ANGELS CAMP NORTH MAIN STREET PLAN

MAY 2020

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NORTH
CALIFORNIA
49
MARK TWAIN
THE PAINT BODY SHOP

1 – INTRODUCTION

1 – INTRODUCTION

PROJECT PURPOSE & OVERVIEW

In collaboration with the City of Angels, Calaveras Council of Governments (CCOG), Caltrans and the community this Plan incorporates transit and other pedestrian safety improvements on State Route (SR) 49 in the northern area of Angels Camp. The process facilitated community and stakeholder outreach and resulted in conceptual designs and necessary technical data for a competitive Active Transportation Program grant application.

The focus of this Plan is on the northern section of Main Street/SR 49 in Angels Camp, north of the SR 4/49 intersection, representing approximately three-quarters of a mile of the Main Street corridor. State Route 49 is the only connecting roadway from the uses in the northern end of town to the rest of Angels Camp. This area of town has limited to no pedestrian infrastructure; creating a gap in multimodal access for the residential neighborhoods and services in this area of town. This area of town also houses two of the City's high-density residential neighborhoods including low-income/Section 8 housing, in addition to future planned development for a mix of land uses including low to high density residential, service/retail, and commercial. The roadway in this section consists of wide shoulders where large trucks and visitors park as a resting area from the State Highway, which interferes with safe pedestrian access.

PROJECT TEAM

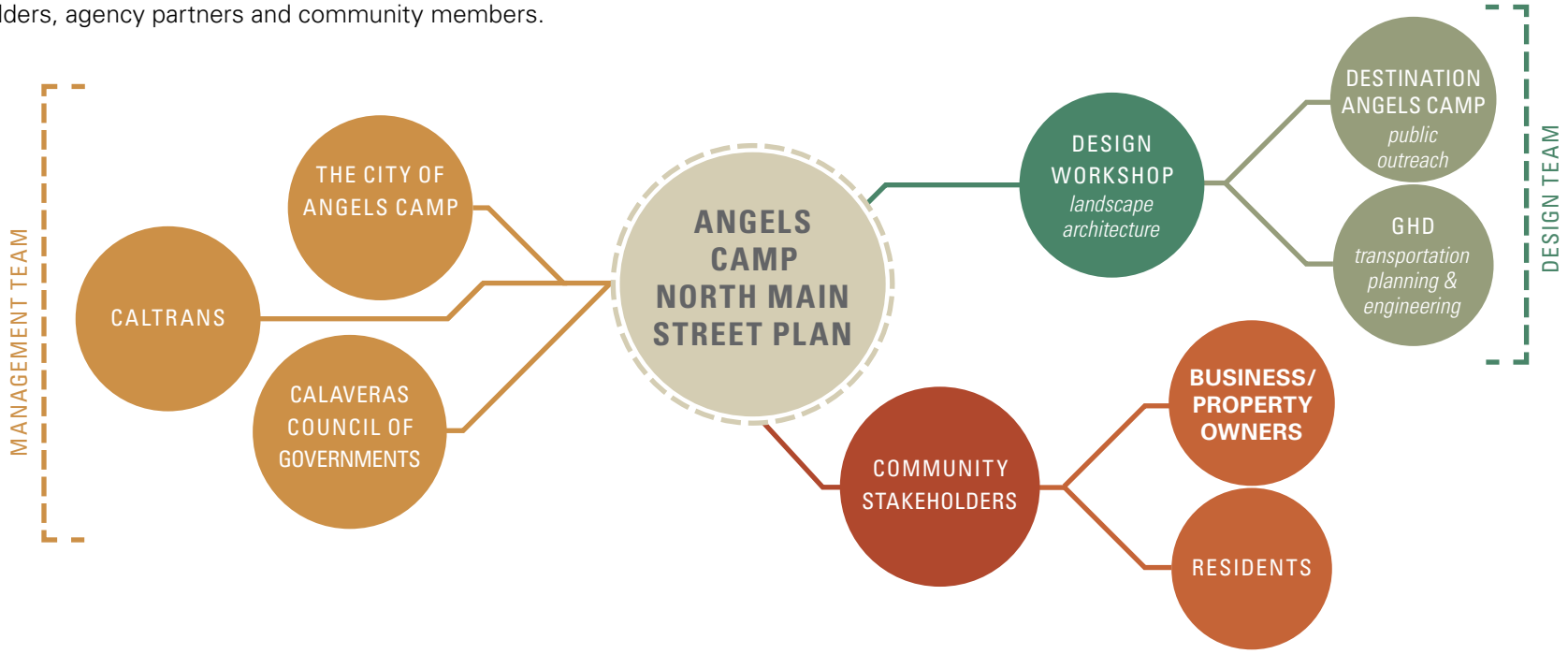
The Plan was funded by the State Road Maintenance and Rehabilitation Account and administered by the California Department of Transportation. The Calaveras Council of Governments facilitated the grant. The consultant team was led by Design Workshop with transportation planning contributed by GHD and Destination Angels Camp for public outreach.

PROCESS

The Plan focused on input from the City, CCOG, stakeholders and the public to develop a set of design elements, guidelines and implementation strategies that the City will use to guide future improvements along the SR 49 corridor. Planning began by exploring the current site conditions through site inventory, data gathering and stakeholder input to develop an Existing Conditions, Issues and Opportunities Memo and incorporated into Chapter 2 - Existing Conditions. Following the existing conditions, the consultant team developed ideas and alternatives that were reviewed by stakeholders, the Advisory Committee, and the public through site walks and public meetings for comments and feedback. The concepts shown in this final document have been refined to a final set of recommendations and design guidelines followed by strategies for how to support the development of these alternatives and how to implement these plans over time.

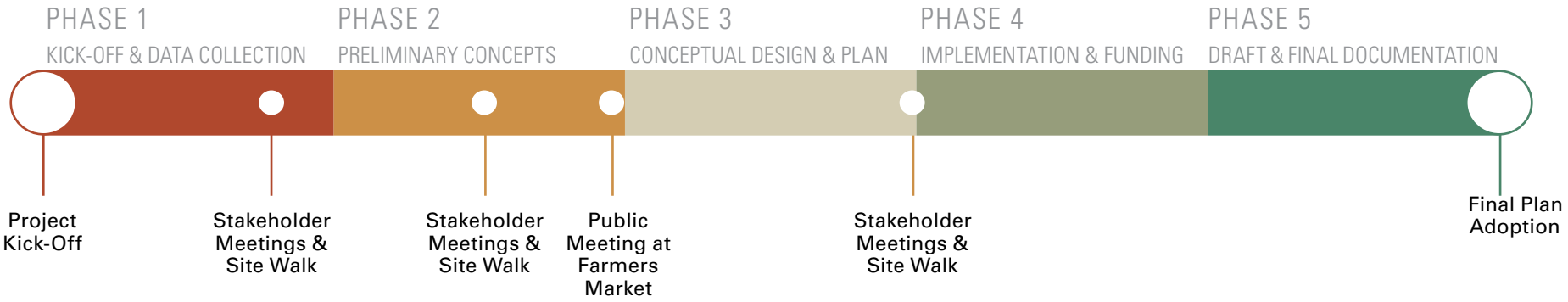
PROJECT TEAM

The organizational chart below shows the team approach to holistic planning uniting stakeholders, agency partners and community members.



PROCESS

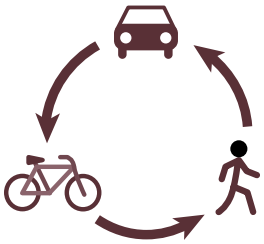
The project process involved community and stakeholder engagement to develop a plan that will be adopted by the City and utilized to secure funding for future improvements.



PROJECT GOALS

The following five goals represent opportunities to resolve transportation conflicts and identify growth opportunities that align with the region's current and future objectives.

- **Safety and Access:**
  Improve safety and access along SR 49.
- **Multi-modal:**
  Build a connected multi-modal network in Angels Camp that accounts for future development.
- **Placemaking:**
  Enhance the landscape character entering Angels Camp from the north with gateway signage, wayfinding, lighting and street trees.
- **Parking:**
  Coordinate strategies for parking within the corridor.
- **Implementation:**
  Develop a plan that is implementable for the City and informs future Caltrans improvements.



PROJECT OBJECTIVES

The project incorporates transit and other pedestrian, bicycle and vehicular safety improvements on SR 49 in the northern area of Angels Camp. The process provided for facilitated community and stakeholder outreach that resulted in conceptual designs and necessary technical data for a competitive Active Transportation Program grant application.

Overall project objectives of this plan were to:

- Establish and encourage early coordination with Caltrans District staff.
- Enhance connectivity and multi-modal transportation options along North Main Street/ SR 49 and Copello Road.
- Protect existing and planned transportation investments along SR 49 by addressing critical gaps in bicycle and pedestrian infrastructure.
- Improve access to transportation and mobility for the residents of northern Angels Camp including the communities of Copello Square Apartments and Angels Court RV Park.
- Improve safety, comfort, and convenience for non-motorized modes and local transit.
- Improve livability for all economic segments of the community.
- Promote active living.
- Connect key features in the community together with complete streets alternatives.
- Enhance the environment by improving ways for residents and visitors to enjoy and appreciate the city's scenic and natural resources.
- Strengthen public agency relationships which would result in programmed system improvements once the Plan is complete.

This plan was created ensuring the content is consistent with the previously completed planning efforts including the SR 4/49 Gateway Corridor Study and Angels Camp Main Street Plan. This Plan fills a gap in needed planning for future improvements to connect this area of town to the rest of the community.

2 – EXISTING CONDITIONS

The project area starts at the northern end of Angels Camp near Copello Road and continues south to the intersection of SR 4 and 49. The corridor primarily consists of retail and commercial uses with residential, light industrial, a hotel, fire station, church and a historic school. Major anchors of retail include Middleton's Shopping Center, Frog Jump Plaza and Tractor Supply. Plans for future development include a Habitat for Humanity residential development and roadway connections for SR 4 at Foundry Lane to the west and connection to Dogtown Road to the east.

2 – EXISTING CONDITIONS

Figure 2.1: Project Context

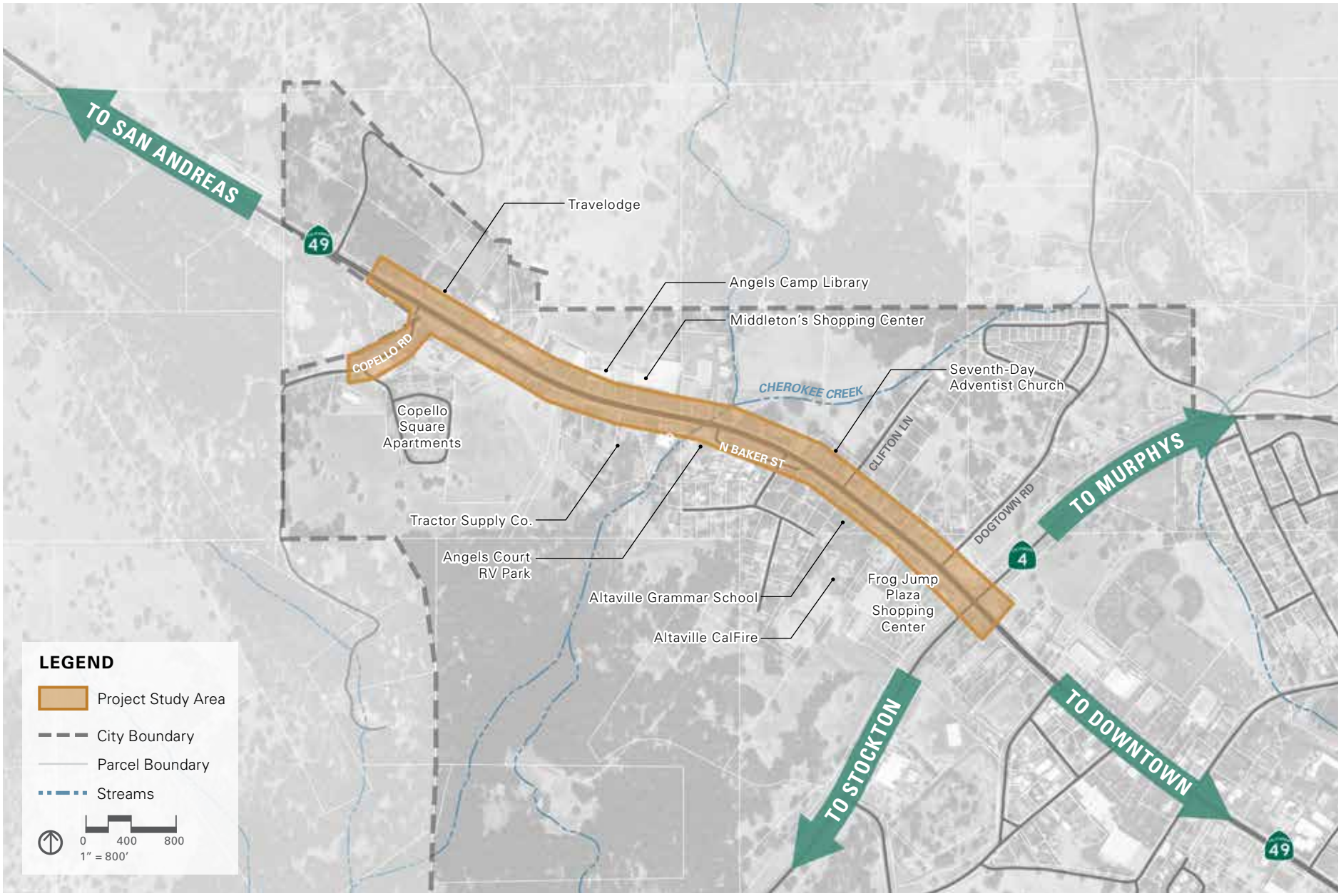


Figure 2.2: Project Study Area

EXISTING STUDIES

A review of recent relevant planning and transportation studies for the area identified significant future projects planned within the study area. The influences of these future projects are shown on the next page and created a need for two alternatives (or short and long ranged) plans based on development led improvements. The following documents were reviewed and incorporated into this document:

Caltrans Project Initiation Report for SHOPP Tool ID: 18336, April 2019

Angels Camp Main Street Plan, May 2017

Angels Camp State Route 4 & State Route 49 Gateway and Corridor Study, January 2016

Calaveras Regional Bike, Pedestrian and Safe Routes to Schools Plan, August 2015

Angels Creek Master Plan Design Concepts, January 2012

Angels Camp Wayfinding System, December 2011

Angels Camp Trails Master Plan, 2010

Branding Identity and Standards Manual, 2010

Angels Camp 2020 General Plan, February 2009

Branding Development and Marketing Plan, November 2008

Acknowledge/Incorporate **General Plan 2020** with the points below:

Implementation Programs 1.C.a and 1.C.b
NOTE: The Study Area Corresponds to the Shopping Center Commercial District

1.C.a Establish and Maintain Four Distinct Commercial Districts

Establish and maintain a general plan land use designation and consistent zoning districts as necessary to distinguish four distinct commercial areas in the city:

c. A Shopping Center Commercial District (SC) emphasizing heavy commercial uses extending north from the northern intersection of State Routes 4 and 49

1.C.b Establish Design Guidelines for Each of the City's Distinct Commercial Districts
Ensure implementation of the Design Guidelines are consistent with the zoning districts and development standards adopted in Program 1.C.a, with respect to mass, scale and placement of buildings that may be built.

This proposed Plan partially implements and will be consistent with the following **General Plan 2020** Implementation Programs:

1.C.c Consider Establishing Scenic Getaways/Scenic Corridors

1.C.d Develop a Master Plan for Context Sensitive Solutions - Caltrans Coordination

1.D.c Encourage Low-Impact Modes of Transportation

1.E.d Update the City's Landscaping Provisions/Street Trees

Figure 2.3: Inventory of Existing Plans

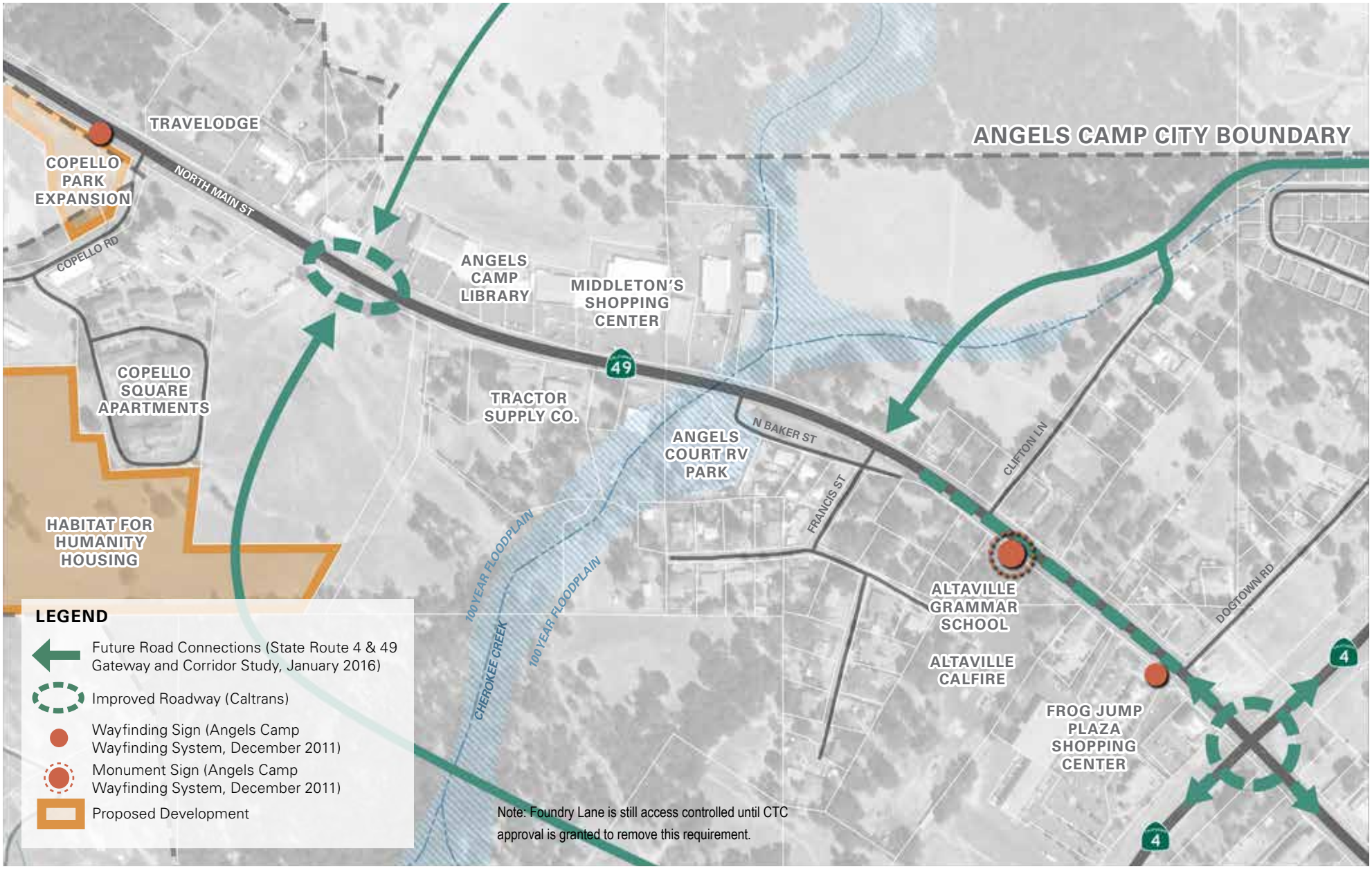


Figure 2.4: 2020 General Plan - Land Use

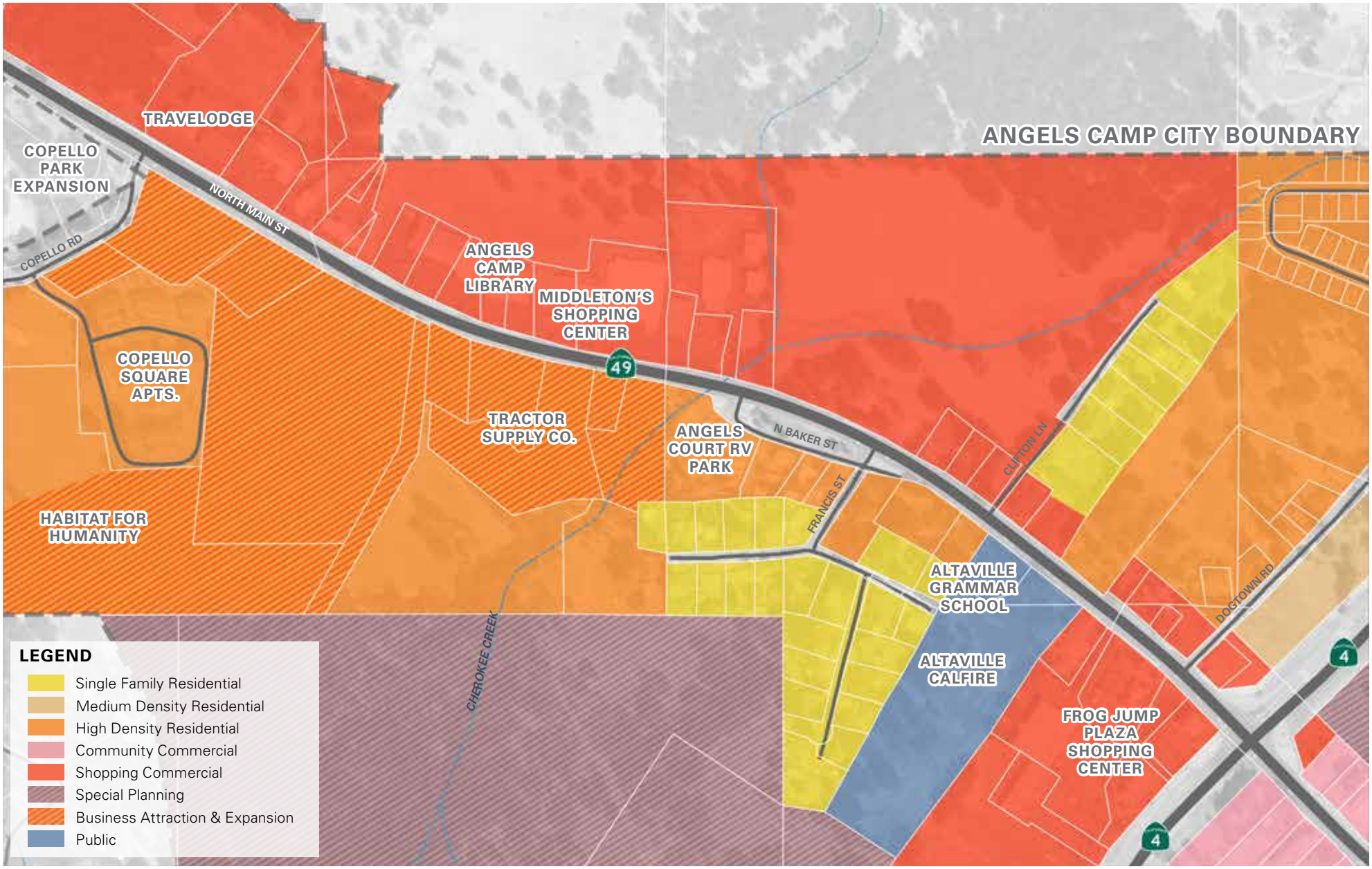


Figure 2.5: Ownership Along North Main Street

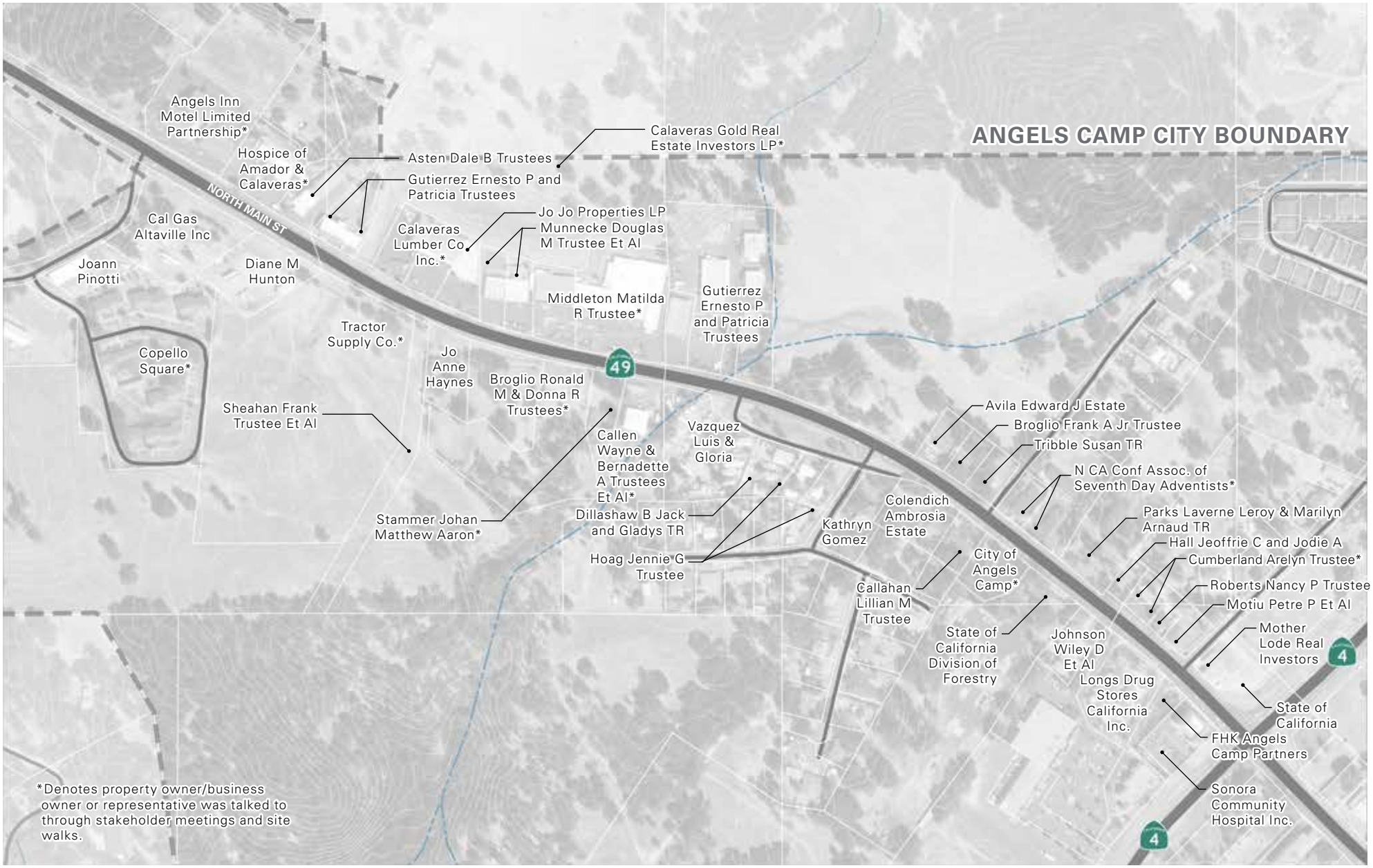
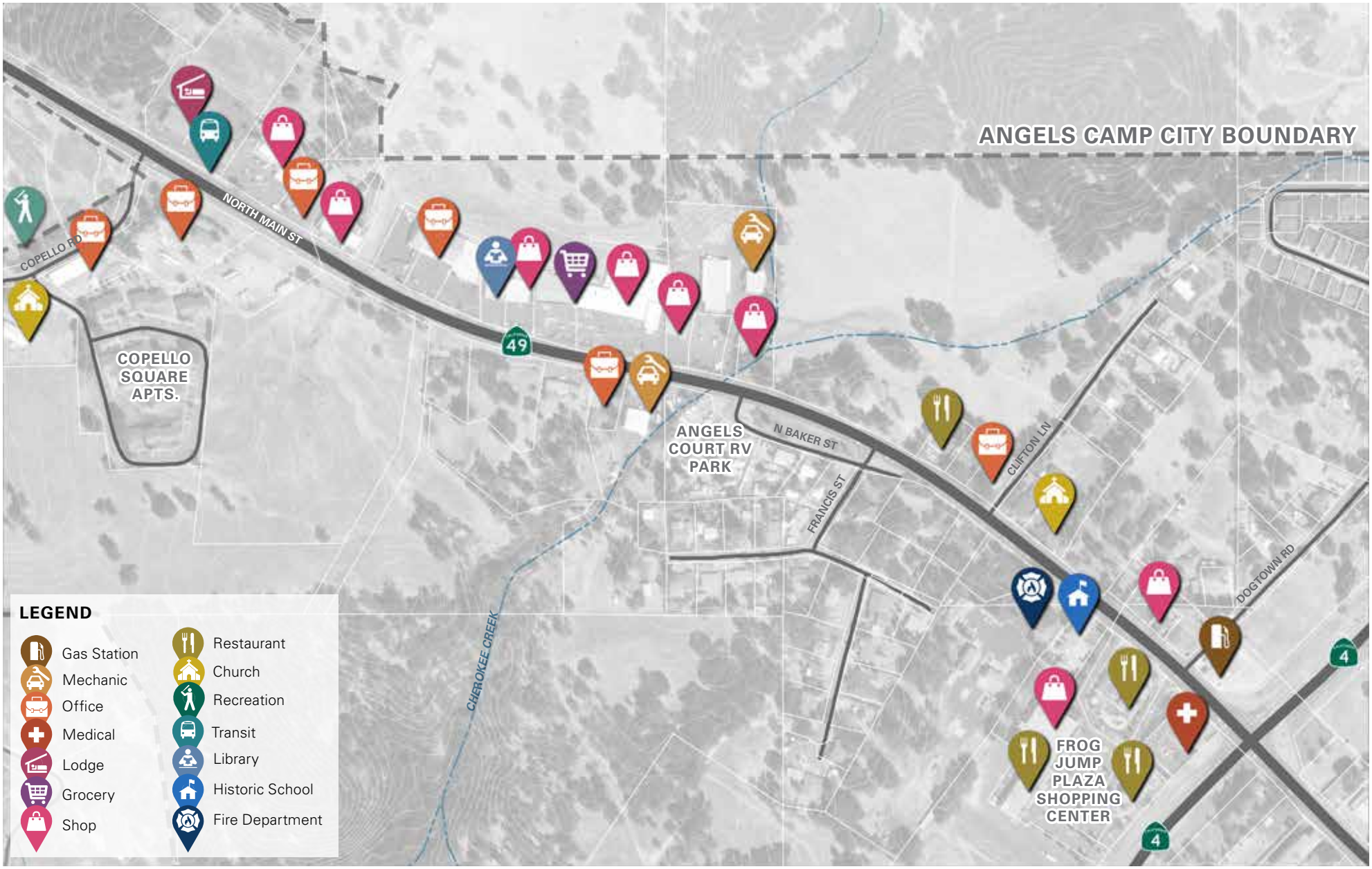


Figure 2.6: Corridor Destinations




ANGELS
FOOD
MARKET
MARK
TWAIN
CENTER
MIDDLETON'S
FOOD
MARKET
DENTISTRY
verizon
U-HAUL

SITE INVENTORY & ANALYSIS

The following summarizes existing conditions within the Angels Camp North Main Street Complete Streets Corridor Plan study area, which includes the segment of North Main Street/SR 49 between SR 4 and Copello Road. Data reported herein was collected by the project team and/ or from existing planning documents, including the Angels Camp SR 4 and SR 49 Gateway and Corridor Study, and the Tractor Supply Store Traffic Impact Assessment.

The assessment of existing conditions within the study area includes the following:

- inventory of existing infrastructure and origins-destinations
- traffic counts, including bicycle, pedestrian and vehicular turning movements
- existing intersection operations
- level of traffic stress
- collision analysis

DATA COLLECTION

The project team conducted a field survey of the Angels Camp N. Main Street/ SR 49 Complete Streets Corridor Plan study area on April 30, 2019. The survey area included SR 49 between Copello Road and SR 4. The observation period was from 7:30 A.M. to 10:15 A.M. The goals of the field visit included observations of:

- Existing roadway and bridge geometry;
- Key O-D locations within the corridor;
- Pedestrian and bicycle activity;
- Existing bicycle, pedestrian and transit infrastructure;
- Bus loading activity at Copello Road and SR 49;
- Infrastructure and safety concerns; and
- A.M. Driveway counts at Mark Twain Center

East of Francis St/ SR 49, traveling northbound on SR 49


Sidewalk near Mark Twain Center—ADA accessibility questionable

ROADWAY AND INFRASTRUCTURE INVENTORY

Overview

The study area includes SR 49 from Copello Road to SR 4. SR 49 a two-lane highway with center turn lane, and speeds ranging between 35 and 45 mph. Lower speed, secondary streets and driveways intersect with SR 49 throughout the corridor. The study area includes 6 intersections, and driveways to several shopping centers and/or businesses.

The study area also includes a small bridge structure over Cherokee Creek, inconsistent shoulder width throughout the corridor, limited pedestrian facilities and no bicycle facilities. Where pedestrian facilities do exist, the survey visit called ADA accessibility into question due to difficulty in traversing the pathways

Primary Study Area Intersections

The two main intersections within the study area are Copello Road/ SR 49, a side-stop controlled intersection, and SR 4/ SR 49, a signalized intersection. Copello Road leads to Copello Square Apartments, an origin-destination for observed pedestrians along SR 49. Parents and children were witnessed to be waiting at an informal bus stop in front of the AmeriGas property at Copello Road/ SR 49, which is discussed in further detail in the following section. There are no pedestrian facilities along Copello Road leading to the intersection at SR 49, seen in the image to the right.

There is limited south-facing sight distance at Copello Road/ SR 49, due to crest vertical curve at the intersection, seen in the image to the right.

Lack of pedestrian facilities at Copello Road


Sight distance issues at Copello Road and SR 49

The intersection of SR 4/SR 49 is an eight-phase signal-controlled intersection, featuring crosswalks at three legs, but no formal pedestrian landing pads and limited shoulder width. Additionally, heavy truck traffic was observed at this intersection during the study period. The images the right display the conditions at the intersection of SR 4/ SR 49.

Additional Infrastructure

There are four additional side-stop controlled intersections at SR 49/ Dogtown Road, SR 49/ Francis Street, and SR 49/ N Baker Street.

Driveways exist at several destinations, including: Frog Jump Plaza, Mark Twain Center, and the Travel Lodge/ Hospice Thrift lot.

Intersection infrastructure at SR 4/SR 49

Intersection infrastructure at SR 4/SR 49

Intersection infrastructure at SR 4/SR 49

Limited shoulder space, and Driveway # 1 at Mark Twain Center

Bus Stop activity at Copello Road/SR 49

Six children and two adults were observed waiting in a gravel dirt area. In order to access the bus stop area from Copello Square Apartments, individuals must traverse over a dirt hill preventing direct access, seen in the images below.

ORIGINS AND DESTINATIONS

Overall, land uses within the study area include: retail/ commercial; residential; lodging; industrial/utilities; institutional; parks/recreation; and undeveloped land. Near to, but outside of, the study area are also several schools.

Key origin-destinations for bicycle and pedestrian activity included McDonald's, Mark Twain Center, the recycling center, the Travel Lodge, and Copello Square Apartments. The bus stop at Copello Road/SR 49 was also observed as an origin-destination for students and parents. Bus Stop activity was observed during the A.M. pick up (7:44 A.M.) in front of the AmeriGas property at Copello Road and SR 49. As seen in the images to the left, the bus stop is within a gravel/ dirt area.

STUDY AREA DEMOGRAPHICS

According to 2018 American Community Survey (ACS) estimates, the City of Angels Camp has a population of 3,897. The Median Household Income (MHI) for the city is $53,100[1]. The statewide MHI is $67,169 and $54,800 for Calaveras County[2]. However, the study area is comprised of pockets of comparatively lower income geographies. At the Census Block Group level, the MHI within the study area is $48,654, which is roughly 72 percent of statewide MHI.[3]

Pursuant to California Transportation Commission 2019 Active Transportation Program (ATP) Guidelines, communities with a population of less than 15,000 may utilize Census Block Group level data to examine disadvantaged community status on the basis of MHI. While updated guidelines in the following year may recommend using more recent data, the guidelines currently require the use of 2012-2016 ACS 5-Year estimates. 2016 MHI for the Angels Camp Block Group covering the study area, is $43,158, which is 68 percent of 2016 statewide MHI. The threshold to qualify as a disadvantaged community based on income is below 80 percent, classifying the study area as such.

1 U.S. Census. 2013 – 2017 American Community Survey 5-Year Estimates. Income in the Past 12 Months (In 2017 Inflation-Adjusted Dollars) (Table ID B19013).
2 ibid
3 ibid

BICYCLE AND PEDESTRIAN COUNTS

Bicycle and Pedestrian counts were observed during the project team's field visit on April 30, 2019 between 8:30 A.M. and 10:00 A.M. Table 2.1 below displays the observed counts.

Table 2.1: *Bicycle and Pedestrian Counts*

BICYCLE AND PEDESTRIAN COUNTS TUESDAY APRIL 30, 2019 8:30 A.M. - 10:00 A.M.		
Time Period	**Bicyclists**	**Pedestrians**
8:00 A.M. - 9:00 A.M.	0	4
9:00 A.M. - 9:30 A.M.	0	4
9:30 A.M. - 10:00 A.M.	3	3

Note: Counts were observed while traversing the corridor, and during bus loading observation and driveway counts.

DATA COLLECTION AND STUDY LOCATIONS

For the initial field visit, traffic counts were requested for observation at the driveways at Mark Twain Center, which were utilized in the analysis presented herein. Subsequently, eleven study locations were identified for operational analysis based on the observation of these counts and the availability of counts from previous transportation studies. These locations include:

1. SR 4/SR 49
2. First Title Driveway/SR 49 [4]
3. Frog Jump Plaza South Driveway/SR 49/Dogtown Road
4. Frog Jump Plaza North Driveway/SR 49
5. Clifton Lane/SR 49
6. Mark Twain Center Driveway #1
7. Mark Twain Center Driveway #2/Tractor Supply Driveway South/SR 49
8. Mark Twain Center Driveway #3
9. Mark Twain Center Driveway #4/ Tractor Supply Driveway North/SR 49
10. Mark Twain Center Driveway #5
11. Copello Road/SR 49

TRAFFIC COUNT ESTIMATION

While counts of vehicular turning movements were observed during the AM peak at the five driveways located at Mark Twain Center, traffic counts for the remaining study intersections and PM peak period were sourced from existing studies and/or generated using the ITE Trip Generation Manual, 10th Edition. The methodology for estimating and balancing these volumes are described below.

The table on the opposite page displays the traffic count estimation methodology for each intersection and peak period examined. As presented, intersection counts were sourced from direct observation, traffic studies, and based on ITE trip generation rates for multiple land use types. The combination of these counts were balanced in the Synchro 10 software environment to mitigate inconsistencies.

AM peak hour counts were observed at the Middleton's driveways at Mark Twain Center during the field visit on April 30, 2019. PM peak hour trips at these locations were estimated based on the proportionality of AM to PM trips generated by the shopping center based on trip generation rates reported in the ITE Trip Generation Manual. At the time of this field visit, the driveways at the Tractor Supply Store were not yet open to the public due to the building being under construction. The driveways have opened in the time following the field visit. Turning movement counts for these driveways were sourced from the Traffic Impact Assessment completed for the Tractor Supply Store[5]. Counts for the remaining intersections were sourced from traffic counts reported in the Angels Camp SR 4 and SR 49 Gateway and Corridor Study[6].

A turning movement figure incorporating the estimated and balanced counts are presented in the Table 2.2 on the opposite page.

4 Count source for this location refers to the driveway as "First Title Driveway."

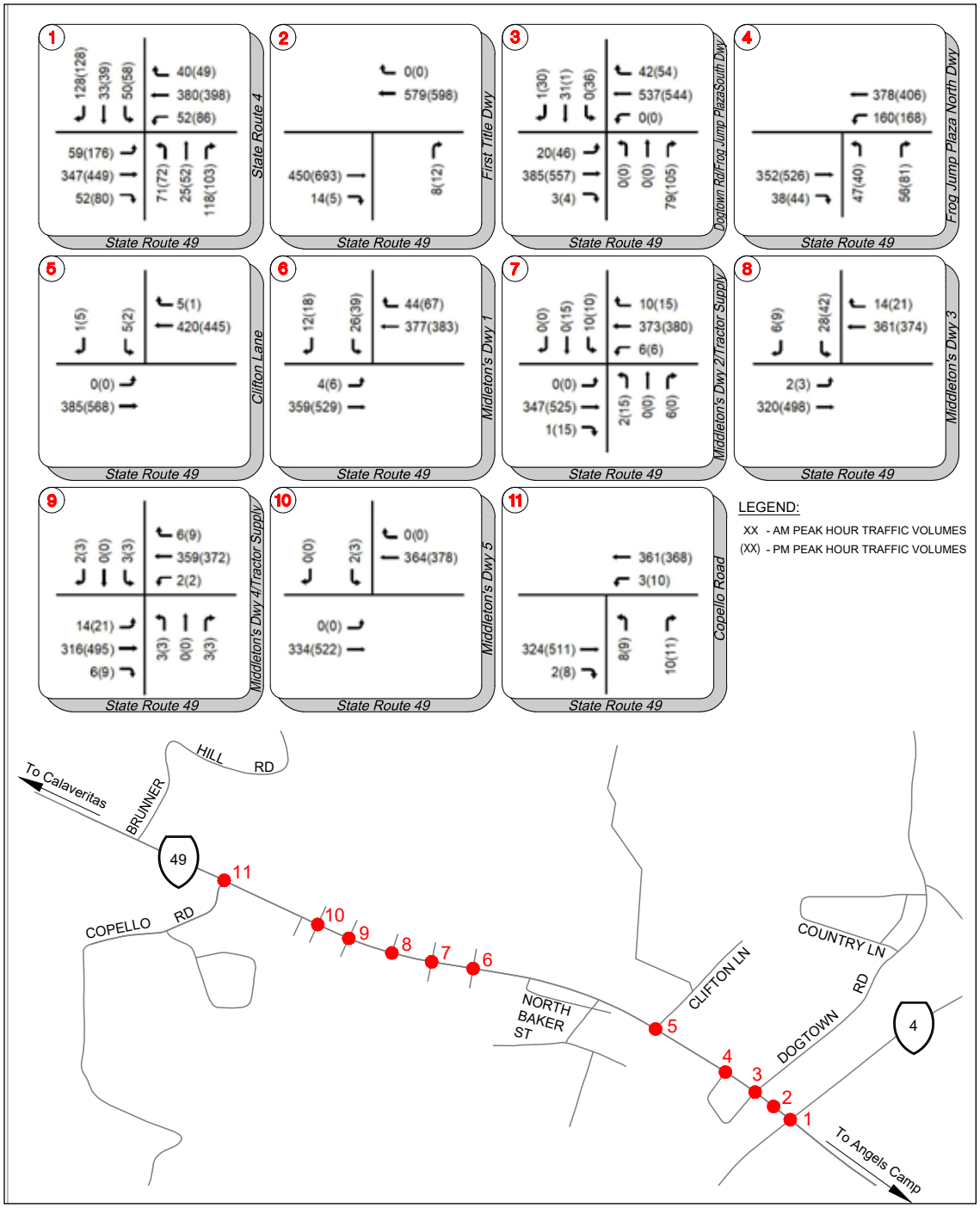
5 Tractor Supply Store on SR 49 in Angels Camp, CA: Traffic Assessment. KD Anderson & Associates, Inc. May 2018.

6 Angels Camp SR 4 and SR 49 Gateway and Corridor Study. Calaveras Council of Governments. January 2016.

Table 2.2: *Traffic Count Estimation Methodology By Intersection and Peak Period*

TRAFFIC COUNT ESTIMATION METHODOLOGY BY INTERSECTION AND PEAK PERIOD			
Intersection	**Location**	**AM Peak**	**PM Peak**
1	SR 49/SR 4	Counts sourced from Angels Camp SR 4 and SR 49 Gateway and Corridor Study.	
2	SR 49/First Title Driveway	Counts sourced from Angels Camp SR 4 and SR 49 Gateway and Corridor Study.	
3	SR 29/Frog Jump Plaza South/ Dogtown Road	Counts sourced from Angels Camp SR 4 and SR 49 Gateway and Corridor Study.	
4	SR 49/Frog Jump Plaza North	Counts sourced from Angels Camp SR 4 and SR 49 Gateway and Corridor Study.	
5	SR 49/Clifton Lane	Counts sourced from Angels Camp SR 4 and SR 49 Gateway and Corridor Study.	
6	SR 49/Mark Twain Center Driveway #1	Counts observed at Mark Twain.	Mark Twain driveway counts estimated based on ITE Trip Generation proportion of AM to PM peak rates for shopping center land use code (899).
7	SR 49/Mark Twain Center Driveway #2/ Tractor Supply South	Counts observed at Mark Twain driveway. Tractor Supply driveway counts sourced from traffic impact study.	Mark Twain driveway counts estimated based on ITE Trip Generation proportion of AM to PM peak rates for shopping center land use code (899). Tractor Supply driveway counts sourced from traffic impact study.
8	SR 49/Mark Twain Center Driveway #3	Counts observed at Mark Twain.	Mark Twain driveway counts estimated based on ITE Trip Generation proportion of AM to PM peak rates for shopping center land use code (899).
9	SR 49/ Mark Twain Center Driveway #4/ Tractor Supply North	Counts observed at Mark Twain driveway. Tractor Supply driveway counts sourced from traffic impact study.	Mark Twain driveway counts estimated based on ITE Trip Generation proportion of AM to PM peak rates for shopping center land use code (899). Tractor Supply driveway counts sourced from traffic impact study.
10	SR 49/Mark Twain Center Driveway #5	Counts observed at Mark Twain.	Mark Twain driveway counts estimated based on ITE Trip Generation proportion of AM to PM peak rates for shopping center land use code (899).
11	SR 49/Copello Road	Counts estimated based on ITE trip generation rate for multi-family dwelling unit land use code (220) for AM and PM peak hours, using the directional distribution of existing traffic.	

Figure 2.7: Existing peak hour traffic volumes



EXISTING INTERSECTION OPERATIONS

Existing intersection operations were quantified based on the Level of Service during the AM and PM peak hours of the 11 intersections identified for analysis within the study area by utilizing the estimated traffic counts described in Traffic Count Estimation on Page 22.

LEVEL OF SERVICE METHODOLOGY

Traffic operations are quantified through the determination of "Level of Service" (LOS). Level of service is a qualitative measure of traffic operating conditions, whereby a letter grade "A" through "F" is assigned to an intersection, representing progressively worsening traffic operations as determined by vehicle delay or congestion. LOS "A" represents free-flow operating conditions and LOS "F" represents over-capacity conditions. LOS was calculated for all study intersection control types using the methods documented in the Transportation Research Board Publication Highway Capacity Manual, Sixth Edition, A Guide to Multimodal Mobility Analysis, 2016 (HCM 6). Table 2.3 presents the vehicular delay-based LOS criteria for different types of intersection control. For an all-way stop-controlled (AWSC) intersection, an LOS determination is based on the calculated averaged delay for all approaches and movements. For a two-way or one-way (T-intersection) stop controlled (TWSC) intersection, an LOS determination is based upon the calculated average delay for all movements of the worst-performing approach.

The Synchro version 10 (Trafficware) software program was used to implement the HCM 6 analysis methodologies. Synchro has the capability to produce results using HCM 2000, HCM 2010, and HCM 6 methodologies, and takes into account queuing constraints when calculating delay, the corresponding delay, and queue lengths. For intersections with channelized free right-turn movements which by-pass the intersection, HCM methodologies consider that vehicles using a free right turn movement will not contribute to vehicle delay at an intersection.

Table 2.3: *Level of Service Criteria for Intersections*

LEVEL OF SERVICE CRITERIA FOR INTERSECTIONS						
Level of Service	**Type of Flow**	**Delay**	**Maneuverability**	**Stopped Delay/Vehicle**		
				Signalized/ Roundabout	**Un-signalized**	**All-Way Stop**
A	Stable Flow	Very slight delay. Progression is very favorable, with most vehicles arriving during the green phase not stopping at all.	Turning movements are easily made, and nearly all drivers find freedom of operation.	<10.0	<10.0	<10.0
B	Stable Flow	Good progression and/or short cycle lengths. More vehicles stop than for LOS A, causing higher levels of average delay.	Vehicle platoons are formed. Many drivers begin to feel somewhat restricted within groups of vehicles.	>10.0 and <20.0	>10.0 and <15.0	>10.0 and <15.0
C	Stable Flow	Higher delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures may begin to appear at this level. The number of vehicles stopping is significant, although many still pass through the intersection without stopping.	Back-ups may develop behind turning vehicles. Most drivers feel somewhat restricted	>20.0 and <35.0	>15.0 and <25.0	>15.0 and <25.0
D	Approaching Unstable Flow	The influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high volume-to-capacity ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.	Maneuverability is severely limited during short periods due to temporary back-ups.	>35.0 and <55.0	>25.0 and <35.0	>25.0 and <35.0
E	Unstable Flow	Generally considered to be the limit of acceptable delay. Indicative of poor progression, long cycle lengths, and high volume-to-capacity ratios. Individual cycle failures are frequent occurrences.	There are typically long queues of vehicles waiting upstream of the intersection.	>55.0 and <80.0	>35.0 and <50.0	>35.0 and <50.0
F	Forced Flow	Generally considered to be unacceptable to most drivers. Often occurs with over saturation. May also occur at high volume-to-capacity ratios. There are many individual cycle failures. Poor progression and long cycle lengths may also be major contributing factors.	Jammed conditions. Back-ups from other locations restrict or prevent movement. Volumes may vary widely, depending principally on the downstream back-up conditions.	>80.0	>50.0	>50.0

Highway Capacity Manual, Sixth Edition, A Guide to Multimodal Mobility Analysis, 2016 (HCM 6).

LEVEL OF SERVICE GUIDELINES AND POLICIES

Caltrans LOS Guidelines

Caltrans' Guide for the Preparation of Traffic Impact Studies contains the following policy pertaining to the LOS standards within Caltrans jurisdiction:

Caltrans endeavors to maintain a target LOS at the transition between LOS "C" and LOS "D" on State highway facilities, however, Caltrans acknowledges that this may not always be feasible and recommends that the lead agency consult with Caltrans to determine the appropriate target LOS.

Calaveras County LOS Guidelines

The Calaveras County General Plan contains the following policy pertaining to the LOS standards within County jurisdiction:

For Calaveras County roadways, acceptable LOS is defined by Policy C 2.2 of the Draft General Plan. The policy establishes LOS C or better as acceptable for County-maintained roadways outside of Community Areas. For County-maintained roadways within Community Areas (as indicated per the Draft General Plan Land Use map), the policy establishes LOS D or better as acceptable.

For the purpose of this study, the Caltrans and County LOS criteria are applied for the study intersections. Therefore, the intersections within the community were considered to be operating at an acceptable LOS if they were operating at LOS D or better, and intersections outside the community were considered to be operating at an acceptable LOS if they were operating at LOS C or better.

TECHNICAL ANALYSIS PARAMETERS AND ASSUMPTIONS

Table 2.4 presents the technical parameters assumed for evaluation of the LOS of the study intersections. All parameters not listed should be assumed as default or calculated values based on HCM methodology based on HCM methodology.

Table 2.4: *Technical Parameters and Assumptions*

TECHNICAL PARAMETERS AND ASSUMPTIONS	
Technical Parameters	**Assumptions**
1. Intersection Peak Hour Factor (PHF)	Intersection overall, PHF of .88 assumed for rural communities
2. Intersection Heavy Vehicle Percentage	Intersection overall, Based on Caltrans Traffic Census Program % Truck of Total of 4% at Route 49 Post Mile 8.667. All study intersections were assumed at 4% due to SR 49 being a truck route

EXISTING LEVEL OF SERVICE

Table 2.5 displays the LOS calculated during the AM and PM peak hours for all study intersections. During the PM peak hour. The intersection at SR 49/Dogtown Road/Frog Jump Plaza Driveway South is operating outside of the acceptable thresholds, at LOS F. All remaining intersections are operating within the acceptable thresholds.

Table 2.5: *Existing Intersection Level of Service*

EXISTING INTERSECTION LEVEL OF SERVICE							
				AM Peak Hour		PM Peak Hour	
#	Intersection	Control Type [1,2]	Target	Delay	LOS	Delay	LOS
1	SR 4/SR 49	Signal	D	17.4	B	20.7	C
2	SR 49/First Title Driveway	TWSC	D	11.6	B	14.7	B
3	SR 49/Dogtown Rd/Frog Jump Plaza South Driveway	TWSC	D	26.8	D	75.4	F
4	SR 49/Frog Jump Plaza North Driveway	TWSC	D	18.2	C	22.3	C
5	SR 49/Clifton Lane	TWSC	D	13.2	B	12.6	B
6	SR 49/Mark Twain Driveway 1	TWSC	D	13.2	B	15.2	C
7	SR 49/ Mark Twain Driveway 2/Tractor Supply Driveway South	TWSC	D	18.6	C	26.6	D
8	SR 49/ Mark Twain Driveway 3	TWSC	D	12.9	B	14.9	B
9	SR 49/ Mark Twain Driveway 4/ Tractor Supply North	TWSC	D	14.9	B	17.8	C
10	SR 49/ Mark Twain Driveway 5	TWSC	D	12.7	B	14.4	B
11	SR 49/Copello Road	TWSC	D	11.6	B	13.6	B

Notes:

1. AWSC = All Way Stop Control; TWSC = Two Way Stop Control; RNDBT = Roundabout

2. LOS = Delay based on worst minor street approach for TWSC intersections, average of all approaches for AWSC, Signal, RNDBT

3. **Bold** *= Unacceptable Conditions*

LEVEL OF TRAFFIC STRESS METHODOLOGIES

Bicycle Level of Traffic Stress Methodology

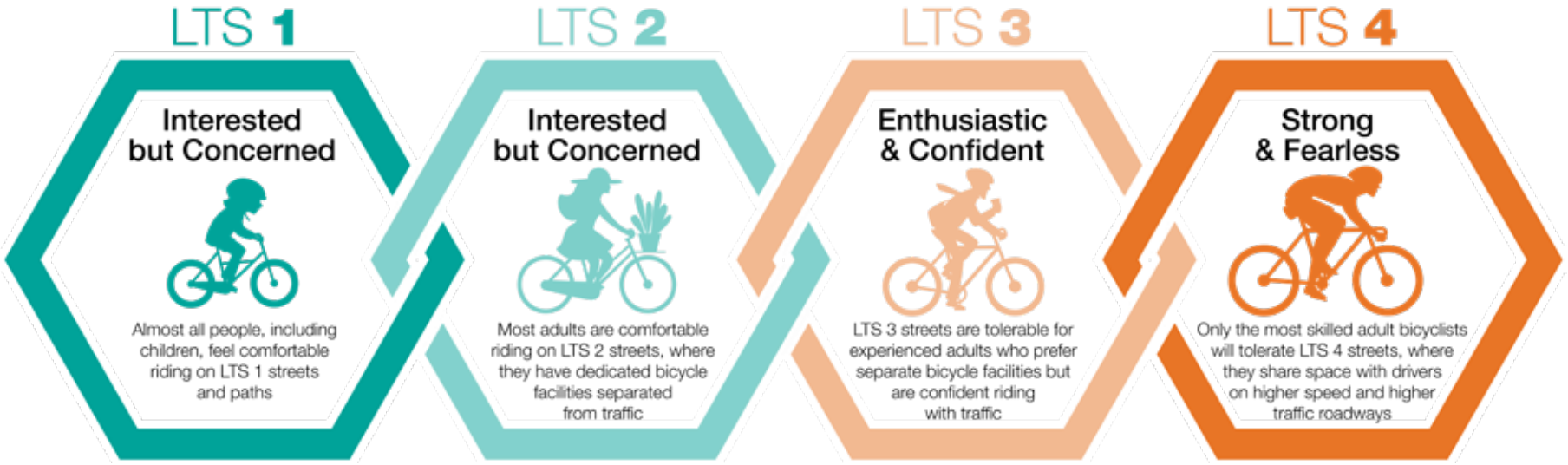
Existing bicycle facilities within the study corridor were analyzed based on Bicycle Level of Traffic Stress (Bicycle LTS). Based on the methodology described in Mineta Transportation Institute's Report 11-19 Low Stress Bicycling and Network Connectivity (2012), Bicycle LTS quantifies the stress level of a given roadway segment by considering a variety of criteria, including street width (number of lanes), speed limit or prevailing speed, presence and width of bike lanes, and the presence and width of parking lanes. Bicycle LTS is suitability rating system of the safety, comfort, and convenience of transportation facilities from the perspective of different subsets of the population. Moreover, the methodology allows planning practitioners to assess gaps in connectivity that may discourage active users from traversing roadways.

Bicycle LTS scores roadway facilities into one of four classifications or ratings for measuring the effects of traffic-based stress on bicycle riders, with 1 being the lowest stress or most comfortable, and 4 being the highest stress or least comfortable. Generally, LTS score of 1 indicates the facility provides a traffic stress tolerable by most children and to multi-use paths that are separated from motorized traffic. An LTS score of 4 indicates a stress level tolerable by only the most experienced cyclists who are comfortable with high-volume and high-speed, mixed traffic environments.

The Bicycle LTS methodology is comprised of three scoring categories: roadway segments, intersection approaches where right turn lanes exist, and unsignalized intersection crossings. Signalized crossings are generally not analyzed as signalized crossings generally do not create a barrier to connectivity because signalization provides a safe crossing.

Infrastructure characteristic criteria are applied separately for each category to ascribe a given LTS score. Scoring

Figure 2.8: Bicycle Level of Traffic Stress (Bicycle LTS)



operates on the "worst case principle," meaning the highest stress infrastructure characteristic prevails for an overall score for each category. The scoring criteria utilized for Bicycle LTS is provided in the Tables 2.6, 2.7, and 2.8.

Table 2.6: *Criteria for Segment Bicycle Level of Traffic Stress in Mixed Traffic*

CRITERIA FOR SEGMENT BICYCLE LEVEL OF TRAFFIC STRESS IN MIXED TRAFFIC			
Speed Limit	**Street Width**		
	2-3 lanes	**4-5 lanes**	**6+ lanes**
Up to 25 mph	LTS 1 or 2[1]	LTS 3	LTS 4
30 mph	LTS 2 or 3[1]	LTS 4	LTS 4
35+ mph	LTS 4	LTS 4	LTS 4
[1] Use lower value for streets without marked centerlines or classified as residential and with fewer than 3 lanes; use higher value otherwise			

Table 2.7: *Criteria for Bicycle Level of Traffic Stress in Mixed Traffic in the Presence of a Right-turn Lane*

CRITERIA FOR BICYCLE LEVEL OF TRAFFIC STRESS IN MIXED TRAFFIC IN THE PRESENCE OF A RIGHT-TURN LANE	
Configuration	**Level of Traffic Stress**
Single right-turn lane with length ≤ 75 feet and intersection angle and curb radius limit turning speed to 15 mph	(no effect on LTS)
Single right-turn lane with length between 75 and 150 feet, and intersection angle and curb radius limit turning speed to 15 mph	LTS ≥ 3
Otherwise	LTS ≥ 4

Table 2.8: *Criteria for Bicycle Level of Traffic Stress for Unsignalized Crossings Without a Median Refuge*

CRITERIA FOR BICYCLE LEVEL OF TRAFFIC STRESS FOR UNSIGNALIZED CROSSINGS WITHOUT A MEDIAN REFUGE			
Speed Limit of Street Being Crossed	**Width of Street Being Crossed**		
	Up to 3 lanes	**4-5 lanes**	**6+ lanes**
Up to 25 mph	LTS 1	LTS 2	LTS 4
30 mph	LTS 1	LTS 2	LTS 4
35 mph	LTS 2	LST 3	LTS 4
40+	LST 3	LTS 4	LTS 4

Pedestrian Level of Traffic Stress Methodology

Existing pedestrian facilities were examined using the Pedestrian Level of Traffic Stress (Pedestrian LTS) methodology reported in Analysis Procedure Manual, Version 2 published by the Oregon Department of Transportation (ODOT). Similar to Bicycle LTS, Pedestrian LTS is used to assess the stress level of the roadway network through the perspective of the user by analyzing roadway characteristics of segments and intersection crossings. Furthermore, the methodology was developed to be used in conjunction with Bicycle LTS in determining the multimodal comfort level of active transportation users.

Pedestrian LTS methodology utilizes the same one to four rating system as Bicycle LTS, which is described by the following:

- PLTS 1 – Represents little to no traffic stress and requires little attention by pedestrians to the traffic situation. This is suitable for all users including children 10 years of age or younger, groups of people, and people using a wheeled mobility device.
- PLTS 2 – Represents little traffic stress but requires more attention to the traffic situation than may be capable of young children. These facilities would be suitable for children over 10, teens and adults.
- PLTS 3 – Represents moderate stress and is suitable for adults. Able-bodied adults would feel uncomfortable, but safe using this facility.

- PLTS 4 – Represents high traffic stress. Only able-bodied adults with limited route choices would use this facility. Traffic speeds are moderate to high with narrow or no pedestrian facilities provided.
- The scoring criteria utilized for Pedestrian LTS are provided in Tables 2.9, 2.10 and 2.11.

Table 2.9: *Pedestrian LTS Sidewalk Condition Criteria*

PEDESTRIAN LTS SIDEWALK CONDITION CRITERIA				
Sidewalk Condition				
Good	**Fair**	**Poor**	**Very Poor**	**No Sidewalk**
PLTS 4	PLTS 4	PLTS 4	PLTS 4	PLTS 4
PLTS 3	PLTS 3	PLTS 3	PLTS 4	PLTS 4
PLTS 2	PLTS 2	PLTS 3	PLTS 4	PLTS 4
PLTS 1	PLTS 1	PLTS 2	PLTS 3	PLTS 4
Notes:				
1. Can include other facilities such as walkways and shared-use paths				
2. Effective width is the available/useable area for the pedestrian. Does not include areas occupied by store fronts or curb side features.				
3. Consider increasing the PLTS one level (Max PLTS 4) for segments that do not have illumination. Darkness requires more awareness especially if sidewalk is in fair or worse conditions.				
4. Effective width should be proportional to volume as higher volume sidewalks should be wider than the base six feet. Use a minimum PLTS 2 for higher volume sidewalks that are not proportional.				

Table 2.10: *Pedestrian LTS Total Buffering Width Criteria*

PEDESTRIAN LTS TOTAL BUFFERING WIDTH CRITERIA					
Total Number of Travel Lanes (both directions)	**Total Buffering Width (ft)**				
	<5	**≥5 to <10**	**≥10 to <15**	**≥15 to <25**	**≥25**
2	PLTS 2	PLTS 2	PLTS 1	PLTS 1	PLTS 1
3	PLTS 3	PLTS 2	PLTS 2	PLTS 1	PLTS 1
4 - 5	PLTS 4	PLTS 3	PLTS 2	PLTS 1	PLTS 1
6	PLTS 4	PLTS 4	PLTS 3	PLTS 2	PLTS 2
Notes:					
1. Total Buffering Width is the summation of the width of the buffer, width of parking, width of shoulder and width of the bike lane on the same side of the roadway as the pedestrian facility being evaluated.					
2. Sections with a substantial physical barrier/tall railing between the travel lanes and the walkway (like might be found on a bridge) can be lowered to PLTS 3.					

Table 2.11: *Pedestrian LTS Buffer Type Criteria*

PEDESTRIAN LTS BUFFER TYPE CRITERIA				
Buffer Type[1]	**Prevailing of Posted Speed**			
	≤25 MPH	**30 MPH**	**35 MPH**	**≥40 MPH**
No Buffer (curb tight)	PLTS 2	PLTS 3	PLTS 3	PLTS 4
Solid Surface	PLTS 2[2]	PLTS 2	PLTS 2	PLTS 2
Landscaped	PLTS 1	PLTS 2	PLTS 2	PLTS 2
Landscaped with Trees	PLTS 1	PLTS 1	PLTS 1	PLTS 2
Vertical				
Notes:				
1. Combined buffers: If two or more buffer conditions apply, use the most appropriate, typically the lower stress level				
2. If street furniture, stress trees, lighting, planters, surface change, etc. are present then the PLTS can be lowered to PLTS 1.				

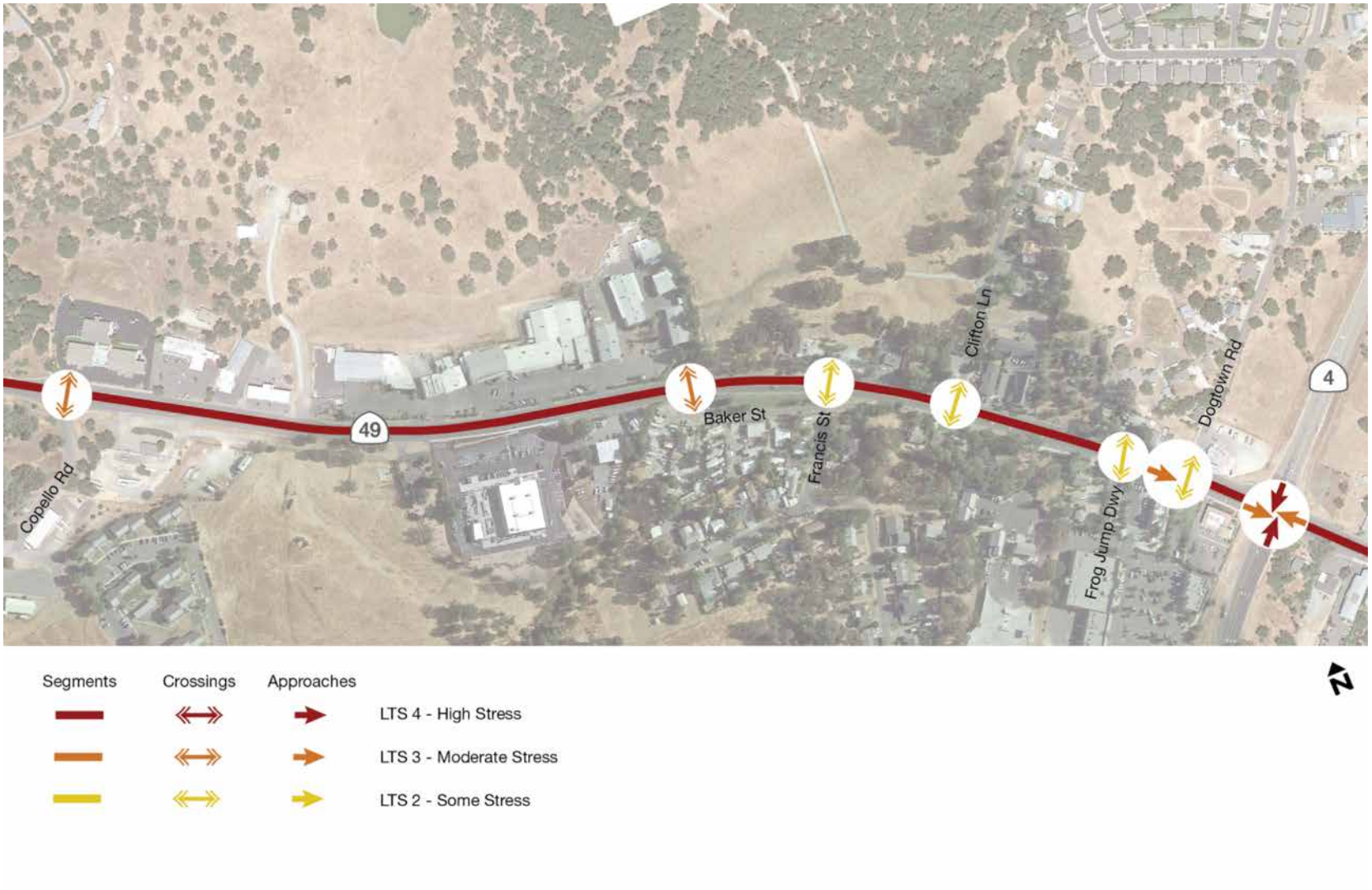
EXISTING BICYCLE LEVEL OF TRAFFIC STRESS

Existing Bicycle Level of Traffic Stress is presented in Figure 2.9, and in Table 2.12. As seen, the entirety of segments within the corridor can be considered high stress, while scored crossings exhibit some to moderate stress, and scored approaches exhibit moderate to high stress. The high stress nature of roadway segments in the study area are due to speeds of between 35 to 45 mph and lack of physical separation from between 3 and 4 travel lanes. The stress of crossings within the study area are due the speeds of the street being crossed, which creates a high-stress barrier for the bicyclists attempting to cross SR 49 from minor streets. High stress approaches exist where right-turns exist, which expose bicyclists to turning traffic as they traverse the roadway adjacent to long turn pockets.

Table 2.12: *Bicycle Level of Traffic Stress Scores*

BICYCLE LEVEL OF TRAFFIC STRESS SCORES		
Segments		
Roadway	**Location Description**	**Segment Scoring**
SR 49	Copello Road to N Baker Street	4
	N Baker Street to SR 4	4
Approaches		
Roadway	**Location Description**	**Segment Scoring**
SR 49	Frog Jump Plaza South Driveway entrance SB	3
	SR 4/SR 49 SB	3
	SR 4/SR 49 NB	3
	SR 4/SR 49 EB	4
	SR 4/SR 49 WB	4
Unsignalized Crossings		
Roadway	**Location Description**	**Segment Scoring**
SR 49	SR 49/Copello Road	3
	SR 49/ N Baker Street	3
	SR 49/ Francis Street	2
	SR 49/Clifton Ln	2
	SR 49/Frog Jump Driveway North	2
	SR 49/Frog Jump Driveway South/ Dogtown Rd	2

Figure 2.9: Existing Bicycle Level of Traffic Stress Map



EXISTING PEDESTRIAN LEVEL OF TRAFFIC STRESS

There are very few pedestrian facilities within the study area. Sidewalk exists in five segments, which are described in Table 2.13. Table 2.13 reports the PLTS given to each segment based on the methodology described previously. Crosswalks exist only at the intersection of SR 4/SR 49; however ODOT's PLTS methodology does not include crossings at signalized intersections, so these crossings were not included in the analysis. Due to the lack of pedestrian facilities throughout the study area, the majority of the study area results in a PLTS score of four, which highlights the high stress environment and gaps in connectivity within the North Main Street corridor. Existing Pedestrian LTS is also displayed graphically in Figure 2.10.

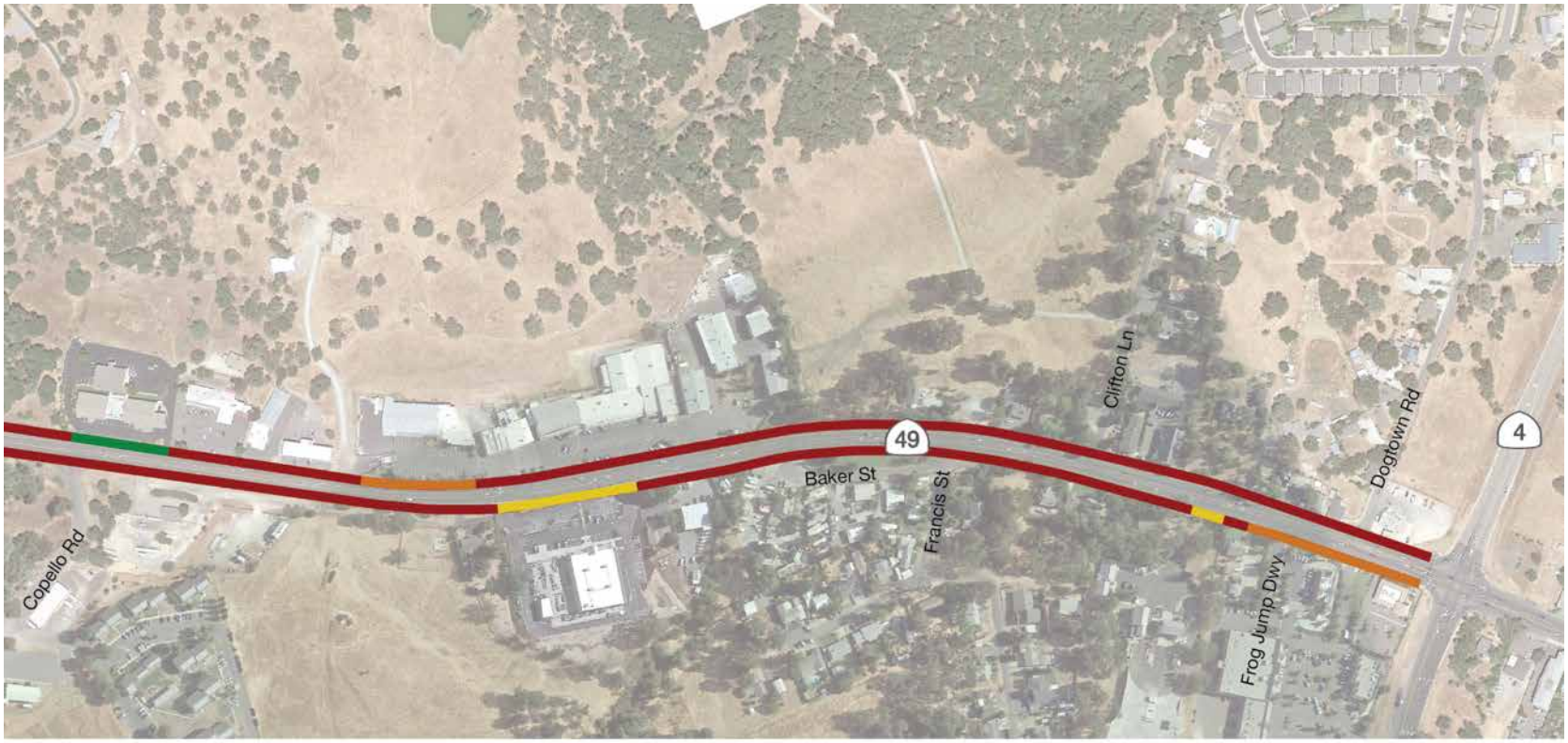
Table 2.13: *Pedestrian Level of Traffic (PLTS) Segment Scores*

PEDESTRIAN LEVEL OF TRAFFIC (PLTS) SEGMENT SCORES			
Sidewalk Condition			
Roadway	**Location Description**	**Segment Scoring (Along)**	
		North Side	**South Side**
SR 49	Travel Lodge to Hospice Thrift	1	N/A
	Aspen Street Architects	3	N/A
	Tractor Supply	N/A	1
	Fire Station	N/A	1
	Frog Jump Plaza to SR 4	N/A	1
	Remaining roadway segments[1]	4	4
Physical Buffer Type			
Roadway	**Location Description**	**Segment Scoring (Along)**	
		North Side	**South Side**
SR 49	Travel Lodge to Hospice Thrift	2	N/A
	Aspen Street Architects	2	N/A
	Tractor Supply	N/A	2
	Fire Station	N/A	2
	Frog Jump Plaza to SR 4	N/A	2
	Remaining roadway segments[1]	N/A	N/A
Notes:			
1. Remaining roadway segments were scored only on the basis of sidewalk presence/conditions because have these segments have no sidewalks.			

Table 2.13: *Pedestrian Level of Traffic (PLTS) Segment Scores continued*

PEDESTRIAN LEVEL OF TRAFFIC (PLTS) SEGMENT SCORES			
Total Buffering Width			
Roadway	**Location Description**	**Segment Scoring (Along)**	
		North Side	**South Side**
SR 49	Travel Lodge to Hospice Thrift	1	N/A
	Aspen Street Architects	2	N/A
	Tractor Supply	N/A	2
	Fire Station	N/A	1
	Frog Jump Plaza to SR 4	N/A	3
	Remaining roadway segments[1]	N/A	N/A
Overall PLTS Score			
Roadway	**Location Description**	**Segment Scoring (Along)**	
		North Side	**South Side**
SR 49	Travel Lodge to Hospice Thrift	1	N/A
	Aspen Street Architects	3	N/A
	Tractor Supply	N/A	2
	Fire Station	N/A	2
	Frog Jump Plaza to SR 4	N/A	3
	Remaining roadway segments[1]	N/A	N/A
Notes:			
1. Remaining roadway segments were scored only on the basis of sidewalk presence/conditions because have these segments have no sidewalks.			

Figure 2.10: Existing Pedestrian Level of Traffic Stress Map



Collision data for the roadways and intersections within the study area was obtained from California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS). Data was obtained for all roadways within the study area for the most recent years available between January 1, 2014 and December 31, 2018. The accuracy of this data is subject to reporting levels of the law enforcement agencies supplying the collision reports, and 2018 data is provisional and subject to change. Based on the collision data, there were 37 reported within the study area.

COLLISION TRENDS

Between 2014 and 2018, of the 37 collisions reported, 28 resulted in property damage only, one resulted in visible injury and nine in visible injury. No fatalities or severe injuries were reported. A summary of crash data by location is provided in Table 2.14. As presented, there 28 collisions resulting in property Damage-only (PDO), and 9 resulting in injury within the study limits. Ninety-two percent of the total collisions within the study area occurred at or near the intersections of SR 49/SR 4 and SR 49/Dogtown Road. Additionally, rear-end and broadside collisions were the most common crash type, at 17 and 10 collisions, respectively.

Thirty-three of the 37 collisions were vehicle/vehicle collisions. One collision between each of the following party types were reported: bicycle/vehicle, animal/vehicle, vehicle/hit object and overturned non-collision. Unsafe speeds, improper turning, and automobile right-of-way violations were the most common violation types for the reported collisions, at eleven, six and eight of the 37 total collisions, respectively.

Table 2.14: *Summary of Crash Data By Location, 2014 - 2018*

SUMMARY OF CRASH DATA BY LOCATION, 2014 - 2018														
			Collisions By Severity				Collisions By Type							
Nearest Intersecting Cross Street	Total Collisions	% Total Crashes	Property Damage Only	Injury	Fatality	Total Persons Injured	Head-On	Sideswipe	Rear End	Broadside	Hit Object	Other	Not Stated	Total
SR 49	1	3%	1	0	0	0	0	0	0	0	1	0	0	1
Copello Road														
SR 49	1	3%	0	1	0	1	0	0	0	1	0	0	0	1
Baker Street														
SR 49	1	3%	0	1	0	1	0	1	0	0	0	0	0	1
Clifton Lane														
SR 49	16	43%	12	4	0	4	1	3	5	7	0	0	0	16
Dogtown Road														
SR 49	18	49%	15	3	0	3	0	2	12	2	0	1	1	18
SR 4														
Total	**37**	**100%**	**28**	**9**	**0**	**9**	**1**	**6**	**17**	**10**	**1**	**1**	**1**	**37**
		% Total	**76%**	**24%**	**0%**									

COLLISION RATES COMPARISON

Collision rates were calculated in terms of "collisions per million vehicle miles traveled" for both segments and intersections within the study area. This calculation is based on the number of collisions per year, and the vehicle miles traveled per year (equal to the ADT volumes multiplied by the length of the segment), as presented in the following equation:

$$Collision\ Rate = \frac{(Number\ of\ Collisions) \times (1{,}000{,}000)}{Vehicle\ Miles\ Traveled}$$

The calculated collision rates were compared with statewide average rates compiled by the California Department of Transportation (Caltrans) as published in their most recent document 2016 Collision Data on California State Highways. The document provides basic average collision rates for various types of roadways and intersections categorized by number of lanes, travel speed, etc., and are derived from the California SWITRS. This analysis provides a performance-based safety comparison against similar roadway facilities.

As presented in Table 2.15, the segment collision rate for the SR 49 Corridor is higher than the statewide average for similar facilities, adjusted for ADT; however, the rate is lower compared to the countywide rate for similar facilities. Table 2.16 displays the collision rates for intersections within the corridor. The collision rate at the intersections of Clifton Lane/SR 49 and SR 4/SR 49 are lower than statewide averages for similar facilities. Both the collision rate and percent of injuries at Dogtown Road/SR 49 is higher than statewide averages, underscoring safety issues at this location.

SUMMARY

The data shows a concentration of collisions at or near the termini of two adjacent intersections: SR 4/SR 49 and SR 4/ Dogtown Road. With 92 percent of the total collisions within the study area concentrated in this area, countermeasures should be explored to address crash risk in this subsection of the study area.

The collisions that occurred over the five-year crash history examined herein shows that only one bicycle collision and no pedestrian collisions occurred. However, few active facilities currently exist. With perceivably safe and comfortable facilities, bicyclists and pedestrians may be discouraged from active transportation within the corridor completely, which would diminish the likelihood of bicycle or pedestrian to vehicle conflict, and depress the number of these collision types. Improved facilities could induce demand for the active transportation system, increasing the number of active users and potential for vehicle conflict with these users. Due to the low number of bicycle and pedestrian collisions along the corridor, a systemic approach towards identify crash risk and possible countermeasures may provide a more proactive assessment of possible intersection modifications along SR 49.

Table 2.15: *Segment Accident Rates Comparison*

SEGMENT ACCIDENT RATES COMPARISON									
Roadway Segments	**Length (mi)**	**2019 ADT**	**Total Collisions (5years)**	**Fatality + Injury (F+I) (5 Year)**	**% F + I**	**Statewide Average % F + I**	**Collision Rate (ACC/ MVM)**	**Countywide Rate (ACC/ MVM)**	**Statewide Basic Average Rate (ACC/ MVM)**
SR 49									
Copello Rd to SR 4	0.70	9,170	12	4	33.3%	42.2%	1.02	1.49	0.94
Notes:									
1. Statewide Basic Average Rate are recorded in 2016 Collision Data on California State Highways, Caltrans.									
2. Daily Entering Volume for the intersection is based on the PM peak hour counts multiplied by a factor of 10.									

Table 2.16: *Intersection Accident Rates Comparison*

INTERSECTION ACCIDENT RATES COMPARISON						
Intersections	**2019 Daily Entering Volume**	**Total Collisions (5 years)**	**% F + I**	**Statewide Average % F + I**	**Collision Rate (COLL/MVE)**	**Statewide Basic Average Rate**
SR 49						
Clifton Ln & SR 49	10,210	1	100.0%	41.3%	0.05	0.16
Dogtown Rd & SR 49	13,770	8	50.0%	45.9%	0.32	0.22
SR 4 & SR 49	16,900	16	25.0%	39.0%	0.52	0.58
Notes:						
1. Statewide Basic Average Rate are recorded in 2016 Collision Data on California State Highways, Caltrans.						
2. Daily Entering Volume for the intersection is based on the PM peak hour counts multiplied by a factor of 10.						

Figure 2.11: Collision Heat Map

EXISTING CONDITIONS ANALYSIS SUMMARY

The major findings of the existing conditions assessment of the Angels Camp SR 49 N. Main Street Corridor are as follows:

- There is a lack in both pedestrian and bicycle facilities, creating gaps in connectivity throughout the corridor. Few sidewalks and no bicycle facilities exist within the study area.
- With Median Household Income at 68 percent of statewide MHI, Angels Camp can be considered a disadvantaged community on the basis of income. It is likely that deficiencies in active transportation infrastructure disproportionately impacts disadvantaged members of the study area community.
- Vehicular LOS is within acceptable thresholds at all study intersections within the AM and PM peak periods, with the exception of SR 49 and Dogtown Road, which currently operates at LOS F in the PM peak period.
- As presented in Figures 2.9 and 2.10, the Bicycle Level of Traffic Stress and Pedestrian Level of Traffic Stress analyses highlight the moderate to high stress active transportation environment within the study area. High speeds and lack of protected facilities contribute to the stress levels throughout the corridor.
- Within the five year period of crash history examined (2014-2018), 37 collisions were reported within the study corridor. The crash rate for the roadway segment is higher than the statewide average, but lower than the countywide average for similar facilities. The crash rate for the intersection at SR 49 and Dogtown Road is also higher than statewide averages for like facilities.

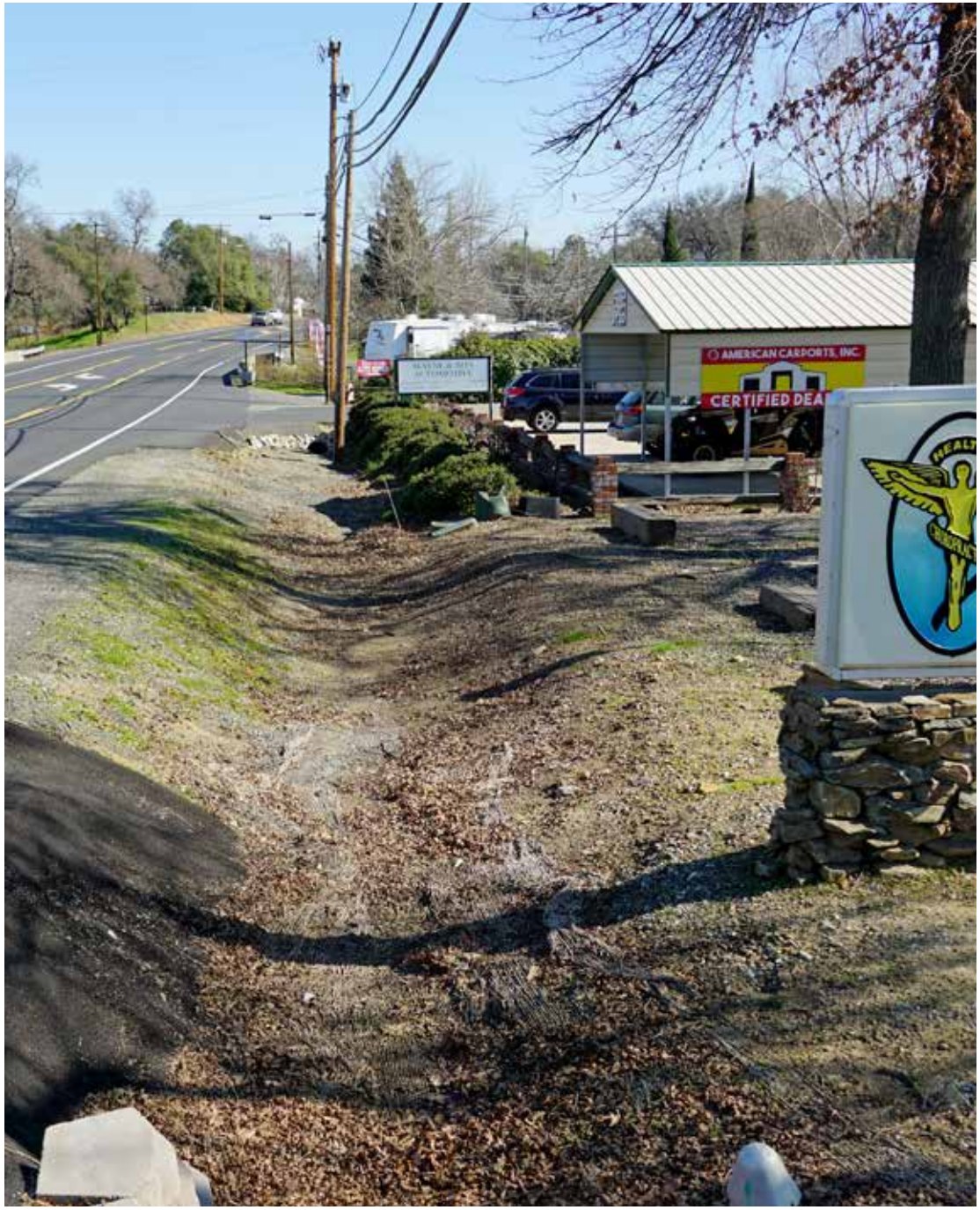


Figure 2.12: Existing Conditions Assessment (1 of 4)

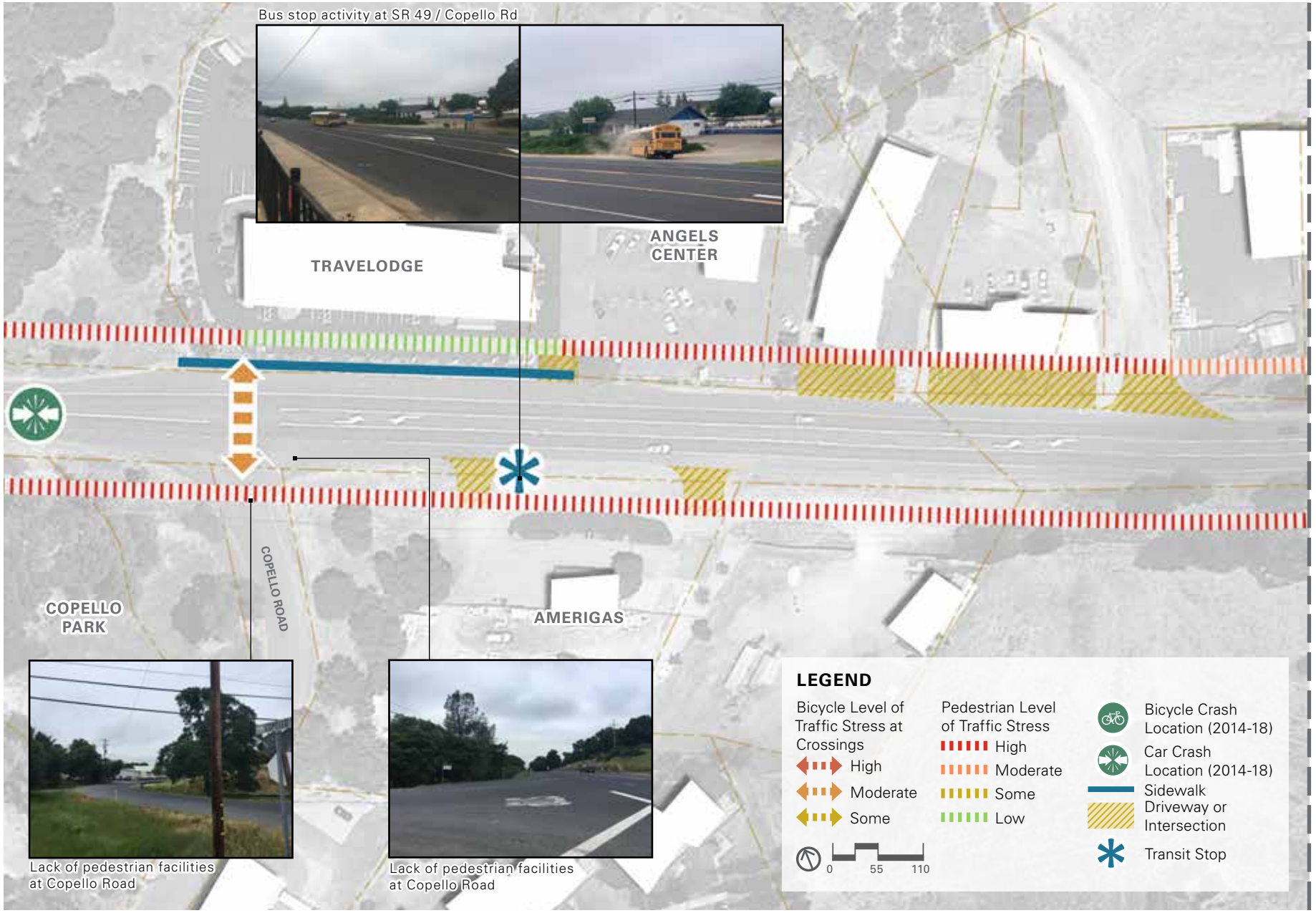


Figure 2.13: Existing Conditions Assessment (2 of 4)

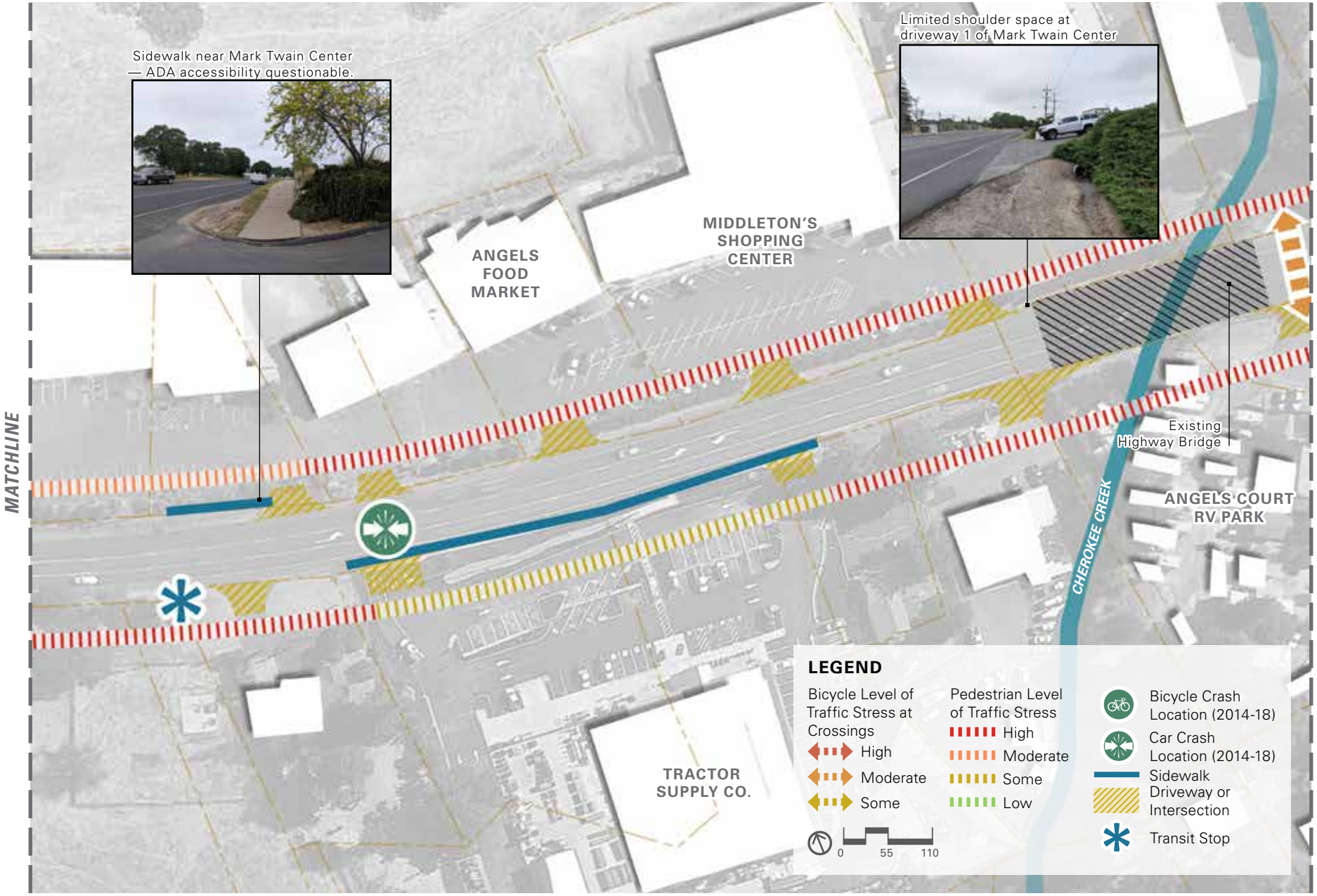


Figure 2.14: Existing Conditions Assessment (3 of 4)

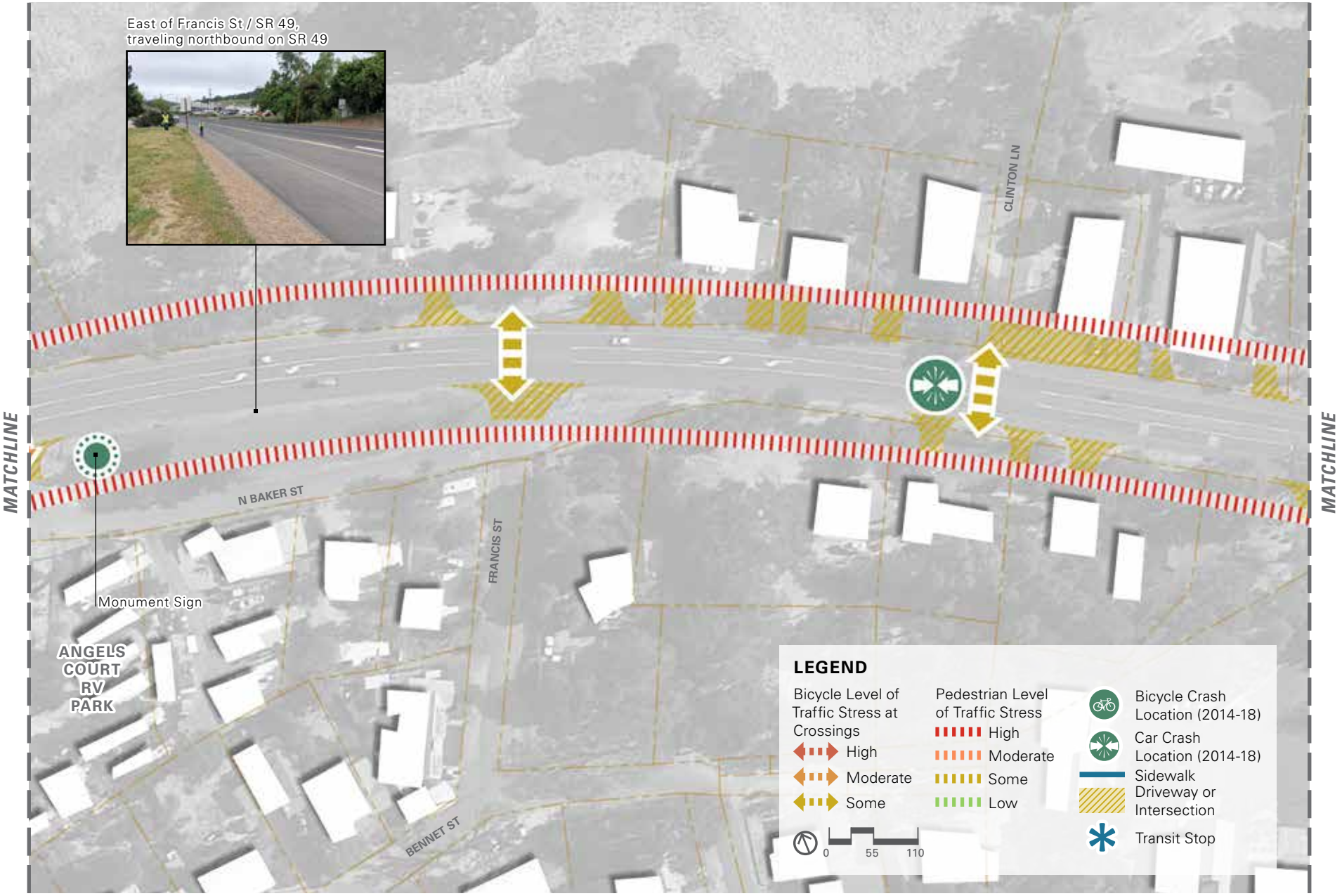
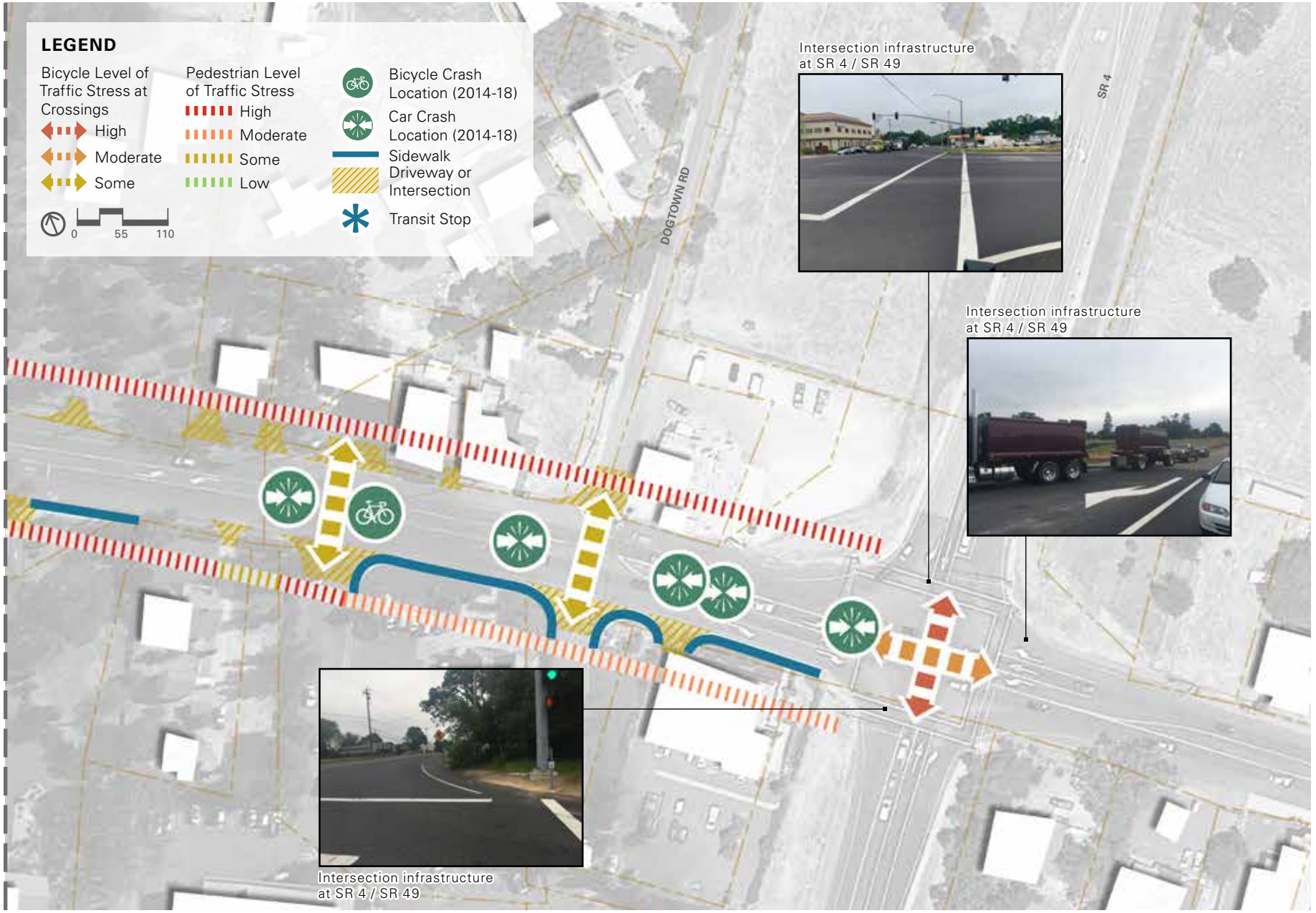


Figure 2.15: Existing Conditions Assessment (4 of 4)



3. PUBLIC OUTREACH

A well-defined Public Outreach Strategy ensured communication throughout the process by considering the best methods of informing the public and involving them in the development of the Angels Camp North Main Street Plan. By creating consensus, we assured the plan was well received, thereby increasing the likelihood of smooth implementation.

3 – PUBLIC OUTREACH

WEBSITE AND SOCIAL MEDIA

A website was created using the previously prepared site at https://planningangelscamp.com/ This website was updated to include information related to the North Main Street project while still providing access to the previously prepared documents. The website shared current project information including:

- Project Information
- Purpose/Overview and Process
- Project Team
- Project Documents
- Public Outreach Information
- Online Comment and Contact Information

STAKEHOLDERS

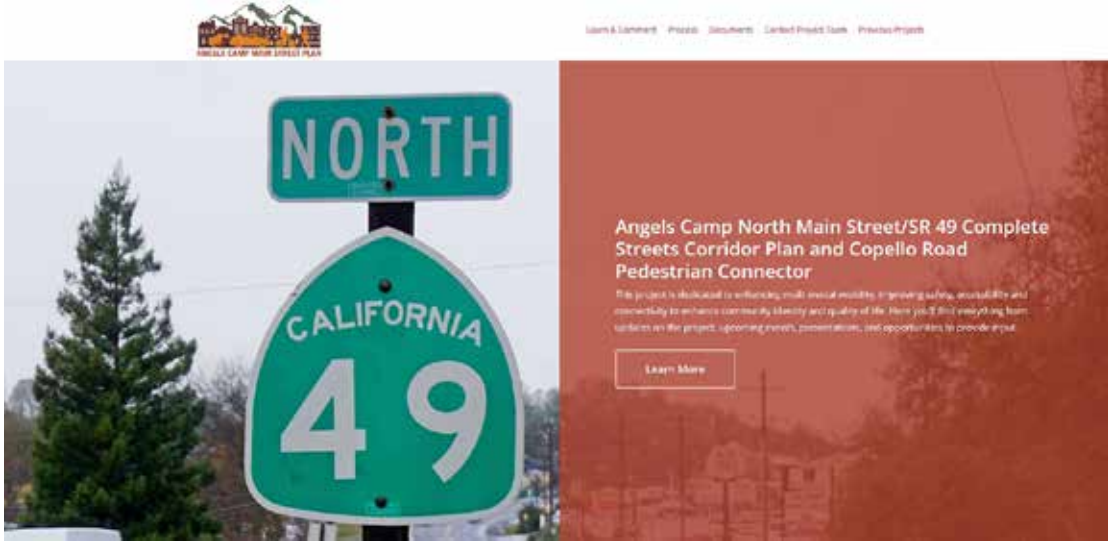
Stakeholders were identified by the project team as local property owners along the corridor including business owners and residents. Meetings with the stakeholders occurred in a variety of locations including at the office of Destination Angels Camp, at the Copello Square Apartments and going directly to the businesses that were not able to attend the scheduled meetings.

Two days of meetings were held to obtain comments and feedback from the stakeholder groups. Goals of these meetings were to inform stakeholders of project goals, listen to concerns and gather ideas.

MEETING SUMMARIES

Stakeholder Meeting 1

A series of stakeholder meetings were held on February 26th and 27th. Overall 14 business owners and residents attended.



Project website: www.planningangelscamp.com

AGENDA FOR EACH MEETING:

- Project Introduction/Description
- Discussion of Accessibility Opportunities
- Schedule
- Next Steps
  - » On-site meeting with design ideas in the spring
  - » Coordination with future utility improvements
  - » Website updated

SUMMARY OF FEEDBACK RECEIVED AT EACH MEETING:

February 26, 2019 from 11-12 at the Destination Angels Camp Conference Room. Six residents from Clifton Lane and Bennett Street attended.

General Comments

- Show future and planned projects onto one plan (Habitat for Humanity project, Foundry Lane/CVS Plaza connection, Tractor Supply, etc)
- Entry into city needs to be more attractive
- Need separate bridge at Cherokee Creek for pedestrians and bicycles.
- Need crosswalks at Angels Food Mart, Copello Road and Altaville School/Fire Station

Roadway/ROW Comments

- Concern of Caltrans ROW and loss of private property. Explained that current ROW is shown on hand drawn plans and are not accurate, surveys will be conducted before improvements are implemented.
- Corridor needs curbs, gutter, sidewalks and lighting, not a safe or nice place to walk.
- Traffic calming is needed so slow vehicular speeds
- On street parking would be helpful in front of Travel Lodge for truck parking and customer parking in front of Bloom and Things.

February 26th from 5-6 at the Middleton's Shopping Center. Eight business owners and residents attended this meeting.

General Comments

- Numerous people cross SR 49 from mobile home park to the businesses near the bridge at Cherokee Creek.
- Crosswalks are needed within the corridor
- Bridge is a constraint
- Underground powerlines
- Land around SR 4 and SR 49 has greatest potential for growth, it is a regional hub.


Farmers Market at Utica Park

Roadway/ROW Comments

- Bike lanes and sidewalks are better use for the right-of-way than on street parking.
- Concern of space to install bike lanes and sidewalks in front of Middleton's
- Concern of evaluation if road too narrow
- Concern of Caltrans ROW taking away private property
- Need traffic calming in this area as people enter Angels Camp.

February 27th from 11-12 at the Travelodge. Only the owner of the establishment attended.

General Comments

- Need welcome sign at the entry of city limits at Copello Road.
- On street truck parking is useful and would like for it to remain.
- A lot of cyclists stay in summer, a road cycling destination.
- City needs sign ordinance

Roadway/ROW Comments

- Guests walk from hotel to market along roadway
- Speeds are too fast through the corridor.

Stakeholder Meetings 2

A second stakeholder meetings were held on June 21, 2019. The meetings were held with the Project Team going to individual businesses to receive input. Steve, Debbie, Kevin and Ben met with representatives and residents from Copello Square Apartments, the Executive Director for the future Habitat for Humanity project, Tractor Supply, Stammerjohan Chiropractic, Wayne and Son Automotive, and Bloom and Things.

SUMMARY OF FEEDBACK RECEIVED:

General consensus that Alternative B (Figure 4.1-4.6) was preferred showing the primary pedestrian and bicycle circulation on the west side of SR 49 with the following elements:

- Gateway signage and traffic calming starting at City limits by Copello and SR 49.
- Possible transit stop on both sides of SR 49 in front of the library, this could be the location for a mid-block crossing and most likely accepted by Caltrans being tied to the transit stops.
- Copello Square Apartments would like to see a pedestrian connection from the apartments directly to SR 49 as shown which would require an easement through the adjacent privately-owned parcel. There was desire for this connection to be gated.
- The old highway should be used for a multi-use path from Copello Road connecting to the new sidewalk at Tractor Supply. There are questions as to who owns the old road that need to be researched with the City.
- Tractor Supply has already built their sidewalk, curb and gutter which provides a constraint with connecting the pathway and providing a striped bike lane on SR 49.
- A detached sidewalk would be located in front of Stammerjohan and Wayne and Son then connecting to a new pedestrian bridge over Cherokee Creek.
- Caltrans stated that the existing bridge over Cherokee Creek would likely be built at the same width while allowing for an 8' shoulder. It was decided a separated pedestrian bridge would be the best improvement for safety and cost.
- Pathway connection through the green space in front of North Baker Street would also include gateway signage improvements.
- Sidewalks on both side of SR 49 from Francis Street to SR 4 as part of the Caltrans intersection improvement projects.

Stakeholder Meetings 3

The third and final round of stakeholder meetings was held on February 12, 2020. There were three time slots for people to attend with the same information reviewed. Kevin, Todd, Debbie and Ben were at all the meetings presenting the draft final plan to the stakeholders..

SUMMARY OF FEEDBACK RECEIVED:

Stakeholders were all in support of the improvements and discussion was focused on ways to fund and implement the plan.

- General support for roundabouts from all attendees.
- Consensus that the multi-use pathway is the most desired improvement shown.

- General discussion that this area of town is growing with new business opportunities and this project is strongly desired.
- Noted that bike lanes and striping will help reduce traffic speeds.
- Residents of Copello Square Apartments and Francis Street number one desire is to have pedestrian improvements along the corridor to accommodate strollers, electric scooters, bikes and walking. They like the extra width as shown with the multi-use path.

PUBLIC PARTICIPATION EVENT

On June 21, 2019 the team set up a table at the Friday night Farmers Market at Utica Park in Angels Camp. At the table display boards explained the project purpose, project location and design alternatives. Community members were invited to submit written comment cards or verbal feedback related to the plans. Approximately 30 residents provided comments and feedback. The general comments were positive with everyone wanting to see sidewalks and intersection improvements along the corridor. There was mixed feedback regarding a roundabout at the intersection of SR 4 and SR 49.

Stakeholder Meeting at Copello Square Apartments

LOCAL LIAISON

The project team worked with Destination Angels Camp (DAC) as a local liaison for public outreach. Debbie Ponte, the Executive Director helped develop the stakeholder group comprised of local businesses and residents, coordinated community meetings, and provided local outreach for the project. DAC distributed approximately 250 flyers to businesses and residents along the corridor in addition to targeted email outreach. As stated on the Destination Angels Camp website:

"Our purpose is to foster Angels Camp through economic development to create a vibrant business environment rich in appeal for Angels Camp residents, businesses and visitors..."

ANGELS CAMP NORTH MAIN STREET PLAN

4. PRELIMINARY CONCEPTS

Two preliminary concepts were developed with input from the design and management team showing a range of applicable improvements. In June 2019, the plans were reviewed at a series of stakeholder meetings and property owner meetings where the improvements were explained, and feedback was received. The plans were also shown to the public at the Angels Camp Farmers Market where additional feedback was received.

Alterative A shows streetscape improvements with sidewalks on both sides of SR 49 from Copello Road to SR 4. This alternative would require significant coordination with easements on private property on the north side of the highway. In addition, grade constraints on the north side would make this alternative more difficult to construct.

Alternative B shows streetscape improvements with a focus on providing a Class 1 multi-use path on the south side of the highway. The multi-use path would be 10' wide and connect to Copello Square Apartments, the future Habitat for Humanity project, and existing residences near Francis Street. In addition, a pedestrian bridge would be built over Cherokee Creek.

Both alternatives provide landscape enhancements, signage, wayfinding, and on street bike lanes.

Figure 4.1: North Alternatives A & B

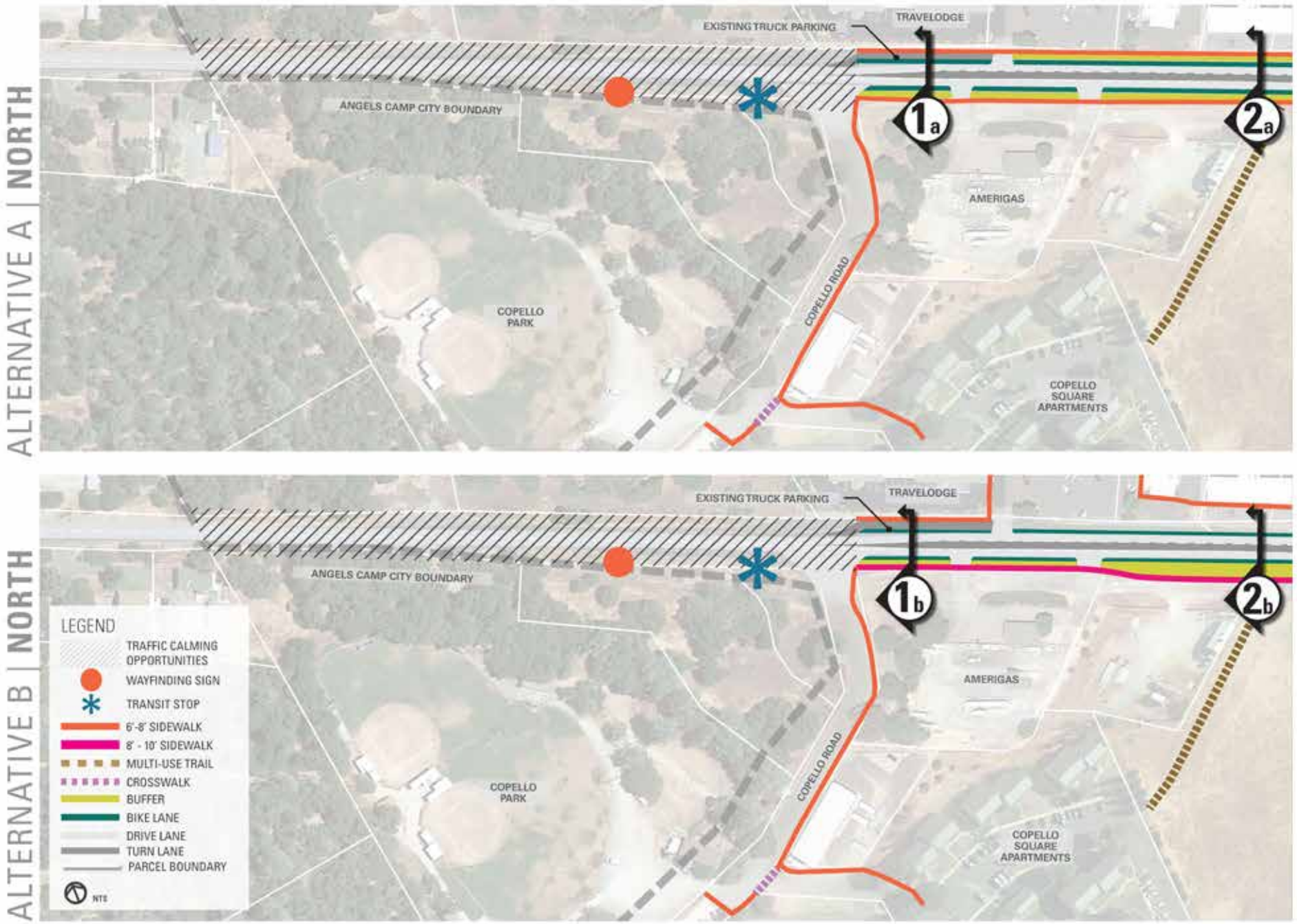


Figure 4.2: North Sections 1 & 2 Existing

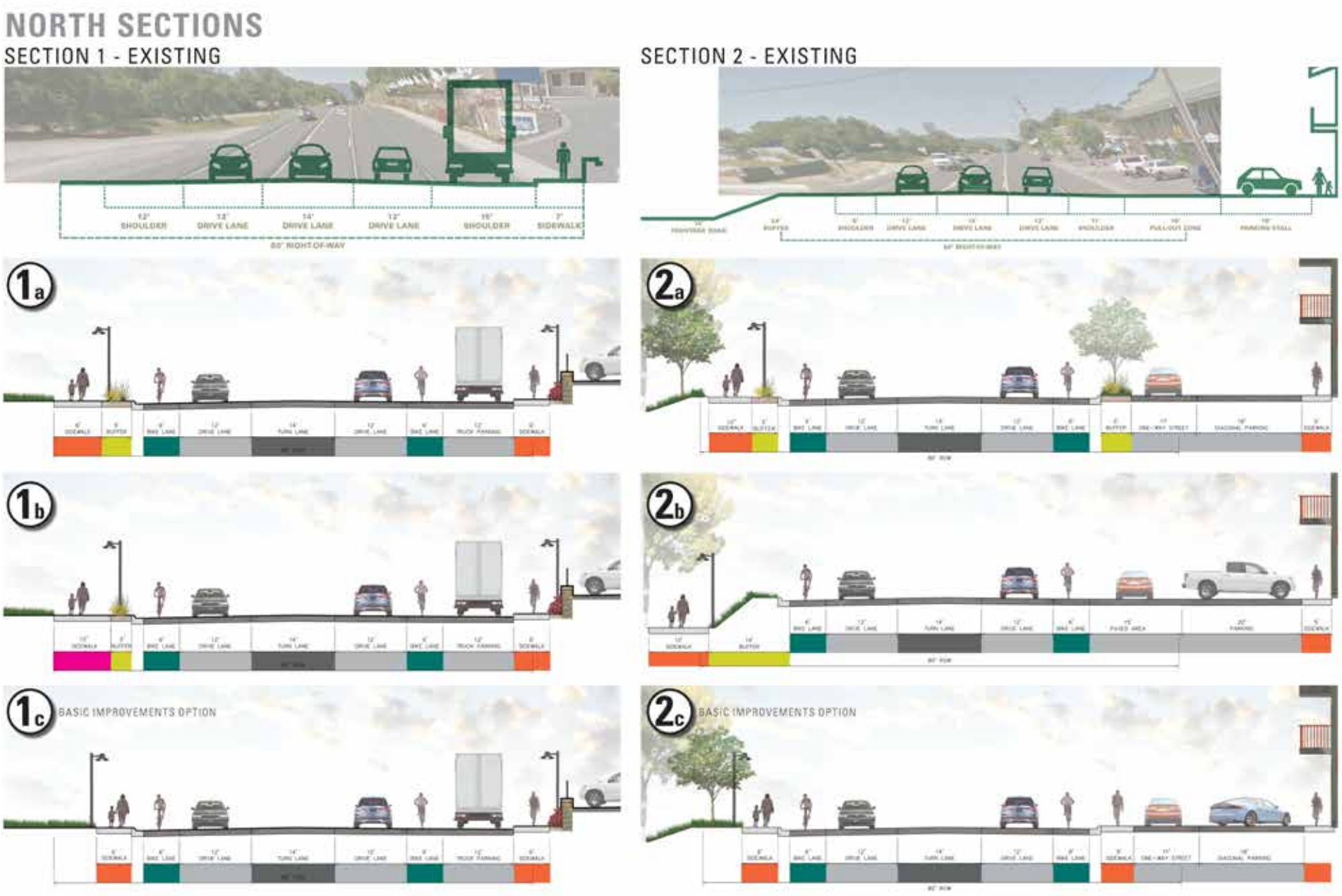


Figure 4.3: Central Alternatives A & B

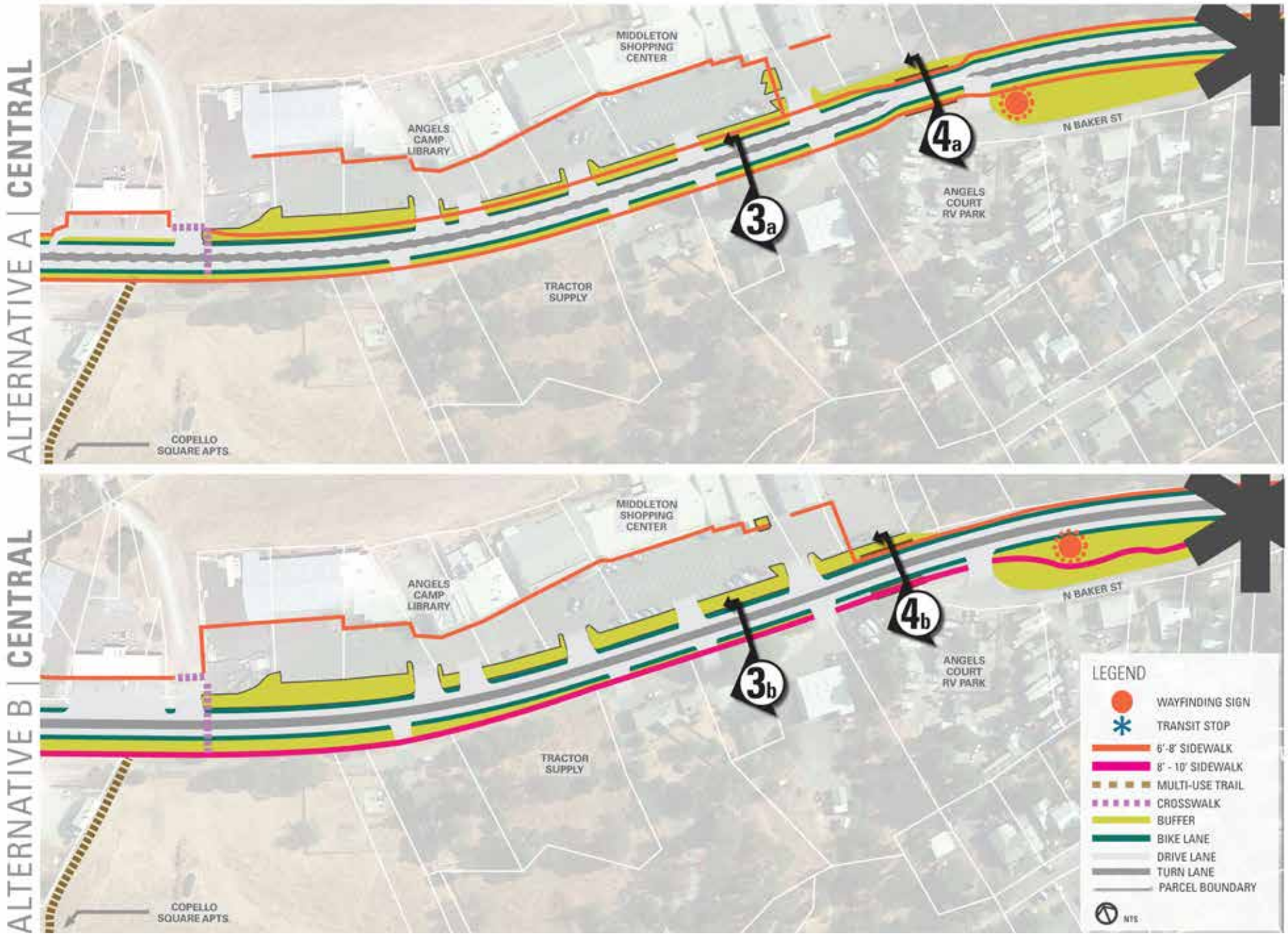


Figure 4.3: Central Sections 3 & 4 Existing

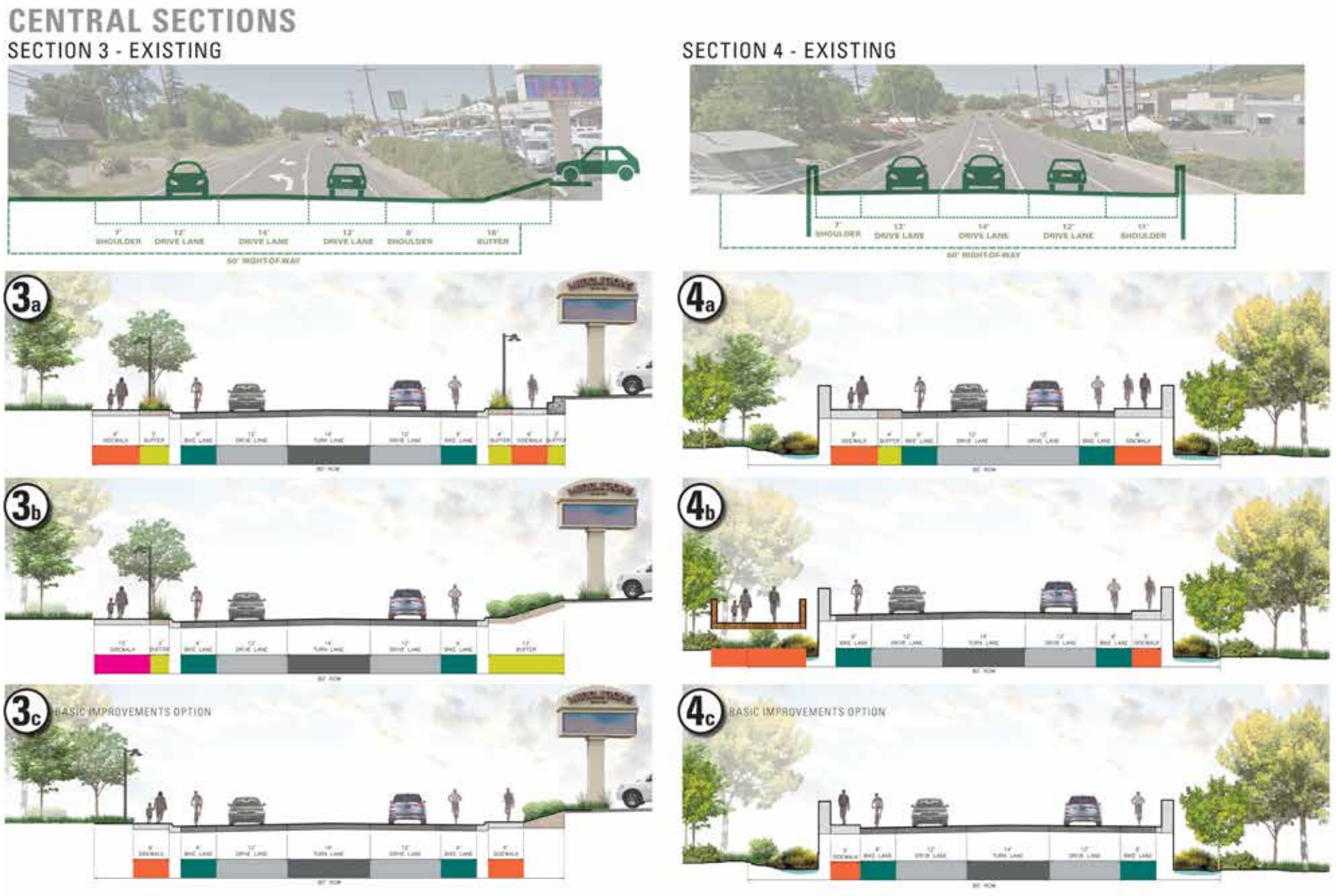


Figure 4.5: South Alternatives A & B

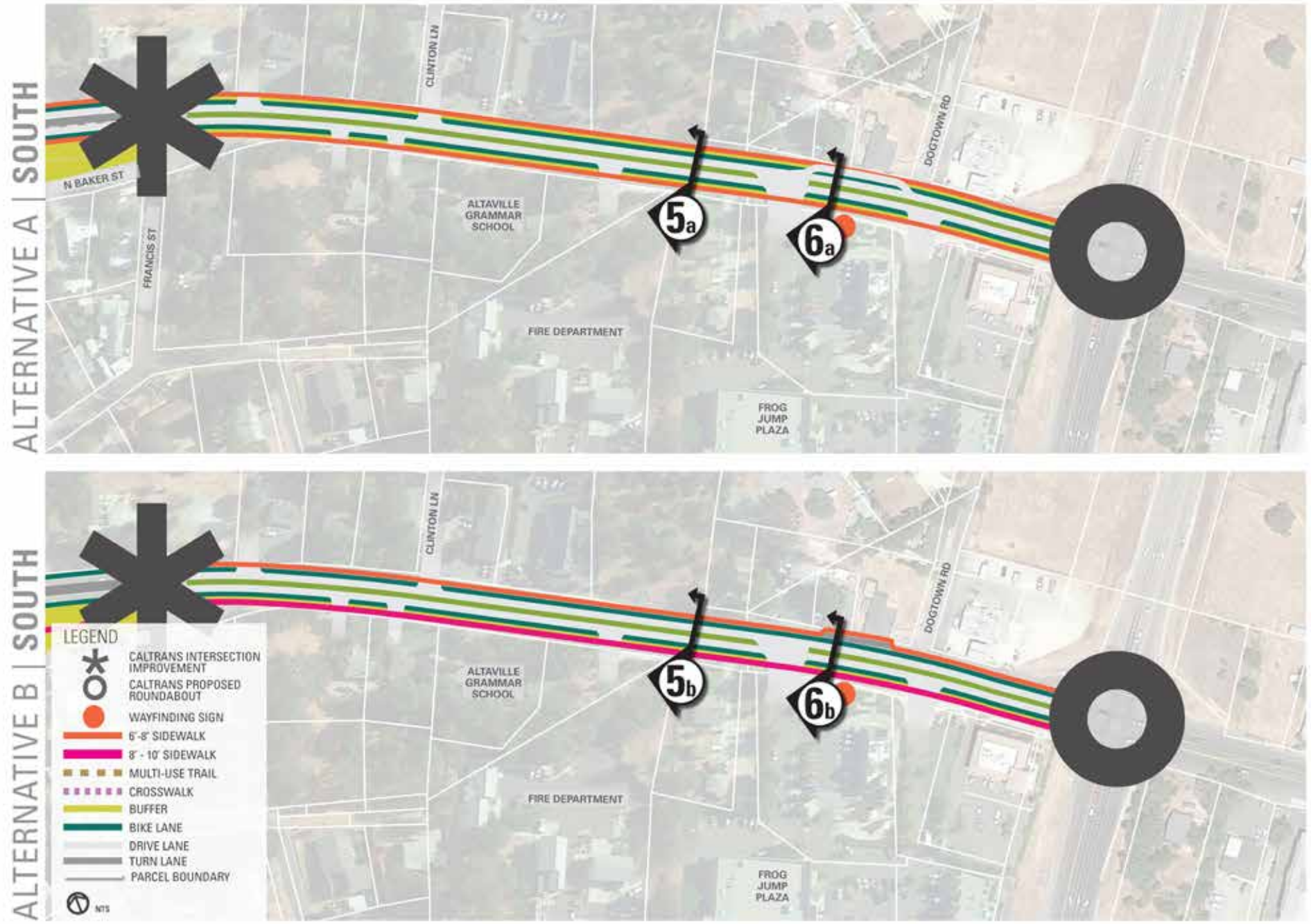
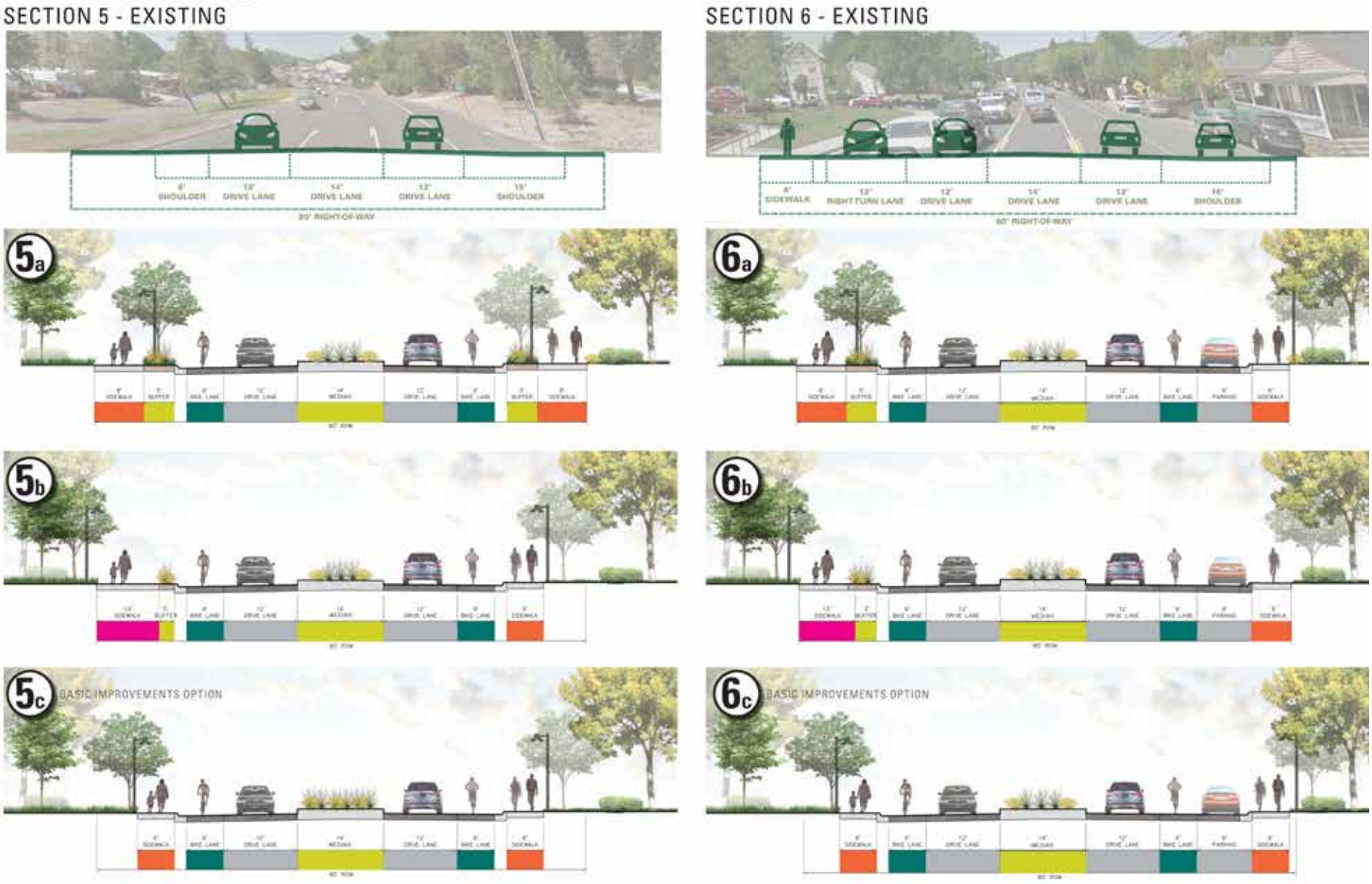


Figure 4.6: South Sections 5 & 6 Existing



ANGELS CAMP NORTH MAIN STREET PLAN

5. CONCEPTUAL DESIGN & COMPLETE STREET PLAN

Following the stakeholder and public feedback a preferred conceptual design was developed illustrating the complete street plan and incorporating the Caltrans project. The preferred concept went through multiple versions over a 6-month timeframe reviewed bi-weekly with the project team. During review it was decided to show two plans depicting short term (5-10 year) improvements and long term (20+ years) improvements. This decision was made to be able to inform near term projects by Caltrans such as the SR 4 & SR 49 intersection improvements as well as to allow the City to be able to move forward with projects along the corridor before future regional connector streets are permitted and built.

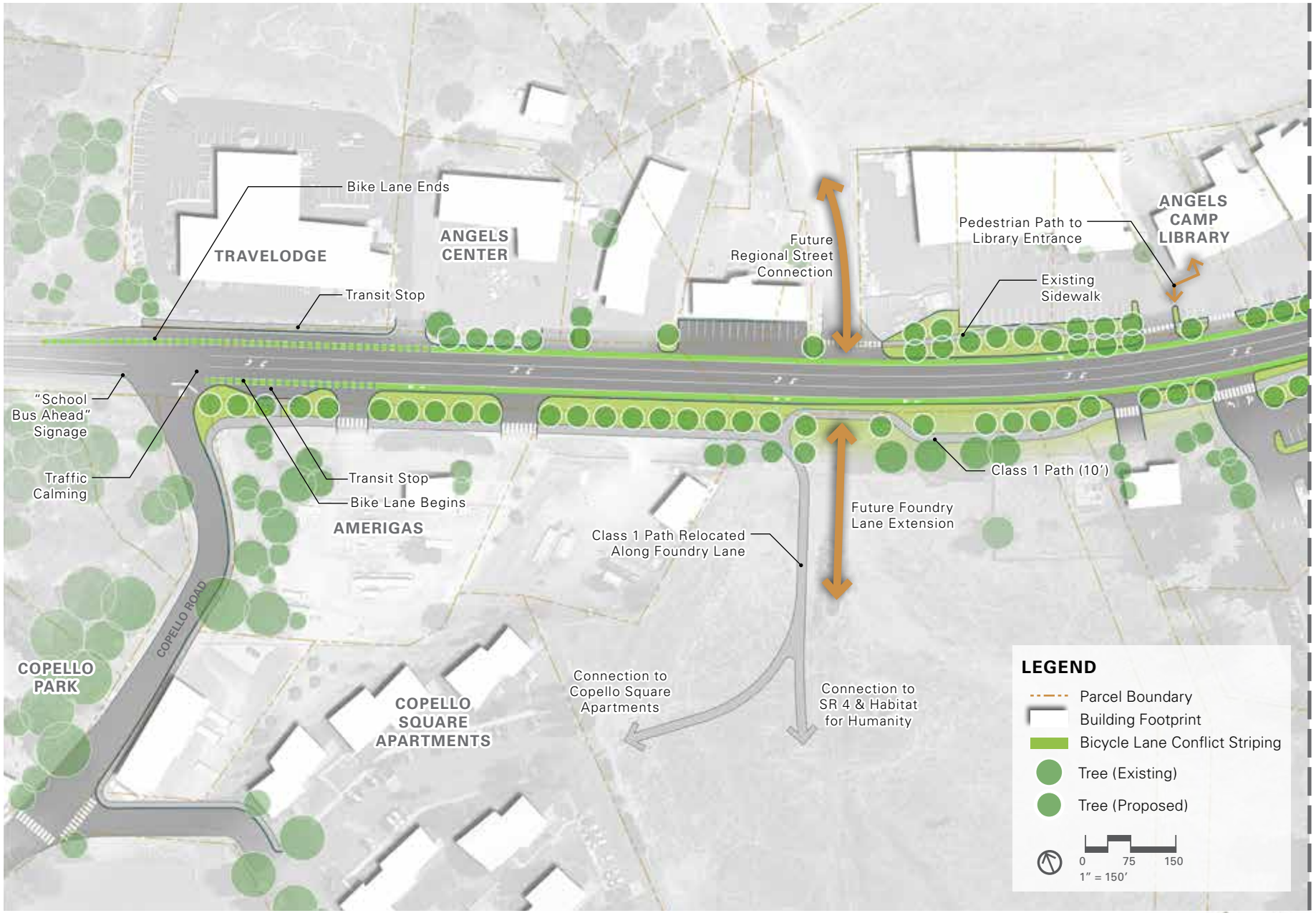
The preferred plan focuses on improving mobility and safety by building a Class 1 multi-use path on the south side of SR 49 with strategic placement of new crosswalks and transit stops. An overlay of landscape and aesthetic improvements are shown highlighting the entry into Angels Camp and reducing traffic speeds by perceived narrowing of the roadway.

Driveway intersections were studied and the team identified the potential to reduce and restrict some existing driveways along the corridor to improve safety. Additional coordination with private property owners will need to occur.

For ROW and frontage improvements, there is a possible ROW revocable claim of declaration from the property owner to the City, if the owner cannot afford the improvements to the frontage.

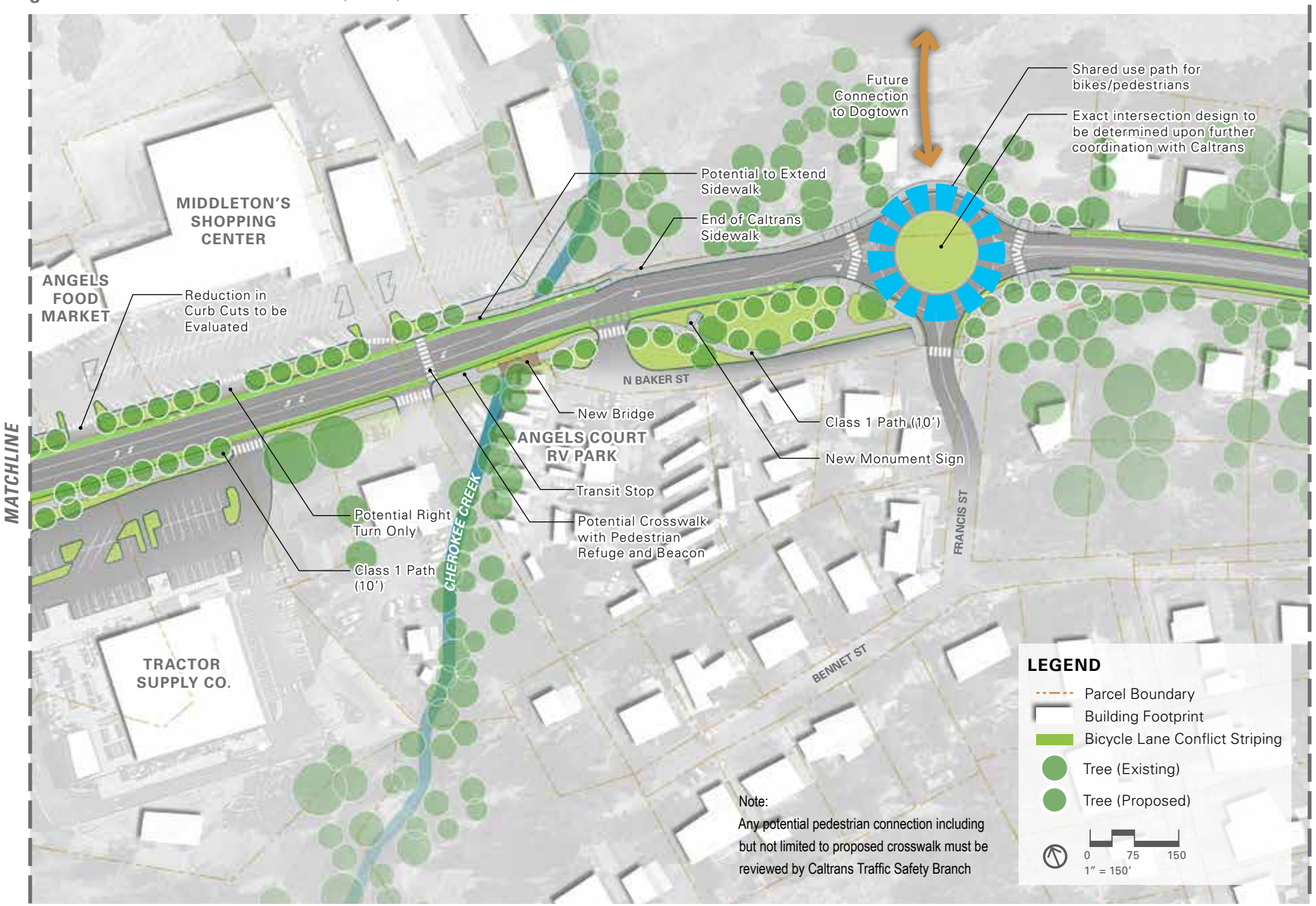
SHORT TERM ILLUSTRATIVE PLAN (1 OF 3)

Figure 5.1: Short-Term Illustrative Plan (1 of 3)



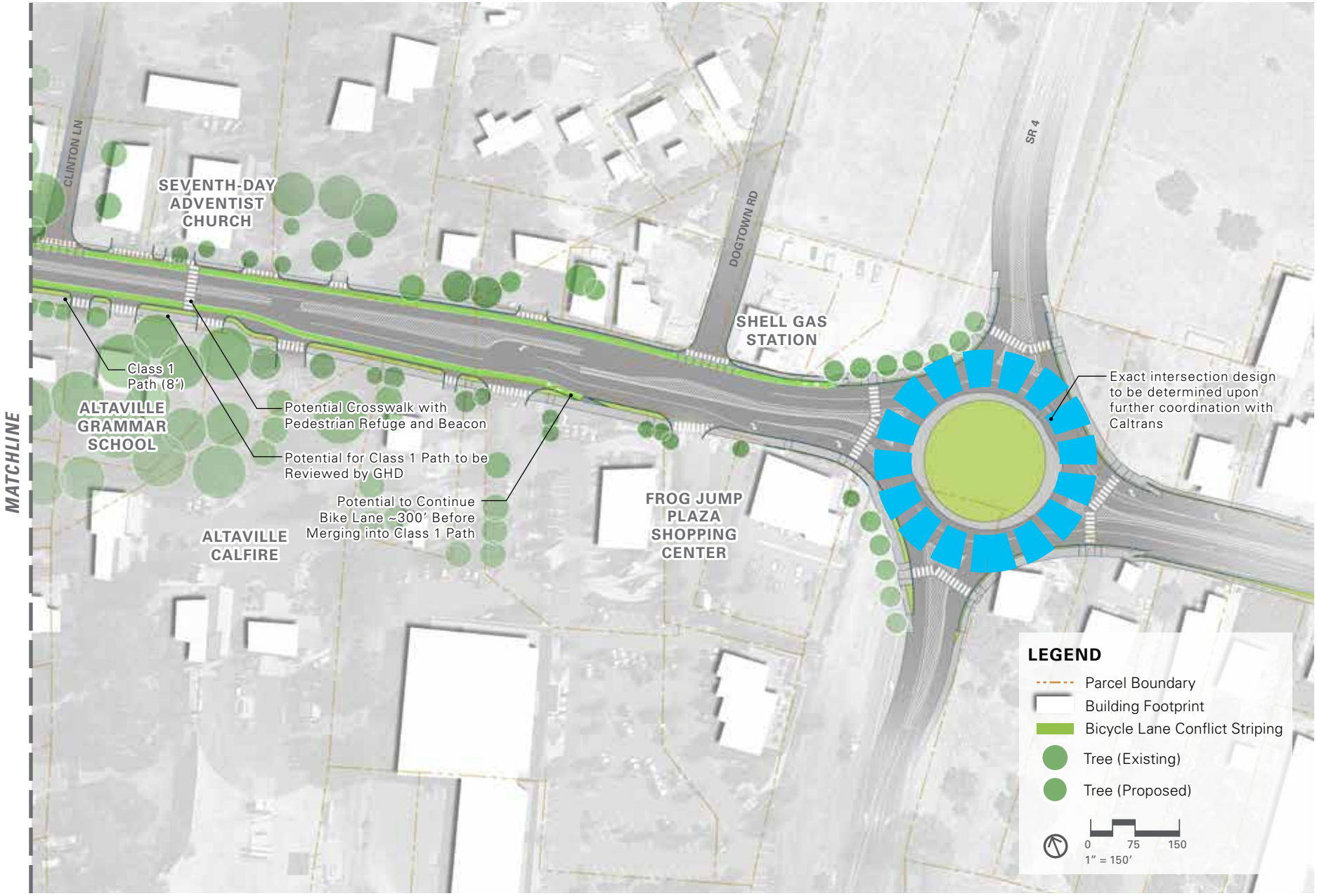
SHORT TERM ILLUSTRATIVE PLAN (2 OF 3)

Figure 5.2: Short-Term Illustrative Plan (2 of 3)



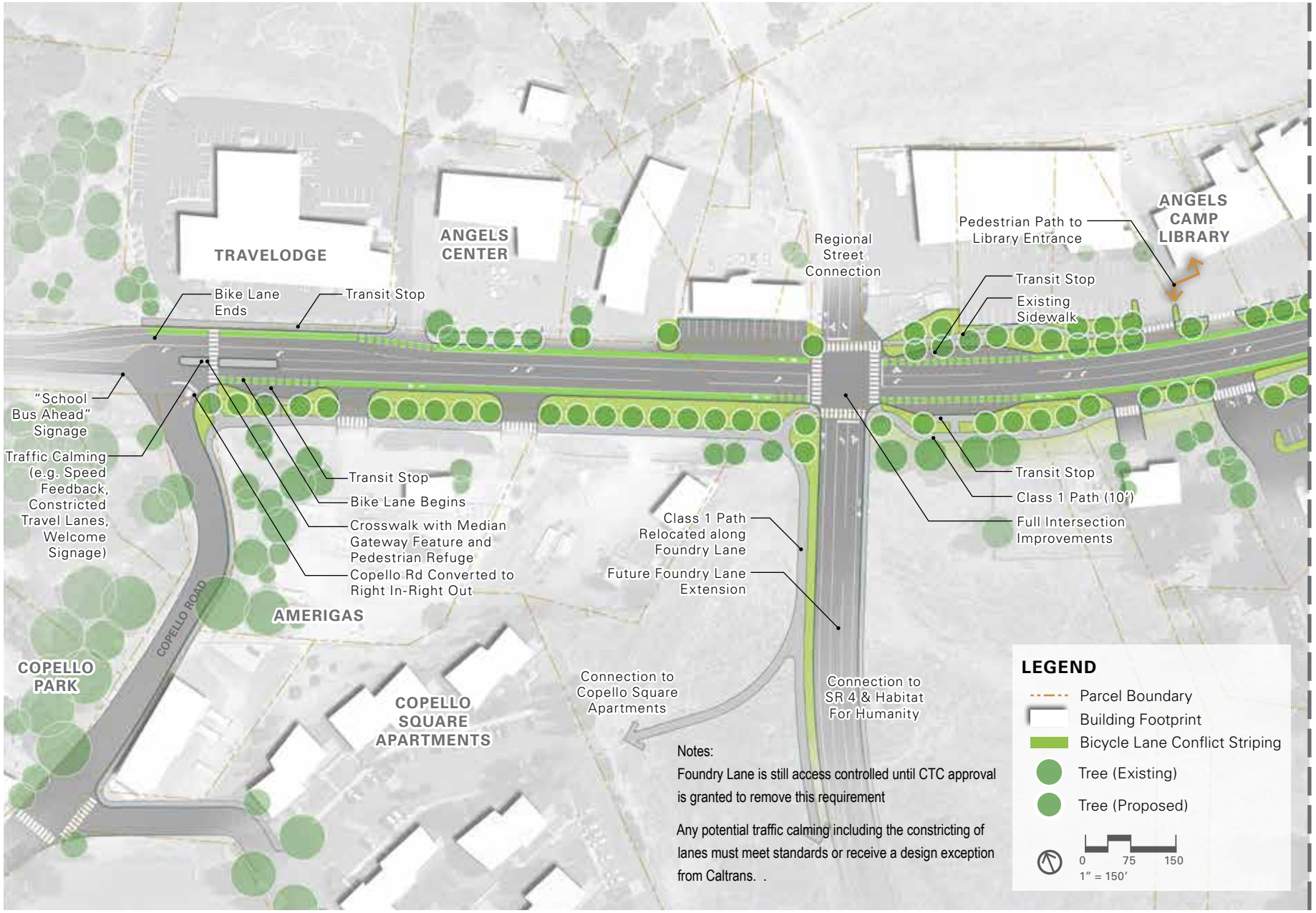
SHORT TERM ILLUSTRATIVE PLAN (3 OF 3)

Figure 5.3: Short-Term Illustrative Plan (3 of 3)



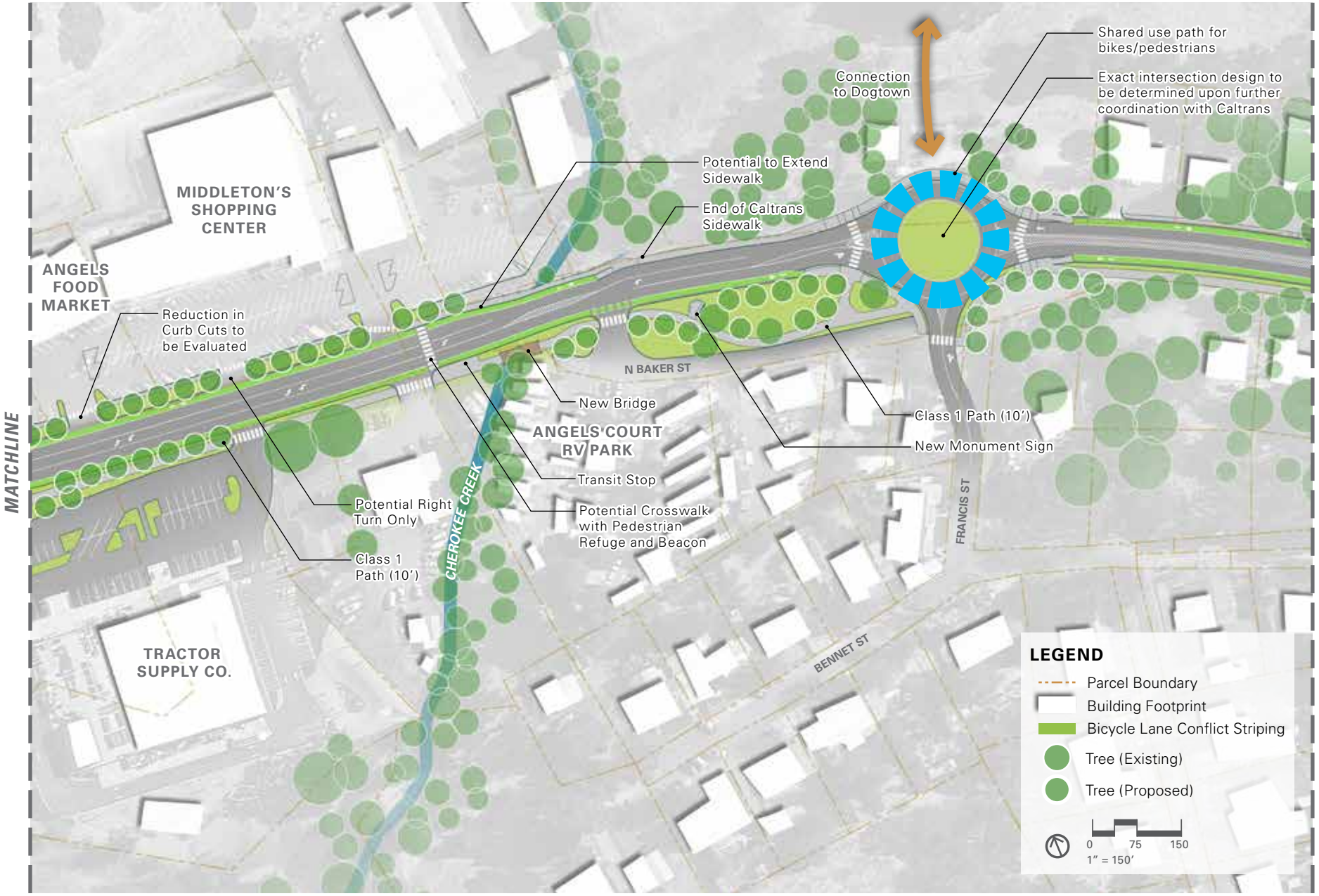
LONG TERM ILLUSTRATIVE PLAN (1 OF 3)

Figure 5.4: Long-Term Illustrative Plan (1 of 3)



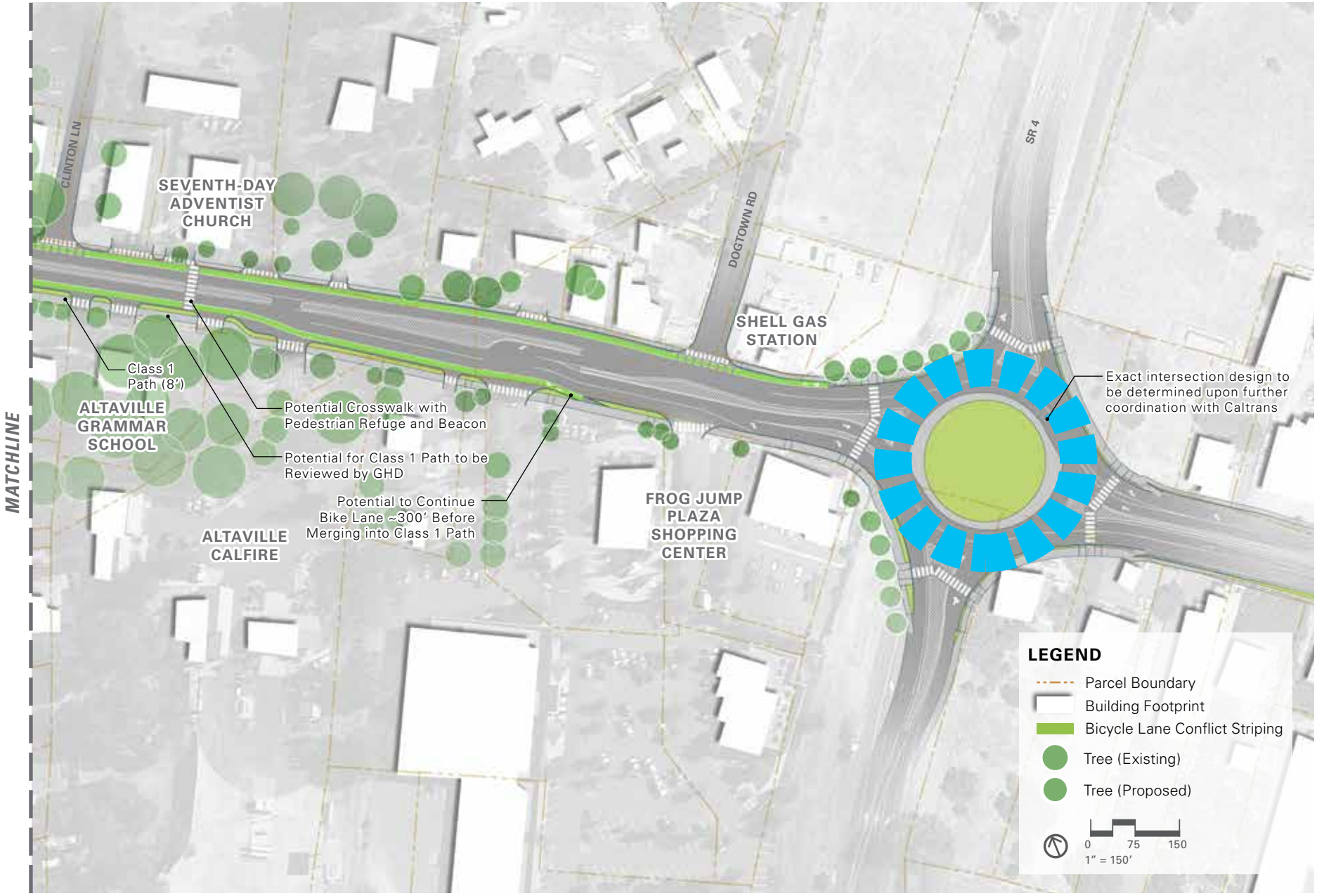
LONG TERM ILLUSTRATIVE PLAN (2 OF 3)

Figure 5.5: Long-Term Illustrative Plan (2 of 3)



LONG TERM ILLUSTRATIVE PLAN (3 OF 3)

Figure 5.6: Long-Term Illustrative Plan (3 of 3)



PROPOSED IMPROVEMENTS AT COPELLO ROAD & TRANSIT STOP

Figure 5.7: Copello Road & Transit Stop

PROPOSED CLASS 1 PATH AT ENTRY MONUMENT

Figure 5.8: Class 1 Path at Entry Monument

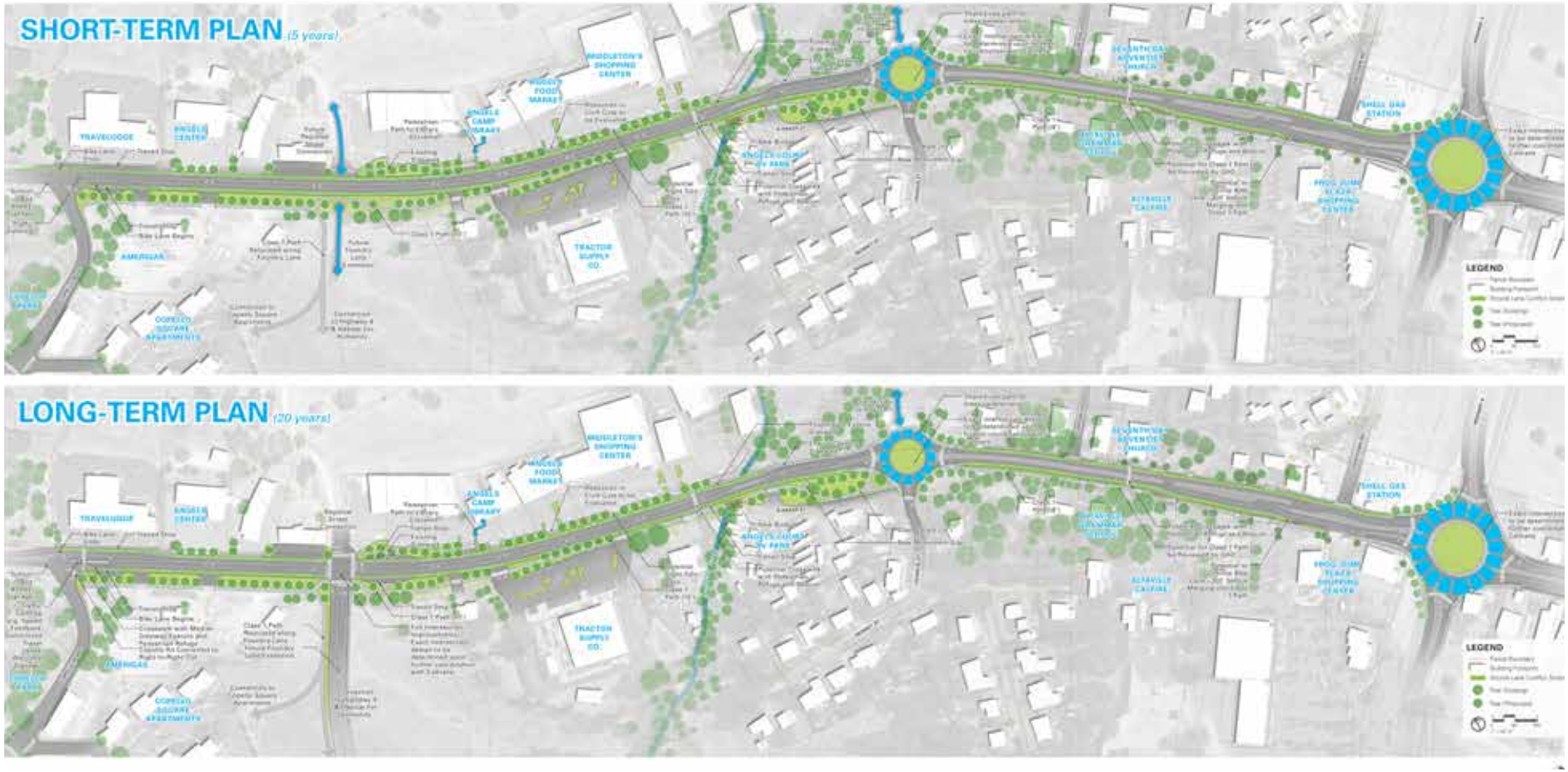
PROPOSED CLASS 1 PATH AT CHEROKEE CREEK

Figure 5.9: Class 1 Path at Cherokee Creek

Note:
The proposed pedestrian bridge shall incorporate design features addressing its location within a FEMA Flood hazard zone and coordination with adjacent private property owners

PREFERRED SHORT TERM AND LONG TERM PLANS

Figure 5.10: Preferred Plan



PREFERRED CONCEPT ASSESSMENT

INTRODUCTION

The improvements included in the preferred concept plan were assessed using several quantitative and qualitative rubrics. These assessments are intended to demonstrate comparative benefit between the improvements, and the rubrics selected are generally consistent with scoring criteria used in anticipated funding sources such as the Active Transportation Program (ATP). Analyses completed include:

- Multimodal connectivity and Safe Routes to School (SRTS)
- Safety benefit
- Mode shift benefits
- Congestion, delay, and vehicular operations
- Emissions and vehicle miles traveled (VMT) benefits
- Community support
- Disadvantaged community benefits

The assessment categories are further broken down into the following categories of improvements:

- State Highway Segment Improvements
  - » These improvements are along SR 49 within the study limits, and include a variety of active transportation improvements
- State Highway Intersections
  - » These are the intersections within Caltrans right-of-way with planned control type improvements, including:
    - SR 49/SR 4 (roundabout)
    - SR 49/Francis Street (roundabout or signal conversion)

While not assessed in this study, the future Foundry Lane extension intersection improvement at SR 49 is included for illustrative purposes.

CONCEPT ASSESSMENT

MULTIMODAL CONNECTIVITY AND SAFE ROUTES TO SCHOOL

Multimodal connectivity was assessed using Level of Traffic Stress (LTS) as a measure of low stress bicycle and pedestrian connectivity between key origins and destinations within the study area. Improvements in traffic stress and multimodal connectivity are discussed in the following sections.

There are several schools that serve the populations residing within the study area, including Bret Harte Union High School and Mark Twain Elementary School—both of which are located within two miles of the study area. Because the entire study area is within two miles of both local schools, all improvements described in the plan are applicable to the Safe Routes to School category, and all improvements are demonstrated to connect the schools to the community.

IMPROVED BLTS

Bicycle Level of Traffic Stress is analyzed in terms of roadway segments, approaches and unsignalized crossings, as described below. Segment LTS shows improvements in traffic stress with the preferred recommendations. Implementation of the Class I path from on the south side of SR 49 from Copello Road to SR 4 will result in a low stress connection (LTS 1) throughout the study area. In addition to the lower stress option provided by the Class I path, Class II painted bike lanes are recommended on the roadway. While green paint will improve visibility of bicyclists choosing to utilize the facility (and potentially lower the level of traffic stress), a speed limit of 35 mph through the study area results in LTS 3 based on the Mineta Institute's Bicycle Level of Traffic Stress methodology. The improved segment BLTS is the same under both the short- and long-term preferred plans, aside from the additional low stress connection along the Class I path proposed adjacent to the future Foundry Lane.

PREFERRED CONCEPT ASSESSMENT

Crossing LTS with the improvements were analyzed where marked crossings are recommended and are likely to facilitate crossing for bicyclists. While a bicyclist could potentially cross at SR 49/Baker Street, the marked crossing slightly to the west at Middleton's Driveway # 1 was analyzed as a bicyclist is more likely to cross here due to the striped median between these two intersections. The analyzed crossing will result in LTS 2 due to speed. The intersections at Frog Jump Plaza and Dogtown Road/SR 49 were analyzed under existing conditions; however, raised medians in the preferred plan preclude a bicyclist from crossing at these locations under future conditions. With the short-term preferred plan, the intersection at Copello Road and SR 49 will remain LTS 3 due to a high speeds with a 45 mph speed limit. Similarly, the crossing near Clifton Lane will remain LTS 2 due to a 35 mph speed limit within this segment. The implementation of roundabouts at SR 49/Francis Street and SR 49/SR4 are assumed to result in LTS 1 due to lowered speeds and the transition from bike lane to Class I path included in the roundabout design. The crossing LTS scores mentioned above are associated with recommended improvements included in the short-term preferred plan. With improvements under the long-term preferred plan, improvements at Copello Road/SR 49 will reduce level of traffic stress with a variety of traffic calming measures and crossing with a landscaped median refuge and gateway feature. Additionally, an intersection at the future Foundry Lane connection to SR 49 is reflected in the long-term plan. Whether a signal or roundabout, intersection improvements here will provide a low stress crossing opportunity for bicyclists.

There were no approaches considered in the BLTS analysis under the preferred plan. The only right turn pockets that exist are at the roundabout at SR 4/SR 49; however, the Class II bike lanes here ramp up and transition to Class I paths at the approaches to the roundabout. Level of traffic stress is assumed to be low here.

The BLTS score with implementation of the short-term recommended improvements is presented in Figure 5.11. The BLTS score with implementation of the long-term recommended improvements is presented in Figure 5.12.

BLTS - SHORT TERM IMPROVEMENTS

Figure 5.11: BLTS - Short Term Improvements

BLTS - LONG TERM IMPROVEMENTS

Figure 5.12: BLTS - Long Term Improvements

Note: Foundry Lane is still access controlled until CTC approval is granted to remove this requirement.

IMPROVED PLTS

Pedestrian LTS is analyzed in terms segments and crossings, taking into account sidewalk/path and crossing condition.

The Class I path along the south side of SR 49, which traverses from Copello Road to SR 4, provides a low stress travel option separated from vehicular traffic by a landscaped buffer. Similarly, added sidewalks on the north side of the roadway provide a low stress option through the corridor. However, high stress segments do exist in several locations. Near Angels Center, proposed sidewalk was infeasible due to roadway geometry constraints. The existing sidewalk adjacent to the northwest end of Mark Twain Center is in poor condition, so PLTS for this segment will remain high stress. Lastly, little to no buffering distance between the sidewalk proposed northeast of the Francis St/ SR 49 intersection results in high stress. The segment LTS scores mentioned above are associated with recommended improvements included in the short-term preferred plan. In addition to these improvements, the long-term plan includes an extension of the Class I path along the future Foundry Lane extension, which will provide additional low-stress connection to the Copello Square Apartments.

Crossing LTS under short-term improved conditions provide low stress connectivity with marked crossings, and pedestrian refuges and beacons at some locations. At intersections where roundabout or signalization is proposed, crossing enhancements will also provide low stress connectivity. In addition to these improvements, the long-term plan includes and additional crossing at Copello Road/ SR 49 and intersection improvement at SR 49/Foundry Lane Extension. The intersection improvement at the future Foundry Lane extension will provide low stress connectivity if the improvement results in a signalized intersection. The crossing proposed at Copello Road/ SR 49 will remain high stress due to roadway speed. While traffic calming is recommended, speed reduction would need to be significant to improve traffic stress at the crossing location.

The PLTS score with implementation of the short-term recommended improvements is presented in Figure 5.13. The PLTS score with implementation of the long-term recommended improvements is presented in Figure 5.14.

PLTS - SHORT TERM IMPROVEMENTS

Figure 5.13: PLTS - Short-Term Improvements

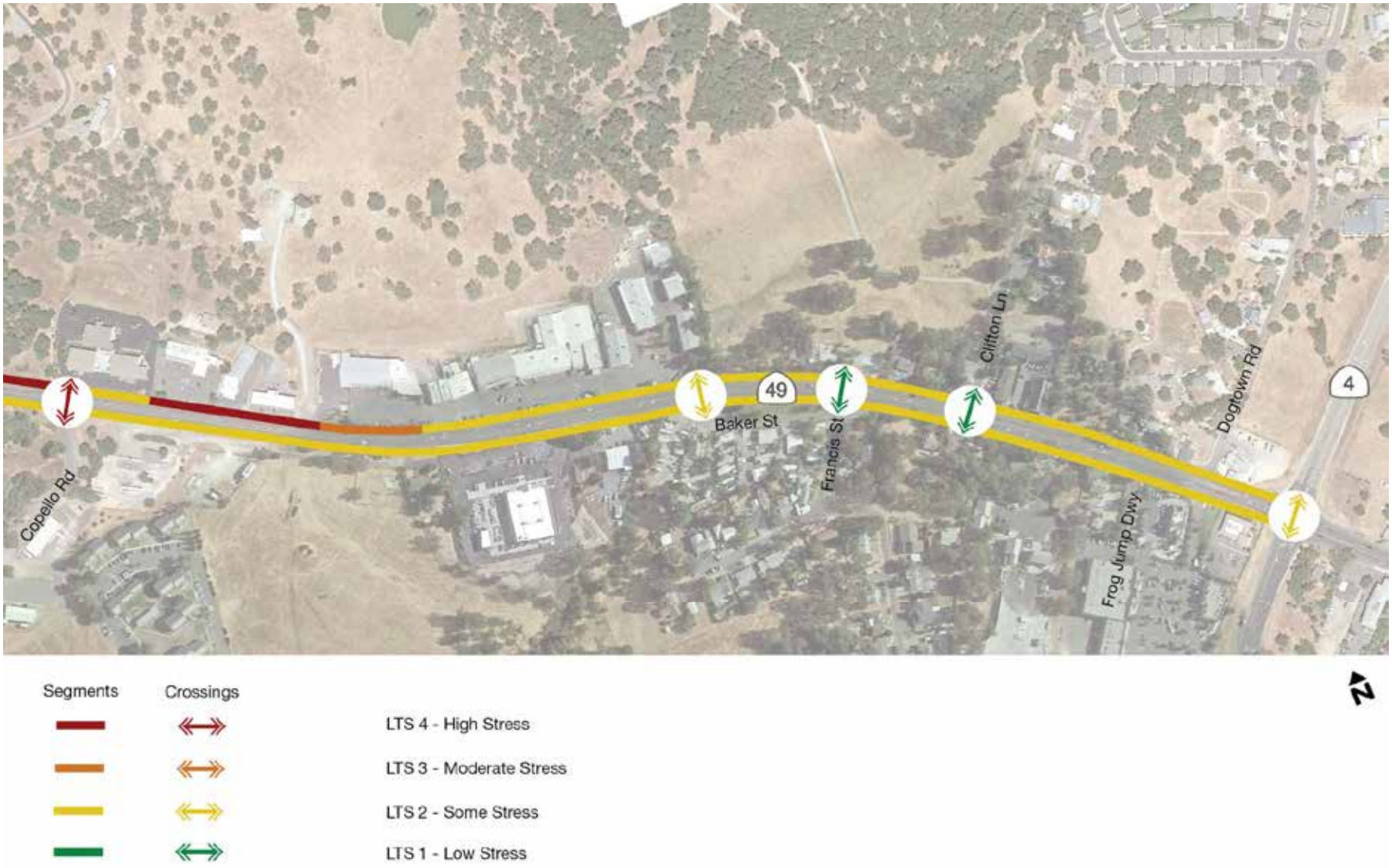


Figure 5.14: PLTS - Long-Term Improvements

SAFETY

To analyze the safety benefit of improvements presented in this study, a collision modification factor (CMF) analysis was employed using the Highway Safety Improvement Program (HSIP) project analyzer tool. Collision modification factors are multiplicative factors used to calculate the expected reduction in collisions associated with a particular countermeasure. Crash Modification Factors (CMFs) have been established based on safety research over the last several decades; however, CMFs may not be available for all countermeasure types—despite the safety improvements provided by the improvement. Moreover, the HSIP Analyzer allows a maximum of three selected countermeasures to be included in the analysis, and benefit will be reflected only if there is a significant crash history associated with the countermeasures.

The HSIP analyzer tool calculates a benefit-cost ratio of the safety benefits associated with the CMF and the cost of these improvements. In other words, the benefit-cost (B-C) ratio provides a value for the return on investments associated with the recommended improvements. A value greater than 1 indicates a positive return on investment, and higher benefit-cost ratios result in greater funding competitiveness.

STATE HIGHWAY SEGMENT IMPROVEMENTS

The improvement projects on the state highway segments do not yield a substantial quantifiable safety benefit due to the crash type history. There was only one bicycle collision and no pedestrian collisions within the crash study period to associate with the proposed bicycle and pedestrian improvements along the roadway segment. However, it should be noted that a lack of safe and comfortable active transportation facilities result in low bicyclist and pedestrian volumes and therefore a low number of these collisions.

STATE HIGHWAY INTERSECTION IMPROVEMENTS

Caltrans plans to improve the intersections of SR 49/ SR 4 and SR 49/Francis Street. SR 4/49 will be improved depending on the ICE process results. SR 49/Francis Street will be improved with conversion from side-stop control to a roundabout or signal, and SR 49/SR 4 will be converted from signal to roundabout control. The potential safety benefit of these improvements are reported in Table 5.1 for the roundabout alternative, which is the current Caltrans preferred alternative. As displayed in Table 5.2, a safety benefit– cost ratio of 2.19 is associated with the roundabouts alternative. The roundabout at SR 4 and SR 49 performs better with regards to safety because there is a more extensive collision history at this location. While these results show a strong benefit-cost associated with safety, a full Intersection Control Evaluation (ICE) process should be performed to assess the potential benefit of the roundabout alternative against signal alternative, taking into account the full life cycle costs associated with each control type.

Table 5.1: *Safety Benefit – Roundabout Intersection Alternatives*

LOCATION	BENEFIT
SR 4/SR 49 - Conversion to Roundabout	$19,785,600
SR 49/ Francis Street - Conversion to Roundabout	$973,156
Total Expected Benefit	**$20,758,756**

Table 5.2: *Safety Benefit – Cost Summary Roundabouts Alternative*

LOCATION	2019 BENEFIT	2019 COST	B/.C
Total Expected Benefit-Cost	$20,758,756	$9,477,000	2.19
** NOTES*			
1. Safety benefit analyzed using Caltrans HSIP analyzer			
2. Roundabout cost estimates from Caltrans District 10			

CONGESTION, DELAY AND MODE SHIFT BENEFIT

The primary source of analysis for assessing congestion benefit is the anticipated reduction in auto trips from mode shift resulting from the induced demand associated with bicycle improvements, and the operational benefits associated with intersection improvements, as quantified in delay and LOS. The NCHRP 552 methodology assesses the induced demand mode-shift associated with proposed bicycle improvements, and monetizes the annualized mobility, health, recreation and decreased auto use benefits provided by the projected mode shift at high, moderate and low estimates.

CUMULATIVE VOLUMES

Cumulative volumes presented in Figure 5.15 were utilized in the intersection control comparison of state highway intersections improvement alternative proposed in the plan. Lane geometries for the cumulative scenario are displayed in Figure 5.16.

Figure 5.15: Cumulative Volumes

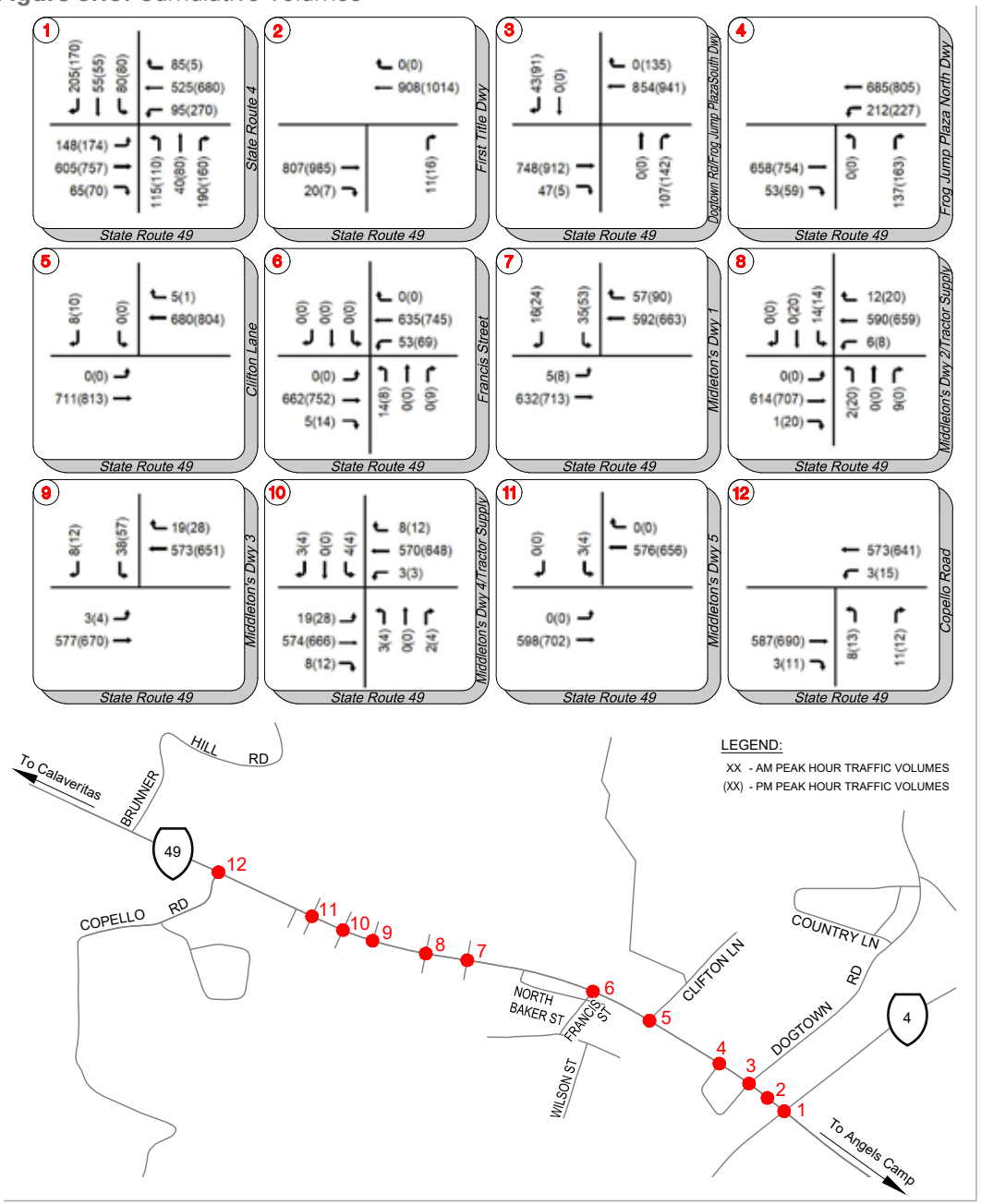
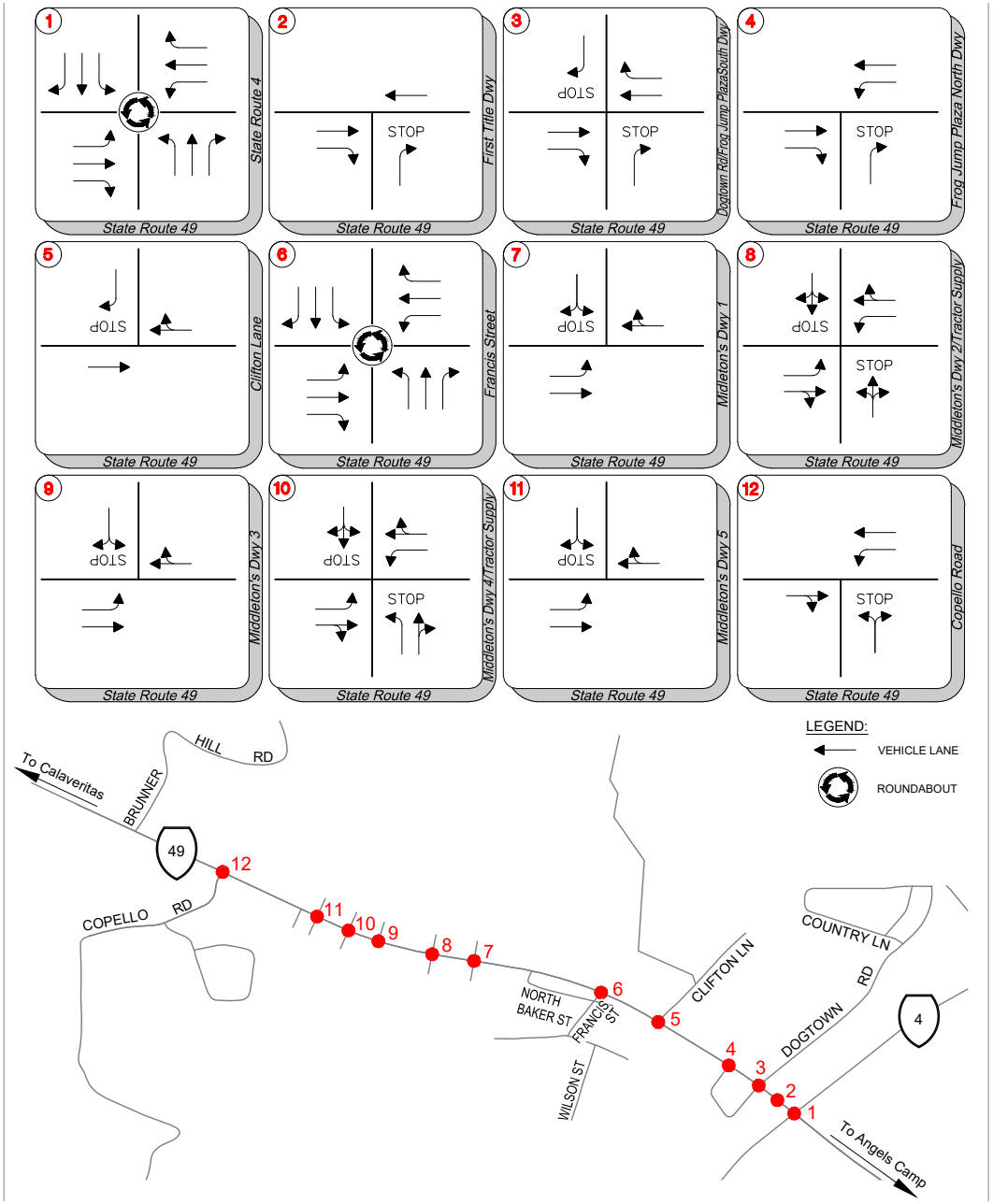


Figure 5.16: Cumulative Geometrics



FUTURE CONDITIONS OPERATIONAL BENEFITS

The bicycle and pedestrian improvements on the state highway segments are not anticipated to generate significant reductions in automotive congestion or delay, as these improvements do not alter vehicular operations. However, the roundabouts proposed are anticipated to impact vehicular operations at the intersections of SR 49/ Francis Street and SR 4/SR 49—the benefits of which are discussed below.

CUMULATIVE INTERSECTION OPERATIONS

Table 5.3 displays the intersection operations with control type conversion to roundabout at SR 4/SR 49 and SR 4 / Francis Street. When compared against the existing condition, level of service is improved in the cumulative scenario. However, LOS at intersection eight operates beyond the acceptable thresholds in the cumulative condition.

Table 5.3: *Cumulative Intersection Operations (Roundabout Alternative)*

#	INTERSECTION	CONTROL TYPE 1,2	TARGET LOS	AM PEAK HOUR		PM PEAK HOUR	
				DELAY	LOS	DELAY	LOG
1	SR 4/SR 49	RNDBT	D	6.5	A	9.3	A
2	SR 49/First Title Driveway	TWSC	D	17.2	C	22.5	C
3	SR 49/Dogtown Rd/Frog Jump Plaza South Driveway	TWSC	D	20.2	C	18.6	C
4	SR 49/Frog Jump Plaza North Driveway	TWSC	D	20.0	C	27.8	D
5	SR 49/Clifton Ln	TWSC	D	14.4	B	16.4	C
6	SR 49/ Francis Street	RNDBT	D	16.6	C	14.1	B
7	SR 49/Middleton's Dwy 1	TWSC	D	18.9	C	24.1	C
8	**SR 49/Middleton's Dwy 2/Tractor Supply Dwy South**	**TWSC**	**D**	**41.6**	**E**	**80.9**	**F**
9	SR 49/Middleton's Dwy 3	TWSC	D	18.0	C	22.6	C
10	SR 49/Middleton's Dwy 4/ Tractor Supply North	TWSC	D	26.8	D	33.6	D
11	SR 49/Middleton's Dwy 5	TWSC	D	16.8	C	16.8	C
12	SR 49/Copello Road	TWSC	D	15.1	C	18.9	C

INTERSECTION IMPROVEMENT DELAY MONETIZATION

Delay benefits can also be monetized using the 2016 Caltrans economic parameters. The delay cost of the signal and roundabout alternatives, compared to the "no build" scenario, is presented in Table 5.4 for the two intersections. The roundabout alternative is associated with less delay costs over the life cycle for the intersection at SR 4/ SR 49. For the intersection of Francis Street/ SR 49, the signal alternative is associated with less delay costs over the life cycle, but the difference between the two alternatives is much less significant.

Table 5.4: *Intersection Improvement Delay Monetization*

INTERSECTION	TRAFFIC SIGNAL ALTERNATIVE	ROUNDABOUT ALTERNATIVE
Francis Street/ SR 49	$ 110,000	$ 170,000
SR 4/ SR 49	$ 1,890,000	$ 220,000

MODE SHIFT/INDUCED DEMAND BENEFIT

The methodology described in NCHRP Report 552 Guidelines for Analysis of Investments in Bicycle Improvements was utilized to assess the induced demand mode-shift associated with proposed bicycle improvements using existing population and bicycle mode share. Estimates of existing bicycle demand are based on bicycle mode share, and the population within 0.5, 1.0, and 1.5 mile buffer distances. Existing bicycle demand is then used to estimate the number of new bicycle users associated with the improvement by applying the equations described in the methodology. The induced demand associated with improvements are then monetized into annualized mobility, health, recreation and decreased auto use benefits at medium, high and low estimates. These results are reported in Table 5.5.

Table 5.5: *Anticipated Bicycle Mode Shift Benefits*

BICYCLE FACILITY BENEFITS	
Annual Mobility Benefit	
Annual Mobility Benefit, Off-Street Trail	$ 21,791
Annual Mobility Benefit, Bicycle Lane without Parking	$ 19,268
Annual Health Benefit	
High Estimate	$ 2,432
Moderate Estimate	$ 1,920
Low Estimate	$ 1,408
Annual Recreation Benefit	
High Estimate	$ 62,050
Moderate Estimate	$ 47,450
Low Estimate	$ 32,850
Annual Decreased Auto Use Benefit	$ 93.81
Total Annual Benefit, High	**$ 105,635**
Total Annual Benefit, Moderate	**$ 90,523**
Total Annual Benefit, Low	**$ 75,411**

INDUCED DEMAND BENEFIT-COST

To analyze the benefit-cost associated with bicycle mode shift/induced demand, benefits were annualized to a 20-year life cycle and compared against the project costs associated with the bicycle improvements. These results are reported in Table 5.6. While the 2020 benefit-cost results in a ratio of .10, the B-C improves to 1.05 when the 20-year life cycle of the improvement is accounted for.

EMISSIONS AND VMT BENEFIT

To assess the benefit associated with emissions and VMT reduction, the anticipated reduction in auto trips associated with mode shift and the operational benefits associated with the intersection improvements, as measured by pollutant and fuel consumption, were examined.

VEHICLE MILES TRAVELED (VMT)

To measure the VMT reduction benefits associated with the recommended improvement concepts, the reduced auto-use benefit analyzed using the NCHRP 552 methodology was examined. No significant changes in VMT are anticipated as a result of this project, due to the low number of commuters anticipated to shift mode use from automobile to bicycle. However, the recommended improvements may incentivize a reduction in auto travel within Angels Camp and the study area more specifically. Marginal emissions reductions would be expected by shifts in travel mode to non-motorized uses.

Table 5.6: *Induced Demand Life Cycle Benefit-Cost Summary*

SEGMENT	TOTAL ANNUALIZED BENEFIT	2020 BENEFIT	2020 COST	B/C	20 YEAR ADJUSTED BENEFIT	20 YEAR ADJUSTED COST	B/C
Study Area	Bicycle Mode Shift Benefit	$ 105,635	$1,092,018	0.10	$1,473,602	$1,400,178	1.05
**Notes:*							
1. Mode Shift to Bike Transportation induced demand benefit calculated using NCHRP 552 methodology.							
2. 20-year life cycle cost estimated using planning-level cost estimates include 20 year life cycle of Class I Paths and Class II bike lanes							
3. 20-year benefit estimated by multiplying the annualized benefit by a factor of 20 and applying a 4% year of year discount rate to account for the present worth of future dollars.							

FUEL AND EMISSIONS

The fuel and emissions benefits associated with the state highway intersection improvements can be analyzed using the outputs of the SIDRA software utilized to analyze operational benefits of signal versus roundabout control. These emissions estimates are not the same as a standard air quality assessment, and are provided solely for comparison purposes. Fuel and emissions costs can also be monetized using the 2016 Caltrans economic parameters. The fuel and emission costs of the signal and roundabout alternatives, are presented in Table 5.7, for the two intersections.

As seen in Table 5.7, the fuel and emissions costs are over the life cycle is higher for the roundabout versus signal alternative at SR 49/ Francis Street, while the roundabout alternative performs better than the signal alternative at SR 4/ SR 49.

Table 5.7: *Intersection Improvement Fuel & Emissions Monetization*

INTERSECTION	TRAFFIC SIGNAL ALTERNATIVE	ROUNDABOUT ALTERNATIVE
Francis Street/ SR 49	$ 293,000	$ 449,000
SR 4/ SR 49	$ 1,472,000	$ 1,0026,000

COMMUNITY SUPPORT

The preferred plan was presented to the stakeholders on February 12, 2020 and received unanimous support for the improvements shown. Copello Square Apartments and Francis Street residents' number one desire is to have pedestrian improvements along the corridor to accommodate strollers, electric scooters, bikes and walking. They like the extra width as shown with the multi-use path. In addition there was support for the roundabouts, landscaping, multiuse path, bike lanes, crosswalks and transit stops. Additional text forthcoming after City Council approval.

DISADVANTAGED COMMUNITY

For competitive grant funding programs that include an equity component, disadvantaged communities are typically identified using three metrics based on publicly available data: air pollution burdens, median household income, and free or reduced-price meal eligibility at schools. Each of these three data sources is discussed and summarized for the project area below, using thresholds for disadvantaged communities from the most recent cycle of Active Transportation Program (ATP) grant application guidelines in 2018. While these thresholds may change in future years or in other grant programs, they serve as a helpful point of reference in determining whether any part of the project area may qualify as a disadvantaged community for funding purposes.

AIR POLLUTION

Many programs evaluate pollution burdens using CalEnviroScreen, which identifies census tracts that are disproportionately burdened by or vulnerable to pollution. To qualify as a disadvantaged community under ATP guidelines, a census tract must be in the most disadvantaged 25% of tracts statewide. This is equivalent to a score higher than 39.34. Severely disadvantaged communities are those in the most disadvantaged 10% of tracts, or a score higher than 51.19.

Angels Camp is located in Census Tract 6009000121 which received a score of 16.31, placing it in the most disadvantaged 29% of tracts statewide. While this is close to the threshold, it does not meet the most recent ATP definition for a disadvantaged community based on pollution burden.

MEDIAN HOUSEHOLD INCOME

Under the most recent ATP guidelines, a disadvantaged community is defined as one where median household income is less than 80% of the statewide average. A severely disadvantaged community is defined as one where median income is less than 65% of statewide average. As of the 2016 American Community Survey (ACS) 5-Year Estimate, used to determine thresholds for the most recent ATP cycle, the California median household income is $63,783. To qualify as a disadvantaged or severely disadvantaged community, the median household income thresholds are therefore $51,026 and $41,458, respectively.

According to 2018 American Community Survey (ACS) estimates, the City of Angels Camp has a population of 3,897. The Median Household Income (MHI) for the city is $53,100. The statewide MHI is $67,169 and $54,800 for Calaveras County. However, the study area is comprised of pockets of comparatively lower income geographies. At the Census Block Group level, the MHI within the study area is $48,654, which is roughly 72 percent of statewide MHI.1

Pursuant to California Transportation Commission 2019 Active Transportation Program (ATP) Guidelines, communities with a population of less than 15,000 may utilize Census Block Group level data to examine disadvantaged community status on the basis of MHI. While updated guidelines in the following year may recommend using more recent data, the guidelines currently require the use of 2012-2016 ACS 5-Year estimates. 2016 MHI for the Angels Camp Block Group covering the study area, is $43,158, which is 68 percent of 2016 statewide MHI. The threshold to qualify as a disadvantaged community based on income is below 80 percent, classifying the study area as such.

FREE OR REDUCED PRICE MEAL ELIGIBILITY

The percentage of students eligible for free or reduced-price meals (FRPM) at schools is another commonly used metric to establish disadvantaged community status. In the most recent ATP cycle, 75% of a school's students must be

FRPM eligible to qualify as a disadvantaged community. To qualify as a severely disadvantaged community, more than 90% of students must be eligible. The project must also demonstrate that the improvements will provide a direct benefit to students.

While there are no schools located in the immediate vicinity of the project, the improvements may support access to schools east of State Route 4 for students living along Main Street, including in the Copello Square Apartments. As shown in Table 5.8, neither of the public schools near the project area meets the threshold for eligible students. Angels Camp is unlikely to qualify as a disadvantaged community based on this metric.

Table 5.8: *Eligibility for Free or Reduced Price Meals*

SCHOOL NAME	STUDENTS ENROLLED	STUDENTS ELIGIBLE	PERCENT ELIGIBLE
Bret Harte Union High School	646	264	40.9%
Mark Twain Elementary	545	341	62.6%

CONCLUSION

The improvements recommended as part of the Angels Camp SR 49/North Main Street Complete Streets Corridor Plan offer benefit to the community including:

- multimodal connectivity and safe routes to school
- safety
- congestion
- mode shift/induced demand
- positive impact to the surrounding disadvantaged community

STATE HIGHWAY SEGMENT IMPROVEMENTS

The multimodal improvements throughout the study corridor provide low stress connectivity, as seen in the bicycle and pedestrian level of traffic stress analyses discussed previously. Moreover, level of traffic stress improvements provide Safe Routes to School connections for students of two local schools within two miles of the study area. These improvements will provide low stress, safe connections between key origins and destinations within and beyond the study area. While the analyzed safety benefit provided by the segment improvements do not show a robust benefit-cost, a lack of historical bicycle and pedestrian crash data is the cause of the low safety B/C. The lack of existing active facilities could explain the low number of bicycle/ pedestrian collisions occurring within the study area.

The State Highway segment improvements do not impact vehicular operations significantly enough to reduce congestion; however, the anticipated mode shift over the twenty year life cycle will provide a marginal reduction to congestion and vehicle miles traveled. Additionally, the anticipated mode shift will provide mobility, health, and recreation benefits over the life cycle as well.

Lastly, the block group covering the study area is considered a disadvantaged community on the basis of median household income. The recommended improvements will positively benefit disadvantaged community members by providing improved and safer multimodal connections throughout the study area.

STATE HIGHWAY INTERSECTION IMPROVEMENTS

Under cumulative conditions, signal modifications at several locations will be necessary to accommodate future growth. Two proposed intersection improvements within the Caltrans right-of-way are included in this plan, at Francis Street/ SR 49 and SR 4 / SR 49. Based on the Collision Modification Factor analysis discussed previously, the roundabout at SR 4/ SR 49 will provide a robust safety benefit compared to the existing signal alternative, and the benefit provided by the roundabout at Francis Street/ SR 49 will also provide a higher benefit compared to the signal alternative. Additionally, the roundabout improvement at SR 4/SR 49 shows delay, and emissions benefits over the signal alternative. However, the roundabout improvement at Francis Street / SR 49 does not perform as well. While these results can inform the potential benefits provided by these improvements in conjunction with the SR 49 North Main Street Complete Streets Plan improvements, a full intersection control evaluation process should occur prior to implementation.

TOTAL BENEFIT PROJECT AREA BENEFIT-COST

Table 5.9 displays the total benefit-cost summary for all improvements included in the plan, annualized to a 20-year life cycle. Cost for bicycle improvements include the design year costs and operations and maintenance costs associated with the improvements. Mode shift benefits were derived using the NCHRP 552 methodology, as described previously.

The safety and air quality/emissions benefits assume the roundabout alternative for the state highway study intersections, which is the Caltrans preferred alternative. The cost of the roundabouts associated with air quality and emissions benefits includes design year costs and the delay and fuel/emissions life cycle costs associated with the roundabout alternative. The total project cost is $16,313,594, including the design year costs for all improvements, operations and maintenance associated with the bicycle improvements, and the life cycle costs associated with delay and fuel/emissions. Taken together, the total benefit provided by the improvements recommended in the plan equals $24,132,358. Compared against the $16,313,594 in cost, the total benefit-cost is 1.48, which shows a positive return on investment.

Table 5.9: *Total Benefit-Cost Summary*

BENEFIT TYPE	BENEFIT	COST	B/C
Bicycle Mode Shift Benefit	$1,473,602	$1,400,178	1.05
Safety Benefit	$20,758,756	$9,477,000	2.19
Air Quality/ Emissions	$1,900,000	$11,342,000	0.17
Total Benefit	**$24,132,358**	**$16,313,594**	**1.48**

GENERAL RECOMENDATIONS

- It is the desire of the City to underground all utilities within the project area. All future improvement projects within the corridor shall explore the opportunity of undergrounding utilities and removing overhead power poles and lines.
- It is recommended that the City work with private property owners to consolidate scattered signs into integrated "center signs" to reduce visual clutter, improve site distance, reduce visual obstructions, and aesthetics.


Information Management
Off-Site Media Vault
Secure Destruction
Digital Solutions
Access
Protecting our environment, too:
InformationProtected.com/green
1 877 FileLine

6. DESIGN GUIDELINES

Traditional street design prioritizes vehicles, resulting in speeding cars, crashes, and traffic. Pedestrian crashes are more than twice as likely to occur on streets without sidewalks and on arterial roads, such as SR 49, which are designed to move traffic quickly and efficiently. Complete Streets use a comprehensive approach to design the street with pedestrians and cyclists in mind, such as sidewalks, dedicated bike lanes, medians, traffic calming, and crosswalks. By clearly defining safe spaces for all users, Complete Streets limit points of conflict and increase awareness from all user groups, thereby increasing safety and wellbeing of the community.

Complete Streets improve public health through more active transportation options. Better designing for older people, disabled people, and children to safely walk and bike increases physical and mental health. Complete Streets are associated with increased walking and biking as residents are more likely to choose transportation alternatives when the option is convenient, safe, and accessible. Studies have shown that people can comfortably walk 1/4 mile and that 46% of people are willing to walk up to 1 mile to church or school and 35% of people are willing to walk up to 1 mile to work (Centers for Disease Control and Prevention 2012, newpublichealth.org). Caltrans has developed a Complete Streets Action Plan and supports roadway designs that increase safety and mobility for all.

Complete Streets have a number of economic benefits to the community by making it easier to take transit, walk or bike. This can stimulate the local economy by reducing household expenses dedicated toward car maintenance and reduce time lost in traffic. Businesses benefit from increased pedestrian and bike activity by increasing the time people spend in the area. These streetscape improvements can also spur private investment, by attracting new business, offices and residential options.

NOTES ON CALTRANS STANDARDS

Tree installation and parking designations must provide adequate sight distance for all driveways and public road connections along SR 49.

Any decorative or stamped concrete within Caltrans Right-of-Way requires a maintenance agreement with the City.

These and similar considerations will be addressed through Caltrans encroachment permit review.

Design Elements

Street Intersections — Intersections will prioritize pedestrian crossings over vehicles. All intersections will be controlled with design elements that result in slow vehicle speeds and maximize pedestrian comfort and safety. Intersections should be compact and well timed, while still meeting transportation needs. Intersections are shared spaces that need to balance all modes of travel. Clear views should be maintained, therefore corner radii should be narrow (15' radius is ideal in urban settings). Delivery and fire access for large truck movements should also be considered.

Crosswalks and Signals — To promote pedestrian connectivity, all 4 sides of each intersection should incorporate crosswalks with high visibility, reflective materials. All crossings should be ADA compliant.

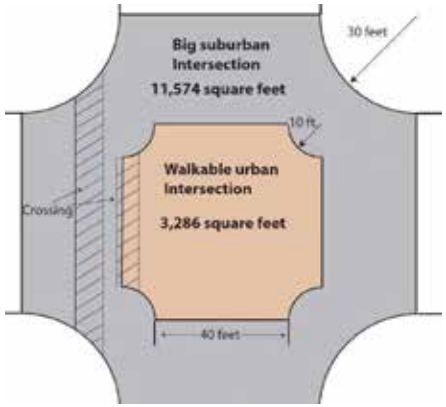
Signals — Signal timing should be appropriate and visible. Pedestrian Signal timing create a legible crossing environment and should include countdowns. Pedestrian crossing times need to be long enough to accommodate the elderly and disabled, and need to be ADA compliant.

Streetscape and Landscape Treatments — Landscape buffers should be located between sidewalks and the travel lanes to separate pedestrian and vehicular circulation.

Bicycle Lanes — Bicycle lanes can be located along the roadway to encourage people to bike to destinations. The width of bicycle lanes should align with standards for bike lane design.

Sidewalks — Sidewalk widths should be a minimum of 6 feet wide. Ideally, sidewalks should be located away from the street to prevent pedestrian crossings at undesignated locations and create a more pleasant environment.

Figure 6.1: Intersection Design Character



Smaller intersections facilitate safer and more comfortable pedestrian movements.

Pedestrian Signage

Raised Crosswalks

The more bikes and pedestrians on the roadways, the safer streets become for all user groups. Additionally, places that implement bike lanes see an increase in bike ridership. Safer, more accessible streets for walking and biking will attract more people to the area in addition to increasing health and wellness within the community.

DESIGN ELEMENTS

Bike Lanes - All bike lanes shall meet current design standards in the Caltrans Highway Design Manual, green paint is shown in this document to highlight the bike lanes, but final delineation of the bike lanes shall be decided by the City and CItrans.

Traffic Signs — Standardized signs used to regulate bicycle traffic should be implemented along the roadway to inform vehicles and to guide bicyclists.

Informational & Directional Signage — Route identification and how to use signs that inform users with regards to destinations, distance, and user expectations. A bike map of the community and regional networks helps to define routes and connect paths so riders can remain on safe, designated bikeways.

Intersection Markings — Multi-lane intersections can be challenging for bicyclists and motorists alike. Green painted bike boxes can be used to indicate areas designated for bikes in an effort to minimize conflicts between bikes and vehicles. A bike box places bicycles at the front of the queue, in clear view of motorists. Green lanes should be provided at significant conflict points and in merge areas.

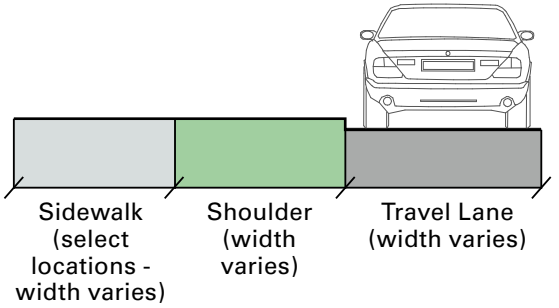
Crossing Signal — Bike crossing signal push buttons can be positioned to provide bicyclists with signal changing ability when cars are not present to trigger signal timing.

Bike Parking — Public bike parking facilities can be located at key destinations to keep bikes organized, out of the public walkways and off street poles.

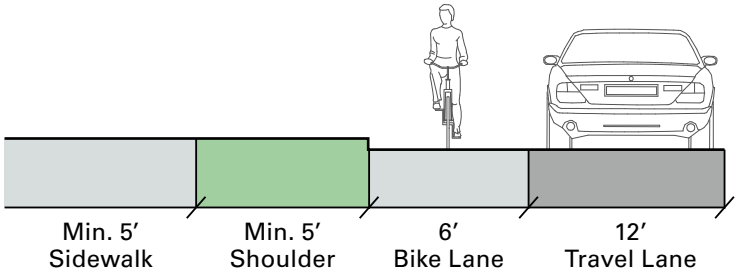
Bike Box at Intersection

Bike Signage

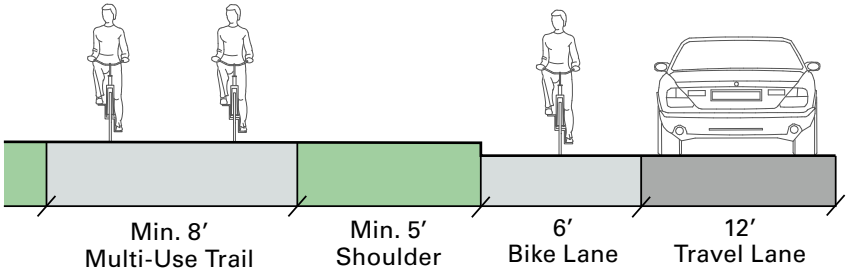
Existing Highway Conditions



Proposed: On-Street Bike Lane with Landscape Buffer

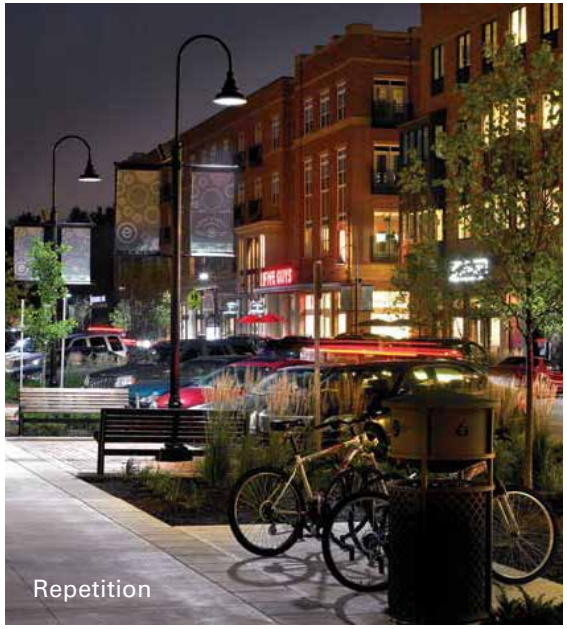


Proposed: On-Street Bike Lane with Multi-Use Trail



Updated, uniform furnishings with planters

Moveable Site Furnishings



Repetition

DESIGN ELEMENTS

Site amenities create a safe and comfortable user experience along the streetscape and can contribute to the overall aesthetic character of North Main Street. The following are streetscape elements the design should incorporate into future improvements along SR 49.

Street Lighting — Street lighting is essential for safe streets. Street lighting should:

- Support a safe and secure environment.
- Be evenly distributed along the street with no dark spaces.
- Utilize energy efficient light sources and aesthetic lighting color.
- Be in accordance with Dark Sky Requirements.

Paving — Paving can consist of a variety of materials ranging from concrete and asphalt to decorative brick and stone. Paving can be used to define spaces such as communicating changes between pedestrian and vehicle zones. Paving should:

- Define the Pedestrian zone – emphasize places of importance.
- Be ADA accessible and not provide a tripping hazard or excessive vibration for wheelchairs.
- Maintain the Frog Plaques on the streetscape.

Seating — Public seating is an opportunity for people to stop, rest, watch and create a sense of activity along the street where people can see and be seen. Seating should:

- Be located in a comfortable location, protected from the elements and outside of the pedestrian thoroughfare.
- Allow for informality and comfort.
- Face inward towards buildings and primary pedestrian pathways, away from the street.
- Be incorporated into walls, art and other street features.

Bicycle Racks & Corrals — Biking is a growing and important element of the streetscape and bike parking should be located at the Visitors Center and Vallecito Road Lot. Bicycle racks should:

- Be located outside the pedestrian thoroughfare.
- Be located at least 2' away from and perpendicular to the curb.
- Allow for the opportunity to be integrated with public art.

Trash Receptacles — Trash, recycling, and cigarette disposal are important to maintain cleanliness and user comfort along the streetscape. Trash receptacles should:

- Be located in high activity areas, at corners and at regular intervals along the corridor.
- Be durable and functional for maintenance needs.
- Match a selected family of furnishings.

Bollards — Bollards can be permanent, removable or movable fixtures to allow for flexibility of use and separation of pedestrian and vehicular spaces along the roadway, parklets, or at intersections.

Planters — Planter pots or landscape beds can function as an aesthetic element to provide color and contrast, soften hard edges, provide screening along the streetscape, or function as a bollard element.

Public Art — Public art is a growing trend in streetscape design that provides the opportunity to highlight the unique history of Angels Camp. Public art should:

- Be visually prominent along main thoroughfares for pedestrians, bicycles and vehicle.
- Be integrated as part of other site furnishings such as seating, walls, or bicycle racks.
- Provide information, interpretation or wayfinding in the City.

Modern Amenities — Additional considerations such as WiFi, bottle fill stations, charging stations, social media check-ins and other streetscape elements to be incorporated into the landscape to provide for the changing needs of the digitally conscious age.


Banners with City Branding


Bicycle Racks

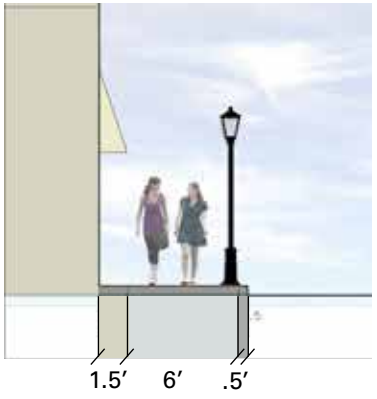
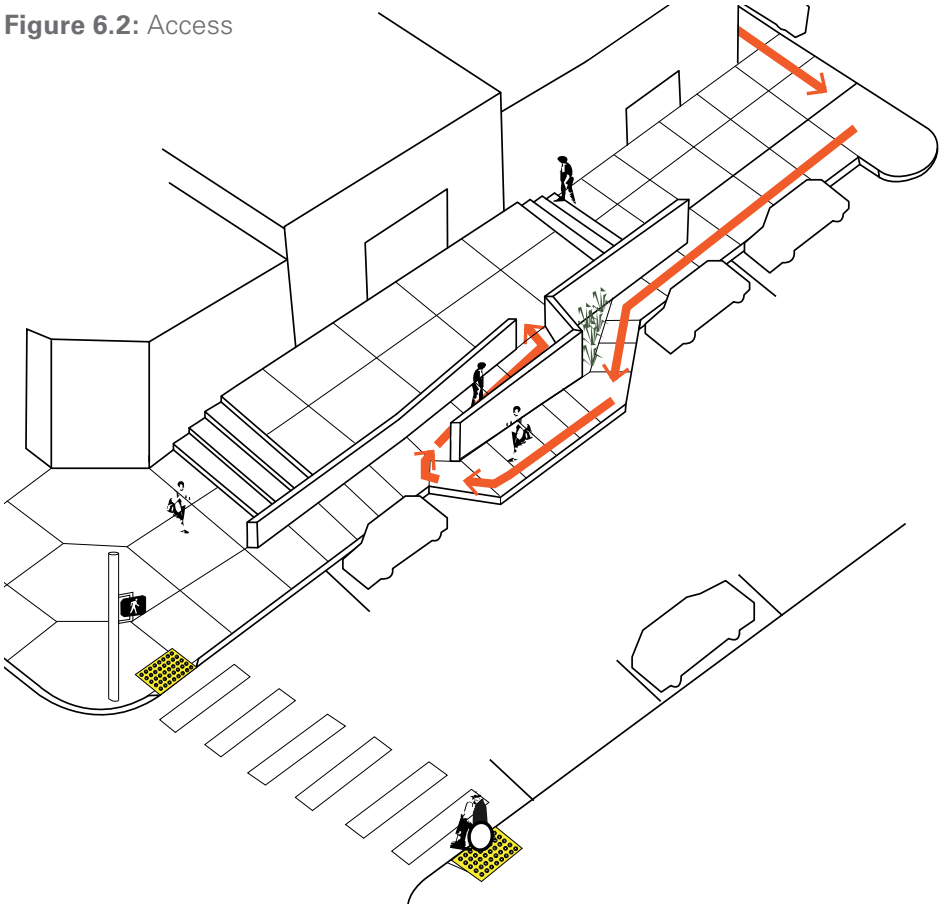


Figure 6.2: Access



Design for people of all ages and mobility, to equitably access buildings and outdoor spaces. The seven principles for universal design are:

- Principle 1: Equitable Use
- Principle 2: Flexibility in Use
- Principle 3: Simple and Intuitive Use
- Principle 4: Perceptible Information
- Principle 5: Tolerance for Error
- Principle 6: Low Physical Effort
- Principle 7: Size and Space for Approach and Use

Design solutions for North Main Street should be safe, easy to navigate and complete, including:

- Accessible Paths of Travel: 12:1 Ramps with handrails, 5% or less on walks, maximum of 2% cross slope.
- Intersections: Textured and colored crosswalks, pedestrian activated signals with audible and visible intersection signals, and high-visibility crosswalks
- Flush paving at building entries

Playground with universal access

Curb-cuts with brightly colored rumble strips

Accessible routes to navigate grade changes

DESIGN GUIDELINES | CRIME PREVENTION THROUGH ENVIRONMENTAL DESIGN

Crime Prevention through Environmental Design (CPTED) is the study of safety and security measures that can be increased through the thoughtful design of the natural and built environment. CPTED principles will be used to contribute to a safe and inclusive community.

1. CPTED Principle #1: Develop the opportunity for natural surveillance such as 'eyes on the street' to create transparency and a sense of community. Spaces should be visible and landscape should allow for outsiders to see into spaces.
2. CPTED Principle #2: Natural access control utilizes the use of walkways, fences, lighting, signage and landscape to clearly guide people and vehicles to and from the proper entrances.
3. CPTED Principle #3: Utilize physical designs such as pavement treatments, landscaping and signage that clearly distinguishes public from private.
4. CPTED Principle #4: Maintenance and the "Broken Window Theory" suggests that one "broken window" or nuisance, if allowed to exist, will lead to the decline of a space. Maintenance is important to show spaces are cared for and valued.

STREET TREES LOWER AIR TEMPERATURES AND IMPROVE AIR QUALITY IN URBAN SPACES.

Street Trees

Street trees are an important aspect of street design by creating a visual pattern and repetition, shade to increase comfort on warm days and a canopy for an outdoor 'roof' over businesses and roadways. The following should guide tree selection along North Main Street:

- Select the right tree for the right space. Consider mature size conflicts, growth habits, hardiness, characteristics(such as flowers, fruit, autumn leaves) and potential diseases.
- Consider the full canopy size of the tree to determine tree planting spacing.
- Consider mature growth of the tree when planting in tree grates or small planting beds, to allow space for the trunk and roots to grow.
- Larger planting beds with good soil will produce healthier and longer living trees by increasing permeability, reducing tree-root conflict points and lessening compaction at the base of the tree.
- Proper soil amendments are necessary to increase the life of the tree.
- Consider tree litter when selecting a tree species, which includes leaves, seeds and fruit.
- Plant a variety of trees along the streetscape to promote biodiversity, as well a allow for a mix of color, textures and characteristics.

Suggested trees include:

- Cork oak (Quercus suber)
- Fruitless olive
- Bay/Laurel (Laurus nobilis)
- Italian stone pine (Pinus pinea)
- Italian buckthorn (Rhamnus alaternus)

Trees and Landscape along Street Edge

Street Trees in Median






Low Water Landscape Examples

Landscape

Maintenance — Trees and plants are living elements of the streetscape and therefore require continued care and maintenance for longevity. Maintenance considerations include, pruning, clearing litter and debris, seasonal planting and replacements.

Safety — Proper visibility at drive entrances and corners need to be considered. Plants should not grow over 18 inches tall and trees need to be limbed to 5 feet to maintain sight distance visibility so that drivers can see other cars.

Aesthetics — Landscape creates color and texture, that also softens the hardscape of asphalt streets and concrete walks. Many studies have shown the value that green spaces can bring to human health and wellness and sense of comfort in spaces. Landscape planting should consider variety of planting materials and a blend of color, texture, sizing and spacing in developing streetscape designs.

Low water/xerIscape strategies

The images to the left represent alternative treatments to landscape areas. Xeric plants are defined as low water use plants and include succulents, low growing ground covers, junipers and wildflowers. Other low water treatments could include crushed stone, stone or concrete pavers and mulch treatments. Use of indigenous stone and rock is suggested.

It is the desire of the City to have low water use plants used in all new improvements throughout the City. A suggested plant list shall be developed by the City and approved by the Caltrans Landscape Architect and Planning Commission prior to the implementation of this plan or any future project within the study area.

ANGELS CAMP NORTH MAIN STREET PLAN

7. IMPLEMENTATION & FUNDING PLAN

The following provides an overview of available funding opportunities that improvements identified in the Angels Camp North Main Street Plan may be eligible for and provides recommendations for implementation strategies for the Plan's preferred concept.

PREFERRED CONCEPT

The Plan's preferred concept includes improvements to segments and intersections along North Main Street/SR 49, including improvements to the intersections of SR 4 and SR 49 and SR 49 and Francis Street, slated for Caltrans SHOPP Project funding. As presented in Preferred Concept Assessment Chapter, the improvements were assessed using criteria related to multimodal connectivity and bicycle mode shift, safety, congestion and air quality, vehicle miles traveled (VMT), and disadvantaged community benefits. The results of these assessments could be useful in determining project competitiveness for relevant funding programs.

Preferred Concept Projects

The preferred concept projects and planning level costs are presented in Table 7.1.

Table 7.1: *Safety Benefit – Roundabout Intersection Alternatives*

ITEM DESCRIPTION		OPINION OF TOTAL UNIT COST
Total Unit Cost	$	1,350,500
Bridge	$	592,000
Median Island	$	303,863
Sidewalk	$	488,678
Bike Lane with Green Paint	$	331,890
Multi-Use Path	$	760,128
White Thermoplastic Striping	$	8,325
Yellow Thermoplastic Striping	$	32,412
Retaining Wall	$	502,969
Guard Rail	$	41,070
Crosswalk	$	66,600
HAWK Beacon	$	185,000
Roundabouts*	$	9,477,000
Total	**$**	**14.140,434**

** Roundabout cost estimates provided by Caltrans District 10; all else provided by GHD*

FUNDING SOURCES

Improvements in this Plan are likely eligible for funding through the following competitive grant opportunities. The list is not exhaustive and additional funding opportunities may be available now or in the future. Funding opportunities include state, federal and local sources. In addition, consideration of the City's April 2020 Income Survey Report should be made in identifying potential funding sources. The most applicable are described below.

ACTIVE TRANSPORTATION PROGRAM (ATP)

Created in 2013 by Senate Bill 99 and Assembly Bill 101, California's Active Transportation Program (ATP) funds projects that improve air quality and public health by increasing walking and bicycling trips. The program consolidated several previous funding programs to streamline the application process for communities, including the Bicycle Transportation Account, Safe Routes to School, Recreational Trails, and Transportation Alternatives. ATP funds can be used to design and construct eligible infrastructure or non-infrastructure projects, and combination projects that combine these elements.

Competitive application cycles are held approximately every two years, with the next call for project applications expected to occur in March 2020. More than $400 million is expected to be available, distributed as follows: 50 percent of funds are allocated based on the statewide competitive process, 40 percent are allocated to Metropolitan Planning Organizations (MPOs) for regional competitive processes, and 10 percent of funds are allocated to small urban or rural regions with populations under 200,000. A minimum of 25 percent of funds in each allocation must benefit disadvantaged communities as defined by ATP guidelines.

ATP Competitiveness

The proposed multimodal improvements throughout the study corridor provide low stress connectivity, as seen in

the bicycle and pedestrian level of traffic stress analyses discussed previously. Moreover, level of traffic stress improvements provide Safe Routes to School connections for students of two local schools within two miles of the study area. These improvements will provide low stress, safe connections between key origins and destinations within and beyond the study area. While the analyzed safety benefit provided by the segment improvements do not show a robust benefit-cost, a lack of historical bicycle and pedestrian crash data could be the cause of the low safety B/C. The lack of existing active facilities could explain the low number of bicycle/ pedestrian collisions occurring within the study area.

The total benefit-cost ratio for bicycle mode shift is 1.05, and includes the design year costs and operations and maintenance costs over a 20-year life cycle associated with the improvements. Mode shift benefits were derived using the NCHRP 552 methodology, as described in the Preferred Concept Assessment memorandum.

SURFACE TRANSPORTATION BLOCK GRANT PROGRAM (STBGP)

Funds from the Surface Transportation Block Grant Program (STBGP), formerly the Revised Surface Transportation Program, are apportioned to states to provide flexible funding that may be used to preserve or improve conditions and performance on any federal-aid highway, bridge projects on any public road, facilities for active transportation, transit capital projects, and public bus terminals and facilities. Both Caltrans and local agencies may apply for funding through this program.

HIGHWAY SAFETY IMPROVEMENT PROGRAM

Highway Safety Improvement Program (HSIP) funding is distributed to states under the Fixing America's Surface Transportation (FAST) Act. HSIP funding aims to reduce serious and fatal injuries on all public roads. Distributed by the Caltrans Division of Local Assistance, California's local HSIP funding focuses on infrastructure projects that include nationally-recognized crash modification factors. Application scoring in this program emphasizes data-driven factors and benefit-cost ratios.

Eligible projects must be located on a public road or publicly owned bicycle or pedestrian pathway or trail. Projects must identify a specific safety problem that can be corrected or substantially improved. City or County transportation planning agencies may typically apply for up to $1 million per project. Application cycles are held approximately every other year, with the next call for project applications expected to occur in spring of 2020.

HSIP Competitiveness

Eligible HSIP projects from this Plan include the state highway intersection improvements, and other projects implemented in conjunction with these intersection improvements provided the demonstrated safety benefit remains substantial. As presented in the Preferred Concept Assessment memorandum, to analyze the safety benefit of improvements presented in this study, a collision modification factor (CMF) analysis was employed using the Highway Safety Improvement Program (HSIP) project analyzer tool. Collision modification factors are multiplicative factors used to calculate the expected reduction in collisions associated with a particular countermeasure. Crash Modification Factors (CMFs) have been established based on safety research over the last several decades; however, CMFs may not be available for all countermeasure types—despite the safety improvements provided by the improvement. Moreover, the HSIP Analyzer allows a maximum of three selected countermeasures to be included in the analysis, and benefit will be reflected only if there is a significant crash history associated with the countermeasures.

The HSIP analyzer tool calculates a benefit-cost ratio of the safety benefits associated with the CMF and the cost

of these improvements. In other words, the benefit-cost (B-C) ratio provides a value for the return on investments associated with the recommended improvements. A value greater than 1 indicates a positive return on investment, and higher benefit-cost ratios result in greater funding competitiveness.

The resulting benefit-cost ratio assumes the roundabout alternative for the state highway study intersections, which is the Caltrans preferred alternative. The safety benefit-cost ratio is a robust 2.19.

CONGESTION MITIGATION AN AIR QUALITY PROGRAM

Congestion Mitigation and Air Quality (CMAQ) funds are federal funds that provide a flexible funding source to state and local governments for transportation projects and programs that meet requirements of the Clean Air Act. Funding is available for transportation projects or programs that reduce congestion and improve air quality for "nonattainment areas" that do not meet the National Ambient Air Quality Standards for ozone, carbon monoxide, or particulate matter, and for former nonattainment areas that are now in compliance (called "maintenance areas"). Eligible projects must be included in the applicable MPO's current transportation improvement program, or in the current State Transportation Improvement Program (STIP) in areas without an MPO.

Eligible CMAQ projects include public transit improvements, high occupancy vehicle (HOV) lanes, intelligent transportation system (ITS) infrastructure, traffic management and traveler information systems, employer-based transportation management plans and incentive programs, traffic signal coordination, rideshare services, bicycle and pedestrian facilities, flexible work schedule programs, fare or fee subsidy programs, and more.

CMAQ Competitiveness

To assess the benefit associated with emissions and VMT reduction, the anticipated reduction in auto trips associated with mode shift associated with the proposed bicycle and pedestrian facilities and the operational benefits associated with the planned intersection improvements were examined in the Preferred Concept Assessment memorandum. VMT reduction associated with the proposed active transportation facilities was calculated using the NCHRP 552 methodology. The operational benefits associated with the Caltrans planned intersection improvements was assessed in terms of pollutant and fuel consumption costs.

The State Highway segment improvements do not impact vehicular operations significantly enough to reduce congestion; however, the anticipated mode shift over the twenty year life cycle will provide a marginal reduction to congestion and vehicle miles traveled.

Under cumulative conditions, signal modifications at several locations will be necessary to accommodate future growth. Two proposed intersection improvements within the Caltrans right-of-way are included in this plan, at Francis Street / SR 49 and SR 4 / SR 49. Additionally, the roundabout improvement at SR 4/SR 49 shows delay, and emissions benefits over the signal alternative.

IMPLEMENTATION

This section focuses on implementation strategies including project prioritization and partnerships. Due to the location of the projects on a state highway (SR 49) within Caltrans right-of-way, partnerships with Caltrans will be essential to the successful implementation of the Preferred Concept.

PARTNERSHIP OPPORTUNITIES

Most of the improvements recommended in this Plan are within or adjacent to Caltrans right-of-way. The recommended improvements would provide a greater overall benefit if implemented in conjunction with the proposed SHOPP project in the Caltrans right-of-way. As in many other communities bisected by state highways, a partnership with Caltrans will be essential to maximize community benefit. Opportunities for partnerships include routine maintenance projects, resurfacing, safety upgrades, and Americans with Disabilities Act (ADA) compliance projects. Improvements from this Plan should be incorporated into these projects wherever feasible.

In addition to ensuring partnerships with Caltrans, the City of Angels Camp should coordinate with Calaveras Council of Governments (Calaveras COG), specifically regarding future development and future road extensions as they relate to short- and mid-term improvements recommended in the Plan. The City and caltrans should coordinate street improvement plans with utility repair/improvement plans for efficiency during implementation and construction.

PROJECT PRIORITIZATION

Project prioritization is critical to the implementation of the Plan. One approach to project implementation is to prioritize those projects that are most competitive with regard to funding program criteria, as well as those improvements that can be implemented by leveraging the programmed SHOPP project funds. The bicycle and pedestrian improvements described in the Plan are estimated to provide a variety of benefits, both quantitative and qualitative, including those related to improved connectivity, induced demand/ bicycle mode shift, Safe Routes to School, and positive impact to disadvantaged communities. These benefits underscore the potential competitiveness in seeking Active Transportation Plan (ATP) grant funding. Moreover, the proposed intersection improvements, which are planned SHOPP projects, can coalesce with the active transportation facilities proposed in this plan to provide further improved low-stress connectivity, and safety, operational and air quality benefits.

In addition, in coordination with Calaveras COG, projects should be examined within the context of future development needs, highlighting projects that provide direct benefit to future development. More specifically, the development of the future Foundry Lane extension and Copello-area housing can be leveraged in implementing the Class I Path connection proposed in the Long-Term Plan.

An alternative approach is to prioritize and implement the lowest cost improvement types immediately. This may include installation of the proposed green-painted Class II facilities or new crossing locations.

Consideration should be made in the implementation of this plan to include funding for final design, environmental clearance and construction to facilitate securing funding from a wide variety of alternative funding sources that may focus on a single phase of the overall construction process.