Downtown San Rafael Station Area Plan Existing Conditions Report

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Prepared for: City of San Rafael

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I. Introduction

This report describes existing conditions in the Downtown San Rafael Station Area. It seeks to establish baseline conditions within and around the station area to set the stage for future planning to accommodate and leverage the benefits of upcoming Sonoma Marin Area Rail Transit (SMART) commuter train service to the Downtown San Rafael SMART station. The planning horizon for this plan is 2035. This existing conditions report includes a description of the scope and physical context of the planning area; a summary of current land use policies and existing land uses in the study planning area; a review of the draft SMART station designs and operations to date; an overview of the existing San Rafael Transit Center; an assessment of pedestrian, bicycle conditions, auto and transit operations and conditions; a survey of parking in the immediate vicinity of the station; and an introduction to opportunities and constraints around the new SMART station.

The Downtown San Rafael Station Area

The San Rafael is the seat of Marin County and the largest city in Marin, and Downtown is the heart of commerce, professional services and the arts for the county. The Downtown San Rafael SMART station is the second southern-most station along the planned 70-mile SMART rail corridor from Cloverdale to Larkspur. It is located at the eastern end of and gateway to Downtown San Rafael, along the US 101 corridor, and near to the residential neighborhoods and business centers of east and central San Rafael, as well as other communities to the west such as San Anselmo and Fairfax.



Source: Marin County GIS, City of San Rafael



Source: City of San Rafael

Study Area / Priority Development Area

The Station Area Plan covers a 1/2-mile radius around the future SMART station and San Rafael Transit Center. This area is synonymous with the Priority Development Area (PDA), as defined by the City of San Rafael in coordination with the Association of Bay Area Governments (ABAG) and the Metropolitan Transportation Commission (MTC). It is within the PDA that residential units are counted toward the MTC TOD Policy housing threshold. The Metropolitan Transportation Commission's TOD Policy, Resolution 3434, sets corridor-wide housing thresholds for prioritizing funding for regional transit expansion projects. For commuter rail systems, Resolution 3434 sets a threshold of an average of 2,200 dwelling units per station across the system. In 2005, City of San Rafael staff estimated that the Study Area contained 2,444 dwelling units.¹

Plan Area

The Plan Area is defined as the twelve city blocks that surround the future SMART station, as well as the edges of the adjacent blocks across Mission Avenue to the north, Irwin Street to the east, Mahon Creek/San Rafael Canal to the south, and Lincoln Avenue to the west.

Station Area Demographics

The 2000 Census reveals that San Rafael's population includes a wide range of ages and incomes. It can be informative to compare these City-wide Census data with the same data for the Study Area and Plan Area to compare the distributions of age, race and income among the City, Study Area and Plan Area. The exact boundary of the Study Area cannot be matched with the available Census data, so the four primary Census Block Groups are used as a proxy for the Study Area. The map below shows the relationship between these two boundaries, and the following table lists the various data for each area: City, Block Groups, and Plan Area.

¹ <u>Downtown San Rafael FOCUS Application for Priority Development Area</u>, October 31, 2008.



Source: US Census, City of San Rafael

Station Area Demographics Source: 2000 Census

Household Income	Percent of Population (City-wide)	Percent of Population (Block Group Area)	Percent of Population (Plan Area)
Below \$25,000	8%	29%	
\$25,000 - 59,999	11%	35%	
\$60,000 - \$99,999	23%	22%	not available
\$100,000 - \$199,999	24%	10%	
Over \$200,000	10%	4%	

Age	Percent of Population (City-wide)	Percent of Population (Block Group Area)	Percent of Population (Plan Area)
0 - 18	18%	17%	7%
18 - 64	66%	73%	88%
65+	15%	10%	5%

Race	Percent of Population (City-wide)	Percent of Population (Block Group Area)	Percent of Population (Plan Area)
Hispanic or Latino	26%	26%	13%
White	62%	63%	73%
Black or African Am.	3%	4%	3%
Asian	7%	4%	5%
Two or more races	2%	3%	6%

The table above shows that the Study Area has lower incomes, slightly higher working-age population, and similar racial demographics to the City as a whole. Within the Plan Area, there is a higher percentage of working age adults and fewer children and elderly residents than in either the Study Area or the City. The Plan Area also has only about half the proportion of Hispanic or Latino residents as the Study Area and the City.

Demographic data from the 2000 Census reveal additional interesting facts about the population within the Block Group area. Of a total population of 7,243 people, 35% reported some type of disability and nearly 45% of the population lives alone, while another 31% live in a 2-person household. Almost 29% of the population is foreign born and over 76% of the housing is renter occupied. The majority of people drove or carpooled to get to work, but almost 16% used public transportation and another 7% walked or bicycled to work. These data are shown in greater detail in the table below.

Source: 2000 Census						
Total Population Population With Reported Disability	7,243 % of Pop	Means of Transportation to Work (16 and Older)	% of Pop	Place of Birth	% of Pop	
2,544	35%	. ,				
		Car, truck or van	72%	Native	71%	
Household Size	% of Pop	Drove alone	85%	Foreign Born	29%	
1-person HH	45%	Carpooled	15%	Naturalized Citizen	26%	
2-person HH	31%	Public Transportation	16%	Not a Citizen	74%	
3-person HH	12%	Motorcycle	0.5%			
4-person HH	6%	Bicycle	2%	Housing	% of Pop	
5-person HH	5%	Walked	5%	Owner Occupied	24%	
6-person HH	1%	Other Means	0.5%	Renter Occupied	76%	
7-or-more	1%	Worked at Home	4%			

Block Group Demographics Source: 2000 Census

Station Area Employment

According to data from the US Census, the population within the 1/2-mile radius Study Area held almost 1,800 jobs, located throughout Marin and the Bay Area. The majority of these jobs were held by employees between the ages of 30 and 54, and a majority of these jobs paid more than \$3,333 per month. Within the Study Area there were almost 7,000 jobs in 2008. Of these jobs, the majority was also held by employees between 30 and 54 years of age, and over 40 percent of the jobs paid more than \$3,333 per month. The following table and maps provide more detailed information.

Jobs Data Source: US Census, 2008	Jobs held by Study Area Residents (2008)		Jobs located within the Study Area (2008)		
	Count	Percent of Total	Count	Percent of Total	
Total	1,759	100%	6,839	100%	
Age 29 or younger	370	21%	1,891	28%	
Age 30 to 54	975	55%	3,615	53%	
Age 55 or older	414	24%	1,333	20%	
\$1,250 per month or less	277	16%	1297	19%	
\$1,251 to \$3,333 per month	506	29%	2582	38%	
More than \$3,333 per month	976	56%	2960	43%	

Jobs located within the Study Area (US Census, 2008)



Jobs held by Study Area Residents (US Census, 2008)



II. Land Use

Current Land Use Policies

San Rafael General Plan 2020

The San Rafael community values its natural setting, rich cultural and economic diversity, and strong business vitality. The *San Rafael General Plan 2020*, adopted in 2004, outlines a vision for the City that acknowledges the desirable "hometown" feel of San Rafael's residential neighborhoods, as well as the many advantages of urban living provided by the City's distinctive Downtown, which has been successfully revitalized over the past two decades.

General Plan 2020 established a goal of maintaining and building on the Downtown as a vibrant, active and attractive center for the City. To achieve this, the plan lays out several objectives, including substantially expanding the Downtown's economic success by increasing opportunities for a diversified economic base of retail, office, and residential development; encouraging creative infill to redevelop deteriorated and/or underdeveloped areas; promoting pedestrian safety and comfort along roadways and in public spaces; and ensuring that new and remodeled buildings contribute to the City's "hometown feel" and respect Downtown's many attractive, well-liked historic buildings.

Both within and beyond Downtown, there are a number of historic resources in San Rafael. Boyd House (Marin History Museum) is in the National Register, and Mission San Rafael Arcángel is listed in the State Register. The 1986 San Rafael Historical/Architectural Survey designates several other buildings within the Study Area as local landmarks.



Source: City of San Rafael

The General Plan anticipates that existing land use patterns will not change significantly by 2020, and that growth will occur primarily through infill and redevelopment. It is anticipated that new multi-family housing, including affordable and senior housing, will be constructed in commercial areas and along transit corridors so that residents may walk to work and shopping. This includes the Downtown, which benefits from a large variety of employment and service uses and proximity to transit, including the San Rafael Transit Center and the planned Downtown SMART station.

The General Plan's vision for housing in San Rafael is to provide a variety of residential options, "for people at all stages of life, at all income levels." Nearly half of the City's existing housing stock is renteroccupied, and great strides have been made to increase the supply of affordable housing over the past two decades. General Plan incentives developed in 1988 and 1996 encourage mixed-use development and reduce parking requirements. These same incentives also allow single-room occupancy and live/work units and encourage affordable housing by allowing density and height bonuses, which have helped San Rafael add over 1,000 units, many of them affordable, throughout the City since 1991. Some of the units developed as a result of the zoning changes include Centertown and Lone Palm apartments, which are attractive 3 and 4-story infill projects located in Downtown within easy walking distance of transit, shopping and services.

For new housing, the General Plan states that care must be taken to respect the character and privacy of adjacent development. Utilizing setbacks, transitions in height, and other strategies is encouraged to maintain compatibility with surrounding context. This is especially important for infill development, including transit-oriented development in Downtown, where mixed-uses and greater densities, height limits, and floor-area ratios are permitted. The General Plan encourages preserving and upgrading existing housing units, and implementing zoning standards for new units that reflect and reinforce Downtown's urban character.

Redevelopment Agency Five Year Implementation Plan

The Plan Area, and the majority of the Study Area, fall within the City of San Rafael's Redevelopment Project Area. The San Rafael Redevelopment Agency (RDA) has published the 2010/11 – 2014/15 *Five Year Implementation Plan* to establish and guide progress toward redevelopment goals for the City. The Agency's long-term goals are to:

- Guide and foster revitalization;
- Enhance visual characteristics of the project area;
- Promote new and continuing private sector investment;
- Retain existing businesses;
- Create local job opportunities;
- Protect the project area's position as a commercial center;
- Eliminate infrastructural deficiencies in the project area;
- Improve and increase the City's supply of affordable housing; and
- Accomplish these goals with a minimum of displacement.



City of San Rafael Development Agency (RDA) Project Area

The RDA's goals in the current five-year plan are to:

- Pursue economic development activities which increase City revenues, attract new businesses, retain existing businesses and create jobs;
- Support Downtown San Rafael as a healthy economic center with housing, shopping and employment; and
- Target housing funds to low and very low-income household projects to address the Project Area's
 proportional share of the unmet housing need.

The implementation plan sets out objectives to achieve these five-year plan goals, including providing assistance to stimulate the reuse of major economic development sites and other opportunity sites throughout the project area; assisting with tenanting of the Corporate Center offices; and assisting with retention and relocation of auto dealerships and other high tax-generating uses.

Objectives specific to Downtown include improving circulation within the project area—specifically, coordinating with SMART in improving conditions around the planned Downtown station—and assisting with infill development and transit-oriented development (including affordable housing development) around the station area and the San Rafael Transit Center.

San Rafael's housing citywide affordable housing need for 2009 to 2014, as identified by ABAG, is 1,403 units. In addition, ABAG has determined the following affordable housing needs for the period from 2007 to 2014:

- low and very low-income housing: 470 units (about 34 percent of the total housing need)
- moderate-income housing need: 288 units (about 28 percent of the total housing need)
- Market rate and/or above-moderate income housing: 646 units

In addition to funding infill and TOD housing around the planned SMART station and San Rafael Transit Center, the Agency provides assistance to organizations that acquire, rehabilitate and even manage existing housing stock for very low and low-income individuals.

San Rafael Zoning

The following section describes zoning and related development guidelines for each of the twelve blocks within the Plan Area, as numbered on the key map below. Note that housing is not subject to Floor Area Ration (FAR) limits, so mixed use buildings can include the maximum non-residential FAR plus any additional housing as allowed by the zoning.

FAR is the total gross building square footage divided by the land area, exclusive of public streets. Parking areas, covered or uncovered, and nonleasable covered atriums are not included in calculating FARs.



Source: City of San Rafael

Zoning: Sth/Mission Residential/Office (S/M R/O) to the north-west and <i>Hetherton Office</i> (HO) to the south-east Building: 42 feet to the north-west and 66 feet to the south-east Maximum 5//N R/O: 43 dwelling units/acre; HO: 72 du/acre FAR: 0.60 to the north and 2.00 to the south Parking: up to 2 spaces/multi-family dwelling unit Existing Multi-Family Residential, Mixed Use Residential over Commercial, Commercial, Office, Civic-Non Taxable Single-Family Residential, Mixed Use Residential over Commercial, Commercial, Office, Civic-Non Taxable Building Building: 42 feet Height: Maximum Zoning: Hetherton Office (HO) Building: 42 feet Height: Maximum 72 dwelling units/acre Density: FAR: 1.50 Parking: up to 2 spaces/multi-family dwelling unit Existing Single-Family Residential, Multi-Family Residential, Uses: Commercial Commercial Density: FAR: 1.50 Parking: up to 2 spaces/multi-family dwelling unit Existing Single-Family Residential, Multi-Family Residential, Commercial, Office	MissinciAve		Block I
Building Height: 42 feet to the north-west and 66 feet to the south-east Height: Maximum Density: 5/M R/O: 43 dwelling units/acre; HO: 72 du/acre FAR: 0.60 to the north and 2.00 to the south Parking: up to 2 spaces/multi-family dwelling unit Existing Multi-Family Residential, Mixed Use Residential over Commercial, Commercial, Office, Civic-Non Taxable Vess: Coming: Hetherton Office (HO) Building 42 feet Height: Maximum Density: FAR: 1.50 Parking: up to 2 spaces/multi-family dwelling unit Existing Single-Family Residential, Multi-Family Residential, Commercial Vess: Coning: Residential/Office Districts (R/O) Building 36 feet Height: Maximum A1 dwelling units/acre Block 3 Zoning: Residential/Office Districts (R/O) Building 36 feet Height: Maximum A2 dwelling units/acre Block 3 Zoning: Residential/Office Districts (R/O) Building 36 feet Height: <td rowspan="3">International Ave</td> <td>Zoning:</td> <td><i>5th/Mission Residential/Office</i> (5/M R/O) to the north- west and <i>Hetherton Office</i> (HO) to the south-east</td>	International Ave	Zoning:	<i>5th/Mission Residential/Office</i> (5/M R/O) to the north- west and <i>Hetherton Office</i> (HO) to the south-east
Maximum Density: 5/M R/O: 43 dwelling units/acre; HO: 72 du/acre FAR: 0.60 to the north and 2.00 to the south Parking: up to 2 spaces/multi-family dwelling unit Existing Uses: Multi-Family Residential, Mixed Use Residential over Commercial, Commercial, Office, Civic-Non Taxable Block 2 Zoning: Hetherton Office (HO) Building Height: 42 feet Maximum Density: 72 dwelling units/acre FAR: 1.50 Parking: up to 2 spaces/multi-family dwelling unit Existing Uses: Single-Family Residential, Multi-Family Residential, Commercial Vises: Zoning: Residential/Office Districts (R/O) Building Height: 36 feet Maximum Density: 43 dwelling units/acre Existing Uses: Single-Family Residential, Office Districts (R/O) Building Height: 36 feet Height: Maximum 43 dwelling units/acre Density: FAR: 0.40 Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Uses: Single-Family Residential, Commercial, Office, Institutional <td>Building Height:</td> <td>42 feet to the north-west and 66 feet to the south-east</td>		Building Height:	42 feet to the north-west and 66 feet to the south-east
FAR: 0.60 to the north and 2.00 to the south Parking: up to 2 spaces/multi-family dwelling unit Existing Multi-Family Residential, Mixed Use Residential over Commercial, Commercial, Office, Civic-Non Taxable Block 2 Zoning: Hetherton Office (HO) Building 42 feet Height: Maximum Density: 72 dwelling units/acre FAR: 1.50 Parking: up to 2 spaces/multi-family dwelling unit Existing Single-Family Residential, Multi-Family Residential, Uses: Commercial		Maximum Density:	5/M R/O: 43 dwelling units/acre; HO: 72 du/acre
Parking: up to 2 spaces/multi-family dwelling unit Existing Uses: Multi-Family Residential, Mixed Use Residential over Commercial, Commercial, Office, Civic-Non Taxable Block 2 Zoning: Hetherton Office (HO) Building 42 feet Height: 72 dwelling units/acre Density: FAR: FAR: 1.50 Parking: up to 2 spaces/multi-family dwelling unit Existing Single-Family Residential, Multi-Family Residential, Commercial Block 3 Zoning: Residential/Office Districts (R/O) Building 36 feet Height: 93 feet Maximum 43 dwelling units/acre Density: FAR: Output 36 feet Height: 43 dwelling units/acre Density: FAR: Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Uses: Single-Family Residential, Commercial, Office, Institutional Uses: Single-Family Residential, Commercial, Office, Institutional		FAR:	0.60 to the north and 2.00 to the south
Existing Uses: Multi-Family Residential, Mixed Use Residential over Commercial, Commercial, Office, Civic-Non Taxable Block 2 Zoning: Hetherton Office (HO) Building Height: 42 feet Maximum Density: 72 dwelling units/acre FAR: 1.50 Parking: up to 2 spaces/multi-family dwelling unit Existing Uses: Single-Family Residential, Multi-Family Residential, Commercial Block 3 Zoning: Residential/Office Districts (R/O) Building Height: 36 feet Maximum Density: 36 feet FAR: 0.40 Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Uses: Single-Family Residential, Commercial, Office, Institutional		Parking:	up to 2 spaces/multi-family dwelling unit
Block 2 Zoning: Hetherton Office (HO) Building 42 feet Height: Maximum 72 dwelling units/acre Density: FAR: 1.50 Parking: up to 2 spaces/multi-family dwelling unit Existing Single-Family Residential, Multi-Family Residential, Commercial Block 3 Zoning: Residential/Office Districts (R/O) Building 36 feet Height: Maximum Versity: 43 dwelling units/acre Density: FAR: Image: 0.40 Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Single-Family Residential, Commercial, Office, Institutional Uses:	5th Ave	Existing Uses:	Multi-Family Residential, Mixed Use Residential over Commercial, Commercial, Office, Civic-Non Taxable
Block 2 Zoning: Hetherton Office (HO) Building 42 feet Height: Maximum 72 dwelling units/acre Density: FAR: 1.50 Parking: up to 2 spaces/multi-family dwelling unit Existing Single-Family Residential, Multi-Family Residential, Multi-Family Residential, Commercial Block 3 Zoning: Residential/Office Districts (R/O) Building 36 feet Height: Maximum 43 dwelling units/acre Density: FAR: 0.40 Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Single-Family Residential, Commercial, Office, Institutional Uses:		·	·
Zoning: Hetherton Office (HO) Building 42 feet Height: Maximum Density: 72 dwelling units/acre Parking: up to 2 spaces/multi-family dwelling unit Existing Single-Family Residential, Multi-Family Residential, Commercial Block 3 Zoning: Residential/Office Districts (R/O) Building 36 feet Height: 93 dwelling units/acre Density: 1.50 Parking: up to 2 spaces/multi-family dwelling unit Existing Single-Family Residential, Multi-Family Residential, Commercial Block 3 Zoning: Residential/Office Districts (R/O) Building 36 feet Height: 94 dwelling units/acre Density: 1 FAR: 0.40 Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Single-Family Residential, Commercial, Office, Institutional Uses:	Mission Ave		Block 2
Building Height: 42 feet Maximum Density: 72 dwelling units/acre FAR: 1.50 Parking: up to 2 spaces/multi-family dwelling unit Existing Uses: Single-Family Residential, Multi-Family Residential, Commercial Block 3 Zoning: Residential/Office Districts (R/O) Building Height: 36 feet Maximum Density: 96 feet Existing Uses: 0.40 Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Uses: Single-Family Residential, Commercial, Office, Institutional	S'101 S.	Zoning:	Hetherton Office (HO)
Maximum Density: 72 dwelling units/acre FAR: 1.50 Parking: up to 2 spaces/multi-family dwelling unit Existing Uses: Single-Family Residential, Multi-Family Residential, Commercial Block 3 Zoning: Residential/Office Districts (R/O) Building Height: 36 feet Maximum Density: 43 dwelling units/acre Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Uses: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking		Building Height:	42 feet
FAR: 1.50 Parking: up to 2 spaces/multi-family dwelling unit Existing Single-Family Residential, Multi-Family Residential, Commercial Block 3 Zoning: Residential/Office Districts (R/O) Building 36 feet Height: Maximum 43 dwelling units/acre Density: FAR: FAR: 0.40 Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Single-Family Residential, Commercial, Office, Institutional Uses:		Maximum Density:	72 dwelling units/acre
Parking: up to 2 spaces/multi-family dwelling unit Existing Uses: Single-Family Residential, Multi-Family Residential, Commercial Block 3 Zoning: Residential/Office Districts (R/O) Building Height: 36 feet Maximum Density: 43 dwelling units/acre Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Uses: Single-Family Residential, Commercial, Office, Institutional		FAR:	1.50
Existing Uses: Single-Family Residential, Multi-Family Residential, Commercial Block 3 Zoning: Residential/Office Districts (R/O) Building 36 feet Height: Maximum Maximum 43 dwelling units/acre Density: FAR: 0.40 Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Single-Family Residential, Commercial, Office, Institutional		Parking:	up to 2 spaces/multi-family dwelling unit
Zoning: Residential/Office Districts (R/O) Building 36 feet Height: Maximum 43 dwelling units/acre Density: FAR: 0.40 Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Single-Family Residential, Commercial, Office, Institutional Uses:	Slibbave 1	Existing Uses:	Single-Family Residential, Multi-Family Residential, Commercial
Block 3 Zoning: Residential/Office Districts (R/O) Building 36 feet Height: Maximum Maximum 43 dwelling units/acre Density: FAR: Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Single-Family Residential, Commercial, Office, Institutional			
Zoning:Residential/Office Districts (R/O)Building Height:36 feetMaximum Density:43 dwelling units/acreFAR:0.40Parking:up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parkingExisting Uses:Single-Family Residential, Commercial, Office, Institutional Uses:	MissionAve it		Block 3
Building Height: 36 feet Maximum Density: 43 dwelling units/acre FAR: 0.40 Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Uses: Single-Family Residential, Commercial, Office, Institutional		Zoning:	Residential/Office Districts (R/O)
Maximum 43 dwelling units/acre Density:	La Carte Martin	Building Height:	36 feet
Density: FAR: 0.40 Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Single-Family Residential, Commercial, Office, Institutional Uses:		Maximum	43 dwelling units/acre
FAR: 0.40 Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Existing Single-Family Residential, Commercial, Office, Institutional Uses: Version		Density:	
Parking: up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking Single-Family Residential, Commercial, Office, Institutional Uses:		FAR:	0.40
Existing Uses: Single-Family Residential, Commercial, Office, Institutional		Parking:	up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking
	SHEAVE9	Existing Uses:	Single-Family Residential, Commercial, Office, Institutional

5th Ave	Block	
Section 2	Zoning:	Hetherton Office (HO)
	Building Height:	66 feet
	Maximum Density:	72 dwelling units/acre
	FAR:	2.00
	Parking:	up to 2 spaces/multi-family dwelling unit
4th St	Existing	Residential/Commercial Mixed Use, Office/Commercial
Strend of the second	Uses:	Mixed Use, Commercial, Office
Stevenso		Plack F
CERNIC .		BIOCK 5
	Zoning:	Hetherton Office (HO)
and the second second	Building	42 feet
	Height:	
1 the second sec	Maximum	72 dwelling units/acre
E H S S	Density:	1.50
	Parking:	1.50
ant so l	Faiking.	Commercial Office
	Uses:	
		Block 6
5th Ave-,	Zoning:	Residential/Office Districts (R/O) to the north and Commercial/Office (C/O)* to the south
z en l	Building Height:	36 feet
S TO:	Maximum Density:	43 dwelling units/acre
	FAR:	0.40
410 St	Parking:	up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking
	Existing Uses:	Single-Family Residential, Office, Commercial-Automotive, Institutional
		*General Plan classification: "Retail Office (R/O)"

- 4Da 81		Block 7
	Zoning:	Hetherton Office (HO)
	Building Height:	66 feet
	Maximum Density:	72 dwelling units/acre
	FAR:	2.00
E Standard	Parking:	up to 2 spaces/multi-family dwelling unit
NIC SI	Existing Uses:	Residential/Commercial Mixed Use, Commercial, Civic/Non-Taxable, Vacant (Commercial Lot)
IL ST THE		Block 8
visitints.	Zoning:	Hetherton Office (HO)
	Building Height:	42 feet
	Maximum Density:	72 dwelling units/acre
5 a	FAR:	1.50
	Parking:	up to 2 spaces/multi-family dwelling unit
sints)	Existing Uses:	Institutional, Commercial
300.59		Block 9
a la state a state	Zoning:	Commercial/Office (C/O)*
	Building Height:	36 feet
TOT I TOTAL	Maximum Density:	43 dwelling units/acre
	FAR:	0.70
	Parking:	up to 2 spaces/multi-family dwelling unit, +1 space/5 units for guest parking
	Existing Uses:	Commercial
		*General Plan classification: "Retail Office (R/O)"

<u> </u>		Block I
	Zoning:	2nd/3rd Mixed Use East (2/3 MUE)
	Building Height:	54 feet; up to 12 feet height bonus available
	Maximum	72 dwelling units/acre
	Density:	
A Starter A Starter	FAR:	1.50
	Parking:	up to 2 spaces/multi-family dwelling unit
2mi St. /	Existing	Commercial
	Uses:	
And an and a second second second		
asro St		Block I
Itrafs Ave	Zoning:	Public/Quasi-Public (P/QP)
	Building	36 feet
	Height:	
	Maximum	24 dwelling units/acre
	Density:	
	FAR:	1.00
	Parking:	up to 2 spaces/multi-family dwelling unit
200150	Existing	Civic/Non-Taxable (Bettini Transit Center)
	Uses:	
316 51		Block I2
A State of the second s	Zoning:	Commercial/Office (C/O)*
· · · · · · · · · · · · · · · · · · ·	Building	36 feet
2	Height:	
	Maximum	43 dwelling units/acre
	Density:	
210 51	FAR:	0.40
	Parking:	up to 2 spaces/multi-family dwelling unit
	Existing	Office
	Uses:	
		*General Plan classification: "Retail Office (R/O)"

To the west of the Plan Area within Downtown, zoning allows a variety of mixed-use buildings including, among others, commercial/office and commercial/residential uses that encourage retail frontages along the street with office and residential uses on upper floors. As the retail core of Downtown, much of Fourth Street as well as several blocks to the southwest of the Plan Area allow the greatest building heights, up to 54 feet plus 12 to 24 feet in height bonuses. The greatest non-residential densities, up to 2.00 FAR, are similarly allowed along much of Fourth Street. This means that the tallest buildings that

take up the largest amount of space on their respective parcels are allowed where the most density is already located – in the center of Downtown.

Between the Downtown core and the parks and lower-density, primarily residential neighborhoods surrounding Downtown to the north, south and west, the building heights and densities allowed by zoning are reduced. This ensures that buildings taper to lower heights of approximately 30 to 36 feet and non-residential densities of less than 1.00 FAR as they get closer to these surrounding uses. East of US 101, non-residential density is also limited to less than 1.00 FAR, and building heights are similarly limited to 30 to 36 feet. The following maps show this pattern in greater detail, and provide more information about individual Zoning designations in and around the Study Area.



Floor Area Ratios (FAR) in Downtown and Environs from the San Rafael General Plan 2020



Building Height Limits in Downtown and Environs from the San Rafael General Plan 2020



Source: City of San Rafael

In light of the recent economic downturn and to facilitate economic development, the City amended the Zoning Code to streamline Use Permit review for commonly requested and non-controversial non-residential land uses, and for modification of commonly requested and non-controversial parking standards. The recent Zoning Code amendment also permitted changes to land uses in existing buildings in Downtown's West End and environs without requiring additional on-site parking, based on the City's review of parking supply and demand in the area.

Design Guidelines

The San Rafael Design Guidelines in the General Plan were developed to provide guidance for the design of buildings that integrate well with their surroundings and promote a pedestrian friendly, peopleoriented environment. The General Plan's design guidance emphasizes preservation of Downtown's reputation as a special place characterized by diverse architectural design, historic buildings, and the unique character created by a higher density of buildings and an urban street frontage. Downtown's appeal is due in part to the many businesses, shops and restaurants that front directly onto the sidewalks and address the street. These features contribute to a comfortable and engaging pedestrian environment and are promoted by the design guidelines, which direct that windows, landscaping and architectural elements relate to the height of pedestrians and create visual interest.

The Downtown is divided into six districts as described in *Our Vision of Downtown*. Each is accompanied by specific guidelines to ensure new development maintains the district's unique character and advances the overall vision for Downtown.



Downtown District boundaries from the San Rafael General Plan 2020

Fourth Street Retail Core District

The General Plan requires that this district maintain a mix of uses with pedestrian-serving ground floor establishments and upper level residential and office uses. Retail, shopping, and other ground floor uses contribute to making Fourth Street a vibrant and interesting destination that is active at different times of day, including after normal business hours and on weekends.

Building on Past Success. Attracting public events and new entertainment venues is an important goal for this district, as is building on the already pleasant pedestrian experience through infill development and façade renovations, sidewalk repair and reduction of curb cuts, street tree and landscaping installation, and creating better connections between the street and available parking facilities. Finally, City Plaza is to be reinforced as the public, civic heart of Downtown.

Hetherton Gateway Office District

Adjacent to US 101, this district is the primary gateway into Downtown and is characterized by a concentration of office and professional service buildings, and by the San Rafael Transit Center and planned SMART station. Additional non-office uses, including restaurants and service retail with residential and office uses above, border the western edge of the district. The introduction of additional residential uses, with retail at the ground floor where possible, is strongly encouraged in this district, as is expansion of bus transit and incorporation of planned SMART service and potential shuttle service, and increased pedestrian and bicycle connectivity, including access to Mahon Path and other Downtown destinations.

The Gateway to Downtown. As the gateway to Downtown, special care should be paid to improving the entries at Lincoln, Mission, and Fifth Avenue, and along Third and Fourth Streets; in particular, the intersection of Fourth and Hetherton should announce this primary gateway into Downtown with a public plaza, special landscape design and public art, and include retail uses if feasible.

Lindaro Office District

This district is anchored by the new San Rafael Corporate Center office complex, the goal of which is to attract new employment that will benefit the City and the many other Downtown businesses nearby. Like the Corporate Center, the buildings in this district should be exceptionally high quality and include attractive landscaping, public plazas and courtyards, and active ground floor uses where feasible. Buildings should front onto the district's streets to create a comfortable and engaging pedestrian environment that connects well with adjacent districts. Specifically, improvements are recommended for accessing and traveling along Mahon Creek and crossing Second Street.



San Rafael Corporate Center offices and landscaped plaza

Second/Third Mixed-Use District

This district is relied upon heavily by transit providers using the San Rafael Transit Center and is easily accessible by car upon arrival and departure from Downtown via US 101. As such it presents opportunities for auto-oriented uses, including drive through retail, repair and service stations, and parking facilities.

Creating a Comfortable Pedestrian Realm. A challenge within this district is ensuring that pedestrians have safe and comfortable access along streets. Where possible, neighborhood serving retail and new residential uses are encouraged in this district, and the guidelines encourages creating an attractive, varied architectural frontage on all side of buildings, particularly along Second and Third Streets, as well as A, B, C, and D Streets, which provide critical links to other Downtown destinations.

Montecito/Happy Valley District

This district is anchored by a strong neighborhood commercial core centered around the Montecito Shopping Center. Featuring many businesses and community uses, including San Rafael High School, the district benefits from its close proximity and accessibility to Downtown.

A History of Diversity. As one of San Rafael's oldest neighborhoods, it includes a variety of housing, ranging from multi-family rental properties to large single-family homes, some of which are historic or architecturally significant. The General Plan supports the preservation of the diverse mix of housing types, including the many medium and high-density residences, and encourages new buildings to provide a "pedestrian friendly" street front and blend well with surrounding buildings. Similarly, maintaining the mix of commercial uses is encouraged and the addition of active ground floor and retail uses on Fourth Street is also supported.

Fifth/Mission Residential/Office District

This district boasts culturally significant and historic resources, including the City Hall, City Library, Falkirk Center and Boyd House. Other institutions include theaters, schools, a museum and historic buildings. The General Plan supports maintaining and reinforcing this thriving cultural district, increasing pedestrian access to these amenities, enhancing landscaping and improving connectivity to the rest of Downtown. Residential and office uses are appropriate intermingled throughout the district.

Canalfront District

The 2009 *Canalfront Conceptual Design Plan* and the preceding 2006 *Canal Transportation Plan* lay out a grand vision for improving link between the San Rafael Canal and the surrounding community. This vision seeks to capitalize on the asset that the waterway represents by encouraging investment in an eclectic array of new and existing businesses, including complementary shopping and dining establishments along the canal, improving access from surrounding neighborhoods, and expanding pedestrian and bicycle access along and across the canal.



Existing rail crossing and pedestrian bridge over Mahon Creek at Francisco Boulevard West south of Second Street.

Connecting to Downtown. The *Conceptual Design Plan* divides the canal into segments, two of which intersect the Downtown Station Study Area: the *Transit Center* and *West Canal* areas. Recommendations for these areas include improving underinvested and leftover open spaces that border the canal and Mahon Creek and developing pedestrian walks and landscaping along the segments of the waterway that traverse below the elevated US 101; developing art installations with lighting that increases safety; widening sidewalks along Second and Third Streets and generally improving access between the canal and Downtown; and encouraging mixed-use development with continuous paseos along the north and south sides of the canal.

West End Village

This district lies largely outside of the Study Area, but it relates to the area as an extension of the Fourth Street retail corridor. A broad range of shops, cafes with outdoor seating, and a major retail anchor characterize the district. Residential uses are appropriate on upper floors, and improving parking by providing additional lots that are accessible from side streets and screened with vegetation is encouraged. Redevelopment of existing parking lots of Fourth Street is encouraged as well.

Existing Land Use and Urban Form

Study Area

Roughly one third of the Study Area consists of commercial uses. This category includes all exclusively commercial or office properties, as well as mixed-use commercial properties with residential or office uses on upper floors. Exclusively residential uses, including single-family detached, single-family



attached, and multi-family, account for slightly less than one-quarter of the Study Area, while other uses account for the remaining acreage.

Study Area Existing Land Use (Commercial category includes exclusively commercial, office and mixed-use commercial buildings). (Source: County Assessor and City of San Rafael)



Source: County Assessor and City of San Rafael

Existing land use patterns largely follow the zoning the Study Area. Single-family residential uses predominate at the edges, especially to the northeast and northwest within the Domincan/Black Canyon, Lincoln/San Rafael Hill, and Fairhills neighborhoods; and to a lesser extent to the southeast and southwest within the Canal, Bret Harte and Gerstle Park neighborhoods. Institutional and civic uses, including Coleman Elementary School, Dominican University, San Rafael/Madrone High School, Davidson Middle School, San Rafael Mission, and City Hall, lie on the edge of or just beyond the Study Area boundary.

Moving from the edge of the Study Area boundary towards Downtown, multi-family residential uses begin to intermingle with the single-family uses. Multi-family uses are scattered throughout the Gerstle Park neighborhood immediately southwest of Downtown and are concentrated primarily toward the southern end of the Dominican/Black Canyon and northern end of the Montecito/Happy Valley neighborhoods to Downtown's northeast. Attached single-family uses are present in various small pockets within these neighborhoods, particularly within the Lincoln/San Rafael Hill neighborhood near its border with Downtown. Generally, higher-density residential uses tend to be located along the major corridors that lead from the neighborhoods into Downtown, such as D Street south of First Street, Lincoln Avenue and Laurel Place north of Mission Avenue, and in the Dominican/Black Canyon neighborhood north of San Rafael/Madrone High School.

Public Open Space and Plazas

While Downtown's streets, sidewalks and even parking lots are used for informal gathering and for parades and festivals, as well as promotional sales and sports events, City Plaza is the only formal, public open space within Downtown. Albert Park is the only urban park within the Study Area and in proximity to Downtown; it consists primarily of recreational facilities, including a baseball diamond, tennis and bocce courts, a child care center, senior facilities and a children's playground. The pathway along Mahon Creek provides a bicycle and pedestrian connection between the Transit Center, Andersen Drive and Albert Park. A and B Streets and the Palm Promenade serve to connect Albert Park to Downtown. Boyd Memorial Park is the other major public open space near Downtown, located in the hills above the San Rafael Mission, to the northwest of the Study Area.



Boyd Memorial Park rises behind the San Rafael Mission

Intermingled industrial and commercial uses are predominant south of the Study Area, concentrated along Andersen Drive and the SMART rail right-of-way within the Francisco Boulevard West neighborhood. The majority of these uses are big-box and automotive retail, as well as industrial supply and outlet establishments. East of US 101 in the Canal Waterfront neighborhood, commercial uses line both sides of the San Rafael Canal and include several maritime retail businesses, auto dealerships, and the Montecito Plaza shopping center. Within the Montecito/Happy Valley neighborhood north of Third Street and west of US 101, San Rafael/Madrone High School separates the commercial uses south of Third Street from the residential uses to the north. To the west, a mix of commercial uses, including grocery stores, boutique shopping, and office buildings as well as some civic uses, gradually transitions to single- and multi-family residential uses along the border with the Dominican/Black Canyon neighborhood. Along Irwin Street, several auto-oriented businesses cater to vehicular traffic exiting the freeway, leading to potential pedestrian conflicts and a less walkable environment.

West of US 101 and stretching to the intersection of Fourth Street and West End Avenue lies the Downtown neighborhood. The southern border of Downtown is marked by Mahon Creek, which runs along the edge of the San Rafael Corporate Center office complex and Albert Field, while Mission Avenue defines the northern border. Downtown consists of a rich conglomeration of diverse uses that vary by district. Much of the success of Downtown and a major civic, cultural and commercial destination for the region is the urban character of the architectural form and land uses, which feature retail businesses on the ground level, and office and residential uses on upper stories. More detailed information about these districts is described in the Downtown Design Guidelines section of this document.

Urban Form. The following figure-ground study provides insight into the urban form that characterizes different parts of San Rafael within and surrounding the Study Area. The gridded street network of the Downtown core, particularly along Fourth Street, is clearly evident in this illustration. The consistent architectural building wall along Fourth Street, and to some extent along parts of Third Street, Fifth Avenue, A Street, B Street, and Lincoln Avenue, physically frames the pedestrian experience on these

blocks, which is reinforced in areas with street trees placed at regular intervals and building facades that include transparency and are visually engaging to the passing viewer.

At a larger scale, this illustration clearly demonstrates the less pedestrian-oriented urban form created by auto-related uses, primarily US 101 and large surface parking lots that front directly onto streets rather than sitting behind the buildings they serve. Topographic conditions can also be discerned from the way residential buildings begin to trace curvilinear paths in the hills to north and northeast of the Study Area.



Source: City of San Rafael

Plan Area

Exclusively commercial uses account for nearly half of the Plan Area, while automotive uses, exclusively office uses, and mixed-use commercial buildings with office or residential uses on upper floors compose roughly twenty additional percent. Civic/Non-Taxable uses and Institutional uses make up over a quarter of the Plan Area, while residential uses account for less than ten percent of the Plan Area.



Plan Area Existing Land Use (Sources: County Assessor, City of San Rafael and Community Design + Architecture)



Sources: County Assessor, City of San Rafael and Community Design + Architecture

Land uses within the Plan Area diverge from the underlying zoning designation, which is primarily Hetherton Office but also includes Commercial/Office, Residential/Office and Second/Third Mixed Use designations. However, consistent with the General Plan's Hetherton Gateway Office District design guidelines, the Plan Area is characterized by a broad mix of uses. Among these are stand-alone retail commercial, office, and other professional service buildings; mixed-use buildings that include non-office uses such as restaurants and service retail on the ground floor with residential and office uses on upper levels; multi-family and attached single-family homes; various civic and institutional buildings; and transit uses associated with the San Rafael Transit Center and planned SMART station site.



Whistlestop building (former train depot) and site of the planned Downtown SMART station

Specific uses immediately adjacent to the planned SMART station site include Whistlestop, a non-profit organization devoted to providing services and activities for older adults and persons with disabilities, and a Citibank branch building. Whistlestop occupies the renovated former railroad depot building on Tamalpais Avenue between Third and Fourth Streets, and Citibank is located in a two-story building on the south-eastern corner of the same block, opposite the Whistlestop building across the rail right-ofway, backing onto Hetherton. A parking lot for the bank occupies the northwestern portion of the site. To the east, Caltrans parking lots occupy two blocks below US 101 within the Plan Area, between Second Street and Mission Avenue. The remaining two blocks under the freeway are private, dedicated parking lots for the surrounding buildings.

Three one-story retail businesses occupy the block to the west of the San Rafael Transit Center. The block to the north and west of the Whistlestop building is a combination of stand-alone commercial uses including retail services, restaurants and a bar, a non-profit organization, and mixed-use buildings with residential over ground floor retail. The parcel at the southeast corner is currently vacant and is flanked by parking lots for adjacent businesses on both sides. On the next block to the north between Fourth Street and Fifth Avenue, more commercial uses predominate; these include offices, a medical rehabilitation clinic and some vacant office space, restaurants, and a liquor store. In the northwest
corner of the Plan Area the mix of uses becomes more diverse and includes offices, mixed-use buildings with retail on the ground floor and residential or office uses on upper floors, some multi-family residential buildings and one single family residence. To the east of this block between Tamalpais Avenue and Hetherton Street are two multi-family units, one single-family residence, and mixed commercial/office uses. South of this block are two offices and retail uses including a check cashing business and a café. East of US 101, between Mission Avenue and Fifth Avenue are offices, one single-family residence, a bike shop, and tire store. South of this block, a collection of retail commercial uses includes the French Quarter boutique shops and offices, restaurants, and a dry cleaner on the site of a former service station. Finally, the block in the southeast corner of the Plan area is a single office building with multiple office tenants.

Urban Form. The following figure-ground study provides insight into the urban form that characterizes the Plan Area. As the "Gateway to Downtown," the Plan Area west of US 101 is hindered by a lack of significant buildings on the west side of Hetherton, other than the Citibank building. This is partly the result of the San Rafael Transit Center's location between Second and Third Streets, which are primary vehicular routes to and from the Downtown.

Fourth Street provides an excellent architectural building wall along the sidewalk from Tamalpais Avenue to the west; however, east of Tamalpais Avenue the urban form that defines the streetscape dissipates due to the intervention of the rail right-of-way and the parking lots on the north side of the Whistlestop and Citibank buildings. Fifth, Mission, and Tamalpais Avenues, Hetherton Street and sections of Irwin Street similarly lack physical definition of the edge of the pedestrian realm due to buildings that do not directly front onto and address the street, and due to large parking lots, many of which correspond with long curb cuts that interrupt the pedestrian realm.



Source: City of San Rafael

Key Conclusions

A transit-oriented station area requires a walkable environment so transit riders can get to and from their destinations on foot, and transit-oriented development so there are destinations within walking distance of transit (places of business, homes, shopping and recreation). Planners often refer to "the Four D's" as the key ingredients that help create this kind of environment and as this existing conditions report demonstrates, Downtown San Rafael benefits from all of them, to varying degrees:

- Density a dense concentration of jobs and a considerable and growing residential population, which contribute to more activity and improved vitality and safety for people Downtown.
- Diversity a good mix of different types of businesses and residences, numerous cultural facilities, schools and other civic uses, and public open spaces, and many diverse and distinct neighborhoods.
- Design pedestrian-friendly building designs and character throughout much of Downtown; architecturally attractive streetscapes, especially Fourth Street, and historic buildings; a traditional street grid with small, walkable blocks with some larger and more auto-oriented blocks in outlying portions of Downtown.
- Destinations the County seat and local government; commerce, including many longstanding and new businesses; cultural destinations like the Film Center and Mission, and new housing and jobs throughout Downtown.

In addition, Downtown San Rafael benefits from recent investments in public infrastructure, including sidewalk upgrades, ADA sidewalk/curb cut improvements, San Rafael Transit Center signage and wayfinding, and improved bicycle routes and multi-use path connections. Private investments also contribute to a successful and energized Downtown, including Rafael Town Center, the Corporate Center, new housing developments and new businesses.

There are some challenges for development in Downtown. The station block is slightly removed from the heart of Downtown, and there are some difficult walking and bicycling conditions along certain routes between the station block and surrounding neighborhoods and business destinations. The existing transit center, while providing excellent accessibility and transit service, does create some visual and noise impacts in the immediate surrounding area. Heavy traffic related to US101 on and off-ramp use along Hetherton and Irwin Streets, and cross town traffic along Second and Third Street contribute to a less appealing environment to pedestrians and certain businesses and housing uses. However, other businesses benefit from vehicle accessibility. New development can be challenging because of the relative smallness of parcels within the station area, but it is possible to assemble properties to create larger development sites. Parking requirements and height and density maximums also pose a challenge to development; however, the City has made good efforts to allow exceptions and height and density bonuses in certain cases.

Combined, these strengths and opportunities for improvement create an environment that is well suited to benefit from additional transit investments. Leveraging the introduction of SMART train services and building on the many successes to date will allow the City to create an even more vibrant, successful and enjoyable place for people to live, work, and recreate in Downtown San Rafael.

III. Transportation and Circulation

This section documents the existing transportation system in the vicinity of the Downtown San Rafael SMART station. An analysis of the San Rafael Transit Center operations, an analysis of multimodal transportation conditions on local streets (traffic, transit, pedestrian, bicycle), and a discussion of the 20 percent SMART station design plans are included in this section. The existing transportation and circulation conditions will provide the basis for analyzing the alternative configuration concepts for the Downtown San Rafael SMART Station and the San Rafael Transit Center.

Regional Transportation Context

Figure 1 shows the major elements of Downtown San Rafael's transportation system.



Figure 1 – Regional Transportation Context

- Freeway
- Major Roadways
- SMART Station Site
- San Rafael Bettini Transit Center
- Rail Corridor
- ····· Central San Rafael Interchange Ramps
- US 101/I-580 Interchange

Source: City of San Rafael

The major elements shown in Figure 1 are described below:

- US 101: US 101 is a major north-south freeway that connects San Rafael and other Marin County communities with San Francisco to the south and Sonoma County to the north. In the vicinity of the Plan Area, US 101 is an eight-lane freeway with four lanes in each direction: three mixed-flow travel lanes and one high-occupancy vehicle (HOV) travel lane. The segment of US 101 in Central San Rafael carries approximately 100,000 vehicles per day.
- US 101 Central San Rafael Interchange: The Central San Rafael Interchange provides the primary
 access to US 101. The interchange consists of a set of freeway ramps at Second Street and Mission
 Avenue that are connected by Hetherton and Irwin Streets. Second Street provides access to US 101
 to/from the south, and Mission Avenue provides access to US 101 to/from the north. Hetherton and
 Irwin Streets, which are local streets maintained by the City of San Rafael, serve as frontage roads
 for US 101.
- Hetherton and Irwin Streets: Irwin and Hetherton Streets are one-way streets that function together to connect the freeway ramps at Second Street and Mission Avenue. Hetherton Street is a three to four-lane one-way street traveling southbound between Mission and Second, while Irwin Street is a three to four-lane one-way street traveling northbound from Second to Mission. These one-way streets form a single high-capacity connector that functions similar to freeway frontage roads.
- Second Street and Third Street: Second and Third Streets form a one-way couplet that carries traffic east-west through Downtown San Rafael. Second Street and Third Street are both three to four-lane one-way arterial streets that extend from West End Avenue west of downtown to Point San Pedro Road east of US 101. These streets serve as the primary route for traffic from San Rafael and communities to the west, such as San Anselmo and Fairfax, to access US 101 at the Central San Rafael Interchange. Concentrating traffic on Second and Third Street does reduce traffic congestion on other street within downtown San Rafael, such as Fourth Street and Fifth Avenue.
- Fourth Street and Fifth Avenue: Fourth Street and Fifth Avenue are minor two-lane east-west roadways that primarily function as local traffic collectors. These streets also form the backbone of the City's downtown commercial district west of Lincoln Avenue.
- Tamalpais Avenue and Tamalpais Avenue East: Tamalpais Avenue is a north-south two-lane street that runs between Second Street and Laurel Place (north of Mission Avenue) west of the railroad tracks. Tamalpais Avenue has offset intersections at Fourth Street and Mission Avenue. Tamalpais Avenue East is a northbound one-way street east of the railroad tracks that runs parallel to Tamalpais Avenue. Tamalpais Avenue East begins at Third Street and terminates at Mission Avenue.
- US 101/I-580 Interchange: The US 101/I-580 Interchange is just south of the Plan Area and provides a second point of access to the regional freeway network via ramps at Bellam and Francisco Boulevards. The interchange provides a limited freeway-to-freeway connection serving westbound I-580 to northbound US 101 and southbound US 101 to eastbound I-580.

A major improvement project at the interchange, the *Westbound I-580 to Northbound US 101 Connector Improvements* project is in its final stages of construction. The major components of the project, including the widening of the freeway-to-freeway connector ramps, construction of auxiliary lanes, and modifications to the ramps have been completed. Reconstruction of the Bellam Boulevard undercrossing structure is near completion, which will improve the pedestrian, bicycle, and auto experience by providing better sightlines and a clearer path of travel. These interchange improvements have helped alleviate a significant bottleneck along the US 101 corridor south of the Central San Rafael Interchange.

- San Rafael Transit Center (C. Paul Bettini Transit Center): The San Rafael Transit Center (SRTC) is located on the southern edge of the Plan Area and is bounded by Second, Hetherton, Third, and Tamalpais. The SRTC provides the primary transit access to Downtown San Rafael and is the main hub for bus service operated by Golden Gate Transit (GGT) and Marin Transit. The SRTC's central location and proximity to US 101 make it an important transfer point for transit service within Marin County and regional destinations in the Bay Area.
- **SMART Downtown San Rafael Station:** SMART's Downtown San Rafael station site is located just to the north of the SRTC and is bounded by Third, Fourth, Tamalpais East, and the Whistlestop building.
- Whistlestop Wheels: Whistlestop Wheels provides paratransit services under a contract with Marin Transit. Whistlestop is a senior center operated by the Marin Senior Coordinating Council located in the historic train station building adjacent to the SMART station property west of the existing railroad tracks.



Queues on eastbound Second Street approaching the southbound US 101 on-ramp (AM peak hour)



Queues on southbound Hetherton Street approaching the southbound US 101 on-ramp (AM peak hour)

The Transportation and Circulation section below discusses the following topics:

- A detailed description of operations and ridership at the SRTC
- A multimodal transportation analysis of the local street network (traffic, transit, pedestrians, bicycles)
- An update on the design plans under development for the SMART Downtown San Rafael station

San Rafael Transit Center Operations

The SRTC provides the primary transit access to Downtown San Rafael and is the main hub in Marin County for bus service operated by Golden Gate Transit and Marin Transit. The SRTC's central location, convenient freeway access and proximity to park-and-ride lots make it an important origin for long distance commute service to San Francisco and Sonoma County. The SRTC is also a primary regional transfer point for transit service to other destinations in the Bay Area. Bus schedules at the SRTC are coordinated around several "pulse" times, which allow for timed transfers between routes. The SRTC also serves several private operators, including the Marin Airporter (scheduled service to/from San Francisco International), the Sonoma County Airport Express (scheduled service to/from Oakland Airport) and Greyhound.

SRTC Configuration and Bus Service

Figure 2 provides a detailed map of the SRTC. The SRTC has four platforms (A through D) with a total of 14 designated bus berths. Bus routes on Platforms B, D, and west curb of Platform A use assigned berths. Bus routes on Platform C and the east curb of Platform A operate on a "first bus in uses the first available loading area" basis. The entire length of the east curb of Platform C (berths C1 and C2) is

utilized by northbound routes 70, 71, 80, and 101. Because of the one-way pattern on the streets surrounding the SRTC, some routes have two berths, one to serve each direction of travel. This allows for more convenient entry and exit between the SRTC and the local street network. The SRTC also contains a taxi stand area, bicycle parking and ancillary buildings (food service, security, restrooms, etc.) with employee parking.



Distingent Applyments	(Discontinue in stands)	MO - would be a could	CD	ED - seath sund 18	(In some the second)
Platform Assignments	Directions noted:	NB = northbound	SB = SOUTRBOURD	EB = eastroound v	B = Westbound)
, including the state of the st		ite iterteres			

Platform B	Platform C	Platform D	
B1 - NB 27; WB 23, 126	C1/C2 - NB 70, 71, 80, 101	D1 - Marin Airporter	
B2 - SB 22		D2 - Sonoma County Transi	
B3 - WB 29; NB 49		D3 - NB 44, 52; Sonoma	
B4 - NB 45/45K		Greyhound	
	Platform B B1 - NB 27; WB 23, 126 B2 - SB 22 B3 - WB 29; NB 49 B4 - NB 45/45K	Platform B Platform C B1 - NB 27; WB 23, 126 C1/C2 - NB 70, 71, 80, 101 B2 - SB 22 B3 - WB 29; NB 49 B4 - NB 45/45K E45/45K	

D4 - WB 68, NB 233

Source: City of San Rafael



Platform B at the SRTC

The taxi stand/staging area is located along the railroad track right-of-way between Platforms C and D. The maximum number of cabs that can wait simultaneously at the SRTC is six, though the actual number varies considerably throughout the day. Data on taxi operations is limited because most taxis are owned by private operators. Field observations indicate that as many as four to five taxis queue up within this staging area during the afternoon peak. Taxi usage at the SRTC peaks on nights and weekends when local service is not operating. Taxis are also used in conjunction with the airport bus service provided by Marin Airporter and the Sonoma County Airport Express.



Platform D and taxi stand on existing railroad tracks at the SRTC

Golden Gate Transit (GGT) is the primary operator of public transit services in Marin County. GGT is one of three operating divisions of the Golden Gate Bridge, Highway & Transportation District (the Golden Gate Bridge and Golden Gate Ferry being the other divisions). GGT operates local intra-county bus service via a contract with Marin Transit and regional inter-county service.

The regional service consists of:

- Transbay Basic Service: Basic service bus routes provide daily service throughout the day and evening connecting San Francisco, Marin, Sonoma, and Contra Costa Counties (including the Richmond and El Cerrito BART stations).
- Transbay Commute Service: Commute bus routes provides directional/peak period service, mornings and evenings, Monday through Friday (except holidays) connecting San Francisco, Marin, and Sonoma Counties.

The Marin County Transit District (Marin Transit) is the agency responsible for providing local transit service within Marin County. Marin Transit contracts with other providers, such as GGT and Whistlestop Wheels, for local bus and paratransit services. The SRTC also serves as a main stop for Greyhound, Marin Airporter, the Sonoma County Airport Express and other public and private transit operators.

Table 1 shows weekday service for GGT, Marin Transit, Sonoma County and County Shuttle Connection and daily service for other operators (effective September 2010).

Route	Route Description	Direction	AM Peak Headway (min) ¹	PM Peak Headway (min) ¹	Pulse Time ²	Layover (min)	Berth
Marin Tra	nsit						
17	Local: Marin City to San Rafael	SB	30	30	00/30	5	A2
22	Local: San Rafael to Sausalito	WB	8-30	30	00/22/30	5	B2
23	Local: San Rafael to Fairfax/Manor (via Third St)	WB	11-49	60	04/15	5	B1
29	Local: San Rafael to Fairfax/Manor (via Sir Francis Drake Blvd)	WB	30	30	00/30	5	B3
35	Local: San Rafael to Canal Area	SB	10-20	10-20	00/30	5	A4
26	Local: San Rafael Canal Area to	NB	30	30	15/45	5	A4
30	Marin City	SB	30	30	15/45	5	A2
45/45K	Local: San Rafael to Northgate /Kaiser Hospital	NB	30	30	00/30	5	B4
49	Local: San Rafael to Ignacio	NB	60	60	15	5	B3
52	Local: Novato to San Rafael	NB	60	60	15	5	D3
68	West Marin Stagecoach: San Rafael to Pt. Reyes and Inverness	WB	1 trip	_3	8:05AM/ 6:30PM	13-19	D4
126	Local: Sleepy Hollow to San Rafael	EB	1 trip	-	7:24AM	-	B1
233	Shuttle: Santa Venetia to San Rafael	NB	60	60	00	5	D4
Golden Ga	te Transit						
27	Commute: Sleepy Hollow to San	NB	-	30	20/50	-	B1

Table 1: San Rafael Transit Center Operators (Weekday)

	Francisco	SB	15-35	-	5/35	-	A1
40/42	Basic: San Rafael to BART Del Norte Station	EB	30	60	00/30	5-10	A3
4.4	Commute: Marinwood to San	NB	-	1 trip	6:00PM	-	D3
44	Francisco	SB	60	-	15	-	A2
	Basic (70): Novato to San Francisco	NB	4-30	4-30	00/26/30/55	5	C1
70/71	: Novato to San Francisco Local (71): Novato to Marin City	SB	4-30	4-30	00/26/30/55	5	A2
00			1 trip	_3	7:00AM	5	C1
80	Basic: Santa Rosa to San Francisco	SB	-3	1 trip	-	5	A2
101	101 Basic: Santa Rosa to San Francisco		60	60	15	5	C1
101			60	60	15	5	A2
Other Tra	nsit Service						
A.C	Sonoma Airport Expross	NB	120	120	15	-	D3
AL	Sonoma Airport Express	SB	120	120	15	-	D3
CC	County Shuttle Connection	NB	1 trip	-	8:30AM	-	D5
CP	Graubaund	NB	-	_3	3:45PM	-	D3
GK	Greynound	SB	-	1 trip	4:05PM	-	D3
N4A	Marin Airportor	NB	30	30	Varies	-	D1
IVIA	Marin Airporter	SB	60	60	15	-	D1
DD	River Peck Casine Express	NB	-3	-	9:45AM	-	Citibank
КК	River Rock Casillo Express	SB	-	1 trip	4:15PM	-	Citibank
SO	Sonoma County Transit Route 38	NB	-	-3	6:26PM	0	D2
Notes: ¹ AM peak ² Pulse tim	s period defined as 7:00 to 9:00 AM; PM he is shown as the minutes after the start	peak period de of the hour	efined as 4:00 to	6:00 PM			

³ Trip operates outside of the peak period

Source: Golden Gate Transit, Marin Transit (2010)

Table 1 summarizes the following details about the SRTC operations:

- Transit Operator and Route
- Direction: routes with a berth serving a different direction of travel are identified (NB = northbound, SB = southbound, EB -= eastbound, WB = westbound)
- AM and PM Peak Headway: headway is the time between scheduled bus arrivals
- Pulse Time: pulse time is the coordinated departure time at the SRTC. Pulses are scheduled roughly every 15 minutes to facilitate transfers between routes. Pulse times are shown as minutes after the start of each hour.
- Layover: layover is the amount of dwell time that buses have at the station
- Berth: the berth is assigned area on each platform

The general layout and function of the SRTC is summarized below:

 Southbound Basic routes to San Francisco (70, 80, 101) and local routes (17, 36, and 71) are assigned to Platform berths A2. Southbound Commute routes to San Francisco (27 and 44) are assigned to berth A1. Given the frequency of service on berths A1 and A2, the first bus in occupies the southernmost portion of Platform A, thereby allowing subsequent buses to park immediately behind the preceding bus.

- Southbound weekday morning commute routes occupy the northern portion of Platform A (or berth A1) since their dwell times are very brief. These two berths are located adjacent to the curb on southbound Hetherton Street. This allows for a convenient exit from the SRTC onto to the southbound US 101 on-ramp.
- Platform berths A3 and A4, along with Platform B, serve a mix of local service and Basic routes to the El Cerrito Del Norte BART station.
- Platform D serves GGT routes 44 and 52, Marin Transit shuttle 233, West Marin Stagecoach route 68, and Sonoma County Transit route 38. Platform D also serves private operators, including Greyhound, Marin Airporter, and the Sonoma County Airport Express.
- The berth on northbound Tamalpais Avenue closest to Second Street serves the County Shuttle Connection.

Table 2 provides a summary of the bus frequency at each platform during the PM peak hour.

Platform	Bus Frequency – PM Peak Hour (4-5 PM) (Total Stops per Hour at all berths)
A	16
В	10
С	8
D	8
Total	42

Table 2: SRTC Bus Frequency – PM Peak Hour



Golden Gate Transit bus exiting the SRTC and crossing Third Street heading north on Tamalpais East Avenue

Figure 3 (A through F) provides a series of route maps that depict how buses travel to and from the SRTC on the local street network and how buses access their assigned platform berths.













Ridership and Transfers

Data on transfers between bus routes at the SRTC has been obtained from Translink/Clipper and farebox data collected by GGT. AM 3-hour (6:00 to 9:00) peak period pedestrian counts for several locations at the SRTC are available from the study *MTC Regional Hub Signage Program* (Jacobs, 2008). Ridership data (boardings, alightings, bus load factor, etc.) are not available at this time. However, an upcoming data collection effort by Marin Transit should provide a clearer picture of ridership activity at the SRTC. This data should be available for the alternatives phase of the project.

GGT has provided an estimate of the total number of transfers between routes at the SRTC. The transfer data was developed by GGT using data from Translink/Clipper transit payment cards and farebox data on one weekday in April 2010. The transfer data are helpful for understanding pedestrian flows between platforms. However, the data do not represent all pedestrian flows because they do not include riders with a final origin or destination at the SRTC. Boarding and alighting data are required to develop total count of pedestrian activity at the SRTC.

Table 3 presents the top ten route pairs based on the transfer data supplied by GGT. Table 3 sums the total number of daily transfers for both directions of a transit trip. For routes that are split north/south or east/west, the corresponding round-trips are combined. For example:

- The Marin Transit Local 35 to the GGT Basic 70N (all-day service) connection transports customers from the Canal neighborhood (east of US 101) to destinations north of San Rafael. Fifty-nine riders made this connection from 35 to 70N in the dataset.
- The corresponding return trip from origins north of San Rafael to the Canal neighborhood consists of the 70S connecting to the 35 at the SRTC. Thirty-two riders made this connection from 70S to 35.
- The GGT Basic 70 serves the same route and destinations as the Marin Transit 71 (operated under a contract with GGT). Therefore, the 35-70 and 35-71 route transfers describe similar market segments.

Route Pair	Daily Transfers	Notes
35-17	166	Canal Neighborhood to/from Mill Valley
35-22	162	Canal to/from Sausalito Ferry Terminal
35 to 71N / 71S to 35	95	Canal to/from destinations north of San Rafael
35 to 70S / 70N to 35	92	Canal to/from destination south of San Rafael
35 to 70N / 70S to 35	91	Canal to/from destinations north of San Rafael
35-45	73	Canal to/from Northgate Mall
35 to 71S / 71N to 35	73	Canal to/from destination south of San Rafael
35 to 80N / 80S to 35	63	Canal to/from destinations north of San Rafael
22-45	58	Sausalito to/from Kaiser Hospital/Northgate Mall
29-45	43	San Anselmo to/from Kaiser Hospital/Northgate Mall
Source: Golden Gate Transit, 2010)	

Table 3: Top Ten Transfer Route Pairs at the SRTC

According to the Translink/Clipper and farebox data, the SRTC handles approximately 2,300 daily transfers between routes, with 190 transfers occurring during the PM peak hour. The majority of the transfer activity occurs between bus routes serving the Canal Neighborhood and destinations to the

north and south along US 101 served by the 70, 71 and 80. Approximately 43 percent of all transfers at the SRTC involved riders connecting to/from the Marin Transit Local 35.

The transfer data were analyzed further to aggregate the pedestrian flows between platforms at the SRTC. Table 4 shows the transfer flows between platforms from the GGT Translink/Clipper and farebox data using an origin-destination matrix format.

Platform To\From	А	В	С	D			
Α	622	403	216	16			
В	327	207	116	21			
С	147	105	23	9			
D	57	33	9	0			
Source: Golden Gate Transit, Arup, 2010							

Table 4: Daily Platform to Platform Transfer Volume

Figure 4 summarizes the Translink/Clipper and farebox data by showing the percentage of daily transfers that occur between platforms. These percentages sum the two-way flow between platforms. Thirty-two percent of transfers occur between Platforms A and B, while 27 percent of transfers remain on Platform A to board their connecting bus. These data do not provide an indication of the route pedestrians take to move between the platforms (i.e., the center crosswalk or either of the crosswalks on Second or Third Streets).



Figure 4: Bus Transfers Between Platforms

Major Platform to Platform Pedestrian Flows

- Percent of daily transfer flows between platforms Source: Golden Gate Transit
 Transfer on same platform (arrow scaled based on percentage)
 Transfer between platform Arrow does not represent the actual path of travel (arrow scaled based on percentage)
- Crosswalk not established

Figure 5 summarizes the data from the pedestrian flow data published in the MTC Hub Signage study (AM peak period only) and pedestrian counts collected by the City at the intersection crosswalks surrounding the SRTC (AM and PM peak hour). The City's counts represent all pedestrians, not only pedestrians to and from the SRTC. These counts provide another valuable source of data that describe how pedestrians access the station. The counts also provide a count of platform-to-platform flows across the center crosswalk.



Figure 5: Pedestrian Access and Crosswalk Volumes

Pedestrian Crosswalk Volumes (AM & PM Peak Hour)

← 100 (150) → AM (PM) Peak Hour Crosswalk Volume Source: City of San Rafael Counts

Pedestrian Access to the SRTC (6 to 9 AM)

Distribution of Pedestrian Volumes at Main Access Points (%) - Based on AM peak period counts (6-9 AM) Source: MTC Regional Hub Signage Program SRTC Center Crosswalk Flow (6 to 9 AM)



Center Crosswalk Pedestrian Volume Source: MTC Regional Hub Signage Program

Multimodal Transportation Conditions

This section describes the existing multimodal transportation conditions within the Plan Area. This section describes how all travel modes (auto, transit, and pedestrian/bicycle) currently operate and interact within the Plan Area.

The framework for analyzing existing multimodal conditions is:

- Plan Area Transportation Context: A discussion of major transportation elements within the Plan Area is provided, along with results from data collection efforts and field observations.
- Traffic/Transit Operating Conditions: Conditions on the local street network were analyzed using a
 microsimulation model. Microsimulation allows for a robust analysis of automobile and transit
 operations on complex transportation networks. Pedestrians and their interaction with vehicles at
 crosswalks can also be captured in a more limited way. Microsimulation models simulate individual
 users on the transportation system and can produce various measure of effectiveness (MOEs) such
 as travel time, delay, and intersection level of service (LOS).
- Pedestrian and bicycle conditions: Pedestrian and bicycle conditions are assessed qualitatively by describing existing facilities and pending projects.
- Incident analysis: Collisions between all modes are summarized and discussed
- **Parking analysis:** A parking survey of existing demand and supply within the study area was conducted.

Plan Area Transportation Context

Figures 6A and 6B provide a detailed view of the Plan Area network and the study intersections included in the multimodal transportation analysis. The analysis includes 17 signalized intersections along the major streets within the Plan Area. Figure 6A shows major AM peak hour traffic flows through the Plan Area, while Figure 6B shows major PM peak hour traffic flows. The flow diagrams indicate that overall traffic loads are slightly higher during the PM peak hour.



Source: Arup; City of San Rafael



Source: Arup; City of San Rafael

Major elements and critical issues are within the Plan Area are summarized below:

- Traffic signal coordination within the Plan Area: The City of San Rafael Public Works Department maintains a coordinated traffic control system along major streets within the Plan Area and Downtown San Rafael. This system ties together traffic signals along critical corridors to help maintain traffic flow and manage queues between intersections.
- Traffic congestion on Second Street approaching the Central San Rafael Interchange: Traffic originating from Downtown San Rafael and areas west of the City, such as San Anselmo and Fairfax, use Second Street as the primary route to access US 101. Heavy traffic demand and close intersection spacing contribute to recurring congestion on the segment of Second Street approaching US 101. Despite the congestion on Second Street, this route remains a more attractive option than Sir Francis Drake Boulevard for drivers traveling to and from areas west of San Rafael. Sir Francis Drake Boulevard necks down from four travel lanes (two lanes in each direction) to two travel lanes (one lane in each direction) just south of San Anselmo. This reduction in capacity on Sir Francis Drake Boulevard renders Second Street the more attractive option to access US 101.
- Traffic congestion on Second/Third and Hetherton/Irwin: Most traffic headed to/from US 101 must use these one-way couplets. Very close spacing results in queues spilling back between intersections.
- Traffic queues on the southbound US 101 on-ramp extend from the freeway mainline back to Second Street: The on-ramp from Second Street to southbound US 101 experiences congestion due to the merge from two lanes to one lane on the ramp. Also, the ramp forms an auxiliary lane on southbound US 101. Congestion in the auxiliary lane, combined with the effect of cars merging from the auxiliary lane into the mainline mixed-flow travel lanes on southbound US 101, can result in queuing on the on-ramp from Second Street.
- Difficult access for buses entering and exiting the SRTC: Bus access to and from the SRTC is impeded by heavy traffic congestion on Second, Third, and Hetherton. Also, the design of the platforms and the curb radius at the access to the SRTC results in some difficult turning maneuvers for buses entering, exiting and operating within the SRTC.
- Well connected pedestrian environment: The short block lengths provide for a well connected pedestrian network within the Plan Area. However, high traffic volumes on local streets, freeway noise on US 101, and some indirect pedestrian crossings at intersections do detract from the overall pedestrian experience.
- Lack of dedicated striped bike lanes within the Plan Area



Congestion on Second Street at Hetherton Street near US 101

These major issues were verified through field observations and data collection efforts. New traffic counts were collected at six intersections on Thursday, August 26, 2010. The new counts provide a comparison with previous counts collected by the City's Public Works Department and utilized in their AM and PM traffic operations models.

The City's Synchro traffic models are used by the Public Works Department to develop traffic signal timings and coordination parameters. The most conservative traffic volumes are considered appropriate for these purposes. The traffic volumes currently assumed in the City's Synchro models were collected between 2005 and 2007, before the economic downturn caused a decrease in occupancy in Downtown San Rafael.

The recent counts were collected to verify that the City's Synchro models include a conservative estimate of traffic levels within the Plan Areas. The counts were conducted after the San Rafael City Schools were back in session but before the Labor Day holiday. For this comparison, morning (7:00-9:00 AM) and afternoon (4:00-6:00 PM) peak period turning movement counts were collected at the following locations:

- Second Street / Hetherton Street / Southbound (SB) US 101 On-Ramp
- Second Street / Irwin Street / Northbound (NB) US 101 Off-Ramp
- Third Street / Hetherton Street
- Third Street / Irwin Street
- Mission Avenue / Hetherton Street / SB US 101 Off-Ramp
- Mission Avenue / Irwin Street / NB US 101 On-Ramp

At all of the intersections, the new counts were lower than the counts used in the City's Synchro model. In the AM peak hour, the new intersection traffic counts ranged from 8 to 29 percent below the City's Synchro model. In PM peak hour, the new counts were 3 to 8 percent below the Synchro model. This comparison indicates that the volumes contained in the City's traffic models represent a more conservative estimate of traffic than the new counts. The Synchro volumes are used as the basis for the traffic analysis in the remainder of the study. Figures showing the intersection turning movement volumes and lane configurations for the Plan Area study intersections are provided in Appendix A.

Traffic/Transit Operating Conditions

Traffic and transit operating conditions on the local street network were analyzed using the software program VISSIM. VISSIM is a stochastic, multi-modal, microscopic simulation program that models the interaction of individual users (automobile drivers, transit vehicles, pedestrians) in complex urban transportation systems. VISSIM randomly assigns different behaviors and physical characteristics to each user as they are loaded onto the network. Behaviors, physical characteristics, roadway geometrics, traffic control systems, and the fundamental rules of motion (i.e., car following logic) all dictate how users move through the network. The decisions of users to accelerate, decelerate, change lanes, etc., are based on a complex car-following logic and are made multiple times per second (5 to 10 time steps per second are typical). Microsimulation models are typically executed or "run" a number of different times with different random seeds. This allows the model to capture a variety of different outcomes, which better reflect real-world conditions. The models developed for this analysis are based on earlier work completed by Dowling Associates for SMART's *Draft Supplemental Environmental Impact Report* (SMART and Dowling, 2008).

Model Calibration and Validation

Existing conditions AM and PM VISSIM microsimulation models were developed for the Plan Area using the following set of assumptions and features:

- The model simulates the peak hour (60 minutes) plus a 15-minute warm-up period.
- Traffic volumes, pedestrian counts, and signal timings are from the City's Synchro model.
- Traffic origin and destination (O-D) flows through the network were developed based on the previous work for SMART.
- Transit service at the SRTC is fully detailed per September 2010 schedules; buses depart based on the scheduled "pulse."
- Additional upstream signals on Second Street west of Lincoln Avenue at Lindaro Street and A Street were added to more accurately simulate vehicle platoons arriving at Lincoln Avenue.
- No train service, freight or SMART passenger, was included in this existing conditions scenario.
- Both the AM and PM models were run 15 times and all results were averaged over the runs.

The AM and PM VISSIM models were then calibrated to prove that the models are capable of replicating existing conditions within the Plan Area. Calibration is an iterative process that ensures the model is producing results that correspond to the modeler's knowledge of the traffic conditions in the field. The model was visually calibrated based on field observations of queuing and platoon progression on congested portions within the network. Figure 7 provides an image of the PM peak hour conditions VISSIM model.



Figure 7: PM Peak Hour VISSIM Model Screenshot (Second and Third Street in the foreground)

Model validation begins after the calibration is complete. Validation involves adjusting model parameters to produce a result that closely replicates field measured traffic conditions. These include identifying the appropriate calibration criteria and adjusting the model to meet the criteria.

Model calibration guidelines and targets published by the Federal Highway Administration (FHWA) and the California Department of Transportation (Caltrans) were used in this analysis. The calibration criteria consist of two main categories:

Traffic volume and throughput: Modeled traffic throughput at intersection approaches or turning movements should reasonably replicate the observed counts. The model should have the capability to serve close to 100 percent of the observed traffic volumes. The performance measure selected for comparing modeled to observed traffic volumes is the GEH statistic. The GEH statistic, named for its inventor Geoffrey E. Havers, is a formula used in traffic engineering to compare two sets of traffic volumes. The GEH formula is given as:

$$GEH = \sqrt{\frac{2(M-C)^2}{M+C}}$$

where
M = modeled volume
C = observed volume

$$GEH = \sqrt{\frac{2(M-C)^2}{M+C}}$$

where
M = modeled volume
C = observed volume

The GEH statistic avoids some of the pitfalls associated with using simple percentages to compare two sets of traffic volumes. This is because traffic volumes in real-world systems can vary over a wide range. The GEH statistic is non-linear and provides a single acceptance threshold that can be used uniformly to evaluate both high volume arterials and low volume local streets.

FHWA and Caltrans guidelines recommend a GEH statistic of less than 5.0 on 85 percent of observed count locations. Figure 8 compares a GEH statistic of 5.0 to a percent difference of 5 percent at different traffic volumes.



Maximum Allowable Variation: 5% vs GEH=5

Figure 8: A comparison of the allowable variance under the GEH formula GEH = 5.0 to a variance of 5%

Travel Times: Travel times within the study area were collected by City staff using "floating car runs" during the AM and PM peak periods. In this method, one or more vehicles are driven the length of a route several times. The time to traverse the route is measured and the mean travel time is computed. The travel time runs were collected between 2003 and 2008. The start and endpoints for all travel time runs are measured from the "far-side" of an intersection (i.e., immediately after an

intersection). Table 4 presents summary statistics for the Plan Area travel time segments with at least 9 observations.

	AM Peak Hour Travel Time Observations				PM Peak Hour Travel Time Observations				ations	
Segment	Avg (sec)	Std Dev	Min (sec)	Max (sec)	Obs #	Avg (sec)	Std Dev	Min (sec)	Max (sec)	Obs #
Second Street: Lindaro to Irwin	57.24	19.72	36	116	29	78.54	39.46	34	224	37
Irwin Street: Second to Mission (to NB 101 On- Ramp)	62.33	19.73	46	107	9	94.94	48.07	47	189	16
Third Street: Grand to Lincoln	98.29	57.06	36	277	28	73.89	25.36	43	142	36
Hetherton Street: Mission to Second (SB 101 On-Ramp)	67.22	13.74	57	96	9	73.14	19.77	45	131	14
Third Street (@ Grand) to the SB 101 On-Ramp	131.58	99.68	49	458	45	96.33	56.09	41	319	40
Hetherton Street (@ Mission) to Second Street (@ Irwin)	113.41	27.90	66	179	17	133.76	70.88	79	451	33
Source: City of San Rafael (2003-2008); Arup (2010)										

Table 4: Travel Time Segments – Summary Statistics

FHWA and Caltrans guidelines recommend that modeled travel times should be within 15 percent of observed travel times for 85 percent of cases. When comparing the modeled to the observed travel times in this analysis, a few important caveats should be kept in mind:

- Data collected on different days and in different years: the travel time data for each segment was collected on a number of different days across several years. Day-to-day variations in demand on the street network and the freeway can result in substantial differences in traffic flow and travel times on each segment.
- Some segments have a small number of observations: the small number of observations for some of the segments can result in larger variances and standard deviations. For example, the Third Street to the Southbound 101 On-Ramp segment has an average of 132 seconds. However, the standard deviation is almost 100 and the maximum observed value was 458 seconds. This indicates that a significant number of extreme delay events occurred on several of the observation days. This is an expected result, as Downtown San Rafael can experience days with significant traffic congestion.
- Combining average travel times collected on different days and years represents a wide array of traffic flow conditions: averaging the travel times for each segment across the complete set of observation days combines a wide-range of different traffic flow conditions. These combined conditions might not occur in reality on a single given day. The model developed in this study simulates "average" conditions and is relatively stable.

- For these reasons, the FHWA and Caltrans criteria for travel times are not strictly adhered to. This analysis evaluates travel times by comparing the average of the modeled runs to the observed mean and the minimum and maximum values.
- For segments with a large number of observations to average over, the model performs very close to the observed data.

Model Calibration Results

Table 5 summarizes the results of the traffic volume calibration by intersection. Detailed comparisons by turning movement (e.g., northbound left-turn, northbound through, northbound right-turn, etc.) are provided in Appendix A. In the AM peak hour model, 88 percent of all turning movements have a GEH less than 5.0. In the PM peak hour, 92 percent of all turning movements have a GEH less than 5.0.

	A	M Peak Hour		Р	M Peak Hour	
Intersection	Observed	Modeled	GEH ¹	Observed	Modeled	GEH ¹
Hetherton St / Second St	3906	3748	2.55	3972	3937	0.56
Hetherton St / Third St	3272	3055	3.86	3374	3201	3.03
Hetherton St / Fourth St	1938	1841	2.23	2302	2273	0.60
Hetherton St / Fifth St	1714	1739	0.60	1920	1926	0.14
Hetherton St / Mission St	2287	2336	1.01	2551	2495	1.11
Irwin St / Second St	3531	3569	0.64	3756	3822	1.07
Irwin St / Third St	3436	3338	1.69	3528	3623	1.59
Irwin St / Fourth St	1898	2025	2.86	2342	2563	4.45
Irwin St / Fifth St	1634	1845	5.05	2133	2301	3.56
Irwin St / Mission St	2585	2627	0.82	3070	3098	0.51
Lincoln St / Second St	2957	2916	0.75	3106	3179	1.30
Lincoln St / Third St	2414	2417	0.07	2830	2831	0.02
Lincoln St / Fourth St	1490	1646	3.94	2015	2356	7.29
Lincoln St / Fifth Ave	1482	1536	1.39	1962	2039	1.72
Lincoln St / Mission St	2325	2409	1.73	3023	3060	0.67
Tamalpais St / Second St	3175	3114	1.10	3309	3391	1.42
Tamalpais St / Third St	2348	2205	3.00	2511	2437	1.49

Table 5: Traffic Volume Calibration Results

Notes:

¹ GEH = The GEH statistic, named for its inventor Geoffrey E. Havers, is a standard traffic modeling measure that takes into account the amount of traffic flow at a study location.

Source: City of San Rafael Public Works, Arup (2010)

Table 6 summarizes the results of the travel time calibration for the six segments listed above.
	AM Peak Hour					PM Peak Hour				
	Observed			Modeled		Observed			Modeled	
Segment	Avg (sec)	Min (sec)	Max (sec)	Avg (sec)	% Diff ¹ Model / Obs	Avg (sec)	Min (sec)	Max (sec)	Avg (sec)	% Diff ¹ Model / Obs
Second Street: Lindaro to Irwin	57.24	36	116	68.61	20%	78.54	34	224	73.51	-6%
Irwin Street: Second to Mission (to NB 101 On- Ramp)	62.33	46	107	83.83	34%	94.94	47	189	75.75	-20%
Third Street: Grand to Lincoln	98.29	36	277	76.37	-22%	73.89	43	142	80.93	10%
Hetherton Street: Mission to Second (SB 101 On-Ramp)	67.22	57	96	76.25	13%	73.14	45	131	90.20	23%
Third Street (@ Grand) to the SB 101 On-Ramp	131.58	49	458	121.23	-8%	96.33	41	319	104.95	9%
Hetherton Street (@ Mission) to Second Street (@ Irwin)	113.41	66	179	86.13	-24%	133.76	79	451	105.77	-21%

Table 6: Travel Time Calibration Results

Notes:

¹% Diff = Percent Difference. Percent Difference is calculated by dividing the model average by the observed average.

Source: City of San Rafael Public Works (2003-2008); Arup (2010)

Table 6 indicates that the modeled travel times are reasonably close to the observed averages and well within the minimum and maximum values.

The results in Tables 5 and 6 indicate the successful calibration and validation of the AM and PM peak hour VISSIM models. The calibrated model will be used as a basis for the analysis of the station area alternatives in the next phase of the project.

Overall, the results from the model calibration and validation support the understanding of how the network actually functions.

The following are key findings from the AM existing conditions VISSIM model:

- Eastbound traffic on Second Street from Lincoln to US 101 is heavily congested during the AM peak.
- The congestion on Second Street is related to the downstream bottleneck at the southbound US 101 on-ramp. Congestion on southbound US 101 and the lane merge on the southbound on-ramp causes traffic to slow on the ramp, which reduces the capacity of eastbound Second Street. Queuing on Irwin Street, north of Second Street, also contributes to the congestion on Second Street approaching the southbound US 101 on-ramp.

- A high number of vehicles proceeding westbound on Third Street turn left on to Hetherton Street. In some instances this movement can cause slowdowns at the upstream intersection of Irwin and Third Street. Pedestrians crossing Hetherton Street slow turning vehicles through this intersection.
- A high number of vehicles proceeding northbound on Irwin Street turn left onto Third Street, which results in long queues in the two lane left-turn lanes.
- A high number of vehicles proceeding southbound on Hetherton Street turn right onto Third Street. This often causes long queues in the single right-turn lane.

The following are the findings from the PM existing conditions VISSIM model:

- Overall traffic congestion within the Plan Area is slightly worse during the PM peak than in the AM.
- Traffic congestion still occurs along Second Street, although it less severe than during the AM peak.
- Congestion on westbound Third Street and northbound Irwin Street is most severe during the PM peak.
- Traffic is heavy along Irwin Street from the northbound US 101 off-ramp to the US 101 NB on-ramp at Mission Avenue.
- A high number of vehicles proceeding northbound on Irwin Street queue up as they approach Mission Ave due to the lane reduction on that portion of Irwin Street.
- Queuing at the southbound US 101 on-ramp from Second Street does not restrict flow on surface streets during the PM peak.

Pedestrian and Bicycle Conditions

The pedestrian and bicycle evaluation provides an inventory of existing facilities within the Plan Area and a discussion of proposed and pending projects.

Existing Environment and Issues

The Plan Area's street network, which is characterized by short block lengths, provides a generally well connected and walkable environment. However, the Plan Area does have some pedestrian and bicycle deficiencies:

- Lack of bicycle lanes within the Plan Area
- Some intersections have crosswalks that are not established. This can create indirect walk routes
 and can result in jaywalking. Crosswalks are not established in locations where sidewalks do not
 exist or at locations with specific traffic operations and safety considerations.
- Crosswalks that conflict with double left-turn movements
- Crosswalks without pedestrian signal heads
- Narrow sidewalks on portions of Hetherton Street and Tamalpais Avenue
- Heavy traffic volumes and loud traffic noise from US 101



"No Ped Crossing" signage on Second Street near Francisco Boulevard



Narrow sidewalks, high traffic, and US 101 create an uncomfortable pedestrian environment



Crosswalk at the south leg of the Third Street / Hetherton Street intersection; note the double-left turn movements that must yield to pedestrians

Figure 9 shows the location of many of the pedestrian issues across the Plan Area. The Plan Area's central location, coupled with the activity at the SRTC, results in significant pedestrian activity on streets immediately surrounding the transit center. However, pedestrian activity is relatively light in areas further from the SRTC. Figure 9 also shows AM and PM peak hour pedestrian and bicycle volumes at critical areas of the street network and the location of existing and proposed pedestrian/bicycle facilities.

The San Francisco Bay Trail is a planned recreational corridor that, when complete, will encircle San Francisco and San Pablo Bays. The Bay Trail is administered by the Association of Bay Area Governments (ABAG). The Bay Trail alignment currently runs east-west through the Plan Area along Second and Third Streets. No on-street bike lanes are currently provided along Second and Third Streets. To the west of the Plan Area, the Bay Trail alignment on Second and Third intersects A Street and begins heading south along Andersen Drive (Anderson Drive has dedicated on-street bike lanes south of Lindaro Street). Plans recently published by ABAG propose redirecting the Bay Trail from Andersen Drive to Second and Third Streets via the recently completed Mahon Creek trail.



City of San Rafael Bicycle and Pedestrian Plan

The City of San Rafael's *Bicycle and Pedestrian Plan* (Nelson\Nygaard, 2001) is the primary document that establishes the goals, programs, and strategies for implementing bicycle and pedestrian infrastructure improvements within the City. The goal of the plan is to provide a network of interconnected facilities that provide for safe and convenient walking and biking throughout San Rafael.

Pedestrian improvements in the Bicycle and Pedestrian Plan typically include the following:

- Sidewalks: sidewalk widening, landscape buffers, improved amenities (benches, trees, etc.)
- Intersection and mid-block crossings: countdown pedestrian signals, landscaped medians and refuges, curb extensions ("bulb-outs") to reduce crossing distances

The Bicycle and Pedestrian Plan refers to various classes of bikeways, as defined in Chapter 1000 "Bikeway Planning and Design" of Caltrans' *Highway Design Manual* (Caltrans, 2006). The bikeway classes are defined below:

- **Class I Bikeway:** Referred to as a bike path or multi-use path. Provides for bicycle travel on a paved right of way completely separated from any street or highway.
- Class II Bikeway: Referred to as a bike lane. Provides a striped and stenciled lane for one-way travel on a street or highway.
- **Class III Bikeway:** Referred to as a bike route. Provides for shared use with pedestrian or motor vehicle traffic and is identified only by signing and (sometimes) stenciling.
- Class III-b Bicycle Boulevard: is similar to Class III except that it is designed to favor bicycles. Pioneered in Palo Alto, the Bicycle Boulevard is designed to promote bicycle movement and to discourage through vehicle movement, except for local stops. The effect is achieved by partial closures and lack of coordinated traffic signals.

Within the Plan Area, the following streets are slated to receive bicycle treatments under the City's Bicycle and Pedestrian Plan:

- A Class II route along Third Street
- A Class II/III route along Lincoln, Mission, and Fifth Avenues
- A Class III route along Fourth Street

Nonmotorized Transportation Pilot Program (NTPP) Projects

Three specific bicycle/pedestrian projects, funded through the Nonmotorized Transportation Pilot Program (NTPP), are located within the Plan Area and are slated for construction over the next year. The NTPP was authorized under Section 1807 of the Safe, Accountable, Flexible, Efficient Transportation Equity Act (SAFETEA-LU). Important elements of these NTPP projects are shown on Figure 9. Table 7 provides greater detail on these NTPP projects and their funding sources. These projects will greatly enhance the walking and bicycling environment within the Study Area.

Project	Project Description	Status
San Rafael Transit Center	 Improve functionality of center for pedestrians and bicyclists Improved signage and wayfinding 	2011
Puerto Suello – Transit Center Connector	Class I bike route on Hetherton between the Puerto Suello Hill Pathway and Fourth Street	2011
	 Improvements to Fourth Street / Tamalpais Avenue intersection Class III bike route on Tamalpais Avenue from Fourth Street to Second Street 	
Source: City of San Rafael, 2010	Sheet	

Table 7: NTPP Pedestrian and Bicycle Projects

These NTPP projects will help connect the SRTC to the Puerto Suello and Mahon Creek Class I pathways. The Puerto Suello pathway was constructed as part of the final phase of the Highway 101 Gap Closure project. The pathway runs parallel to US 101 on the west side of the freeway. The pathway begins at the Puerto Suello Hill summit just east of Fair Drive and terminates at the northwest corner of the Hetherton Street / Mission Avenue intersection at the northern edge of the Plan Area.

Incident Analysis

An overview of incidents was conducted to better understand traffic, bicycle and pedestrian safety within the Plan Area. This analysis was based on five years of collision data obtained from the California Highway Patrol's (CHP) Statewide Integrated Traffic Records System (SWITRS). The SWITRS collision data contains a record of all reported traffic collisions. Information on the type of collision (vehicle/vehicle, vehicle/pedestrian, or vehicle/bicycle), the location and the infraction is included in each SWITRS report. The data were used to develop a list of collision "hot spots" throughout the Plan Area. At these "hot spots," City staff can identify geometric and design issues, which can eventually lead to safety recommendations and other improvements with the implementation of the SMART station.

Figure 10 presents a five-year history (2004 to 2008) of all collisions (motor vehicles with other vehicles, pedestrians, and bicycles) that have occurred within the Plan Area.



- Number of incidents where a pedestrian was involved
- Number of incidents where a bicyclist was involved
- Source: Arup; City of San Rafael

Table 8 lists the top five intersections with the highest number of collisions.

Intersection	Vehicle / Vehicle (#)	Vehicle / Pedestrian (#)	Vehicle / Bicycle (#)	Total Incidents (#)		
1. Second St / Irwin St / NB US 101 Off-Ramp	66	3	5	74		
2. Third St / Hetherton Ave	58	11	2	71		
3. Third St / Irwin Ave	49	11	4	64		
4. Mission Ave / Lincoln Ave	42	4	1	47		
5. Third St / Lincoln Ave	41	2	3	46		
5. Second St / Tamalpais Ave	44	2	0	46		
Source: SWITRS, Arup, 2010						

Table 8: Top Five Incident Locations (2004-2008)

These intersections rank high partly due to the high volume of traffic at the intersection – because volumes are so high, there are more opportunities for collisions to occur. However, focusing on bicycle/pedestrian incidents, the records indicate that drivers are at fault a majority of the time, and certain turning movements tend to be more problematic than others. The following intersections and turning movements showed up frequently in the incident reports:

- Westbound left turn on to Hetherton Street from Third Street
- Northbound left turn on to Third Street from Irwin Street
- Eastbound left turn on to Irwin Street from Second Street



The intersection with the most incidents: Second Street / Irwin Street / Northbound US 101 Off-Ramp

The SWITRS data were used to calculate the accident rate for each intersection. The calculated rates represent the average accident rate, expressed in accidents per million vehicle-miles (MVM), observed

at each intersection over the five-year reporting period (2004 to 2008). The accident rates include incidents involving vehicles, bicyclists, and/or pedestrians.

To interpret the accident rates within the Plan Area, the calculated rates at each intersection were compared to average accident rates on roadways with similar characteristics. The accident rate data for comparable roadways were obtained from Caltrans. Caltrans calculates accident rates on freeways and arterial state highways that they maintain and operate. Three Caltrans state highways with similar characteristics to the Plan Area street system (i.e., medium to high volume urban arterials) were selected:

- State Route (SR) 13 (Ashby Avenue in Alameda County): 1.80 accidents per MVM
- SR-123 (San Pablo Avenue, Contra Costa and Alameda County): 2.45 accidents per MVM
- SR-131 (Tiburon Boulevard, in Marin County): 2.19 accidents per MVM

Table 9 provides a comparison of the Plan Area accident rates at each intersection to the average accident rates on the three Caltrans facilities listed above.

	Intersection Total			
Intersection	Accidents per MVM ¹			
Hetherton St / Second St	0.690			
Hetherton St / Third St	1.705			
Hetherton St / Fourth St	1.071			
Hetherton St / Fifth St	1.070			
Hetherton St / Mission St	0.671			
Irwin St / Second St	1.495			
Irwin St / Third St	1.534			
Irwin St / Fourth St	1.082			
Irwin St / Fifth St	0.963			
Irwin St / Mission St	0.759			
Lincoln St / Second St	0.838			
Lincoln St / Third St	1.234			
Lincoln St / Fourth St	1.564			
Lincoln St / Fifth Ave	1.571			
Lincoln St / Mission St	1.178			
Tamalpais St / Second St	0.994			
Tamalpais St / Third St	0.900			
Caltrans Average Accident Rates on Comparable Facilities ²				
SR-13 (Ashby Avenue, Alameda County)	1.800			
SR-123 (San Pablo Avenue, Contra Costa and Alameda Counties)	2.450			

Table 9: Accident Rate Comparison

Notes:

SR-131 (Tiburon Boulevard, Marin County)

¹ Accidents per MVM = accident rate per million vehicle miles. Accidents per MVM were calculated by converting peak hour intersection volumes to a daily intersection total. The daily intersection total was factored to an annual traffic total using a seasonal adjustment factor.

² Caltrans Traffic Accident and Surveillance Analysis System (TASAS), 2007-2009

2.190

Source: Caltrans, City of San Rafael Public Works, Arup (2010)

Table 9 shows that all of the intersections within the Plan Area have accident rates that are below the average accident rates on similar roadways.

Parking

The Plan Area lies just outside of the Downtown Parking Assessment District ("District"), which covers the area bounded by E Street, Fifth Avenue, Second Street and Lincoln Avenue. The Downtown Parking Assessment District was created in 1958 to provide public spaces for new development. Inside the District, a portion of required parking may be provided by District lot spaces (not on-street spaces) <u>if</u> there is capacity in the nearest District lot. Development outside the District boundaries, which includes areas within the Plan Area, must provide all of their required parking as private off-street spaces, although parking requirements for portions of Downtown outside of the District are lower than in the rest of the City.

Public parking within the Plan Area is provided via:

- On-street spaces with some restrictions (mostly two-hour time limits with some time-of-day restrictions)
- Park and ride lots maintained by Caltrans
- Miscellaneous public parking areas around the SMART right-of-way

A survey of parking supply and demand was conducted within the Plan Area on the same day as the traffic counts (August 26, 2010). A number of private lots were also counted because of their proximity to the proposed SMART station; these include the Citibank lot and the diagonal parking at the Whistlestop building. Two private parking lots under US 101 and south of the park and ride lots were also included in the counts. These lots, which are state-owned but leased to private interests, provide parking for buildings on the west side of Irwin Street between Second and Third Streets.



Park and Ride lot beneath US 101

Figure 11 shows the location of the various parking areas within the Plan Area. The occupancy and parking restrictions for these areas are described in greater detail below.



- Whistlestop Parking between Third Street and Fourth Street
- Diagonal Parking Near Citibank West of Hetherton Street.
- Private Parking Included in the Survey (Citibank Lot, Two Caltrans-leased Lots Under US-101, and small lot at the southwest corner of Tamalpais Avenue / Fifth Street intersection)

Source: Arup; City of San Rafael

Additional parking for bus commuters is available on Francisco Boulevard West south of Second Street.

On-Street Parking

On-street parking is permitted along Fourth Street, Fifth Ave, Lincoln Avenue, Tamalpais Avenue, Mission Avenue, and parts of Irwin Street. There are approximately 200 on-street spaces within the Plan Area, most of which have two-hour time limits.

Along Irwin Street, between Third Street and Fifth Avenue, tow-away zones prohibit parking during the PM peak (4:00 to 6:00 PM). Although the parking prohibition is not in effect during the AM peak, field visits revealed that traffic often utilizes the parking lane in the morning peak to travel north on Irwin Street. On-street parking counts were taken on August 26, 2010. Occupancy counts were taken at hourly intervals for all blocks with on-street parking. Figure 12 shows parking occupancy rates over the surveyed weekday. Occupancy peaks in the midday at just over 50 percent.



Figure 12: On-Street Occupancy Rates

Park and Ride

Park and ride lots are maintained and operated by Caltrans for the purpose of providing transit commuters with all day parking spaces in close proximity to the SRTC. One park and ride lots contains sixteen bicycle lockers.

Four park and ride lots are located beneath US 101 in the vicinity of the Plan Area, totaling 197 spaces:

Lot 1: Mission Avenue between Irwin and Hetherton Streets: 33 spaces

- Lot 2: Hetherton Street between Mission Avenue and Fifth Avenue: 68 spaces
- Lot 3: Hetherton Street between Fifth Avenue and Fourth Street: 56 spaces
- Lot 4: Hetherton Street between Fourth and Third Streets: 40 spaces, 16 bicycle lockers

Figure 13 shows the park and ride lot occupancy rates were surveyed on August 26, 2010 at hourly intervals. Total occupancy rates steadily climb in the morning, peak at around noon, and decline into the evening.



Figure 13: Park and Ride Occupancy Rates

Miscellaneous and Private Parking Lots

In addition to the on-street and park and ride lots, there are two informal parking zones in unsecured areas adjacent to the SMART rail tracks that were counted and merit additional attention:

- 30 diagonal public parking spaces on Tamalpais East between Third and Fourth Streets just east of the SMART tracks. These parking spaces are located within the SMART right-of-way and are part of the future station area.
- 12+ plus parking spaces along the SMART right-of-way between Fourth Street and Mission Avenue immediately west of the existing tracks. Cars park informally on the hard packed dirt within this area. No enforcement appears to occur. The 12 parking spaces is an estimate. All of this area is within SMART controlled right-of-way and will become part of the track alignment.

There are also five private parking lots within the Plan Area that were counted because of their close proximity to the SMART station:

• Whistlestop parking on the east side of the building between Third and Fourth Streets: 26 spaces

- Citibank lot south of Fourth Street: 33 spaces
- Caltrans leased private lot under US 101 between Third and Fourth Streets (connected to a Caltrans park and ride lot): 48 spaces
- Caltrans leased private lots under US 101 between Second and Third Streets: 73 spaces
- A small private lot at the southwest corner of the Tamalpais Avenue / Fifth Street intersection (counted as part of the on-street inventory but included in this section): 14 spaces



Parking on Tamalpais East, with Whistlestop in the background

Figure 14 presents the hourly occupancy rates at the five miscellaneous and private lots surveyed on August 26, 2010. Total lot occupancy peaks around noon, but individual lot's occupancy profiles were varied. This was likely due to the different functions of the lots – some may be employee parking while others are used by downtown customers or commuters. Citibank customer parking, for example, peaks in the evening hours, while the parking lot outside of Citibank peaks in the morning hours.



Figure 14: Miscellaneous and Private Parking Lot Occupancy Rates

IV. SMART Downtown San Rafael Station

SMART Project Description

The SMART District is proposing implementation of passenger rail service along a 70-mile rail corridor extending from Cloverdale in Sonoma County to a station located near GGT's Larkspur ferry terminal. SMART would utilize an existing rail corridor, commonly known as the Northwestern Pacific Railroad (NWP). The NWP generally parallels US 101 running north-south through Sonoma and Marin Counties. The NWP corridor is owned by the SMART District from Healdsburg in the north, to a location south of the proposed Larkspur station in the Town of Corte Madera.

The total cost for the SMART project from Cloverdale to Larkspur is estimated at \$695 million. A steep drop in sales taxes has resulted in a funding shortfall that will require the project to be constructed in phases. The first phase of the project, scheduled for completion in 2014, does not include the Downtown San Rafael station. The first phase includes the segment from the Marin Civic Center to Railroad Square in Santa Rosa. Downtown San Rafael is scheduled for completion in 2018. Forecasts developed for the *SMART Draft Environmental Impact Report* "Draft EIR" (SMART, 2005) estimate that 4,756 daily riders are projected to use the system in 2025 between Cloverdale and Larkspur.

The latest details regarding SMART's operating and service plans are published in *Sonoma-Marin Area Rail Transit District, Passenger Rail & Pathway Project Description "*Project Description" (SMART, May 19, 2010). Major components of the proposed project identified in the Project Description include:

Implement passenger rail service utilizing a two-way "single-track" system with sidings (strategically
placed sections of second track) and appropriate signal and communication systems

- Rehabilitation of tracks and at-grade crossings (there are approximately 73 public at-grade crossings and numerous private crossings)
- Construction of 14 rail stations (9 in Sonoma and 5 in Marin)
- Park and ride lots at some station locations
- Operation of free shuttle serve at selected stations
- A rail maintenance facility
- Train passing sidings, timber trestle and other bridge replacements, and drainage improvements
- Bicycle/pedestrian pathway generally located within or adjacent to the rail corridor and connecting the rail stations, including 54 miles of a separate multi-use pathway and 16 miles of Class II pathway (striped bike lanes)
- Use of either light or heavy diesel multiple units (DMUs)

DMUs are rail cars that contain both passenger accommodations and propulsion systems (diesel engines located below the passenger compartment). "Light" DMUs utilize lighter materials such as aluminum; "heavy" DMUs typically use steel car bodies. These two DMU types have different fuel consumption, operating performance, and noise impacts. The Federal Railroad Administration (FRA) also has different time separation requirements for operating light or heavy DMUs on single-track facilities shared with freight rail. SMART plans to operate two to three car DMU train sets depending on passenger demand.

Downtown San Rafael Station

The proposed Downtown San Rafael SMART station is located adjacent to the SMART corridor between Third and Fourth Streets and just east of Whistlestop Wheels. SMART's proposed weekday service includes 12 southbound and 12 northbound trains (24 total stops per weekday), while weekend service includes 4 southbound and 4 northbound trains (8 total stops per weekday). The peak hour timetable assumptions from the latest Project Description include:

- Weekday AM and PM frequency of two trains per hour in each direction
- Peak hour headways of 30 minutes in each direction (headway is the scheduled time between train arrivals)
- 30-second average dwell time

The Draft EIR reported 2025 ridership forecasts for the Downtown San Rafael SMART station. These forecasts estimate 307 total daily riders at the station, with approximately 130 riders occurring during the peak hour.

SMART has recently produced "20 percent" conceptual design plans for two station alternatives:

- 1. Center Platform: single platform located in between rail tracks
- 2. Side Platforms: two platforms located outside of the rail tracks

Figures 15A and B show drawings obtained from SMART with the 20% design for the two station options.



Source: SMART



Source: SMART

Two tracks are planned at the station and along the length of the SMART right-of-way within the Plan Area. The configuration of the platforms will impact the station footprint and the design and spacing of the tracks at each of the at-grade crossings that would occur at Second, Third, Fourth, Fifth, and Mission. Further analysis of the station, the SRTC, the impact of SMART service on the Plan Area's parking supply, and the local circulation network will occur during the alternatives analysis phase of the Plan.