alternative 1, vehicular access to parking is provided primarily from Grundy Lane.



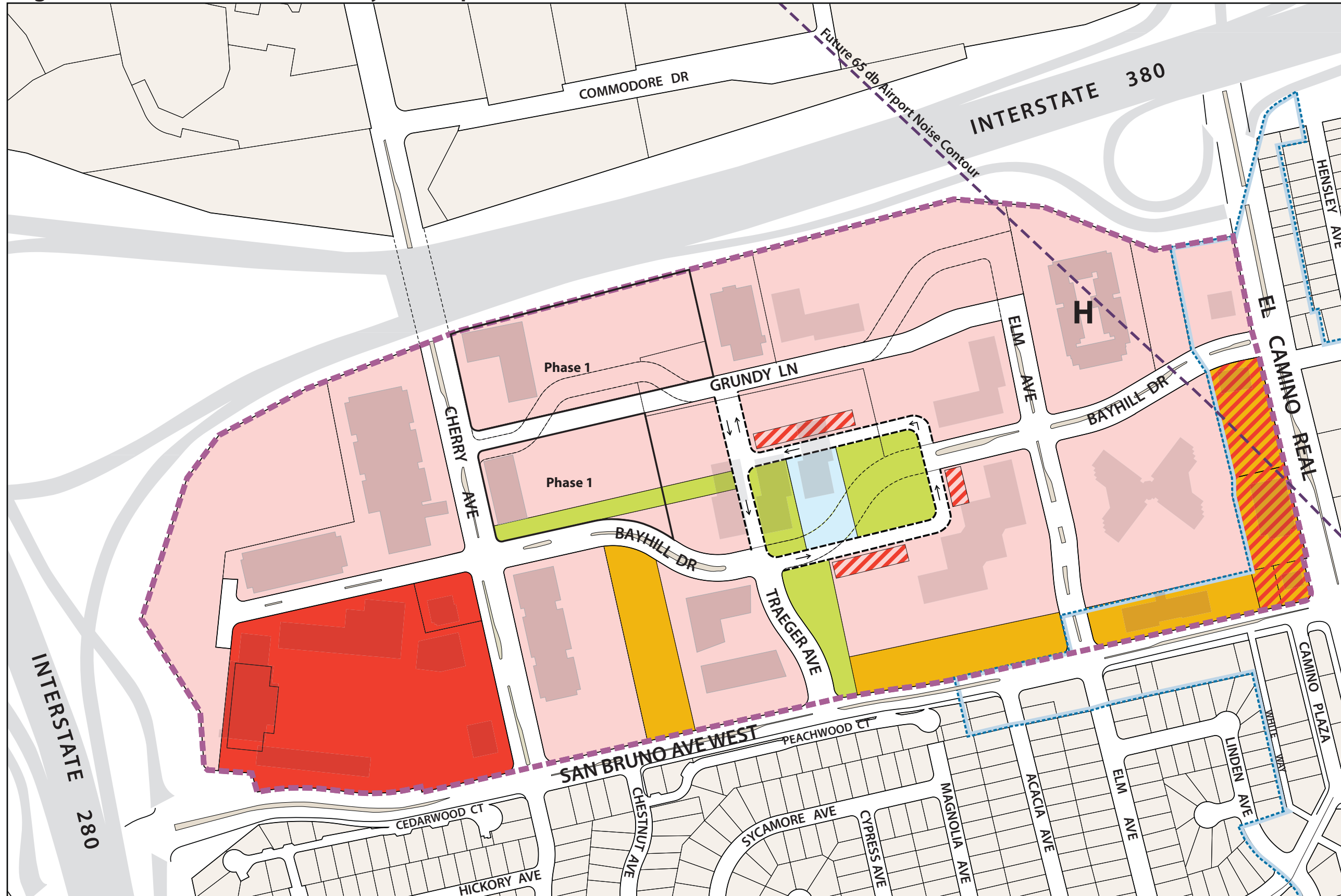
**Table 2-2: Alternative 2 Bayhill Square: Build-out Summary**

<i>Land use</i>	<i>Acres<sup>1</sup></i>	<i>Density</i>	<i>Avg. Non-residential FAR<sup>2</sup></i>	<i>Existing</i>	<i>Existing To Go</i>	<i>Net New</i>	<b><i>Total</i></b>
<b>Residential (units)</b>	8.1					570	<b>570</b>
High-Density Residential (Max. 50 ft)	3.8	60				230	<b>230</b>
High-Density Residential, within Transit Corridor (Max. 70 ft)	1.4	90				130	<b>130</b>
High-Density Residential Mixed-Use within Transit Corridor	2.8	75				210	<b>210</b>
<b>Civic Use</b>	1.0					1.0	<b>1.0</b>
<b>Park/ Plaza (acres)</b>	4.2					4.2	<b>4.2</b>
<b>Office (square feet)</b>	55.7		1.7	1,594,000	728,000	2,160,000	<b>3,754,000</b>
<b>Retail (square feet)</b>	14.1		0.3 – 0.4	145,000	23,000	27,000	<b>172,000</b>
High-Density Residential Mixed-Use Retail within Transit Corridor	2.8		0.3	23,000	23,000	14,000	<b>37,000</b>
Other Retail	11.3		0.4	122,000		13,000	<b>134,000</b>
<b>Hotel (square feet)</b>	4.3			79,000			<b>79,000</b>

Notes:

1. Totals may not add due to rounding
2. This pertains to new development only, excluding planned development or existing development that is to remain, such as the YouTube Phase I development and Bayhill Shopping Center.

Figure 2-3: Alternative 2 Bayhill Square - Land Use



- Planning Area
- Office
- Commercial
- H Hotel
- Ground Floor Active Uses
- High Density Residential
- Civic
- Public Open Space
- Existing Street to be realigned
- Expanded Street Grid
- Transit Corridor Specific Plan
- Existing Building Footprint

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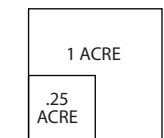
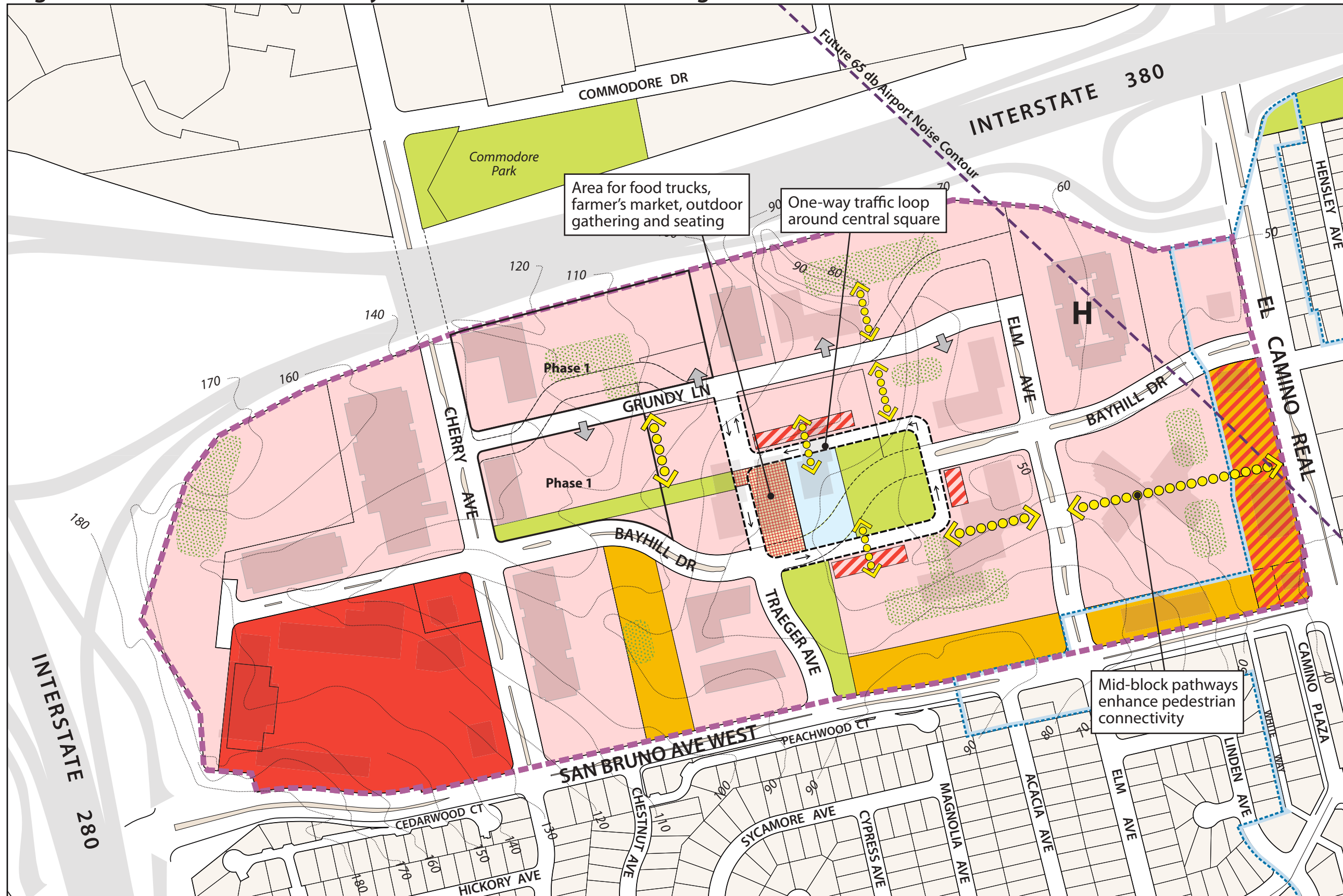
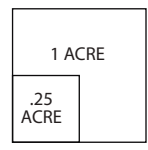


Figure 2-4: Alternative 2 Bayhill Square - Urban Design



- Planning Area
- Office
- Commercial
- H Hotel
- Ground Floor Active Uses
- High Density Residential
- Civic
- Public Open Space
- Private Open Space
- Plaza/Special Paving
- Existing Street to be realigned
- Expanded Street Grid
- Pedestrian Connection
- ↑ Entrance to Underground Parking
- Transit Corridor Specific Plan
- Existing Building Footprint

Areas designated as private open space may be completely private, or may be private open space with the possibility of some public access (POPOS)



## 2.3 Alternative 3: Cherry Plaza

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As illustrated in Figures 2-5 and 2-6, Alternative 3 establishes two residential mixed-use areas within Bayhill: one at its east end, centered on the corner of El Camino Real and San Bruno Avenue, and one at its west end, along Cherry Avenue between Bayhill Drive and San Bruno Avenue. Both of these areas are envisioned as pedestrian-oriented, with bicycle and pedestrian amenities, active ground-floor uses, and public gathering spaces. The mixed-use area along El Camino Real would include a new civic use with active ground floor uses. The mixed-use area along Cherry Avenue would face a landscaped public plaza over a segment of Cherry Avenue that is closed to vehicular traffic. By prohibiting through traffic, traffic on Cherry Avenue north of Bayhill Drive would be slowed and pedestrian comfort would be improved. Currently, SamTrans Routes 140 and 49 use Cherry Avenue between San Bruno Avenue and Sneath Lane. Further

coordination with SamTrans would be required if the proposed Cherry Avenue plaza moves forward as part of the preferred plan.

Alternative 3 also establishes a series of publicly-accessible linear open spaces across the Planning Area, enhancing connectivity and openness throughout the site. In addition to Cherry Plaza and the plaza at the corner of El Camino Real and San Bruno Avenue, these include a park that spans between Elm Avenue and the El Camino Real mixed-use development; a park along Traeger Avenue; green space along both Grundy and Cherry avenues; and a north-south mid-block open space on the Traeger block. Landscaped mid-block pathways and crosswalks connect these spaces, and office development faces and opens onto the many public open spaces and internal pathways.

**Table 2-3: Alternative 3 Cherry Plaza: Build-out Summary**

<i>Land use</i>	<i>Acres<sup>1</sup></i>	<i>Density</i>	<i>Avg. Non-residential FAR<sup>2</sup></i>	<i>Existing</i>	<i>Existing To Go</i>	<i>Net New</i>	<b><i>Total</i></b>
<b>Residential (units)</b>	15					980	<b>980</b>
High-Density Residential (Max. 50 ft)	9.4	60				570	<b>570</b>
High-Density Residential Mixed-Use (Max. 50 ft)	1.9	60				120	<b>120</b>
High-Density Residential, within Transit Corridor (Max. 70 ft)	1.4	90				120	<b>120</b>
High-Density Residential Mixed-Use within Transit Corridor	2.3	75				170	<b>1720</b>
<b>Civic Use</b>	2.1					2.1	<b>2.1</b>
<b>Park/ Plaza (acres)</b>	8.4					8.4	<b>8.4</b>
<b>Office (square feet)</b>	44.1		1.8	1,594,000	728,000	1,472,000	<b>3,066,000</b>
<b>Retail (square feet)</b>	12.4		0.3 – 0.4	145,000	42,000	21,000	<b>166,000</b>
High-Density Residential Mixed-Use Retail within Transit Corridor	2.3		0.3	21,000	21,000	9,000	<b>30,000</b>
Other Retail	10.1		0.4	124,000	22,000	12,000	<b>136,000</b>
<b>Hotel (square feet)</b>	5.6			79,000		66,000	<b>145,000</b>

Notes:

1. Totals may not add due to rounding
2. This pertains to new development only, excluding planned development or existing development that is to remain, such as the YouTube Phase I development and Bayhill Shopping Center.

Figure 2-5: Alternative 3 Cherry Plaza - Land Use

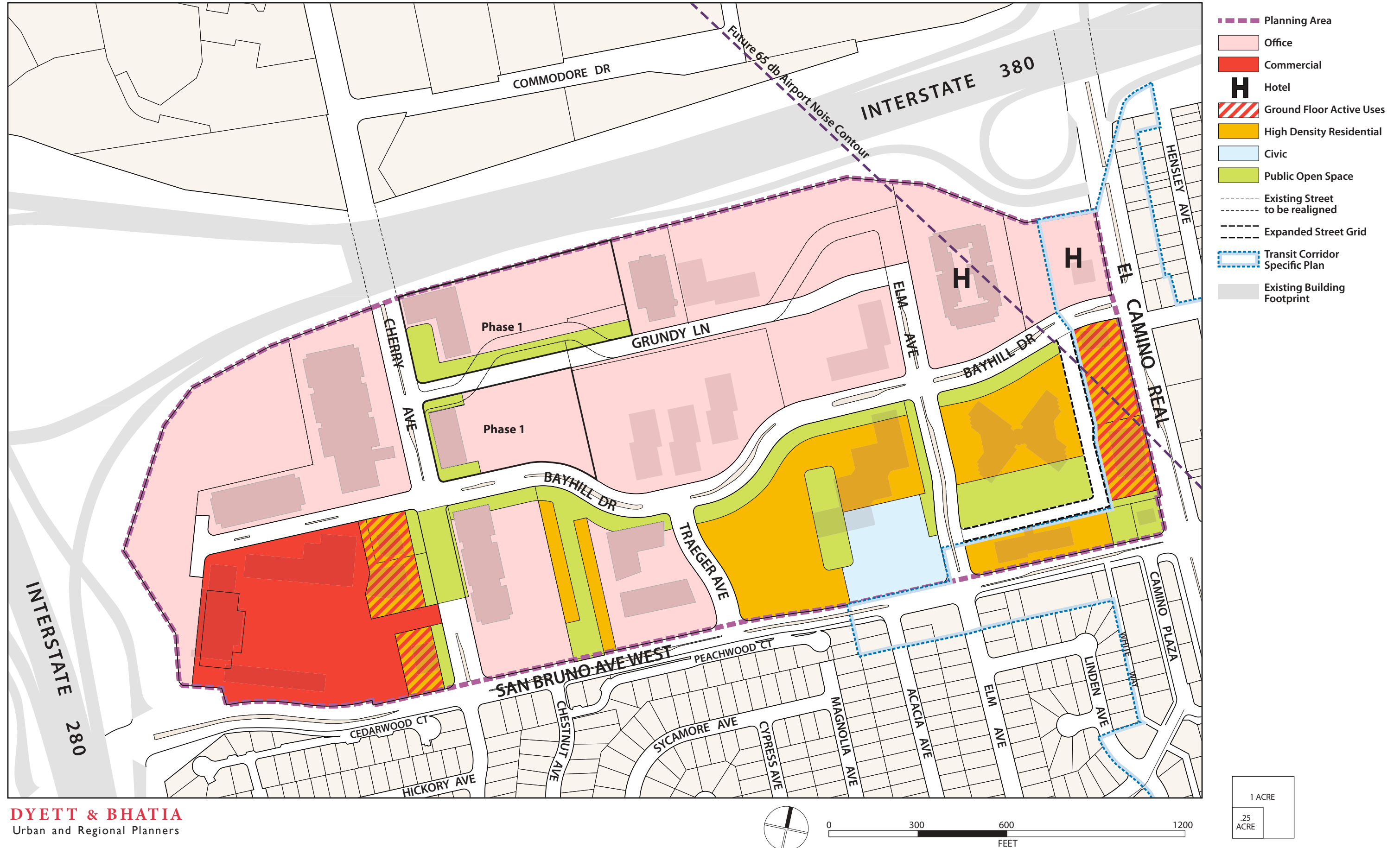
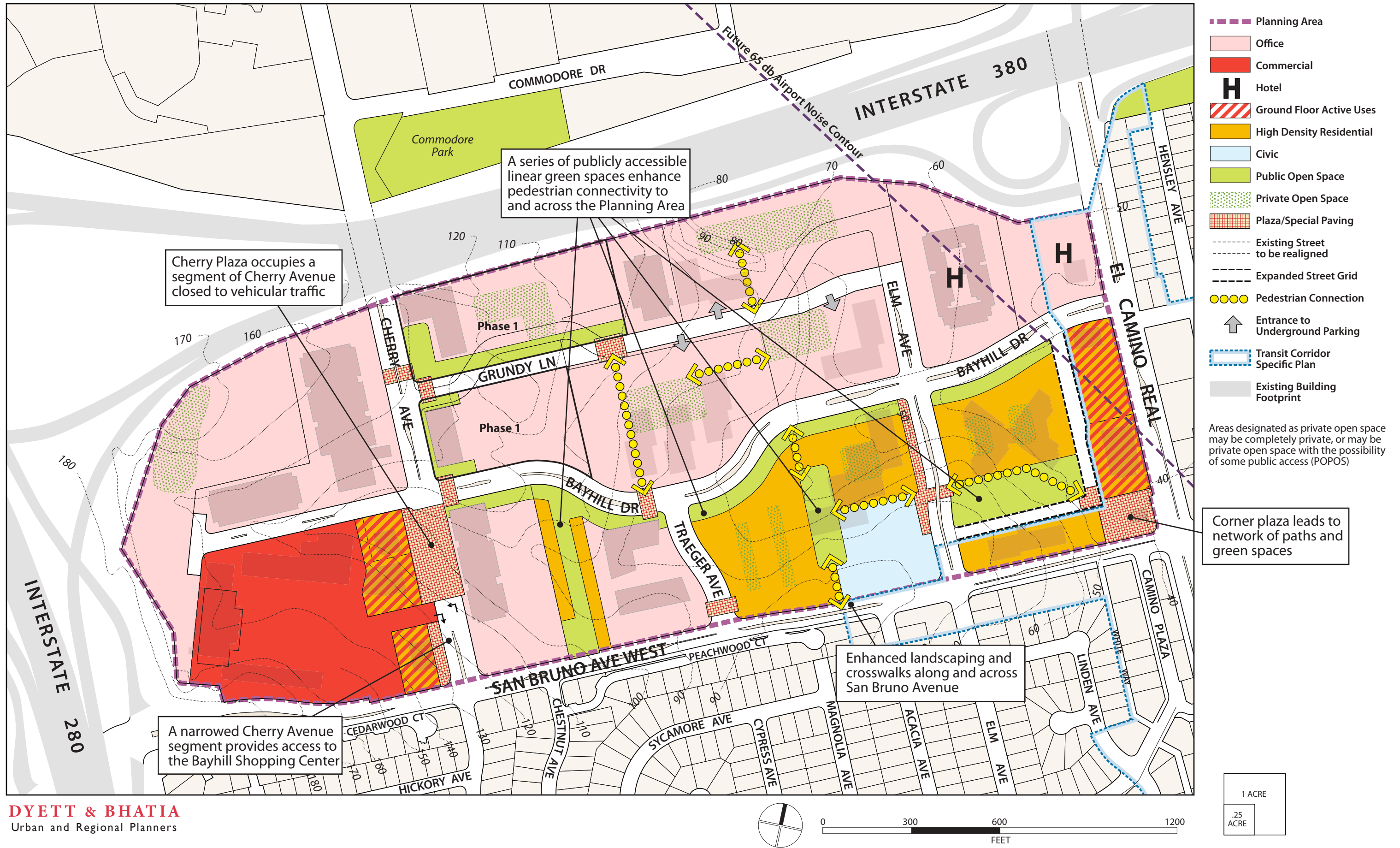


Figure 2-6: Alternative 3 Cherry Plaza - Urban Design



## **2.4 Alternative 4: Greenway Connection (Based on YouTube’s Proposal)**

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Alternative 4 is a property owner-driven Alternative that establishes office uses on all YouTube-owned properties complemented by continuous green spaces along select block frontages that together make up a greenway, or linear park, along Bayhill Drive and Elm Avenue south of Bayhill Drive. Together with enhanced pedestrian connections on existing rights-of-way and a private open space spanning between Grundy Lane and Bayhill Drive, the greenway is intended to enhance movement and connectivity within Bayhill, contributing to the overall permeability of the site. The greenway will also function as a linear park, providing gathering spaces and opportunities for recreation where the width of the park permits.

For non-YouTube owned properties, land uses mirror those found in Alternative 2, though residential and mixed use residential uses are extended along the entire length of the section of El Camino Real located within the Planning Area. In this Alternative, residential and retail uses are generally confined to the El Camino Real and San Bruno Avenue “edges” of the Planning Area.



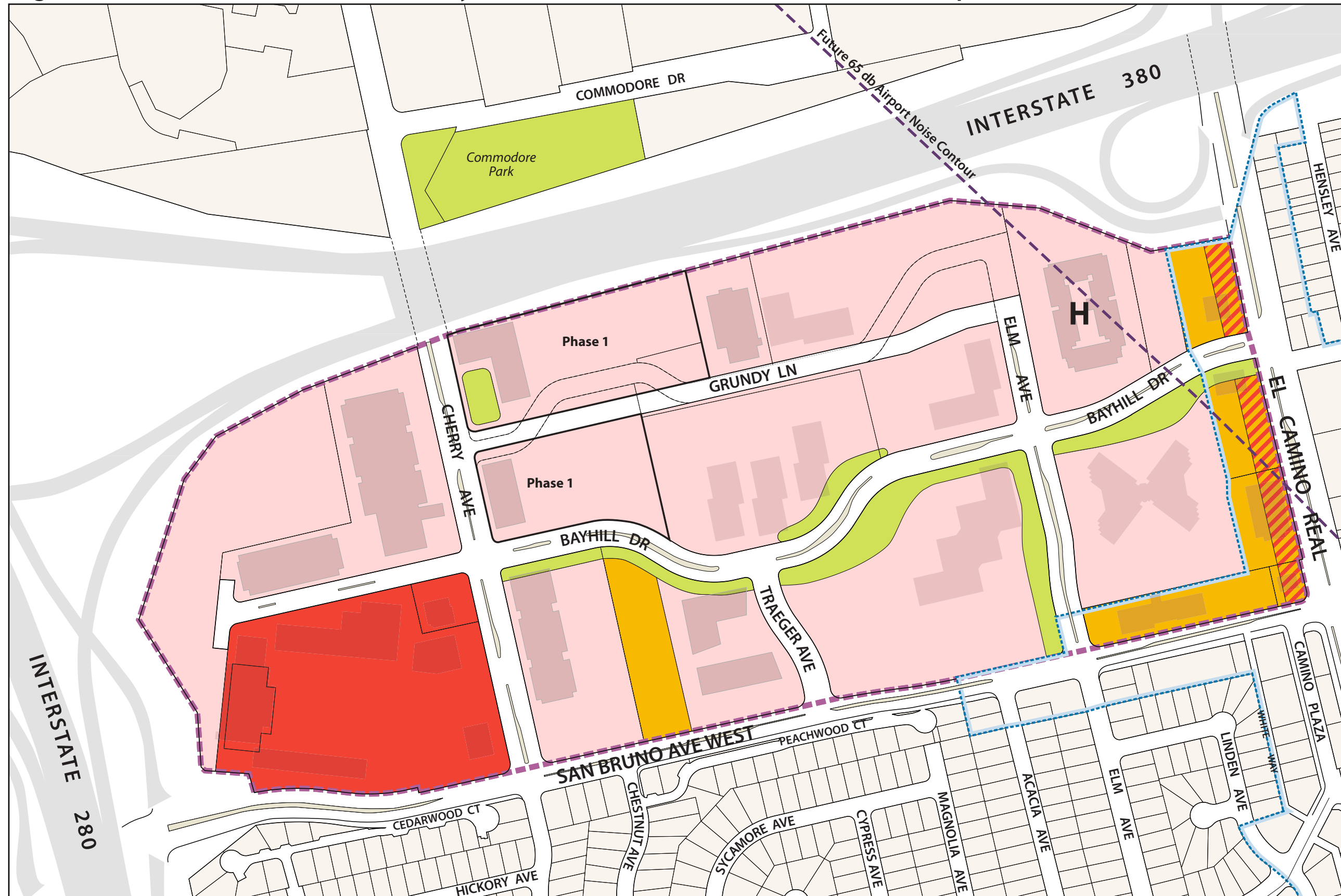
**Table 2-4: Alternative 4 Greenway Connection (Based on YouTube’s Proposal): Build-out Summary**

<i>Land use</i>	<i>Acres<sup>1</sup></i>	<i>Density</i>	<i>Avg. Non-residential FAR<sup>2</sup></i>	<i>Existing</i>	<i>Existing To Go</i>	<i>Net New</i>	<b><i>Total</i></b>
<b>Residential (units)</b>	7.2					570	<b>570</b>
High-Density Residential (Max. 50 ft)	1.8	60				110	<b>110</b>
High-Density Residential, within Transit Corridor (Max. 70 ft)	3.7	90				330	<b>330</b>
High-Density Residential Mixed-Use within Transit Corridor	1.7	75				130	<b>130</b>
<b>Civic Use</b>							
<b>Park/ Plaza (acres)</b>	4.5					4.5	<b>4.5</b>
<b>Office (square feet)</b>	58		1.7	1,594,000	728,000	2,301,000	<b>3,895,000</b>
<b>Retail (square feet)</b>	12.3		0.3 – 0.4	145,000	23,000	21,000	<b>166,000</b>
High-Density Residential Mixed-Use Retail within Transit Corridor	1.7		0.3	23,000	23,000	21,000	<b>44,000</b>
Other Retail	10.6		0.4	122,000			<b>122,000</b>
<b>Hotel (square feet)</b>	4.3			79,000			<b>79,000</b>

Notes:

1. Totals may not add due to rounding
2. This pertains to new development only, excluding planned development or existing development that is to remain, such as the YouTube Phase I development and Bayhill Shopping Center.

Figure 2-7: Alternative 4: Greenway Connection (Based on YouTube's Proposal) - Land Use



- Planning Area
- Office
- Commercial
- H Hotel
- Ground Floor Active Uses
- High Density Residential
- Public Open Space
- Existing Street to be realigned
- Transit Corridor Specific Plan
- Existing Building Footprint

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Urban and Regional Planners

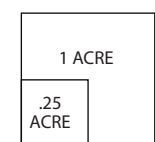
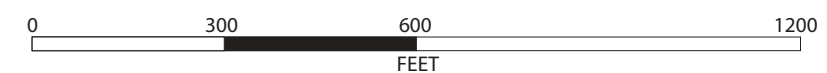
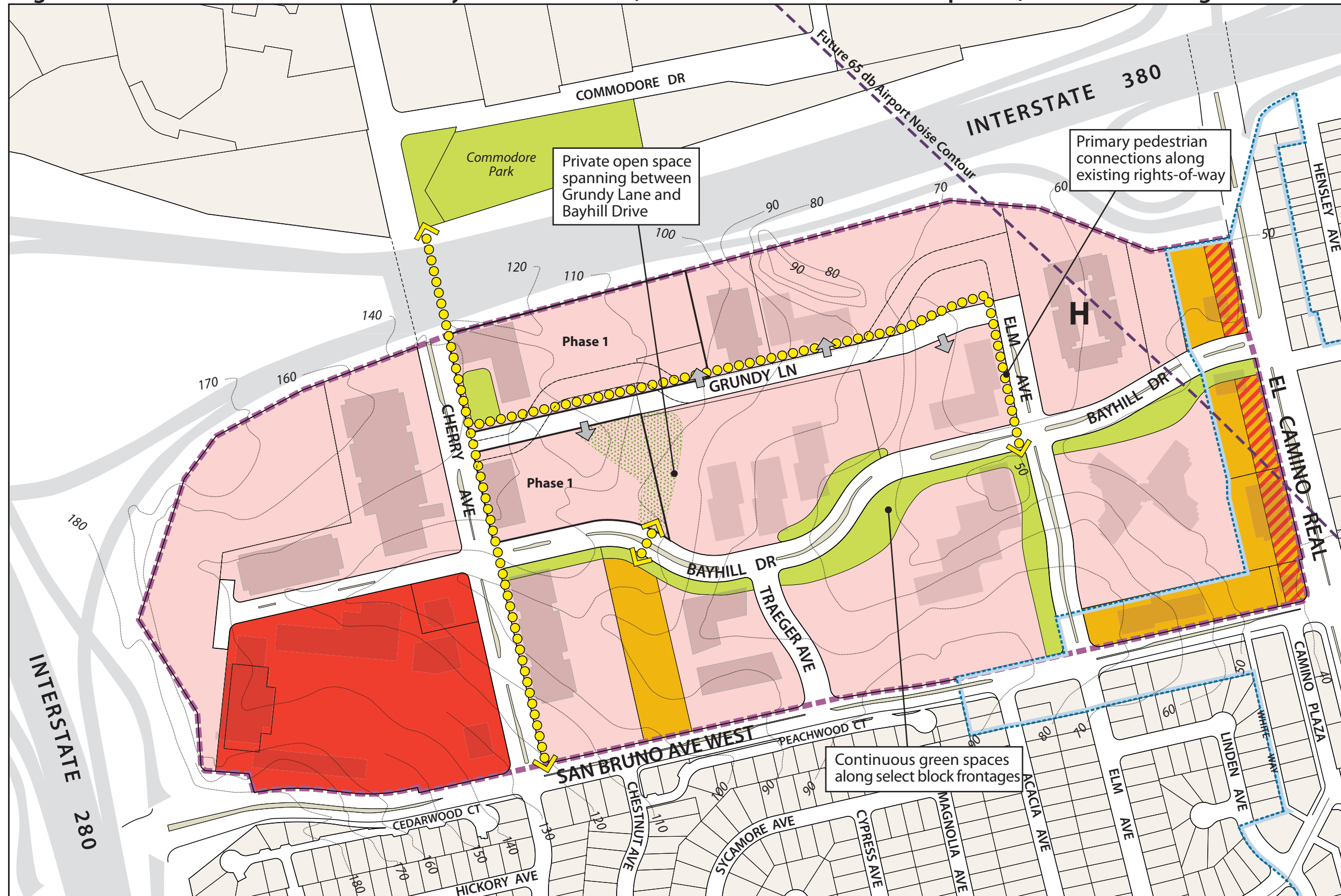
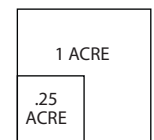
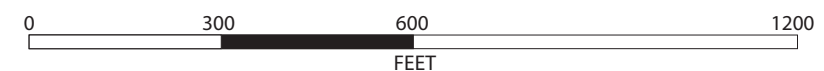


Figure 2-8: Alternative 4 Greenway Connection (Based on YouTube's Proposal) - Urban Design



- Planning Area
- Office
- Commercial
- H Hotel
- Ground Floor Active Uses
- High Density Residential
- Public Open Space
- Private Open Space
- Pedestrian Connection
- Existing Street to be realigned
- ↑ Entrance to Underground Parking
- Transit Corridor Specific Plan
- Existing Building Footprint

Areas designated as private open space may be completely private, or may be private open space with the possibility of some public access (POPOS)



## 3 Comparison of Alternatives

Alternatives 1, 2, and 3 (Central Spine, Bayhill Square, and Cherry Plaza) were developed in response to the community outreach effort. Nevertheless, the Alternatives respond to community priorities in slightly different ways and to different extents. Alternative 4 (Greenway Connection) was developed in response from information received from YouTube.

### 3.1 Land Use and Development Potential

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Each of the Alternatives sets forth a vision for an office-focused district complemented by residential and supporting retail uses as well as parks and plazas at different locations throughout the site. In addition, Alternatives 1, 2, and 3 include space for civic uses. For any of the Alternatives, it is possible that housing, civic uses, or other community benefits may also be developed offsite.

Given that residential and retail uses have the potential to provide vibrancy in an area in the evenings and on weekends, Alternatives 1 and 3, which offer the most housing units (730 and 980 units, respectively), respond most appropriately to the guiding principle of promoting a vibrant mixed-use district. In addition, Alternatives 1 and 3 offer the most public open space (6.2 and 8.4

acres, respectively) and civic use or public amenity acreages (1.7 and 2.1 acres, respectively), which would also contribute to an enhanced and vibrant public realm within Bayhill. Locating civic uses within the Bayhill district would ensure that the district is integrated with and inviting to the greater San Bruno community.

While Alternatives 1 and 2 propose central public and civic spaces that could accommodate programming such as food trucks, outdoor concerts and other activities, the public space belonging to Alternatives 3 and 4 is linear in nature, designed to promote pedestrian connectivity through the site. This pedestrian connectivity would be particularly important in Alternative 3, for example, in order to increase access between residential areas situated along El Camino Real and the civic use on San Bruno Avenue, as well as the Bayhill Shopping Center fronting Cherry Avenue.

Alternatives 2 and 4, while providing fewer housing units and open space areas, would provide the most office development potential (up to 1,200,000 more square feet than Alternatives 1 and 3).



**Table 3- I: Summary of Potential Development**

	Existing	Alternative 1		Alternative 2		Alternative 3		Alternative 4	
		Net New	<b>Total</b>	Net New	<b>Total</b>	Net New	<b>Total</b>	Net New	<b>Total</b>
<b>Housing Units</b>									
	-	730	<b>730</b>	570	<b>570</b>	980	<b>980</b>	570	<b>570</b>
<b>Non-Residential Development (sq. ft.)</b>									
Office	<b>1,594,000</b>	1,086,000	<b>2,679,000</b>	2,160,000	<b>3,754,000</b>	1,472,000	<b>3,066,000</b>	2,301,000	<b>3,895,000</b>
Retail	<b>145,000</b>	9,000	<b>154,000</b>	27,000	<b>172,000</b>	21,000	<b>166,000</b>	21,000	<b>166,000</b>
Hotel	<b>79,000</b>	-	<b>79,000</b>	-	<b>79,000</b>	66,000	<b>145,000</b>	-	<b>79,000</b>
<b>Public Open Space (AC)</b>									
Parks/ Plazas (AC)	-	6.2	<b>6.2</b>	4.2	<b>4.2</b>	8.4	<b>8.4</b>	4.5	<b>4.5</b>
<b>Civic Use (AC)</b>									
	-	1.7	<b>1.7</b>	1.0	<b>1.0</b>	2.1	<b>2.1</b>	-	<b>-</b>

Notes:

1. Numbers may not add due to rounding.
2. Net new refers to new development less existing development to go. Refer to Tables 2-1 through 2-4 for further build-out details.

Source: Dyett & Bhatia, 2018

## 3.2 Traffic Impacts

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The four Alternatives were evaluated to understand the relative difference in traffic impacts within the Project vicinity with the various Alternatives. Eight intersections were selected for evaluation, as illustrated in Figure 3-1 and summarized below:

1. I-280 Southbound Ramps / San Bruno Avenue (Signalized)
2. I-280 Northbound Ramps / San Bruno Avenue (Signalized)
3. Cherry Avenue / San Bruno Avenue (Signalized)
4. El Camino Real / San Bruno Avenue (Signalized)
5. El Camino Real / Bayhill Drive (Signalized)
6. I-380 Eastbound / El Camino Real (Signalized)
7. I-380 Westbound / El Camino Real (Signalized)
8. Bayhill Drive / Cherry Avenue (Signalized)

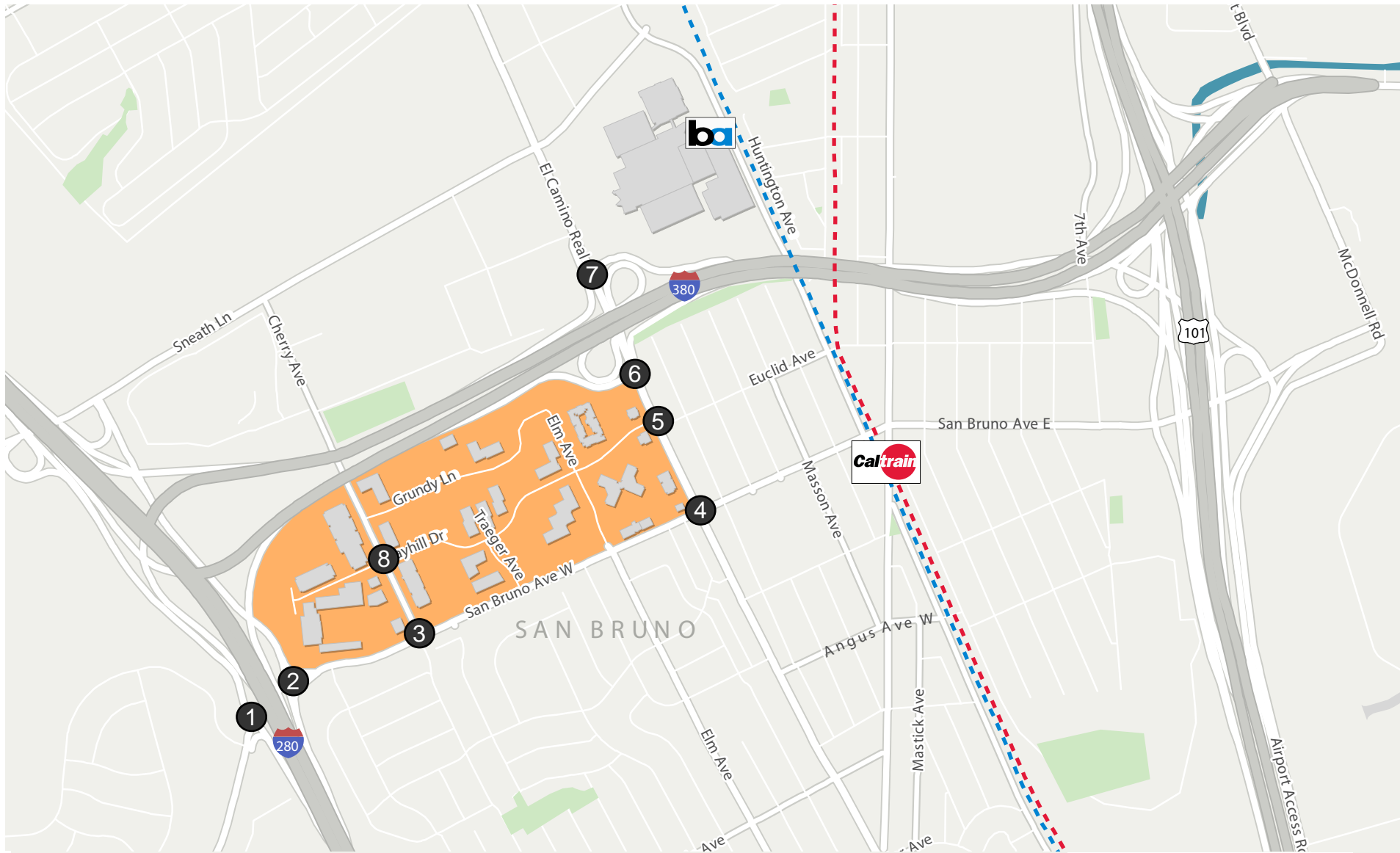
Based on a review of existing data, the PM peak hour has the highest level of vehicle traffic and congestion in the Project's vicinity. Thus, for the purpose of the Alternatives assessment, the weekday PM peak hour was evaluated at an intersection level. Additionally, to understand the full scope of the Alternatives impact, the analysis was evaluated for the future horizon year of 2040.

Using the descriptions provided in the above sections, trip generation estimates were created for the peak one-hour periods during the morning and evening commute periods when traffic volumes on the adjacent streets are the highest. Trip generation was estimated using a combination of rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (10th Edition) as well as Fehr & Peers' MainStreet Trip Generation<sup>2</sup> tool. Table 3-2 summarizes the weekday AM peak hour and PM peak hour trip generation for each Alternative.

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<sup>2</sup> MainStreet is a trip generation tool which is based on MXD methodology, developed for and approved by the US Environmental Protection Agency (EPA) for use in evaluating trip generation at mixed-use projects. MXD incorporates local

data and travel behaviors, as well as leading research in how density, mix of land uses, and other built environment factors affect vehicle trip generation, in order to establish trip generation reductions.



Project Study Area

Proposed Study Intersection

BART

Caltrain

0 0.5 Miles



Figure 3-1

Alternatives Assessment Study Intersections

**Table 3-2: Raw Trip Generation and MainStreet Reductions<sup>1</sup>**

Alternative	AM Peak Hour <sup>2</sup>							PM Peak Hour <sup>2</sup>						
	Initial			MainStreet Reduction <sup>3</sup>	Final			Initial			MainStreet Reduction <sup>3</sup>	Final		
	Hourly Total	In	Out		Hourly Total	In	Out	Hourly Total	In	Out		Hourly Total	In	Out
Alt 1 – Central Spine	4,343	3,322	1,021	25.9%	3,217	2,461	756	5,053	1,537	3,516	25.9%	3,746	1,139	2,607
Alt 2 – Bayhill Square	5,750	4,494	1,256	23.9%	4,376	3,420	956	6,269	1,748	4,521	22.4%	4,864	1,356	3,508
Alt 3 – Cherry Plaza	5,229	3,921	1,308	24.8%	3,934	2,949	985	6,023	1,925	4,098	25.4%	4,493	1,436	3,057
Alt 4 – Greenway Connection	5,842	4,590	1,252	23.9%	4,447	3,492	954	6,125	1,623	4,502	24.2%	4,644	1,230	3,414

Notes:

- Existing trips were credited to the project to determine net new trips and project impacts.
- The AM and PM peak hour represent the hour with the highest number of vehicular traffic. Typically, the AM peak hour is represented within the AM peak period of 7:00 AM and 9:00 AM. The PM peak hour is typically represented within the PM peak period of 4:00 PM and 6:00 PM.
- Reductions include internalization and mode shift to walk, bike, or transit.

Source: Fehr & Peers, 2018

Project trips were distributed to each study intersection and evaluated for LOS and delay. Table 3-3 presents the intersection LOS and delay results for the Existing No Project, the future horizon year for the No Project, and the future horizon year for each Alternative. As shown, under existing operations, two of the intersections evaluated – El Camino Real/San Bruno Avenue and El Camino Real/I-380 Westbound – operate below the Caltrans LOS standard. All other intersections operate acceptably at or above the Caltrans, C/CAG (San Mateo County), and San Bruno thresholds.

Under the 2040 No Project scenario, all eight intersections evaluated operate at or above the LOS standard based on the City of San Bruno and C/CAG thresholds. However, using Caltrans standards, the following intersections would operate below the LOS standard:

- 1-280 Northbound Ramps / San Bruno Avenue
- El Camino Real / San Bruno Avenue
- 1-380 Westbound / El Camino Real

The addition of Project trips under each of the four Alternatives would result in a significant impact based on City of San Bruno and/or Caltrans significance thresholds at the following intersections:

- I-280 Northbound Ramps / San Bruno Avenue (Alternatives 1, 2, 3, and 4)<sup>3, 4</sup>
- Cherry Avenue / San Bruno Avenue (Alternatives 1, 2, and 4)<sup>3</sup>
- El Camino Real / San Bruno Avenue (Alternatives 1, 2, 3, and 4)<sup>4</sup>

- El Camino Real / Bayhill Drive (Alternatives 2, 3, and 4)<sup>4</sup>
- I-380 Westbound / El Camino Real (Alternatives 1, 2, 3, and 4)<sup>4</sup>

All four Alternatives result in varying impacts to the 2040 No Project network during the PM peak hour. Alternatives 1 and 3 result in the fewest impacts because they generate the least amount of additional trips, while also achieving the highest amount of internalization and mode shift due to the balanced, diverse, land use programs proposed. Alternative 3 assumes a portion of Cherry Avenue is closed; however, if the street remains open to vehicular traffic at all or during peak-hour times, it may improve traffic operations. Regardless of the land use Alternative, intersection mitigations would need to be provided for at least four of the study intersections identified above. Alternatives 2 and 4 would require mitigations at all five identified intersections. The scale of required mitigations would likely vary given that intersection delays vary among Alternatives.

It should be noted that the analysis assumes existing roadway network configurations unless an Alternative includes a circulation change (Alternative 3). Additionally, the analysis does not assume reductions associated with any Transportation Demand Management (TDM) measures that may be implemented. Thus, improvements or mitigations could vary from implementation of a TDM program to intersection improvements. Any improvements or mitigation measures will likely have modest implications for intersection operations, and it is likely that some of the Alternatives' impacts may remain significant and unavoidable. A detailed analysis documenting the type of mitigations under consideration and their effectiveness will be prepared as part of the Preferred Plan analysis.

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<sup>3</sup> Exceeds significance thresholds based on City of San Bruno criteria.

<sup>4</sup> Exceeds significance thresholds based on Caltrans criteria.

**Table 3-3: PM Peak LOS and Delay Results<sup>1,2</sup>**

Study Intersection/Freeway Segment	Control	Jurisdiction(s)	LOS Standard	Existing No Project <sup>3</sup>		2040 No Project		2040 + Alt 1		2040 + Alt 2		2040 + Alt 3		2040 + Alt 4	
				LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
I-280 Southbound Ramps / San Bruno Avenue	Signal	Caltrans San Bruno	C/D D	B	16	B	17	B	16	B	16	B	16	B	16
I-280 Northbound Ramps / San Bruno Avenue	Signal	Caltrans San Bruno	C/D D	C	29	<b>D</b>	<b>49</b>	<b>E</b>	<b>69</b>	<b>F</b>	<b>98</b>	<b>F</b>	<b>101</b>	<b>F</b>	<b>96</b>
Cherry Avenue / San Bruno Avenue	Signal	San Bruno	D	D	38	D	45	<b>E</b>	<b>73</b>	<b>F</b>	<b>116</b>	D	55	<b>F</b>	<b>113</b>
El Camino Real / San Bruno Avenue	Signal	Caltrans C/CAG	C/D E	<b>D</b>	<b>55</b>	<b>D</b>	<b>49</b>	<b>E</b>	<b>56</b>	<b>E</b>	<b>69</b>	<b>E</b>	<b>65</b>	<b>E</b>	<b>69</b>
El Camino Real / Bayhill Drive	Signal	Caltrans San Bruno	C/D D	C	32	C	30	C	33	<b>D</b>	<b>45</b>	<b>D</b>	<b>36</b>	<b>D</b>	<b>43</b>
I-380 Eastbound / El Camino Real	Signal	Caltrans San Bruno	C/D D	B	17	B	14	B	15	B	19	B	17	B	18
I-380 Westbound / El Camino Real	Signal	Caltrans San Bruno	C/D D	<b>F</b>	<b>&gt;80</b>	<b>D</b>	<b>44</b>	<b>D</b>	<b>45</b>	<b>D</b>	<b>46</b>	<b>D</b>	<b>45</b>	<b>D</b>	<b>45</b>
Bayhill Drive / Cherry Avenue	Signal	San Bruno	D	C	24	C	29	C	34	D	49	C	31	D	45

Notes:

1. Delay rounded to the nearest second. Delays greater than 80 seconds are typically reported as ">80"; however are shown for comparative purposes.
2. **Bold:** Intersection performs below City and/or Caltrans LOS standard. **Italicized:** Intersection results in an impact.
3. The delay and LOS results for the Existing No Project show poorer performance at a few intersections that the results for the 2040 No Project scenarios. This can be explained by the fact that 2040 signal timings and coordination are optimized, and existing signal operations are not.



### 3.3 Fiscal Impacts

A fiscal impact analysis was prepared to determine whether buildout of the Specific Plan Alternatives would be expected to have a net positive or negative effect on the City’s General Fund budget relative to existing conditions. While the Specific Plan area is already generating positive fiscal impacts to the City, this assessment focuses on the net increase in both revenues and costs as a result of new (re-)development. The purpose of this high level fiscal analysis is to determine if any of the Alternatives would be expected to result in a substantial net negative impact on the City of San Bruno’s General Fund. An accompanying housing assessment (last bullet point under Key Findings) estimates the new housing needs created by the additional employment-generating uses from the Specific Plan.

### STUDY BACKGROUND AND CONTEXT

Bayhill is the largest office park in the city, anchored by YouTube, Walmart.com, and other prominent tenants. It consists of about 1.6 million square feet of office (with about one-third occupied by YouTube), 145,000 square feet of retail, and a 147-room Marriott hotel, as shown in Table 3-4. Redevelopment of the Bayhill Planning Area is driven by YouTube’s plans for expansion and the City’s consideration of densification and diversification of land uses that ultimately may provide an opportunity to improve its economic, recreational, and urban design objectives. The four contemplated Alternatives are also summarized in Table 3-4.

**Table 3-4: Existing Bayhill Development and Alternatives**

	Residential	Commercial (sq. ft., rounded)		Hotel	Open Space
	(units) <sup>1</sup>	Retail	Office <sup>2</sup>	(rooms)	(acres)
Existing Bayhill Development	0	145,000	1,594,000	147	-
<b>Bayhill Alternatives at Buildout<sup>3</sup></b>					
Alternative 1	730	154,000	2,679,000	147	6.2
Alternative 2	570	172,000	3,754,000	147	4.2
Alternative 3	980	166,000	3,066,000	267	8.4
Alternative 4	570	166,000	3,895,000	147	4.5

Notes:

1. Reflects a mix of market-rate and below market-rate units consistent with the City’s requirement. Includes high density and high density mixed-use units.
2. Includes YouTube programming.
3. Includes demolition of existing space.

Sources: Bayhill Specific Plan, City of San Bruno, and Economic & Planning Systems



The fiscal analysis found that all four Alternatives likely will result in a positive net fiscal impact on the City's General Fund at buildout. However, the exact timing and magnitude of the projected fiscal benefits will depend on a variety of factors that are difficult to estimate with certainty, including evolving City service standards and costs, the precise location and phasing of development and absorption, and the market performance of specific tenants, among others. Given this uncertainty, this analysis does not provide specific dollar estimates for the level of annual fiscal benefits (i.e., the difference between General Fund revenues and cost resulting from new development) at this point. A more detailed quantification of the fiscal impact of the preferred alternative will be provided in subsequent phases of the planning process.

The fiscal assessment is largely based on the cost and revenue factors embodied in the City's Fiscal Year 2017-18 General Fund budget. It is important to note that many of these factors are likely to evolve over time, given the scale of the Planning Area and duration of the project horizon. For example, changes in State and even federal law, technology, changes in consumer and employee/employer behavior, and a variety of other factors also can have important impacts on municipal services and General Fund costs and revenues. Moreover, the City's service standards may themselves be affected by the transformative nature of development in the Specific Plan area, given its size and orientation.

It is also important to note that fiscal results (annual surpluses or deficits) are simply indicators of fiscal performance; they do not mean that the City will automatically have surplus revenues or deficits because it must have a balanced budget each year. Persistent shortfalls shown in a fiscal analysis may indicate the need to reduce service levels or obtain additional revenues; persistent surpluses will provide resources to reduce liabilities such as deferred maintenance or improve service levels. Finally,

fiscal impacts on the General Fund are one of many impacts that new development may have on the City. Other potential impacts, such as infrastructure, traffic, housing, and urban design, are not reflected in a fiscal analysis.

## KEY FINDINGS

- **All four of the evaluated Alternatives are estimated to have a positive net fiscal impact on the City's General Fund at buildout.** Anticipated revenues may fluctuate and be more sensitive to changing market conditions as compared with expenditures, which likely would be more constant. Alternatives 1, 2, and 4 are estimated to be marginally positive in terms of net impact to the General Fund. Alternative 3 includes a new hotel and is estimated to be more positive in terms of net impact to the General Fund.
- **While several factors contribute to the differences in the fiscal performance of each Alternative, the amount of new commercial development is the single most important variable quantified in this analysis.** Alternative 3 is estimated to result in the highest fiscal performance, while Alternative 1 is estimated to result in the lowest fiscal performance. One key distinction is the overall magnitude of the commercial program; office and retail space are generally fiscally advantageous uses that generate higher General Fund revenues relative to costs. In addition, differences in fiscal performance are also attributed to the presence of a new hotel in Alternative 3. Although this analysis is based on the assumption that hotel uses are the primary driver of transient occupancy tax (TOT) revenue, TOT is driven by a complex range of factors, including new office development and associated demand for business travel.

- **General Fund revenue items linked to increased property assessed value (i.e., property tax and property tax in lieu of vehicle license fees) are estimated to comprise the largest revenue sources for the City for all Alternatives.** These two revenues comprise up to two-thirds of total revenues and highlight the importance of the new assessed value generated by redevelopment of the Planning Area, consistent with citywide fiscal trends. Historically, property tax has remained the City's largest and most stable source of General Fund revenue. This analysis is based on the assumption that existing under-assessed uses will be replaced by higher value uses, triggering a reassessment of properties to reflect current market values. Other notable revenue items include sales tax (including business-to-business sales), business tax, and TOT (specific to Alternative 3). These sources tend to be more volatile than property tax, given their dependence on market competition and business cycle trends.
- **The need to increase City public safety service to the Bayhill Planning Area is projected to represent the most significant General Fund cost at buildout.** Police costs alone will make up almost half of the increase in General Fund costs. Fire, parks maintenance, and other community service costs comprise the next highest share of costs. All costs are assumed to be driven by increases in daytime population (an average-cost approach) with the exception of park maintenance, which is driven by parks and open space acreage programmed for each Alternative. To the extent this cost is privately funded through project-specific sources, the overall expenditure impact on the City's General Fund could potentially decrease.
- **Both fiscal and housing impacts will vary before and after Specific Plan buildout.** Fiscal impacts during construction could be substantially different from that estimated at buildout and will vary depending on the type and synergy of land uses being demolished and redeveloped. Other important factors include market performance (e.g., occupancy and price appreciation), tenant selection, and property assessments and adjustments after construction commencement. After buildout, fiscal impacts will continue to vary and are likely to be determined by changes in budgetary and economic conditions, rates of property resale and inflation, especially as it relates to Proposition 13-capped property tax growth and impacts from increases in public-sector pension costs. However, in the long term, the City will likely adjust its service levels to commensurate changes in revenues to ensure a balanced budget. The rate of change in these items is uncertain and outside of the scope of this analysis.
- **Despite the new residential uses onsite, redevelopment of the Planning Area will create net substantial demand on housing elsewhere in the City across all four Alternatives.** Significant demand in employment associated with the Alternatives results in estimated housing needs ranging between about 3,300 and 7,000 units to accommodate net new employees. After factoring new housing supply to be accommodated onsite, the Alternatives will still result in the net new demand for between about 2,700 and 6,600 units elsewhere. Assuming these units would need to be provided in San Bruno, this net demand accounts for between 17 and 41 percent of the City's existing housing supply.

## 4 Preliminary Streetscape Concepts

Preliminary street design concepts were developed to illustrate potential changes to various roadways and intersections throughout the Bayhill district with a view to ameliorating multimodal access and connectivity and contributing to a more vibrant public realm. These following concepts are meant to be flexible so that they could potentially be mixed and matched across any of the Alternatives.

The street design concepts depict capital improvements specific to individual streets, as well as improvements that address general shortcomings of all the streets in the Planning Area, including narrow sidewalks, challenging street crossings, and a lack of bicycle routes and other related facilities. Existing condition and concept design illustrations in the following pages depict before and after scenarios, including Specific Plan recommendations for adjacent frontage development as appropriate. Concept improvements for each street are summarized below.

## 4.1 Cherry Avenue

---

Four initial concept options are proposed for Cherry Avenue. All options improve cross-street access to and from the Bayhill Shopping Center, a major destination for Planning Area workers. All options also incorporate sidewalks widened into frontage landscape and/or building setback areas, and pedestrian-oriented street lighting and street trees. Option I (Figure 4-2) retains existing curbside parking and focuses on improving pedestrian circulation and accommodation. Enhanced street crossings are provided at San Bruno Avenue and Bayhill Drive, with corner curb bulb-outs and median refuges. A signalized mid-block pedestrian crossing is provided at the existing driveway entrance to Bayhill Shopping Center. This option may apply to land use and urban design Alternatives 1, 2 or 4.

Option II (Figure 4-3) replaces curbside parking along Cherry Avenue with bike lanes and protecting landscape islands. The bike lanes link San Bruno Avenue (see next section) and neighborhoods to the south through the Planning Area to the transit-oriented infill housing area north of I-380. Wider sidewalks, pedestrian-oriented lighting, street trees, and improved crossings are provided per Option I. Bike lane islands could be designed to collect runoff as part of an overall stormwater management effort. Like Cherry Avenue Option 1, this option may apply to Alternatives 1, 2 or 4.

Option III (Figure 4-4) for Cherry Avenue is taken directly from the 2016 City of San Bruno Walk 'n Bike Plan. This option entails removing a lane of traffic on each side of the street; moving the parking lanes approximately eight to 10 feet away from the curb; and installing bikeways in the space created between the curb and the moved parking. The bike facilities could be bike lanes with a painted buffer or physically separated bikeways. Left-turning

cyclists would pull out of the flow of traffic and wait in the spaces shown as green boxes, rather than having to cut across traffic to make the left turn. Although the number of through vehicle lanes would be reduced from two to one in each direction with this option, turn pockets at the intersections would generally maintain intersection performance. Like Cherry Avenue options I and II, this option may apply to land use and urban design Alternatives 1, 2 or 4.

Option IV (Figures 4-5 and 4-7) supports a “community hub” land use concept in which the easternmost portion of the Bayhill Shopping Center is redeveloped for mixed-use, with infill housing added to the locally-oriented retail and restaurant mix that exists today. The segment of Cherry Avenue between the existing driveway entrance and Bayhill Drive is improved as a “street plaza” that is closed to vehicular traffic, allowing for safer pedestrian crossings and the potential for open air markets, special events, and/or expanded outdoor dining. This option applies only to Alternative 3, Cherry Plaza, while segments of Cherry Avenue to the north and south of the Plaza could be improved per Option I, II, or III.

Figures 4-8 through 4-10 show a residential mixed-use building prototypes to illustrate what future development could potentially look like along Cherry Plaza on the Bayhill Shopping Center block. The schematic building design shown in these figures is consistent with Ordinance 1284.

## 4.2 San Bruno Avenue

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San Bruno Avenue is a through street that links I-280 and the city's hillside neighborhoods with Downtown, BART, Caltrain, and US 101. It is also a barrier between the Planning Area and neighborhoods to the south and provides minimal accommodation for travel modes other than motor vehicles. Two initial concept options are proposed, differentiated by their approach to providing bike lanes and parkway frontage improvements. Option I (Figure 4-12) provides standard Class II striped lanes and the northerly Planning Area frontage improved as a parkway/boulevard, with a wide sidewalk, pedestrian-oriented lighting, and continuous street trees. Option II (Figure 4-13), which is consistent with the Walk 'n Bike Plan's recommendations for San Bruno Avenue, provides buffered bike lanes and parkway/boulevard improvements along the southerly frontage as well. Option II would require a property dedication of approximately 15 feet along the Planning Area frontage.

Both options narrow existing travel lanes to incorporate bike lanes and promote traffic calming. Both include improved crossings with median refuges at all side streets. And both complement a land use concept that includes street-facing infill residential development along the Plan Area frontage east of Traeger Avenue. These two roadway design options may apply to any of the four land use and urban design Alternatives described in this report.

Figures 4-14 through 4-16 show a schematic high density residential building prototype to illustrate what future development could potentially look like along San Bruno Avenue. The schematic building design shown in these figures is consistent with Ordinance 1284.

## 4.3 El Camino Real

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El Camino Real is the most visible street in the city, and the commercial, transit, and planned infill development spine for the entire peninsula. In San Bruno, as in most communities along the El Camino Real corridor, the roadway is also a barrier between residential neighborhoods to the west and commercial districts and rail transit centers to the east. The Grand Boulevard Initiative (GBI) focuses on improving cross connections as well as pedestrian and bus transit conditions along the El Camino/SR 82 corridor, and concept street design improvements are consistent with the GBI, the City of San Bruno General Plan, Transit Corridors Plan, and recently adopted Walk' n' Bike Plan. They include wider sidewalks in frontage landscape and/or building setback areas, pedestrian-oriented street lighting and street trees, and enhanced street crossings with corner curb bulb-outs and median refuges at the San Bruno Avenue and Bayhill Drive intersections.

As shown in Figure 4-18, the concept supports a land use development concept in which the frontage is redeveloped for mixed-use, with infill housing above street-facing ground floor commercial space. Building prototypes of this type of development are illustrated in Figures 4-19 through 4-24. A corner plaza depicted at San Bruno Avenue provides a gateway to the interior of the Plan Area, and community amenity for new and existing residents and business patrons. While Figures 4-21 and 4-24 illustrate the corner plaza shown in land use and urban design Alternative 3, this roadway design would apply to all four concept Alternatives described in this report.



**Existing Conditions**

- |   |                                      |
|---|--------------------------------------|
| 1) Narrow sidewalks on west side - 6'-8' ±      | 8) Highway-type lighting             |
| 2) Surface parking along frontages              | 9) Bott's dots, no lane striping     |
| 3) Parking-oriented buildings                   | 10) Existing Walmart office building |
| 4) Lack of pedestrian furnishings and amenities |                                      |
| 5) Long pedestrian crossings (100' ±)           |                                      |
| 6) Street trees, east side only                 |                                      |
| 7) Pedestrian Oriented lighting, east side only |                                      |

**Figure 4-1: Cherry Ave Existing Condition**



Key Elements

- 1) Sidewalks widened with setback to 18'-0" ±
- 2) Corner bulbout and median refuge to shorten crossing distance
- 3) Pedestrian-oriented street lights
- 4) Pedestrian amenities along sidewalk and plaza mid-block connection
- 5) Curbside parking
- 6) Lane striping to replace Bott's dot

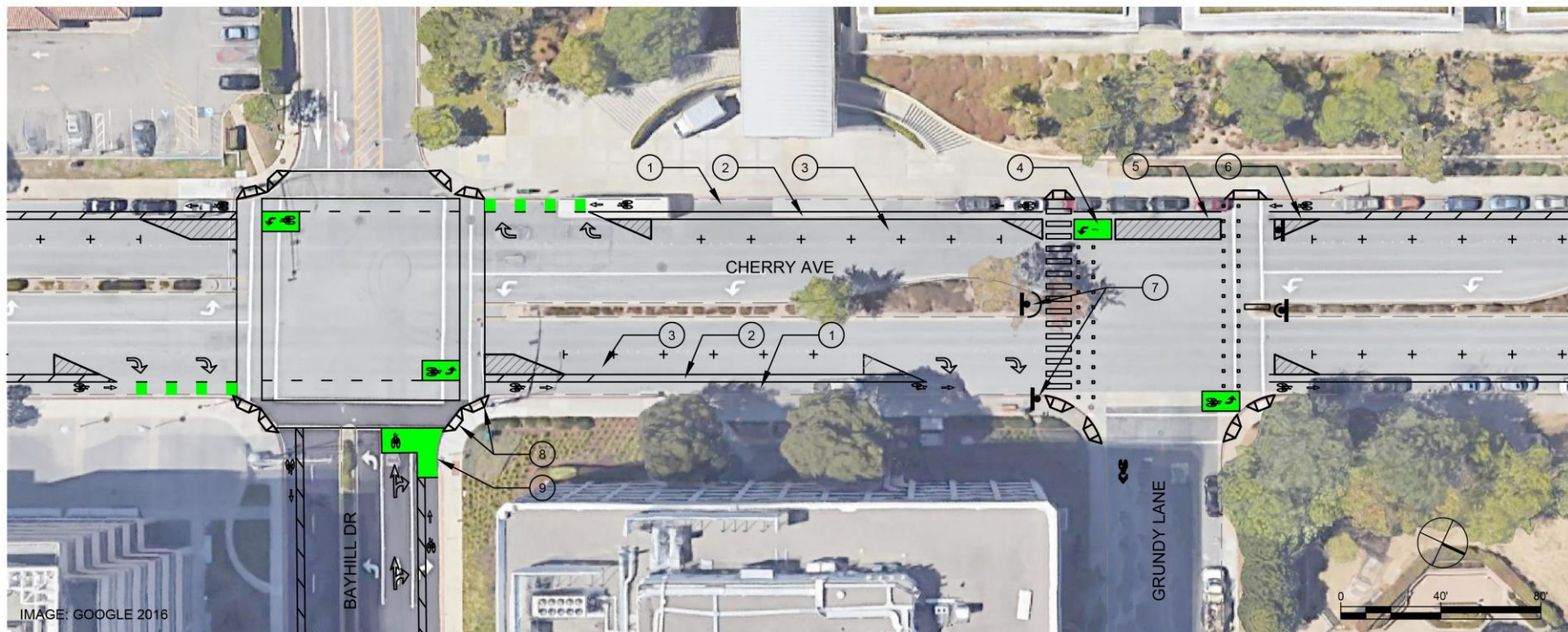
Figure 4-2: Cherry Ave - Curbside Parking (Option I)



Key Elements

- 1) Sidewalks widened with setback to 18'-0" ±
- 2) Median refuges to shorten crossing distances
- 3) Pedestrian-oriented street lights
- 4) Pedestrian amenities along sidewalk and plaza mid-block connection
- 5) Protected Bike lane with curb planters
- 6) Lane striping to replace Bott's dots

Figure 4-3: Cherry Avenue - Protected Bikeway (Option II)



NOTES

- |  |                                      |                                     |
|--|--------------------------------------|-------------------------------------|
| ① ONE-WAY SEPARATED BIKEWAY (CLASS IV) | ④ TWO-STAGE BIKE LEFT TURN BOX       | ⑦ PEDESTRIAN CROSSING WARNING SIGNS |
| ② BUFFER                               | ⑤ BIKE PARKING OR BIKE SHARE STATION | ⑧ NEW CURB RAMPS                    |
| ③ ON-STREET PARKING                    | ⑥ PEDESTRIAN CROSSING REFUGE         | ⑨ BIKE BOX                          |

**Figure 4-4: Cherry Avenue – Single Through-lane Each Direction (Option III)**



Key Elements

- 1) Sidewalks widened with setback to 18'-0" ±
- 2) Wider paved pedestrian crossing
- 3) Pedestrian-oriented street lights
- 4) A vibrant street Plaza closed to residential traffic
- 5) Potential Mixed-use commercial developments
- 6) Access drive to BayHill Shopping Center

Figure 4-5: Cherry Ave - Street Plaza (Option IV)



Existing Conditions

- |   |                                      |
|---|--------------------------------------|
| 1) Narrow sidewalks on west side - 6'-8' ±      | 8) Highway-type lighting             |
| 2) Surface parking along frontages              | 9) Bott's dots, no lane striping     |
| 3) Parking-oriented buildings                   | 10) Existing Walmart office building |
| 4) Lack of pedestrian furnishings and amenities |                                      |
| 5) Long pedestrian crossings (100' ±)           |                                      |
| 6) Street trees, east side only                 |                                      |
| 7) Pedestrian Oriented lighting, east side only |                                      |

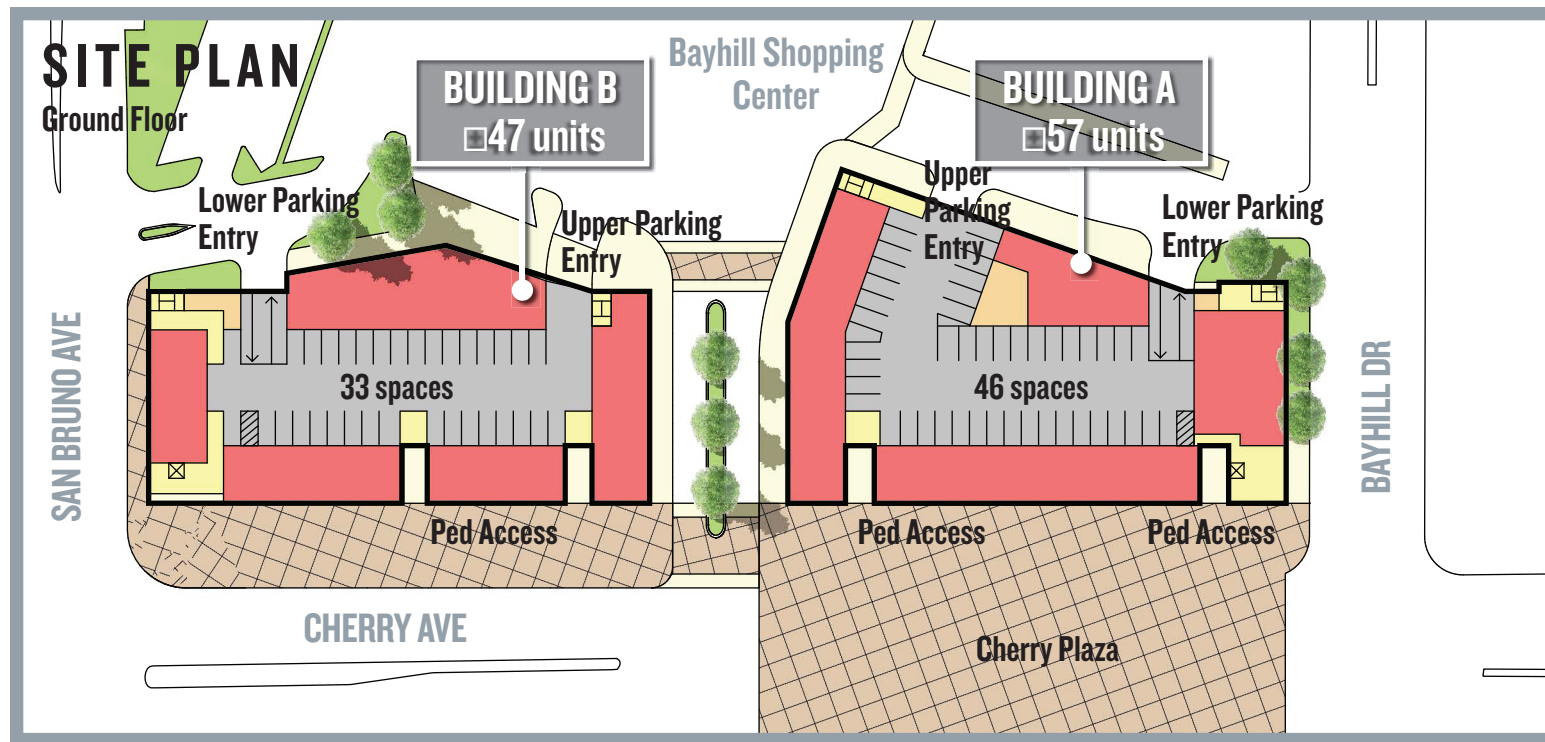
Figure 4-6: Cherry Ave Existing Condition (Birdseye View)



Key Elements

- 1) Sidewalks widened with setback to 18'-0" ±
- 2) Wider paved pedestrian crossing
- 3) Pedestrian-oriented street lights
- 4) A vibrant street Plaza closed to residential traffic
- 5) Potential Mixed-use commercial developments
- 6) Access drive to BayHill Shopping Center

Figure 4-7: Cherry Ave - Street Plaza (Birdseye View)



DEVELOPMENT SUMMARY	Building Category	Building Height	Unit Count <sup>1</sup>	Gross Bldg Area <sup>2</sup>	Residential Parking <sup>3</sup>	Density	
Building A	High-Density Residential Mixed-Use	3 stories (2 floors res over 1 floor retail / 2 floors pkg)	approx. 50'	57	86,576 sf	98 spaces	1.7 / unit avg <sup>3</sup>
Building B	High-Density Residential Mixed-Use	3 stories (2 floors res over 1 floor retail / 2 floors pkg)	approx. 50'	47	73,767 sf	82 spaces	1.8 / unit avg <sup>3</sup>
<b>TOTALS</b>			<b>104 units</b>	<b>160,543 sf</b>	<b>180 spaces</b>	<b>1.7 / unit</b>	<b>54 dua</b>
				<b>Retail Portion of Buildings</b>	<b>30,729 sf</b>	<b>79 spaces</b>	<b>2.6 / 1,000 sf retail</b>
<b>NOTES:</b>	<sup>1</sup> Units calculated as 800 gross sf not including circulation, service, common space, and interior walls <sup>2</sup> Gross building area does not include subgrade parking levels <sup>3</sup> Parking occurs on two levels: 1 above grade and 1 below grade						

- Retail
- Residential
- Common
- Circulation
- Service
- Parking



BUILDING B

BUILDING A

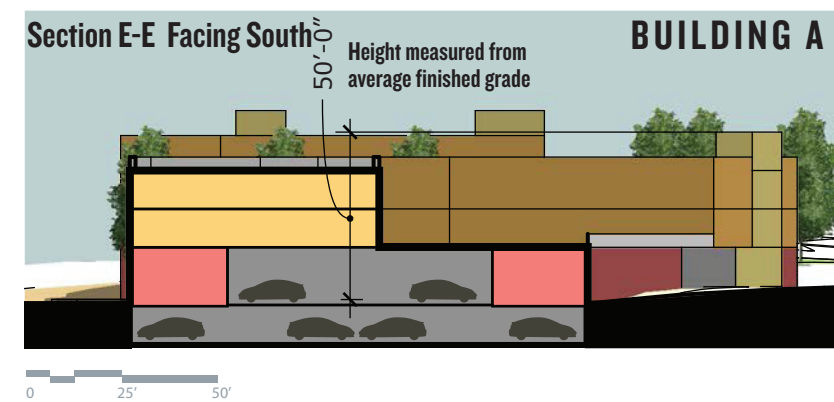
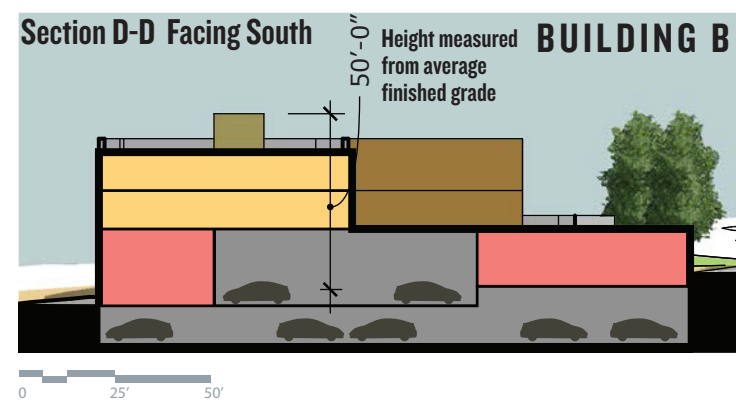
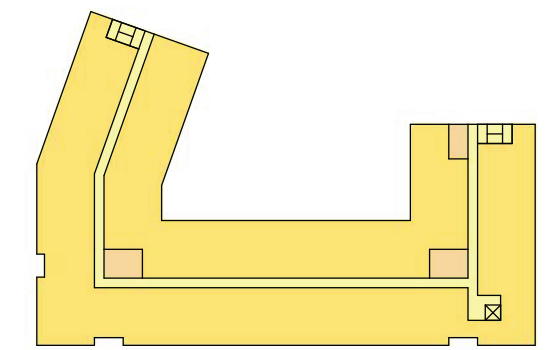
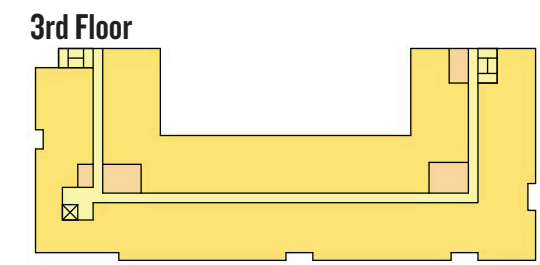
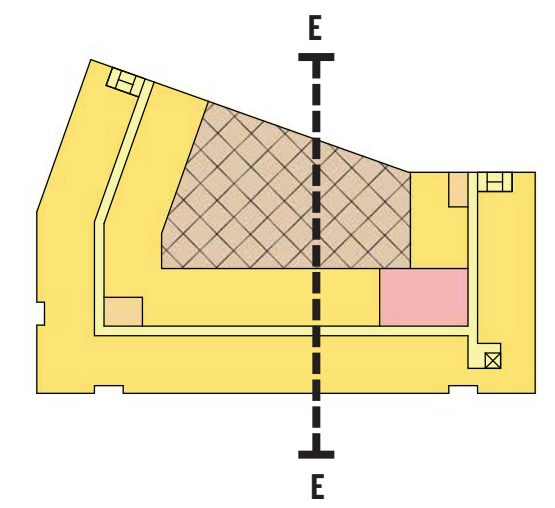
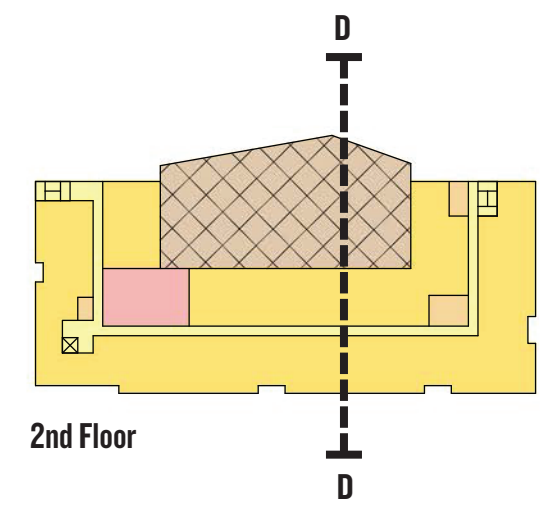
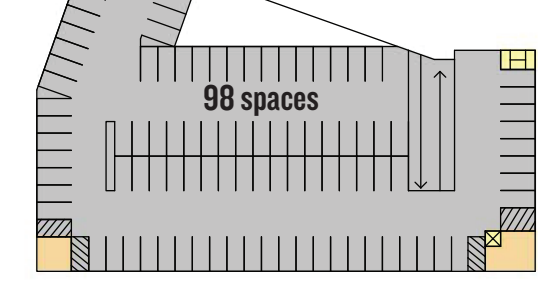
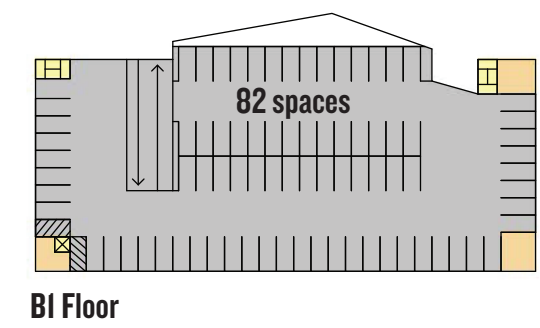


Figure 4-8: Cherry Avenue - High Density Residential Mixed Use Schematic Building Prototype, Plan and Section - Alternative 3

# VIEW ALONG CHERRY AVE



- Retail
- Residential
- Common
- Circulation
- Service
- Parking

Figure 4-9: Cherry Avenue – High-Density Residential Mixed Use Schematic Building Massing Analysis – Alternative 3

# VIEW FROM CHERRY PLAZA



Figure 4-10: Cherry Avenue – High-Density Residential Mixed Use Schematic Building Prototype, Perspective View from Cherry Plaza – Alternative 3



Existing Conditions

- 1) Narrow sidewalks on west side - 6'-8' ±
- 2) Surface parking along frontages
- 3) Parking-oriented buildings
- 4) Lack of pedestrian furnishings and amenities
- 5) Lack of pedestrian crossings
- 6) No street trees
- 7) Lack of pedestrian oriented lighting

Figure 4-11: San Bruno Ave Existing Condition



Key Elements

- 1) Sidewalks widened in setback on west side of street to 18'-0" ±
- 2) Corner bulbout and median refuge to shorten crossing distance
- 3) Pedestrian-oriented street lights
- 4) Pedestrian amenities along sidewalk and plaza mid-block connection
- 5) Wider Medians, with pervious paving
- 6) Potential infill residential developments
- 7) Class II Bike lane

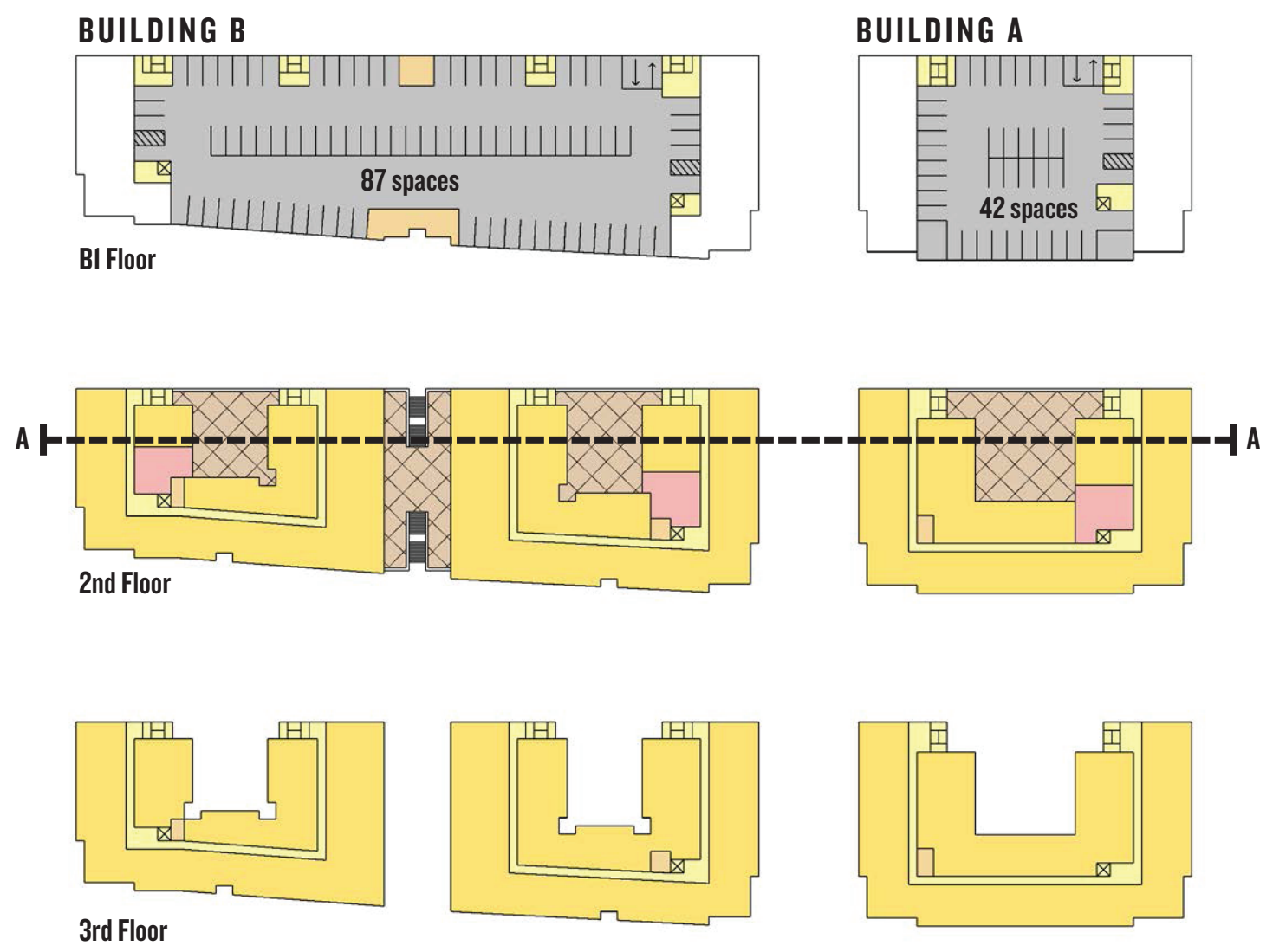
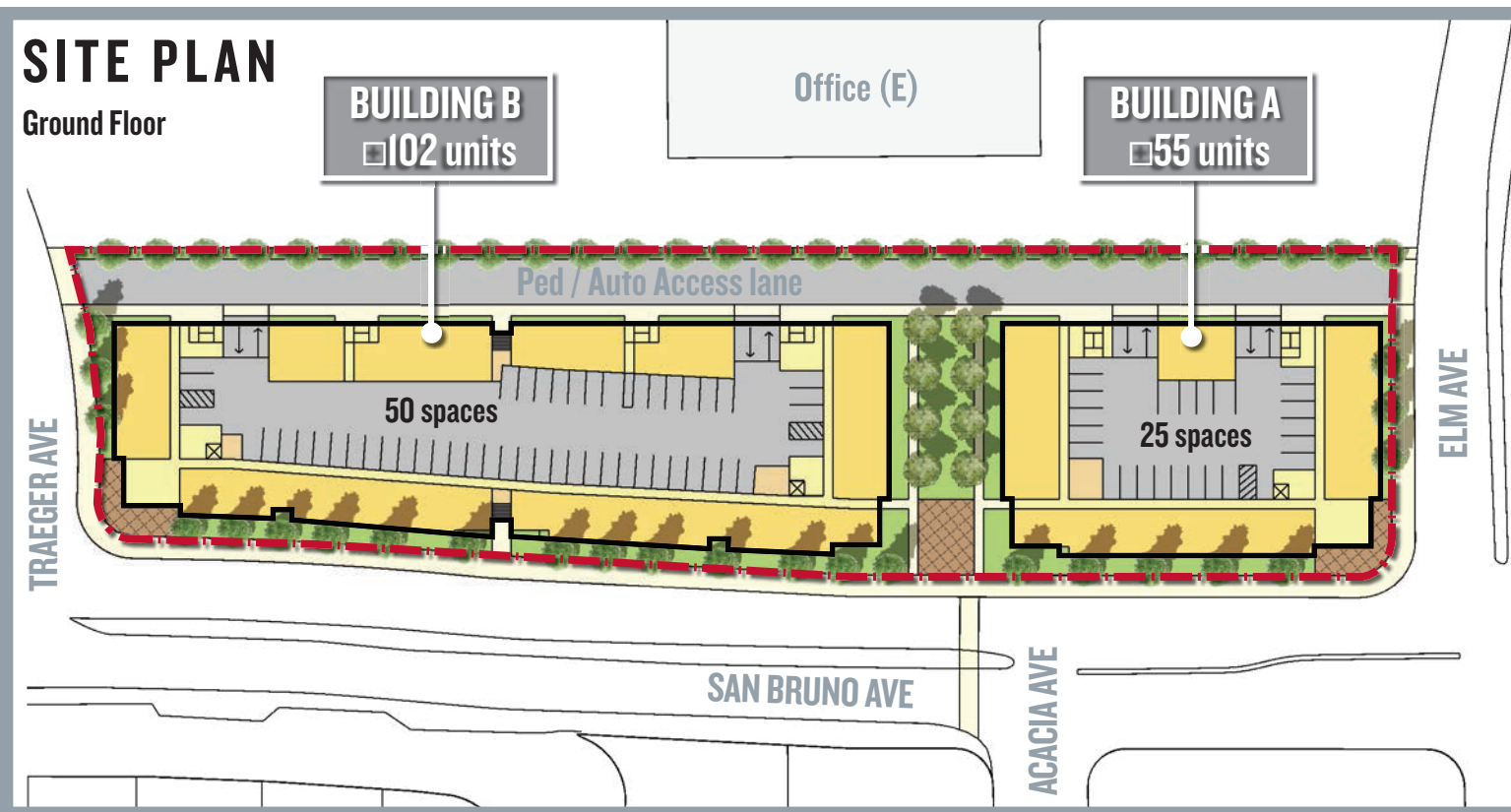
Figure 4-12: San Bruno Ave - Bike Lane (Option I)



Key Elements

- 1) Sidewalks widened with setback to 18'-0" ±
- 2) Corner bulbout and median refuge to shorten crossing distance
- 3) Pedestrian-oriented street lights
- 4) Pedestrian amenities along sidewalk and plaza mid-block connection
- 5) Wider Medians, with pervious surface
- 6) Potential infill residential developments
- 7) Road widening on north side with Class IV protected bike lanes

Figure 4-13: San Bruno Ave - Protected Bikeway (Option II)



DEVELOPMENT SUMMARY	Building Category	Building Height		Unit Count <sup>1</sup>	Gross Bldg Area <sup>2</sup>	Residential Parking <sup>3</sup>		Density
		Stories	Approx. Height			Spaces	Per Unit Avg <sup>3</sup>	
Building A	High-Density Residential	3 stories	approx. 45'	55	62,070 sf	67 spaces	1.2 / unit avg <sup>3</sup>	Site Area 2.90 acres
Building B	High-Density Residential	3 stories	approx. 45'	102	113,785 sf	137 spaces	1.3 / unit avg <sup>3</sup>	
<b>TOTALS</b>				<b>157 units</b>	<b>175,855 sf</b>	<b>204 spaces</b>	<b>1.3 / unit</b>	<b>54 du/a</b>

NOTES:  
<sup>1</sup> Units calculated as 775 gross sf not including circulation, service, common space, and interior walls  
<sup>2</sup> Gross building area does not include subgrade parking levels  
<sup>3</sup> Parking occurs on two levels: one level below grade and one level at grade

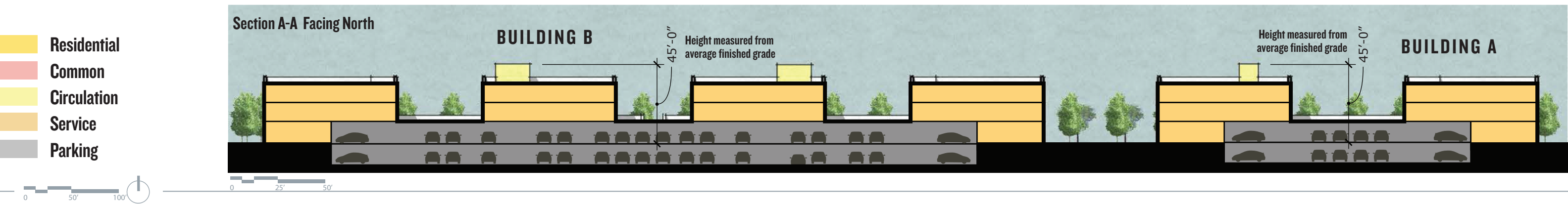


Figure 4-14: San Bruno Avenue - High Density Residential Schematic Building Prototype, Plan and Section - Alternative I

# VIEW ALONG SAN BRUNO AVE



# VIEW ALONG REAR LANE

Figure 4-15: San Bruno Avenue – High Density Residential Schematic Building Massing Analysis – Alternative 1

## VIEW ALONG SAN BRUNO AVE



Figure 4-16: San Bruno Avenue – High Density Residential Schematic Building Prototype, Perspective View at corner of San Bruno and Elm Avenues – Alternative 1



Existing Conditions

- 1) Narrow sidewalks - 6'-8' ±
- 2) Surface parking along frontages
- 3) Parking-oriented buildings
- 4) No street trees
- 5) Lack of pedestrian furnishings and amenities
- 6) Long pedestrian crossings (125' ±)
- 7) Bus stop, no shelter

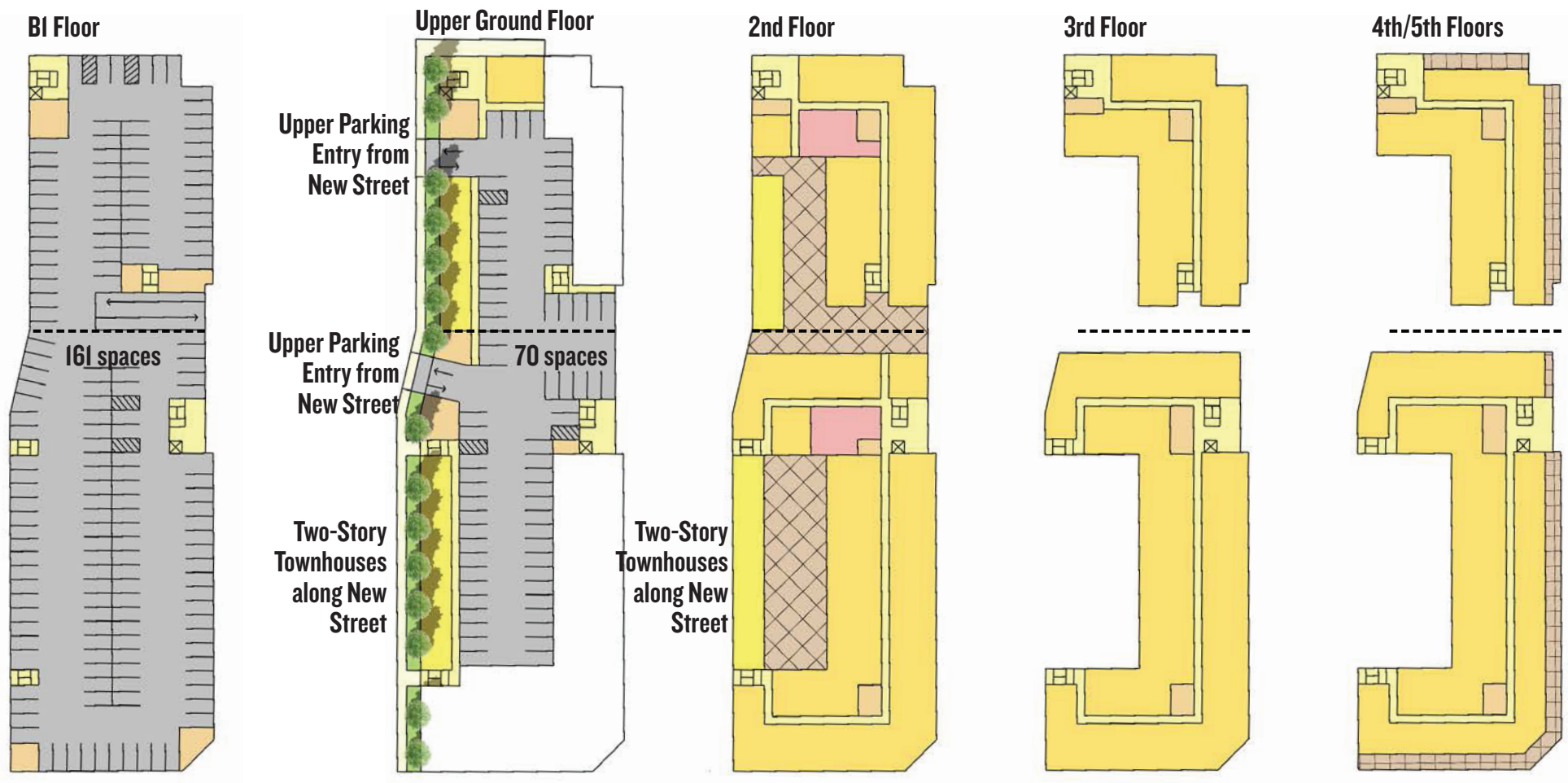
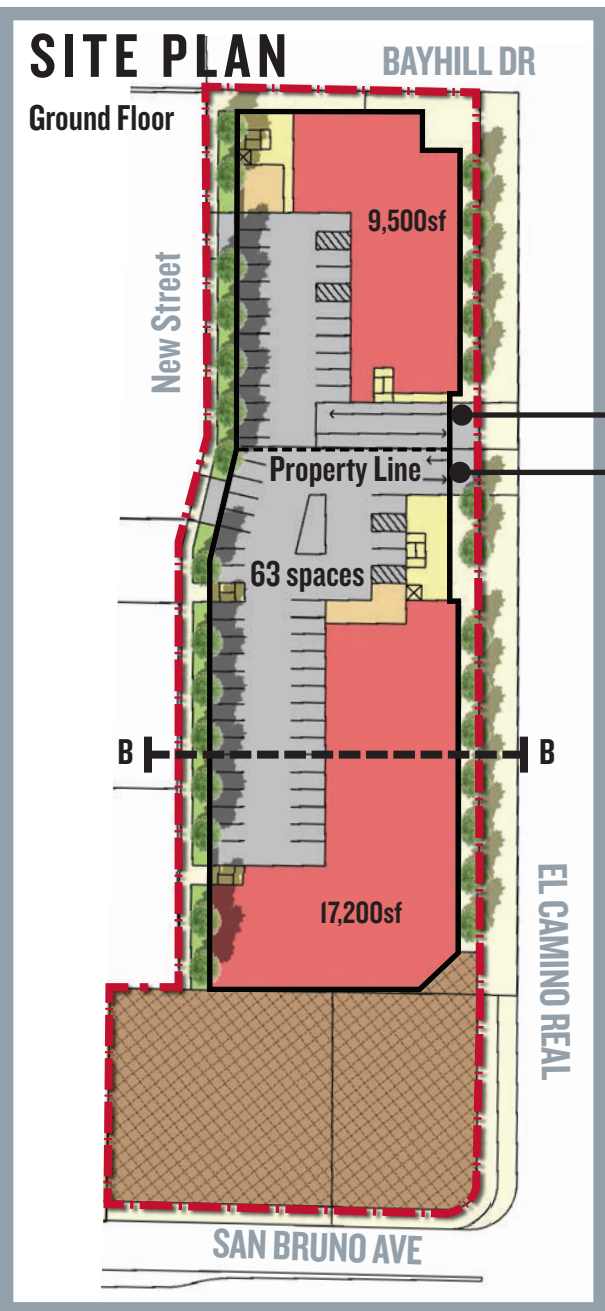
Figure 4-17: El Camino Real/San Bruno Ave Existing Condition - 6 Lanes



Key Elements

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>1) Sidewalks along ECR widened with setback to 18'-0" ±</li> <li>2) Corner bulbouts and median refuges to shorten crossing distances</li> <li>3) Pedestrian-oriented street lights</li> <li>4) Bus shelters and other sidewalk amenities</li> <li>5) Bike-accommodating lane width per "GBI Complete Streets"</li> <li>6) Bulbout eliminates, dedicated right-turn lane</li> <li>7) Wider Medians, with pervious surface</li> <li>8) Bike Lanes along San Bruno Avenue</li> </ul> | <ul style="list-style-type: none"> <li>9) Mixed-Use development up to 70'-0"</li> <li>10) Corner Plaza connection to network of internal green spaces</li> </ul> |
|--|--|

Figure 4-18: El Camino Real/San Bruno Ave - Proposed Condition



- Retail
- Residential
- Common
- Circulation
- Service
- Parking

DEVELOPMENT SUMMARY	Building Category	Building Height		Unit Count <sup>1</sup>	Gross Bldg Area	Residential Parking <sup>2</sup>		Density
		5 stories including double-height ground floor	approx. 65' (70' limit)			231 spaces	1.4 / unit avg <sup>3</sup>	
	High-Density Residential Mixed-Use Transit Corridor			162	244,114 sf	231 spaces	1.4 / unit	Site Area 2.29 acres
<b>TOTALS</b>				<b>162 units</b>	<b>244,114 sf</b>	<b>231 spaces</b>	<b>1.4 / unit</b>	<b>71 dua</b>
		<b>Retail Portion of Building</b>			26,753 sf	63 spaces	2.4 / 1,000 sf retail	0.27 FAR
<b>NOTES:</b>	<sup>1</sup> Units calculated as 800 gross sf not including circulation, service, common space, and interior walls <sup>2</sup> Gross building area does not include subgrade parking levels <sup>3</sup> Parking occurs on three levels: BI floor and ground floor accessed from ECR, upper ground floor accessed from new street							

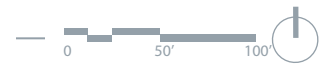
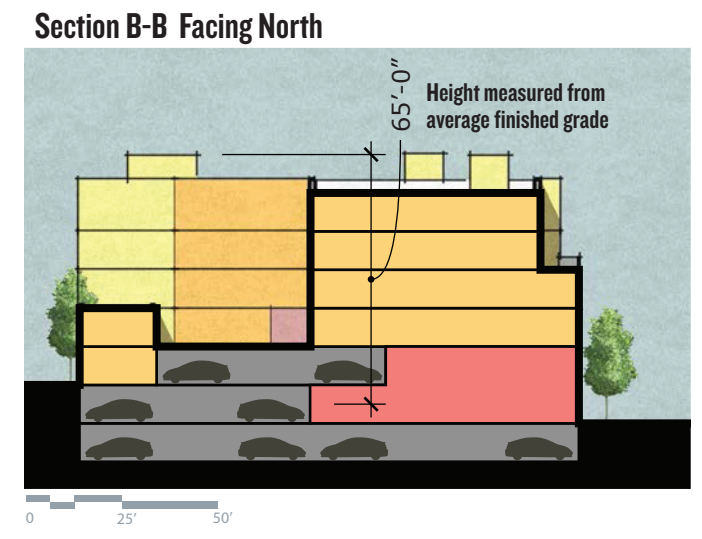
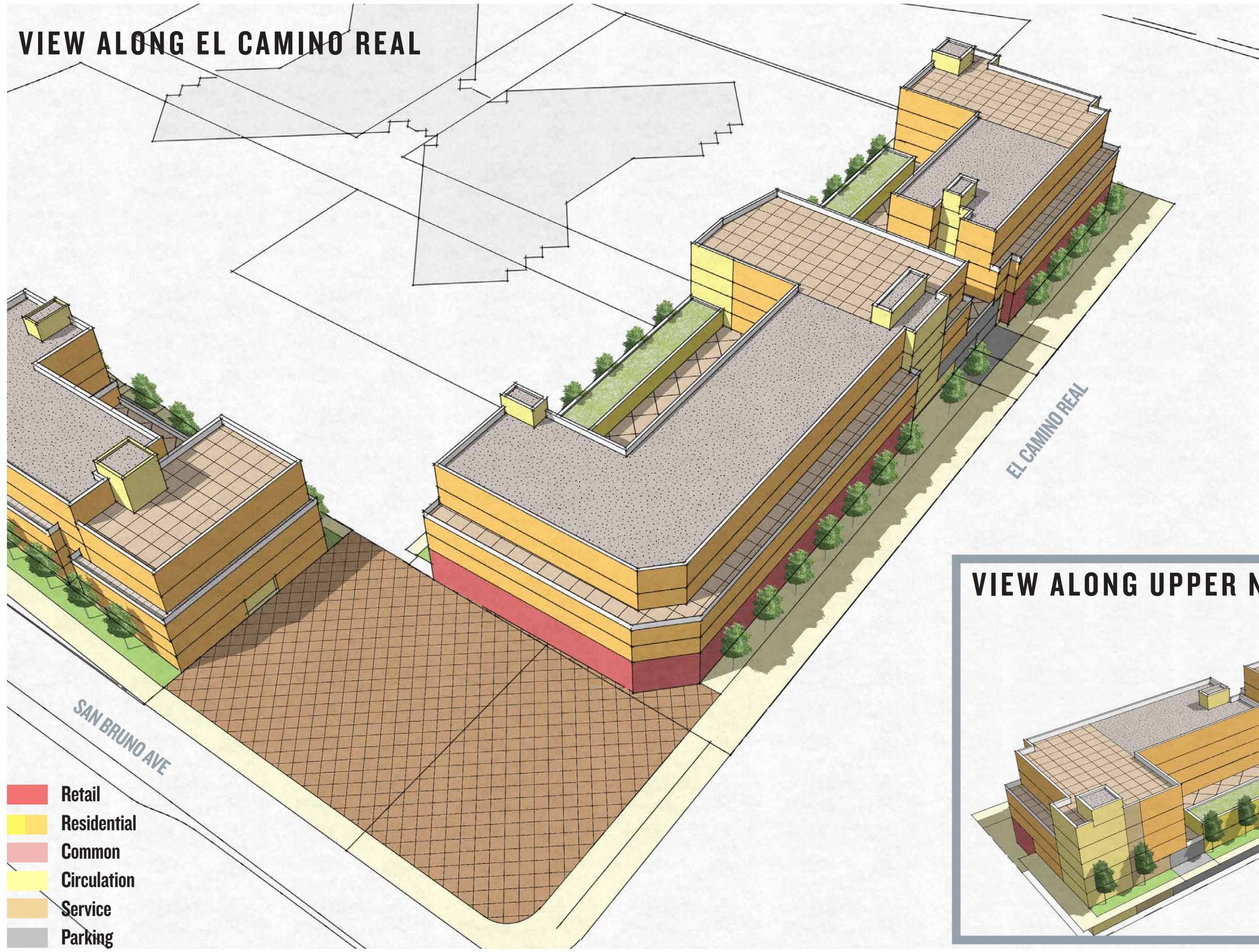


Figure 4-19: El Camino Real - High Density Residential Mixed Use Transit Corridor Schematic Building Prototype, Plan and Section - Alternative 3

# VIEW ALONG EL CAMINO REAL



- Retail
- Residential
- Common
- Circulation
- Service
- Parking

# VIEW ALONG UPPER NEW STREET



Figure 4-20: El Camino Real – High Density Residential Mixed-Use Transit Corridor Schematic Building Massing Analysis – Alternative 3

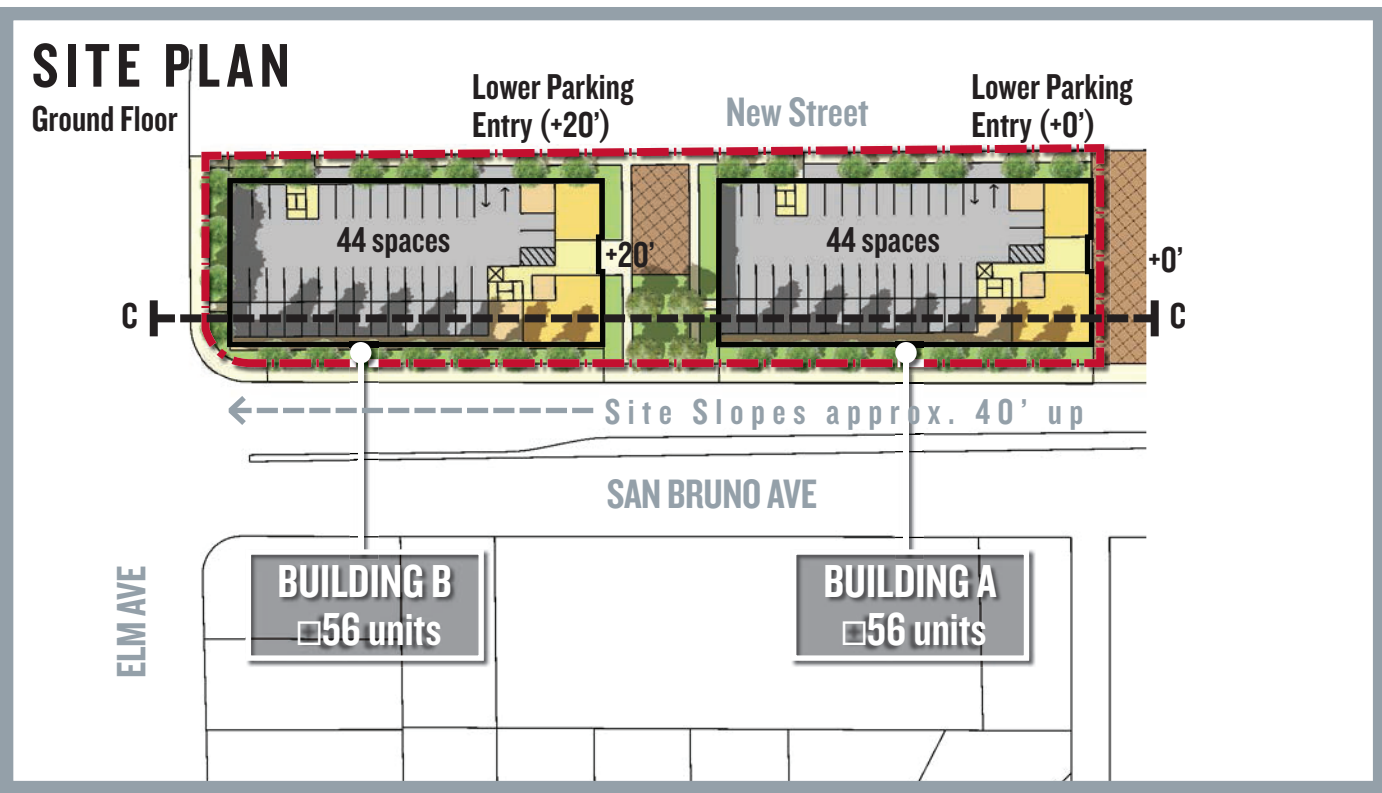
## VIEW FROM NEW PLAZA ON EL CAMINO REAL



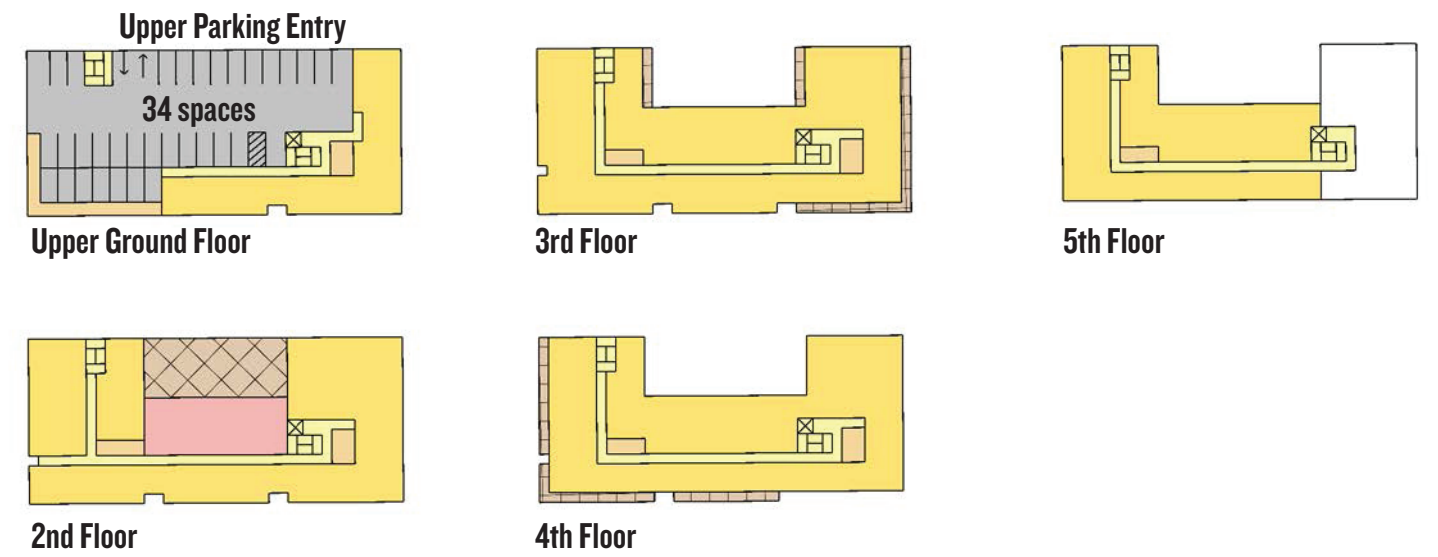
EL CAMINO REAL



Figure 4-21: El Camino Real – High Density Residential Mixed Use Transit Corridor Schematic Building Prototype, Perspective View from New Plaza on El Camino Real – Alternative 3



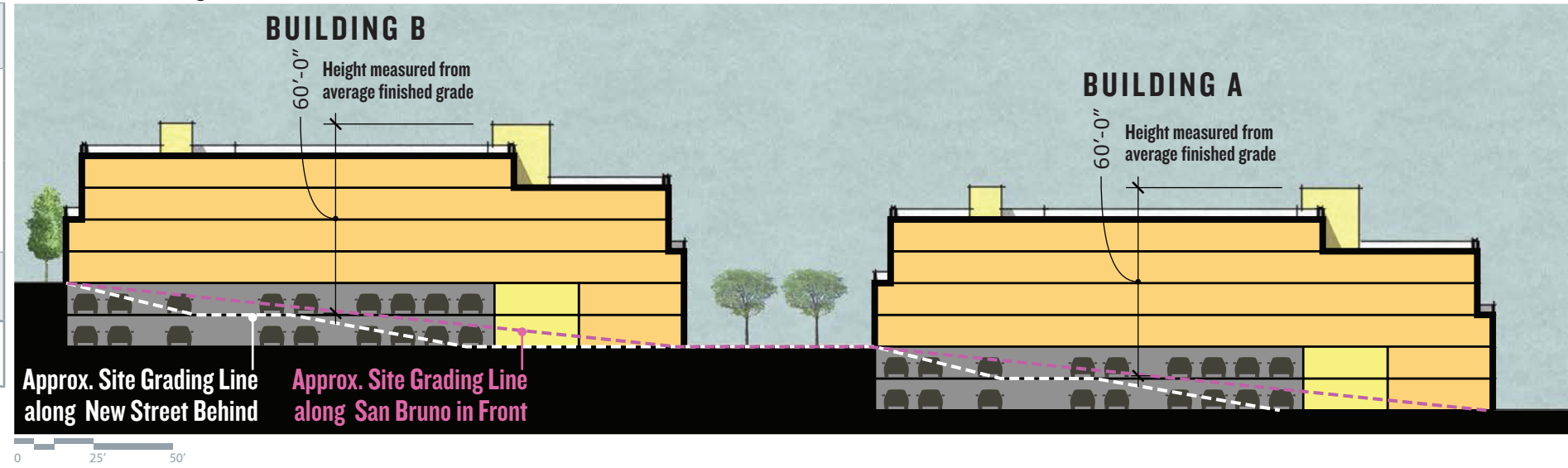
### BUILDINGS B & A



DEVELOPMENT SUMMARY	Building Category	Building Height		Unit Count <sup>1</sup>	Gross Bldg Area	Residential Parking <sup>2</sup>		Density
Building A	High-Density Residential Transit Corridor	5 stories (stepped because of sloping site)	approx. 60' (70' limit)	56	81,834 sf	78 spaces	1.4 / unit avg <sup>3</sup>	Site Area 1.38 acres
Building B	High-Density Residential Transit Corridor	5 stories (stepped because of sloping site)	approx. 60' (70' limit)	56	81,834 sf	78 spaces	1.4 / unit avg <sup>3</sup>	
<b>TOTALS</b>				<b>112 units</b>	<b>163,668 sf</b>	<b>156 spaces</b>	<b>1.4 / unit</b>	<b>82 du/a</b>

NOTES: <sup>1</sup> Units calculated as 800 gross sf not including circulation, service, common space, and interior walls  
<sup>2</sup> Parking occurs on two levels: all accessed from new street

### Section C-C Facing North



- Residential
- Common
- Circulation
- Service
- Parking



Figure 4-22: San Bruno Avenue - High-Density Residential Transit Corridor Schematic Building Prototype, Plan and Sections - Alternative 3

# VIEW ALONG SAN BRUNO AVE

- Residential
- Common
- Circulation
- Service
- Parking

+40'

+20'

+20'

SAN BRUNO AVE

+0'



# VIEW ALONG NEW STREET

Figure 4-23: San Bruno Avenue – High-Density Residential Transit Corridor Schematic Building Massing Analysis – Alternative 3

## VIEW FROM NEW PLAZA ON SAN BRUNO AVE



Figure 4-24: San Bruno Avenue – High-Density Residential Transit Corridor Schematic Building Prototype, Perspective View from New Plaza on San Bruno Avenue and El Camino Real – Alternative 3

SAN BRUNO, CA | JUNE 7, 2018



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# **Appendix A: Transportation Analysis Memorandum**

## MEMORANDUM

Date: July 12, 2018

To: Matt Neuebaumer, City of San Bruno  
Rajeev Bhatia & Elizabeth Blanton, Dyett & Bhatia

From: Sarah Nadiranto Chan, Taylor McAdam, and Bob Grandy, Fehr & Peers

**Subject: Bayhill Specific Plan Alternatives Analysis**

SF17-0931

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This memorandum summarizes the focused transportation analysis of the four alternatives being contemplated for the Bayhill Specific Plan. The purpose of this analysis is to understand the relative difference in traffic impacts within the Project vicinity with the various alternatives.

### Alternatives Assessment Study Area

Intersections are generally the critical capacity-controlling elements of suburban roadway networks. Therefore, the operations of critical intersections surrounding the project site are used as indicators of the adequacy of the vehicular circulation system. 15 intersections were selected by City of San Bruno staff for the evaluation of the Bayhill Specific Plan Project; however, for the purpose of this focused alternatives assessment, 8 of the 15 intersections were selected by City staff and the Project team. The intersections selected are deemed those most likely to be affected by the project and thus warranting analysis.

**Figure 1** illustrates the 8 study intersections evaluated in the alternatives assessment analysis and are described below:

1. I-280 Southbound Ramps / San Bruno Avenue (Signalized)
2. I-280 Northbound Ramps / San Bruno Avenue (Signalized)
3. Cherry Avenue / San Bruno Avenue (Signalized)
4. El Camino Real / San Bruno Avenue (Signalized)
5. El Camino Real / Bayhill Drive (Signalized)



6. I-380 Eastbound / El Camino Real (Signalized)
7. I-380 Westbound / El Camino Real (Signalized)
8. Bayhill Drive / Cherry Avenue (Signalized)

## Analysis Scenarios

Based on a review of existing data, the PM peak hour has the highest level of vehicle traffic and congestion in the Project's vicinity. Thus, for the purpose of the alternatives assessment, the weekday PM peak hour was evaluated at an intersection level; trip generation forecasts were also prepared for the AM peak hour for comparison purposes.

As documented in the Data Collection and Assumptions letter (September 2017), the Bayhill Specific Plan will be evaluated for the future horizon year of 2040. 2040 forecasts were developed using the C/CAG-VTA Travel Demand Model. 2040 land uses were reviewed to confirm consistency with the proposed land uses in the City of San Bruno General Plan and Transit Corridors Plan.

Travel demand models provide volume outputs that need to be adjusted in order to develop volume forecasts for the scenario being tested. In principle, raw volume outputs from a travel demand model should rarely be applied directly in analysis, only being used after adjustments are made. Adjustments to forecasted volumes are usually based on the difference between or ratio of volumes observed in the field and the model's own prediction of existing volumes.

The rationale for adjusting raw model volume outputs is that observed travel behavior is the result of a highly complex mixture of variables, only some of which are included in any given travel demand model, and so an adjustment is needed to account for variables not captured by the model itself. The adjustment takes the form of changing the model outputs to correct for discrepancies between actual field counts and estimated base year model volumes identified during the local calibration process, as it is assumed that the discrepancy will likely affect all scenarios in the same order of magnitude. This can be done several ways, as defined in the National Cooperative Highway Research Program Report 255: Highway Traffic Data for Urbanized Area Project Planning and Design, Transportation Research Board (December 1982). For the purpose of this assessment, the difference method was applied.

The difference method is the difference between the base year field count and the base year model volume, which is added to the output model volume to develop the forecasted volume for the scenario being tested. For example, if the base year model volume for a roadway segment was 650



ADT while the field count was 700 ADT, then the difference method would suggest the output model volume on that roadway segment should be increased by 50 ADT to develop the forecasted volume for the scenario being tested. The difference method adjustment is summarized in the formula below.

$$\text{Scenario Forecast} = \text{Output Model Volume} + (\text{Field Count} - \text{Base Year Model Volume})$$

## Study Methodology

This section describes the study methodology for evaluating intersection operations and describes the significance criteria applied to identify significant traffic impacts for each alternative.

### Analysis Methods

Intersection results will be summarized by Level of Service (LOS). LOS is a qualitative description of operations ranging from LOS A, when the roadway facility has excess capacity and vehicles experience little or no delay, to LOS F, where the volume of vehicles exceeds the capacity, resulting in long queues and excessive delays. Typically, LOS E represents “at-capacity” conditions and LOS F represents “over-capacity” conditions. Intersection LOS were established based on traffic analysis of the study intersections, conducted using a method documented by the Transportation Research Board (TRB) in the 2010 Highway Capacity Manual (HCM).

### Study Intersections

The traffic analysis software Synchro was used for this study and was based on the City's existing traffic model. For signalized intersections, the LOS is based on the average delay experienced by all vehicles passing through the intersection. This methodology uses various intersection characteristics (such as traffic volumes, lane geometry, and signal phasing) to estimate the delay per vehicle. The delay is the portion of the total delay attributed to the signal operations and includes initial deceleration, queue move up time, time stopped, and acceleration.

At unsignalized intersections, operations are defined by the average control delay per vehicle (measured in seconds) for each stop-controlled movement. This incorporates delay associated with deceleration, acceleration, stopping, and moving up in the queue. For side-street stop-controlled intersections, LOS is not defined for the intersection as a whole. Instead, the average delay and associated LOS reported in this study is for the worst-case controlled approach. For all-way stop-



controlled intersections, the LOS is represented by the average control delay for the whole intersection.

**Table 1** shows the correlation of average control delays and LOS designations for signalized and unsignalized intersections.

**Table 1: Intersection LOS Criteria**

Level of Service	Average Control Delay (seconds/vehicle)	
	Signalized	Unsignalized
A	< 10.0	< 10.0
B	> 10.0 to 20.0	> 10.0 – 15.0
C	> 20.0 to 35.0	> 15.0 – 25.0
D	> 35.0 to 55.0	> 25.0 – 35.0
E	> 55.0 to 80.0	> 35.0 – 50.0
F	> 80.0	> 50.0

Source: 2010 Highway Capacity Manual.

## Level of Service (LOS) Standards

As described in the Data Collection & Study Assumptions memo, three agencies govern intersection operations in the study area: the City of San Bruno, C/CAG (San Mateo County), and Caltrans. **Table 2** summarizes the acceptable LOS standard for the study intersections.

**Table 2: Level of Service Standard for Study Intersections**

Study Intersection / Freeway Segment	Control	Jurisdiction(s)	LOS Standard
I-280 Southbound Ramps / San Bruno Avenue	Signal	Caltrans San Bruno	C/D D
I-280 Northbound Ramps / San Bruno Avenue	Signal	Caltrans San Bruno	C/D D
Cherry Avenue / San Bruno Avenue	Signal	San Bruno	D
El Camino Real / San Bruno Avenue	Signal	Caltrans C/CAG	C/D E
El Camino Real / Bayhill Drive	Signal	Caltrans San Bruno	C/D D
I-380 Eastbound / El Camino Real	Signal	Caltrans San Bruno	C/D D



**Table 2: Level of Service Standard for Study Intersections**

Study Intersection / Freeway Segment	Control	Jurisdiction(s)	LOS Standard
I-380 Westbound / El Camino Real	Signal	Caltrans San Bruno	C/D D
Bayhill Drive / Cherry Avenue	Signal	San Bruno	D

## Significance Thresholds

The criteria used to determine whether project impacts rise to the level of significance are based on recent environmental impact reports in the City of San Bruno and criteria from C/CAG CMP guidelines.

### Signalized Intersection Impact Criteria

Traffic impacts at City of San Bruno intersections would occur when the addition of traffic associated with implementation of the Project causes:

- Peak hour intersection operations to deteriorate from an acceptable level (LOS D or better) to an unacceptable level (LOS E or LOS F) with the addition of the Project; or,
- Exacerbation of unacceptable operations under No Project Conditions by increasing the average critical delay by four (4) seconds or more at an intersection operating at LOS E or LOS F with the addition of the Project.

Traffic impacts at C/CAG CMP intersections would occur when the addition of traffic associated with implementation of the Project causes:

- Peak hour intersection operations to deteriorate from an acceptable level (LOS E or better) to an unacceptable level (LOS F) with the addition of the Project; or,
- Exacerbation of unacceptable operations No Project Conditions by increasing the average control delay by more than four (4) seconds or more at an intersection operating at LOS F with the addition of the Project.

Caltrans strives to maintain a target LOS at the transition between LOS C and LOS D. Traffic impacts at Caltrans intersections would occur when the addition of traffic associated with implementation of the Project causes:

- Peak hour intersection operations to deteriorate from an acceptable level (the transition between LOS C and LOS D to an unacceptable level (LOS D or worse); or,



- Exacerbation of unacceptable operations by any increase in traffic

## Land Use Scenarios

All alternatives propose a mixture of office, commercial, residential, hotel, and civic land uses built out within the existing Bayhill Office and Shopping Center footprint, with exception to Alternative 4 which does not include a civic use. Each of the four alternatives propose slightly different quantities of each land use, but all propose to significantly increase total developed square footage at the site. All alternatives concentrate residential development along El Camino Real and San Bruno Avenue, expand office space along the northern edge of the site, and retain the existing Bayhill Shopping Center as commercial space. However, housing, civic uses, and other community benefits may be developed offsite for any alternative.

The four land use programs are presented in more detail in **Table 3**, below.

**Table 3: Land Use Alternatives**

Land Use Category	Alternative 1 Central Spine	Alternative 2 Bayhill Square	Alternative 3 Cherry Plaza	Alternative 4 Greenway Connection
Office	2,680 KSF	3,755 KSF	3,065 KSF	3,895 KSF
Residential	730 Units	570 Units	975 Units	565 Units
Commercial	160 KSF	185 KSF	175 KSF	180 KSF
Hotel	147 Rooms	147 Rooms	267 Rooms*	147 Rooms
Civic Use	55 KSF	30 KSF	70 KSF	0 KSF
Open Space	6 Acres	4 Acres	8 Acres	4 Acres

Notes: \*Two hotels are proposed in Alternative 3, which a combined total of 267 rooms.

KSF =thousand square feet; units are rounded.

Land use descriptions reflect the total program, thus, existing uses are incorporated in the totals.

Source: Dyett & Bhatia, 2018

**Alternative 1 (Central Spine)** proposes the smallest increase in office and commercial space, but adds more residential than either Alternative 2 or Alternative 4. In Alternative 1, the civic use is located on El Camino Real and the center of the site is planned as an open-air performance facility.

**Alternative 2 (Bayhill Square)** and **Alternative 4 (Greenway Connection)** have very similar land use programs; the only difference being that Alternative 4 does not include a civic use and instead



utilizes that space for about 140 KSF of more office space. Alternative 2 includes both a civic use and open space in the center of the site.

**Alternative 3 (Cherry Plaza)** presents the most distinct land use program, both in quantity of each land use and in layout. The program includes the most residential of the four alternatives, adds a second hotel, and proposes the largest civic space and the largest amount of open space of any alternative. In contrast to the other three layouts, the civic use in Alternative 3 is located along San Bruno Avenue and open space is concentrated in the southern half of the site between Bayhill Drive and San Bruno Avenue. Also diverging from the other alternatives, which leave the Bayhill Shopping Center site as is, Alternative 3 proposes to increase commercial square footage and add residential units to the Bayhill Shopping Center.

## Trip Generation & Trip Distribution

Trip generation refers to the process of estimating the amount of vehicular traffic a project would add to the surrounding roadway system. Estimates are created for the peak one-hour periods during the morning and evening commute periods when traffic volumes on the adjacent streets are the highest. For all alternatives, trip generation was estimated using a combination of rates from the Institute of Transportation Engineers (ITE) *Trip Generation Manual* (10<sup>th</sup> Edition) as well as Fehr & Peers' MainStreet Trip Generation tool. **Table 4** presents the ITE codes used to approximate the land uses proposed for the site.

**Table 4: Trip Generation Rates**

ITE Land Use	Bayhill Land Uses
710 – General Office Building	Office (non-YouTube), Office (YouTube)
Custom trip-generation rate based on Fall 2017 driveway counts	Commercial (Shopping Center)
932 – High Turnover Sit-Down Restaurant	Commercial (Other), Ground Floor Active Use Overlay, Mixed Use within Residential
221 – Mid-Rise Multifamily Housing	High Density Residential, High Density Residential within Transit Corridors, High Density Residential with Mixed Use
310 – Hotel	Hotel
590 – Library	Civic Use
411 – Public Park	Open Space

Source: Institute of Transportation Engineers (ITE) Trip Generation Manual (10th Edition)



The MainStreet trip generation tool, which is based on MXD methodology, developed for and approved by the US Environmental Protection Agency (EPA) for use in evaluating trip generation at mixed-use projects. The primary difference between the ITE and MXD methodologies is that the traditional ITE methodology relies on one factor—the project's land use type—to predict vehicle trip generation, while MXD incorporates local data and travel behaviors, as well as leading research in how density, mix of land uses, and other built environment factors affect vehicle trip generation. The total square footage at buildout of each alternative was included in the MainStreet analysis to capture the full benefits of the land use mixture.

Overall, the MainStreet analysis shows that ITE trip rates, without adjustments for internalization and mode share, overestimate vehicle trips generated at this site by approximately 20-25% for the four alternatives. A portion of this reduction is attributable to an anticipated shift from driving trips to walk, bike, and transit trips (11-13% for all alternatives). The remainder of the reduction is attributable to internalized trips and varies between the alternatives based on the level of balance and synergy between land uses. Alternative 1 shows the highest internalization reduction (11.5% in the AM and 13.6% in the PM) indicating the highest level of synergy between its land uses. Alternative 2 shows the smallest internalization reduction (11% in the AM, 11.3% in the PM).

Neither methodology takes into account the travel demand management (TDM) programs proposed for or currently in place at the site. This is due to the fact that TDM programs are not permanent in the same way built environment factors and land use diversity are, and instead are tied to particular tenants, who often turnover during the life of a project. For this reason, the estimated net new trips presented in this analysis do not account for TDM strategies. TDM could, however, be considered as a mitigation measure for the upcoming DEIR analysis and will likely be required per the San Bruno Municipal Code, which states that all employers with 25 or more employees must have a TDM program in place.

**Table 5** summarizes the weekday AM peak hour and PM peak hour trip generation for each alternative. The AM and PM peak hour represent the hour with the highest number of vehicular traffic. Typically, the AM peak hour is represented within the AM peak period of 7:00 AM and 9:00 AM. The PM peak hour is typically represented within the PM peak period of 4:00 PM and 6:00 PM.



**Table 5: Raw Trip Generation and MainStreet Reductions<sup>1</sup>**

Alternative	AM Peak Hour							PM Peak Hour						
	Initial			MainStreet Reduction <sup>2</sup>	Final			Initial			MainStreet Reduction <sup>2</sup>	Final		
	Hourly Total	In	Out		Hourly Total	In	Out	Hourly Total	In	Out		Hourly Total	In	Out
Alt 1 – Central Spine	4,343	3,322	1,021	25.9%	3,217	2,461	756	5,053	1,537	3,516	25.9%	3,746	1,139	2,607
Alt 2 – Bayhill Square	5,750	4,494	1,256	23.9%	4,376	3,420	956	6,269	1,748	4,521	22.4%	4,864	1,356	3,508
Alt 3 – Cherry Plaza	5,229	3,921	1,308	24.8%	3,934	2,949	985	6,023	1,925	4,098	25.4%	4,493	1,436	3,057
Alt 4 – Greenway Connection	5,842	4,590	1,252	23.9%	4,447	3,492	954	6,125	1,623	4,502	24.2%	4,644	1,230	3,414

Note:

1. Existing trips were credited to the project to determine net new trips and project impacts.
2. Reductions include internalization and mode shift to walk, bike, or transit.

Source: Fehr & Peers, 2018



**Table 5** summarizes vehicular trips that the site would generate after it is fully occupied by all tenants. Project trips were distributed to each study intersection based on the trip distribution assumptions illustrated in **Figure 3**. Trip distribution assumptions were based on C/CAG's model regional distributions and locally available employee survey data. Figures 4 through Figure 7, illustrate the PM peak hour intersection turning movement counts for 2040 Plus Alternatives 1 through 4, respectively.

## Analysis Results

**Table 6** presents intersection Level of Service (LOS) and delay results for the PM peak hour at each of the eight study intersections. Results are presented for the Existing No Project, 2040 No Project, and 2040 Plus Alternatives scenarios. Detailed LOS calculations are included in **Appendix A**.

Under existing operations, two intersections – El Camino Real/San Bruno Avenue and El Camino Real/I-380 Westbound – operate below the Caltrans LOS standard. All other intersections operate acceptably at or above both the Caltrans, C/CAG, and San Bruno thresholds.

Under the 2040 No Project scenario, all eight intersections evaluated operate at or above the LOS standard based on the City of San Bruno and C/CAG thresholds. However, using Caltrans standards, the following intersections would operate below the LOS standard:

- I-280 Northbound Ramps / San Bruno Avenue
- El Camino Real / San Bruno Avenue
- I-380 Westbound / El Camino Real

The delay and LOS results for Existing No Project show poorer performance at a few intersections than the results for the 2040 No Project scenarios. This can be explained by the fact that 2040 signal timings and coordination are optimized and existing signal operations are not.

The addition of Project trips under each of the four alternatives would result in a significant impact based on City of San Bruno and/or Caltrans significance thresholds at the following intersections:

- I-280 Northbound Ramps / San Bruno Avenue (Alternatives 1, 2, 3, and 4)<sup>1, 2</sup>
- Cherry Avenue / San Bruno Avenue (Alternatives 1, 2, and 4)<sup>1</sup>

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<sup>1</sup> Exceeds significance thresholds based on City of San Bruno criteria.

<sup>2</sup> Exceeds significance thresholds based on Caltrans criteria.



- El Camino Real / San Bruno Avenue (Alternatives 1, 2, 3, and 4)<sup>2</sup>
- El Camino Real / Bayhill Drive (Alternatives 2, 3, and 4)<sup>2</sup>
- I-380 Westbound / El Camino Real (Alternatives 1, 2, 3, and 4)<sup>2</sup>

Alternative 3 closes Cherry Avenue to through traffic at Bayhill Drive and thus continues to perform at LOS D. The road closure would redistribute trips entering and existing the site to the San Bruno Avenue/Traeger Avenue and San Bruno Avenue/Elm Avenue intersections, which may require signalization of one or more of the intersections. Additionally, the closure would divert some interchange traffic such that drivers coming to and from I-280 that may have used the San Bruno Avenue interchange under Alternatives 1, 2, and 4, would now use the Sneath Lane interchange under Alternative 3.

Overall, Alternatives 1 through 4 cause four to five of the study intersections to result in an impact; however, Alternatives 1 and 3 result in the least amount of additional delay added at the eight intersections evaluated. This is due to the fact that these alternatives produce fewer peak hour project trips than Alternatives 2 and 4. Alternatives 1 and 3 also generate the highest internalization rate given their mix of land uses, which further reduces their trip generation.



**Table 6: PM Peak LOS and Delay Results**

Study Intersection / Freeway Segment	Control	Jurisdiction(s)	LOS Standard	Existing No Project		2040 No Project		2040 + Alt 1		2040 + Alt 2		2040 + Alt 3		2040 + Alt 4	
				LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
1. I-280 Southbound Ramps / San Bruno Avenue	Signal	Caltrans San Bruno	C/D D	B	16	B	17	B	16	B	16	B	16	B	16
2. I-280 Northbound Ramps / San Bruno Avenue	Signal	Caltrans San Bruno	C/D D	C	29	<b>D</b>	<b>49</b>	<b>E</b>	<b>69</b>	<b>F</b>	<b>98</b>	<b>F</b>	<b>101</b>	<b>F</b>	<b>96</b>
3. Cherry Avenue / San Bruno Avenue	Signal	San Bruno	D	D	38	D	45	<b>E</b>	<b>73</b>	<b>F</b>	<b>116</b>	D	55	<b>F</b>	<b>113</b>
4. El Camino Real / San Bruno Avenue	Signal	Caltrans C/CAG	C/D E	<b>D</b>	<b>55</b>	<b>D</b>	<b>49</b>	<b>E</b>	<b>56</b>	<b>E</b>	<b>69</b>	<b>E</b>	<b>65</b>	<b>E</b>	<b>69</b>
5. El Camino Real / Bayhill Drive	Signal	Caltrans San Bruno	C/D D	C	32	C	30	C	33	<b>D</b>	<b>45</b>	<b>D</b>	<b>36</b>	<b>D</b>	<b>43</b>
6. I-380 Eastbound / El Camino Real	Signal	Caltrans San Bruno	C/D D	B	17	B	14	B	15	B	19	B	17	B	18
7. I-380 Westbound / El Camino Real	Signal	Caltrans San Bruno	C/D D	<b>F</b>	<b>&gt;80</b>	<b>D</b>	<b>44</b>	<b>D</b>	<b>45</b>	<b>D</b>	<b>46</b>	<b>D</b>	<b>45</b>	<b>D</b>	<b>45</b>
8. Bayhill Drive / Cherry Avenue	Signal	San Bruno	D	C	24	C	29	C	34	D	49	C	31	D	45

Notes:

Delay are rounded to the nearest second. Delays greater than 80 seconds are typically reported as ">80"; however are shown for the alternative scenarios for comparative purposes.

**Bold** = Intersection performs below LOS standard.

**Italicized** = Intersection results in an impact.



## Site Plan & Circulation Review

This section describes Fehr & Peer's qualitative review of the proposed site plans corresponding to each alternative. A copy of the site access and circulation plans are included in **Appendix B**.

### Alternative 1

Alternative 1 remains largely the same as the existing street network with the exception of realigning Grundy Lane and providing two additional north-south streets, connecting Bayhill Drive and Grundy Lane. Straightening Grundy Lane would improve access for pedestrians, cyclists, and motorists, as it would straighten the existing meandering road on Grundy Lane, thereby, reducing the walk, bike, and driving distances. Straightening Grundy Lane may cause some vehicles to increase their speed; therefore, traffic calming improvements should be considered such that drivers drive the posted speed or lower. Additionally, a Plaza/Special Paving treatment should be considered at the Grundy Lane and new north-south street, just east of Traeger Avenue, intersection, to enhance the pedestrian experience.

The new north-south access streets reduce each block's footprint into more pedestrian scale blocks. Additionally, these new streets provide new circulation options, making connections between the north and south side of the campus more accessible for all users.

New pedestrian connections are provided between some of the internal blocks. In two cases, a pedestrian connection is provided mid-block instead of near an intersection. Mid-block crossings are most useful when they are situated to connect key building or open space access points. Additionally, extra precaution must be taken at mid-block crossings to establish pedestrian visibility and safe crossing treatments.

Lastly, Alternative 1 would remove and relocate parking in some of the existing surface lots on the northern side of the site to underground parking structures, making the pedestrian connections between buildings more accessible and the site more permeable.

### Alternative 2

Alternative 2 is similar to Alternative 1, with the proposal to straighten Grundy Lane. In addition, Alternative 2 proposes an internal one-way counter-clockwise traffic loop around the Central Square. The one-way loop would likely reduce pedestrian crossing distances across portions of Traeger Avenue and Bayhill Drive. The configuration may be confusing for cyclists and drivers; however, due



to the design of adjacent streets which are all two-way and provide full access. Additional intersection improvements, such as wayfinding signs (both at gateways and internal to the network) and hardscape improvements should be incorporated into the design of the street network to clearly indicate how cyclists and drivers should circulate around the site. Special considerations should be made for cyclists, who may travel in the reverse direction in order to travel the shortest distance and less circuitous path.

Like Alternative 1, Alternative 2 proposes underground parking structures on the north side of the site, and would replace some of the existing surface lots with private open space. Replacing the surface lots with underground parking structures would improve the pedestrian connections between buildings and make the site more permeable.

### **Alternative 3**

The internal network proposed in Alternative 3 is nearly identical to existing conditions and Alternative 1, such as straightening Grundy Lane, with the exception of the new north-south streets proposed in Alternative 1. Alternative 3 also proposes to close vehicle through access along Chery Avenue, just south of Bayhill Drive, thus modifying the Bayhill Drive / Chery Avenue intersection from a four-legged intersection to a three-legged "T" intersection. The existing Bayhill Shopping Center Driveway on Chery Avenue would remain, retaining this access into the existing Shopping Center. The segment of Chery Avenue proposed for closure would be open to pedestrians and cyclists, improving connections between the Bayhill Shopping Center and office building east of Chery Avenue. Additionally, the Bayhill Shopping Center Driveway and Chery Avenue intersection meets existing pedestrian warrants. The proposed closure would create an open plaza adjacent to the intersection, such that a signal would be no longer warranted.

Chery Avenue currently serves as a neighborhood collector street, connecting residents, employees, and retail patrons of the Bayhill Specific Plan area and residential community, north of I-380, to San Bruno Avenue and Sneath Lane. Thus, the proposed closure would re-route vehicles to use internal streets such as Bayhill Drive and/or Traeger Avenue as a cut-through or external streets such as San Bruno Avenue and Sneath Lane. While the road closure would not substantially impact the intersection operations at Chery Avenue/Bayhill Drive and Chery Avenue/San Bruno Avenue, the shift in traffic would likely negatively impact the uncontrolled intersection at Traeger Avenue/San Bruno Avenue, and may require a signal with the forecasted shift in traffic.



The road closure would have a negative impact on vehicle circulation, though it improves pedestrian access between the existing Bayhill Shopping Center site and Office site. Traffic calming improvements could be considered as an alternative to full vehicle closure.

Like Alternatives 1 and 2, Alternative 3 proposes to relocate existing surface lot parking to an underground parking structure. This proposal would improve pedestrian connections between buildings and make the site more permeable.

## **Alternative 4**

Alternative 4 is largely the same as the existing network with the exception of improvements along Grundy Lane which would straighten the street between Elm Avenue and Cherry Avenue, additionally, underground parking structures would be constructed. The proposed network would also improve the pedestrian connections along Cherry Avenue, Grundy Lane, and Elm Avenue. If this alternative is selected as the preferred project, active transportation improvements should be considered to connect the different buildings across the campus.

## **Consistency with Walk 'n Bike Plan**

The City of San Bruno's Walk 'n Bike Plan, adopted in July 2016, includes multiple recommendations around the Specific Plan Area. Pedestrian improvements along Cherry Avenue and El Camino Real include but are not limited to reducing intersection corner radii, constructing bulb-outs, lighting, push buttons, and flashing beacons. At the I-380 interchange, pedestrian improvements include adding high visibility crosswalks and yield lines, realigning curb ramps, and reconstructing ramp alignments to lower vehicle speeds.

Alternatives 1 through 4 would not propose any infrastructure changes that would conflict with the recommended improvements; however, all alternatives would increase vehicular traffic in the general area, such that, as the Specific Plan continues to be developed, pedestrian improvements, consistent with recommendations provided in the Walk 'n Bike Plan should be considered for implementation.

In addition to the pedestrian improvements mentioned above, the Walk 'n Bike Plan recommends several bicycle improvements in the Project area, including, Class II bike lanes along Bayhill Drive, Elm Avenue, and San Bruno Avenue, and a Class IV cycle track along Cherry Avenue. The Class II facilities along Bayhill Drive, Elm Avenue and San Bruno Avenue would not conflict with the



proposed circulation plan across the four Alternatives under evaluation; however, vehicular traffic would increase with implementation of the Specific Plan.

The recommended Class IV cycle track proposed on Cherry Avenue would result in a lane reduction, thereby affecting traffic operations. However, based on initial renderings included in the Walk 'n Bike Plan, intersections along Cherry Avenue would include turn pockets such that intersection operations would likely not worsen. The addition of a Class IV cycle track along Cherry Avenue with the Class II facilities along San Bruno Avenue, Bayhill Drive, and Elm Avenue would substantially improve the bicycle network in the area, without significantly worsening traffic operations such that as the Specific Plan is developed, the recommendations included in the Walk 'n Bike Plan should be considered.

## Conclusion

All four alternatives result in various impacts to the 2040 No Project network during the PM peak hour. Alternatives 1 and 3 result in the fewest impacts because it generates the least amount of additional trips, while also achieving the highest amount of internalization and mode shift due to the balanced, yet diverse, land use program proposed. Furthermore, Alternative 3, assumes a portion of Cherry Avenue is closed, which if removed, may have implications that improve traffic operations. Regardless of the land use alternative, intersection mitigations would need to be identified at four to five of the study intersections evaluated. The scale of required mitigations at the intersections would likely vary as the resulting intersection delays vary among alternatives. It should be noted that the analysis assumes existing configurations unless the alternative includes a circulation change (Alternative 3), such that improvements associated with background growth were not identified. Additionally, the analysis does not assume any reductions due to TDM. Thus, improvements or mitigations could vary from implementation of a TDM plan to infrastructure improvements. The improvements/mitigation measures will likely have modest implications to the intersection operations such that some of the alternatives may remain significant and unavoidable. A detailed analysis will be prepared as part of the preferred plan analysis, documenting the type of mitigations under consideration and their effectiveness.

With respect to site access and circulation improvements, Alternatives 1 through 4 propose realigning Grundy Lane and underground parking structures. Alternatives 1 through 3 show that some of the existing surface lots would be replaced with open space resulting in improved pedestrian connections between buildings and making the site more permeable. Additionally,



Alternative 1 offers additional points of access, internal to the site, Alternative 2 proposes a one-way loop at the center of the site, and Alternative 3 proposes a segment closure along Cherry Avenue. Alternative 4 is largely similar to the existing street network and does not currently propose enhancements to connections between building sites. Between the four alternatives proposed circulation plan, Alternative 4 would have the most limited access between buildings due to the base roadway pattern. Alternative 1 improvements are the most intuitive and have the least impact to existing travel patterns, unlike Alternative 2 and 3 which propose a one-way loop and road closure, respectively.

# Attachments

Figure 1: Alternative Assessment Study Intersections

Figure 2: 2040 No Project Intersection Volumes (PM Peak Hour)

Figure 3: Trip Distribution Figure

Figure 4: 2040 + Alternative 1 Intersection Volumes (PM Peak Hour)

Figure 5: 2040 + Alternative 2 Intersection Volumes (PM Peak Hour)

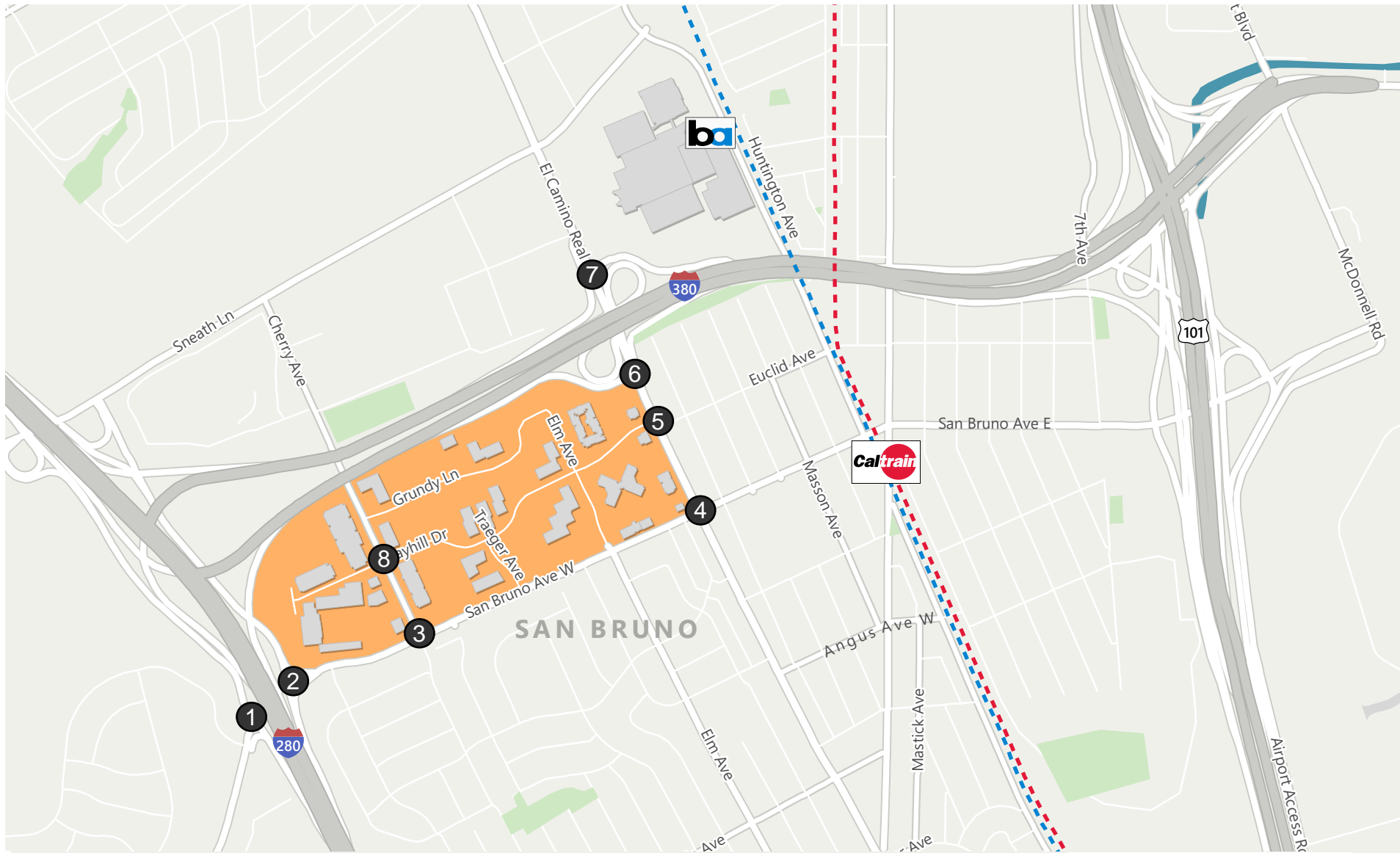
Figure 6: 2040 + Alternative 3 Intersection Volumes (PM Peak Hour)

Figure 7: 2040 + Alternative 4 Intersection Volumes (PM Peak Hour)

Appendix A: Detailed LOS Calculations

Appendix B: Proposed Circulation Improvements

# Figures 1 through 7



Project Study Area

Proposed Study Intersection

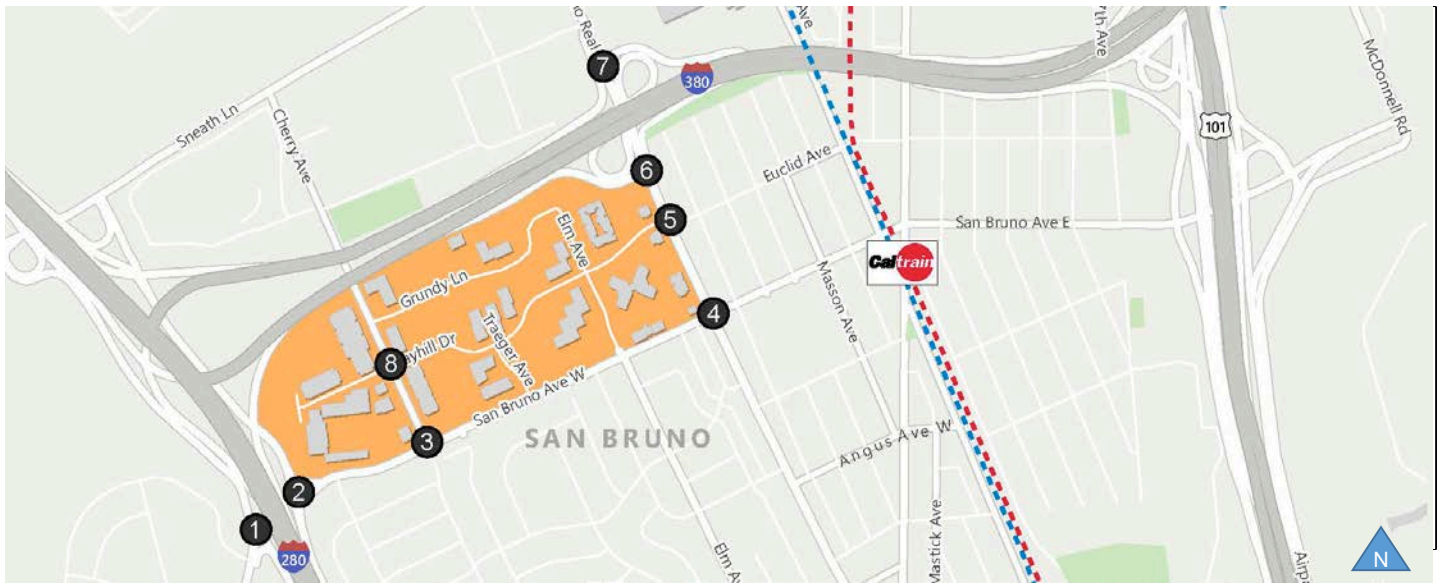
BART

Caltrain

0 0.5 Miles



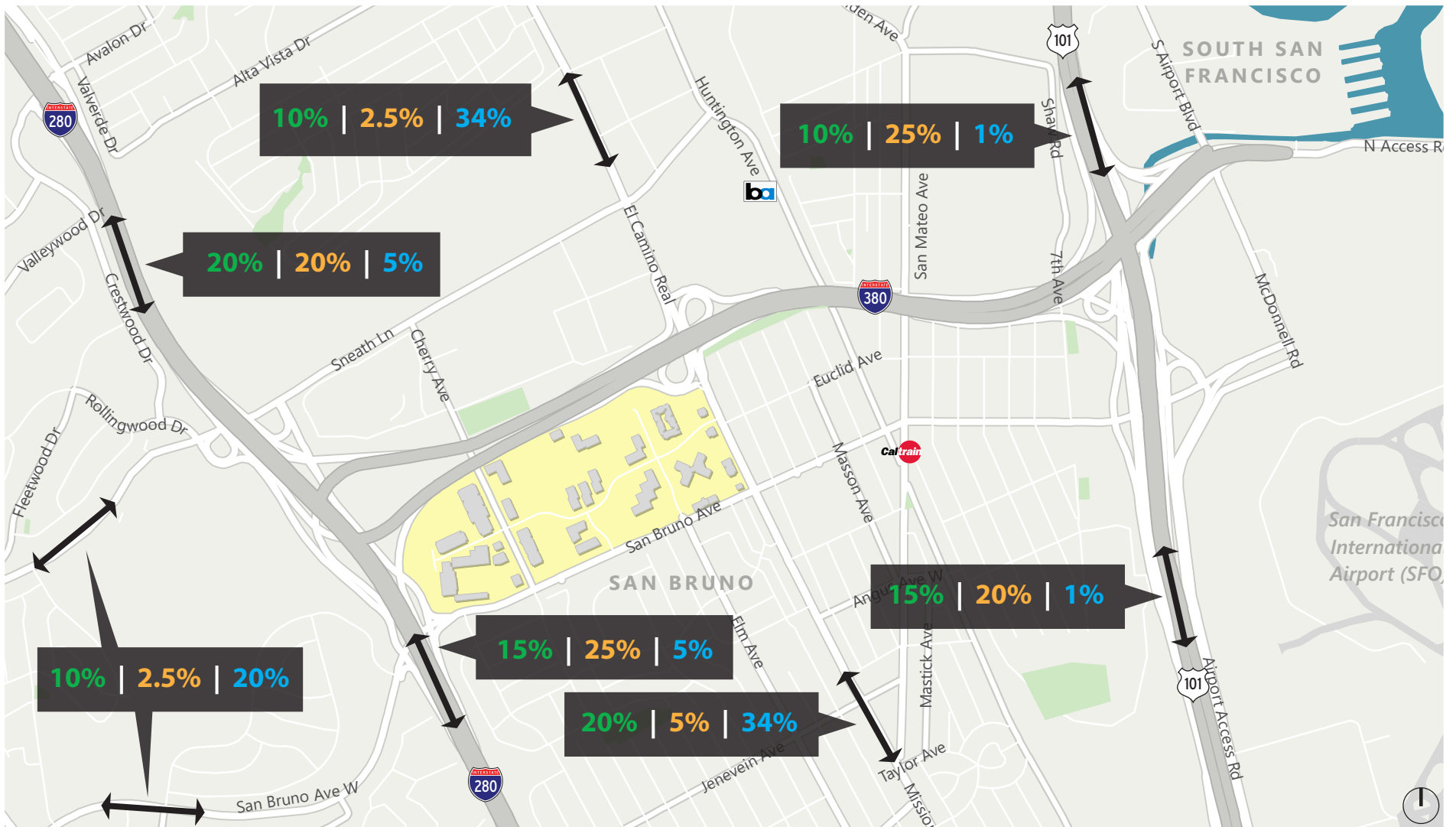
Figure 1  
 Alternatives Assessment Study Intersections



1. 280 SB Ramps/San Bruno Avenue W	2. 280 NB Ramps/San Bruno Avenue W	3. Cherry Avenue/San Bruno Avenue W	4. El Camino Real /San Bruno Avenue W
<p>280 SB Off Ramp</p> <p>280 150 380</p> <p>940 565</p> <hr/> <p>San Bruno Avenue W</p> <p>500 150</p> <p>280 SB On Ramp</p>	<p>280 NB On Ramp</p> <p>620 1,190</p> <hr/> <p>San Bruno Avenue W</p> <p>160 720</p> <p>280 NB Off Ramp</p> <p>310 780 530</p>	<p>Cherry Avenue</p> <p>500 110 130</p> <p>250 1,030 40</p> <hr/> <p>San Bruno Avenue W</p> <p>230 910 140</p> <p>Cherry Avenue</p> <p>90 110 30</p>	<p>El Camino Real</p> <p>230 1,620 330</p> <p>230 450 330</p> <hr/> <p>San Bruno Avenue W</p> <p>190 540 350</p> <p>El Camino Real</p> <p>330 1,840 130</p>
5. El Camino Real/Bayhill Drive	6. El Camino Real/380 EB Ramps	7. El Camino Real/380 WB Ramps	8. Cherry Avenue/Bayhill Drive
<p>El Camino Real</p> <p>200 1,970</p> <p>410 70</p> <p>65 2,220</p> <hr/> <p>Bayhill Drive</p> <p>El Camino Real</p>	<p>El Camino Real</p> <p>840 1,880</p> <p>380 EB On-Ramp</p> <p>400 0 380</p> <p>2,240 510</p> <hr/> <p>380 EB Off-Ramp</p> <p>El Camino Real</p>	<p>El Camino Real</p> <p>480 2,090</p> <p>380 WB On-Ramp</p> <p>1,800 830</p> <p>1,220 630</p> <hr/> <p>380 WB Off-Ramp</p> <p>El Camino Real</p>	<p>Cherry Avenue</p> <p>50 400 30</p> <p>110 40 230</p> <hr/> <p>Bayhill Drive</p> <p>70 40 100</p> <p>Cherry Avenue</p> <p>20 440 60</p>

Figure 2  
PM Peak Hour Traffic Volumes  
2040 No Project



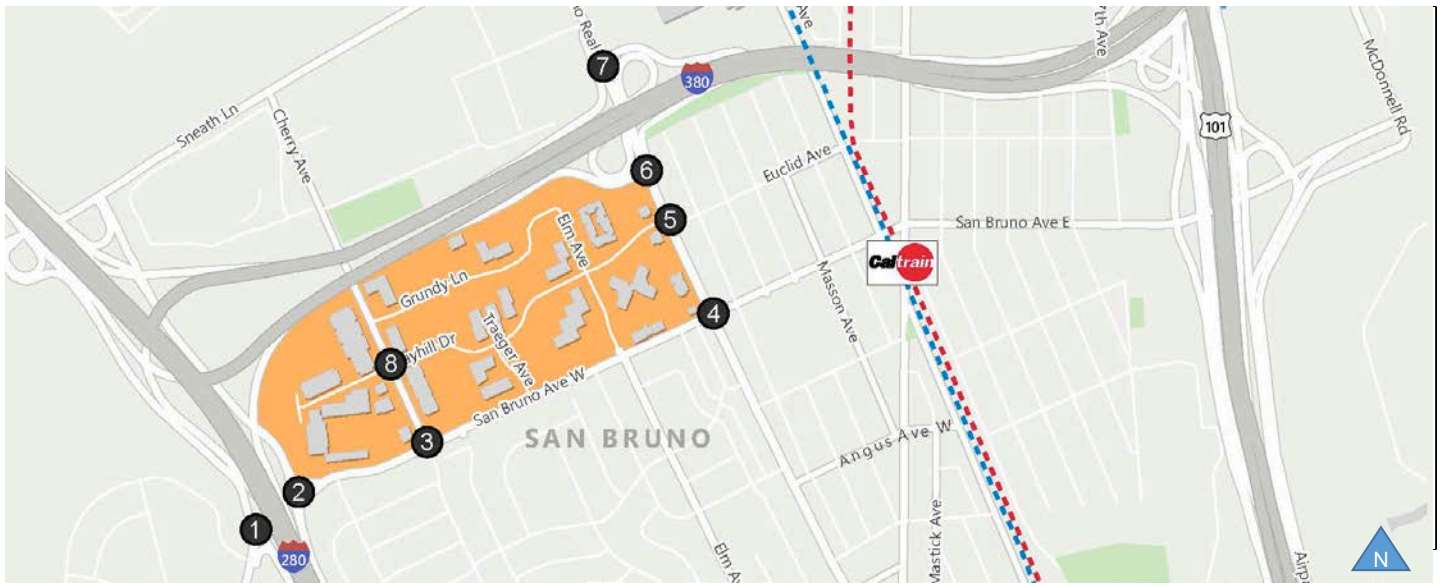


**LEGEND**

- Project Site
- XX% Non-YouTube Employment & Residential
- XX% YouTube Employment
- XX% Commercial



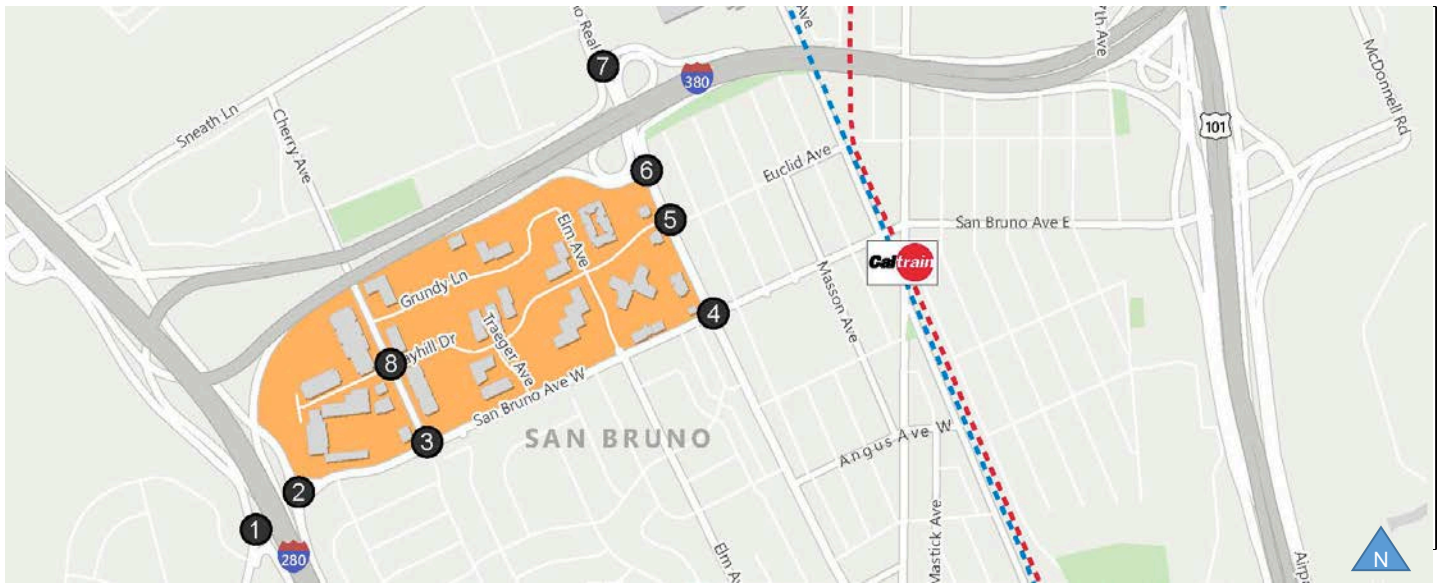
Figure 3  
Trip Distribution



1. 280 SB Ramps/San Bruno Avenue W	2. 280 NB Ramps/San Bruno Avenue W	3. Cherry Avenue/San Bruno Avenue W	4. El Camino Real /San Bruno Avenue W																																																																																																
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Figure 4  
PM Peak Hour Traffic Volumes  
2040 Alternative 1

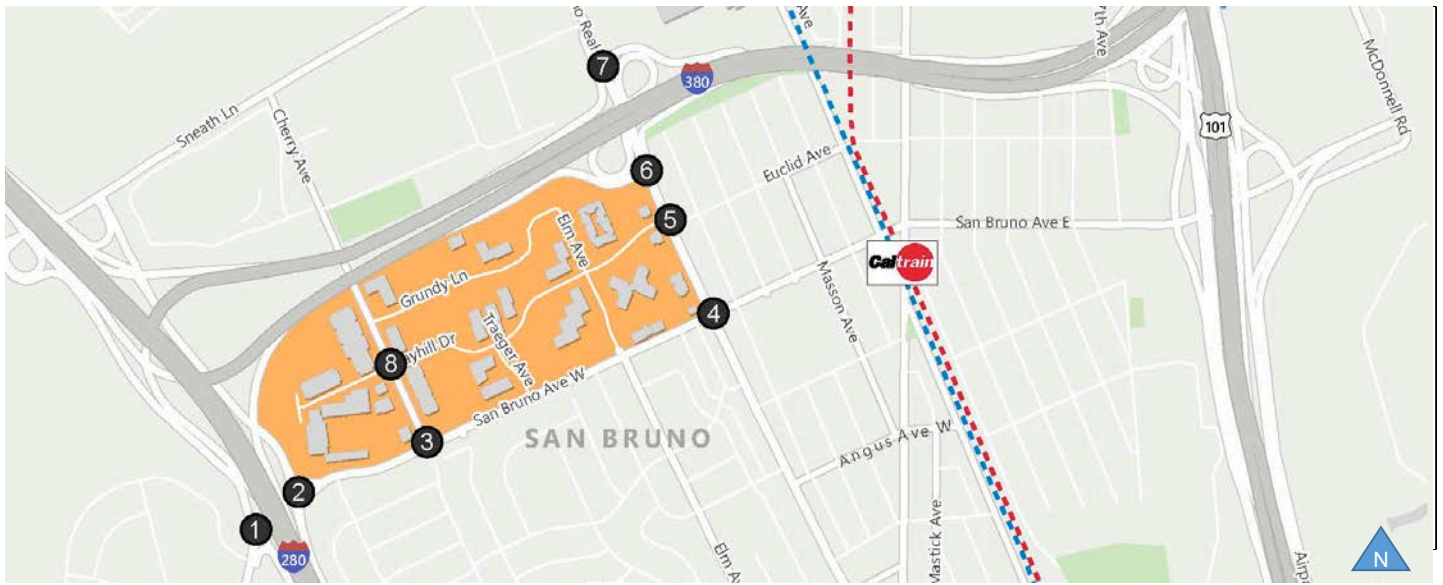




1. 280 SB Ramps/San Bruno Avenue W	2. 280 NB Ramps/San Bruno Avenue W	3. Cherry Avenue/San Bruno Avenue W	4. El Camino Real /San Bruno Avenue W
<p>280 SB Off Ramp</p> <p>280</p> <p>150</p> <p>407</p> <p>993</p> <p>838</p> <hr/> <p>San Bruno Avenue W</p> <p>520</p> <p>150</p> <p>280 SB On Ramp</p>	<p>280 NB On Ramp</p> <p>779</p> <p>1,516</p> <hr/> <p>San Bruno Avenue W</p> <p>160</p> <p>766</p> <p>280 NB Off Ramp</p> <p>310</p> <p>780</p> <p>581</p>	<p>Cherry Avenue</p> <p>695</p> <p>117</p> <p>263</p> <p>281</p> <p>1,321</p> <p>40</p> <hr/> <p>San Bruno Avenue W</p> <p>261</p> <p>977</p> <p>140</p> <p>90</p> <p>110</p> <p>30</p>	<p>El Camino Real</p> <p>240</p> <p>1,645</p> <p>330</p> <p>230</p> <p>474</p> <p>330</p> <hr/> <p>San Bruno Avenue W</p> <p>333</p> <p>661</p> <p>486</p> <p>363</p> <p>1,858</p> <p>130</p>
5. El Camino Real/Bayhill Drive	6. El Camino Real/380 EB Ramps	7. El Camino Real/380 WB Ramps	8. Cherry Avenue/Bayhill Drive
<p>El Camino Real</p> <p>341</p> <p>1,980</p> <hr/> <p>Bayhill Drive</p> <p>850</p> <p>95</p> <p>83</p> <p>2,363</p>	<p>El Camino Real</p> <p>930</p> <p>2,003</p> <hr/> <p>380 EB Off-Ramp</p> <p>400</p> <p>0</p> <p>407</p> <p>380 EB On-Ramp</p> <p>2,426</p> <p>907</p>	<p>El Camino Real</p> <p>480</p> <p>2,224</p> <hr/> <p>380 WB On-Ramp</p> <p>1,869</p> <p>947</p> <p>El Camino Real</p> <p>1,227</p> <p>709</p> <p>380 WB Off-Ramp</p>	<p>Cherry Avenue</p> <p>50</p> <p>402</p> <p>80</p> <p>264</p> <p>40</p> <p>327</p> <hr/> <p>Bayhill Drive</p> <p>191</p> <p>40</p> <p>335</p> <p>20</p> <p>464</p> <p>98</p>

Figure 5  
PM Peak Hour Traffic Volumes  
2040 Alternative 2

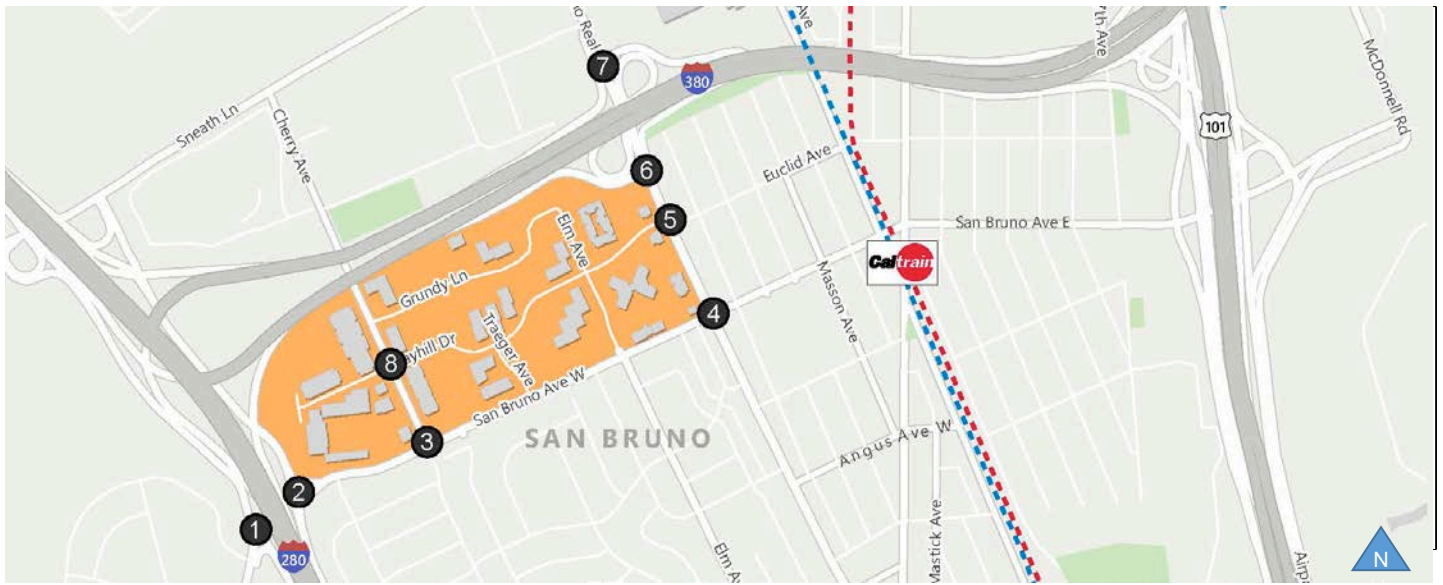




1. 280 SB Ramps/San Bruno Avenue W	2. 280 NBRamps/San Bruno Avenue W	3. Cherry Avenue/San Bruno Avenue W	4. El Camino Real /San Bruno Avenue W
<p>280 150 413 ↑↑ 1,030 ↑↑ 802 San Bruno Avenue W 525 150 280 SB On Ramp</p>	<p>↑↑ 787 ↑↑ 1,526 San Bruno Avenue W 160 777 280 NB On Ramp 310 780 588</p>	<p>150 30 120 Cherry Avenue ↑↑ 70 ↑↑ 1,543 40 San Bruno Avenue W 70 1,130 140 120 30 70</p>	<p>244 1,638 330 ↑↑ 230 ↑↑ 478 ↑↑ 330 San Bruno Avenue W 330 628 456 El Camino Real 377 1,859 130</p>
5. El Camino Real/Bayhill Drive	6. El Camino Real/380 EB Ramps	7. El Camino Real/380 WB Ramps	8. Cherry Avenue/Bayhill Drive
<p>350 1,984 Bayhill Drive 719 88 84 ↑↑ 2,350 El Camino Real</p>	<p>906 2,013 El Camino Real 380 EB Off-Ramp 400 411 380 EB On-Ramp 2,372 820</p>	<p>480 2,200 El Camino Real 380 WB On-Ramp 1,849 913 380 WB Off-Ramp ↑↑ 1,229 ↑↑ 719</p>	<p>195 84 Cherry Avenue ↑↑ 220 0 80 80 Bayhill Drive 410 329 0 0 0</p>

Figure 6  
PM Peak Hour Traffic Volumes  
2040 Alternative 3





1. 280 SB Ramps/San Bruno Avenue W	2. 280 NB Ramps/San Bruno Avenue W	3. Cherry Avenue/San Bruno Avenue W	4. El Camino Real /San Bruno Avenue W
<p>280 SB Off Ramp 280 SB On Ramp</p> <p>San Bruno Avenue W</p>	<p>280 NB On Ramp 280 NB Off Ramp</p> <p>San Bruno Avenue W</p>	<p>Cherry Avenue</p> <p>San Bruno Avenue W</p>	<p>El Camino Real</p> <p>San Bruno Avenue W</p>
5. El Camino Real/Bayhill Drive	6. El Camino Real/380 EB Ramps	7. El Camino Real/380 WB Ramps	8. Cherry Avenue/Bayhill Drive
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










Figure 7  
PM Peak Hour Traffic Volumes  
2040 Alternative 4



# Appendix A: Detailed LOS Calculations

**HCM 2010 Signalized Intersection Summary**  
**1: 280 SB On Ramp/280 SB Off Ramp & San Bruno Avenue W**

06/26/2018

												
Movement	EBL	EBT	EBR	WBU	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations		↑↑↑	↑		↑↑	↑↑					↑	↑↑
Traffic Volume (veh/h)	0	461	146	1	419	834	0	0	0	0	197	113
Future Volume (veh/h)	0	461	146	1	419	834	0	0	0	0	197	113
Number	5	2	12		1	6	16				7	4
Initial Q (Qb), veh	0	0	0		0	0	0				0	0
Ped-Bike Adj(A_pbT)	1.00		1.00		1.00		1.00				1.00	
Parking Bus, Adj	1.00	1.00	1.00		1.00	1.00	1.00				1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900		1900	1900	0				1900	1900
Adj Flow Rate, veh/h	0	507	0		460	916	0				144	174
Adj No. of Lanes	0	3	1		2	2	0				1	1
Peak Hour Factor	0.91	0.91	0.91		0.91	0.91	0.91				0.91	0.91
Percent Heavy Veh, %	0	0	0		0	0	0				0	0
Cap, veh/h	0	1960	610		1160	2758	0				238	250
Arrive On Green	0.00	0.38	0.00		0.66	1.00	0.00				0.13	0.13
Sat Flow, veh/h	0	5358	1615		3510	3705	0				1810	1900
Grp Volume(v), veh/h	0	507	0		460	916	0				144	174
Grp Sat Flow(s),veh/h/ln	0	1729	1615		1755	1805	0				1810	1900
Q Serve(g_s), s	0.0	6.1	0.0		5.4	0.0	0.0				6.8	7.9
Cycle Q Clear(g_c), s	0.0	6.1	0.0		5.4	0.0	0.0				6.8	7.9
Prop In Lane	0.00		1.00		1.00		0.00				1.00	
Lane Grp Cap(c), veh/h	0	1960	610		1160	2758	0				238	250
V/C Ratio(X)	0.00	0.26	0.00		0.40	0.33	0.00				0.60	0.70
Avail Cap(c_a), veh/h	0	1960	610		1160	2758	0				434	456
HCM Platoon Ratio	1.00	1.00	1.00		2.00	2.00	1.00				1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00		0.74	0.74	0.00				1.00	1.00
Uniform Delay (d), s/veh	0.0	19.3	0.0		11.1	0.0	0.0				36.9	37.4
Incr Delay (d2), s/veh	0.0	0.3	0.0		0.1	0.2	0.0				0.9	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0		0.0	0.0	0.0				0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.9	0.0		2.6	0.1	0.0				3.4	4.2
LnGrp Delay(d),s/veh	0.0	19.6	0.0		11.2	0.2	0.0				37.8	38.7
LnGrp LOS		B			B	A					D	D
Approach Vol, veh/h		507				1376						638
Approach Delay, s/veh		19.6				3.9						38.5
Approach LOS		B				A						D
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	34.8	39.0		16.2		73.8						
Change Period (Y+Rc), s	5.0	* 5		4.4		5.0						
Max Green Setting (Gmax), s	21.5	* 34		21.6		59.0						
Max Q Clear Time (g_c+I1), s	7.4	8.1		10.6		2.0						
Green Ext Time (p_c), s	7.5	4.7		1.3		12.7						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			15.8									
HCM 2010 LOS			B									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
1: 280 SB On Ramp/280 SB Off Ramp & San Bruno Avenue W

06/26/2018

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	260
Future Volume (veh/h)	260
Number	14
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Adj Sat Flow, veh/h/ln	1900
Adj Flow Rate, veh/h	320
Adj No. of Lanes	2
Peak Hour Factor	0.91
Percent Heavy Veh, %	0
Cap, veh/h	425
Arrive On Green	0.13
Sat Flow, veh/h	3230
Grp Volume(v), veh/h	320
Grp Sat Flow(s),veh/h/ln	1615
Q Serve(g_s), s	8.6
Cycle Q Clear(g_c), s	8.6
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	425
V/C Ratio(X)	0.75
Avail Cap(c_a), veh/h	775
HCM Platoon Ratio	1.00
Upstream Filter(l)	1.00
Uniform Delay (d), s/veh	37.7
Incr Delay (d2), s/veh	1.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	3.9
LnGrp Delay(d),s/veh	38.7
LnGrp LOS	D
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer	

HCM 2010 Signalized Intersection Summary  
1: 280 SB On Ramp/280 SB Off Ramp & San Bruno Avenue W

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06/26/2018

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

















User approved volume balancing among the lanes for turning movement.

User approved ignoring U-Turning movement.

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
2: 280 NB Off Ramp/280 NB On Ramp & San Bruno Avenue W

06/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	147	505	0	0	987	619	268	501	295	0	0	0
Future Volume (veh/h)	147	505	0	0	987	619	268	501	295	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1881	1881	0	0	1881	1881	1881	1881	1881			
Adj Flow Rate, veh/h	160	549	0	0	1073	0	291	545	321			
Adj No. of Lanes	2	2	0	0	2	1	1	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	1	1	0	0	1	1	1	1	1			
Cap, veh/h	226	2064	0	0	1672	748	558	586	498			
Arrive On Green	0.13	1.00	0.00	0.00	0.15	0.00	0.31	0.31	0.31			
Sat Flow, veh/h	3476	3668	0	0	3668	1599	1792	1881	1597			
Grp Volume(v), veh/h	160	549	0	0	1073	0	291	545	321			
Grp Sat Flow(s),veh/h/ln	1738	1787	0	0	1787	1599	1792	1881	1597			
Q Serve(g_s), s	4.0	0.0	0.0	0.0	25.4	0.0	12.0	25.3	15.6			
Cycle Q Clear(g_c), s	4.0	0.0	0.0	0.0	25.4	0.0	12.0	25.3	15.6			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	226	2064	0	0	1672	748	558	586	498			
V/C Ratio(X)	0.71	0.27	0.00	0.00	0.64	0.00	0.52	0.93	0.65			
Avail Cap(c_a), veh/h	232	2064	0	0	1672	748	577	606	515			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.96	0.96	0.00	0.00	0.63	0.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	38.3	0.0	0.0	0.0	31.0	0.0	25.5	30.0	26.7			
Incr Delay (d2), s/veh	7.5	0.3	0.0	0.0	1.2	0.0	0.3	20.2	2.0			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	2.1	0.1	0.0	0.0	12.9	0.0	5.9	16.3	7.1			
LnGrp Delay(d),s/veh	45.8	0.3	0.0	0.0	32.2	0.0	25.8	50.3	28.7			
LnGrp LOS	D	A			C		C	D	C			
Approach Vol, veh/h		709			1073			1157				
Approach Delay, s/veh		10.6			32.2			38.1				
Approach LOS		B			C			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		57.0			9.9	47.1		33.0				
Change Period (Y+Rc), s		5.0			4.0	5.0		5.0				
Max Green Setting (Gmax), s		51.0			6.0	41.0		29.0				
Max Q Clear Time (g_c+I1), s		2.0			6.0	27.4		27.3				
Green Ext Time (p_c), s		24.6			0.0	10.4		0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				29.3								
HCM 2010 LOS				C								
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
2: 280 NB Off Ramp/280 NB On Ramp & San Bruno Avenue W

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


















06/26/2018

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User approved volume balancing among the lanes for turning movement.  
User approved changes to right turn type.

**HCM 2010 Signalized Intersection Summary**  
**3: Cherry Avenue & San Bruno Avenue W**

06/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	201	491	128	34	1029	106	75	92	20	109	96	356
Future Volume (veh/h)	201	491	128	34	1029	106	75	92	20	109	96	356
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.99	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1937
Adj Flow Rate, veh/h	216	528	138	37	1106	114	81	99	22	117	103	383
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	345	1546	402	48	1223	126	180	400	89	235	187	438
Arrive On Green	0.06	0.18	0.18	0.03	0.38	0.38	0.27	0.27	0.27	0.27	0.27	0.27
Sat Flow, veh/h	1774	2780	723	1774	3238	333	903	1469	327	636	685	1608
Grp Volume(v), veh/h	216	335	331	37	604	616	81	0	121	220	0	383
Grp Sat Flow(s),veh/h/ln	1774	1770	1733	1774	1770	1802	903	0	1796	1321	0	1608
Q Serve(g_s), s	10.7	14.9	15.0	1.9	29.0	29.1	7.9	0.0	4.7	9.8	0.0	20.5
Cycle Q Clear(g_c), s	10.7	14.9	15.0	1.9	29.0	29.1	22.4	0.0	4.7	14.5	0.0	20.5
Prop In Lane	1.00		0.42	1.00		0.19	1.00		0.18	0.53		1.00
Lane Grp Cap(c), veh/h	345	984	964	48	669	681	180	0	489	421	0	438
V/C Ratio(X)	0.63	0.34	0.34	0.78	0.90	0.91	0.45	0.00	0.25	0.52	0.00	0.87
Avail Cap(c_a), veh/h	355	984	964	158	669	681	185	0	499	429	0	447
HCM Platoon Ratio	0.33	0.33	0.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.93	0.93	0.93	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	38.9	22.4	22.4	43.5	26.4	26.5	39.1	0.0	25.5	29.8	0.0	31.3
Incr Delay (d2), s/veh	2.3	0.9	0.9	9.7	17.8	17.8	0.7	0.0	0.1	0.5	0.0	16.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	7.5	7.4	1.0	17.4	17.7	2.0	0.0	2.4	4.9	0.0	11.1
LnGrp Delay(d),s/veh	41.2	23.2	23.3	53.2	44.3	44.3	39.7	0.0	25.6	30.3	0.0	47.6
LnGrp LOS	D	C	C	D	D	D	D		C	C		D
Approach Vol, veh/h		882			1257			202			603	
Approach Delay, s/veh		27.7			44.5			31.3			41.3	
Approach LOS		C			D			C			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	22.5	39.0		28.5	6.4	55.1		28.5				
Change Period (Y+Rc), s	5.0	* 5		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	18.0	* 34		25.0	8.0	44.0		25.0				
Max Q Clear Time (g_c+I1), s	12.7	31.1		22.5	3.9	17.0		24.4				
Green Ext Time (p_c), s	0.6	2.2		0.8	0.0	6.2		0.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				37.9								
HCM 2010 LOS				D								
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
3: Cherry Avenue & San Bruno Avenue W

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



















06/26/2018

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\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real/El Camino Real & San Bruno Avenue W

06/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBU	SBL
Lane Configurations												
Traffic Volume (veh/h)	181	286	214	299	428	184	10	313	1301	124	58	267
Future Volume (veh/h)	181	286	214	299	428	184	10	313	1301	124	58	267
Number	3	8	18	7	4	14		1	6	16		5
Initial Q (Qb), veh	0	0	0	0	0	0		0	0	0		0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.97		1.00		0.98		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1900		1881	1881	1881		1881
Adj Flow Rate, veh/h	193	304	228	318	455	196		333	1384	132		284
Adj No. of Lanes	1	2	1	2	2	0		2	3	1		2
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94		0.94	0.94	0.94		0.94
Percent Heavy Veh, %	1	1	1	1	1	1		1	1	1		1
Cap, veh/h	215	869	371	361	548	234		940	1393	426		952
Arrive On Green	0.12	0.24	0.24	0.10	0.23	0.23		0.27	0.27	0.27		0.55
Sat Flow, veh/h	1792	3574	1527	3476	2414	1030		3476	5136	1571		3476
Grp Volume(v), veh/h	193	304	228	318	336	315		333	1384	132		284
Grp Sat Flow(s),veh/h/ln	1792	1787	1527	1738	1787	1656		1738	1712	1571		1738
Q Serve(g_s), s	15.9	10.6	11.3	13.5	26.8	27.3		11.6	40.3	7.9		6.6
Cycle Q Clear(g_c), s	15.9	10.6	11.3	13.5	26.8	27.3		11.6	40.3	7.9		6.6
Prop In Lane	1.00		1.00	1.00		0.62		1.00		1.00		1.00
Lane Grp Cap(c), veh/h	215	869	371	361	406	376		940	1393	426		952
V/C Ratio(X)	0.90	0.35	0.61	0.88	0.83	0.84		0.35	0.99	0.31		0.30
Avail Cap(c_a), veh/h	454	929	397	487	429	398		940	1393	426		952
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00		2.00
Upstream Filter(I)	0.92	0.92	0.92	1.00	1.00	1.00		1.00	1.00	1.00		1.00
Uniform Delay (d), s/veh	65.1	47.0	16.2	66.3	55.2	55.4		44.1	54.5	27.0		26.1
Incr Delay (d2), s/veh	4.9	0.1	1.5	11.1	11.2	13.1		0.1	22.5	1.9		0.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0		0.0
%ile BackOfQ(50%),veh/ln	8.2	5.2	4.9	7.0	14.5	13.9		5.6	22.0	3.6		3.2
LnGrp Delay(d),s/veh	70.0	47.1	17.8	77.4	66.4	68.4		44.2	77.1	28.9		26.2
LnGrp LOS	E	D	B	E	E	E		D	E	C		C
Approach Vol, veh/h		725			969				1849			
Approach Delay, s/veh		44.0			70.7				67.7			
Approach LOS		D			E				E			
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	44.1	45.3	21.5	39.1	44.6	44.8	19.1	41.6				
Change Period (Y+Rc), s	3.5	4.6	3.5	* 5.1	3.5	4.1	3.5	5.1				
Max Green Setting (Gmax), s	20.0	40.7	38.0	* 36	19.0	40.7	21.0	39.0				
Max Q Clear Time (g_c+I1), s	13.6	34.6	17.9	29.3	8.6	42.3	15.5	13.3				
Green Ext Time (p_c), s	0.1	1.4	0.0	0.8	0.1	0.0	0.0	1.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			54.8									
HCM 2010 LOS			D									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
6: El Camino Real/El Camino Real & San Bruno Avenue W

06/26/2018

Movement	SBT	SBR
Lane Configurations	↑↑↑	↑
Traffic Volume (veh/h)	1176	195
Future Volume (veh/h)	1176	195
Number	2	12
Initial Q (Qb), veh	0	0
Ped-Bike Adj(A_pbT)		0.98
Parking Bus, Adj	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881
Adj Flow Rate, veh/h	1251	207
Adj No. of Lanes	3	1
Peak Hour Factor	0.94	0.94
Percent Heavy Veh, %	1	1
Cap, veh/h	1393	426
Arrive On Green	0.54	0.54
Sat Flow, veh/h	5136	1571
Grp Volume(v), veh/h	1251	207
Grp Sat Flow(s),veh/h/ln	1712	1571
Q Serve(g_s), s	32.6	9.3
Cycle Q Clear(g_c), s	32.6	9.3
Prop In Lane		1.00
Lane Grp Cap(c), veh/h	1393	426
V/C Ratio(X)	0.90	0.49
Avail Cap(c_a), veh/h	1393	426
HCM Platoon Ratio	2.00	2.00
Upstream Filter(l)	1.00	1.00
Uniform Delay (d), s/veh	32.4	16.1
Incr Delay (d2), s/veh	9.4	3.9
Initial Q Delay(d3),s/veh	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.3	4.4
LnGrp Delay(d),s/veh	41.9	20.0
LnGrp LOS	D	C
Approach Vol, veh/h	1742	
Approach Delay, s/veh	36.7	
Approach LOS	D	
Timer		

HCM 2010 Signalized Intersection Summary  
6: El Camino Real/El Camino Real & San Bruno Avenue W

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06/26/2018












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User approved ignoring U-Turning movement.

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
7: El Camino Real /El Camino Real & Bayhill Drive

06/26/2018

								
Movement	EBL	EBR	NBU	NBL	NBT	SBT	SBR	
Lane Configurations								
Traffic Volume (veh/h)	399	68	32	27	1620	1590	185	
Future Volume (veh/h)	399	68	32	27	1620	1590	185	
Number	3	18		1	6	2	12	
Initial Q (Qb), veh	0	0		0	0	0	0	
Ped-Bike Adj(A_pbT)	1.00	1.00		1.00			0.99	
Parking Bus, Adj	1.00	1.00		1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln	1881	1900		1881	1881	1881	1900	
Adj Flow Rate, veh/h	487	0		28	1705	1674	195	
Adj No. of Lanes	2	1		1	3	3	0	
Peak Hour Factor	0.95	0.95		0.95	0.95	0.95	0.95	
Percent Heavy Veh, %	1	0		1	1	1	1	
Cap, veh/h	530	239		435	4102	2456	285	
Arrive On Green	0.15	0.00		0.49	1.00	0.17	0.17	
Sat Flow, veh/h	3583	1615		1792	5305	4832	541	
Grp Volume(v), veh/h	487	0		28	1705	1228	641	
Grp Sat Flow(s),veh/h/ln	1792	1615		1792	1712	1712	1780	
Q Serve(g_s), s	20.1	0.0		1.2	0.0	50.4	50.7	
Cycle Q Clear(g_c), s	20.1	0.0		1.2	0.0	50.4	50.7	
Prop In Lane	1.00	1.00		1.00			0.30	
Lane Grp Cap(c), veh/h	530	239		435	4102	1803	938	
V/C Ratio(X)	0.92	0.00		0.06	0.42	0.68	0.68	
Avail Cap(c_a), veh/h	1123	506		435	4102	1803	938	
HCM Platoon Ratio	1.00	1.00		2.00	2.00	0.33	0.33	
Upstream Filter(I)	1.00	0.00		1.00	1.00	0.91	0.91	
Uniform Delay (d), s/veh	63.0	0.0		29.5	0.0	50.2	50.3	
Incr Delay (d2), s/veh	2.9	0.0		0.0	0.3	1.9	3.7	
Initial Q Delay(d3),s/veh	0.0	0.0		0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln	10.2	0.0		0.6	0.1	24.4	26.0	
LnGrp Delay(d),s/veh	65.9	0.0		29.6	0.3	52.1	53.9	
LnGrp LOS	E			C	A	D	D	
Approach Vol, veh/h	487				1733	1869		
Approach Delay, s/veh	65.9				0.8	52.7		
Approach LOS	E				A	D		
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	40.8	83.4				124.2		25.8
Change Period (Y+Rc), s	4.4	* 4.4				4.4		3.6
Max Green Setting (Gmax), s	13.0	* 79				95.0		47.0
Max Q Clear Time (g_c+I1), s	3.2	52.7				2.0		22.1
Green Ext Time (p_c), s	2.4	2.7				2.9		0.1
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay				32.3				
HCM 2010 LOS				C				
<b>Notes</b>								

HCM 2010 Signalized Intersection Summary  
7: El Camino Real /El Camino Real & Bayhill Drive

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06/26/2018

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
















User approved volume balancing among the lanes for turning movement.

User approved ignoring U-Turning movement.

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

**HCM 2010 Signalized Intersection Summary**  
**8: El Camino Real & 380 EB Off-Ramp/380 EB On-Ramp**

06/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	278	0	376	0	0	0	0	1602	506	0	1438	704
Future Volume (veh/h)	278	0	376	0	0	0	0	1602	506	0	1438	704
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881				0	1881	1900	0	1881	1881
Adj Flow Rate, veh/h	432	0	247				0	1686	533	0	1514	0
Adj No. of Lanes	2	0	1				0	3	0	0	3	1
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1				0	1	1	0	1	1
Cap, veh/h	599	0	266				0	2900	888	0	3968	1236
Arrive On Green	0.17	0.00	0.17				0.00	1.00	1.00	0.00	0.52	0.00
Sat Flow, veh/h	3583	0	1588				0	3922	1149	0	5305	1599
Grp Volume(v), veh/h	432	0	247				0	1533	686	0	1514	0
Grp Sat Flow(s),veh/h/ln	1792	0	1588				0	1712	1478	0	1712	1599
Q Serve(g_s), s	17.1	0.0	23.0				0.0	0.0	0.0	0.0	26.6	0.0
Cycle Q Clear(g_c), s	17.1	0.0	23.0				0.0	0.0	0.0	0.0	26.6	0.0
Prop In Lane	1.00		1.00				0.00		0.78	0.00		1.00
Lane Grp Cap(c), veh/h	599	0	266				0	2646	1142	0	3968	1236
V/C Ratio(X)	0.72	0.00	0.93				0.00	0.58	0.60	0.00	0.38	0.00
Avail Cap(c_a), veh/h	717	0	318				0	2646	1142	0	3968	1236
HCM Platoon Ratio	1.00	1.00	1.00				1.00	2.00	2.00	1.00	0.67	0.67
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.85	0.85	0.00	0.85	0.00
Uniform Delay (d), s/veh	59.1	0.0	61.6				0.0	0.0	0.0	0.0	14.6	0.0
Incr Delay (d2), s/veh	2.1	0.0	28.2				0.0	0.8	2.0	0.0	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.6	0.0	12.2				0.0	0.3	0.6	0.0	12.7	0.0
LnGrp Delay(d),s/veh	61.2	0.0	89.7				0.0	0.8	2.0	0.0	14.9	0.0
LnGrp LOS	E		F					A	A		B	
Approach Vol, veh/h		679						2219			1514	
Approach Delay, s/veh		71.6						1.2			14.9	
Approach LOS		E						A			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		120.3				120.3		29.7				
Change Period (Y+Rc), s		4.4				4.4		4.6				
Max Green Setting (Gmax), s		111.0				111.0		30.0				
Max Q Clear Time (g_c+I1), s		28.6				2.0		25.0				
Green Ext Time (p_c), s		8.7				8.7		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			16.7									
HCM 2010 LOS			B									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
8: El Camino Real & 380 EB Off-Ramp/380 EB On-Ramp

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
















06/26/2018

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User approved volume balancing among the lanes for turning movement.























HCM 2010 Signalized Intersection Summary  
9: El Camino Real & 380 WB On-Ramp/380 WB Off-Ramp

06/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	480	0	1212	0	1569	318	0	1658	352
Future Volume (veh/h)	0	0	0	480	0	1212	0	1569	318	0	1658	352
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	0	1881	0	1881	1881	0	1881	1881
Adj Flow Rate, veh/h				500	0	1262	0	1634	0	0	1727	0
Adj No. of Lanes				2	0	2	0	3	1	0	3	1
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				1	0	1	0	1	1	0	1	1
Cap, veh/h				695	0	563	0	3835	1194	0	3835	1194
Arrive On Green				0.20	0.00	0.20	0.00	0.50	0.00	0.00	1.00	0.00
Sat Flow, veh/h				3476	0	2814	0	5305	1599	0	5305	1599
Grp Volume(v), veh/h				500	0	1262	0	1634	0	0	1727	0
Grp Sat Flow(s),veh/h/ln				1738	0	1407	0	1712	1599	0	1712	1599
Q Serve(g_s), s				20.2	0.0	30.0	0.0	30.3	0.0	0.0	0.0	0.0
Cycle Q Clear(g_c), s				20.2	0.0	30.0	0.0	30.3	0.0	0.0	0.0	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				695	0	563	0	3835	1194	0	3835	1194
V/C Ratio(X)				0.72	0.00	2.24	0.00	0.43	0.00	0.00	0.45	0.00
Avail Cap(c_a), veh/h				695	0	563	0	3835	1194	0	3835	1194
HCM Platoon Ratio				1.00	1.00	1.00	1.00	0.67	0.67	1.00	2.00	2.00
Upstream Filter(l)				1.00	0.00	1.00	0.00	0.75	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				56.1	0.0	60.0	0.0	17.1	0.0	0.0	0.0	0.0
Incr Delay (d2), s/veh				3.1	0.0	564.7	0.0	0.3	0.0	0.0	0.4	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.0	0.0	65.2	0.0	14.5	0.0	0.0	0.1	0.0
LnGrp Delay(d),s/veh				59.2	0.0	624.7	0.0	17.3	0.0	0.0	0.4	0.0
LnGrp LOS				E		F		B			A	
Approach Vol, veh/h					1762			1634			1727	
Approach Delay, s/veh					464.2			17.3			0.4	
Approach LOS					F			B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		116.4		33.6		116.4						
Change Period (Y+Rc), s		4.4		3.6		4.4						
Max Green Setting (Gmax), s		112.0		30.0		71.4						
Max Q Clear Time (g_c+I1), s		2.0		32.0		32.3						
Green Ext Time (p_c), s		3.0		0.0		2.8						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				165.3								
HCM 2010 LOS				F								













**HCM 2010 Signalized Intersection Summary**  
**10: Cherry Avenue & Bayhill Drive**

06/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	63	37	97	172	34	101	17	236	54	20	275	48
Future Volume (veh/h)	63	37	97	172	34	101	17	236	54	20	275	48
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.95	1.00		0.96	1.00		0.95	1.00		0.92
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	68	40	104	185	37	109	18	254	58	22	296	52
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	87	142	369	224	743	606	44	879	196	34	903	156
Arrive On Green	0.05	0.33	0.33	0.13	0.40	0.40	0.02	0.31	0.31	0.02	0.31	0.31
Sat Flow, veh/h	1757	437	1135	1757	1845	1503	1757	2820	629	1757	2947	508
Grp Volume(v), veh/h	68	0	144	185	37	109	18	156	156	22	174	174
Grp Sat Flow(s),veh/h/ln	1757	0	1572	1757	1845	1503	1757	1752	1696	1757	1752	1702
Q Serve(g_s), s	2.9	0.0	5.2	7.8	0.9	3.6	0.8	5.1	5.3	0.9	5.8	6.0
Cycle Q Clear(g_c), s	2.9	0.0	5.2	7.8	0.9	3.6	0.8	5.1	5.3	0.9	5.8	6.0
Prop In Lane	1.00		0.72	1.00		1.00	1.00		0.37	1.00		0.30
Lane Grp Cap(c), veh/h	87	0	511	224	743	606	44	546	529	34	537	521
V/C Ratio(X)	0.78	0.00	0.28	0.83	0.05	0.18	0.41	0.28	0.30	0.64	0.32	0.33
Avail Cap(c_a), veh/h	1013	0	906	783	1064	866	944	1056	1022	898	1056	1026
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	35.9	0.0	19.1	32.5	13.9	14.7	36.7	19.8	19.9	37.1	20.4	20.5
Incr Delay (d2), s/veh	5.6	0.0	0.1	3.0	0.0	0.1	2.3	1.0	1.1	7.2	1.3	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.6	0.0	2.3	4.0	0.5	1.5	0.4	2.6	2.6	0.5	3.0	3.0
LnGrp Delay(d),s/veh	41.5	0.0	19.2	35.4	13.9	14.7	38.9	20.9	21.0	44.3	21.6	21.8
LnGrp LOS	D		B	D	B	B	D	C	C	D	C	C
Approach Vol, veh/h		212			331			330			370	
Approach Delay, s/veh		26.4			26.2			21.9			23.1	
Approach LOS		C			C			C			C	
<b>Timer</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	5.9	27.9	7.8	34.8	5.5	28.3	13.7	28.8				
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0				
Max Green Setting (Gmax), s	41.0	46.0	44.0	44.0	39.0	46.0	34.0	44.0				
Max Q Clear Time (g_c+I1), s	2.8	8.0	4.9	5.6	2.9	7.3	9.8	7.2				
Green Ext Time (p_c), s	0.0	11.2	0.0	0.7	0.0	11.3	0.1	0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			24.2									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary  
1: 280 SB On Ramp/280 SB Off Ramp & San Bruno Avenue W

03/23/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑↑	↑↑					↑	↑↑	↑
Traffic Volume (veh/h)	0	500	150	565	940	0	0	0	0	380	150	280
Future Volume (veh/h)	0	500	150	565	940	0	0	0	0	380	150	280
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	549	0	621	1033	0				464	255	205
Adj No. of Lanes	0	3	1	2	2	0				2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	1153	359	1563	2610	0				624	328	279
Arrive On Green	0.00	0.22	0.00	0.89	1.00	0.00				0.17	0.17	0.17
Sat Flow, veh/h	0	5358	1615	3510	3705	0				3619	1900	1615
Grp Volume(v), veh/h	0	549	0	621	1033	0				464	255	205
Grp Sat Flow(s),veh/h/ln	0	1729	1615	1755	1805	0				1810	1900	1615
Q Serve(g_s), s	0.0	8.3	0.0	2.7	0.0	0.0				11.0	11.5	10.8
Cycle Q Clear(g_c), s	0.0	8.3	0.0	2.7	0.0	0.0				11.0	11.5	10.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1153	359	1563	2610	0				624	328	279
V/C Ratio(X)	0.00	0.48	0.00	0.40	0.40	0.00				0.74	0.78	0.74
Avail Cap(c_a), veh/h	0	1153	359	1563	2610	0				1110	583	495
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(l)	0.00	1.00	0.00	0.20	0.20	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	30.4	0.0	2.9	0.0	0.0				35.3	35.6	35.3
Incr Delay (d2), s/veh	0.0	1.4	0.0	0.0	0.1	0.0				0.7	1.5	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.1	0.0	1.2	0.0	0.0				5.5	6.2	5.0
LnGrp Delay(d),s/veh	0.0	31.9	0.0	2.9	0.1	0.0				36.0	37.1	36.7
LnGrp LOS		C		A	A					D	D	D
Approach Vol, veh/h		549			1654						924	
Approach Delay, s/veh		31.9			1.1						36.5	
Approach LOS		C			A						D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	45.1	25.0		19.9		70.1						
Change Period (Y+Rc), s	5.0	* 5		4.4		5.0						
Max Green Setting (Gmax), s	29.5	* 20		27.6		53.0						
Max Q Clear Time (g_c+I1), s	4.7	10.3		13.5		2.0						
Green Ext Time (p_c), s	12.1	3.1		2.0		15.7						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				17.0								
HCM 2010 LOS				B								
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
1: 280 SB On Ramp/280 SB Off Ramp & San Bruno Avenue W

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03/23/2018

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

















User approved volume balancing among the lanes for turning movement.

User approved ignoring U-Turning movement.

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
2: 280 NB Off Ramp/280 NB On Ramp & San Bruno Avenue W

03/23/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	160	720	0	0	1190	620	310	780	530	0	0	0
Future Volume (veh/h)	160	720	0	0	1190	620	310	780	530	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1881	1881	0	0	1881	1881	1881	1881	1881			
Adj Flow Rate, veh/h	174	783	0	0	1293	0	337	848	576			
Adj No. of Lanes	2	2	0	0	2	1	1	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	1	1	0	0	1	1	1	1	1			
Cap, veh/h	154	1515	0	0	1197	536	833	875	743			
Arrive On Green	0.09	0.85	0.00	0.00	0.11	0.00	0.47	0.47	0.47			
Sat Flow, veh/h	3476	3668	0	0	3668	1599	1792	1881	1598			
Grp Volume(v), veh/h	174	783	0	0	1293	0	337	848	576			
Grp Sat Flow(s),veh/h/ln	1738	1787	0	0	1787	1599	1792	1881	1598			
Q Serve(g_s), s	4.0	5.3	0.0	0.0	30.1	0.0	11.2	39.5	27.1			
Cycle Q Clear(g_c), s	4.0	5.3	0.0	0.0	30.1	0.0	11.2	39.5	27.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	154	1515	0	0	1197	536	833	875	743			
V/C Ratio(X)	1.13	0.52	0.00	0.00	1.08	0.00	0.40	0.97	0.78			
Avail Cap(c_a), veh/h	154	1515	0	0	1197	536	836	878	746			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.90	0.90	0.00	0.00	0.44	0.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	41.0	4.4	0.0	0.0	40.0	0.0	15.9	23.4	20.1			
Incr Delay (d2), s/veh	106.9	1.1	0.0	0.0	43.4	0.0	0.1	22.9	4.6			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.2	2.6	0.0	0.0	22.1	0.0	5.6	25.8	12.8			
LnGrp Delay(d),s/veh	147.9	5.5	0.0	0.0	83.4	0.0	16.0	46.4	24.8			
LnGrp LOS	F	A			F		B	D	C			
Approach Vol, veh/h		957			1293			1761				
Approach Delay, s/veh		31.4			83.4			33.5				
Approach LOS		C			F			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		43.1			8.0	35.1		46.9				
Change Period (Y+Rc), s		5.0			4.0	5.0		5.0				
Max Green Setting (Gmax), s		38.0			4.0	30.0		42.0				
Max Q Clear Time (g_c+I1), s		7.3			6.0	32.1		41.5				
Green Ext Time (p_c), s		23.8			0.0	0.0		0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			49.1									
HCM 2010 LOS			D									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
2: 280 NB Off Ramp/280 NB On Ramp & San Bruno Avenue W

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


















03/23/2018

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User approved volume balancing among the lanes for turning movement.  
User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
3: Cherry Avenue & San Bruno Avenue W

03/23/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	230	910	140	40	1030	250	90	110	30	130	110	500
Future Volume (veh/h)	230	910	140	40	1030	250	90	110	30	130	110	500
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1937
Adj Flow Rate, veh/h	247	978	151	43	1108	269	97	118	32	140	118	538
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	390	1914	295	54	1194	288	123	390	106	228	158	447
Arrive On Green	0.29	0.83	0.83	0.03	0.42	0.42	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	3073	474	1774	2827	681	772	1404	381	600	570	1609
Grp Volume(v), veh/h	247	563	566	43	691	686	97	0	150	258	0	538
Grp Sat Flow(s),veh/h/ln	1774	1770	1778	1774	1770	1739	772	0	1785	1170	0	1609
Q Serve(g_s), s	10.9	8.5	8.5	2.2	33.3	33.9	5.1	0.0	6.0	14.0	0.0	25.0
Cycle Q Clear(g_c), s	10.9	8.5	8.5	2.2	33.3	33.9	25.0	0.0	6.0	19.9	0.0	25.0
Prop In Lane	1.00		0.27	1.00		0.39	1.00		0.21	0.54		1.00
Lane Grp Cap(c), veh/h	390	1102	1107	54	747	734	123	0	496	387	0	447
V/C Ratio(X)	0.63	0.51	0.51	0.79	0.92	0.94	0.79	0.00	0.30	0.67	0.00	1.20
Avail Cap(c_a), veh/h	390	1102	1107	118	747	734	123	0	496	387	0	447
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.76	0.76	0.76	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.7	3.6	3.6	43.3	24.6	24.8	43.9	0.0	25.6	32.6	0.0	32.5
Incr Delay (d2), s/veh	1.9	1.3	1.3	9.3	18.9	20.7	25.7	0.0	0.1	3.5	0.0	111.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.5	4.3	4.3	1.2	20.0	20.4	3.3	0.0	2.9	6.4	0.0	24.9
LnGrp Delay(d),s/veh	30.6	4.9	4.9	52.7	43.5	45.5	69.6	0.0	25.8	36.2	0.0	143.9
LnGrp LOS	C	A	A	D	D	D	E		C	D		F
Approach Vol, veh/h		1376			1420			247			796	
Approach Delay, s/veh		9.5			44.8			43.0			109.0	
Approach LOS		A			D			D			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	24.8	43.0		29.0	6.7	61.1		29.0				
Change Period (Y+Rc), s	5.0	* 5		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	14.0	* 38		25.0	6.0	46.0		25.0				
Max Q Clear Time (g_c+I1), s	12.9	35.9		27.0	4.2	10.5		27.0				
Green Ext Time (p_c), s	0.2	1.8		0.0	0.0	13.6		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			45.3									
HCM 2010 LOS			D									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
3: Cherry Avenue & San Bruno Avenue W

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03/23/2018

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\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real/El Camino Real & San Bruno Avenue W

03/23/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	190	540	350	330	450	230	330	1840	130	330	1620	230
Future Volume (veh/h)	190	540	350	330	450	230	330	1840	130	330	1620	230
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1900	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	202	574	372	351	479	245	351	1957	138	351	1723	245
Adj No. of Lanes	1	2	1	2	2	0	2	3	1	2	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	223	877	375	393	530	269	439	2130	655	414	2075	638
Arrive On Green	0.12	0.25	0.25	0.11	0.23	0.23	0.13	0.41	0.41	0.24	0.81	0.81
Sat Flow, veh/h	1792	3574	1527	3476	2267	1151	3476	5136	1581	3476	5136	1580
Grp Volume(v), veh/h	202	574	372	351	377	347	351	1957	138	351	1723	245
Grp Sat Flow(s),veh/h/ln	1792	1787	1527	1738	1787	1631	1738	1712	1581	1738	1712	1580
Q Serve(g_s), s	16.7	21.7	27.6	14.9	30.7	31.1	14.7	54.1	6.1	14.5	29.4	4.5
Cycle Q Clear(g_c), s	16.7	21.7	27.6	14.9	30.7	31.1	14.7	54.1	6.1	14.5	29.4	4.5
Prop In Lane	1.00		1.00	1.00		0.71	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	223	877	375	393	418	381	439	2130	655	414	2075	638
V/C Ratio(X)	0.90	0.65	0.99	0.89	0.90	0.91	0.80	0.92	0.21	0.85	0.83	0.38
Avail Cap(c_a), veh/h	233	877	375	406	429	391	439	2130	655	414	2075	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.78	0.78	0.78	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	64.8	50.9	32.3	65.6	55.8	55.9	63.7	41.5	14.6	55.8	11.4	4.5
Incr Delay (d2), s/veh	27.6	1.1	39.2	20.3	21.0	23.9	9.3	7.9	0.7	14.5	4.0	1.7
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	10.0	10.8	15.7	8.3	17.6	16.5	7.6	27.1	2.7	7.8	13.9	2.2
LnGrp Delay(d),s/veh	92.4	52.0	71.5	86.0	76.8	79.8	73.0	49.4	15.3	70.3	15.4	6.3
LnGrp LOS	F	D	E	F	E	E	E	D	B	E	B	A
Approach Vol, veh/h		1148			1075			2446			2319	
Approach Delay, s/veh		65.4			80.8			50.9			22.8	
Approach LOS		E			F			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	22.5	65.2	22.2	40.2	21.4	66.3	20.5	41.9				
Change Period (Y+Rc), s	3.5	4.6	3.5	* 5.1	3.5	4.1	3.5	5.1				
Max Green Setting (Gmax), s	18.6	60.6	19.5	* 36	17.5	62.2	17.5	36.6				
Max Q Clear Time (g_c+I1), s	16.7	31.4	18.7	33.1	16.5	56.1	16.9	29.6				
Green Ext Time (p_c), s	0.1	2.8	0.0	0.6	0.0	2.3	0.0	1.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			48.5									
HCM 2010 LOS			D									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
6: El Camino Real/El Camino Real & San Bruno Avenue W

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03/23/2018

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\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
7: El Camino Real /El Camino Real & Bayhill Drive

03/23/2018

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	410	70	65	2220	1970	200		
Future Volume (veh/h)	410	70	65	2220	1970	200		
Number	3	18	1	6	2	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.99		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1881	1900	1881	1881	1881	1900		
Adj Flow Rate, veh/h	501	0	68	2337	2074	211		
Adj No. of Lanes	2	1	1	3	3	0		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	1	0	1	1	1	1		
Cap, veh/h	544	245	289	4082	2863	288		
Arrive On Green	0.15	0.00	0.32	1.00	0.20	0.20		
Sat Flow, veh/h	3583	1615	1792	5305	4909	477		
Grp Volume(v), veh/h	501	0	68	2337	1492	793		
Grp Sat Flow(s),veh/h/ln	1792	1615	1792	1712	1712	1793		
Q Serve(g_s), s	20.7	0.0	4.2	0.0	61.1	62.2		
Cycle Q Clear(g_c), s	20.7	0.0	4.2	0.0	61.1	62.2		
Prop In Lane	1.00	1.00	1.00			0.27		
Lane Grp Cap(c), veh/h	544	245	289	4082	2068	1083		
V/C Ratio(X)	0.92	0.00	0.23	0.57	0.72	0.73		
Avail Cap(c_a), veh/h	870	392	289	4082	2068	1083		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33		
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.81	0.81		
Uniform Delay (d), s/veh	62.7	0.0	44.0	0.0	48.3	48.7		
Incr Delay (d2), s/veh	7.1	0.0	0.2	0.6	1.8	3.6		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	10.8	0.0	2.1	0.2	29.5	32.0		
LnGrp Delay(d),s/veh	69.8	0.0	44.1	0.6	50.1	52.3		
LnGrp LOS	E		D	A	D	D		
Approach Vol, veh/h	501			2405	2285			
Approach Delay, s/veh	69.8			1.8	50.8			
Approach LOS	E			A	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	28.6	95.0				123.6		26.4
Change Period (Y+Rc), s	4.4	* 4.4				4.4		3.6
Max Green Setting (Gmax), s	12.0	* 91				105.6		36.4
Max Q Clear Time (g_c+I1), s	6.2	64.2				2.0		22.7
Green Ext Time (p_c), s	2.8	3.6				4.8		0.1
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			30.0					
HCM 2010 LOS			C					
<b>Notes</b>								

HCM 2010 Signalized Intersection Summary  
7: El Camino Real /El Camino Real & Bayhill Drive

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03/23/2018



















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User approved volume balancing among the lanes for turning movement.

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
8: El Camino Real & 380 EB Off-Ramp/380 EB On-Ramp

03/23/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	0	380	0	0	0	0	2240	510	0	1880	840
Future Volume (veh/h)	400	0	380	0	0	0	0	2240	510	0	1880	840
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881				0	1881	1900	0	1881	1881
Adj Flow Rate, veh/h	545	0	267				0	2358	537	0	1979	0
Adj No. of Lanes	2	0	1				0	3	0	0	3	1
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1				0	1	1	0	1	1
Cap, veh/h	644	0	286				0	3113	654	0	3904	1216
Arrive On Green	0.18	0.00	0.18				0.00	1.00	1.00	0.00	0.76	0.00
Sat Flow, veh/h	3583	0	1588				0	4264	861	0	5305	1599
Grp Volume(v), veh/h	545	0	267				0	1939	956	0	1979	0
Grp Sat Flow(s),veh/h/ln	1792	0	1588				0	1712	1532	0	1712	1599
Q Serve(g_s), s	22.1	0.0	24.9				0.0	0.0	0.0	0.0	22.5	0.0
Cycle Q Clear(g_c), s	22.1	0.0	24.9				0.0	0.0	0.0	0.0	22.5	0.0
Prop In Lane	1.00		1.00				0.00		0.56	0.00		1.00
Lane Grp Cap(c), veh/h	644	0	286				0	2603	1164	0	3904	1216
V/C Ratio(X)	0.85	0.00	0.94				0.00	0.75	0.82	0.00	0.51	0.00
Avail Cap(c_a), veh/h	893	0	396				0	2603	1164	0	3904	1216
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.33	1.33	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00				0.00	0.73	0.73	0.00	0.60	0.00
Uniform Delay (d), s/veh	59.5	0.0	60.7				0.0	0.0	0.0	0.0	7.0	0.0
Incr Delay (d2), s/veh	4.1	0.0	21.1				0.0	1.5	4.9	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.3	0.0	12.6				0.0	0.5	1.6	0.0	10.5	0.0
LnGrp Delay(d),s/veh	63.6	0.0	81.8				0.0	1.5	4.9	0.0	7.3	0.0
LnGrp LOS	E		F					A	A		A	
Approach Vol, veh/h		812						2895			1979	
Approach Delay, s/veh		69.6						2.6			7.3	
Approach LOS		E						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		118.4				118.4		31.6				
Change Period (Y+Rc), s		4.4				4.4		4.6				
Max Green Setting (Gmax), s		103.6				103.6		37.4				
Max Q Clear Time (g_c+I1), s		24.5				2.0		26.9				
Green Ext Time (p_c), s		16.7				16.9		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			13.8									
HCM 2010 LOS			B									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
8: El Camino Real & 380 EB Off-Ramp/380 EB On-Ramp

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
















03/23/2018

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User approved volume balancing among the lanes for turning movement.






















HCM 2010 Signalized Intersection Summary  
9: El Camino Real & 380 WB On-Ramp/380 WB Off-Ramp

03/23/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	630	0	1220	0	1800	830	0	2090	480
Future Volume (veh/h)	0	0	0	630	0	1220	0	1800	830	0	2090	480
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	0	1881	0	1881	1881	0	1881	1881
Adj Flow Rate, veh/h				656	0	1271	0	1875	0	0	2177	0
Adj No. of Lanes				2	0	2	0	3	1	0	3	1
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				1	0	1	0	1	1	0	1	1
Cap, veh/h				1562	0	1265	0	2554	795	0	2554	795
Arrive On Green				0.45	0.00	0.45	0.00	0.33	0.00	0.00	0.50	0.00
Sat Flow, veh/h				3476	0	2814	0	5305	1599	0	5305	1599
Grp Volume(v), veh/h				656	0	1271	0	1875	0	0	2177	0
Grp Sat Flow(s),veh/h/ln				1738	0	1407	0	1712	1599	0	1712	1599
Q Serve(g_s), s				19.2	0.0	67.4	0.0	48.3	0.0	0.0	55.5	0.0
Cycle Q Clear(g_c), s				19.2	0.0	67.4	0.0	48.3	0.0	0.0	55.5	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1562	0	1265	0	2554	795	0	2554	795
V/C Ratio(X)				0.42	0.00	1.01	0.00	0.73	0.00	0.00	0.85	0.00
Avail Cap(c_a), veh/h				1562	0	1265	0	2554	795	0	2554	795
HCM Platoon Ratio				1.00	1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	1.00	0.00	0.49	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				28.0	0.0	41.3	0.0	41.3	0.0	0.0	32.9	0.0
Incr Delay (d2), s/veh				0.1	0.0	26.5	0.0	0.9	0.0	0.0	3.8	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				9.2	0.0	45.3	0.0	23.1	0.0	0.0	27.1	0.0
LnGrp Delay(d),s/veh				28.1	0.0	67.9	0.0	42.2	0.0	0.0	36.7	0.0
LnGrp LOS				C		F		D			D	
Approach Vol, veh/h					1927			1875			2177	
Approach Delay, s/veh					54.3			42.2			36.7	
Approach LOS					D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		79.0		71.0		79.0						
Change Period (Y+Rc), s		4.4		3.6		4.4						
Max Green Setting (Gmax), s		74.6		67.4		67.0						
Max Q Clear Time (g_c+l1), s		57.5		69.4		50.3						
Green Ext Time (p_c), s		4.0		0.0		3.2						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				44.1								
HCM 2010 LOS				D								

HCM 2010 Signalized Intersection Summary  
10: Cherry Avenue & Bayhill Drive













03/23/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	40	100	230	40	110	20	440	60	30	400	50
Future Volume (veh/h)	70	40	100	230	40	110	20	440	60	30	400	50
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	1.00		0.96	1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	75	43	108	247	43	118	22	473	65	32	430	54
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	96	127	319	280	719	585	49	1103	151	42	1101	137
Arrive On Green	0.05	0.29	0.29	0.16	0.39	0.39	0.03	0.36	0.36	0.02	0.35	0.35
Sat Flow, veh/h	1757	446	1119	1757	1845	1500	1757	3080	421	1757	3106	387
Grp Volume(v), veh/h	75	0	151	247	43	118	22	268	270	32	241	243
Grp Sat Flow(s),veh/h/ln	1757	0	1565	1757	1845	1500	1757	1752	1748	1757	1752	1740
Q Serve(g_s), s	4.0	0.0	7.3	13.1	1.4	5.0	1.2	11.0	11.2	1.7	9.8	10.0
Cycle Q Clear(g_c), s	4.0	0.0	7.3	13.1	1.4	5.0	1.2	11.0	11.2	1.7	9.8	10.0
Prop In Lane	1.00		0.72	1.00		1.00	1.00		0.24	1.00		0.22
Lane Grp Cap(c), veh/h	96	0	446	280	719	585	49	628	626	42	621	617
V/C Ratio(X)	0.78	0.00	0.34	0.88	0.06	0.20	0.45	0.43	0.43	0.76	0.39	0.39
Avail Cap(c_a), veh/h	424	0	707	1052	1492	1213	184	1141	1138	240	1196	1188
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	44.4	0.0	26.9	39.2	18.2	19.2	45.6	23.1	23.2	46.2	23.0	23.1
Incr Delay (d2), s/veh	5.1	0.0	0.2	3.6	0.0	0.1	2.4	1.7	1.7	9.9	1.4	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.1	0.0	3.2	6.7	0.7	2.0	0.6	5.6	5.7	1.0	5.0	5.0
LnGrp Delay(d),s/veh	49.5	0.0	27.1	42.8	18.2	19.3	48.0	24.8	24.9	56.1	24.4	24.5
LnGrp LOS	D		C	D	B	B	D	C	C	E	C	C
Approach Vol, veh/h		226			408			560			516	
Approach Delay, s/veh		34.5			33.4			25.8			26.5	
Approach LOS		C			C			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.6	38.3	9.2	41.1	6.3	38.6	19.2	31.1				
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0				
Max Green Setting (Gmax), s	10.0	65.0	23.0	77.0	13.0	62.0	57.0	43.0				
Max Q Clear Time (g_c+I1), s	3.2	12.0	6.0	7.0	3.7	13.2	15.1	9.3				
Green Ext Time (p_c), s	0.0	21.7	0.0	0.8	0.0	21.0	0.1	0.7				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			28.9									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary

1: 280 SB On Ramp/280 SB Off Ramp & San Bruno Avenue W

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑↑	↑↑					↑	↑↑	↑
Traffic Volume (veh/h)	0	508	150	689	965	0	0	0	0	393	150	280
Future Volume (veh/h)	0	508	150	689	965	0	0	0	0	393	150	280
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	558	0	757	1060	0				476	257	205
Adj No. of Lanes	0	3	1	2	2	0				2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	1153	359	1559	2606	0				629	330	281
Arrive On Green	0.00	0.22	0.00	0.89	1.00	0.00				0.17	0.17	0.17
Sat Flow, veh/h	0	5358	1615	3510	3705	0				3619	1900	1615
Grp Volume(v), veh/h	0	558	0	757	1060	0				476	257	205
Grp Sat Flow(s),veh/h/ln	0	1729	1615	1755	1805	0				1810	1900	1615
Q Serve(g_s), s	0.0	8.4	0.0	3.8	0.0	0.0				11.3	11.6	10.8
Cycle Q Clear(g_c), s	0.0	8.4	0.0	3.8	0.0	0.0				11.3	11.6	10.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1153	359	1559	2606	0				629	330	281
V/C Ratio(X)	0.00	0.48	0.00	0.49	0.41	0.00				0.76	0.78	0.73
Avail Cap(c_a), veh/h	0	1153	359	1559	2606	0				1110	583	495
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.09	0.09	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	30.5	0.0	3.0	0.0	0.0				35.4	35.5	35.2
Incr Delay (d2), s/veh	0.0	1.5	0.0	0.0	0.0	0.0				0.7	1.5	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.2	0.0	1.7	0.0	0.0				5.7	6.2	4.9
LnGrp Delay(d),s/veh	0.0	32.0	0.0	3.0	0.0	0.0				36.1	37.0	36.6
LnGrp LOS		C		A	A					D	D	D
Approach Vol, veh/h		558			1817						938	
Approach Delay, s/veh		32.0			1.3						36.5	
Approach LOS		C			A						D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	45.0	25.0		20.0		70.0						
Change Period (Y+Rc), s	5.0	* 5		4.4		5.0						
Max Green Setting (Gmax), s	29.5	* 20		27.6		53.0						
Max Q Clear Time (g_c+I1), s	5.8	10.4		13.6		2.0						
Green Ext Time (p_c), s	12.5	3.1		2.0		17.0						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				16.4								
HCM 2010 LOS				B								
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
1: 280 SB On Ramp/280 SB Off Ramp & San Bruno Avenue W

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03/26/2018

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





















User approved volume balancing among the lanes for turning movement.

User approved ignoring U-Turning movement.

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
2: 280 NB Off Ramp/280 NB On Ramp & San Bruno Avenue W

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 				
Traffic Volume (veh/h)	160	741	0	0	1339	693	310	780	552	0	0	0
Future Volume (veh/h)	160	741	0	0	1339	693	310	780	552	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1881	1881	0	0	1881	1881	1881	1881	1881			
Adj Flow Rate, veh/h	174	805	0	0	1455	0	337	848	600			
Adj No. of Lanes	2	2	0	0	2	1	1	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	1	1	0	0	1	1	1	1	1			
Cap, veh/h	154	1515	0	0	1197	536	833	875	743			
Arrive On Green	0.09	0.85	0.00	0.00	0.11	0.00	0.47	0.47	0.47			
Sat Flow, veh/h	3476	3668	0	0	3668	1599	1792	1881	1598			
Grp Volume(v), veh/h	174	805	0	0	1455	0	337	848	600			
Grp Sat Flow(s),veh/h/ln	1738	1787	0	0	1787	1599	1792	1881	1598			
Q Serve(g_s), s	4.0	5.6	0.0	0.0	30.1	0.0	11.2	39.5	28.9			
Cycle Q Clear(g_c), s	4.0	5.6	0.0	0.0	30.1	0.0	11.2	39.5	28.9			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	154	1515	0	0	1197	536	833	875	743			
V/C Ratio(X)	1.13	0.53	0.00	0.00	1.22	0.00	0.40	0.97	0.81			
Avail Cap(c_a), veh/h	154	1515	0	0	1197	536	836	878	746			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.90	0.90	0.00	0.00	0.15	0.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	41.0	4.4	0.0	0.0	40.0	0.0	15.9	23.4	20.6			
Incr Delay (d2), s/veh	106.7	1.2	0.0	0.0	98.1	0.0	0.1	22.9	6.1			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.2	2.7	0.0	0.0	31.2	0.0	5.6	25.8	13.9			
LnGrp Delay(d),s/veh	147.7	5.6	0.0	0.0	138.2	0.0	16.0	46.4	26.7			
LnGrp LOS	F	A			F		B	D	C			
Approach Vol, veh/h		979			1455			1785				
Approach Delay, s/veh		30.9			138.2			34.0				
Approach LOS		C			F			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		43.1			8.0	35.1		46.9				
Change Period (Y+Rc), s		5.0			4.0	5.0		5.0				
Max Green Setting (Gmax), s		38.0			4.0	30.0		42.0				
Max Q Clear Time (g_c+I1), s		7.6			6.0	32.1		41.5				
Green Ext Time (p_c), s		25.2			0.0	0.0		0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay					69.2							
HCM 2010 LOS					E							
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
2: 280 NB Off Ramp/280 NB On Ramp & San Bruno Avenue W

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


















03/26/2018

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User approved volume balancing among the lanes for turning movement.  
User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
3: Cherry Avenue & San Bruno Avenue W

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	244	939	140	40	1170	264	90	110	30	180	113	583
Future Volume (veh/h)	244	939	140	40	1170	264	90	110	30	180	113	583
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1937
Adj Flow Rate, veh/h	262	1010	151	43	1258	284	97	118	32	194	122	627
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	458	2041	305	54	1214	270	80	390	106	248	115	447
Arrive On Green	0.34	0.88	0.88	0.03	0.42	0.42	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	3089	461	1774	2875	641	709	1404	381	659	415	1609
Grp Volume(v), veh/h	262	578	583	43	768	774	97	0	150	316	0	627
Grp Sat Flow(s),veh/h/ln	1774	1770	1780	1774	1770	1746	709	0	1785	1074	0	1609
Q Serve(g_s), s	10.9	6.3	6.3	2.2	38.0	38.0	0.0	0.0	6.0	19.0	0.0	25.0
Cycle Q Clear(g_c), s	10.9	6.3	6.3	2.2	38.0	38.0	25.0	0.0	6.0	25.0	0.0	25.0
Prop In Lane	1.00		0.26	1.00		0.37	1.00		0.21	0.61		1.00
Lane Grp Cap(c), veh/h	458	1170	1177	54	747	737	80	0	496	363	0	447
V/C Ratio(X)	0.57	0.49	0.50	0.79	1.03	1.05	1.21	0.00	0.30	0.87	0.00	1.40
Avail Cap(c_a), veh/h	458	1170	1177	118	747	737	80	0	496	363	0	447
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.74	0.74	0.74	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	25.5	2.2	2.2	43.3	26.0	26.0	45.0	0.0	25.6	36.0	0.0	32.5
Incr Delay (d2), s/veh	0.8	1.1	1.1	9.3	40.2	47.1	168.5	0.0	0.1	19.1	0.0	194.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.4	3.3	3.3	1.2	26.8	27.9	5.7	0.0	2.9	9.7	0.0	35.2
LnGrp Delay(d),s/veh	26.3	3.3	3.3	52.7	66.2	73.1	213.5	0.0	25.8	55.2	0.0	227.0
LnGrp LOS	C	A	A	D	F	F	F		C	E		F
Approach Vol, veh/h		1423			1585			247			943	
Approach Delay, s/veh		7.6			69.2			99.5			169.4	
Approach LOS		A			E			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	28.2	43.0		29.0	6.7	64.5		29.0				
Change Period (Y+Rc), s	5.0	* 5		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	14.0	* 38		25.0	6.0	46.0		25.0				
Max Q Clear Time (g_c+I1), s	12.9	40.0		27.0	4.2	8.3		27.0				
Green Ext Time (p_c), s	0.2	0.0		0.0	0.0	14.5		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			72.6									
HCM 2010 LOS			E									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
3: Cherry Avenue & San Bruno Avenue W

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03/26/2018

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\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real/El Camino Real & San Bruno Avenue W

03/26/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	253	594	414	330	460	230	344	1848	130	330	1633	234
Future Volume (veh/h)	253	594	414	330	460	230	344	1848	130	330	1633	234
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1900	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	269	632	440	351	489	245	366	1966	138	351	1737	249
Adj No. of Lanes	1	2	1	2	2	0	2	3	1	2	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	233	895	383	393	533	265	422	2130	655	396	2075	638
Arrive On Green	0.13	0.25	0.25	0.11	0.23	0.23	0.12	0.41	0.41	0.23	0.81	0.81
Sat Flow, veh/h	1792	3574	1528	3476	2284	1137	3476	5136	1581	3476	5136	1580
Grp Volume(v), veh/h	269	632	440	351	382	352	366	1966	138	351	1737	249
Grp Sat Flow(s),veh/h/ln	1792	1787	1528	1738	1787	1634	1738	1712	1581	1738	1712	1580
Q Serve(g_s), s	19.5	24.2	28.6	14.9	31.3	31.6	15.5	54.5	6.1	14.7	30.1	4.6
Cycle Q Clear(g_c), s	19.5	24.2	28.6	14.9	31.3	31.6	15.5	54.5	6.1	14.7	30.1	4.6
Prop In Lane	1.00		1.00	1.00		0.70	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	233	895	383	393	417	381	422	2130	655	396	2075	638
V/C Ratio(X)	1.15	0.71	1.15	0.89	0.92	0.92	0.87	0.92	0.21	0.89	0.84	0.39
Avail Cap(c_a), veh/h	233	895	383	406	429	392	431	2130	655	406	2075	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.69	0.69	0.69	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.3	51.2	32.6	65.6	56.1	56.2	64.7	41.6	14.6	57.0	11.5	4.4
Incr Delay (d2), s/veh	98.0	1.5	86.9	20.3	23.3	26.2	16.0	8.2	0.7	19.3	4.2	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	16.0	12.1	21.3	8.3	18.1	17.1	8.4	27.3	2.7	8.1	14.3	2.2
LnGrp Delay(d),s/veh	163.2	52.7	119.5	86.0	79.3	82.4	80.7	49.8	15.3	76.2	15.7	6.2
LnGrp LOS	F	D	F	F	E	F	F	D	B	E	B	A
Approach Vol, veh/h		1341			1085			2470			2337	
Approach Delay, s/veh		96.8			82.5			52.5			23.8	
Approach LOS		F			F			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.7	65.2	23.0	40.1	20.6	66.3	20.5	42.6				
Change Period (Y+Rc), s	3.5	4.6	3.5	* 5.1	3.5	4.1	3.5	5.1				
Max Green Setting (Gmax), s	18.6	60.6	19.5	* 36	17.5	62.2	17.5	36.6				
Max Q Clear Time (g_c+I1), s	17.5	32.1	21.5	33.6	16.7	56.5	16.9	30.6				
Green Ext Time (p_c), s	0.0	2.9	0.0	0.3	0.0	2.3	0.0	1.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			55.9									
HCM 2010 LOS			E									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
6: El Camino Real/El Camino Real & San Bruno Avenue W

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







03/26/2018

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\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
7: El Camino Real /El Camino Real & Bayhill Drive

03/26/2018

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	 			  	  			
Traffic Volume (veh/h)	617	83	73	2283	1974	259		
Future Volume (veh/h)	617	83	73	2283	1974	259		
Number	3	18	1	6	2	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.99		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1881	1900	1881	1881	1881	1900		
Adj Flow Rate, veh/h	730	0	77	2403	2078	273		
Adj No. of Lanes	2	1	1	3	3	0		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	1	0	1	1	1	1		
Cap, veh/h	770	347	176	3758	2779	359		
Arrive On Green	0.21	0.00	0.20	1.00	0.20	0.20		
Sat Flow, veh/h	3583	1615	1792	5305	4770	595		
Grp Volume(v), veh/h	730	0	77	2403	1538	813		
Grp Sat Flow(s),veh/h/ln	1792	1615	1792	1712	1712	1771		
Q Serve(g_s), s	30.1	0.0	5.7	0.0	63.3	65.0		
Cycle Q Clear(g_c), s	30.1	0.0	5.7	0.0	63.3	65.0		
Prop In Lane	1.00	1.00	1.00			0.34		
Lane Grp Cap(c), veh/h	770	347	176	3758	2068	1070		
V/C Ratio(X)	0.95	0.00	0.44	0.64	0.74	0.76		
Avail Cap(c_a), veh/h	870	392	176	3758	2068	1070		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33		
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.80	0.80		
Uniform Delay (d), s/veh	58.1	0.0	56.6	0.0	49.1	49.8		
Incr Delay (d2), s/veh	17.3	0.0	0.6	0.8	2.0	4.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	16.8	0.0	2.8	0.3	30.6	33.2		
LnGrp Delay(d),s/veh	75.4	0.0	57.2	0.8	51.1	53.9		
LnGrp LOS	E		E	A	D	D		
Approach Vol, veh/h	730			2480	2351			
Approach Delay, s/veh	75.4			2.6	52.1			
Approach LOS	E			A	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	19.2	95.0				114.2		35.8
Change Period (Y+Rc), s	4.4	* 4.4				4.4		3.6
Max Green Setting (Gmax), s	12.0	* 91				105.6		36.4
Max Q Clear Time (g_c+I1), s	7.7	67.0				2.0		32.1
Green Ext Time (p_c), s	2.3	3.8				5.0		0.1
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			33.1					
HCM 2010 LOS			C					
<b>Notes</b>								

HCM 2010 Signalized Intersection Summary  
7: El Camino Real /El Camino Real & Bayhill Drive

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03/26/2018



















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User approved volume balancing among the lanes for turning movement.

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
8: El Camino Real & 380 EB Off-Ramp/380 EB On-Ramp

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	0	392	0	0	0	0	2329	691	0	1931	880
Future Volume (veh/h)	400	0	392	0	0	0	0	2329	691	0	1931	880
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881				0	1881	1900	0	1881	1881
Adj Flow Rate, veh/h	549	0	275				0	2452	727	0	2033	0
Adj No. of Lanes	2	0	1				0	3	0	0	3	1
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1				0	1	1	0	1	1
Cap, veh/h	662	0	293				0	2936	782	0	3879	1208
Arrive On Green	0.18	0.00	0.18				0.00	1.00	1.00	0.00	0.76	0.00
Sat Flow, veh/h	3583	0	1589				0	4056	1036	0	5305	1599
Grp Volume(v), veh/h	549	0	275				0	2127	1052	0	2033	0
Grp Sat Flow(s),veh/h/ln	1792	0	1589				0	1712	1499	0	1712	1599
Q Serve(g_s), s	22.1	0.0	25.6				0.0	0.0	0.0	0.0	24.1	0.0
Cycle Q Clear(g_c), s	22.1	0.0	25.6				0.0	0.0	0.0	0.0	24.1	0.0
Prop In Lane	1.00		1.00				0.00		0.69	0.00		1.00
Lane Grp Cap(c), veh/h	662	0	293				0	2586	1132	0	3879	1208
V/C Ratio(X)	0.83	0.00	0.94				0.00	0.82	0.93	0.00	0.52	0.00
Avail Cap(c_a), veh/h	893	0	396				0	2586	1132	0	3879	1208
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.33	1.33	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00				0.00	0.62	0.62	0.00	0.57	0.00
Uniform Delay (d), s/veh	58.9	0.0	60.3				0.0	0.0	0.0	0.0	7.4	0.0
Incr Delay (d2), s/veh	3.7	0.0	22.3				0.0	2.0	9.9	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.3	0.0	13.1				0.0	0.7	3.1	0.0	11.4	0.0
LnGrp Delay(d),s/veh	62.5	0.0	82.6				0.0	2.0	9.9	0.0	7.7	0.0
LnGrp LOS	E		F					A	A		A	
Approach Vol, veh/h		824						3179			2033	
Approach Delay, s/veh		69.2						4.6			7.7	
Approach LOS		E						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		117.7				117.7		32.3				
Change Period (Y+Rc), s		4.4				4.4		4.6				
Max Green Setting (Gmax), s		103.6				103.6		37.4				
Max Q Clear Time (g_c+I1), s		26.1				2.0		27.6				
Green Ext Time (p_c), s		21.0				21.4		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			14.5									
HCM 2010 LOS			B									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
8: El Camino Real & 380 EB Off-Ramp/380 EB On-Ramp

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
















03/26/2018

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User approved volume balancing among the lanes for turning movement.






















HCM 2010 Signalized Intersection Summary  
9: El Camino Real & 380 WB On-Ramp/380 WB Off-Ramp

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	664	0	1223	0	1833	886	0	2146	480
Future Volume (veh/h)	0	0	0	664	0	1223	0	1833	886	0	2146	480
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	0	1881	0	1881	1881	0	1881	1881
Adj Flow Rate, veh/h				692	0	1274	0	1909	0	0	2235	0
Adj No. of Lanes				2	0	2	0	3	1	0	3	1
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				1	0	1	0	1	1	0	1	1
Cap, veh/h				1562	0	1265	0	2554	795	0	2554	795
Arrive On Green				0.45	0.00	0.45	0.00	0.33	0.00	0.00	0.50	0.00
Sat Flow, veh/h				3476	0	2814	0	5305	1599	0	5305	1599
Grp Volume(v), veh/h				692	0	1274	0	1909	0	0	2235	0
Grp Sat Flow(s),veh/h/ln				1738	0	1407	0	1712	1599	0	1712	1599
Q Serve(g_s), s				20.5	0.0	67.4	0.0	49.5	0.0	0.0	58.1	0.0
Cycle Q Clear(g_c), s				20.5	0.0	67.4	0.0	49.5	0.0	0.0	58.1	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1562	0	1265	0	2554	795	0	2554	795
V/C Ratio(X)				0.44	0.00	1.01	0.00	0.75	0.00	0.00	0.88	0.00
Avail Cap(c_a), veh/h				1562	0	1265	0	2554	795	0	2554	795
HCM Platoon Ratio				1.00	1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	1.00	0.00	0.34	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				28.4	0.0	41.3	0.0	41.6	0.0	0.0	33.6	0.0
Incr Delay (d2), s/veh				0.1	0.0	27.1	0.0	0.7	0.0	0.0	4.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				9.8	0.0	45.4	0.0	23.6	0.0	0.0	28.4	0.0
LnGrp Delay(d),s/veh				28.5	0.0	68.4	0.0	42.4	0.0	0.0	38.1	0.0
LnGrp LOS				C		F		D			D	
Approach Vol, veh/h					1966			1909			2235	
Approach Delay, s/veh					54.4			42.4			38.1	
Approach LOS					D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		79.0		71.0		79.0						
Change Period (Y+Rc), s		4.4		3.6		4.4						
Max Green Setting (Gmax), s		74.6		67.4		67.0						
Max Q Clear Time (g_c+I1), s		60.1		69.4		51.5						
Green Ext Time (p_c), s		4.0		0.0		3.2						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				44.7								
HCM 2010 LOS				D								












HCM 2010 Signalized Intersection Summary  
10: Cherry Avenue & Bayhill Drive

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	116	40	189	276	40	184	20	451	77	51	401	50
Future Volume (veh/h)	116	40	189	276	40	184	20	451	77	51	401	50
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.96	1.00		0.96	1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	125	43	203	297	43	198	22	485	83	55	431	54
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	153	73	346	326	689	559	47	1028	175	70	1115	139
Arrive On Green	0.09	0.27	0.27	0.19	0.37	0.37	0.03	0.35	0.35	0.04	0.36	0.36
Sat Flow, veh/h	1757	267	1259	1757	1845	1497	1757	2974	506	1757	3107	386
Grp Volume(v), veh/h	125	0	246	297	43	198	22	284	284	55	242	243
Grp Sat Flow(s),veh/h/ln	1757	0	1526	1757	1845	1497	1757	1752	1728	1757	1752	1741
Q Serve(g_s), s	7.5	0.0	14.9	17.8	1.6	10.2	1.3	13.6	13.8	3.3	11.0	11.2
Cycle Q Clear(g_c), s	7.5	0.0	14.9	17.8	1.6	10.2	1.3	13.6	13.8	3.3	11.0	11.2
Prop In Lane	1.00		0.83	1.00		1.00	1.00		0.29	1.00		0.22
Lane Grp Cap(c), veh/h	153	0	419	326	689	559	47	606	597	70	629	625
V/C Ratio(X)	0.82	0.00	0.59	0.91	0.06	0.35	0.47	0.47	0.47	0.78	0.38	0.39
Avail Cap(c_a), veh/h	377	0	612	934	1325	1075	164	1013	999	213	1062	1056
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	48.1	0.0	33.6	42.8	21.5	24.2	51.4	27.4	27.5	51.0	25.6	25.6
Incr Delay (d2), s/veh	4.1	0.0	0.5	4.1	0.0	0.1	2.6	2.1	2.1	6.8	1.4	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	3.8	0.0	6.3	9.0	0.8	4.3	0.7	6.9	6.9	1.8	5.5	5.6
LnGrp Delay(d),s/veh	52.2	0.0	34.1	46.9	21.6	24.4	54.0	29.5	29.6	57.8	27.0	27.1
LnGrp LOS	D		C	D	C	C	D	C	C	E	C	C
Approach Vol, veh/h		371			538			590			540	
Approach Delay, s/veh		40.2			36.6			30.4			30.1	
Approach LOS		D			D			C			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	6.9	43.0	13.3	44.0	8.3	41.6	23.9	33.5				
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0				
Max Green Setting (Gmax), s	10.0	65.0	23.0	77.0	13.0	62.0	57.0	43.0				
Max Q Clear Time (g_c+I1), s	3.3	13.2	9.5	12.2	5.3	15.8	19.8	16.9				
Green Ext Time (p_c), s	0.0	22.4	0.0	1.2	0.0	21.3	0.1	1.2				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			33.8									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary  
1: 280 SB On Ramp/280 SB Off Ramp & San Bruno Avenue W

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑↑	↑↑					↑	↑↑	↑
Traffic Volume (veh/h)	0	520	150	838	993	0	0	0	0	407	150	280
Future Volume (veh/h)	0	520	150	838	993	0	0	0	0	407	150	280
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	571	0	921	1091	0				489	260	205
Adj No. of Lanes	0	3	1	2	2	0				2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	1153	359	1552	2599	0				635	334	284
Arrive On Green	0.00	0.22	0.00	0.88	1.00	0.00				0.18	0.18	0.18
Sat Flow, veh/h	0	5358	1615	3510	3705	0				3619	1900	1615
Grp Volume(v), veh/h	0	571	0	921	1091	0				489	260	205
Grp Sat Flow(s),veh/h/ln	0	1729	1615	1755	1805	0				1810	1900	1615
Q Serve(g_s), s	0.0	8.7	0.0	5.7	0.0	0.0				11.6	11.8	10.8
Cycle Q Clear(g_c), s	0.0	8.7	0.0	5.7	0.0	0.0				11.6	11.8	10.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1153	359	1552	2599	0				635	334	284
V/C Ratio(X)	0.00	0.50	0.00	0.59	0.42	0.00				0.77	0.78	0.72
Avail Cap(c_a), veh/h	0	1153	359	1552	2599	0				1110	583	495
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.09	0.09	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	30.6	0.0	3.2	0.0	0.0				35.4	35.4	35.0
Incr Delay (d2), s/veh	0.0	1.5	0.0	0.0	0.0	0.0				0.8	1.5	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.3	0.0	2.3	0.0	0.0				5.8	6.3	4.9
LnGrp Delay(d),s/veh	0.0	32.1	0.0	3.3	0.0	0.0				36.1	36.9	36.3
LnGrp LOS		C		A	A					D	D	D
Approach Vol, veh/h		571			2012						954	
Approach Delay, s/veh		32.1			1.5						36.4	
Approach LOS		C			A						D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	44.8	25.0		20.2		69.8						
Change Period (Y+Rc), s	5.0	* 5		4.4		5.0						
Max Green Setting (Gmax), s	29.5	* 20		27.6		53.0						
Max Q Clear Time (g_c+I1), s	7.7	10.7		13.8		2.0						
Green Ext Time (p_c), s	12.7	3.2		2.0		18.7						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				15.9								
HCM 2010 LOS				B								
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
1: 280 SB On Ramp/280 SB Off Ramp & San Bruno Avenue W

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03/26/2018

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





















User approved volume balancing among the lanes for turning movement.

User approved ignoring U-Turning movement.

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
2: 280 NB Off Ramp/280 NB On Ramp & San Bruno Avenue W

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 				
Traffic Volume (veh/h)	160	766	0	0	1516	779	310	780	581	0	0	0
Future Volume (veh/h)	160	766	0	0	1516	779	310	780	581	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1881	1881	0	0	1881	1881	1881	1881	1881			
Adj Flow Rate, veh/h	174	833	0	0	1648	0	337	848	632			
Adj No. of Lanes	2	2	0	0	2	1	1	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	1	1	0	0	1	1	1	1	1			
Cap, veh/h	154	1515	0	0	1197	536	833	875	743			
Arrive On Green	0.09	0.85	0.00	0.00	0.11	0.00	0.47	0.47	0.47			
Sat Flow, veh/h	3476	3668	0	0	3668	1599	1792	1881	1598			
Grp Volume(v), veh/h	174	833	0	0	1648	0	337	848	632			
Grp Sat Flow(s),veh/h/ln	1738	1787	0	0	1787	1599	1792	1881	1598			
Q Serve(g_s), s	4.0	6.0	0.0	0.0	30.1	0.0	11.2	39.5	31.5			
Cycle Q Clear(g_c), s	4.0	6.0	0.0	0.0	30.1	0.0	11.2	39.5	31.5			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	154	1515	0	0	1197	536	833	875	743			
V/C Ratio(X)	1.13	0.55	0.00	0.00	1.38	0.00	0.40	0.97	0.85			
Avail Cap(c_a), veh/h	154	1515	0	0	1197	536	836	878	746			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(l)	0.90	0.90	0.00	0.00	0.09	0.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	41.0	4.4	0.0	0.0	40.0	0.0	15.9	23.4	21.3			
Incr Delay (d2), s/veh	106.5	1.3	0.0	0.0	170.0	0.0	0.1	22.9	8.8			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.2	3.0	0.0	0.0	43.2	0.0	5.6	25.8	15.7			
LnGrp Delay(d),s/veh	147.5	5.7	0.0	0.0	210.0	0.0	16.0	46.3	30.1			
LnGrp LOS	F	A			F		B	D	C			
Approach Vol, veh/h		1007			1648			1817				
Approach Delay, s/veh		30.2			210.0			35.0				
Approach LOS		C			F			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		43.1			8.0	35.1		46.9				
Change Period (Y+Rc), s		5.0			4.0	5.0		5.0				
Max Green Setting (Gmax), s		38.0			4.0	30.0		42.0				
Max Q Clear Time (g_c+I1), s		8.0			6.0	32.1		41.5				
Green Ext Time (p_c), s		26.4			0.0	0.0		0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				98.4								
HCM 2010 LOS				F								
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
2: 280 NB Off Ramp/280 NB On Ramp & San Bruno Avenue W

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


















03/26/2018

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User approved volume balancing among the lanes for turning movement.  
User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
3: Cherry Avenue & San Bruno Avenue W

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	261	977	140	40	1321	281	90	110	30	263	117	695
Future Volume (veh/h)	261	977	140	40	1321	281	90	110	30	263	117	695
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1937
Adj Flow Rate, veh/h	281	1051	151	43	1420	302	97	118	32	283	126	747
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	533	2185	313	54	1231	256	80	390	106	268	89	447
Arrive On Green	0.40	0.94	0.94	0.03	0.42	0.42	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	3107	446	1774	2915	607	631	1404	381	721	321	1609
Grp Volume(v), veh/h	281	598	604	43	850	872	97	0	150	409	0	747
Grp Sat Flow(s),veh/h/ln	1774	1770	1783	1774	1770	1752	631	0	1785	1042	0	1609
Q Serve(g_s), s	10.8	3.6	3.6	2.2	38.0	38.0	0.0	0.0	6.0	19.0	0.0	25.0
Cycle Q Clear(g_c), s	10.8	3.6	3.6	2.2	38.0	38.0	25.0	0.0	6.0	25.0	0.0	25.0
Prop In Lane	1.00		0.25	1.00		0.35	1.00		0.21	0.69		1.00
Lane Grp Cap(c), veh/h	533	1244	1254	54	747	740	80	0	496	357	0	447
V/C Ratio(X)	0.53	0.48	0.48	0.79	1.14	1.18	1.21	0.00	0.30	1.15	0.00	1.67
Avail Cap(c_a), veh/h	533	1244	1254	118	747	740	80	0	496	357	0	447
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.70	0.70	0.70	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	22.2	1.0	1.0	43.3	26.0	26.0	45.0	0.0	25.6	37.3	0.0	32.5
Incr Delay (d2), s/veh	0.3	0.9	0.9	9.3	77.7	94.2	168.5	0.0	0.1	93.2	0.0	312.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	1.8	1.8	1.2	34.6	37.6	5.7	0.0	2.9	18.1	0.0	49.8
LnGrp Delay(d),s/veh	22.5	1.9	1.9	52.7	103.7	120.2	213.5	0.0	25.8	130.5	0.0	344.5
LnGrp LOS	C	A	A	D	F	F	F		C	F		F
Approach Vol, veh/h		1483			1765			247			1156	
Approach Delay, s/veh		5.8			110.6			99.5			268.8	
Approach LOS		A			F			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	32.0	43.0		29.0	6.7	68.3		29.0				
Change Period (Y+Rc), s	5.0	* 5		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	14.0	* 38		25.0	6.0	46.0		25.0				
Max Q Clear Time (g_c+I1), s	12.8	40.0		27.0	4.2	5.6		27.0				
Green Ext Time (p_c), s	0.2	0.0		0.0	0.0	15.7		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay	115.9											
HCM 2010 LOS	F											
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
3: Cherry Avenue & San Bruno Avenue W

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03/26/2018

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\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real/El Camino Real & San Bruno Avenue W

03/26/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	333	661	486	330	474	230	363	1858	130	330	1645	240
Future Volume (veh/h)	333	661	486	330	474	230	363	1858	130	330	1645	240
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1900	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	354	703	517	351	504	245	386	1977	138	351	1750	255
Adj No. of Lanes	1	2	1	2	2	0	2	3	1	2	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	233	900	385	393	543	262	519	2130	655	493	2075	638
Arrive On Green	0.13	0.25	0.25	0.11	0.23	0.23	0.15	0.41	0.41	0.28	0.81	0.81
Sat Flow, veh/h	1792	3574	1529	3476	2309	1117	3476	5136	1581	3476	5136	1580
Grp Volume(v), veh/h	354	703	517	351	389	360	386	1977	138	351	1750	255
Grp Sat Flow(s),veh/h/ln	1792	1787	1529	1738	1787	1639	1738	1712	1581	1738	1712	1580
Q Serve(g_s), s	19.5	27.5	28.8	14.9	32.0	32.3	15.9	55.0	6.5	13.6	30.8	5.1
Cycle Q Clear(g_c), s	19.5	27.5	28.8	14.9	32.0	32.3	15.9	55.0	6.5	13.6	30.8	5.1
Prop In Lane	1.00		1.00	1.00		0.68	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	233	900	385	393	420	385	519	2130	655	493	2075	638
V/C Ratio(X)	1.52	0.78	1.34	0.89	0.93	0.93	0.74	0.93	0.21	0.71	0.84	0.40
Avail Cap(c_a), veh/h	233	900	385	406	429	393	519	2130	655	493	2075	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.53	0.53	0.53	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.3	52.3	32.7	65.6	56.1	56.2	61.1	41.8	16.7	51.0	11.5	5.1
Incr Delay (d2), s/veh	245.4	2.2	163.4	20.3	25.6	28.4	5.1	8.6	0.7	4.1	4.4	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	25.5	13.8	29.6	8.3	18.8	17.6	8.0	27.7	3.0	6.8	14.8	2.4
LnGrp Delay(d),s/veh	310.6	54.5	196.0	86.0	81.7	84.7	66.2	50.4	17.5	55.1	15.9	6.9
LnGrp LOS	F	D	F	F	F	F	E	D	B	E	B	A
Approach Vol, veh/h		1574			1100			2501			2356	
Approach Delay, s/veh		158.6			84.0			51.0			20.8	
Approach LOS		F			F			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	25.9	65.2	23.0	40.3	24.8	66.3	20.5	42.9				
Change Period (Y+Rc), s	3.5	4.6	3.5	* 5.1	3.5	4.1	3.5	5.1				
Max Green Setting (Gmax), s	18.6	60.6	19.5	* 36	17.5	62.2	17.5	36.6				
Max Q Clear Time (g_c+I1), s	17.9	32.8	21.5	34.3	15.6	57.0	16.9	30.8				
Green Ext Time (p_c), s	0.0	2.9	0.0	0.2	0.1	2.2	0.0	1.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			68.9									
HCM 2010 LOS			E									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
6: El Camino Real/El Camino Real & San Bruno Avenue W

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







03/26/2018

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\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
7: El Camino Real /El Camino Real & Bayhill Drive

03/26/2018

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	 			  	  			
Traffic Volume (veh/h)	850	95	83	2363	1980	341		
Future Volume (veh/h)	850	95	83	2363	1980	341		
Number	3	18	1	6	2	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.99		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1881	1900	1881	1881	1881	1900		
Adj Flow Rate, veh/h	988	0	87	2487	2084	359		
Adj No. of Lanes	2	1	1	3	3	0		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	1	0	1	1	1	1		
Cap, veh/h	870	392	127	3615	2673	449		
Arrive On Green	0.24	0.00	0.14	1.00	0.20	0.20		
Sat Flow, veh/h	3583	1615	1792	5305	4594	743		
Grp Volume(v), veh/h	988	0	87	2487	1600	843		
Grp Sat Flow(s),veh/h/ln	1792	1615	1792	1712	1712	1744		
Q Serve(g_s), s	36.4	0.0	6.9	0.0	66.4	69.1		
Cycle Q Clear(g_c), s	36.4	0.0	6.9	0.0	66.4	69.1		
Prop In Lane	1.00	1.00	1.00			0.43		
Lane Grp Cap(c), veh/h	870	392	127	3615	2068	1053		
V/C Ratio(X)	1.14	0.00	0.69	0.69	0.77	0.80		
Avail Cap(c_a), veh/h	870	392	143	3615	2068	1053		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33		
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.78	0.78		
Uniform Delay (d), s/veh	56.8	0.0	62.8	0.0	50.3	51.4		
Incr Delay (d2), s/veh	75.4	0.0	8.2	1.1	2.3	5.1		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	27.1	0.0	3.7	0.4	32.2	34.9		
LnGrp Delay(d),s/veh	132.2	0.0	71.0	1.1	52.6	56.5		
LnGrp LOS	F		E	A	D	E		
Approach Vol, veh/h	988			2574	2443			
Approach Delay, s/veh	132.2			3.5	54.0			
Approach LOS	F			A	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	15.0	95.0				110.0		40.0
Change Period (Y+Rc), s	4.4	* 4.4				4.4		3.6
Max Green Setting (Gmax), s	12.0	* 91				105.6		36.4
Max Q Clear Time (g_c+I1), s	8.9	71.1				2.0		38.4
Green Ext Time (p_c), s	1.9	4.0				5.4		0.0
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			45.2					
HCM 2010 LOS			D					
<b>Notes</b>								

HCM 2010 Signalized Intersection Summary  
7: El Camino Real /El Camino Real & Bayhill Drive

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
















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User approved volume balancing among the lanes for turning movement.

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
8: El Camino Real & 380 EB Off-Ramp/380 EB On-Ramp

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	0	407	0	0	0	0	2426	907	0	2003	930
Future Volume (veh/h)	400	0	407	0	0	0	0	2426	907	0	2003	930
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881				0	1881	1900	0	1881	1881
Adj Flow Rate, veh/h	555	0	284				0	2554	955	0	2108	0
Adj No. of Lanes	2	0	1				0	3	0	0	3	1
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1				0	1	1	0	1	1
Cap, veh/h	682	0	302				0	2762	905	0	3850	1199
Arrive On Green	0.19	0.00	0.19				0.00	1.00	1.00	0.00	0.75	0.00
Sat Flow, veh/h	3583	0	1589				0	3853	1206	0	5305	1599
Grp Volume(v), veh/h	555	0	284				0	2348	1161	0	2108	0
Grp Sat Flow(s),veh/h/ln	1792	0	1589				0	1712	1467	0	1712	1599
Q Serve(g_s), s	22.3	0.0	26.4				0.0	3.4	112.5	0.0	26.1	0.0
Cycle Q Clear(g_c), s	22.3	0.0	26.4				0.0	3.4	112.5	0.0	26.1	0.0
Prop In Lane	1.00		1.00				0.00		0.82	0.00		1.00
Lane Grp Cap(c), veh/h	682	0	302				0	2567	1100	0	3850	1199
V/C Ratio(X)	0.81	0.00	0.94				0.00	0.91	1.06	0.00	0.55	0.00
Avail Cap(c_a), veh/h	893	0	396				0	2567	1100	0	3850	1199
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.45	0.45	0.00	0.52	0.00
Uniform Delay (d), s/veh	58.2	0.0	59.9				0.0	0.1	0.2	0.0	8.0	0.0
Incr Delay (d2), s/veh	3.4	0.0	23.7				0.0	3.1	35.0	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.3	0.0	13.6				0.0	1.2	10.8	0.0	12.4	0.0
LnGrp Delay(d),s/veh	61.6	0.0	83.5				0.0	3.2	35.2	0.0	8.3	0.0
LnGrp LOS	E		F					A	F		A	
Approach Vol, veh/h		839						3509			2108	
Approach Delay, s/veh		69.0						13.8			8.3	
Approach LOS		E						B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		116.9				116.9		33.1				
Change Period (Y+Rc), s		4.4				4.4		4.6				
Max Green Setting (Gmax), s		103.6				103.6		37.4				
Max Q Clear Time (g_c+I1), s		28.1				114.5		28.4				
Green Ext Time (p_c), s		27.2				0.0		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			19.2									
HCM 2010 LOS			B									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
8: El Camino Real & 380 EB Off-Ramp/380 EB On-Ramp

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
















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User approved volume balancing among the lanes for turning movement.























HCM 2010 Signalized Intersection Summary  
9: El Camino Real & 380 WB On-Ramp/380 WB Off-Ramp

03/26/2018

													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Lane Configurations													
Traffic Volume (veh/h)	0	0	0	709	0	1227	0	1869	947	0	2224	480	
Future Volume (veh/h)	0	0	0	709	0	1227	0	1869	947	0	2224	480	
Number				7	4	14	1	6	16	5	2	12	
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0	
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00	
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Adj Sat Flow, veh/h/ln				1881	0	1881	0	1881	1881	0	1881	1881	
Adj Flow Rate, veh/h				739	0	1278	0	1947	0	0	2317	0	
Adj No. of Lanes				2	0	2	0	3	1	0	3	1	
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	
Percent Heavy Veh, %				1	0	1	0	1	1	0	1	1	
Cap, veh/h				1562	0	1265	0	2554	795	0	2554	795	
Arrive On Green				0.45	0.00	0.45	0.00	0.33	0.00	0.00	0.50	0.00	
Sat Flow, veh/h				3476	0	2814	0	5305	1599	0	5305	1599	
Grp Volume(v), veh/h				739	0	1278	0	1947	0	0	2317	0	
Grp Sat Flow(s),veh/h/ln				1738	0	1407	0	1712	1599	0	1712	1599	
Q Serve(g_s), s				22.3	0.0	67.4	0.0	50.8	0.0	0.0	62.0	0.0	
Cycle Q Clear(g_c), s				22.3	0.0	67.4	0.0	50.8	0.0	0.0	62.0	0.0	
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00	
Lane Grp Cap(c), veh/h				1562	0	1265	0	2554	795	0	2554	795	
V/C Ratio(X)				0.47	0.00	1.01	0.00	0.76	0.00	0.00	0.91	0.00	
Avail Cap(c_a), veh/h				1562	0	1265	0	2554	795	0	2554	795	
HCM Platoon Ratio				1.00	1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00	
Upstream Filter(l)				1.00	0.00	1.00	0.00	0.14	0.00	0.00	1.00	0.00	
Uniform Delay (d), s/veh				28.9	0.0	41.3	0.0	42.1	0.0	0.0	34.5	0.0	
Incr Delay (d2), s/veh				0.1	0.0	28.0	0.0	0.3	0.0	0.0	6.0	0.0	
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
%ile BackOfQ(50%),veh/ln				10.7	0.0	45.6	0.0	24.1	0.0	0.0	30.6	0.0	
LnGrp Delay(d),s/veh				29.0	0.0	69.3	0.0	42.4	0.0	0.0	40.5	0.0	
LnGrp LOS				C		F		D			D		
Approach Vol, veh/h					2017				1947			2317	
Approach Delay, s/veh					54.5				42.4			40.5	
Approach LOS					D				D			D	
Timer	1	2	3	4	5	6	7	8					
Assigned Phs		2		4		6							
Phs Duration (G+Y+Rc), s		79.0		71.0		79.0							
Change Period (Y+Rc), s		4.4		3.6		4.4							
Max Green Setting (Gmax), s		74.6		67.4		67.0							
Max Q Clear Time (g_c+I1), s		64.0		69.4		52.8							
Green Ext Time (p_c), s		3.8		0.0		3.3							
<b>Intersection Summary</b>													
HCM 2010 Ctrl Delay				45.6									
HCM 2010 LOS				D									

HCM 2010 Signalized Intersection Summary  
10: Cherry Avenue & Bayhill Drive













03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	191	40	335	327	40	264	20	464	98	80	402	50
Future Volume (veh/h)	191	40	335	327	40	264	20	464	98	80	402	50
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	1.00		0.95	1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	205	43	360	352	43	284	22	499	105	86	432	54
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	229	46	384	375	679	551	44	906	189	107	1096	136
Arrive On Green	0.13	0.29	0.29	0.21	0.37	0.37	0.03	0.32	0.32	0.06	0.35	0.35
Sat Flow, veh/h	1757	161	1347	1757	1845	1496	1757	2859	598	1757	3108	385
Grp Volume(v), veh/h	205	0	403	352	43	284	22	305	299	86	242	244
Grp Sat Flow(s),veh/h/ln	1757	0	1508	1757	1845	1496	1757	1752	1704	1757	1752	1741
Q Serve(g_s), s	15.3	0.0	34.8	26.3	2.0	19.7	1.6	19.2	19.4	6.4	13.8	14.1
Cycle Q Clear(g_c), s	15.3	0.0	34.8	26.3	2.0	19.7	1.6	19.2	19.4	6.4	13.8	14.1
Prop In Lane	1.00		0.89	1.00		1.00	1.00		0.35	1.00		0.22
Lane Grp Cap(c), veh/h	229	0	430	375	679	551	44	556	540	107	618	614
V/C Ratio(X)	0.90	0.00	0.94	0.94	0.06	0.52	0.50	0.55	0.55	0.81	0.39	0.40
Avail Cap(c_a), veh/h	303	0	486	751	1065	864	132	815	792	171	854	849
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	57.1	0.0	46.5	51.6	27.2	32.8	64.2	37.6	37.7	61.8	32.4	32.5
Incr Delay (d2), s/veh	19.4	0.0	23.4	5.0	0.0	0.3	3.2	3.0	3.2	5.5	1.5	1.5
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	8.7	0.0	17.2	13.2	1.0	8.2	0.8	9.8	9.6	3.3	6.9	7.0
LnGrp Delay(d),s/veh	76.5	0.0	69.9	56.6	27.3	33.1	67.4	40.7	40.9	67.3	33.9	34.0
LnGrp LOS	E		E	E	C	C	E	D	D	E	C	C
Approach Vol, veh/h		608			679			626			572	
Approach Delay, s/veh		72.1			44.9			41.7			38.9	
Approach LOS		E			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.3	51.5	21.4	53.1	12.1	46.8	32.4	42.0				
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0				
Max Green Setting (Gmax), s	10.0	65.0	23.0	77.0	13.0	62.0	57.0	43.0				
Max Q Clear Time (g_c+I1), s	3.6	16.1	17.3	21.7	8.4	21.4	28.3	36.8				
Green Ext Time (p_c), s	0.0	22.9	0.0	2.0	0.0	20.9	0.1	1.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			49.4									
HCM 2010 LOS			D									

HCM 2010 Signalized Intersection Summary

1: 280 SB On Ramp/280 SB Off Ramp & San Bruno Avenue W

03/27/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↗	↖↗	↑↑					↖	↖↗	↗
Traffic Volume (veh/h)	0	525	150	802	1030	0	0	0	0	413	150	280
Future Volume (veh/h)	0	525	150	802	1030	0	0	0	0	413	150	280
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	577	0	881	1132	0				496	261	205
Adj No. of Lanes	0	3	1	2	2	0				2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	1153	359	1550	2597	0				638	335	285
Arrive On Green	0.00	0.22	0.00	0.88	1.00	0.00				0.18	0.18	0.18
Sat Flow, veh/h	0	5358	1615	3510	3705	0				3619	1900	1615
Grp Volume(v), veh/h	0	577	0	881	1132	0				496	261	205
Grp Sat Flow(s),veh/h/ln	0	1729	1615	1755	1805	0				1810	1900	1615
Q Serve(g_s), s	0.0	8.8	0.0	5.3	0.0	0.0				11.8	11.8	10.8
Cycle Q Clear(g_c), s	0.0	8.8	0.0	5.3	0.0	0.0				11.8	11.8	10.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1153	359	1550	2597	0				638	335	285
V/C Ratio(X)	0.00	0.50	0.00	0.57	0.44	0.00				0.78	0.78	0.72
Avail Cap(c_a), veh/h	0	1153	359	1550	2597	0				1110	583	495
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.09	0.09	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	30.6	0.0	3.2	0.0	0.0				35.4	35.4	35.0
Incr Delay (d2), s/veh	0.0	1.6	0.0	0.0	0.0	0.0				0.8	1.5	1.3
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.3	0.0	2.2	0.0	0.0				5.9	6.3	4.9
LnGrp Delay(d),s/veh	0.0	32.2	0.0	3.3	0.0	0.0				36.2	36.9	36.3
LnGrp LOS		C		A	A					D	D	D
Approach Vol, veh/h		577			2013						962	
Approach Delay, s/veh		32.2			1.5						36.4	
Approach LOS		C			A						D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	44.7	25.0		20.3		69.7						
Change Period (Y+Rc), s	5.0	* 5		4.4		5.0						
Max Green Setting (Gmax), s	29.5	* 20		27.6		53.0						
Max Q Clear Time (g_c+I1), s	7.3	10.8		13.8		2.0						
Green Ext Time (p_c), s	13.2	3.2		2.1		19.4						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				15.9								
HCM 2010 LOS				B								
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
1: 280 SB On Ramp/280 SB Off Ramp & San Bruno Avenue W

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03/27/2018

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





















User approved volume balancing among the lanes for turning movement.

User approved ignoring U-Turning movement.

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
2: 280 NB Off Ramp/280 NB On Ramp & San Bruno Avenue W

03/27/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 				
Traffic Volume (veh/h)	160	777	0	0	1526	787	310	780	588	0	0	0
Future Volume (veh/h)	160	777	0	0	1526	787	310	780	588	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1881	1881	0	0	1881	1881	1881	1881	1881			
Adj Flow Rate, veh/h	174	845	0	0	1659	0	337	848	639			
Adj No. of Lanes	2	2	0	0	2	1	1	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	1	1	0	0	1	1	1	1	1			
Cap, veh/h	154	1515	0	0	1197	536	833	875	743			
Arrive On Green	0.09	0.85	0.00	0.00	0.11	0.00	0.47	0.47	0.47			
Sat Flow, veh/h	3476	3668	0	0	3668	1599	1792	1881	1598			
Grp Volume(v), veh/h	174	845	0	0	1659	0	337	848	639			
Grp Sat Flow(s),veh/h/ln	1738	1787	0	0	1787	1599	1792	1881	1598			
Q Serve(g_s), s	4.0	6.2	0.0	0.0	30.1	0.0	11.2	39.5	32.1			
Cycle Q Clear(g_c), s	4.0	6.2	0.0	0.0	30.1	0.0	11.2	39.5	32.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	154	1515	0	0	1197	536	833	875	743			
V/C Ratio(X)	1.13	0.56	0.00	0.00	1.39	0.00	0.40	0.97	0.86			
Avail Cap(c_a), veh/h	154	1515	0	0	1197	536	836	878	746			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.90	0.90	0.00	0.00	0.45	0.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	41.0	4.4	0.0	0.0	40.0	0.0	15.9	23.4	21.5			
Incr Delay (d2), s/veh	106.5	1.3	0.0	0.0	176.1	0.0	0.1	22.9	9.5			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.2	3.1	0.0	0.0	44.2	0.0	5.6	25.8	16.0			
LnGrp Delay(d),s/veh	147.5	5.8	0.0	0.0	216.1	0.0	16.0	46.3	31.0			
LnGrp LOS	F	A			F		B	D	C			
Approach Vol, veh/h		1019			1659			1824				
Approach Delay, s/veh		30.0			216.1			35.3				
Approach LOS		C			F			D				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		43.1			8.0	35.1		46.9				
Change Period (Y+Rc), s		5.0			4.0	5.0		5.0				
Max Green Setting (Gmax), s		38.0			4.0	30.0		42.0				
Max Q Clear Time (g_c+I1), s		8.2			6.0	32.1		41.5				
Green Ext Time (p_c), s		26.4			0.0	0.0		0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay					100.7							
HCM 2010 LOS					F							
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
2: 280 NB Off Ramp/280 NB On Ramp & San Bruno Avenue W

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


















03/27/2018

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User approved volume balancing among the lanes for turning movement.  
User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
3: Cherry Avenue & San Bruno Avenue W

03/27/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	70	1130	140	40	1543	70	120	30	70	120	30	150
Future Volume (veh/h)	70	1130	140	40	1543	70	120	30	70	120	30	150
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	0.99		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1937
Adj Flow Rate, veh/h	75	1215	151	43	1659	75	129	32	75	129	32	161
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	260	1741	216	54	1456	66	232	134	315	317	71	444
Arrive On Green	0.29	1.00	1.00	0.03	0.42	0.42	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	3170	393	1774	3449	155	1179	487	1142	887	257	1608
Grp Volume(v), veh/h	75	677	689	43	847	887	129	0	107	161	0	161
Grp Sat Flow(s),veh/h/ln	1774	1770	1792	1774	1770	1834	1179	0	1629	1144	0	1608
Q Serve(g_s), s	2.9	0.0	0.0	2.2	38.0	38.0	9.6	0.0	4.6	8.6	0.0	7.2
Cycle Q Clear(g_c), s	2.9	0.0	0.0	2.2	38.0	38.0	22.8	0.0	4.6	13.2	0.0	7.2
Prop In Lane	1.00		0.22	1.00		0.08	1.00		0.70	0.80		1.00
Lane Grp Cap(c), veh/h	260	972	984	54	747	775	232	0	449	388	0	444
V/C Ratio(X)	0.29	0.70	0.70	0.79	1.13	1.14	0.56	0.00	0.24	0.42	0.00	0.36
Avail Cap(c_a), veh/h	276	972	984	118	747	775	235	0	453	390	0	447
HCM Platoon Ratio	2.00	2.00	2.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.69	0.69	0.69	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	28.2	0.0	0.0	43.3	26.0	26.0	38.3	0.0	25.3	29.8	0.0	26.2
Incr Delay (d2), s/veh	0.2	2.9	2.9	9.3	76.4	80.1	1.7	0.0	0.1	0.3	0.0	0.2
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.8	0.8	1.2	34.3	36.4	3.2	0.0	2.1	3.5	0.0	3.3
LnGrp Delay(d),s/veh	28.4	2.9	2.9	52.7	102.4	106.1	40.0	0.0	25.4	30.1	0.0	26.4
LnGrp LOS	C	A	A	D	F	F	D		C	C		C
Approach Vol, veh/h		1441			1777			236				322
Approach Delay, s/veh		4.2			103.0			33.3				28.3
Approach LOS		A			F			C				C
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	18.2	43.0		28.8	6.7	54.4		28.8				
Change Period (Y+Rc), s	5.0	* 5		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	14.0	* 38		25.0	6.0	46.0		25.0				
Max Q Clear Time (g_c+I1), s	4.9	40.0		15.2	4.2	2.0		24.8				
Green Ext Time (p_c), s	6.6	0.0		1.3	0.0	19.5		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				54.6								
HCM 2010 LOS				D								
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
3: Cherry Avenue & San Bruno Avenue W

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





















03/27/2018

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\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real/El Camino Real & San Bruno Avenue W

03/27/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	330	628	456	330	478	230	377	1859	130	330	1638	244
Future Volume (veh/h)	330	628	456	330	478	230	377	1859	130	330	1638	244
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1900	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	351	668	485	351	509	245	401	1978	138	351	1743	260
Adj No. of Lanes	1	2	1	2	2	0	2	3	1	2	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	233	903	386	393	546	262	660	2130	655	635	2075	638
Arrive On Green	0.13	0.25	0.25	0.11	0.24	0.24	0.19	0.41	0.41	0.37	0.81	0.81
Sat Flow, veh/h	1792	3574	1529	3476	2318	1110	3476	5136	1581	3476	5136	1580
Grp Volume(v), veh/h	351	668	485	351	392	362	401	1978	138	351	1743	260
Grp Sat Flow(s),veh/h/ln	1792	1787	1529	1738	1787	1641	1738	1712	1581	1738	1712	1580
Q Serve(g_s), s	19.5	25.8	28.9	14.9	32.2	32.5	15.8	55.0	7.1	12.0	30.4	5.7
Cycle Q Clear(g_c), s	19.5	25.8	28.9	14.9	32.2	32.5	15.8	55.0	7.1	12.0	30.4	5.7
Prop In Lane	1.00		1.00	1.00		0.68	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	233	903	386	393	421	387	660	2130	655	635	2075	638
V/C Ratio(X)	1.51	0.74	1.26	0.89	0.93	0.94	0.61	0.93	0.21	0.55	0.84	0.41
Avail Cap(c_a), veh/h	233	903	386	406	429	394	660	2130	655	635	2075	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.60	0.60	0.60	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.3	51.5	32.7	65.6	56.1	56.2	55.6	41.8	19.9	42.7	11.5	6.1
Incr Delay (d2), s/veh	241.2	1.8	127.6	20.3	26.2	29.1	1.2	8.7	0.7	0.6	4.3	1.9
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	25.2	12.9	25.9	8.3	19.0	17.8	7.7	27.7	3.2	5.8	14.4	2.7
LnGrp Delay(d),s/veh	306.5	53.3	160.3	86.0	82.4	85.3	56.8	50.5	20.7	43.4	15.8	8.0
LnGrp LOS	F	D	F	F	F	F	E	D	C	D	B	A
Approach Vol, veh/h		1504			1105			2517			2354	
Approach Delay, s/veh		146.9			84.5			49.8			19.1	
Approach LOS		F			F			D			B	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	32.0	65.2	23.0	40.4	30.9	66.3	20.5	43.0				
Change Period (Y+Rc), s	3.5	4.6	3.5	* 5.1	3.5	4.1	3.5	5.1				
Max Green Setting (Gmax), s	18.6	60.6	19.5	* 36	17.5	62.2	17.5	36.6				
Max Q Clear Time (g_c+I1), s	17.8	32.4	21.5	34.5	14.0	57.0	16.9	30.9				
Green Ext Time (p_c), s	0.0	2.9	0.0	0.2	0.1	2.2	0.0	1.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			64.8									
HCM 2010 LOS			E									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
6: El Camino Real/El Camino Real & San Bruno Avenue W

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03/27/2018

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\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
7: El Camino Real /El Camino Real & Bayhill Drive

03/27/2018

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations	 			  	  			
Traffic Volume (veh/h)	719	88	84	2350	1984	350		
Future Volume (veh/h)	719	88	84	2350	1984	350		
Number	3	18	1	6	2	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.99		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1881	1900	1881	1881	1881	1900		
Adj Flow Rate, veh/h	844	0	88	2474	2088	368		
Adj No. of Lanes	2	1	1	3	3	0		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	1	0	1	1	1	1		
Cap, veh/h	870	392	127	3615	2663	457		
Arrive On Green	0.24	0.00	0.14	1.00	0.20	0.20		
Sat Flow, veh/h	3583	1615	1792	5305	4578	756		
Grp Volume(v), veh/h	844	0	88	2474	1609	847		
Grp Sat Flow(s),veh/h/ln	1792	1615	1792	1712	1712	1741		
Q Serve(g_s), s	35.0	0.0	7.0	0.0	66.8	69.6		
Cycle Q Clear(g_c), s	35.0	0.0	7.0	0.0	66.8	69.6		
Prop In Lane	1.00	1.00	1.00			0.43		
Lane Grp Cap(c), veh/h	870	392	127	3615	2068	1052		
V/C Ratio(X)	0.97	0.00	0.70	0.68	0.78	0.81		
Avail Cap(c_a), veh/h	870	392	143	3615	2068	1052		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33		
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.78	0.78		
Uniform Delay (d), s/veh	56.3	0.0	62.9	0.0	50.5	51.7		
Incr Delay (d2), s/veh	23.4	0.0	8.8	1.1	2.3	5.2		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	20.2	0.0	3.8	0.4	32.3	35.1		
LnGrp Delay(d),s/veh	79.6	0.0	71.7	1.1	52.8	56.9		
LnGrp LOS	E		E	A	D	E		
Approach Vol, veh/h	844			2562	2456			
Approach Delay, s/veh	79.6			3.5	54.2			
Approach LOS	E			A	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	15.0	95.0				110.0		40.0
Change Period (Y+Rc), s	4.4	* 4.4				4.4		3.6
Max Green Setting (Gmax), s	12.0	* 91				105.6		36.4
Max Q Clear Time (g_c+I1), s	9.0	71.6				2.0		37.0
Green Ext Time (p_c), s	1.8	4.0				5.3		0.0
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			35.7					
HCM 2010 LOS			D					
<b>Notes</b>								

HCM 2010 Signalized Intersection Summary  
7: El Camino Real /El Camino Real & Bayhill Drive

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
















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User approved volume balancing among the lanes for turning movement.

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
8: El Camino Real & 380 EB Off-Ramp/380 EB On-Ramp

03/27/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	0	411	0	0	0	0	2372	820	0	2013	906
Future Volume (veh/h)	400	0	411	0	0	0	0	2372	820	0	2013	906
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881				0	1881	1900	0	1881	1881
Adj Flow Rate, veh/h	558	0	287				0	2497	863	0	2119	0
Adj No. of Lanes	2	0	1				0	3	0	0	3	1
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1				0	1	1	0	1	1
Cap, veh/h	688	0	305				0	2808	858	0	3841	1196
Arrive On Green	0.19	0.00	0.19				0.00	0.99	0.99	0.00	0.75	0.00
Sat Flow, veh/h	3583	0	1589				0	3924	1147	0	5305	1599
Grp Volume(v), veh/h	558	0	287				0	2248	1112	0	2119	0
Grp Sat Flow(s),veh/h/ln	1792	0	1589				0	1712	1478	0	1712	1599
Q Serve(g_s), s	22.4	0.0	26.7				0.0	4.2	112.2	0.0	26.6	0.0
Cycle Q Clear(g_c), s	22.4	0.0	26.7				0.0	4.2	112.2	0.0	26.6	0.0
Prop In Lane	1.00		1.00				0.00		0.78	0.00		1.00
Lane Grp Cap(c), veh/h	688	0	305				0	2561	1105	0	3841	1196
V/C Ratio(X)	0.81	0.00	0.94				0.00	0.88	1.01	0.00	0.55	0.00
Avail Cap(c_a), veh/h	893	0	396				0	2561	1105	0	3841	1196
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.33	1.33	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00				0.00	0.55	0.55	0.00	0.53	0.00
Uniform Delay (d), s/veh	58.0	0.0	59.7				0.0	0.1	0.4	0.0	8.1	0.0
Incr Delay (d2), s/veh	3.3	0.0	24.1				0.0	2.7	21.5	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.4	0.0	13.8				0.0	1.2	6.9	0.0	12.5	0.0
LnGrp Delay(d),s/veh	61.3	0.0	83.8				0.0	2.8	21.9	0.0	8.4	0.0
LnGrp LOS	E		F					A	F		A	
Approach Vol, veh/h		845						3360			2119	
Approach Delay, s/veh		68.9						9.1			8.4	
Approach LOS		E						A			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		116.6				116.6		33.4				
Change Period (Y+Rc), s		4.4				4.4		4.6				
Max Green Setting (Gmax), s		103.6				103.6		37.4				
Max Q Clear Time (g_c+I1), s		28.6				114.2		28.7				
Green Ext Time (p_c), s		24.8				0.0		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			16.9									
HCM 2010 LOS			B									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
8: El Camino Real & 380 EB Off-Ramp/380 EB On-Ramp

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
















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User approved volume balancing among the lanes for turning movement.






















HCM 2010 Signalized Intersection Summary  
9: El Camino Real & 380 WB On-Ramp/380 WB Off-Ramp

03/27/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	719	0	1229	0	1849	913	0	2200	480
Future Volume (veh/h)	0	0	0	719	0	1229	0	1849	913	0	2200	480
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	0	1881	0	1881	1881	0	1881	1881
Adj Flow Rate, veh/h				749	0	1280	0	1926	0	0	2292	0
Adj No. of Lanes				2	0	2	0	3	1	0	3	1
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				1	0	1	0	1	1	0	1	1
Cap, veh/h				1562	0	1265	0	2554	795	0	2554	795
Arrive On Green				0.45	0.00	0.45	0.00	0.33	0.00	0.00	0.50	0.00
Sat Flow, veh/h				3476	0	2814	0	5305	1599	0	5305	1599
Grp Volume(v), veh/h				749	0	1280	0	1926	0	0	2292	0
Grp Sat Flow(s),veh/h/ln				1738	0	1407	0	1712	1599	0	1712	1599
Q Serve(g_s), s				22.7	0.0	67.4	0.0	50.1	0.0	0.0	60.8	0.0
Cycle Q Clear(g_c), s				22.7	0.0	67.4	0.0	50.1	0.0	0.0	60.8	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1562	0	1265	0	2554	795	0	2554	795
V/C Ratio(X)				0.48	0.00	1.01	0.00	0.75	0.00	0.00	0.90	0.00
Avail Cap(c_a), veh/h				1562	0	1265	0	2554	795	0	2554	795
HCM Platoon Ratio				1.00	1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00
Upstream Filter(I)				1.00	0.00	1.00	0.00	0.23	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				29.0	0.0	41.3	0.0	41.8	0.0	0.0	34.2	0.0
Incr Delay (d2), s/veh				0.1	0.0	28.4	0.0	0.5	0.0	0.0	5.5	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.9	0.0	45.7	0.0	23.9	0.0	0.0	30.0	0.0
LnGrp Delay(d),s/veh				29.1	0.0	69.7	0.0	42.3	0.0	0.0	39.7	0.0
LnGrp LOS				C		F		D			D	
Approach Vol, veh/h					2029			1926			2292	
Approach Delay, s/veh					54.7			42.3			39.7	
Approach LOS					D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		79.0		71.0		79.0						
Change Period (Y+Rc), s		4.4		3.6		4.4						
Max Green Setting (Gmax), s		74.6		67.4		67.0						
Max Q Clear Time (g_c+I1), s		62.8		69.4		52.1						
Green Ext Time (p_c), s		3.9		0.0		3.3						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				45.4								
HCM 2010 LOS				D								













HCM 2010 Signalized Intersection Summary  
10: Cherry Avenue & Bayhill Drive

03/27/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	410	329	0	0	60	220	0	0	0	84	0	195
Future Volume (veh/h)	410	329	0	0	60	220	0	0	0	84	0	195
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		0.95	1.00		1.00	1.00		0.91
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	441	354	0	0	65	237	0	0	0	90	0	210
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	473	1170	0	2	585	471	2	529	0	115	463	376
Arrive On Green	0.27	0.63	0.00	0.00	0.32	0.32	0.00	0.00	0.00	0.07	0.00	0.26
Sat Flow, veh/h	1757	1845	0	1757	1845	1485	1757	3597	0	1757	1752	1425
Grp Volume(v), veh/h	441	354	0	0	65	237	0	0	0	90	0	210
Grp Sat Flow(s),veh/h/ln	1757	1845	0	1757	1845	1485	1757	1752	0	1757	1752	1425
Q Serve(g_s), s	20.5	7.3	0.0	0.0	2.1	10.8	0.0	0.0	0.0	4.2	0.0	10.6
Cycle Q Clear(g_c), s	20.5	7.3	0.0	0.0	2.1	10.8	0.0	0.0	0.0	4.2	0.0	10.6
Prop In Lane	1.00		0.00	1.00		1.00	1.00		0.00	1.00		1.00
Lane Grp Cap(c), veh/h	473	1170	0	2	585	471	2	529	0	115	463	376
V/C Ratio(X)	0.93	0.30	0.00	0.00	0.11	0.50	0.00	0.00	0.00	0.78	0.00	0.56
Avail Cap(c_a), veh/h	484	1170	0	1199	1701	1369	210	2602	0	273	1364	1109
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	29.8	6.9	0.0	0.0	20.2	23.2	0.0	0.0	0.0	38.4	0.0	26.5
Incr Delay (d2), s/veh	24.4	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	4.4	0.0	4.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	13.1	3.7	0.0	0.0	1.1	4.5	0.0	0.0	0.0	2.2	0.0	4.6
LnGrp Delay(d),s/veh	54.2	7.0	0.0	0.0	20.2	23.5	0.0	0.0	0.0	42.8	0.0	31.2
LnGrp LOS	D	A			C	C				D		C
Approach Vol, veh/h		795			302			0			300	
Approach Delay, s/veh		33.2			22.8			0.0			34.6	
Approach LOS		C			C						C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	0.0	26.6	26.5	30.5	9.5	17.1	0.0	56.9				
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0				
Max Green Setting (Gmax), s	10.0	65.0	23.0	77.0	13.0	62.0	57.0	43.0				
Max Q Clear Time (g_c+I1), s	0.0	12.6	22.5	12.8	6.2	0.0	0.0	9.3				
Green Ext Time (p_c), s	0.0	3.9	0.0	0.7	0.0	0.0	0.0	1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			31.2									
HCM 2010 LOS			C									

HCM 2010 Signalized Intersection Summary  
1: 280 SB On Ramp/280 SB Off Ramp & San Bruno Avenue W

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↑↑↑	↑	↑↑	↑↑					↑	↑↑	↑
Traffic Volume (veh/h)	0	513	150	831	986	0	0	0	0	398	150	280
Future Volume (veh/h)	0	513	150	831	986	0	0	0	0	398	150	280
Number	5	2	12	1	6	16				7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0				0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00				1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00				1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	0	1900	1900	1900	1900	0				1900	1900	1900
Adj Flow Rate, veh/h	0	564	0	913	1084	0				481	258	205
Adj No. of Lanes	0	3	1	2	2	0				2	1	1
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91				0.91	0.91	0.91
Percent Heavy Veh, %	0	0	0	0	0	0				0	0	0
Cap, veh/h	0	1153	359	1557	2604	0				631	331	282
Arrive On Green	0.00	0.22	0.00	0.89	1.00	0.00				0.17	0.17	0.17
Sat Flow, veh/h	0	5358	1615	3510	3705	0				3619	1900	1615
Grp Volume(v), veh/h	0	564	0	913	1084	0				481	258	205
Grp Sat Flow(s),veh/h/ln	0	1729	1615	1755	1805	0				1810	1900	1615
Q Serve(g_s), s	0.0	8.5	0.0	5.5	0.0	0.0				11.4	11.7	10.8
Cycle Q Clear(g_c), s	0.0	8.5	0.0	5.5	0.0	0.0				11.4	11.7	10.8
Prop In Lane	0.00		1.00	1.00		0.00				1.00		1.00
Lane Grp Cap(c), veh/h	0	1153	359	1557	2604	0				631	331	282
V/C Ratio(X)	0.00	0.49	0.00	0.59	0.42	0.00				0.76	0.78	0.73
Avail Cap(c_a), veh/h	0	1153	359	1557	2604	0				1110	583	495
HCM Platoon Ratio	1.00	1.00	1.00	2.00	2.00	1.00				1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	0.00	0.09	0.09	0.00				1.00	1.00	1.00
Uniform Delay (d), s/veh	0.0	30.5	0.0	3.1	0.0	0.0				35.4	35.5	35.1
Incr Delay (d2), s/veh	0.0	1.5	0.0	0.0	0.0	0.0				0.7	1.5	1.4
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0				0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	4.2	0.0	2.3	0.0	0.0				5.7	6.2	4.9
LnGrp Delay(d),s/veh	0.0	32.0	0.0	3.2	0.0	0.0				36.1	37.0	36.5
LnGrp LOS		C		A	A					D	D	D
Approach Vol, veh/h		564			1997						944	
Approach Delay, s/veh		32.0			1.5						36.4	
Approach LOS		C			A						D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4		6						
Phs Duration (G+Y+Rc), s	44.9	25.0		20.1		69.9						
Change Period (Y+Rc), s	5.0	* 5		4.4		5.0						
Max Green Setting (Gmax), s	29.5	* 20		27.6		53.0						
Max Q Clear Time (g_c+I1), s	7.5	10.5		13.7		2.0						
Green Ext Time (p_c), s	12.7	3.2		2.0		18.4						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				15.8								
HCM 2010 LOS				B								
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
1: 280 SB On Ramp/280 SB Off Ramp & San Bruno Avenue W

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03/26/2018

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





















User approved volume balancing among the lanes for turning movement.

User approved ignoring U-Turning movement.

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
2: 280 NB Off Ramp/280 NB On Ramp & San Bruno Avenue W

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	 	 			 			 				
Traffic Volume (veh/h)	160	750	0	0	1502	771	310	780	566	0	0	0
Future Volume (veh/h)	160	750	0	0	1502	771	310	780	566	0	0	0
Number	5	2	12	1	6	16	3	8	18			
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0			
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00			
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Adj Sat Flow, veh/h/ln	1881	1881	0	0	1881	1881	1881	1881	1881			
Adj Flow Rate, veh/h	174	815	0	0	1633	0	337	848	615			
Adj No. of Lanes	2	2	0	0	2	1	1	1	1			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92			
Percent Heavy Veh, %	1	1	0	0	1	1	1	1	1			
Cap, veh/h	154	1515	0	0	1197	536	833	875	743			
Arrive On Green	0.09	0.85	0.00	0.00	0.11	0.00	0.47	0.47	0.47			
Sat Flow, veh/h	3476	3668	0	0	3668	1599	1792	1881	1598			
Grp Volume(v), veh/h	174	815	0	0	1633	0	337	848	615			
Grp Sat Flow(s),veh/h/ln	1738	1787	0	0	1787	1599	1792	1881	1598			
Q Serve(g_s), s	4.0	5.7	0.0	0.0	30.1	0.0	11.2	39.5	30.1			
Cycle Q Clear(g_c), s	4.0	5.7	0.0	0.0	30.1	0.0	11.2	39.5	30.1			
Prop In Lane	1.00		0.00	0.00		1.00	1.00		1.00			
Lane Grp Cap(c), veh/h	154	1515	0	0	1197	536	833	875	743			
V/C Ratio(X)	1.13	0.54	0.00	0.00	1.36	0.00	0.40	0.97	0.83			
Avail Cap(c_a), veh/h	154	1515	0	0	1197	536	836	878	746			
HCM Platoon Ratio	2.00	2.00	1.00	1.00	0.33	0.33	1.00	1.00	1.00			
Upstream Filter(I)	0.90	0.90	0.00	0.00	0.09	0.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	41.0	4.4	0.0	0.0	40.0	0.0	15.9	23.4	20.9			
Incr Delay (d2), s/veh	106.6	1.2	0.0	0.0	164.4	0.0	0.1	22.9	7.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile BackOfQ(50%),veh/ln	4.2	2.7	0.0	0.0	42.2	0.0	5.6	25.8	14.6			
LnGrp Delay(d),s/veh	147.6	5.6	0.0	0.0	204.4	0.0	16.0	46.3	28.1			
LnGrp LOS	F	A			F		B	D	C			
Approach Vol, veh/h		989			1633			1800				
Approach Delay, s/veh		30.6			204.4			34.4				
Approach LOS		C			F			C				
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2			5	6		8				
Phs Duration (G+Y+Rc), s		43.1			8.0	35.1		46.9				
Change Period (Y+Rc), s		5.0			4.0	5.0		5.0				
Max Green Setting (Gmax), s		38.0			4.0	30.0		42.0				
Max Q Clear Time (g_c+I1), s		7.7			6.0	32.1		41.5				
Green Ext Time (p_c), s		26.4			0.0	0.0		0.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				96.3								
HCM 2010 LOS				F								
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
2: 280 NB Off Ramp/280 NB On Ramp & San Bruno Avenue W

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


















03/26/2018

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User approved volume balancing among the lanes for turning movement.  
User approved changes to right turn type.

HCM 2010 Signalized Intersection Summary  
3: Cherry Avenue & San Bruno Avenue W

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	251	955	140	40	1305	278	90	110	30	259	117	688
Future Volume (veh/h)	251	955	140	40	1305	278	90	110	30	259	117	688
Number	1	6	16	5	2	12	3	8	18	7	4	14
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.98	0.99		0.98
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1863	1863	1900	1863	1863	1900	1863	1863	1900	1900	1863	1937
Adj Flow Rate, veh/h	270	1027	151	43	1403	299	97	118	32	278	126	740
Adj No. of Lanes	1	2	0	1	2	0	1	1	0	0	1	1
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2	2	2	2
Cap, veh/h	491	2104	309	54	1230	257	80	390	106	267	90	447
Arrive On Green	0.37	0.90	0.90	0.03	0.42	0.42	0.28	0.28	0.28	0.28	0.28	0.28
Sat Flow, veh/h	1774	3096	455	1774	2913	608	635	1404	381	718	325	1609
Grp Volume(v), veh/h	270	586	592	43	841	861	97	0	150	404	0	740
Grp Sat Flow(s),veh/h/ln	1774	1770	1782	1774	1770	1752	635	0	1785	1044	0	1609
Q Serve(g_s), s	10.9	5.1	5.2	2.2	38.0	38.0	0.0	0.0	6.0	19.0	0.0	25.0
Cycle Q Clear(g_c), s	10.9	5.1	5.2	2.2	38.0	38.0	25.0	0.0	6.0	25.0	0.0	25.0
Prop In Lane	1.00		0.26	1.00		0.35	1.00		0.21	0.69		1.00
Lane Grp Cap(c), veh/h	491	1202	1210	54	747	740	80	0	496	357	0	447
V/C Ratio(X)	0.55	0.49	0.49	0.79	1.13	1.16	1.21	0.00	0.30	1.13	0.00	1.66
Avail Cap(c_a), veh/h	491	1202	1210	118	747	740	80	0	496	357	0	447
HCM Platoon Ratio	1.33	1.33	1.33	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	0.72	0.72	0.72	1.00	1.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	24.0	1.6	1.6	43.3	26.0	26.0	45.0	0.0	25.6	37.3	0.0	32.5
Incr Delay (d2), s/veh	0.6	1.0	1.0	9.3	73.1	88.3	168.5	0.0	0.1	87.8	0.0	305.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	5.3	2.6	2.7	1.2	33.6	36.4	5.7	0.0	2.9	17.6	0.0	48.9
LnGrp Delay(d),s/veh	24.6	2.7	2.7	52.7	99.1	114.3	213.5	0.0	25.8	125.1	0.0	337.6
LnGrp LOS	C	A	A	D	F	F	F		C	F		F
Approach Vol, veh/h		1448			1745			247			1144	
Approach Delay, s/veh		6.7			105.5			99.5			262.5	
Approach LOS		A			F			F			F	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2		4	5	6		8				
Phs Duration (G+Y+Rc), s	29.9	43.0		29.0	6.7	66.2		29.0				
Change Period (Y+Rc), s	5.0	* 5		4.0	4.0	5.0		4.0				
Max Green Setting (Gmax), s	14.0	* 38		25.0	6.0	46.0		25.0				
Max Q Clear Time (g_c+I1), s	12.9	40.0		27.0	4.2	7.2		27.0				
Green Ext Time (p_c), s	0.2	0.0		0.0	0.0	15.0		0.0				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay	113.2											
HCM 2010 LOS	F											
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
3: Cherry Avenue & San Bruno Avenue W

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03/26/2018

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\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
6: El Camino Real/El Camino Real & San Bruno Avenue W

03/26/2018

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	329	656	468	330	466	230	351	1852	130	330	1641	237
Future Volume (veh/h)	329	656	468	330	466	230	351	1852	130	330	1641	237
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.96	1.00		0.97	1.00		0.99	1.00		0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881	1881	1881	1900	1881	1881	1881	1881	1881	1881
Adj Flow Rate, veh/h	350	698	498	351	496	245	373	1970	138	351	1746	252
Adj No. of Lanes	1	2	1	2	2	0	2	3	1	2	3	1
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	1	1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h	233	897	384	393	537	264	420	2130	655	394	2075	638
Arrive On Green	0.13	0.25	0.25	0.11	0.23	0.23	0.12	0.41	0.41	0.23	0.81	0.81
Sat Flow, veh/h	1792	3574	1528	3476	2296	1128	3476	5136	1581	3476	5136	1580
Grp Volume(v), veh/h	350	698	498	351	385	356	373	1970	138	351	1746	252
Grp Sat Flow(s),veh/h/ln	1792	1787	1528	1738	1787	1636	1738	1712	1581	1738	1712	1580
Q Serve(g_s), s	19.5	27.3	28.7	14.9	31.6	31.9	15.9	54.6	6.1	14.7	30.6	4.7
Cycle Q Clear(g_c), s	19.5	27.3	28.7	14.9	31.6	31.9	15.9	54.6	6.1	14.7	30.6	4.7
Prop In Lane	1.00		1.00	1.00		0.69	1.00		1.00	1.00		1.00
Lane Grp Cap(c), veh/h	233	897	384	393	418	383	420	2130	655	394	2075	638
V/C Ratio(X)	1.50	0.78	1.30	0.89	0.92	0.93	0.89	0.93	0.21	0.89	0.84	0.39
Avail Cap(c_a), veh/h	233	897	384	406	429	393	431	2130	655	406	2075	638
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	2.00	2.00	2.00
Upstream Filter(I)	0.55	0.55	0.55	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	65.3	52.3	32.6	65.6	56.1	56.2	65.0	41.7	14.6	57.1	11.5	4.4
Incr Delay (d2), s/veh	238.3	2.2	144.7	20.3	24.4	27.3	18.8	8.4	0.7	19.9	4.3	1.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	25.1	13.8	27.5	8.3	18.5	17.3	8.7	27.4	2.7	8.1	14.4	2.3
LnGrp Delay(d),s/veh	303.5	54.5	177.3	86.0	80.5	83.5	83.8	50.0	15.3	77.0	15.9	6.2
LnGrp LOS	F	D	F	F	F	F	F	D	B	E	B	A
Approach Vol, veh/h		1546			1092			2481			2349	
Approach Delay, s/veh		150.5			83.2			53.2			24.0	
Approach LOS		F			F			D			C	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	21.6	65.2	23.0	40.2	20.5	66.3	20.5	42.7				
Change Period (Y+Rc), s	3.5	4.6	3.5	* 5.1	3.5	4.1	3.5	5.1				
Max Green Setting (Gmax), s	18.6	60.6	19.5	* 36	17.5	62.2	17.5	36.6				
Max Q Clear Time (g_c+I1), s	17.9	32.6	21.5	33.9	16.7	56.6	16.9	30.7				
Green Ext Time (p_c), s	0.0	2.9	0.0	0.3	0.0	2.2	0.0	1.3				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			68.5									
HCM 2010 LOS			E									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
6: El Camino Real/El Camino Real & San Bruno Avenue W

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03/26/2018

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\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
7: El Camino Real /El Camino Real & Bayhill Drive

03/26/2018

								
Movement	EBL	EBR	NBL	NBT	SBT	SBR		
Lane Configurations								
Traffic Volume (veh/h)	830	91	77	2359	1977	297		
Future Volume (veh/h)	830	91	77	2359	1977	297		
Number	3	18	1	6	2	12		
Initial Q (Qb), veh	0	0	0	0	0	0		
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			0.99		
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00		
Adj Sat Flow, veh/h/ln	1881	1900	1881	1881	1881	1900		
Adj Flow Rate, veh/h	964	0	81	2483	2081	313		
Adj No. of Lanes	2	1	1	3	3	0		
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95		
Percent Heavy Veh, %	1	0	1	1	1	1		
Cap, veh/h	870	392	127	3615	2728	402		
Arrive On Green	0.24	0.00	0.14	1.00	0.20	0.20		
Sat Flow, veh/h	3583	1615	1792	5305	4686	665		
Grp Volume(v), veh/h	964	0	81	2483	1567	827		
Grp Sat Flow(s),veh/h/ln	1792	1615	1792	1712	1712	1758		
Q Serve(g_s), s	36.4	0.0	6.4	0.0	64.8	66.9		
Cycle Q Clear(g_c), s	36.4	0.0	6.4	0.0	64.8	66.9		
Prop In Lane	1.00	1.00	1.00			0.38		
Lane Grp Cap(c), veh/h	870	392	127	3615	2068	1062		
V/C Ratio(X)	1.11	0.00	0.64	0.69	0.76	0.78		
Avail Cap(c_a), veh/h	870	392	143	3615	2068	1062		
HCM Platoon Ratio	1.00	1.00	2.00	2.00	0.33	0.33		
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.79	0.79		
Uniform Delay (d), s/veh	56.8	0.0	62.6	0.0	49.7	50.6		
Incr Delay (d2), s/veh	64.8	0.0	4.9	1.1	2.1	4.5		
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0		
%ile BackOfQ(50%),veh/ln	25.8	0.0	3.3	0.4	31.3	34.0		
LnGrp Delay(d),s/veh	121.6	0.0	67.5	1.1	51.8	55.1		
LnGrp LOS	F		E	A	D	E		
Approach Vol, veh/h	964			2564	2394			
Approach Delay, s/veh	121.6			3.2	52.9			
Approach LOS	F			A	D			
Timer	1	2	3	4	5	6	7	8
Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	15.0	95.0				110.0		40.0
Change Period (Y+Rc), s	4.4	* 4.4				4.4		3.6
Max Green Setting (Gmax), s	12.0	* 91				105.6		36.4
Max Q Clear Time (g_c+I1), s	8.4	68.9				2.0		38.4
Green Ext Time (p_c), s	2.1	3.9				5.4		0.0
<b>Intersection Summary</b>								
HCM 2010 Ctrl Delay			42.6					
HCM 2010 LOS			D					
<b>Notes</b>								

HCM 2010 Signalized Intersection Summary  
7: El Camino Real /El Camino Real & Bayhill Drive

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03/26/2018



















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User approved volume balancing among the lanes for turning movement.

\* HCM 2010 computational engine requires equal clearance times for the phases crossing the barrier.

HCM 2010 Signalized Intersection Summary  
8: El Camino Real & 380 EB Off-Ramp/380 EB On-Ramp

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	400	0	398	0	0	0	0	2410	900	0	1965	928
Future Volume (veh/h)	400	0	398	0	0	0	0	2410	900	0	1965	928
Number	3	8	18				1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0				0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.99				1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00				1.00	1.00	0.90	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1881	1881	1881				0	1881	1900	0	1881	1881
Adj Flow Rate, veh/h	551	0	279				0	2537	947	0	2068	0
Adj No. of Lanes	2	0	1				0	3	0	0	3	1
Peak Hour Factor	0.95	0.95	0.95				0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	1	1	1				0	1	1	0	1	1
Cap, veh/h	671	0	297				0	2775	907	0	3866	1204
Arrive On Green	0.19	0.00	0.19				0.00	1.00	1.00	0.00	0.75	0.00
Sat Flow, veh/h	3583	0	1589				0	3855	1205	0	5305	1599
Grp Volume(v), veh/h	551	0	279				0	2331	1153	0	2068	0
Grp Sat Flow(s),veh/h/ln	1792	0	1589				0	1712	1467	0	1712	1599
Q Serve(g_s), s	22.2	0.0	26.0				0.0	0.0	109.5	0.0	25.0	0.0
Cycle Q Clear(g_c), s	22.2	0.0	26.0				0.0	0.0	109.5	0.0	25.0	0.0
Prop In Lane	1.00		1.00				0.00		0.82	0.00		1.00
Lane Grp Cap(c), veh/h	671	0	297				0	2577	1104	0	3866	1204
V/C Ratio(X)	0.82	0.00	0.94				0.00	0.90	1.04	0.00	0.53	0.00
Avail Cap(c_a), veh/h	893	0	396				0	2577	1104	0	3866	1204
HCM Platoon Ratio	1.00	1.00	1.00				1.00	1.33	1.33	1.00	1.00	1.00
Upstream Filter(l)	1.00	0.00	1.00				0.00	0.47	0.47	0.00	0.53	0.00
Uniform Delay (d), s/veh	58.6	0.0	60.1				0.0	0.0	0.0	0.0	7.7	0.0
Incr Delay (d2), s/veh	3.5	0.0	22.9				0.0	2.9	31.2	0.0	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0				0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	11.3	0.0	13.3				0.0	1.0	9.6	0.0	11.8	0.0
LnGrp Delay(d),s/veh	62.0	0.0	83.0				0.0	2.9	31.2	0.0	8.0	0.0
LnGrp LOS	E		F					A	F		A	
Approach Vol, veh/h		830						3484			2068	
Approach Delay, s/veh		69.1						12.2			8.0	
Approach LOS		E						B			A	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2				6		8				
Phs Duration (G+Y+Rc), s		117.3				117.3		32.7				
Change Period (Y+Rc), s		4.4				4.4		4.6				
Max Green Setting (Gmax), s		103.6				103.6		37.4				
Max Q Clear Time (g_c+I1), s		27.0				111.5		28.0				
Green Ext Time (p_c), s		26.3				0.0		0.1				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			18.2									
HCM 2010 LOS			B									
<b>Notes</b>												

HCM 2010 Signalized Intersection Summary  
8: El Camino Real & 380 EB Off-Ramp/380 EB On-Ramp

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
















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User approved volume balancing among the lanes for turning movement.






















HCM 2010 Signalized Intersection Summary  
9: El Camino Real & 380 WB On-Ramp/380 WB Off-Ramp

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	0	0	686	0	1225	0	1858	942	0	2207	480
Future Volume (veh/h)	0	0	0	686	0	1225	0	1858	942	0	2207	480
Number				7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh				0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)				1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj				1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln				1881	0	1881	0	1881	1881	0	1881	1881
Adj Flow Rate, veh/h				715	0	1276	0	1935	0	0	2299	0
Adj No. of Lanes				2	0	2	0	3	1	0	3	1
Peak Hour Factor				0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %				1	0	1	0	1	1	0	1	1
Cap, veh/h				1562	0	1265	0	2554	795	0	2554	795
Arrive On Green				0.45	0.00	0.45	0.00	0.33	0.00	0.00	0.50	0.00
Sat Flow, veh/h				3476	0	2814	0	5305	1599	0	5305	1599
Grp Volume(v), veh/h				715	0	1276	0	1935	0	0	2299	0
Grp Sat Flow(s),veh/h/ln				1738	0	1407	0	1712	1599	0	1712	1599
Q Serve(g_s), s				21.4	0.0	67.4	0.0	50.4	0.0	0.0	61.1	0.0
Cycle Q Clear(g_c), s				21.4	0.0	67.4	0.0	50.4	0.0	0.0	61.1	0.0
Prop In Lane				1.00		1.00	0.00		1.00	0.00		1.00
Lane Grp Cap(c), veh/h				1562	0	1265	0	2554	795	0	2554	795
V/C Ratio(X)				0.46	0.00	1.01	0.00	0.76	0.00	0.00	0.90	0.00
Avail Cap(c_a), veh/h				1562	0	1265	0	2554	795	0	2554	795
HCM Platoon Ratio				1.00	1.00	1.00	1.00	0.67	0.67	1.00	1.00	1.00
Upstream Filter(l)				1.00	0.00	1.00	0.00	0.16	0.00	0.00	1.00	0.00
Uniform Delay (d), s/veh				28.6	0.0	41.3	0.0	41.9	0.0	0.0	34.3	0.0
Incr Delay (d2), s/veh				0.1	0.0	27.5	0.0	0.3	0.0	0.0	5.6	0.0
Initial Q Delay(d3),s/veh				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln				10.2	0.0	45.5	0.0	24.0	0.0	0.0	30.1	0.0
LnGrp Delay(d),s/veh				28.7	0.0	68.8	0.0	42.3	0.0	0.0	40.0	0.0
LnGrp LOS				C		F		D			D	
Approach Vol, veh/h					1991			1935			2299	
Approach Delay, s/veh					54.4			42.3			40.0	
Approach LOS					D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs		2		4		6						
Phs Duration (G+Y+Rc), s		79.0		71.0		79.0						
Change Period (Y+Rc), s		4.4		3.6		4.4						
Max Green Setting (Gmax), s		74.6		67.4		67.0						
Max Q Clear Time (g_c+I1), s		63.1		69.4		52.4						
Green Ext Time (p_c), s		3.9		0.0		3.3						
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay				45.3								
HCM 2010 LOS				D								

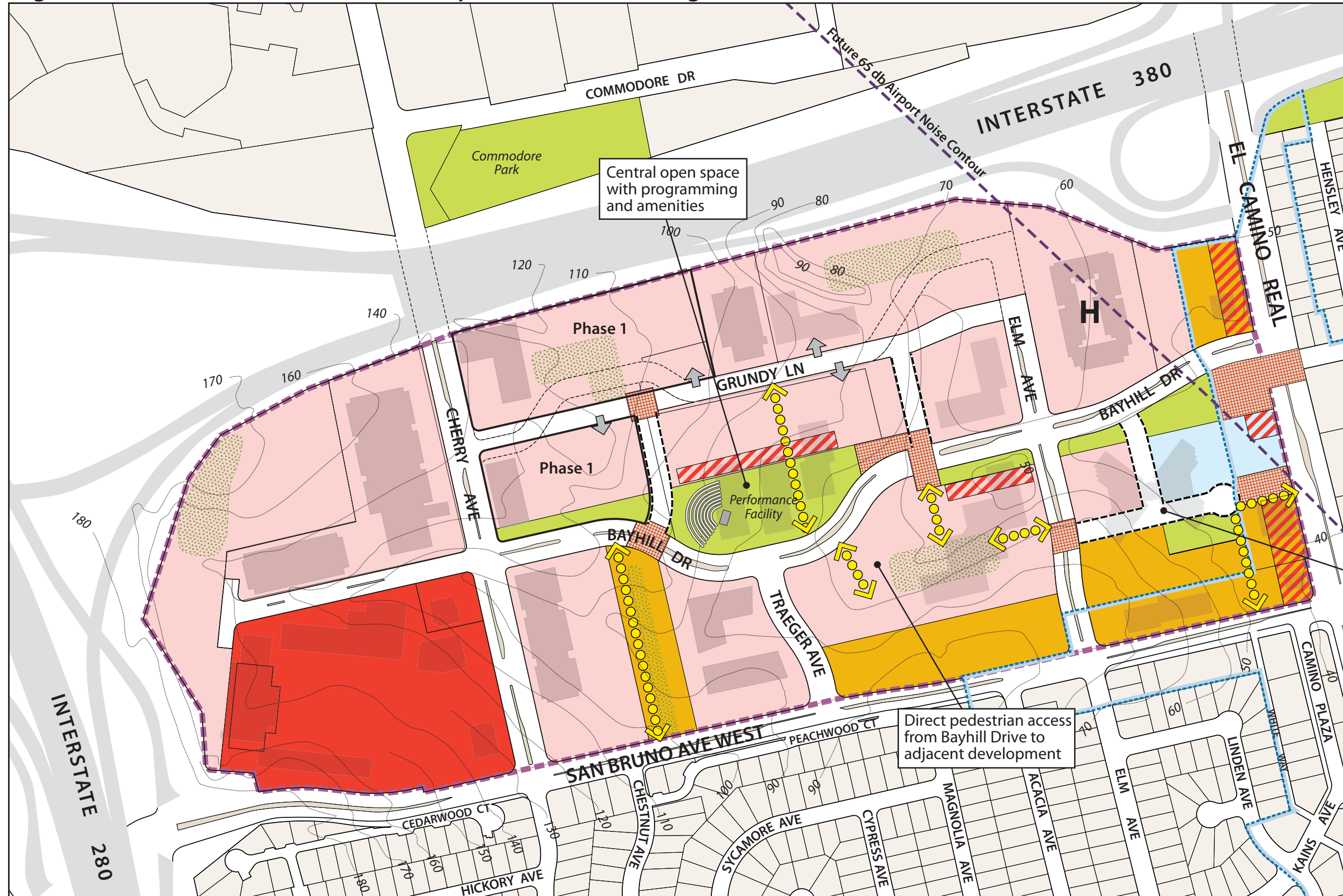
HCM 2010 Signalized Intersection Summary  
10: Cherry Avenue & Bayhill Drive

03/26/2018

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	185	40	328	324	40	250	20	464	86	63	402	50
Future Volume (veh/h)	185	40	328	324	40	250	20	464	86	63	402	50
Number	3	8	18	7	4	14	1	6	16	5	2	12
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.94	1.00		0.95	1.00		0.95	1.00		0.93
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h/ln	1845	1845	1900	1845	1845	1845	1845	1845	1900	1845	1845	1900
Adj Flow Rate, veh/h	199	43	353	348	43	269	22	499	92	68	432	54
Adj No. of Lanes	1	1	0	1	1	1	1	2	0	1	2	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	3	3	3	3	3	3	3	3	3	3	3	3
Cap, veh/h	224	46	381	372	678	550	45	950	174	86	1080	134
Arrive On Green	0.13	0.28	0.28	0.21	0.37	0.37	0.03	0.32	0.32	0.05	0.35	0.35
Sat Flow, veh/h	1757	164	1344	1757	1845	1496	1757	2934	537	1757	3107	385
Grp Volume(v), veh/h	199	0	396	348	43	269	22	297	294	68	242	244
Grp Sat Flow(s),veh/h/ln	1757	0	1508	1757	1845	1496	1757	1752	1719	1757	1752	1740
Q Serve(g_s), s	13.9	0.0	31.9	24.4	1.9	17.3	1.5	17.2	17.5	4.8	13.1	13.3
Cycle Q Clear(g_c), s	13.9	0.0	31.9	24.4	1.9	17.3	1.5	17.2	17.5	4.8	13.1	13.3
Prop In Lane	1.00		0.89	1.00		1.00	1.00		0.31	1.00		0.22
Lane Grp Cap(c), veh/h	224	0	427	372	678	550	45	567	557	86	609	605
V/C Ratio(X)	0.89	0.00	0.93	0.93	0.06	0.49	0.49	0.52	0.53	0.79	0.40	0.40
Avail Cap(c_a), veh/h	323	0	518	801	1136	921	140	869	852	183	911	904
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	53.7	0.0	43.6	48.4	25.6	30.5	60.1	34.4	34.5	58.8	30.9	31.0
Incr Delay (d2), s/veh	14.4	0.0	19.2	4.8	0.0	0.3	3.0	2.7	2.8	5.8	1.5	1.6
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	7.7	0.0	15.6	12.3	1.0	7.2	0.8	8.8	8.7	2.5	6.6	6.6
LnGrp Delay(d),s/veh	68.1	0.0	62.8	53.2	25.6	30.8	63.1	37.1	37.3	64.6	32.4	32.5
LnGrp LOS	E		E	D	C	C	E	D	D	E	C	C
Approach Vol, veh/h		595			660			613			554	
Approach Delay, s/veh		64.6			42.3			38.2			36.4	
Approach LOS		E			D			D			D	
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	1	2	3	4	5	6	7	8				
Phs Duration (G+Y+Rc), s	7.2	48.0	20.0	49.9	10.2	45.0	30.5	39.4				
Change Period (Y+Rc), s	4.0	4.5	4.0	4.0	4.0	4.5	4.0	4.0				
Max Green Setting (Gmax), s	10.0	65.0	23.0	77.0	13.0	62.0	57.0	43.0				
Max Q Clear Time (g_c+I1), s	3.5	15.3	15.9	19.3	6.8	19.5	26.4	33.9				
Green Ext Time (p_c), s	0.0	22.7	0.1	2.0	0.0	21.0	0.1	1.5				
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay			45.4									
HCM 2010 LOS			D									

# **Appendix B: Proposed Circulation Improvements**

Figure 2-2: Alternative 1 Central Spine - Urban Design



- Planning Area
  - Office
  - Commercial
  - H** Hotel
  - Ground Floor Active Uses
  - High Density Residential
  - Civic
  - Public Open Space
  - Private Open Space
  - Plaza/Special Paving
  - Existing Street to be realigned
  - Expanded Street Grid
  - Pedestrian Connection
  - ↑ Entrance to Underground Parking
  - Transit Corridor Specific Plan
  - Existing Building Footprint
- Areas designated as private open space may be completely private, or may be private open space with the possibility of some public access (POPOS)

Expanded street grid with pedestrian connections to San Bruno Avenue and El Camino Real

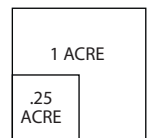
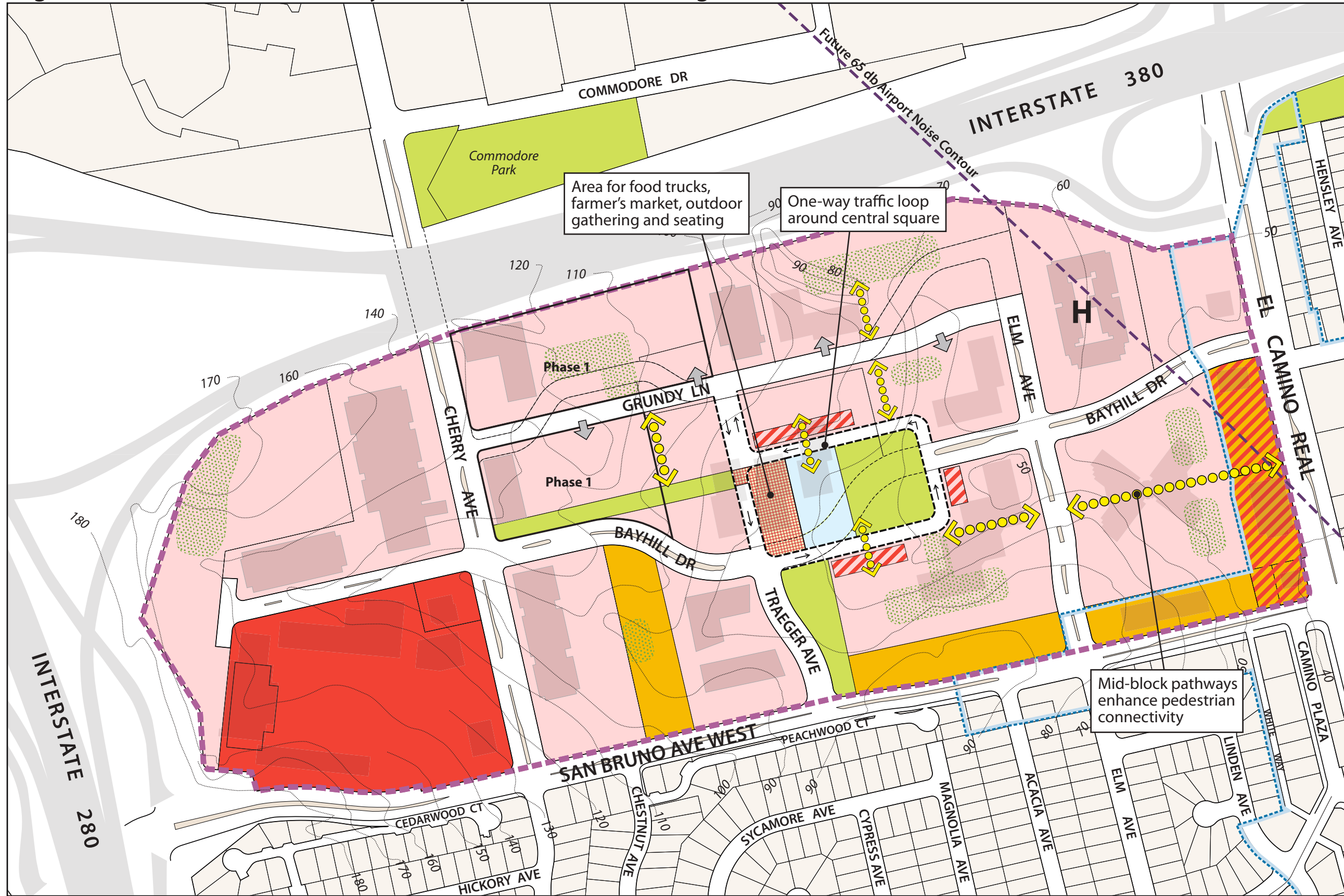


Figure 2-4: Alternative 2 Bayhill Square - Urban Design



- Planning Area
  - Office
  - Commercial
  - H Hotel
  - Ground Floor Active Uses
  - High Density Residential
  - Civic
  - Public Open Space
  - Private Open Space
  - Plaza/Special Paving
  - Existing Street to be realigned
  - Expanded Street Grid
  - Pedestrian Connection
  - ↑ Entrance to Underground Parking
  - Transit Corridor Specific Plan
  - Existing Building Footprint
- Areas designated as private open space may be completely private, or may be private open space with the possibility of some public access (POPOS)

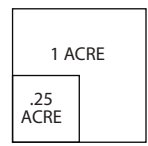
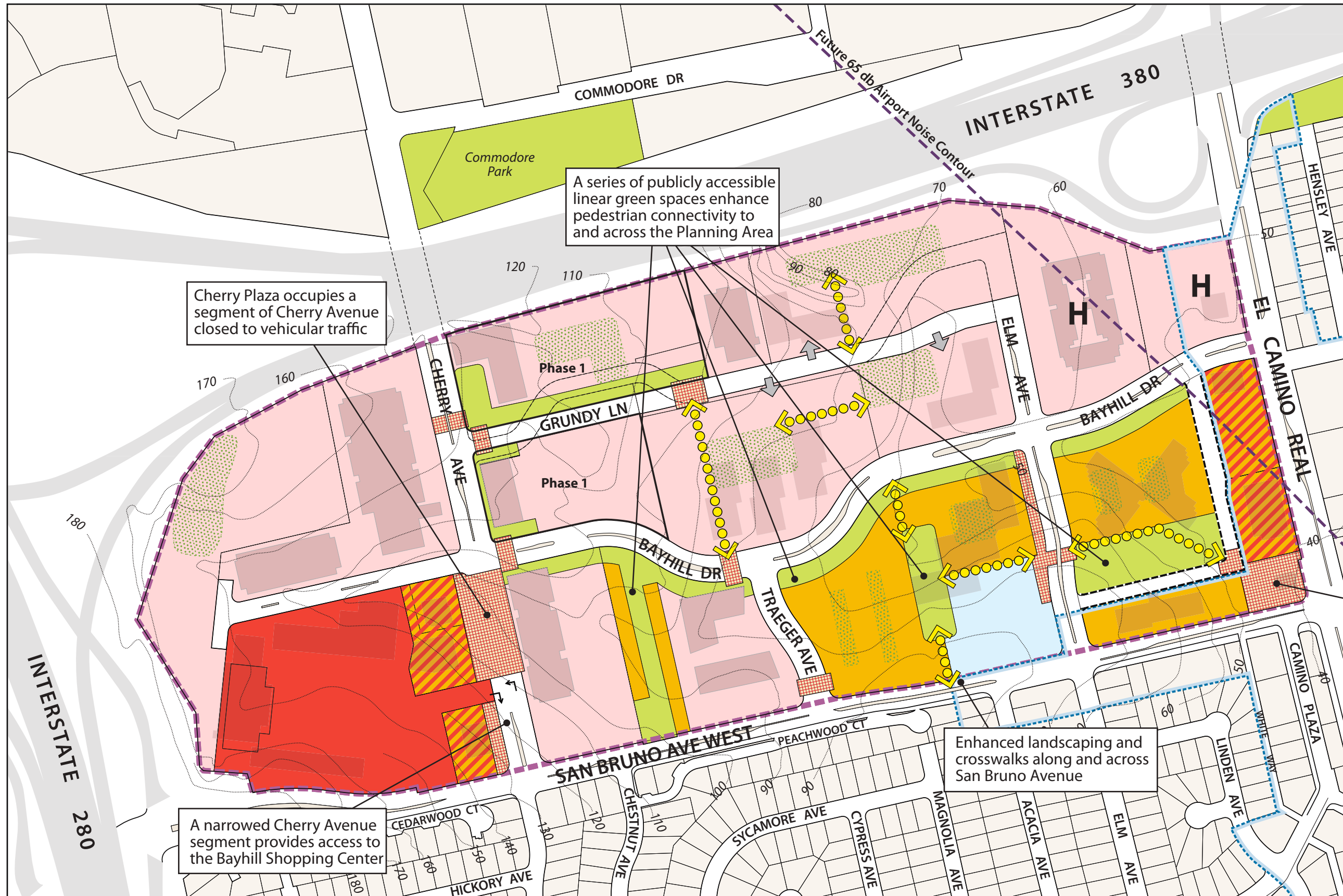


Figure 2-6: Alternative 3 Cherry Plaza - Urban Design



- Planning Area
- Office
- Commercial
- H Hotel
- Ground Floor Active Uses
- High Density Residential
- Civic
- Public Open Space
- Private Open Space
- Plaza/Special Paving
- Existing Street to be realigned
- Expanded Street Grid
- Pedestrian Connection
- ↑ Entrance to Underground Parking
- Transit Corridor Specific Plan
- Existing Building Footprint

Areas designated as private open space may be completely private, or may be private open space with the possibility of some public access (POPOS)

Corner plaza leads to network of paths and green spaces

Cherry Plaza occupies a segment of Cherry Avenue closed to vehicular traffic

A series of publicly accessible linear green spaces enhance pedestrian connectivity to and across the Planning Area

Enhanced landscaping and crosswalks along and across San Bruno Avenue

A narrowed Cherry Avenue segment provides access to the Bayhill Shopping Center

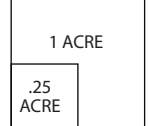
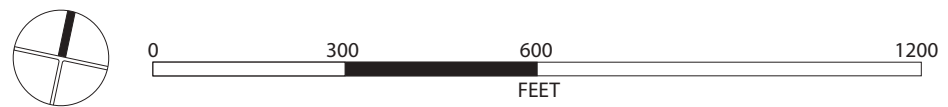
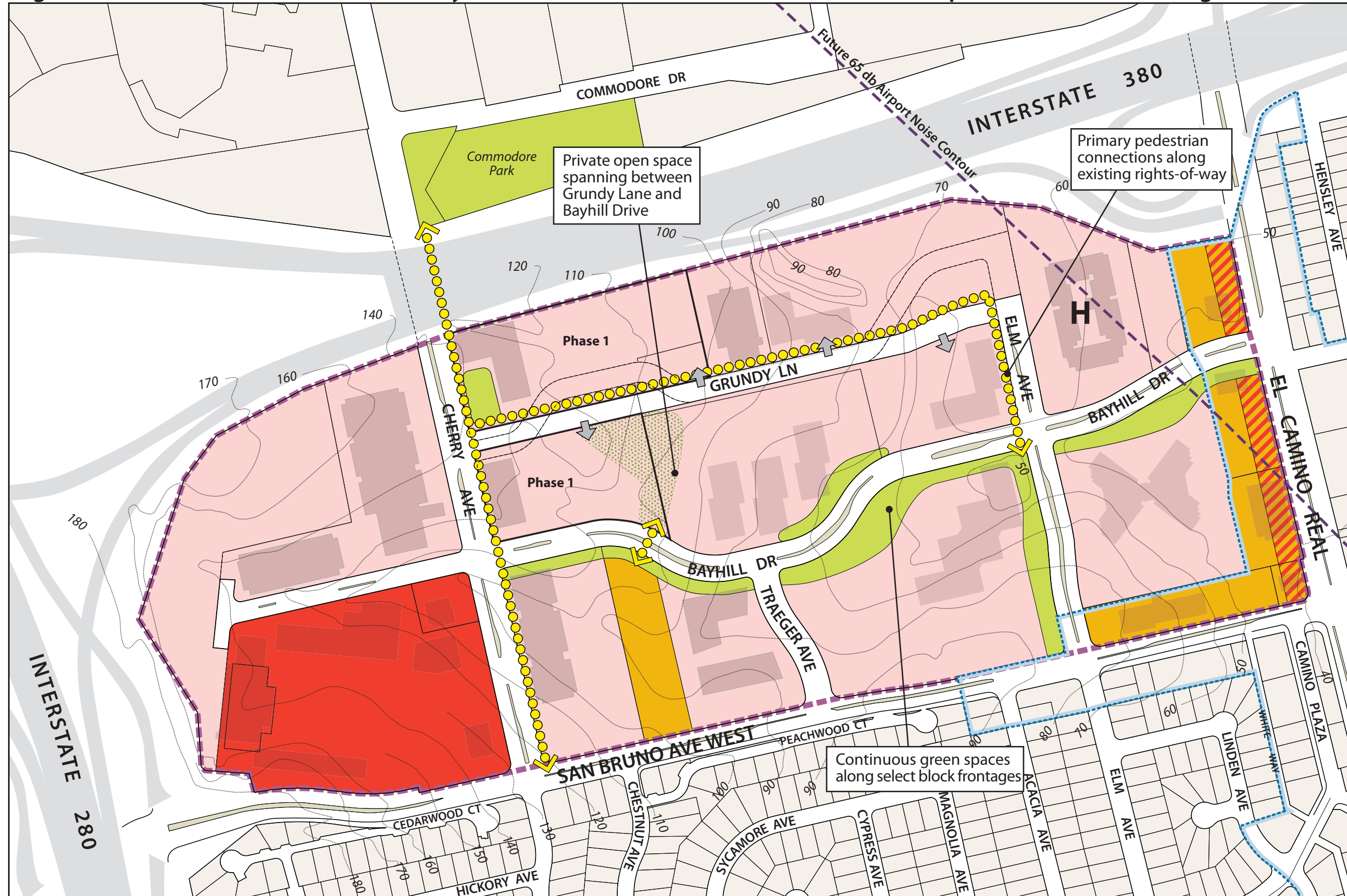
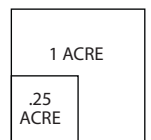
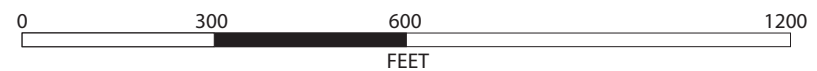


Figure 2-8: Alternative 4 Greenway Connection (Based on YouTube's Proposal) - Urban Design



- Planning Area
- Office
- Commercial
- H** Hotel
- Ground Floor Active Uses
- High Density Residential
- Public Open Space
- Private Open Space
- Pedestrian Connection
- Existing Street to be realigned
- ↑ Entrance to Underground Parking
- Transit Corridor Specific Plan
- Existing Building Footprint

Areas designated as private open space may be completely private, or may be private open space with the possibility of some public access (POPOS)





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