Highway 9
San Lorenzo Valley
Complete Streets
Corridor Plan

2019

SCCRTC

Kimley»Horn

TrailPeople

Contents

List of Figures

Acknowledgements

Study Prepared by:

Consultant Team
Frederik Venter, Project Manager, Kimley-Horn
Randy Anderson, Project Manager, TrailPeople
Derrick Wu, Kimley-Horn
Marissa Garcia, Kimley-Horn
Quan Sun, TrailPeople
Casey Osborn, TrailPeople
Sofia Zander, TrailPeople

Santa Cruz County Regional Transportation Commission (SCCRTC) Staff
Brianna Goodman, Transportation Planner
Rachel Moriconi, Transportation Planner
Thomas Travers, Transportation Planning Technician
Joanna Edmonds, Transportation Planning Technician

Project Oversight Team
Caltrans District 5: Kelly McClendon, John Olejnik, Jennifer Calate, and Roger Barnes
County of Santa Cruz: Steve Wiesner and Greg Martin (Public Works), Paia Levine (Planning)
County Board of Supervisors office: Supervisor Bruce McPherson, Virginia Johnson and JM Brown
Santa Cruz Metropolitan Transit District (METRO): Pete Rasmussen

Community Members and Groups
Hundreds of members of the public provided extensive input during development of this study. San Lorenzo Valley (SLV) communities have demonstrated ongoing dedication to improve transportation safety and access in San Lorenzo Valley (SLV). While many community members have provided significant input on this plan, special recognition is given to Jim Helmer, Brian Largay, and Justin Acton.

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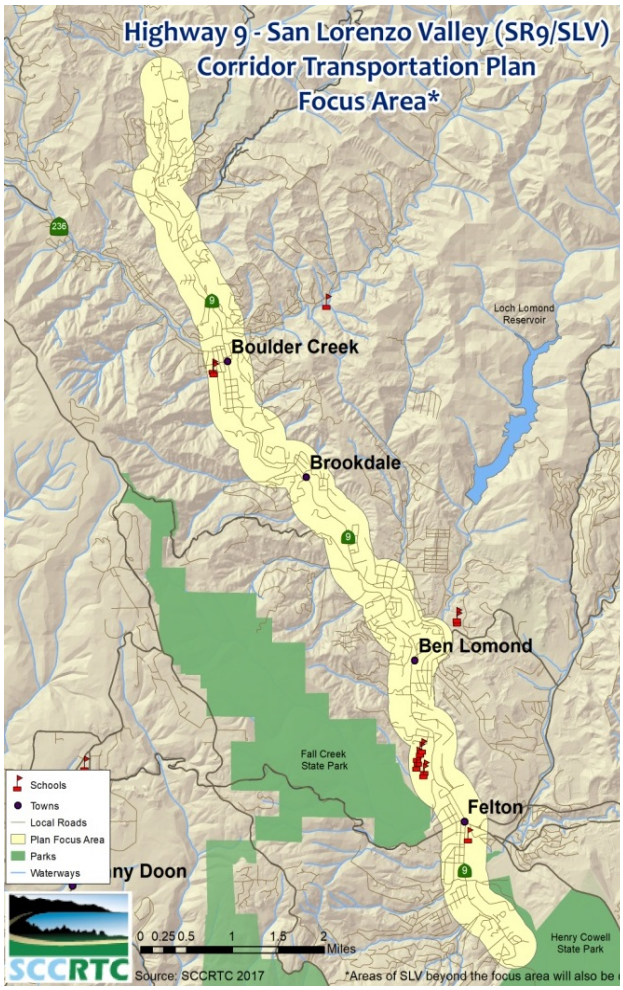
Executive Summary

Highway 9/San Lorenzo Valley Complete Streets Corridor Plan

Shaped by community input about transportation challenges that San Lorenzo Valley residents currently face and desires for the future, the **Highway 9/San Lorenzo Valley Complete Streets Corridor Plan** (Hwy9/SLV Corridor Plan) is a planning study that provides a vision, guiding principles, and realistic strategies to improve how people get around the San Lorenzo Valley.

This corridor plan focuses on the section of Highway 9 which serves as the "Main Street" and economic center for the towns, villages, and communities of Felton, Ben Lomond, Brookdale, and Boulder Creek, as well as connecting county maintained roads (**Figure ES 1**). Priorities identified in the plan improve safety for pedestrians, bicyclists and motorists; improve access to schools, businesses, residences, and transit; and improve traffic operations throughout this travel corridor.

Figure ES 1: Corridor Plan Area Map



This is a "Complete Streets" plan, which means it is focused on planning, designing, operating, and maintaining transportation facilities that improve mobility for all users, including motorists, pedestrians, bicyclists, transit vehicles, and truckers, as appropriate to the function and context of the facility. A well-designed complete street does not just work better; it *feels* better, particularly for pedestrians and cyclists, and it *looks* better, with enhanced aesthetics and amenities that complement the setting and adjacent uses.

Existing Conditions

This mountainous area of Santa Cruz County has narrow curving roadways frequently impacted by steep terrain, high collision rates, significant gaps in bicycle and pedestrian facilities, limited transit service, traffic backups at a number of choke points, as well as pavement, drainage, and other assets in disrepair.

Daily traffic volumes: Highway 9 is used by over 16,000 vehicles between Ben Lomond and Boulder Creek and over 21,000 vehicles each day between Felton and Ben Lomond, with use expanding with tourism and special event traffic during summer months. (see **Figure ES 2**)

Traffic choke points: While traffic volumes through the SLV are relatively low compared to other state highways and major arterials in Santa Cruz County, during peak travel periods motorists regularly experience moderate to severe backups through the town centers, in front of SLV elementary, middle, and high schools (SLV Schools Campus) just north of Felton, and at

major intersections, including the Highway 9/Graham Hill Road intersection in Felton and Highway 9/Bear Creek Road intersection in Boulder Creek.

Figure ES 2: Average Daily Traffic Volumes on Highway 9

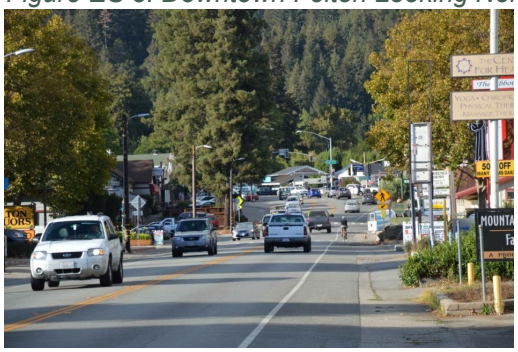
Post Mile	Location Description – HIGHWAY 9	Daily Traffic Volume
5.64	FELTON, north of SAN LORENZO AVENUE	7600
6.46	FELTON, south of GRAHAM HILL ROAD	12,100
6.46	FELTON, north of GRAHAM HILL ROAD	20,800
8.11	BEN LOMOND, south of GLEN ARBOR ROAD	19,600
9.71	BEN LOMOND, SAN LORENZO RIVER BRIDGE	15,200
11.3	BROOKDALE, north of ALAMEDA AVENUE	11,400
13.04	BOULDER CREEK, south of SOUTH JCT. RTE. 236	12,000
13.24	South of BEAR CREEK ROAD	17,700
13.24	North of BEAR CREEK ROAD	10,700
20.86	North of WATERMAN GAP, NORTH JCT. RTE. 236	2800

Credit: Caltrans Traffic Census Program, 2017

Collisions: There have been a number of significant collisions in the past decade in the SLV. Leading causes of injury and fatal collisions from 2013 to 2017 involved unsafe speed or improper turning *(CHP SWITRS)*. Residents are justly concerned about speeding on roadways throughout the SLV, especially near schools, residential, and commercial areas. The narrow curving right-of-way and close proximity to buildings, fences, and trees meant nearly 40% of all collisions 2013-2017 were “hit object” collisions, rather than a collision between two vehicles. Impaired driving from alcohol or drugs is also a significant challenge. There have been about 30 collisions involving bicycles and pedestrians in the corridor over the past ten years. California Highway Patrol (CHP) is responsible for traffic enforcement through the SLV, though officers are responsible for covering very large areas. Caltrans conducts investigations of major incidents.

Walking: While there are some pedestrian facilities (sidewalks, paths, and crosswalks) in town centers, the rural nature of the area has left most pedestrians outside of the town centers walking in dirt along the shoulders of Highway 9 and on local roads. Especially as more vehicles use the roads, more formalized separation of pedestrians is desirable. Many existing sidewalks in town centers are not compliant with the latest accessibility (Americans with Disabilities Act or ADA) standards. Narrow roadways, pinched by hillsides, gullies, and trees make construction of walking paths between town centers difficult.

Figure ES 3: Downtown Felton Looking North



Credit: SCCRTC

Bicycling: While there are no dedicated bicycle lanes or paths along Highway 9 or local roads in the SLV, the highway is regularly used by bicyclists commuting through and between town centers, cyclists accessing parks, as well as recreational cyclists, sometimes traveling the entire length of Highway 9 from Santa Clara County/Saratoga to Santa Cruz. Where shoulders exist, cyclists often use that space, but otherwise are sharing the road surface with motorists.

Transit: The SLV is served by three public bus routes, school buses, as well as paratransit services for seniors and people with disabilities offered by Santa Cruz METRO and Community

Bridges Lift Line. Santa Cruz METRO's three bus routes have an average monthly ridership of approximately 40,000.

Goals and Objectives

The primary purpose of the Highway 9/San Lorenzo Valley Complete Streets Corridor Plan is to create an actionable short-term and longer-term multimodal complete streets corridor plan that addresses transportation challenges for all modes of transportation along the Highway 9 corridor through the San Lorenzo Valley (generally Felton to Boulder Creek) and within the town centers. In evaluating potential transportation projects, the project team considered how well projects address objectives identified by the community. Chapter 1 *Introduction* provides greater detail on objectives and criteria used to evaluate priority projects.

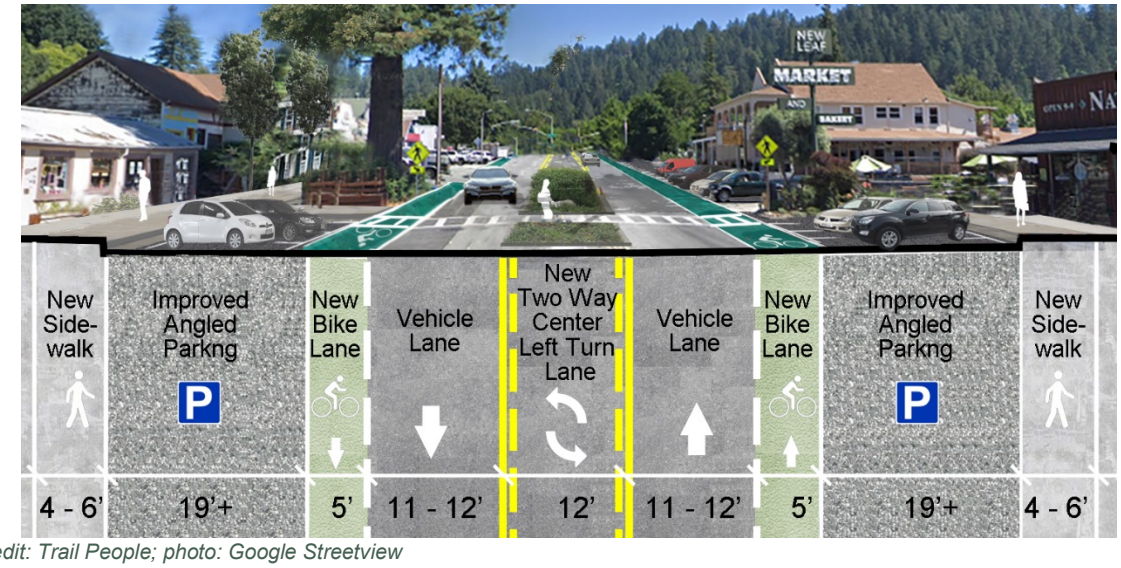
Project Objectives

- *Safety*
- *Pedestrian Access and Connectivity*
- *Bike Access and Connectivity*
- *Sustainability/Reduce emissions and vehicle miles traveled (VMT)*
- *Traffic Flow for Vehicles*
- *System Preservation/Maintenance*
- *Transit Connectivity*
- *Economic Vitality*
- *Town Character Compatibility*
- *Public Support*
- *Ease of Implementation, including cost and available funding*
- *Anticipated Use Level*

Implementation Priorities

In recognition that funding for transportation projects is limited, the Highway 9/San Lorenzo Valley Complete Streets Corridor Plan prioritizes transportation investments that improve multimodal transportation access and connectivity, safety and security, operations, economic vitality, and environmental quality through the San Lorenzo Valley. In order to identify priorities, the project team (SCCRTC, Caltrans, County Public Works, County Planning, Santa Cruz METRO, and consultants) reviewed existing conditions (collisions, facilities, traffic volumes, etc.), conducted extensive community outreach, and considered information from other relevant documents and past community input. After reviewing hundreds of project ideas and challenge areas, the project team developed a consolidated list of a priority projects. The team then

Figure ES 4: Town Center Enhanced Cross Section (Design concept only)



Credit: Trail People; photo: Google Streetview

evaluated how well those projects address goals and primary objectives and solicited stakeholder feedback on project components. The overall vision for the corridor, including corridor-wide priorities and sample cross sections (see **Figure ES 4**), are included in Chapter 2.

Priority Projects: Chapter 3 *Priority Projects by Location* identifies priority projects along the corridor. A more exhaustive list of ideas and concepts for the SLV are included in Appendix B *Identified Projects List*. A range of potential short- and longer-term infrastructure modifications in these areas are described in Chapter 3 and are listed in **Table ES 4**. **Figures ES 6 to ES 9** show components of these priority projects, split according to mode of transportation.

Based on how well the priority projects meet objectives listed above and public input, some of the highest priorities for the corridor include the following:

- SLV Schools Campus Circulation: improving traffic flow and bike and pedestrian access to SLV elementary, middle, and high schools has consistently been identified as one of the highest priorities for the SLV. (Projects 9 and 10)
- Highway 9/Graham Hill Road Intersection: redesign intersection to improve circulation, pedestrian, and bicycle access through the intersection (Project 8)
- Felton: pedestrian, roadway, and parking modifications (Projects 4, 6, and 7)
- Ben Lomond: multimodal improvements in the town center and Highlands Park connection on Highway 9 (Projects 13 and 16)
- Brookdale: crosswalk safety improvements (Project 20)
- Boulder Creek: crosswalk improvements (Project 23) and Bear Creek Road/Highway 9 intersection modification (Project 27)
- Corridor-wide priorities: roadway maintenance, speed reduction, crosswalks, pedestrian visibility, and wider shoulders for bicycles

Additional information regarding implementation priorities can be found in Chapter 4 *Project Evaluation and Implementation Plan.*

How this Plan will be Used

This Complete Streets Corridor Plan is a high-level planning document. While implementation of any of the projects will require additional feasibility analysis, this plan will be used to guide and coordinate transportation investments along the Highway 9 corridor through the SLV. It serves as a resource for Caltrans, County Public Works, County Planning, the Santa Cruz County Regional Transportation Commission (RTC), SLV Unified Schools District (SLVUSD), residents and businesses to use to improve this transportation corridor. It prioritizes infrastructure projects (Chapter 4 *Project Evaluation and Implementation Plan*); shows preferred roadway cross sections for town centers, suburban areas, and rural areas, which can be used as a framework for future updates to infrastructure in areas not identified in the priority projects (Chapter 2 *Corridor Vision*); includes a "toolkit" illustrating a range of potential transportation facility modifications, projects, and programs, and answers questions about what can be done within Caltrans' right-of-way *(*Appendix A *Complete Streets Improvements Toolkit);* and identifies

potential funding sources, including opportunities to use $10 million of Measure D revenues earmarked for the area to leverage other local, state, and federal funds (Chapter 4 *Project Evaluation and Implementation Plan* and Appendix C *Funding Opportunities).*

While it is anticipated that many projects will be implemented independently, as other transportation and non-transportation projects are implemented along the corridor, public and private entities are expected to consider and incorporate complete streets components and concepts identified in this corridor plan. This may include Caltrans maintenance, operational, and preservation projects (SHOPP), new land use developments, or major infrastructure modifications.

Table ES 5: Priority Projects

Area	#	Projects/Concepts
Corridor wide	A	SLV Corridor Safety Measures
	B	SLV Corridor Transit and Travel Demand Management
	C	SLV Corridor Bicycle Facilities or Separated Paths
	D	SLV Corridor Increase Turnouts
	E	SLV Corridor Pedestrian Crossing Safety, Lighting and other Visibility
	F	SLV Corridor Roadway Maintenance
	G	SLV Corridor Emergency Preparedness and Resiliency
Felton	1	Henry Cowell State Park Access and Parking
	2	Southern Felton Neighborhood Bicycle and Walking Paths
	3	Henry Cowell State Park to Downtown Felton Pedestrian and Bicycle Connection
	4	Downtown Felton Crosswalks
	5	Downtown Felton Bicycle and Walking Connections near Library
	6	Downtown Felton Pedestrian Walking Facilities
	7	Downtown Felton Roadway, Bicycle, and Parking Improvements
	8	Highway 9 and Graham Hill Rd Intersection Redesign
SLV Schools	9	Pedestrian and Bicycle Connection to SLV Schools Campus from Felton
	10	SLV Schools Campus Site Access
	11	North SLV Schools Pedestrian and Bicycle Connections
Ben Lomond	12	Willowbrook Drive Commercial Area Improvements and Glen Arbor Bike/Ped Connection
	13	Pedestrian and Bicycle Connections from Ben Lomond to Highlands Park
	14	Ben Lomond Crosswalk and Transit Improvements
	15	Mill Street and Glen Arbor Rd Pedestrian Improvements
	16	Ben Lomond Downtown Core Multiuse Improvements
	17	Pedestrian and Bicycle Connections from Mill St to Alba Rd
	18	Hubbard Gulch/Alba Rd Operational Improvements
Brookdale	19	Brookdale Sidewalks
	20	Brookdale Crosswalk Improvements
	21	Irwin Way/Highway 9 Intersection Improvements
Boulder Creek	22	Boulder Creek Elementary Neighborhood Multimodal Improvements
	23	Boulder Creek Crosswalk Improvements
	24	Parking Modifications or Bicycle Facilities in Downtown Boulder Creek
	25	Sidewalk and Storefront Improvements in Downtown Boulder Creek
	26	Bike/Ped Connections to Boulder Creek Library & Bear Creek Rd, Traffic Calming Hwy 236
	27	Highway 9/Bear Creek Rd Intersection Improvements
North	28	Pedestrian and Bicycle Improvements at Garrahan Park and Mt Store

Figure ES 6: Auto Priority Projects Map

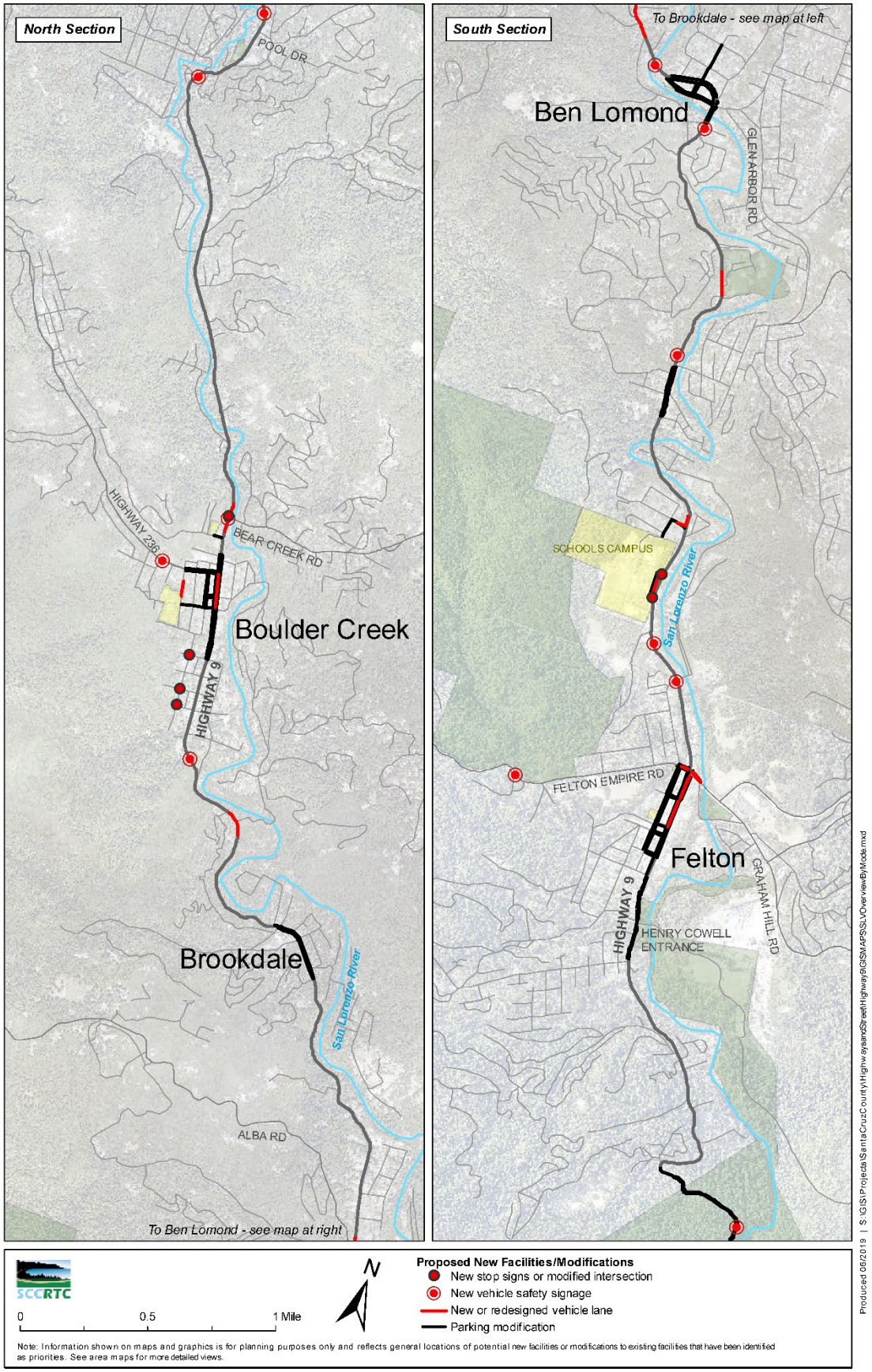


Figure ES 7: Pedestrian Priority Projects Map

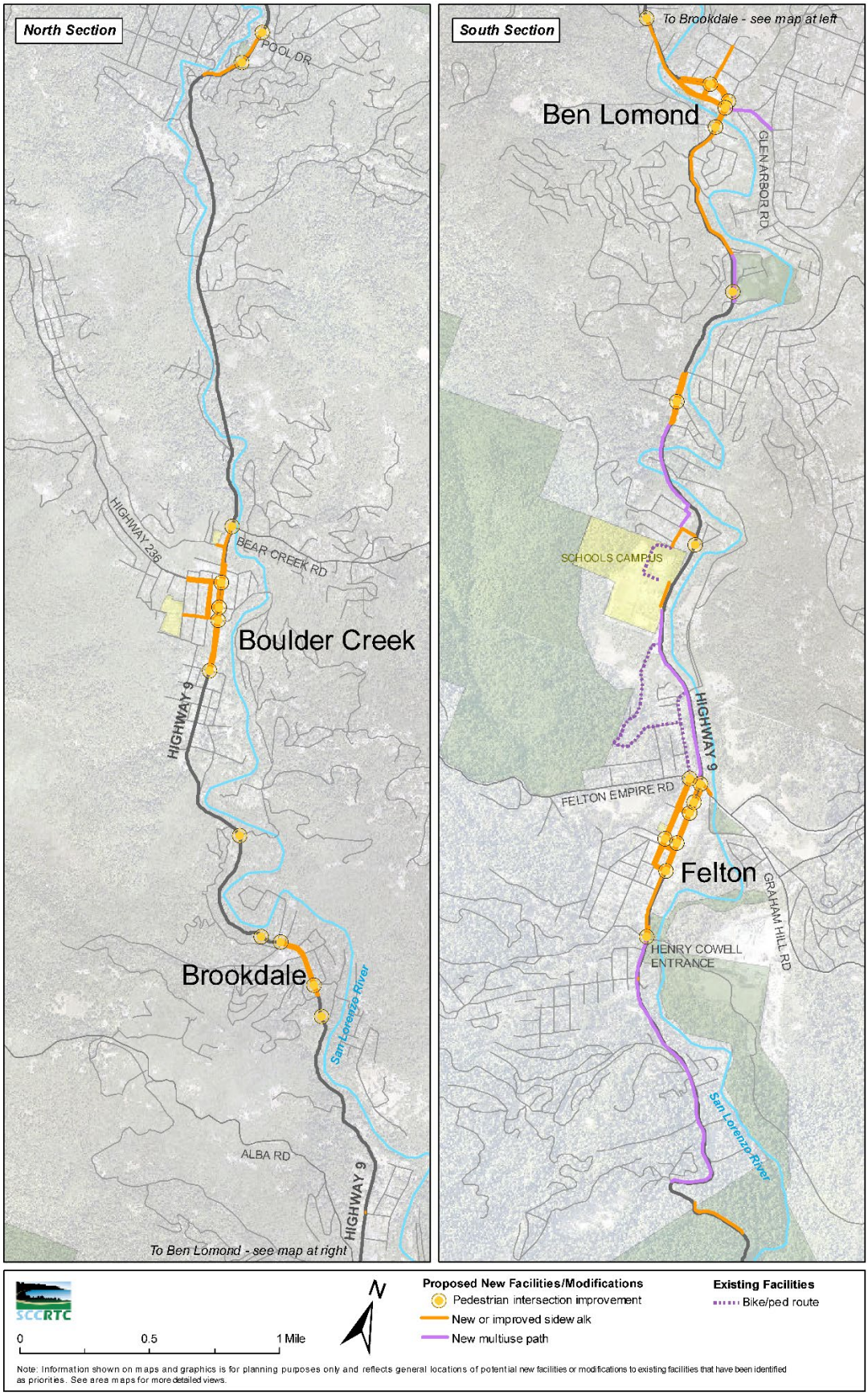


Figure ES 8: Bicycle Priority Projects Map

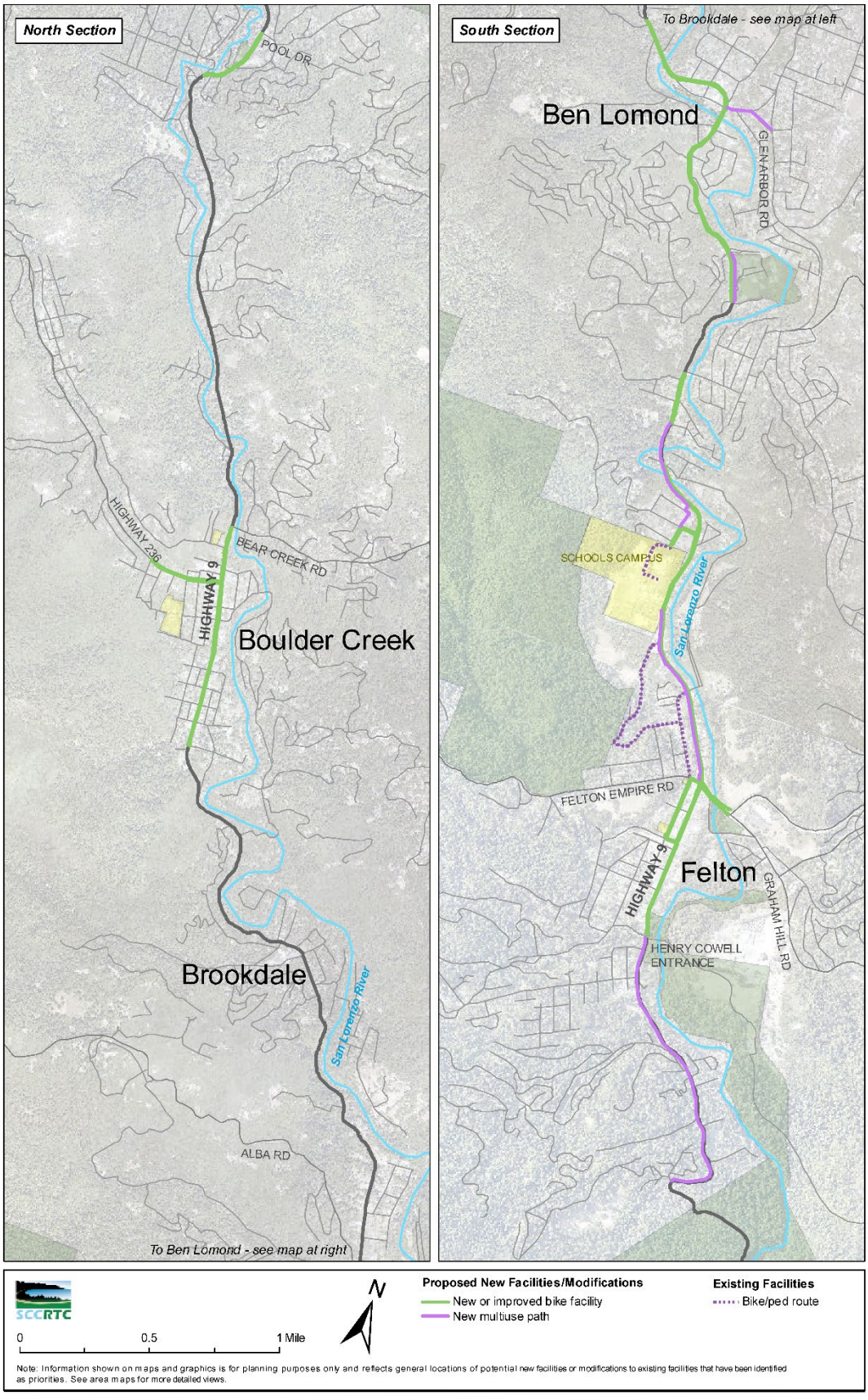
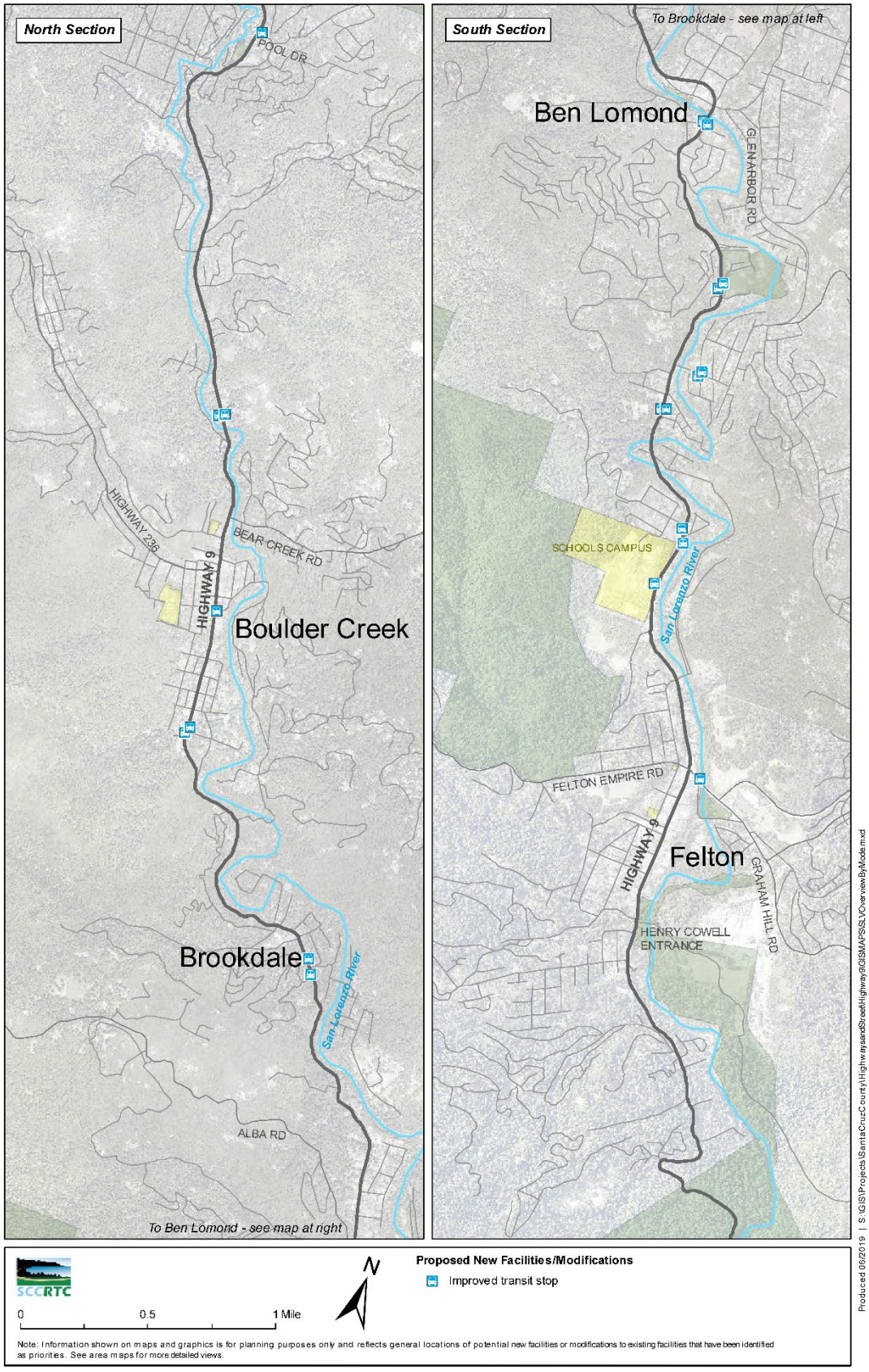


Figure ES 9: Transit Priority Projects Map



1. Introduction

Shaped by community input about challenges that San Lorenzo Valley residents currently face and their desires for the future, the **Highway 9/San Lorenzo Valley Complete Streets Corridor Plan** (Hwy9/SLV Corridor Plan) is a planning study that provides a vision, guiding principles, and realistic strategies to improve how people get around the San Lorenzo Valley. There are significant transportation concerns throughout the San Lorenzo Valley, which includes the towns/villages of Felton, Ben Lomond, Brookdale, Boulder Creek, and surrounding neighborhoods in the northwestern region of Santa Cruz County. This mountainous area has high collision rates, narrow curving roadways frequently impacted by steep terrain, significant gaps in bicycle and pedestrian facilities, a lack of walkways to many bus stops, traffic backups at a number of choke points, as well as pavement, drainage, and other assets in disrepair.

In recognition that funding for transportation projects is limited, this plan prioritizes transportation investments that improve multi-modal[1] transportation access and connectivity, safety, and security, operations, economic vitality and environmental quality through the San Lorenzo Valley**.** The focus of this plan is Highway 9 (SR9, State Route 9) which serves as the backbone for the movement of people and goods through the San Lorenzo Valley. It is the only direct route linking the San Lorenzo Valley communities and is the “main street” for each of the four historic town centers. This plan also identifies investments on county roads that cross or run parallel to Highway 9 in the town centers to increase multimodal connections to transportation facilities and other destinations on Highway 9.

This plan also serves as “toolkit” for Caltrans, Santa Cruz County Public Works, Santa Cruz County Planning, the Santa Cruz County Regional Transportation Commission (RTC), and San Lorenzo Valley (SLV) residents and businesses to use to improve this transportation corridor. This is a “Complete Streets” plan, which means, “a transportation facility that is planned, designed, operated, and maintained to provide safe mobility for all users, including bicyclists, pedestrians, transit vehicles, truckers, and motorists, appropriate to the function and context of the facility.”[2] A well-designed complete street does not just work better; it *feels* better, particularly for bicyclists and pedestrians, and it *looks* better, with enhanced aesthetics and amenities that complement the setting and adjacent uses.

1.1. Plan Area

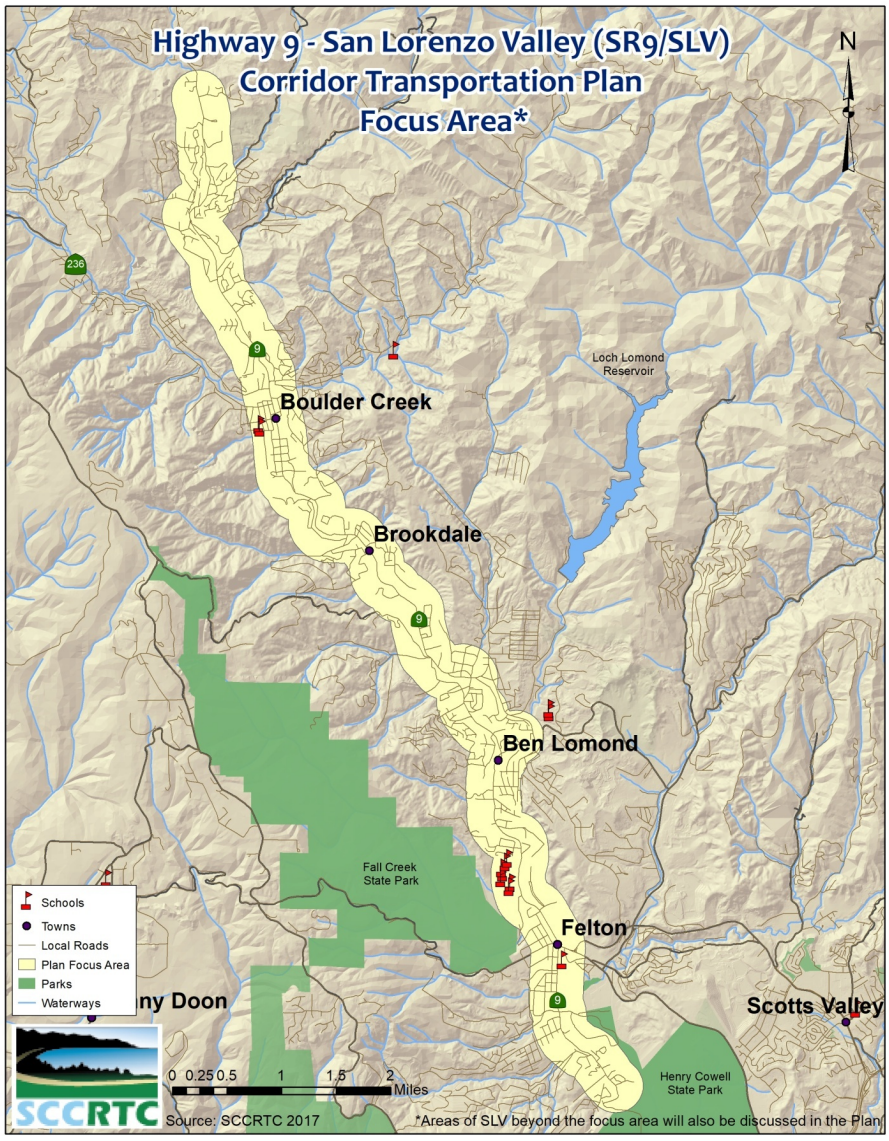
The area of this plan is centered on the Highway 9 travel corridor, including connecting county-maintained streets, roads, and paths through the San Lorenzo Valley, from Henry Cowell State Park in Felton, near Glengarry Road, to the northern intersection of Highway 236 with Highway 9 north of Boulder Creek – a distance of approximately 16 miles (see **Figure 1.1**). The focus of the study is on more “urbanized” areas in and between Felton and Boulder Creek town centers. This section of Highway 9 serves as the primary public space for over 17,000 residents and is the economic center of the San Lorenzo Valley (SLV).

[1] *Multimodal definition: more than one transportation mode - auto, bike, pedestrian, transit, truck, etc.*

[2] *Caltrans Complete Streets Program website: http://www.dot.ca.gov/transplanning/ocp/complete-streets.html*

While the focus of this study is on the Highway 9 corridor between Felton and Boulder Creek, the study also recognizes that many people in the San Lorenzo Valley travel south to the City of Santa Cruz, west and east to Bonny Doon and Scotts Valley, and north to Santa Clara County and the greater San Francisco Bay Area. However, community members determined that the area from Felton to Boulder Creek needed a focused study and routes to other areas could not be addressed within the limited budget for the current study.

Figure 1.1: Complete Streets Corridor Plan Project Area



Bicycle connections from Felton to Santa Cruz were evaluated in the County of Santa Cruz's 2006 *San Lorenzo Valley Trail Study.* Caltrans also has Transportation Concept Reports for all of Highway 9, which provide a high-level overview of this state highway between Saratoga and Santa Cruz. Appendix E provides additional information on these and other relevant studies and plans. Cross section concepts identified for more rural sections of Highway 9 through the study area could also be applied to other areas of Highways 9 and 236, which have lower traffic volumes.

1.2. Plan Contents

This plan for the Highway 9/San Lorenzo Valley corridor:

- Establishes goals, objectives, and criteria for prioritizing transportation projects in the San Lorenzo Valley (SLV) (Chapter 1 *Introduction)*
- Documents existing conditions
- Provides design guidelines and preferred typical cross sections for Highway 9 and neighboring county roads, which can be used as a framework for future updates to infrastructure and facilitate incorporation of multimodal improvements into other project

types (i.e. drainage improvements, bridges, repaving, etc.) (Chapter 2 *Corridor Vision* and Appendix A *Complete Streets Improvements Toolkit)*
- Includes a "toolkit" illustrating the range of potential transportation facilities, projects, and programs, and clarifies what can be done within Caltrans' right-of-way (Chapter 2 Appendix B *Identified Projects List*)
- Identifies priority projects which address key challenge areas, infrastructure gaps, and potential improvements (Chapter 3 *Priority Projects by Location* and Appendix B*)*
- Evaluates prioritized transportation projects and concepts and includes short- and long-term implementation recommendations (Chapter 4 *Project Evaluation and Implementation)*
- Identifies potential funding sources, including opportunities to use local Measure D revenues to leverage other local, state, and federal funds. Measure D, which was approved by voters in November 2016, includes $10 million specifically earmarked for high-priority transportation projects along the Highway 9 corridor (Chapter 4 and Appendix C *Funding Opportunities)*

- Reflects public input. Surveys, meetings, letters, and many years of prior public input and previous studies and plans provide the foundation for this plan (Appendix D *Corridor Plan Public Input* and Appendix E *Background Documents and Prior Community Input).*

1.3. Plan Development

This plan, funded by a Caltrans Sustainable Communities Planning Grant and Santa Cruz County voter-approved Measure D transportation sales tax revenues, builds on prior studies, plans, and public input regarding transportation facilities in the San Lorenzo Valley (SLV). The Santa Cruz County Regional Transportation Commission (RTC) staff worked with a team of transportation consultants from Kimley-Horn and TrailPeople to develop the plan. Extensive public participation identifying transportation challenges, acceptable transportation facilities, and priority projects ensured that this is a "community-based plan."

The project oversight team, consisting of staff from Caltrans District 5, the Santa Cruz County Regional Transportation Commission (RTC), Santa Cruz County Public Works Department, Santa Cruz County Planning, Santa Cruz Metropolitan Transit District (METRO), and Santa Cruz County District 5 Supervisor Bruce McPherson's office, met at key intervals to provide input and oversight on the plan.

1.4. Goals and Objectives

Purpose

One of the primary purposes of the Highway 9/San Lorenzo Valley Complete Streets Corridor Plan is to create an actionable short-term and longer-term multimodal complete streets corridor plan that addresses transportation challenges along the Highway 9 corridor through the San Lorenzo Valley (generally Felton to Boulder Creek) and within the town centers. The plan provides a vision for the corridor and serves as a guide for future infrastructure projects through the entire corridor. Based on community input and consistent with other pertinent plans and policies, the plan clarifies and prioritizes projects and concepts based on several objectives, while considering cost and feasibility, so transportation priorities reflect the most "bang for the buck." Other goals for this plan that were reflected in evaluation criteria are outlined below.

Goals

This plan integrates several goals from the County of Santa Cruz General Plan (GP) and Sustainable Santa Cruz County Plan (SSCC), as well as regional, state (CA), and federal (US) goals.

- Transportation System: Provide a convenient, safe, and economical transportation system for the movement of people and goods, promoting the wise use of resources, particularly energy and clean air, and the health and comfort of residents.[GP]
- Safety: Increase the safety of the transportation system for motorized and non-motorized users. Reduce the number and severity of collisions. [All]
- Improve Multimodal Mobility and Accessibility for All People: Increase accessibility and mobility of people and freight.[US,CA] Provide for the special transportation needs of the elderly and disabled.[GP] Provide the public with choice in transportation modes on a well-integrated system. Increase walking, bicycling, transit ridership, carpooling, etc.[GP] Enhance the integration and connectivity of the transportation system, across and between modes.[US]
- Strengthen Existing Town Centers: Vibrant centers are an essential component of a sustainable Santa Cruz County. Provide clear, safe points of access for pedestrians and bicyclists, and manage parking supply and circulation through town centers. [SSCC, GP]
- Economy: Support a vibrant economy and economic vitality.[US,CA]
- Preserve the Existing Transportation System: Maintain, manage, and efficiently utilize the existing transportation system.[US, CA] Promote efficient system management and operation.[US] Provide for more efficient use of existing transportation facilities.[GP]
- Sustainability: Promote reliable and efficient mobility for people, goods, and services, while meeting the State's GHG emission reduction goals, preserving the State's natural and working lands, and preserving the unique character and livability of California's communities. [CA] Protect and enhance the environment, promote energy conservation, improve the quality of life, and promote consistency between transportation improvements and State and local planned growth and economic development patterns.[US]
- Foster Livable and Healthy Communities and Promote Social Equity: Find transportation solutions that balance and integrate community values with transportation safety and performance, and encourage public involvement in transportation decisions. [CA]
- Health: Decrease exposure to local pollution sources, reduce serious injuries and fatalities on the transportation system, and promote physical activity especially through transportation means.[CA]
- Finance: Plan a system within the County's [and State's] ability to finance and operate.[GP]

Objectives and Evaluation Criteria

Several overarching objectives and performance criteria were identified to support these goals by evaluating transportation concepts and site-specific projects (as described in Chapter 4

Project Evaluation and Implementation Plan). These objectives and criteria were developed based on public input received during Phase 1 and criteria used in regional, state, and federal grant programs and plans. These criteria are not intended to result in a formal, weighted scoring to determine which projects will be funded from specific grants or revenues; the evaluation is used to compare and contrast a range of investment options in the Highway 9 transportation corridor and identify priorities for implementation.

Based on feedback at public meetings, the following 11 criteria were chosen to use as the basis for evaluating projects and concepts.

- Safety
- Pedestrian Access and Connectivity
- Bike Access and Connectivity
- Transit Connectivity
- Sustainability/Reduce Emissions and Vehicle Miles Traveled (VMT)
- Improve Traffic Flow for Vehicles
- System Preservation
- Anticipated Use
- Economic Vitality
- Town Character Compatibility
- Public Support
- Ease of Implementation

Safety

Evaluation for this objective reviews projects on their ability to potentially reduce collisions; eliminate perceived safety issues; eliminate hazards – e.g. trees in roadways, dips in roads; improve drainage; reduce speeding; improve access to/for emergency services.

Evaluation Criteria:

- Address areas with documented collisions, especially those involving fatalities or injuries *(highest rank)*
- Address areas with collisions involving bicyclists or pedestrians
- Address areas with perceived safety issues or those that do not have safety data because users are avoiding that area (e.g. no pedestrian collisions because people avoid walking there, drive instead)
- Address potential traffic conflict locations and congested locations that add to safety concerns
    - Reduce speeding
    - Improve access to/for emergency services
    - Reduce property damage
    - Improve light of sight/visibility/reaction time available
    - More clearly delineate spaces for pedestrians, bicycles, and autos
    - Project/treatment should be a safety countermeasure that has been shown to eliminate or reduce crashes

Types of projects that would satisfy safety objectives include: slow speeds/reduce speeding, traffic calming, guardrails, new bicycle and pedestrian infrastructure, enforcement of speed limits, safety education programs, intersection safety improvements, more visible pedestrian crossings, drainage improvements, increase site distances, maintain roadways.

Applicability to Grant Funding: High. Safety is one of the highest priorities; it is a measure used in almost all grant and planning programs.

Pedestrian Access/Connectivity

Evaluation for this objective reviews projects on the ability to increase pedestrian access and safety along the corridor and address physical conditions that place pedestrians in close proximity to traffic, especially areas with higher speeds and volumes.

Evaluation Criteria

- Increase number of walking trips
    - Increase percent of population that can walk within 30-min to key destinations
    - Increase percent of trips taken by walking
- Fill gaps in facilities, especially to and within key destinations
    - Make it easier to walk within town centers
    - Better pedestrian connections near schools, which would be heavily used by students
    - Better pedestrian connections between key destinations, including town centers, schools, parks
    - Make it easier to walk across Highway 9 at intersections and key destinations
- Improve health/increase physical activity, especially for youth
- Increase quality of walking facilities
- Length of project/connected facility
- Reduce pedestrian travel distances and wait times at intersections

Types of projects that would satisfy pedestrian access and connectivity objectives include: adding new sidewalks, crosswalks, minimize obstacles; increase shared bike/ped pathways, and high visibility crosswalks.

Applicability to Grant Funding: Medium/Low. Used in some grant and planning programs.

Bicycle Access/Connectivity

Evaluation for this objective reviews projects on the ability to increase bicyclist access and safety along the corridor and address physical conditions that place bicyclists in close proximity to traffic, especially areas with higher speeds and volumes.

Evaluation Criteria

- Increase number of biking trips
    - Increase percent of population that can bike within 30-min to key destinations
    - Increase percent of trips taken by bicycle
- Fill gaps in facilities, especially to and within key destinations
    - Make it easier to bike within town centers
    - Better bicycling connections between key destinations, including town centers, schools, parks
    - Better connections between key destinations, including town centers, schools, parks
- Improve health/increase physical activity, especially for youth
- Increase quality of bicycle facilities
- Length of project/connected facility
- Provide safe route to school facility
- Reduce bicycle travel distances and wait times at intersections

Types of projects that would satisfy bicyclist access and connectivity objectives include those that: minimize obstacles, increase shared bike/ped pathways, widen shoulders for bicycles, and add bicycle box at intersections.

Applicability to Grant Funding: Medium/Low. Used in some grant and planning programs.

Sustainability/Reduce Emissions and Vehicle Miles Traveled (VMT)

Evaluation for this objective reviews projects on the ability to reduce emissions by either reducing congestion or reducing vehicle miles traveled.

Evaluation Criteria

- Reduce emissions, air pollution, and greenhouse gas
- Reduce number and distance of automobile trips
- Shift automobile travel to alternative modes, increase proportion of trips accomplished by biking, walking, transit or carpool, decrease SOV mode share
- Reduce idling, improve average speeds

Applicability to Grant Funding: High. Used in many grant and planning programs.

Improve Traffic Flow for Vehicles

Evaluation for this objective reviews projects on the ability to improve traffic flow along the corridor for vehicles.

Evaluation Criteria

- Maintain Traffic Flow
- Reduce congestion at intersections
- Reduce travel times through intersections

Applicability to Grant Funding: Medium/Low. Used in some grant and planning programs.

System Preservation

Evaluation for this objective reviews projects on the ability to improve the condition of transportation infrastructure, including roadway pavement, sidewalks, bicycle, transit, and other transportation facilities. Projects with high scores in System Preservation likely extend useful life of a transportation facility or program and help maintain a state of good repair.

Evaluation Criteria:

- Improve pavement condition
- Reduce percent of transportation facilities in distressed condition
- Improve storm water drainage
- Reduce roadway closures
- Extend useful life of facilities
- Climate adaptation/climate preparedness

Applicability to Grant Funding: High. Used in many grant and planning programs.

Anticipated Use

Evaluation for this objective reviews projects on the ability to serve many roadway users. Projects with high anticipated use scores include popular destinations, such as schools, parks, town centers, and denser residential neighborhoods. These destinations demonstrate locations with high demand for bike, pedestrian or transit access; connections between significant community facilities; and major connection roads.

Evaluation Criteria:

- School Connection
- Park Connection
- Town Center Connection
- Residential Neighborhood Connection
- Bike Facility Connection
- Pedestrian Facility Connection
- Transit Stop Connection
- Major Road Connection

Applicability to Grant Funding: High. Projects that demonstrate a high demand and/or are expected to be used by the greatest number of users typically rank higher.

Transit Connectivity

Evaluation for this objective reviews projects on the ability of a project to demonstrate increase transit options, improve transit facilities, access/pathways to transit stops

Evaluation Criteria:

- Likelihood to increase transit use
- Increase transit access for people with limited mobility (e.g. seniors, people with disabilities, youth)
- Increase destinations served by transit and/or number of trips that can be taken by transit
- Improve access to transit stops, including pathways to bus stops
- Increase attractiveness of transit – bus stop areas locations and amenities
- Improve travel times and travel time reliability
- Provide improved access to transit stops or services
- Increase percent of households and jobs within 0.5 miles of transit stops with frequent transit service
- Increase farebox recovery ratio

Types of projects that would satisfy transit connectivity objectives include: transit service, paratransit service, community transit, upgrade bus stops with shelters, benches, and egress to stops.

Applicability to Grant Funding: Medium/Low. Used in some grant and planning programs.

Economic Vitality

Evaluation for this objective reviews projects on the ability of a project to provide economic benefits.

Evaluation Criteria:

- Greater flexibility in use of sidewalks/right-of-way near businesses
- Better organized commercial parking/frontages and access/driveways
- Facilitate economic growth in area
    - Increase access to jobs, job growth/job creation
- Reduce vehicle operating costs, household transportation costs, and/or amount of personal income spent on gasoline
- Increase freight and goods movement efficiency (throughput)
- Increase transportation options for people who are disadvantaged due to age, income, ability or minority status
- Reduce costs associated with fatalities and injuries
- Enhance travel and tourism, increase visitor tax revenues
- Limit level of public investment required

Applicability to Grant Funding: Medium/Low. Used in some grant and planning programs.

Town Character Compatibility

Evaluation for this objective reviews projects on the ability of a project to demonstrate minimal impact on adjacent properties, residential and commercial/business uses; minimal removal of trees or vegetation; improvements compatible/consistent with rural mountain character and aesthetics, and to avoid urban-type improvements.

Evaluation Criteria

- Maintain/enhance rural mountain character (avoid urban-type improvements)
- Protect neighborhoods
- Have less pavement; preserve vegetation where feasible
- Minimize impacts on existing private facilities in the ROW and/or adjacent private properties
- Improve access to businesses
- Minimize impacts to waterways, wildlife, and other environmental assets
- “Green” drainage to intercept and slow runoff

Applicability to Grant Funding: Low. Not typically used by grant and planning programs.

Ease of Implementation

Evaluation for this objective reviews projects on the ability of a project to realistically be implemented in both short and medium term, taking into consideration relative physical constraints, engineering or permitting challenges, right-of-way availability, known environmental constraints, availability of funding for project/project type and overall cost-effectiveness.

Evaluation Criteria

- Improvements remain in Caltrans right-of-way (ROW)
- No structure/building removal
- No tree removal/relocation
- Limited utility removal/relocation
- Limited sign/striping removal/relocation
- Limited earthwork/embankment removal/relocation

- Meets Caltrans standard design
- Reasonable to finance

Information used to assess ease of implementation were: GIS-based classification of existing conditions in roadway and along shoulders (on site, Google Earth and Streetview inventory); Caltrans record drawings; planning-level cost estimates, project descriptions and illustrations for the study; data from analysis of corridor conditions; review of applicable standards, policies and plans; priorities of various potential funding sources; Comments from agency or entity representatives. Projects were reviewed for their limited physical constraints; support or concerns expressed by the transportation system operators (e.g. Caltrans, County of Santa Cruz, METRO) and other stakeholder agencies and entities, including CHP, fire, etc.; consistency with state plans; comparing estimated costs of potential improvements; considering ongoing maintenance requirements, responsibilities, abilities and costs.

Applicability to Grant Funding: Medium. Deliverability/risk level is a factor in some grant programs. Meeting standards is sometimes a basic screening criterion. Projects cannot typically be implemented unless they meet standards.

Public Support

Evaluation for this objective reviews projects on the ability of a project to address the public need and support expressed for the project, and geographic balance; consistency with local, regional plans that underwent public review. Projects identified by public preferences from surveys, workshops, stakeholder and other meetings, comments received (recent and past); and consistency with local, regional plans.

Evaluation Criteria

- How many people were concerned about the issue/location being addressed, and/or how many supported (or opposed) the project concept. More support = higher score.

Applicability to Grant Funding: Medium. Projects must often demonstrate community support.

2. Corridor Vision

2.1. Vision for the Highway 9/San Lorenzo Valley Corridor

This Complete Streets Corridor Plan seeks to enhance the "Main Street" environment on Highway 9 where it passes through the towns of Felton, Ben Lomond, Brookdale, and Boulder Creek. This involves implementing complete streets features that benefit all users, not just automobiles. Though vehicle safety and easing traffic flow are key components of this plan, complete streets also strive to create welcoming and functional facilities for pedestrians, bicyclists, and transit users.

During the extensive community outreach for this plan, a clear set of values and priorities emerged. The San Lorenzo Valley community is interested in safely and comfortably accessing the town centers and the SLV Schools by foot and bicycle, and crossing the Highway safely with clear visibility. The community is interested in creating a more context-specific look and feel through amenities aligning with the rural character of the towns, such as wider sidewalks with seating and shade trees, smaller-scale lighting and warning devices, pedestrian refuge islands, increased amenities at transit stops, and designated space for bicyclists. Many of these features serve the dual purpose of increasing pedestrian and cyclist comfort while slowing vehicle speeds.

These values and priorities also align with the Guiding Principles for transportation in the Sustainable Santa Cruz County Plan, such as:

- Transportation Choices
- Open Space and Resource Preservation
- Unique Community Character
- Economic Vitality

The population of the San Lorenzo Valley is growing slowly and would benefit greatly from renewed investment in the safety and comfort of those walking, bicycling, driving, and using transit in their communities that also preserves the rural charm and character of the area.

2.2. Existing Corridor Conditions

Highway 9 is a regional corridor that stretches from Highway 17 (Los Gatos) to Highway 1 (Santa Cruz). It was built by carving into mountain sides, building bridges over rivers and traversing through groves of redwood trees. Highway 9 in Santa Cruz County serves as the "Main Street" for the unincorporated San Lorenzo Valley communities of Felton, Ben Lomond, Brookdale, and Boulder Creek, as well as the main shopping and service area for the communities of Mount Hermon, Zayante, and Lompico. Highway 9 is also the only continuous route providing access between these San Lorenzo Valley communities, and serves the SLV as the lifeblood for commerce, utility trips, tourism, and access to schools and emergency services. The corridor is characterized by a mix of commercial, residential, and educational land uses, two state parks, and other popular recreational destinations. There are approximately 3,000 K-12 students at schools along the corridor and businesses employing over 8,000 people.

Population: The population of the San Lorenzo Valley in 2017 (including Ben Lomond, Boulder Creek, Brookdale, Felton, Lompico, Zayante, etc.) is 23,934, a 3% increase over 2010. Since 2000, the population has been growing, though not uniformly across the community. Felton and

Ben Lomond in particular have grown fairly rapidly. See **Figure 2.1** below for Census population data.

Figure 2.1: Population Change by Census Designated Place

	2000 Census	2010 Census	2017 ACS*
Felton	1,051	4,057	3,671
Ben Lomond	2,364	6,234	6,923
Brookdale	1,777	1,991	2,490
Boulder Creek	4,081	4,923	4,359

Credit: U.S. Census - American Fact Finder, Note - American Community Survey (ACS) are estimates.

Travel to Work: A vast majority of workers in the San Lorenzo Valley commute to work by driving alone. According to the U.S. Census American Community Survey data, the percentage of drive alone commute trips is increasing, apart from Boulder Creek. Transit use is decreasing, apart from Boulder Creek. Rates of working from home are increasing across all towns. See **Figure 2.2** for a sample of the mode of transportation used for work trips.

Figure 2.2: Mode of Transportation to Work (Selection only, does not include all modes surveyed)

	Drive Alone (%)		Take Transit (%)		Work From Home (%)	
	2000 Census	2013-2017 ACS Est.	2000 Census	2013-2017 ACS Est.	2000 Census	2013-2017 ACS Est.
Felton	73.9	76.4	3.3	3.0	1.1	12.0
Ben Lomond	72.9	77.4	3.1	1.9	7.8	10.1
Brookdale	No data	77.2	No data	8.8	No data	10.1
Boulder Creek	72.6	67.0	2.0	3.5	5.8	13.8

Credit: U.S. Census American Community Survey (ACS)

The time it takes to get to work has also been generally increasing. Residents of Felton in particular saw a 122% jump in the amount of time it takes them to get to work since the 2000 census. This may be due to more residents commuting “over the hill” to jobs in Silicon Valley. See **Figure 2.3**: Travel Time to Work Change by Town, in minutes.

Figure 2.3: Travel Time to Work Change by Town, in minutes

	2000 Census	2013-2017 ACS Est.
Felton	16.4	36.4
Ben Lomond	32.5	36.8
Brookdale	No data	29.6
Boulder Creek	36.8	36.8

Credit: U.S. Census American Community Survey (ACS)

Daily traffic volumes: Highway 9 is used by over 16,000 vehicles between Ben Lomond and Boulder Creek and over 21,000 vehicles each day between Felton and Ben Lomond, with use bulging with tourism and special event traffic during summer months. (see **Figure 2.4**: Average Daily Traffic Volumes on Highway 9). In 2016, truck annual average daily truck traffic on Highway 9 at Graham Hill Road northbound was 1,045, southbound was 732; on Highway 9 south of Highway 236 in downtown Boulder Creek truck volumes averaged 628 northbound and 610 southbound each day.

Figure 2.4: Average Daily Traffic Volumes on Highway 9

Post Mile	Description – Highway 9 location	Daily Traffic Volume
5.64	FELTON, north of SAN LORENZO AVENUE	7600
6.46	FELTON, south of GRAHAM HILL ROAD	12,100
6.46	FELTON, north of GRAHAM HILL ROAD	20,800
8.11	BEN LOMOND, South of GLEN ARBOR ROAD	19,600
9.71	BEN LOMOND, SAN LORENZO RIVER BRIDGE	15,200
11.3	BROOKDALE, north of ALAMEDA AVENUE	11,400
13.04	BOULDER CREEK, south of SOUTH JCT. RTE. 236	12,000
13.24	South of BEAR CREEK ROAD	17,700
13.24	North of BEAR CREEK ROAD	10,700
20.86	North of WATERMAN GAP, NORTH JCT. RTE. 236	2800

Credit: Caltrans, http://traffic-counts.dot.ca.gov/

Figure 2.5: Average Daily Traffic Volumes on County Roads

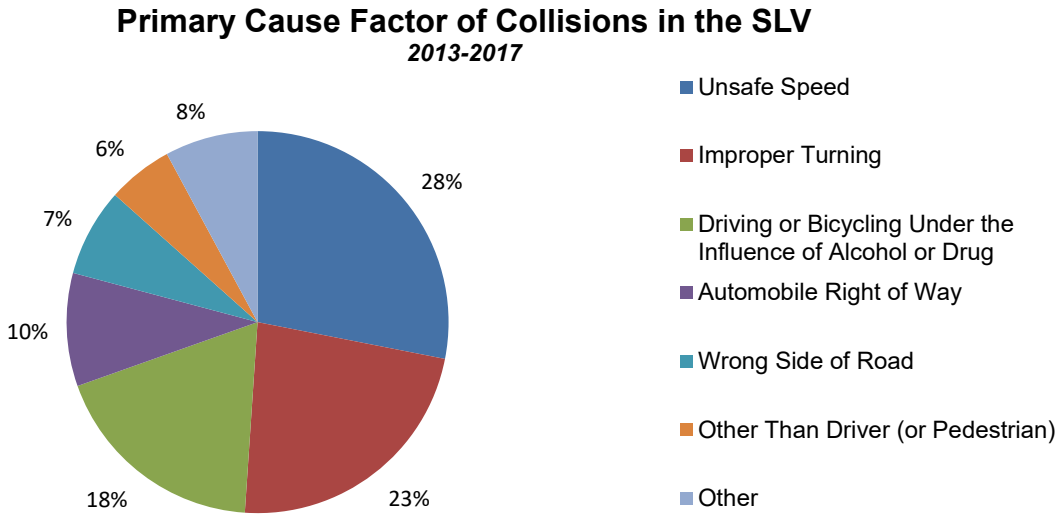
STREET	Between Cross Streets		Avg. Daily Traffic	*Count Date*
Bear Creek Rd	west of	Skyline Blvd	2,724	*Oct, 2010*
Felton Empire Rd	2301 Empire Grade	Krazy Acre Ln	2,079	*Jul, 2011*
Glen Arbor Rd	west of	Highway 9	4,337	*Jul, 2011*
Graham Hill Rd	Mt Hermon Rd	Lockewood Ln	6,749	*Jul, 2011*
Graham Hill Rd	Hwy 9	Mt Hermon Rd	27,896	*Feb, 2012*
Mt Hermon Rd	Graham Hill Rd	Railroad tracks	18,504	*Feb, 2012*
Quail Hollow Rd	Vista Robles Dr	E Zayante Rd	2,067	*Jul, 2011*

Credit: SCCRTC

Traffic choke points: While traffic volumes through the SLV are moderate compared to other state highways and major arterials in Santa Cruz County, during peak travel periods motorists regularly experience moderate to significant backups through the town centers, in front of SLV elementary, middle, and high schools (together referred to in this document as the SLV Schools Campus) just north of Felton, and at major intersections, including the Highway 9/Graham Hill Road intersection in Felton and Highway 9/Bear Creek Road intersection in Boulder Creek.

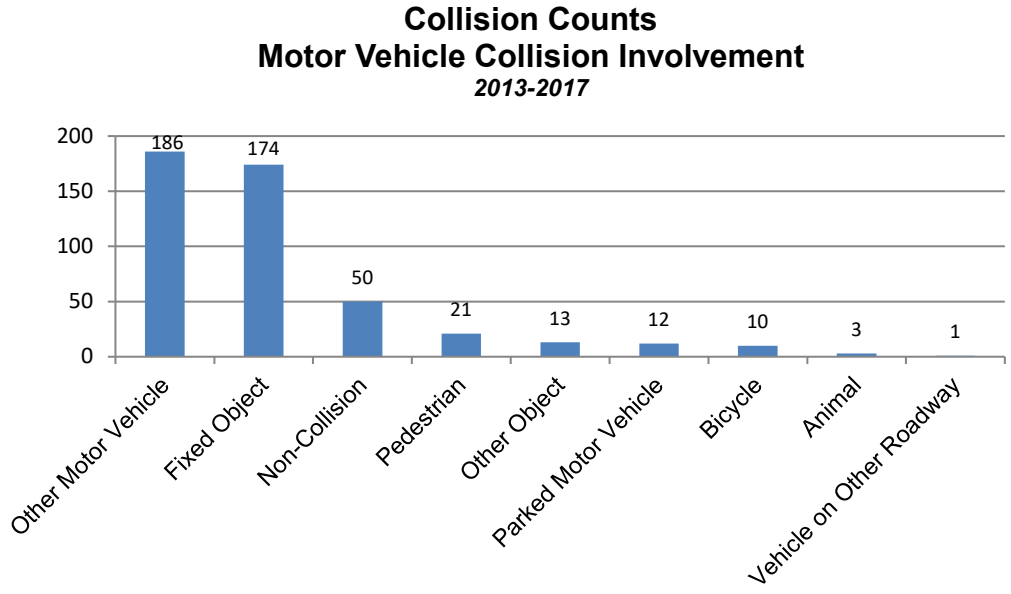
Collisions: California Highway Patrol (CHP) is responsible for traffic enforcement through the SLV, though officers are responsible for covering very large areas. There have been a number of significant collisions in the past decade in the SLV. Leading causes of injury and fatal collisions 2013-2017 involved unsafe speed or improper turning. (see **Figure 2.6**, Primary Causes of Collisions in the SLV). Residents are justly concerned about speeding on roadways throughout the SLV, especially near schools, residential, and commercial areas. The narrow curving right-of-way and close proximity to buildings, fences, and trees meant nearly 40% of all collisions 2013-2017 were “hit object” collisions, rather than a collision between two vehicles (see **Figure 2.7**, Motor Vehicle Collision Involvement). Impaired driving from alcohol or drugs is also a significant challenge.

Figure 2.6: Primary Causes of Collisions in the SLV



Credit: Transportation Injury Mapping System (TIMS), Safe Transportation Research and Education Center, University of California, Berkeley. 2019

Figure 2.7: Motor Vehicle Collision Involvement



Credit: Transportation Injury Mapping System (TIMS), Safe Transportation Research and Education Center, University of California, Berkeley. 2019

Pavement Condition: There is a significant backlog of pavement repairs on state highways and county roads. Roadways in the San Lorenzo Valley are regularly impacted by potholes, and during heavy rains, like those in winter 2017, can experience complete washouts. The average pavement condition of county roads is 50 or "fair-to-poor," on a 100-point pavement condition index. With over 600 miles of roads, 130 bridges, 25,000 traffic signs, and 66 miles of drainage culverts in unincorporated areas countywide, the County of Santa Cruz Public Works Department has been unable to maintain and resurface all local streets and roads.

Walking: While there are some pedestrian facilities (sidewalks, paths, and crosswalks) in town centers, the rural nature of the area has left most pedestrians outside of the town centers walking in dirt along the shoulders of Highway 9 and on local roads. Especially as more vehicles use the roads, more formalized separation of pedestrians is desirable. Many existing sidewalks in town centers are not compliant with the latest accessibility (American's with Disabilities Act - ADA) standards. Narrow roadways, pinched by hillsides, gullies, trees, walls and private improvements make construction of walking paths between town centers difficult.

Bicycling: While there are no dedicated bicycle lanes or paths along Highway 9 or local roads in the SLV, the highway is regularly used by bicyclists commuting through and between town centers, cyclists accessing parks, as well as recreational cyclists, sometimes traveling the entire length of Highway 9 from Santa Clara County/Saratoga to Santa Cruz. Where shoulders exist, cyclists often use that space, but are otherwise sharing the road surface with motorists.

Figure 2.8: Downtown Felton Looking North

Credit: SCCRTC

Transit: The SLV is served by three public bus routes, school buses, as well as paratransit services for seniors and people with disabilities offered by Santa Cruz METRO and Community Bridges Lift Line. Santa Cruz METRO's three bus routes have an average monthly ridership of approximately 40,000.

2.3. Preferred Roadway Cross Sections

There is a wide range of potential transportation improvements that have been considered for the redwood forest and river canyon setting of the San Lorenzo Valley on Highway 9 and connecting roads. What may be feasible or appropriate in the San Lorenzo Valley varies, especially given community character, topography, and right-of-way constraints along Highway 9, as discussed below and in Chapter 3 *Priority Projects by Location* and Appendix B *Identified Projects List.*

In addition to the recommendations for specific locations discussed in Chapter 3 *Priority Projects by Location*, this Complete Streets Corridor Plan provides a set of conceptual roadway improvement cross sections that can be implemented by Caltrans, County Public Works, RTC, or others as funding becomes available and/or other projects are implemented. These conceptual cross sections serve as a general guide for rural, commercial, and other area types to enhance complete streets features and include pedestrian and/or bicycle facilities, where appropriate, while improving safety and traffic flow for automobiles. Where feasible, especially in residential and commercial areas, bicycle and pedestrian facilities should be wider than minimum 4-foot standards to increase user comfort. Appendix A *Complete Streets Improvements Toolkit* includes more extensive examples of infrastructure options and corridor-wide priorities for autos, transit, bicycles, and pedestrians, as well as general safety improvements for all users.

a) Rural Cross Section: Wider Shoulders

Due to hillsides, trees, and other natural features, existing available shoulders for pedestrians and bicycles to use as a travel way, or for motorists to use as an emergency pull-out during a mechanical failure or traffic stop often fall far below Caltrans standard of 8 feet in the SLV, particularly in narrower sections of the SLV river canyon.

The current recommended minimum shoulder for rural sections of Highway 9 and Highway 236 is 4 feet per the Caltrans SR 9 Highway Concept Plan. Caltrans Highway Design Manual (HDM) Topic 307.3 and Caltrans Design Information Bulletin 79 state that during pavement resurfacing, restoration, or rehabilitation projects (2R and 3R projects), if existing shoulders do not meet certain minimum width requirements, the feasibility of widening is

Figure 2.9: Rural Cross Section with Wider Shoulders

Credit: TrailPeople, photo - Google Streetview

analyzed for inclusion in the project, especially if shoulder use by pedestrians and bicycles is common, which is true in most segments of the SLV project area. For the average daily traffic volumes bracket typical on Highway 9 throughout the SLV (6,001 – 18,000 vehicles per day), the Caltrans defined ideal minimum shoulder width is 4 feet, though 5- to 8-foot shoulders are preferable in the San Lorenzo Valley in segments used by pedestrians and cyclists. See **Figure 2.9** for an example cross section with shoulders widened to the Caltrans recommended minimum. Any future project on Highway 9 should strive to incorporate at least 4-foot shoulders.

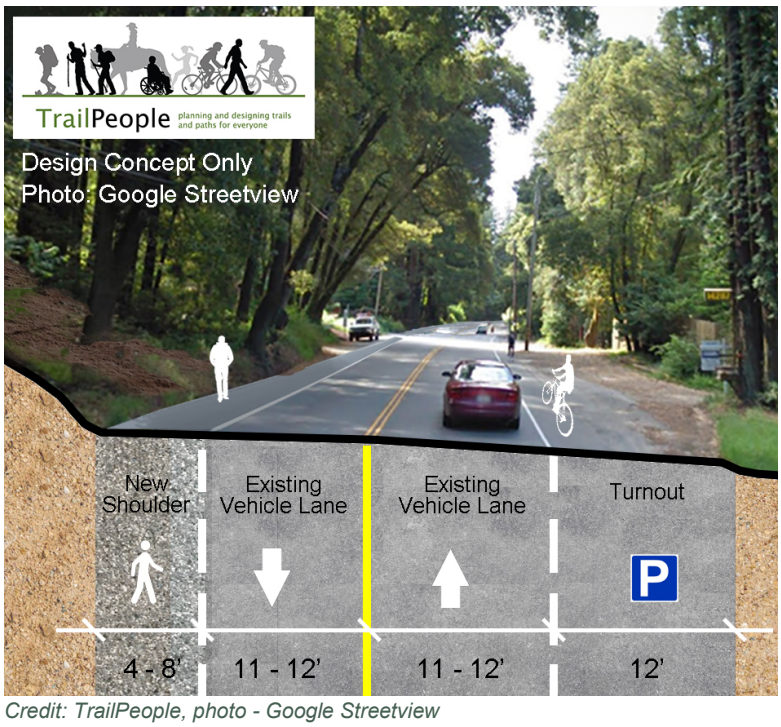
If the shoulders are not currently 4 feet, Topic 307.3 requires they be considered for widening to 8 feet during pavement projects. Highway 9 through the entire project area is slated to be repaved in the next 10 years through Caltrans' SHOPP maintenance program. While the best practice is always to have a consistent contiguous facility that meets minimum standards, because of terrain, environmental, and other constraints it is not feasible to widen shoulders to the recommended minimum at every location. When Caltrans projects are developed, opportunities are sought to enhance complete streets features.

Widening shoulders would require tree removal in many locations. Sections where wider shoulders are feasible without removal of mature trees should be prioritized. Shoulder widening which requires removal of mature trees should absolutely not be undertaken merely to standardize the highway cross section, but rather only where pedestrian and bicycle volumes and/or collision rates support wider shoulders. Where these or other constraints prohibit shoulder widening to the minimum, any shoulder widening that can be installed should be added, and any existing shoulder widths should not be reduced.

b1) Rural Cross Section: Enhanced Bicycle Access

Separating bicycle and auto traffic on Highway 9 throughout the SLV was identified as a priority by many community members (see *Priority C* in Section 2.4). Whenever a road construction project or new land development is undertaken on Highway 9, widening shoulders and/or striping for bike lanes should be considered. As appropriate, standard Class II bike lane striping or "sharrow" bicycle symbols with arrow markings (CAMUTCD Figure 9C-3) should also be augmented with dashed green bike lane markings where bike lanes cross intersections (FHWA MUTCD Interim Approval IA-14). Additional bicycle safety treatments, such a buffering, should be considered in width-constrained areas and around curves. See *Bicycle Facilities* toolkit options in Appendix A.

Figure 2.10: Rural Cross Section with Bicycle Access and Turnouts



Credit: TrailPeople, photo - Google Streetview

Community members indicated that even piecemeal shoulder widening or marked bike lanes on Highway 9 is preferable to the current lack of bicycle facilities on the corridor, especially whenever sections of the right-of-way along curves are rehabilitated or rebuilt due to slides. If segments of improved bicycle facilities are added at multiple locations as those locations are maintained, rebuilt, or updated for another project, corridor-wide bicycle facilities will improve over time, leaving more attainable gap closure projects instead of large, high-cost bicycle facilities projects.

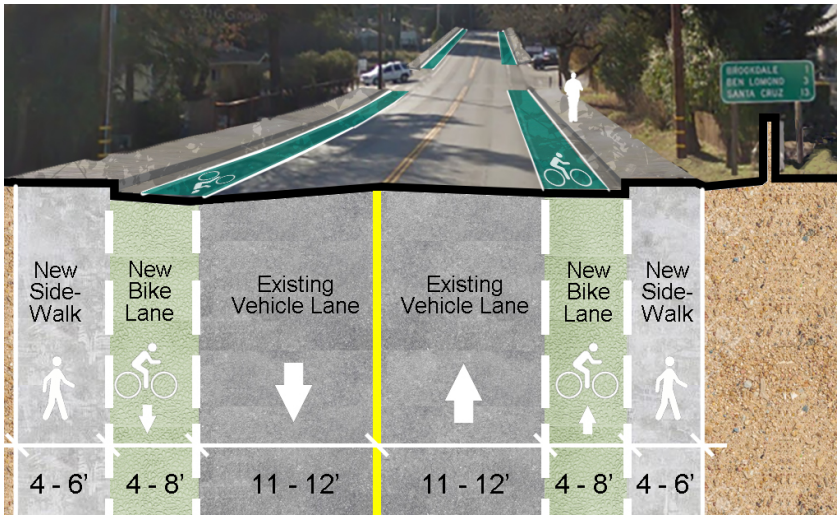
b2) Rural Cross Section: Turnouts

Community members also indicated more auto turnouts should be added on Highway 9 (see *Priority D* in Section 2.4), to provide space for passing slower moving or disabled vehicles, or for emergency vehicles. When moving beyond *Rural Cross Section: Wider Shoulders* or as sections of Highway 9 are rebuilt, this corridor plan supports the addition of marked turnouts in the project scope (see **Figure 2.10**).

c) Suburban Cross Section

In most areas immediately to the north and/or south of the town centers, existing conditions include a network of denser neighborhood streets intersecting Highway 9 that are within walking or biking distance of town centers. Wherever feasible in these denser zones, sidewalks and bike lanes should be added on Highway 9 (see **Figure 2.11**).

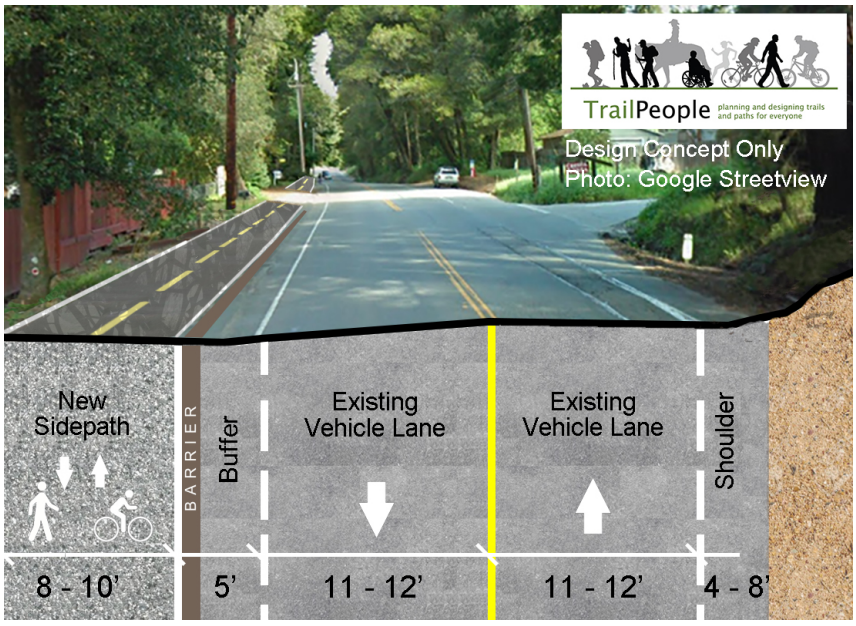
Figure 2.11: Suburban Cross Section



Credit: TrailPeople, photo - Google Streetview.

While **Figure 2.12** shows 4-foot-wide bicycle lanes and sidewalks, widths should be increased when feasible or adjusted to meet requirements of the *California Highway Design Manual (HDM).* The 2018 HDM states minimum Class II bike lane width shall be 4 feet, except where: adjacent to on-street parking, the minimum bike lane should be 5 feet; posted speeds are greater than 40 miles per hour, the minimum bike lane should be 6 feet; or on highways with concrete curb and gutter, a minimum width of 3 feet measured from the bike lane stripe to the joint between the shoulder pavement and the gutter shall be provided.

Figure 2.12: Cross Section with Sidepath



Credit: TrailPeople, photo - Google Streetview
Barrier width and type may vary to meet standards and available right-of-way

Where right-of-way is more severely constrained, more narrow vehicle lanes (11') and combined bicycle and pedestrian access could be provided via a Class I Multiuse Path (Caltrans HDM Topic 1003.1) or a sidepath, as defined in FHWA *Small Town and Rural Multimodal Networks*, Chapter 4-11. See *Pedestrian Facilities* and *Multiuse Facilities* toolkit options in Appendix A *Complete Streets Improvements Toolkit,* **Figure 2.12**, and **Figure 2.12b**. Sidepaths require less right-of-way width than a Class I Multiuse path, but they do require some separation from the adjacent roadway, which could include grade separation, earth, flexible posts, inflexible posts, inflexible barriers, or on-street parking.

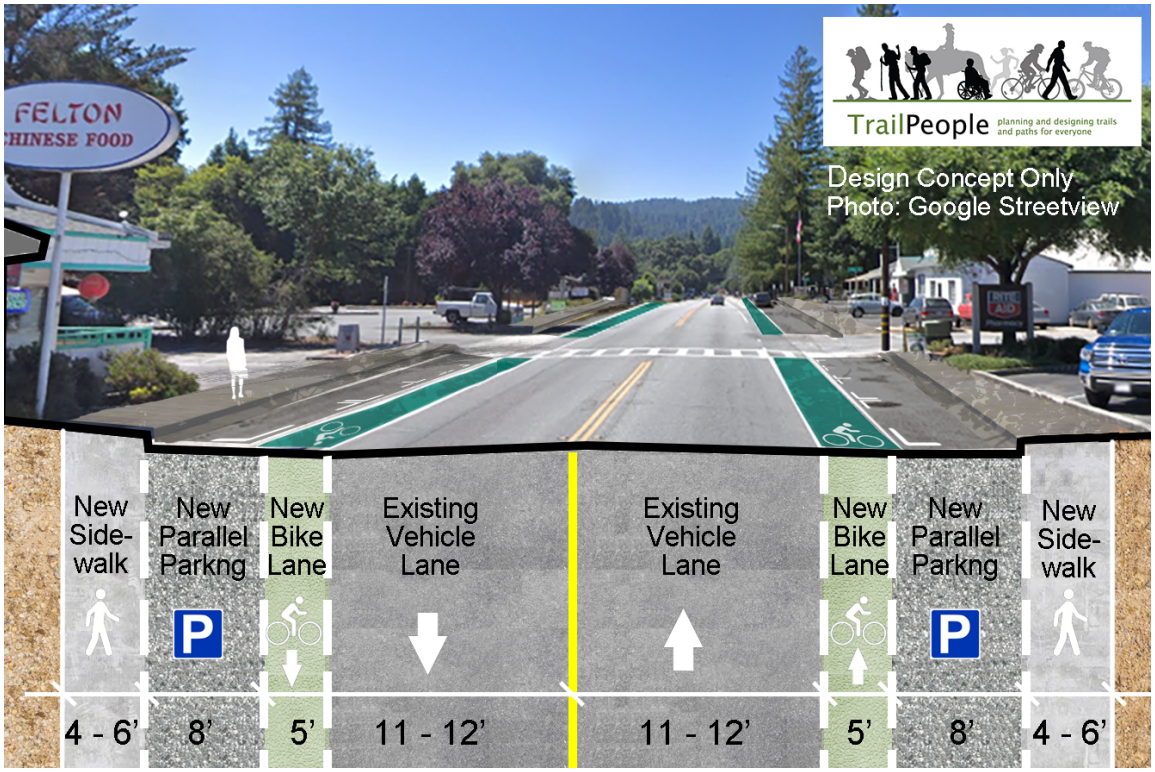
Figure 2.12b: Sidepath Lake Tahoe

Credit: FHWA

d) Town Center Standard Cross Section

In town commercial areas, the standard cross section includes transportation facilities that are essential for the economic vitality of local businesses. This includes sidewalks, crosswalks, pedestrian-scale lighting, bike lanes, transit stops, facilities that improve traffic flow such as turn lanes, as well as parallel parking wherever feasible with the town commercial areas (see **Figure 2.13**). See CAMUTCD Figure 3B-21(CA) for standard parallel parking stall dimensions, as well as *Auto Traffic Flow* toolkit options in Appendix A.

Figure 2.13: Town Center Standard Cross Section



Credit: TrailPeople, photo - Google Streetview

e) Town Center Enhanced Cross Section

In town center commercial areas where demand for parking is higher, this plan recommends that more detailed town center parking studies be conducted (see Projects 7, 16, and 24 in Chapter 3 *Priority Projects by Location*). Angled parking, which would allow more cars to be parked in a given block length, is one option that may be considered. CAMUTCD recently retracted language in Section 3B.19 prohibiting angled parking on state highways. "Main Street" commercial corridors on State Route 395 (Bridgeport) and State Route 16 (Esparto) have since successfully installed back-in angled parking. Back-in angled parking requires drivers to complete only the initial backing movement required for parallel parking, and allows the driver a better view of autos, bicycles, and pedestrians on the highway when exiting the parking stall. To improve traffic flow in high-demand town centers, a two-way center left turn lane (TWLTL) could also be added to the preferred cross section where appropriate or feasible. See **Figure 2.14** and *Auto Traffic Flow* toolkit options in Appendix A.

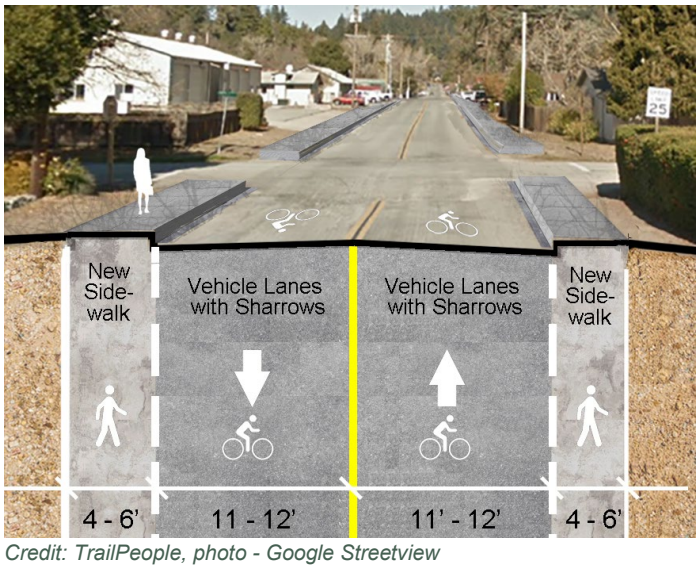
Figure 2.14: Town Center Enhanced Cross Section

Credit: TrailPeople, photo - Google Streetview.
Modified designs may include a cycle-track, with bicycle lane next to sidewalk rather than vehicle lane

f) Suburban Neighborhoods Streets

Suburban neighborhood streets that are maintained by the County of Santa Cruz should follow the design guidelines in the Santa Cruz County Design Criteria. For denser suburban streets close to the town centers, this cross section should include sidewalks, as well as bicycle lanes or sharrows on roads identified as bicycle routes (see **Figure 2.15**).

Figure 2.15: Suburban Neighborhood Street Cross Section

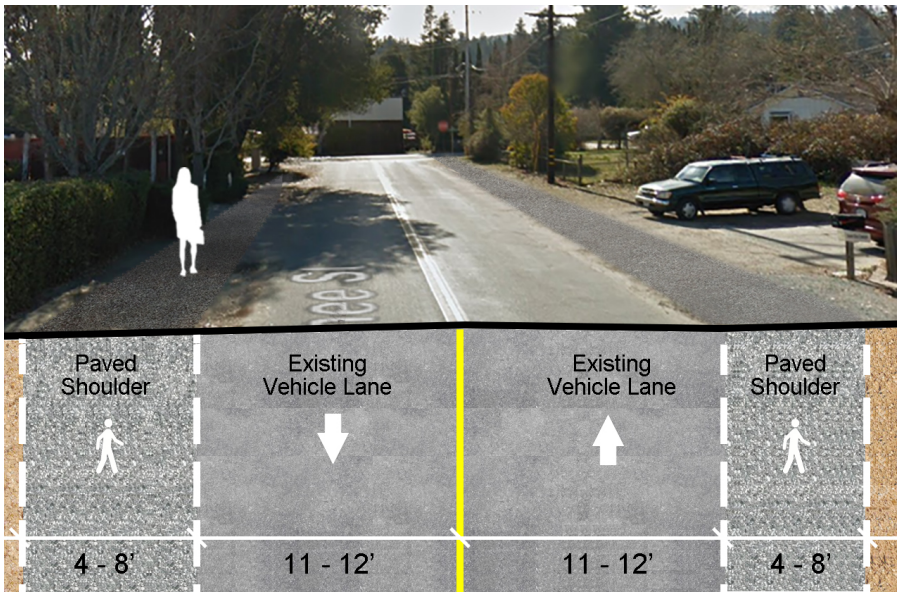


Credit: TrailPeople, photo - Google Streetview

g) Rural County Roads

Rural roads that are maintained by the County of Santa Cruz would follow the design guidelines in the Santa Cruz County Design Criteria. While there is insufficient space or limited community interest in more urban bike and pedestrian facilities on most roads in less densely populated areas, in areas where bicycle and pedestrian space is still desirable, this cross section would include paved shoulders (see **Figure 2.16**).

Figure 2.16: Rural County Road Cross Section



Credit: TrailPeople, photo - Google Streetview

2.4. Corridor-wide Priorities

Evaluation of corridor conditions, review of prior studies, and public input received during Phase 1 all contributed to the identification of 34 priority projects. This section discusses seven of these, which are overarching priorities that are applicable throughout the entire San Lorenzo Valley study area (see Section 1.1 *Plan Area*). Chapter 3 *Priority Projects by Location* describes projects 1 through 28, which include transportation infrastructure recommendations in specific locations. See also **Figures 2.21 - 2.24** at the end of this chapter for an overview of the location of improvements included in Projects 1 – 28.

Corridor Priority A – Safety Measures: Reduce Speeding, Reduce Collisions, and Improve Safety for All Users in the SLV Corridor

Reducing collisions and improving safety for people driving, walking, biking, and riding buses is one of the highest priorities in the San Lorenzo Valley. With excessive speed found to be a primary factor in many traffic collisions in the San Lorenzo Valley in the last 10 years of TIMS data, this plan proposes methods to reduce collisions and speeding through the San Lorenzo Valley. This could involve implementing safety "countermeasures," including speed reducing or traffic calming treatments, especially at locations where vehicles are entering areas with higher pedestrian and bicycle use (including popular pedestrian crossings), town centers, major intersections, or areas with concentrations of parking. Currently, posted speed limits are lower in town centers and near schools, however posted speed limits are not consistently followed.

Figure 2.17: Priority A – Slow Traffic to Ensure Posted Speed Limits are Followed

Credit: SCCRTC

Traffic calming features to slow speeding vehicles to the posted speed limit, such as narrowed lanes, curb extensions ("bulb-outs"), and pedestrian island refuges, could be used in conjunction with town gateway signs to indicate change from rural to urban character and encourage speed reduction.

As Brookdale has no stop control, gateway signs (including speed limit sign and flashing beacon) are included as a priority in Project 20. This type of treatment could be installed at the

north and south entrances to all four towns, as well as key east/west entrances through commercial areas such as Highway 236 near the Country Club and downtown Boulder Creek. Increased CHP enforcement is also recommended throughout the San Lorenzo Valley.

Where appropriate, radar speed feedback signs could supplement or replace the flashing beacons adjacent to the last speed limit sign before entering each of the towns. Flashing beacons and radar feedback signs would require installation per CAMUTCD guidelines. See *Auto Safety* and *Crossing Facilities* toolkit options in Appendix A, Sections 2 and 4. Speed feedback signs or trailers located within Caltrans right-of-way typically require an encroachment permit. CHP has one operational radar trailer that is being utilized around the county, with the help of CHP Senior Volunteers.

Additional treatments or countermeasures that could be considered through the SLV include a variety of FHWA and Caltrans identified countermeasures:

- Reduce and enforce speed limits; including reducing speed limits in towns and business districts (e.g. reduce from 30 mph to 25 mph in Ben Lomond and Brookdale), and farther north and south of the SLV Schools complex in Felton. Reducing speed limits may require changes to state vehicle codes (see Appendix A, Section 2.10 for more information on speed limit requirements)
- Roadside barriers (e.g. guardrails, cable barriers, concrete barriers) to reduce crash severity, especially at curves and along embankments
- Slope flattening to reduce steepness of side slopes
- Widening shoulders
- Enhanced signing and pavement markings, especially at intersections and other potential conflict zones
- Enhanced delineation treatments (e.g. pavement markings, post-mounted delineation, signs with enhanced retro-reflectivity, dynamic advance curve warning signs) and increased pavement friction (especially for wet conditions)
- Milled shoulder and center line rumble strips to alert drivers when they are crossing into the shoulder or other lane, with gaps for bicycles
- Vegetation removal/trimming to increase visibility
- Pedestrian and bicycle facilities
- Public education to reduce distracted and impaired driving

Center line rumble strips alert drivers when they are crossing the centerline

Credit: Wikipedia

Appendix A of this document, the Caltrans *Strategic Highway Safety Plan* (SHSP), as well as Caltrans and FHWA traffic safety documents and websites include additional information about potential safety countermeasure treatments.

Reducing speeding and improving safety throughout the San Lorenzo Valley was determined to be a high priority project based on collision history, public support, anticipated use, geographic distribution, and benefits associated with safety, bike/pedestrian access, economy, and sustainability goals.

Corridor Priority B – SLV Corridor Transit and Travel Demand Management

This project seeks to increase transit options and infrastructure along Highway 9, as well as explore additional options to reduce travel demand and single occupant vehicle use in the SLV. Upgrades to transit stop facilities are also included in location specific projects 8, 10, 11, 12, 13, 14, and 22 in Chapter 3. This project covers transit improvements to the rest of the SLV.

Bus Stops: Addition of concrete pads, benches, shelters, and bicycle parking should occur at bus stops wherever feasible, particularly at stops with higher ridership. Due to heavier rainfall levels in the SLV, the longer-term goal would include making shelter amenities standard at every bus stop. Bus stop upgrades could require modifications to landscaping and grading, as well as widening or repaving. A preliminary assessment of transit stops with higher METRO onboarding/offboarding numbers that currently have minimal amenities and should be considered a priority for full amenity upgrades include:

- Glen Arbor & Hermosa (Glen Arbor, Stop ID 1458)
- Highway 9 & Larkspur (Brookdale, Stop ID 1553)
- Highway 9 & Monaco Ln (Boulder Creek, Stop ID 2600)
- Highway 9 & Pool Dr (at Mountain Store, Stop ID 1678)

Transit Service:

- Increase the frequency of fixed-route transit service in the San Lorenzo Valley, particularly in the evenings and on weekends.
- Maintain school bus service.
- Maintain and expand paratransit service for seniors and people with disabilities.
- Explore alternative transportation service models such as microtransit and community transit in any future analysis of transit improvements in the SLV.

While ridership on METRO route 35/35A is around the average for the system (excluding UCSC routes), areas of the SLV that are not immediately adjacent to the segment of Highway 9 between Graham Hill Rd and Boulder Creek are hard to access via transit – especially due to the current lack of sidewalks and bike lanes. Large service areas with low housing density, such as most areas in the SLV not directly adjacent to Highway 9, are difficult to serve efficiently with fixed-route service and often result in large fixed-route buses running empty to serve a few transit dependent community members. Alternative transportation service models, such as microtransit, may be more feasible for more rural areas and should also be explored in any future analysis of transit improvements in the SLV.

Microtransit is a form of “Demand Responsive Transit.” This technology-enabled transit service offers flexible routing and/or flexible scheduling of minibus vehicles. Microtransit typically combines real-time matching of demand (trips), on top of an in-advance matching, which extends the accessibility of the transit service. Possible pick-up/drop-off stops are usually pre-defined to allow better routes' optimization. Partnerships with ride-hailing companies (Uber, Lyft, etc.) can also be explored as an option for the “first mile/last mile problem” of connecting final destinations or homes to transit stops, or as an option for areas without transit service.

Community members have also expressed interest in expanded services (fixed route, microtransit, or paratransit) to specific locations, including added service from downtown Felton neighborhoods to SLV Schools and Ben Lomond, service to Lompico and Zayante, service north to Mountain Store, and up Highway 236 to Country Club and Big Basin State Park; development of a SLV circular (route that remains within the SLV and doesn't return to Santa Cruz for each departure); and a commuter bus with service connecting to Caltrain stations in the South Bay Area (Saratoga, Cupertino, Sunnyvale) to reduce congestion. Suggestions also included integrating METRO's fare system with the Bay Area's single fare payment system (Clipper card).

Paratransit: ParaCruz (operated by Santa Cruz Metro) and Lift Line (operated by Community Bridges) are key providers of local paratransit transportation services in the SLV. Paratransit transportation services typically operate on flexible routes and/or provide demand-responsive service and are most frequently used by elderly and disabled passengers unable to take fixed-route transit. Generally, vans, small buses, or taxis are used to provide this service. ParaCruz provides service to origin and destination locations within 3/4 mile of a METRO bus routes for eligible riders. Because ParaCruz and Lift Line are unable to serve some remote areas of the SLV, the Santa Cruz Volunteer Center's Transportation Program is an opportunity for volunteers to provide services to SLV residents.

Travel Demand Management – Carpool, vanpool, and other programs: Increase outreach and education about carpooling, vanpooling, and other transportation system management programs. The RTC's Cruz511 program provides a range of commute and traveler services, including information and assistance to people looking to form carpools and vanpools. The RTC and local non-profits also are available to assist businesses and schools in implementing commute programs. To reduce congestion around the SLV Schools campus, school administration should work with the RTC, METRO, parent groups, and transportation non-profits to develop a travel demand management plan for school site drop off and pickup.

See *Transit and Travel Demand Management* toolkit options in Appendix A for additional information on potential travel demand management tools.

This project was determined to be a priority project based on very high public support, safety, bike/pedestrian, sustainability, anticipated use, geographic distribution.

Figure 2.18: Priority B - Improving Infrastructure and Increasing Options for Transit

Credit: SCCRTC

Corridor Priority C – Bicycle Facilities or Separated Paths on Highway 9 and Highway 236

This project seeks to create bike lanes and/or separated paths throughout the entire project area on Highway 9 and Highway 236 over the long term. Initially, Class II bike lanes would be prioritized in the town center areas of Felton, Ben Lomond, and Boulder Creek, which have a potential for higher use, as described in Projects 3, 5, 7, 8, 9, 10, 11, 12, 16, 17, 24, 26, and 28. Where right-of-way widths are not sufficient to support separated bicycle and pedestrian facilities, such as connecting the SLV Schools Campus to Felton, a Class I multiuse path or FHWA sidepath design may be substituted for bike lanes. Some sections initially determined to potentially require this alternative multiuse design are described in Projects 2, 9, 11, 12, 13, and 15.

Beyond the town center areas, whenever slides or slipouts necessitate a viaduct or other major rebuild of the Highway 9 or Highway 236 right of way, reconstruction projects should reference the preferred cross section widths and schematics shown in *Rural Cross Section: Bicycle Access and Turnouts* in Section 2.3 in order to include wider shoulders that provide space for bicyclists where feasible.

Where there is insufficient room for bike lanes or wider shoulders in both directions, and especially at curves, it is recommended to widen and add a bike lane on the uphill direction if feasible, and stencil sharrows, and post signs reminding drivers that “bikes may use full lane” and of 3-foot minimum when passing on the downhill direction. Even if shoulders cannot be striped as bicycle lanes, any increase in shoulder width would be beneficial to cyclists.

Shared bicycle and pedestrian facilities such as a Class I Multiuse Path or FHWA Sidepath may be more appropriate where right-of-way widths are more severely constrained. Because cyclists traveling longer distances should not be encouraged to cross the road multiple times, sharrows and “bikes may use full lane” signage should also be installed on the opposite side of the roadway from the path.

Figure 2.19: Priority C – Bicycle Facilities on Highway 9

Credit: SCCRTC

The community has indicated that intermittent wider shoulders or bike lanes are preferable to rebuilding highway segments without space for bicycles, as they create an opportunity for more bicycle facility connections and gap closure to be incorporated into future designs. Feasibility of bike lanes on Highway 9 and Highway 236 would be analyzed on a case-by-case basis. See the 2006 *SLV Trail Feasibility Study,* and *Bicycle Facilities* and *Multiuse Facilities* toolkit options in Appendix A.

Once bicycle facilities are in place, rental bicycle/bikeshare and electric bicycle programs may be a way to reduce private automobile trips and meet first-last mile connections to transit.

Additional systemwide bicycle facilities identified as priorities include: bicycle boxes and green lanes at intersections and driveways, as well as bicycle parking in towns, other commercial areas, and at transit stops.

This project was determined to be a priority project based on very high public support, bike collisions, safety, bike access, sustainability, travel time, and anticipated use.

Corridor Priority D – Increase the number of turnouts along Highway 9

This project priority would increase the number of clearly marked, paved, formal turnouts on Highway 9.

Existing turnout opportunities outside of town areas are unmarked and informal, and typically not paved. Turnouts help create better traffic flow on meandering two-lane highways in steep sloped terrain. Where possible, turnouts should be sufficient for transit buses, bulldozer carriers, water tenders, and semi-trucks. Fire departments and/or CalFire should be consulted regarding fire water turnouts. Most sections of Highway 9 outside of towns have embankment, tree, utility, and drainage constraints that preclude easy installation of formal turnouts. Addition of turnouts to larger reconstruction projects after slides and slipouts should be considered to ease traffic flow. Feasibility of turnouts at a given location would be analyzed on a case-by-case basis.

This project was determined to be a priority project based on high public support, safety, and travel time.

Corridor Priority E – Pedestrian Crossing Safety, Lighting, and other Visibility Improvements

In addition to slowing vehicle speeds throughout the SLV, corridor-wide pedestrian safety measures include visibility improvements such as pedestrian-scale lighting at existing crosswalks and at intersections where pedestrians may attempt to cross without a marked crosswalk, and other crosswalk safety improvements.

Tall, urban-style LED or similar streetlights should be avoided as they conflict with the existing character of the towns. Double-acorn lampposts, such as the lampposts previously installed in Boulder Creek, are pedestrian-scale and a more appropriate style to enhance rural character. These types of installations are typically sponsored by a local agency under a Caltrans encroachment permit.

The river corridor and redwood forest of the SLV is home to many nocturnal species, and evening darkness should be preserved outside of the town centers to the extent this does not conflict with crossing safety. The guidelines of the International Dark Skies Association (IDA, darksky.org) should be consulted when lighting projects are planned. Pedestrian-scale lighting design should direct light downward toward roads, and potentially be motion-activated. Installation of new lighting could require new utilities and conduit, and have potential landscaping, grading, and right-of-way impacts.

Due to the low light typical of the redwood forest understory, the addition of daytime headlight sections in narrow, dark areas of the SLV along Highway 9 should be explored to provide additional auto visibility and safety. This could be considered starting south from Paradise Park through Boulder Creek, with daylight headlight signs northbound in Paradise Park, northbound and southbound in Felton, and southbound in Boulder Creek. Creating a daytime headlight

section requires traffic investigation and consultation with local CHP. *See Appendix A Section 2.4.*

If additional midblock crossings are ever installed, or at crosswalks with high pedestrian use or a history of collisions, Rectangular Rapid Flashing Beacons (RRFBs) with appropriate signing are also recommended to improve pedestrian visibility. For midblock crossings within the current scope of this plan see Projects 4 and 13, which include upgrades to existing midblock crossings. Creation of new midblock crossings on state highways are not typically supported by Caltrans.

Safety while crossing Highway 9 and other roads in the project corridor was a top priority for the community, as reflected in the inclusion of crosswalk visibility upgrades in Projects 2-5, 8, 11-16, 18, 20, 22, 23, 27, and 28. However these are not the only crossing locations that would benefit from enhanced visibility and safety features, and future projects should seek to improve the safety and visibility of nearby crosswalks whenever feasible, potentially through the lighting and RRFBs mentioned above, but also by installing high visibility ladder striping, signage, and advance stop line "sharks teeth."

This project was determined to be a priority project based on public support, bike/pedestrian collisions, safety, bike/pedestrian, and transit.

Corridor Priority F – Roadway Maintenance

Maintaining roads is one of the highest priorities for the San Lorenzo Valley. This includes regular roadway repairs, pavement maintenance, roadway restoration and restriping, bridge repairs, sidewalk maintenance, roadway landscaping, tree and brush trimming, vegetation removal, culvert maintenance and storm water drainage, paving turnouts, and other projects needed to maintain transportation infrastructure in a state of good repair.

Figure 2.20: Maintenance and Emergency Preparedness

Credit: Santa Cruz County Department of Public Works

Caltrans is responsible for maintenance of state highways (e.g. Highway 9, Highway 236 and Highway 35).

The County of Santa Cruz Public Works Road Maintenance unit is responsible for maintenance of County roads. The County's Road Operations Engineering section of the Transportation Division regularly updates the County's maintained roads listing and the Pavement Management Program. Roadways are prioritized for maintenance and resurfacing through the Capital Improvement Program and Pavement Management Program. Ideally, regular maintenance, like clearing culverts, street-sweeping, and filling potholes would occur on an ongoing basis, with surface treatments applied every 5-7 years; however, due to funding shortfalls (the County's resurfacing budget has been about 1/10th of what is required to keep up and its maintenance crews have been significantly reduced), many of the streets have

not been resurfaced in 30 years. Measure D and Senate Bill 1 have provided some additional funding, though the backlog of repairs is extensive. In addition to county-maintained roads, there are several privately maintained roads throughout the SLV, which are typically maintained through neighborhood homeowner associations.

Examples of maintenance projects that are planned (as of 2018) include:

- Highway 9 repaving (full length) – est. construction 2023-2026
- Highway 9 storm water drainage/sustainability projects (full length) – est. 2019/23 (CT#05-1F920 and 05-1G950)
- Highway 9 restriping (timing TBD)
- Highway 9 PM 4.0 (South of Glengarry Road). Construct sidehill viaducts, restore roadway and facilities, provide erosion control. Construction 2022 (CT#05-1K120).
- Highway 9 at PM 10.8 permanent damage repair – est. FY2021/22 (CT#05-1K060)
- Highway 9 at PM 11.0 Major emergency damage repairs in 2018 (CT#05-1J400)
- Bridge replacements at Highway 9 at Kings Creek Bridge (PM 13.6) and at (PM 15.5) – est. 2021/22 (CT#05-1H470)
- Highway 9 at PM 15.0 (near Spring Creek Road). Construct soldier pile retaining wall, restore roadway and drainage facilities, and install permanent erosion control measures. Construction 2020 (CT#05-1K140)
- Highway 9 PM 20.0 - 1.1 miles south of Highway 236. Construct tieback wall, restore roadway and drainage facilities, and install permanent erosion control measures. Construction 2021 (CT#05-1K130)
- Highway 236 Drainage upgrades full length est. FY2025/26

Corridor Priority G – Emergency Preparedness and Resiliency

In addition to keeping the transportation network maintained in a state of good repair, ongoing emergency preparedness and resiliency, especially as it relates to a changing climate, is essential. More severe winters with heavier rainfall, as well as prolonged dry spells exacerbating erosion and fire danger, can create transportation infrastructure hazards, including significant roadway closures. Culvert maintenance and other projects that improve drainage, removal of dead or otherwise dangerous trees, and hillside reinforcement are all strategies to mitigate climate's effect on key transportation infrastructure.

In the event of a major storm, fire, or other emergency, the corridor would benefit from a better emergency warning system to alert drivers of potential hazards or detour and evacuation routes, especially when roadway closures or other natural disasters occur. Dynamic LED signs activated by Caltrans or the CHP, low frequency advisory radio messages, or other ways to alert motorists to changing travel conditions are recommended to ensure access and safety. As an evacuation route, the corridor could benefit from solar powered, photocell-controlled lighting sufficient for reduced visibility conditions, such as smoke or heavy rain, and signage (lit where feasible) with "Nameoftown #miles" at key intersections that are visible at point where vehicle is deciding on lane to select for them.

The Santa Cruz County Office of Emergency Services prepares hazard mitigation and emergency management plans that include the San Lorenzo Valley. The County of Santa Cruz

planning department also has prepared the *Climate Action Strategy*. These documents include vulnerability assessments and outline county efforts, goals, and additional strategies and actions which should be implemented to minimize hazards. Santa Cruz County Office of Emergency Services (OES) should work with CHP, Santa Cruz County Fire Chief's Association, Cal Fire "CZU" Felton Area, volunteer fire districts in the SLV, Santa Cruz City Fire Department, and the Santa Cruz County Sheriff's Department, and should regularly meet and update emergency management plans.

This project was determined to be a priority based on public support, safety, sustainability, and geographic distribution.

Figure 2.21 Automobile Priority Projects Overview

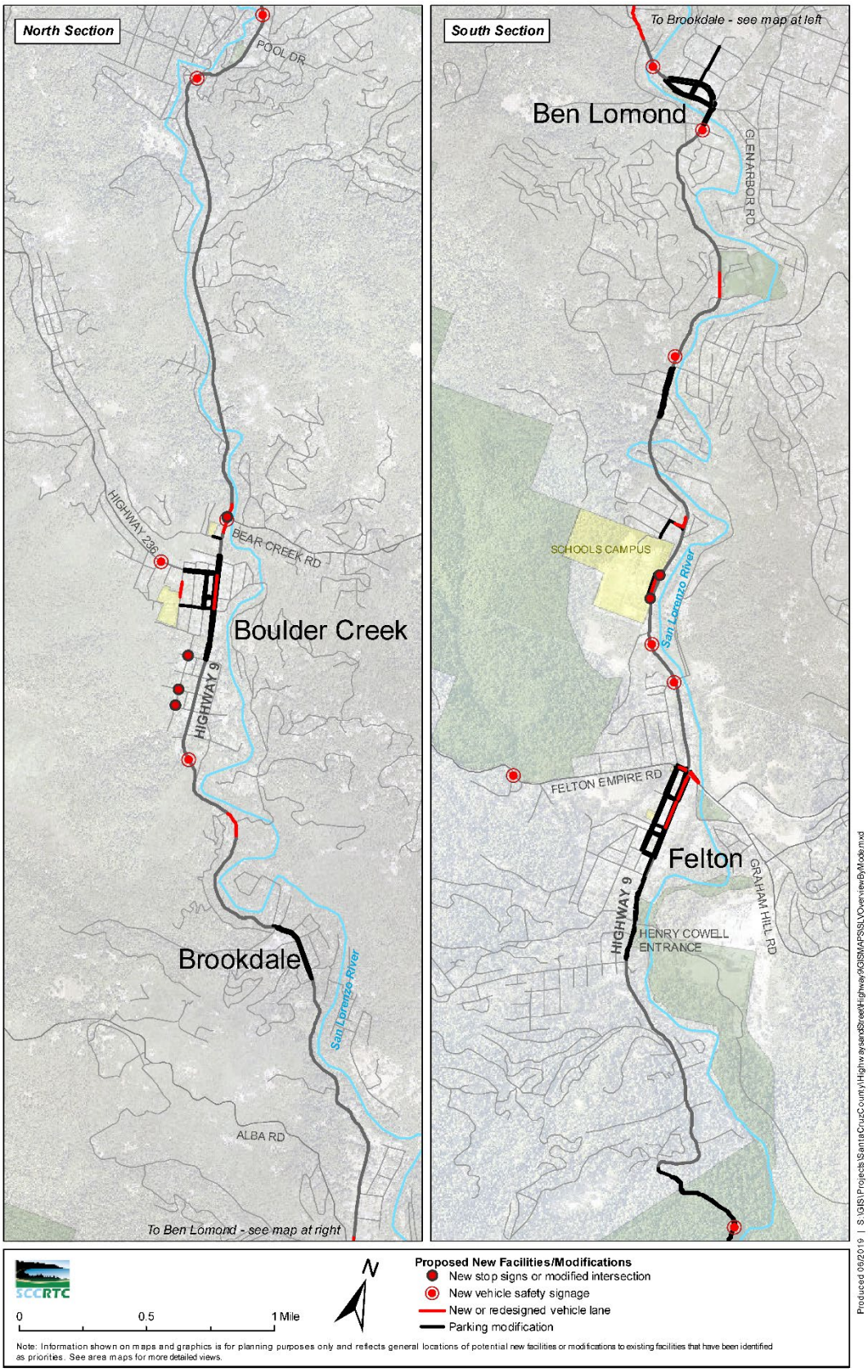


Figure 2.22: Pedestrian Priority Projects Overview

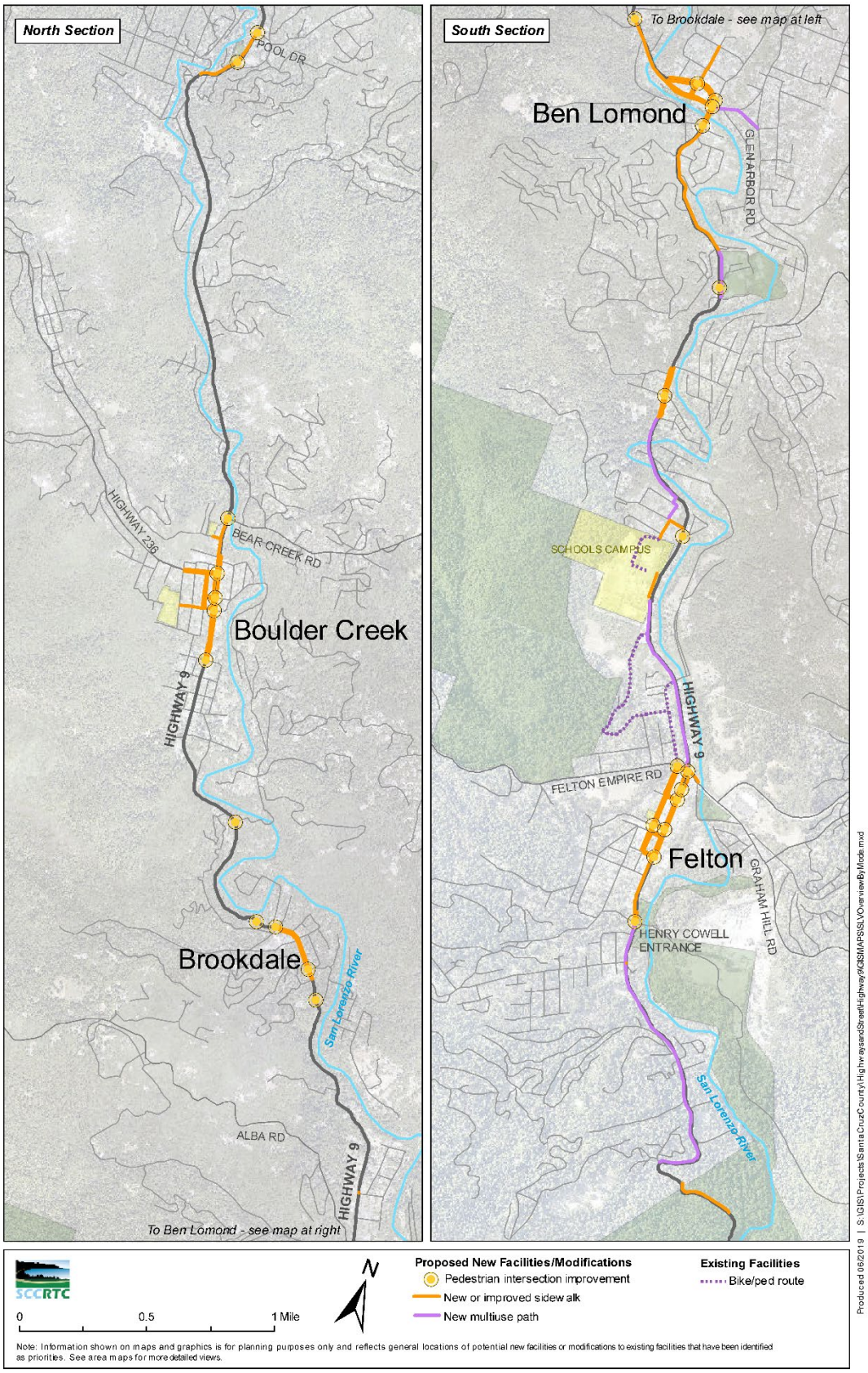


Figure 2.23: Bicycle Priority Projects Overview

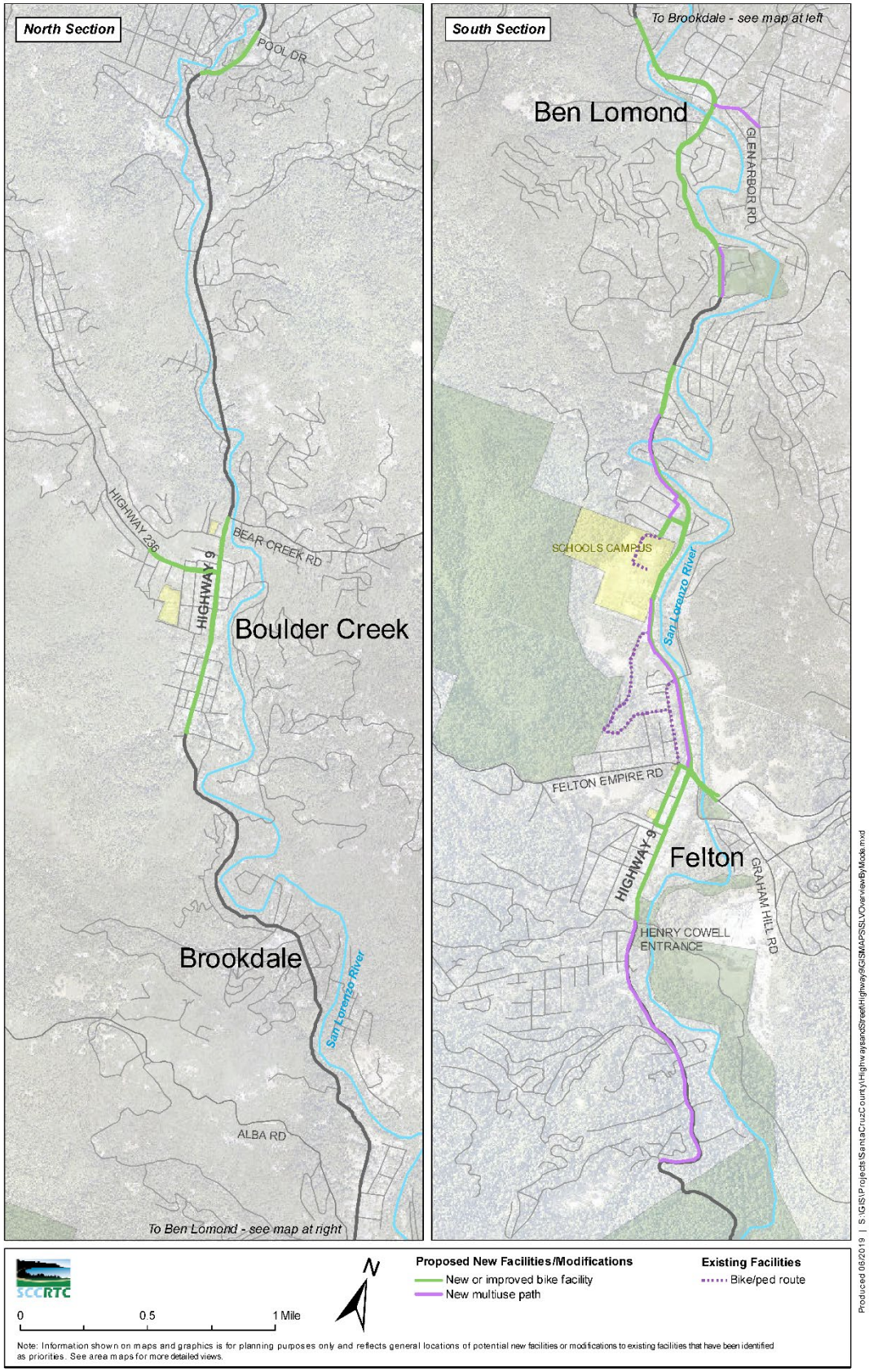
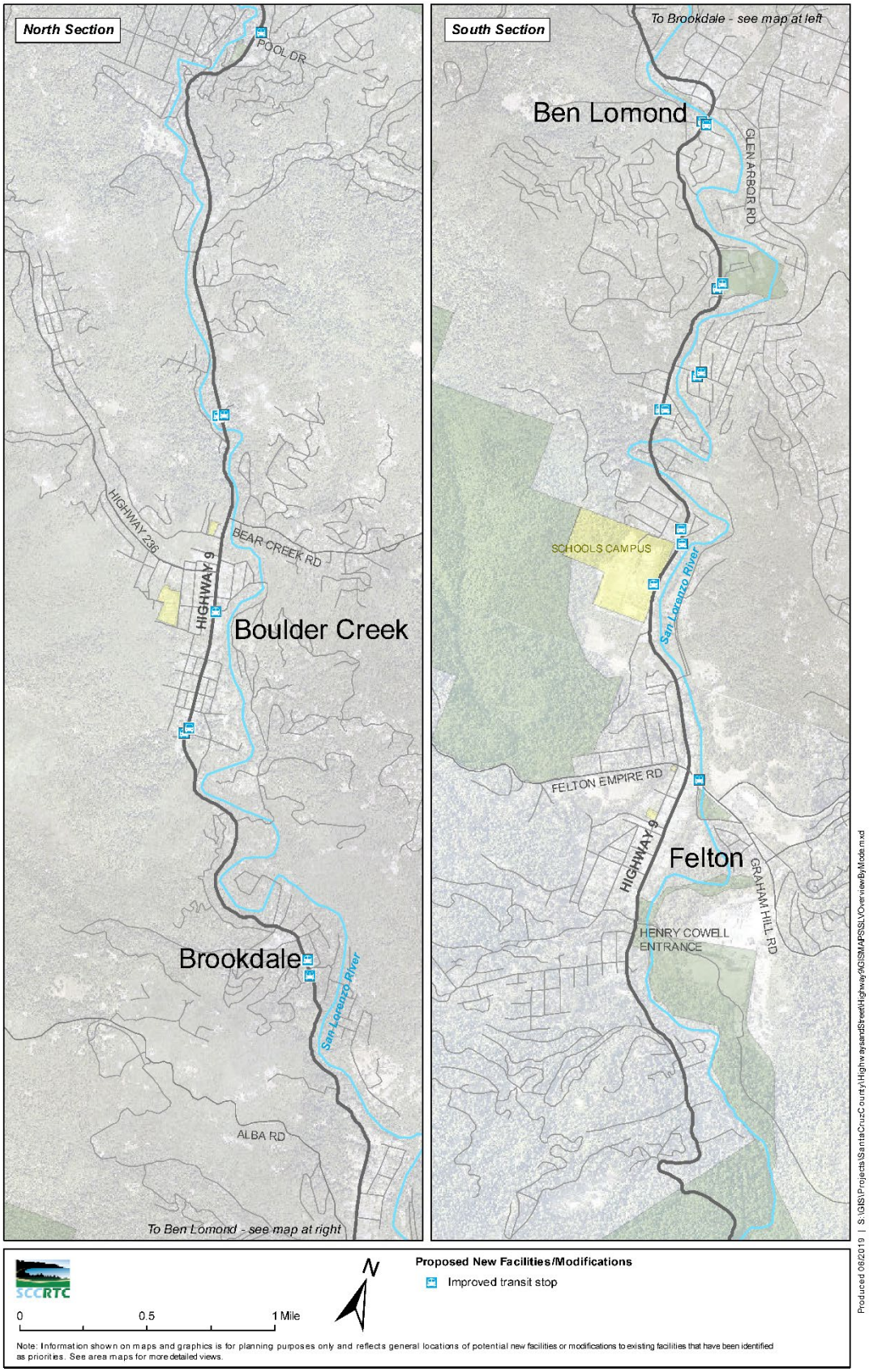


Figure 2.24: Transit Priority Projects Overview



3. Priority Projects by Location

A primary goal of the Highway 9/San Lorenzo Valley Complete Streets Corridor Plan (Highway 9/SLV Corridor Plan) is to create an actionable short-term and longer-term multi-modal plan that addresses key transportation challenges in the San Lorenzo Valley and provides a vision for the corridor in the future. Community members, public agencies, and stakeholder groups have identified hundreds of challenge areas and project ideas for the corridor (see Appendices B, D, and E), with 7 corridor-wide and 28 location specific potential transportation improvements and concepts identified as priorities along the Highway 9/San Lorenzo Valley Corridor from Henry Cowell State Park in Felton to the northern junction of Highway 9 with Highway 236.

The priority project concepts were developed based on:

- Evaluation of existing corridor conditions (including collision data, traffic volumes, land uses);
- Physical and regulatory constraints;
- Goals, objectives, and evaluation measures established for this planning effort (see Chapter 1 *Introduction* and Chapter 4 *Implementation Plan*);
- Challenges and project ideas identified by over 600 participants in surveys and at public meetings from 2017 to 2019;
- Priorities identified in past planning efforts;
- Input from focus groups of key stakeholders for the towns, schools, and overall corridor; and,
- Public input on the draft Highway 9/SLV Corridor Phase 1 Report (2017) and draft plan (2019).

While some preliminary analysis has been done regarding possible designs and constraints for these project concepts, projects would undergo subsequent analysis for feasibility and impacts when implementation is pursued. As funding becomes available and projects are implemented, they would then undergo formal environmental review and design engineering. Information on how well each project addresses safety, mobility, and other objectives for the corridor, as well as the recommended plan for implementation of priority projects in the near, short, medium, and long term is described in Chapter 4 *Implementation Plan*.

Location-specific priority projects are presented here in a roughly south-to-north format, beginning at the southern end of the planning area where Highway 9 (State Route 9) enters Henry Cowell State Park south of Felton. In addition, corridor-wide Priorities A – G in **Section 2.4 *Corridor Wide Priorities*** represent broader corridor-wide goals to be enacted throughout the SLV and are not limited to particular physical locations.

Feasibility considerations and potential constraints for each project are outlined briefly in this chapter. Right-of-way (ROW) constraints/impacts (the potential need for easements, encroachment permits and/or to purchase land next to the current right-of-way to have room to build the project), bridge reconstruction, and retaining wall reconstruction are among the most difficult and/or expensive to address.

For descriptions of specific infrastructure options (such as two-way center turn lane (TWLTL), sidepath, bulb-out, etc.) included in these projects, as well as federal and state guidelines for design of these improvement options, see **Appendix A *Complete Streets Improvements Toolkit.***

In addition to these priority locations and project concepts, **Appendix B *Identified Projects List*** contains a consolidated list of over 800 ideas that public agencies and community members have identified for the corridor. A map of these challenge areas is available online at: *http://arcg.is/1nnW95*. This more exhaustive list of transportation improvements is expected to be considered by Caltrans, the County of Santa Cruz, Santa Cruz METRO, RTC, and other project sponsors as maintenance, new development, and other projects are implemented along the corridor.

To guide future improvements beyond the priority projects, **Section 2.3 *Preferred Typical Cross Sections*** also defines preferred cross sections with Complete Streets features for a variety of land use densities. The 2006 *SLV Trail Feasibility Study* identifies a more comprehensive list of proposed locations and analysis of future bicycle and pedestrian facilities, including options to provide bicycle and pedestrian connections from Felton to Santa Cruz, which is outside the scope of this study.

Transportation conditions occurring through the San Lorenzo Valley are quite variable and complex. Each section of this chapter contains an overview of transportation conditions for areas around each town and the SLV Schools Campus and maps of proposed infrastructure changes.

Additional overview maps focused on vehicular conditions are included in **Appendix F *Existing Corridor Conditions*.** They include information about traffic volumes, collisions, existing signals and crosswalks, and significant local facilities and destinations such as schools, parks, commercial centers, and the denser residential neighborhoods. Appendix F also includes maps showing existing bicycle and pedestrian connectivity and barriers and information on potential space and constraints to accommodate bicyclists and pedestrians on Highway 9.

3.1. Felton

Existing Conditions

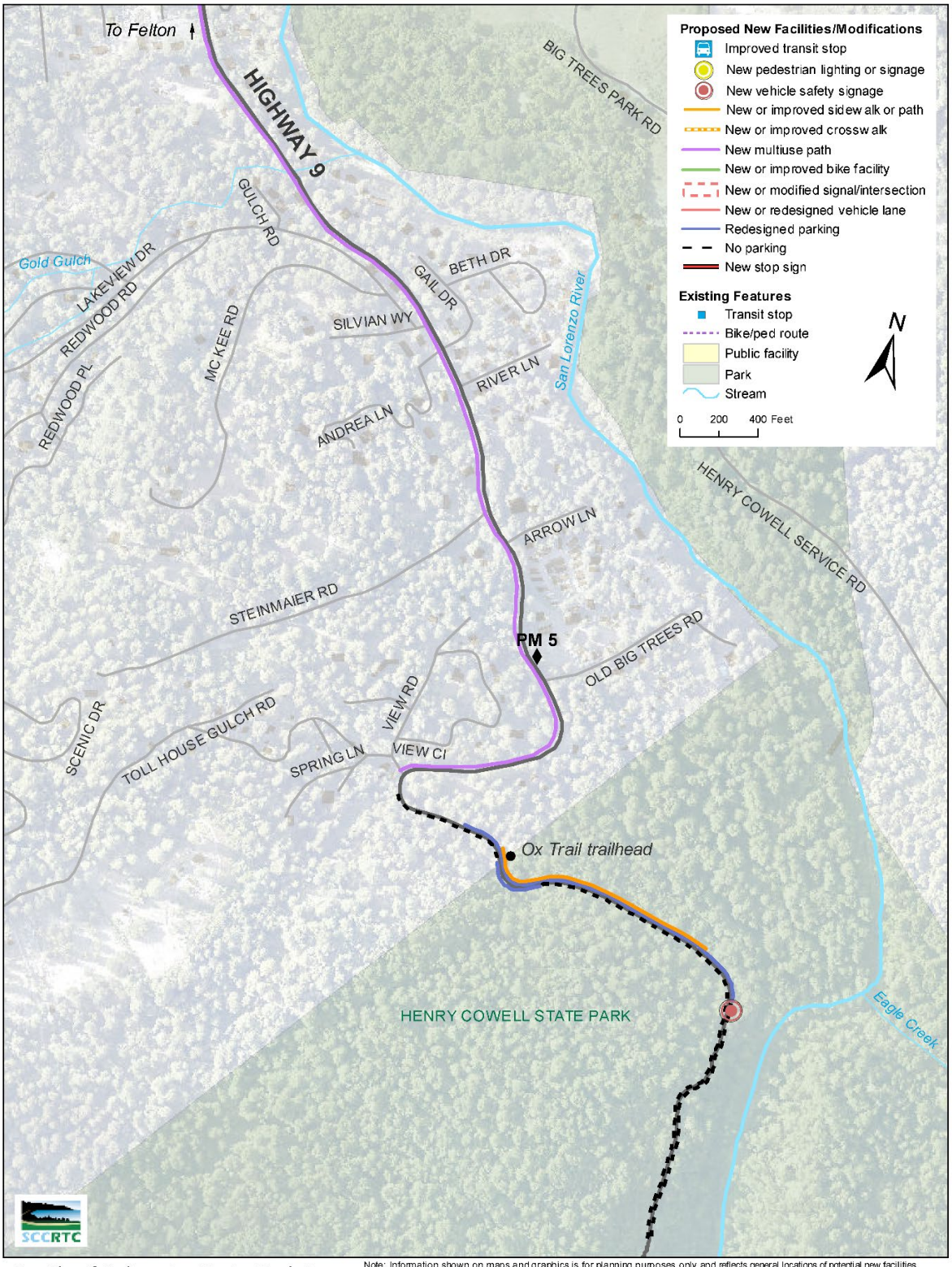
South Felton, Henry Cowell State Park Boundary to Big Trees Park Road. This segment is rural and suburban in character. It begins at approximately Highway 9 Post Mile 4.6 where the highway leaves Henry Cowell State Park land and ends at the main Henry Cowell State Park entrance road (N Big Trees Park Rd). A sharp curve near Glengarry Rd presents serious slope and tree constraints. Then the highway enters flatter terrain in a residential area where there is generally room to widen the highway or create a separate path, but not both. The significant constraints include trees, fences, utility poles, and on the west side, embankments and drainage ditches. Cars often park along the shoulders of Highway 9, especially to access the State Park. Traffic volumes drop significantly south of Redwood Dr and the main Henry Cowell State Park entrance. Santa Cruz METRO bus route 34 primarily serving students from Lakeview Dr to the San Lorenzo Valley schools, operates just twice a day. This segment has average daily traffic volumes of approximately 6,300 vehicles.

Central Felton, N Big Trees Park Road/Redwood Drive to Graham Hill Road. This segment (3300 feet) is straight and in relatively flat terrain. The southern half is primarily residential, while the northern half includes the central business district of Felton. Highway 9 generally has adequate shoulders for bicycles but is not currently striped for bike lanes. Pedestrian access is informal and discontinuous, with barriers created by trees, fences, utility poles, and signs. Much of the commercial area is continuously paved, with parking areas and driveways merging with each other and the highway shoulder, leaving no clearly designated space for pedestrians. Santa Cruz METRO bus route 34, primarily serving students from Lakeview Dr to the San Lorenzo Valley schools, operates just twice a day. This segment has average daily vehicle traffic volumes of approximately 7,600 (near Redwood Dr) to 12,000 (south of Graham Hill Rd).

Priority Projects

Priority projects for Felton are mapped and described on the following pages.

Figure 3.1: South of Felton to State Park Area

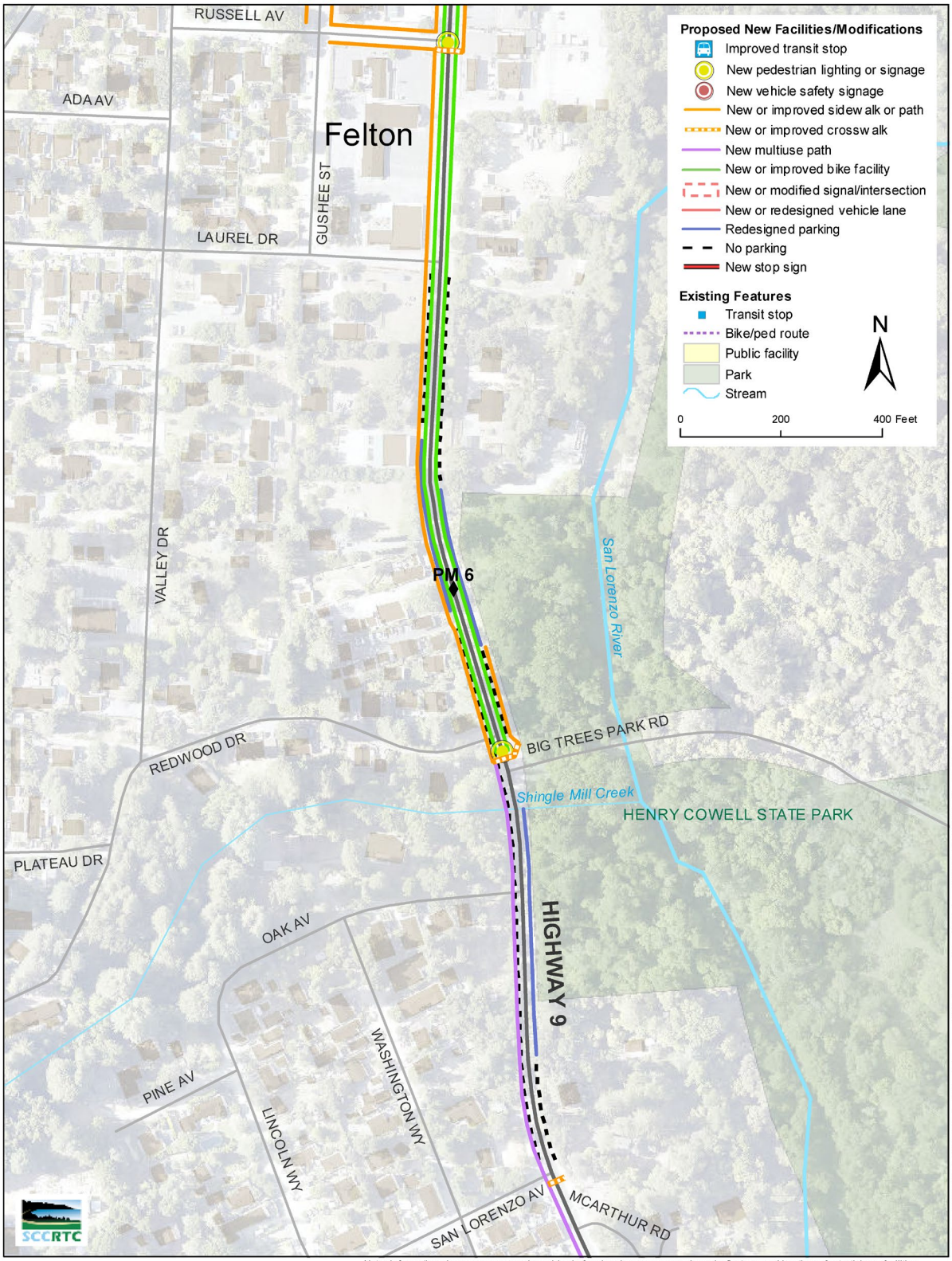


South of Felton to State Park Area

Note: Information shown on maps and graphics is for planning purposes only and reflects general locations of potential new facilities or modifications to existing facilities that have been identified as priorities. These are not engineering level, exact locations. A more expansive list of ideas is included in the Appendix. Most existing facilities (e.g. sidewalks) not shown on maps will remain.

Credit: SCCRTC

Figure 3.2: South Felton Area

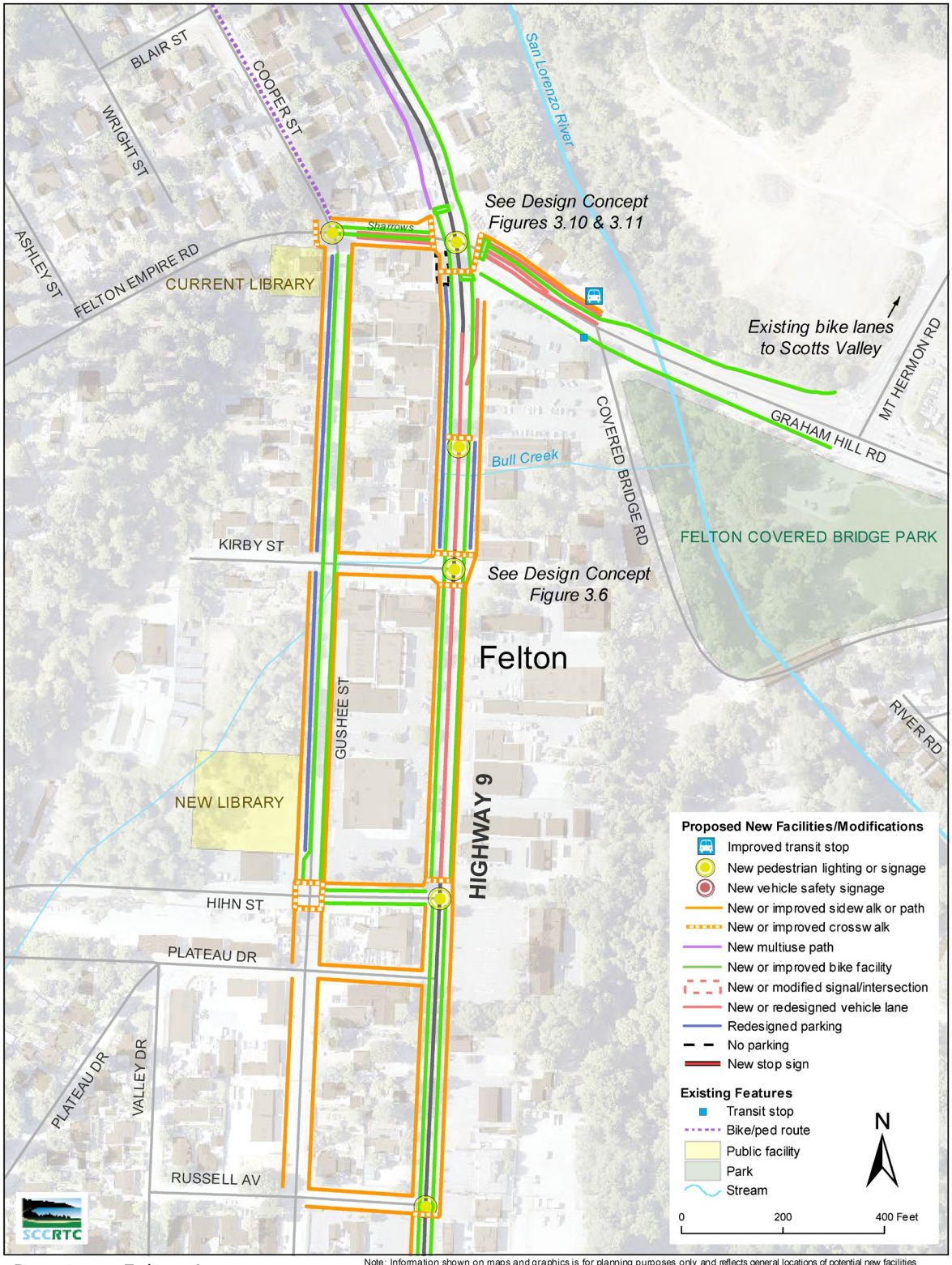


South Felton Area

Note: Information shown on maps and graphics is for planning purposes only and reflects general locations of potential new facilities or modifications to existing facilities that have been identified as priorities. These are not engineering level, exact locations. A more expansive list of ideas is included in the Appendix. Most existing facilities (e.g. sidewalks) not shown on maps will remain.

Credit: SCCRTC

Figure 3.3: Downtown Felton Area



Downtown Felton Area

Note: Information shown on maps and graphics is for planning purposes only and reflects general locations of potential new facilities or modifications to existing facilities that have been identified as priorities. These are not engineering level, exact locations. A more expansive list of ideas is included in the Appendix. Most existing facilities (e.g. sidewalks) not shown on maps will remain.

Credit: SCCRTC

Project 1 – Henry Cowell State Park Access and Parking

This project seeks to evaluate and formalize parking and pedestrian facilities on Highway 9 for safer access to Henry Cowell State Park, both at the main entrance near Redwood Dr and the "Garden of Eden"/Ox Trail parking area just south of Glengarry Rd.

Figure 3.4: Existing Parking Outside Henry Cowell State Park

Credit: SCCRTC

Modifications that would be considered as part of this project include:

- At both the main Henry Cowell State Park and Ox Trail entrances, install parking signs to delineate acceptable parking areas on Highway 9 where existing space outside of the travel way for parked cars is 9 feet or greater.
- Formalize current parking into striped parking stalls wherever feasible, possibly utilizing brightly painted timbers in lieu of painting stripes or paving on State Park property, as described in Appendix A Section 1.1 *Parking.*
- Install "No Parking" signs at 200 – 400-foot intervals for the necessary distance north and south of Redwood Dr/ Highway 9 and north and south of the Ox Trail Parking Lot, wherever formalized parking is not feasible.
- Add signage clarifying that angled parking is illegal on shoulders and clarifying "no parking" areas. "No parking" and parking rules would need to be supported by a Santa Cruz County local ordinance.
- Construct sidepaths connecting formalized parking spaces to their respective park entrances (see Appendix A Section 6.3 *Sidepath*). At the main State Park entrance near Redwood Dr these paths may be combined with the pedestrian facilities in Project 3.
- Pave and stripe parking stalls on Ox Trail lot. Pedestrian access for Ox Trail lot and on west side of Highway 9 at Henry Cowell main entrance could require paving of shoulder.
- Restripe the roadway to define travel way limits, consider narrowing travel lanes to 11-foot lanes and adding pedestrian crossing warning signs on Highway 9.

Currently, vehicles are parked haphazardly on the shoulders of Highway 9, as visitors park their vehicles to access the State Park along blind turns or partially within the vehicle travel lane. This section of Highway 9 currently has narrow paved shoulders less than four feet wide and there are no designated bicycle facilities in the project area. There are limited opportunities on Highway 9 to widen the road or install a consistent pathway due to trees, utility poles, drainage ditches, and embankments next to the travel way. A crosswalk is located at Redwood Dr, but it is does not connect to any pedestrian facilities and there are no other pedestrian facilities further south in the project area.

Possible Alternative Improvements: A crosswalk at Ox Trail Parking Lot connecting formalized parking on the west side of Highway 9 (if any) to the Ox Trail trailhead was proposed during the

process, but this project would likely be rejected during the engineering analysis of crosswalks due to the blind curve and lack of an adjacent intersection. Parking on shoulders could also be formalized by paving the shoulder areas and striping parking spaces.

Possible Feasibility Considerations: Project components feasible, existing shoulder width and grade varies. Access and parking will need to be considered and addressed in coordination with State Parks.

Project 2 – Southern Felton Neighborhood Bicycle and Walking Paths

This project would extend pedestrian and bicycle facilities on Highway 9 to the neighborhoods south of the Felton town center. If necessary, the modifications could be incrementally phased in tiers, as funding opportunities become available.

- **Tier I:** Expand pedestrian and bicycle facilities south along Highway 9 from the main entrance of Henry Cowell State Park and Redwood Dr to the school bus stop just past San Lorenzo Ave (in front of the Big Foot Museum). Potentially add a new crosswalk near San Lorenzo Ave, though the feasibility of this location will require additional analysis due to the existing crosswalk at Redwood Dr one block north.
- **Tier II:** Extend the facilities from San Lorenzo Ave to Lakeview Ave and the Forest Lakes neighborhood.
- **Tier III:** Extend facilities through to Glengarry Rd and the end of the populated area.
- Bicycle and pedestrian facilities would need to cross over Shingle Mill Creek in Tier I and Gold Gulch Creek in Tier II. Current bridges would need to be widened or exclusive bike/ped bridges would need to be built.
- In the interim period before work begins on this project, consistent tree trimming in this segment, particularly between Redwood Dr and Oak Dr, would improve line of sight for motorists and increase safety for pedestrians and bicycles.

This section of roadway currently has narrow paved shoulders less than 4 feet wide and there are no designated pedestrian or bicycle facilities in the project area. There are limited opportunities to widen this section of Highway 9 or install a consistent pathway due to trees, utility poles, fences, drainage ditches, and embankments next to the travel way.

For this narrow section of highway, a FHWA-defined multiuse “sidepath” configuration is proposed, see Appendix A Section 6.3 *Sidepath*. A sidepath is proposed for the western side of Highway 9, pending further study, due to the higher number of residences on the western side of the highway. The vehicle lanes could need to be shifted east to accommodate the sidepath.

Possible Feasibility Considerations: Roadway section between Redwood Dr/Henry Cowell and Glengarry Rd is constrained and would require extensive grading, as well as tree removal and bridge construction or reconstruction. Access and parking need to be considered, coordinated and addressed with State Parks. Sight distances will need to be evaluated for any crosswalks in the area.

Project 3 – Henry Cowell State Park to Downtown Felton Pedestrian and Bicycle Connection Improvements

This project would create pedestrian and bicycle connections on Highway 9 from the Felton town center to the Henry Cowell State Park entrance near Redwood Dr and improve the existing crosswalk at the park entrance.

Improvements that would be considered as part of this project include:

- Widen shoulders to at least four feet to provide space for pedestrians (see Chapter 2 Section 2.3A *Rural Cross Section: Wider Shoulders*), and additionally or alternatively create a separate trail or sidepath on the west side of Highway 9 from the Russell Ave intersection (and the sidewalks in Project 6), extending south to the Redwood Dr crosswalk at the park entrance. If the path proposed in Project 2 is built on the east side of Highway 9 instead of the west side as currently proposed, the path from Russell to the park entrance should also be on the east side.
- Add bike lanes from Laurel Dr (and the bike lanes in Project 7) to the Henry Cowell entrance
- Improve the crosswalk providing access to the Park Entrance/Big Trees Park Rd near Redwood Dr (walkways from crosswalk to Oak Ave and south included in Project 2). This may include moving current crosswalk south to the center of the park entrance, out of a vehicle blind spot, and restriping the crosswalk with high-visibility ladder striping, all of which is under evaluation as part of a successful Fall 2018 Highway Safety Improvement Program (HSIP) grant.

  A Rectangular Rapid Flashing Beacon (RRFB) or similar low-profile pedestrian activated flasher, bulb-outs, and/or pedestrian refuge island to shorten the crossing distance for pedestrians and to narrow and slow traffic as vehicles approach Felton could also be evaluated, though initial analysis indicates visibility distances are not sufficient for an RRFB. Narrowing of vehicle travel lanes and slowing of vehicle traffic at this location using bulb-outs would be complemented by similar facilities at the Pool Dr intersection north of Boulder Creek (see Project 28) to create a “gateway” effect at either end of the more populated Felton to Boulder Creek core segment of the San Lorenzo Valley slowing vehicles from speeds reached in the more rural, unpopulated segments.

The project area currently has uneven shoulders and drainage ditches along both sides of Highway 9 adjacent to the travel way north of N. Big Trees/Park Entrance to Laurel Dr. There are currently no formal pedestrian facilities other than the Redwood Dr crosswalk in the project area. Current paved shoulders are less than 4 feet wide and there are no designated bicycle facilities in project area. Many vehicles are also regularly parked haphazardly on both shoulders (see Project 1).

The current location of the crosswalk to access Henry Cowell State Park requires pedestrians to wait to cross on a blind corner next to a steep embankment on the west side of Highway 9. Many pedestrians currently jaywalk on the south side of the intersection where the shoulder of Redwood Dr lines up with the Henry Cowell State Park entrance rather than use the existing crosswalk. Initial analysis indicates that in order to move the crosswalk south, the guardrail of the bridge over Shingle Mill Creek and the embankment must be shifted to accommodate a paved pedestrian landing. There is currently very limited space in this area due to bridges, guardrails, embankment, and utility poles. Bulb-outs and a pedestrian refuge island would require drainage improvements. Pedestrian and bicycle paths may require new paved shoulders or other paved areas.

Possible Feasibility Considerations: Guardrail at Shingle Mill Creek could require relocation to improve Redwood Dr crosswalk. Existing dirt paths behind guardrails along Highway 9 do not meet standards. Room for pedestrian landings at either end of crosswalks is limited. Concrete box culvert under Highway 9 south of the park entrance constrains width of road and shoulders. In order to provide access to trail on south side of N. Big Trees Rd (Henry Cowell entrance), an additional crosswalk could be considered across N. Big Trees Rd, though the park entrance is

currently very wide. Truck and bus turning radius will need to be considered at bulb-outs. State Park access and parking need to be considered, coordinated and addressed with State Parks.

Project 4 – Downtown Felton Crosswalks

This project seeks to improve pedestrian crossings in Downtown Felton on Highway 9, including the addition of bulb-outs, high-visibility ladder striping and other safety and visibility improvements at each crossing of Highway 9 listed below.

- The existing midblock crossing between Graham Hill Rd and Kirby St at the Wild Roots Grocery Store
- Kirby St, including new crosswalk at the north leg of intersection if determined feasible
- Hihn St
- Possibly Russell Ave, see Alternative Improvements

Installation of double-acorn style pedestrian scale lighting on the shoulder at Felton crosswalks and other locations is described in *Corridor Priority E* (Chapter 2 Section 2.4).

Figure 3.5: Existing Midblock Crossing Outside Wild Roots Market

Credit: SCCRTC

Additional safety features that may be considered for the existing midblock crossing at Wild Roots include:

- Pedestrian refuge island (in center turn lane, see Project 4),
- Rectangular Rapid Flashing Beacon (RRFB) or similar low-profile pedestrian activated flasher, and
- Analysis of moving the existing midblock crossing approximately 20 feet south to allow a space cushion between the crosswalk and vehicles turning left out of the Wild Roots parking lot.

A Preliminary Concept Design for upgrades to the existing mid-block crossing at the Wild Roots grocery store and crosswalk improvements at Kirby St is shown in **Figure 3.6**. The midblock crosswalk was identified in a successful 2018 HSIP grant.

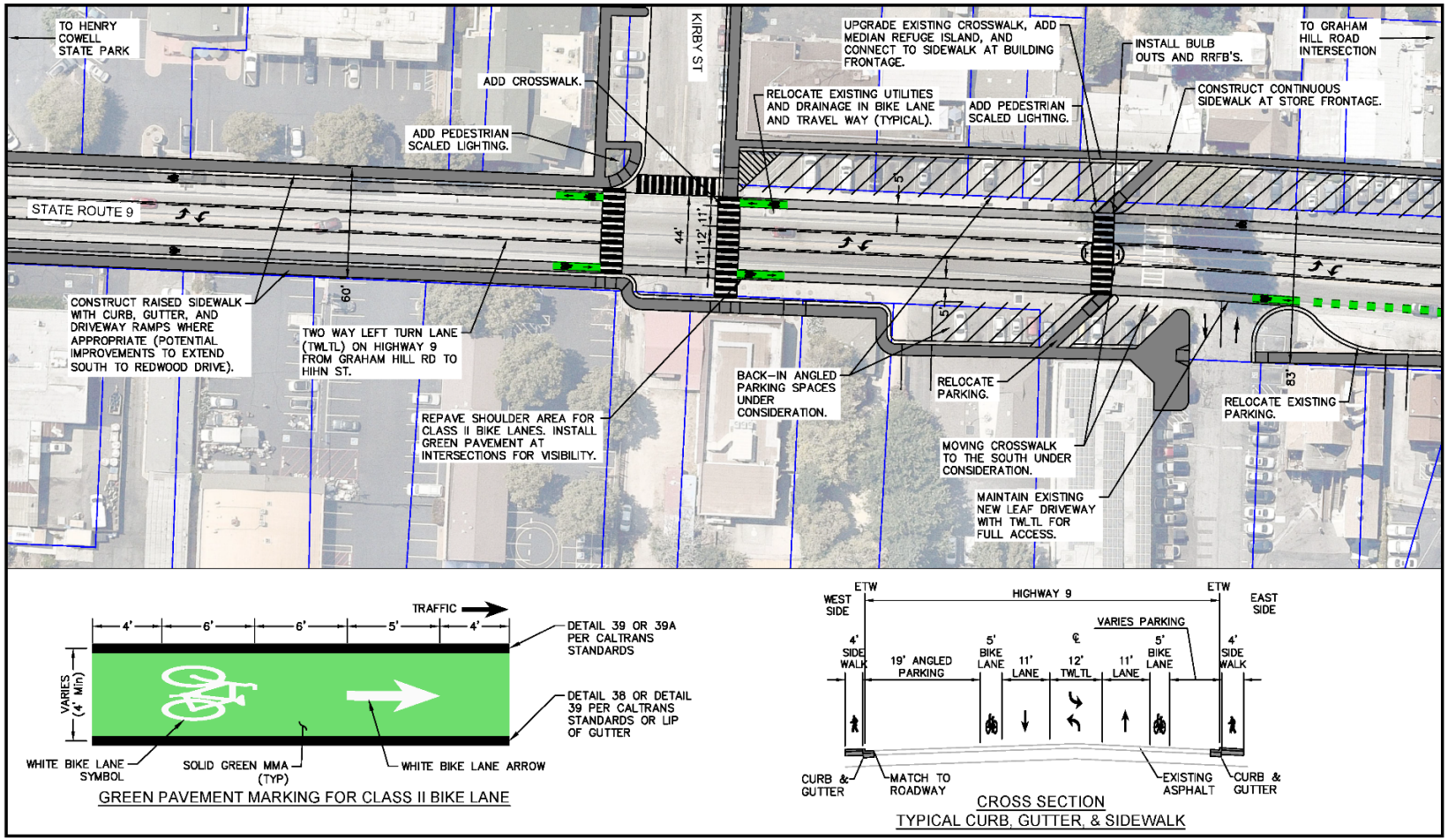
Reducing speeding and implementing traffic calming elements throughout Felton town center is described in Chapter 2 *Priority A*.

In downtown Felton, parking areas and driveways merge with each other and the highway shoulder, particularly in the commercial area, leaving little or no designated safe space for pedestrians. Pedestrian access is discontinuous with barriers created by trees, ditches, unorganized parking, fences, utility poles, and signs. Current crosswalk designs include traditional parallel lines for striping at most locations.

Possible Alternative Improvements: Analyze addition of a new crosswalk at Russell Ave to increase safety for the Tuesday Farmer's Market. A new crossing at Russell is initially determined to be feasible but must be vetted through a Caltrans review process, see Appendix A Section 4.1: *New Crosswalks.*

Possible Feasibility Considerations: No major constraints were identified. Initial analysis determined that raised bulb-out facilities are feasible for Felton crosswalks along Highway 9, however bulb-out design would need to address drainage, bus and truck turning radius, and maintenance, accommodate potential future bike lanes and connect to pedestrian sidewalks on Highway 9 and cross streets. Bulb-outs could require repaving of the crosswalk areas, or connection to curb and gutter sidewalks if/when such sidewalks are installed.

Figure 3.6: Felton Town Center Design Concept



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PROJECT 4 AND PROJECT 7
BIKE / PED CONNECTION IN DOWNTOWN FELTON
HENRY COWELL TO GRAHAM HILL ROAD

SR 9 COMPLETE STREETS CORRIDOR STUDY

Project 5 – Downtown Felton Bicycle and Walking Connections near Library

This project on county roads adjacent to Highway 9 would connect the Felton town center to the new library location near the corner of Gushee St and Hihn St and connect the new library to future pedestrian and bicycle facilities leading to the San Lorenzo Valley Schools Campus (see Project 9). This project provides an alternative pedestrian and bicycle route on a lower volume road with less congestion than Highway 9.

Figure 3.7: Gushee Street at Hihn Street, Looking North

Credit: SCCRTC

Proposed improvements include:

- Improve pedestrian crossing connecting Gushee St to Cooper St across Felton Empire Rd, one block west of Highway 9 – Improvements may include squaring up the crossing, adding high-visibility ladder striping, bulb-outs to make it easier for cars and pedestrians to see one another, new signage, analysis of new dome rumble strips before curve or speed humps to alert drivers. This crosswalk would connect this project to Project 8 and Project 9.
- Narrow auto travel lanes on Gushee St to 11 or 12 feet to free up right-of-way space for complete streets components
- Add bicycle facilities on Gushee St from Felton Empire Rd to Hihn St (near term add sharrows, longer term add bicycle lanes)
- Add new sidewalks on Hihn St from Highway 9 to Gushee St (with north side as higher priority), including shade trees
- Add bicycle facilities on Hihn St from Highway 9 to Gushee St (add sharrows near term)
- Widen and update current sidewalk on west side of Gushee St from Hihn St to Felton Empire Rd, connecting pedestrians to a bike/ped connection to SLV Schools Campus (see Project 9). Add new sidewalk on the east side of Gushee St from Hihn St to Felton Empire Rd, including shade trees. If additional funding becomes available, extend these sidewalks south to Russell Ave
- Add new crosswalks at intersection of Gushee St and Hihn St (at Felton Post Office)
- Add parking on Gushee St from Hihn St to Felton Empire Rd. May include angled parking (back-in or nose-in) on one or both sides if there is sufficient right-of-way and found to be feasible. This component of the project may serve as the new location of relocated parking from Project 8.

There are no existing pedestrian or bicycle facilities in the project area other than two blocks of sidewalk on the west side of Gushee St, and all streets have unstriped on-street parking on both side sides of the street. This project could require repaving of Gushee St, as well as construction of curb and gutter sidewalks and drainage. The minimum 4-foot width for bike lanes should be provided.

Possible Feasibility Considerations: Potential right-of-way impacts for sidewalk on east side of Gushee St. Right-of-way on Gushee St from Kirby St to Felton Empire Rd is constrained and may be insufficient for all defined project components, specifically angled parking. Roadway grades, parking spot widths, and community concerns also need to be considered when analyzing parking options, including any angled parking.

Project 6 – Downtown Felton Pedestrian Walking Facilities

This project would entail updating existing sidewalks and constructing new sidewalks along Highway 9 and on county roads in the Felton town center to the end of the continuous commercial area at Laurel Dr.

This project is tiered so that the project can be incrementally phased as funding opportunities become available.

Figure 3.8: Kirby Street and Highway 9, Looking North

Credit: SCCRTC

- **Tier I**: Improvements to existing sidewalks in front of businesses and gap closure to provide continuous walkways on both sides of Highway 9 between Graham Hill Rd and Kirby St, and fill gaps in sidewalks on south side of Kirby St from Highway 9 to Gushee St Sidewalks would be updated to current ADA standards and include shade trees where feasible.
- **Tier II:** Extend pedestrian facilities on both sides of Highway 9 from Kirby St to Hihn St and connect to pedestrian facilities around the new library (see Project 5). In this segment, many businesses are set well back from the street varying distances by parking lots. New sidewalks could be located closer to the vehicle lanes, immediately adjacent to the proposed bike lanes (see Project 7) and within the Highway 9 right-of-way as proposed by the Felton Town Plan. Install new sidewalk on north side of Kirby St from Highway 9 to Gushee St. Include shade trees where feasible.
- **Tier III:** Extend pedestrian facilities on Highway 9 from Hihn St to Laurel Dr, the south end of the Felton commercial area, and on Plateau Dr and Russell Ave from Highway 9 to Gushee St Sidewalks would follow the boundary of the highway right-of-way as described in Tier II and include shade trees where feasible. Sidewalks on the east side of Highway 9 would end at Russell and connect to the path to Henry Cowell State Park described in Project 3.

Add or include shade trees, benches, tree wells, and other aesthetic features, consistent with *Caltrans' Main Street-California (2013)*. Reducing speeding and implementing traffic calming elements throughout Felton town center is described in Chapter 2 *Priority A*.

Preliminary Concept Designs for downtown Felton are shown in **Figure 3.6**. Infrastructure changes from Projects 4, 6, 7, and 8 are shown together in this figure, although they may be analyzed and implemented separately.

The project area is congested, especially during peak periods. Most of the downtown core is continuously paved, and parking areas and driveways merge with each other and the highway shoulder, leaving no designated space for pedestrians. Pedestrian access is discontinuous and not compliant with ADA accessibility standards in many locations, with barriers created by unstriped shoulder parking, utility poles and signs.

Possible Feasibility Considerations: Construction of continuous sidewalks along Highway 9 is feasible provided drainage and utilities in the shoulder are relocated and Highway 9 shoulders are repaved. Parking, driveways, and landscaping could require reconfiguration or reconstruction.

Project 7 – Downtown Felton Roadway, Bicycle, and Parking Improvements

This project seeks to improve auto and bicycle operations and organize parking in the Felton town center on Highway 9 from Graham Hill Rd to Hihn St.

The project may include:

- Add two-way center turn lane to ease congestion resulting from vehicles turning into parking spaces on Highway 9 shoulders between Graham Hill Rd and Hihn St, if feasible. A two-way center turn lane would also remove the issue of vehicles passing on the right shoulder around left-turning vehicles, which occurs frequently in the current design and decreases the safety of pedestrians and cyclists. Consider installation of temporary “keep clear” markings at high traffic driveways along Highway 9 through downtown in interim to maintain access to businesses. Access to driveways close to Graham Hill/Highway 9 intersection should ultimately be evaluated as part of Project 8.
- Add bicycle lane striping and green lanes at intersections and some heavily used driveways.
- Analyze and modify parking in order to provide for more efficient vehicle maneuvers and minimize conflicts, especially when backing up and returning into highway traffic. Modifications may include back-in angled parking to replace current perpendicular parking, if feasible. Back-in angled parking requires only the first move of entering a parallel parking space to completely park, and offers drivers better visibility of bicyclists and other traffic when they are exiting a parking space. Caltrans recently removed a ban on angled parking on state highways and since then has approved back-in angled parking in several locations (see Appendix A, Section 1.1 *Parking*), though to date no nose-in parking has been approved. Roadway grades will need to be considered when analyzing parking options.
- Increase amount of formalized car parking and bicycle parking in the downtown core, on Highway 9 and neighboring blocks.
- Add bicycle lanes on Highway 9:
    - **Tier I**: Bike lanes on Highway 9 from Graham Hill Rd to Kirby St
    - **Tier II:** Bike lanes on Highway 9 from Kirby St to Hihn St and bicycle connection to new Felton library (see Project 5)
    - **Tier III:** Bike lanes on Highway 9 from Hihn St to Laurel Dr and connection to bike lanes in Project 3 for bicycle access to Henry Cowell State Park entrance

Preliminary Concept Designs for downtown Felton are shown in **Figure 3.6**. Infrastructure changes from Projects 4, 6, 7, and 8 are shown together in this figure, although they may be analyzed and implemented separately.

This area of Felton is congested as vehicles turn, park, reverse into traffic (see **Figure 3.9**) or into other vehicles also reversing, drive against traffic in the shoulder, drive in the shoulder around vehicles turning left, and queue as the northbound traffic waits for the traffic signal at Graham Hill Rd or as the southbound traffic waits for an opportunity to turn left into the Wild Roots parking lot and other parking spaces. Parking areas and driveways merge with each other and the highway shoulder, particularly in the commercial area, leaving no designated safe space for pedestrians. While there are adequate shoulders for bicycles, the shoulder is not currently striped for bike lanes.

Possible Alternative Improvements: If a two-way left turn lane is deemed unnecessary due to back-in angled parking design, left turn pockets for Kirby St and the Wild Roots parking lot should be analyzed instead. Two-way left turn lane or left turn pocket for Wild Roots parking lot would create space for a pedestrian refuge island for the existing midblock crossing, see Project 4.

Possible Feasibility Considerations: Roadway widening could be necessary in some locations to incorporate parking improvements, roadway turn lane improvements, and bike lanes. Roadway widening is feasible with the relocation of utilities and drainage in the shoulder as part of the sidewalk improvement. Parking and driveway landscaping and frontage could require reconfiguration. Current perpendicular parking design not permissible by Caltrans standards. Back-in angled parking would require Caltrans approval. No example of nose-in angled parking has been approved by Caltrans previously. See Appendix A Section 1.1 *Parking* for more information. Some community members have expressed concern about back-in angled parking and additional community discussions will be necessary. Some also expressed preference for wider bicycle lanes and sidewalks over increased parking. Balancing different uses will require additional analysis during the design phase.

Project 8 – Highway 9 and Graham Hill Road Intersection Redesign

This project would redesign of the intersection of Highway 9/Graham Hill Rd/Felton Empire Rd. The goal of the intersection improvement is to reduce delay and back-ups, increase throughput, and improve pedestrian, bicycle, and transit access through the intersection.

Intersection redesign would require a more detailed analysis as intersection modifications are implemented. For descriptions of specific infrastructure improvement options mentioned here and their associated Federal and State guidelines, see Appendix A: *Complete Streets Improvements Toolkit.*

Redesign of the Graham Hill Rd intersection would consider the following components: *(Tiers reflect potential order if phased implementation is necessary due to funding or other constraints)*

- **Tier I**: Make pedestrian, bicycle, and transit modifications to intersection
- **Tier II:** Extend vehicle queuing and turn lanes on all legs to maximum extent possible to increase intersection capacity
- **Tier III:** Widen to add any bicycle lane segments not feasible within existing right-of-way and additional vehicle lanes if feasible

Components of this project include:

- **Crosswalks**: Restripe crosswalks with high-visibility ladder markings, “square up” crosswalks to run perpendicular to the travel lanes to minimize crossing distances and increase pedestrian visibility.

- **Pedestrian island:** Reconstruct existing pedestrian island on the southeast side of the intersection crossing Graham Hill Rd to accommodate bike lanes and maximize protected space available for pedestrians. Community members have expressed interest in incorporating landscaping and/or public art.
- **Sidewalk on Graham Hill Rd:** Install pedestrian walkway on the north side of Graham Hill Rd from the Highway 9 intersection to the northbound transit stop on Graham Hill Rd where there is currently no sidewalk. These facilities would require infrastructure build-out to the edge of the right-of-way and may require acquisition of some right-of-way.
- **Right turn pocket Highway 9 northbound to Graham Hill Rd:** Lengthen the existing right turn pocket from Highway 9 northbound onto Graham Hill Rd. This has the potential to reduce backup through Felton on northbound Highway 9 by more effectively separating northbound traffic and allowing the heavier volumes of right-turning traffic onto Graham Hill Rd to continue flowing during red lights. Modification to current driveway access on southeast corner of intersection should be considered along with this component.
- **Graham Hill Rd travel lanes:** Lengthen existing queuing pockets on Graham Hill Rd for autos going straight onto Felton Empire Rd or turning left into downtown Felton. Longer separated left turn and straight lanes would increase the number of vehicles through the intersection per light cycle. Analyze if this improvement would require removal of a redwood tree planter just north of the Graham Hill Rd westbound lanes.
- **Parking:** Relocate parking stalls on Highway 9 in the southwest corner of the intersection that back up into the intersection or area within 20 feet of the edge of the improved crosswalk location. Current parking design is contrary to Caltrans parking regulations at intersections (see Appendix A, Section 1.*1 Parking*).

Figure 3.9: Cars Backing into Travel Lanes and Waiting to Park South of Graham Hill Road Intersection

Credit: SCCRTC

- **Felton Empire Rd travel lanes:** Separate queuing lanes for left and straight/right movements from Felton Empire Rd east-bound onto Highway 9 and Graham Hill Rd per Felton Library CEQA mitigation measures. Prioritize maintaining existing parking spaces on Felton Empire Rd. County Planning anticipates this lane restriping will take place ahead of other intersection improvements outlined in this project.
- **Bicycle facilities**: Add bike lanes and other bicycle facilities through the intersection on Highway 9 and Graham Hill Rd. Green bike lanes would increase visibility of bicycle space, including hatched green bike lanes across the intersection and bike boxes to increase safety for bicyclists making left turns. Four-foot bike lanes on Highway 9 may require that the vehicle lanes be narrowed to 11 feet, which requires a Caltrans Design Exception. If right-of-way can be obtained on northeast corner, Graham Hill Rd should also be widened to accommodate bike lanes.

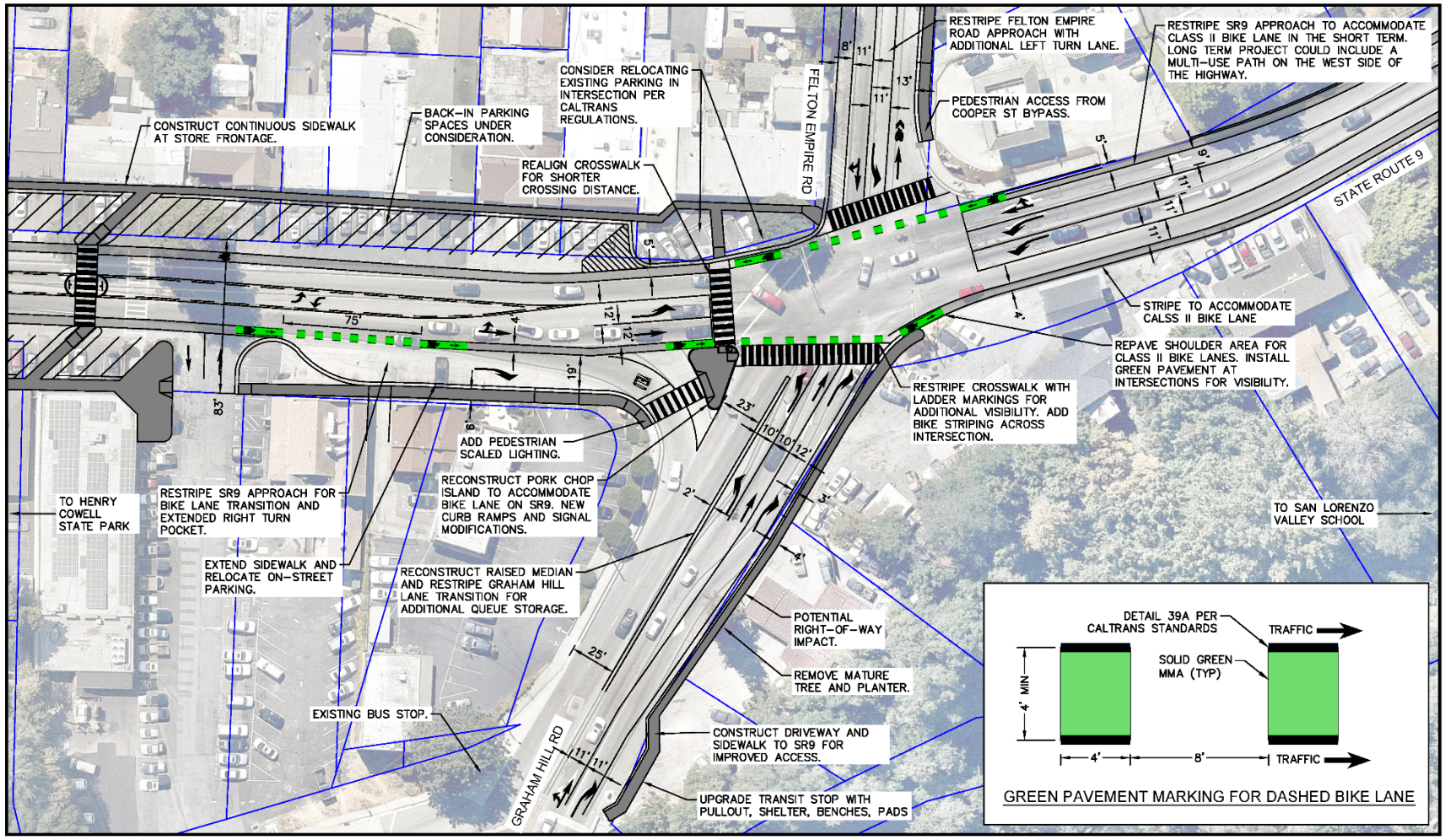
- **Felton Empire Rd sidewalks and bicycle facilities:** Add sidewalks and bicycle facilities (potentially sharrows) on Felton Empire Rd to Cooper St, connecting Highway 9 to the Felton Empire/Gushee St crosswalk improvements (Project 5) and/or the pedestrian and bicycle facilities leading to the SLV Schools Campus (see Project 9).
- **Intersection throughput:** Increase throughput per traffic light cycle from Highway 9 southbound to Graham Hill Rd and continuing south on Highway 9. Possible improvements include modifying queuing lanes from current left and right/straight/left pockets to a left only (splitting into two ahead of the light) and a right/straight.
- **Signal Timing**: Optimize signal timing to maximize throughput in all directions, after improvements detailed above are completed, particularly from Graham Hill Rd onto northbound Highway 9 during the evening commute and to include pedestrian priority signals that allow pedestrians to begin walking before cars receive a green light.
- **Transit:** Upgrade existing northbound transit stop #2559 at Graham Hill Rd and Covered Bridge Rd, with paved bus pullout, landing pad, and shelter.

Figure 3.10 shows the proposed concept design for this intersection redesign project, as well as components of Projects 4, 7, and 9. This design is a potential concept for discussion purposes only and would require additional study and engineering analysis. Intersection design modifications would require repaving, and construction of new curb/gutter sidewalks and drainage. See also feasibility considerations below.

Possible Alternative Improvements: Improvements to circulation through the Highway 9/ Graham Hill Rd intersection could be accomplished without major changes to the current structure of traffic flow, as described above. However, these improvement goals could also be met through a larger-scale redesign of traffic circulation at the intersection. Some options include:

- A multi-lane roundabout. Although this option could improve operations at the intersection and add new bicycle and pedestrian access, a roundabout would require significant right-of-way and many members of the community expressed opposition to this concept.
- Closure of the west leg of the intersection (Felton Empire Rd) with diversion of Felton Empire Rd traffic onto Gushee St. However, this would result in increased traffic on Gushee and northbound on Highway 9 through the Felton commercial area, and this option contradicts recommendations from the CEQA traffic study for the new Felton library location.

Figure 3.10: Highway 9 and Graham Hill Road Intersection Design Concept



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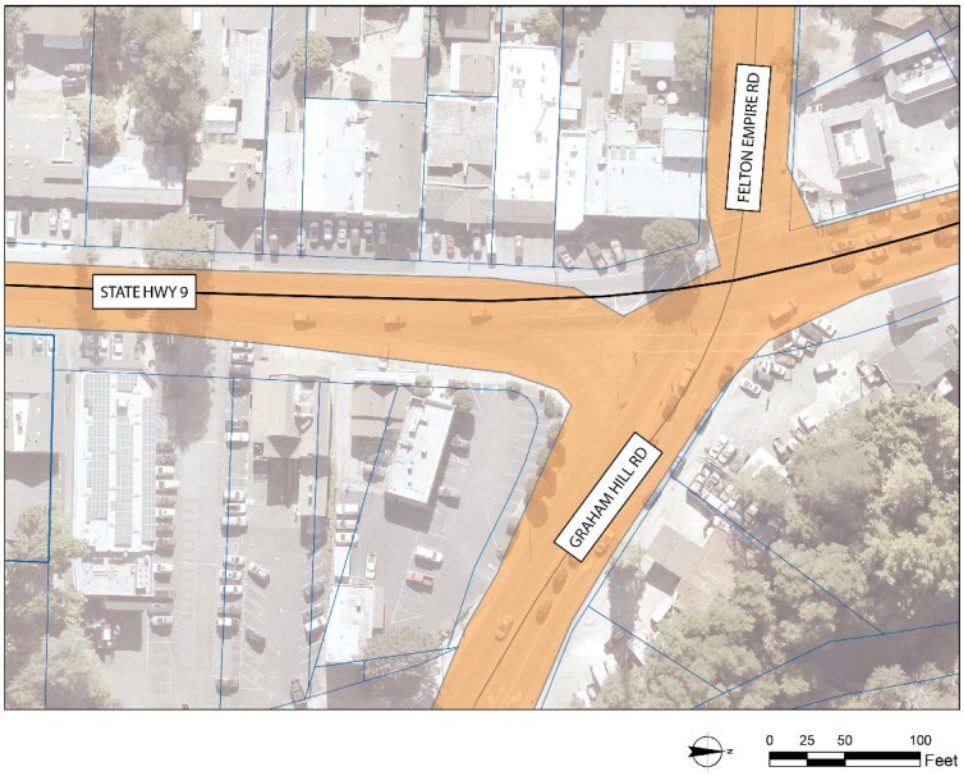
PROJECT 8A: SHORT-TERM
GRAHAM HILL / SR9 INTERSECTION IMPROVEMENTS
SANTA CRUZ COUNTY

SR 9 COMPLETE STREETS CORRIDOR STUDY

- Reconstruction of the intersection to align the northern portion of Highway 9 with Graham Hill Rd to increase throughput between Graham Hill Rd and Highway 9 north of the intersection. The primary traffic direction (the "proceeding straight" movement) in this new design would be a left onto Graham Hill Rd from Highway 9 and right onto Highway 9 from Graham Hill Rd. Felton Empire Rd and the southern portion of Highway 9 would meet this thoroughfare at two separate intersections, see **Figure 3.11**.

Figure 3.11: Alternative Improvement Option – Realignment of Graham Hill Road Intersection



Credit: SCCRTC

Possible Feasibility Considerations: Right-of-way widths for this project are generally constrained. Potentially constrained components of this project include: northbound transit stop improvements and connecting pedestrian facilities on Graham Hill Rd; lengthening straight and left turn pockets on Graham Hill Rd; bike lanes on Graham Hill Rd over bridge, Felton Empire Rd new turn pocket, pedestrian facilities on Felton Empire Rd to Gushee/Cooper. Travel lane widths could require narrowing throughout the intersection, to the extent feasible for truck turning movements, to provide bicycle and pedestrian space as well as additional or lengthened auto turn lanes. Bike boxes would require additional traffic operations study. Right turn lane from northbound Highway 9 onto Graham Hill Rd would require parking relocation. Access to businesses will also need to be evaluated in more detail, including the potential relocation of parking and driveways, and mitigations to maintain traffic flow and access to driveways, such as "do not block" or "keep clear" markings, so stopped traffic does not block entrance/exit of parking lots.

3.2. SLV Schools Campus Area

Existing Conditions

Central Felton to SLV Schools Campus Area, Graham Hill Road to High School Entrance.

The 0.7-mile section of Highway 9 between Graham Hill Rd/Felton-Empire Rd and the SLV schools complex has relatively heavy traffic volumes (nearly 21,000 vehicles per day) and significant constraints due to sloping terrain. Constraints vary along this stretch, but a primary challenge is a series of immediately adjacent residences and retaining walls on the west side that leave less than 1-3 feet of shoulder and no separate walkway space (see photos below). Some of these walls are at the frontage of an apartment building and four single family structures with steep driveways, with extremely narrow shoulders at the base. The east side of the highway also has 3-4-foot shoulders due to businesses and residences in close proximity to the highway with steep slopes down, though these constraints diminish in the northern half of this segment. This segment is served by the primary METRO line for the San Lorenzo Valley, Route 35, which runs on a 30-minute headway in both directions and connects the SLV to downtown Santa Cruz.

Existing Conditions: Retaining Walls, Steep Driveways, Pedestrian Walking Without Shoulders on Highway 9 Just North of Graham Hill Road

Around and north of the SLV Schools Campus, Clearview Place to Glen Arbor Road South. This segment (7100 feet) features San Lorenzo Valley Elementary School, Middle School, and High School in the central portion on the west side. It is similar to the segment described above in terms of retaining walls at the schools, but generally has wider shoulders and fewer constraints to improvement. The significant constraints include Fall Creek Bridge and the retaining walls at the school frontage; the twin bridges north of the schools and south of the southernmost intersection of Glen Arbor Rd with Highway 9 (Glen Arbor South) around Post Mile 7.8 that feature 3 - 4-foot sidewalks but virtually no shoulder, and a dense stand of redwoods adjacent to the road at Post Mile 7.5. This segment is served by the primary METRO line for the San Lorenzo Valley, Route 35, which runs on a 30-minute headway in both directions and connects the SLV to downtown Santa Cruz.

Existing Conditions:
Retaining Walls on Highway 9 North of El Solyo

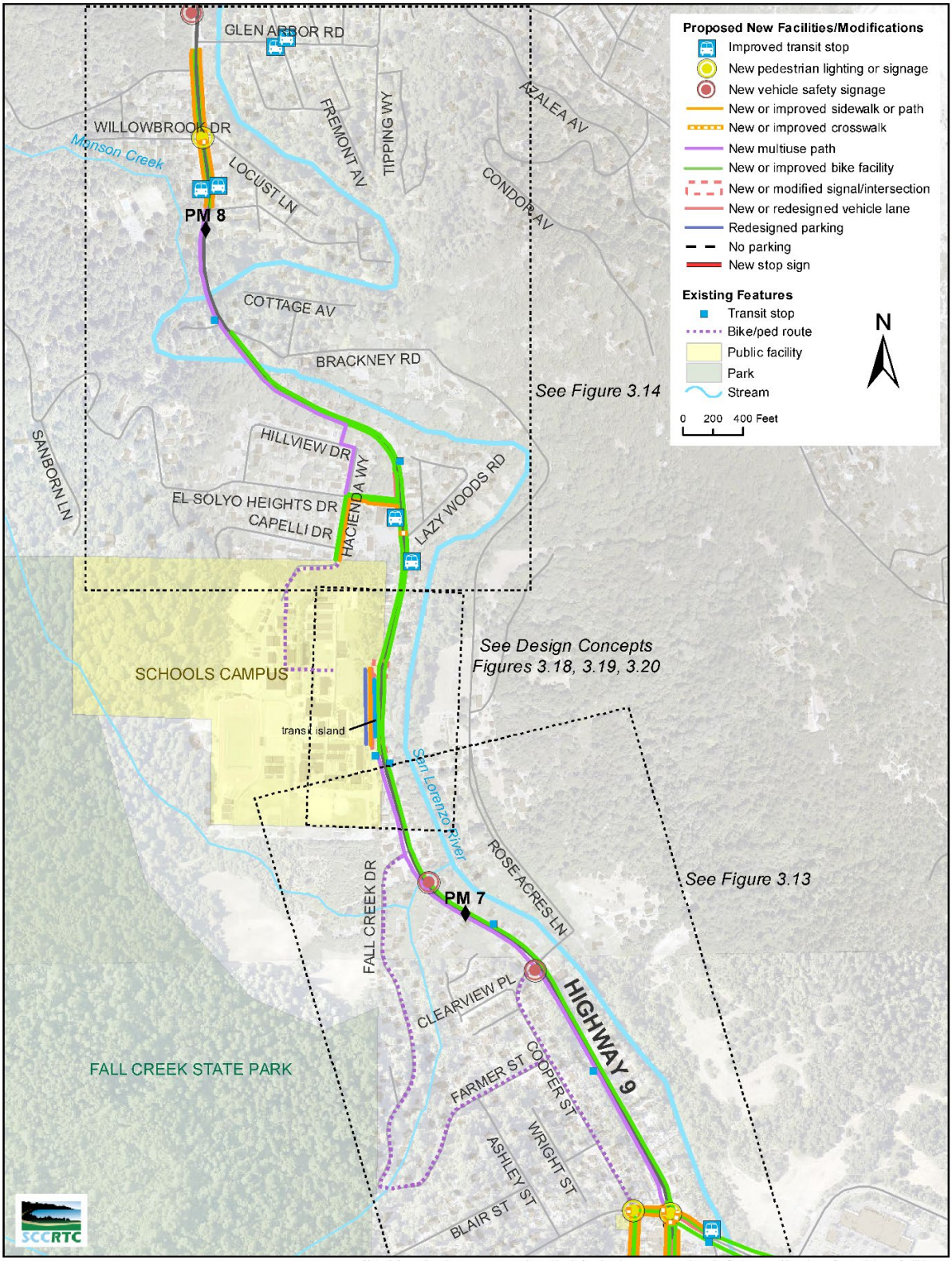
Credit: Google Earth

Hacienda Way

Priority Projects

Priority projects for the SLV Schools Campus area – north of Graham Hill Rd to Glen Arbor Rd South – are mapped and described on the following pages.

Figure 3.12: SLV Schools Campus Access Overview

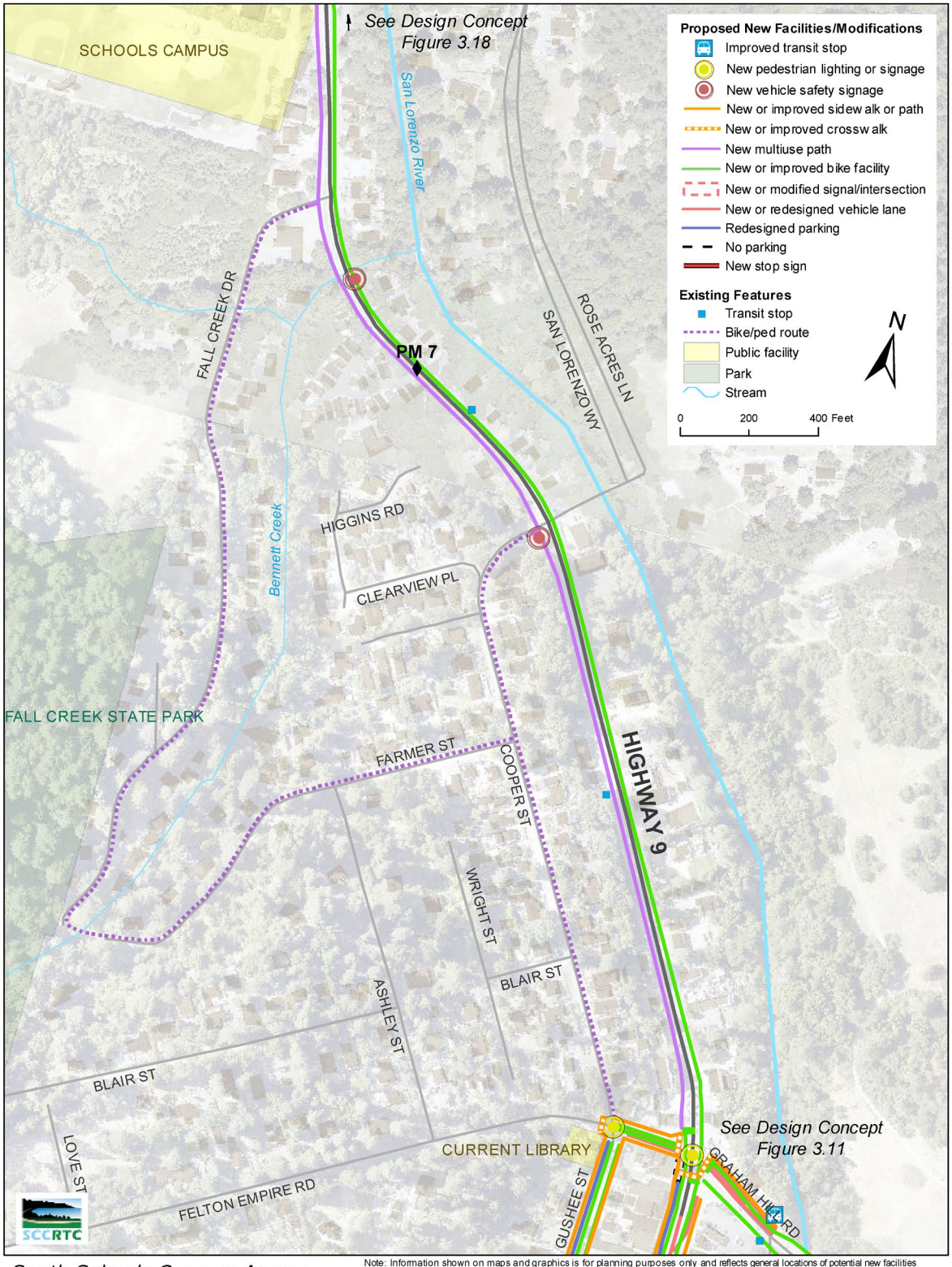


SLV Schools Campus Access Overview

Note: Information shown on maps and graphics is for planning purposes only and reflects general locations of potential new facilities or modifications to existing facilities that have been identified as priorities. These are not engineering level, exact locations. A more expansive list of ideas is included in the Appendix. Most existing facilities (e.g. sidewalks) not shown on maps will remain.

Credit: SCCRTC

Figure 3.13: South Schools Campus Access

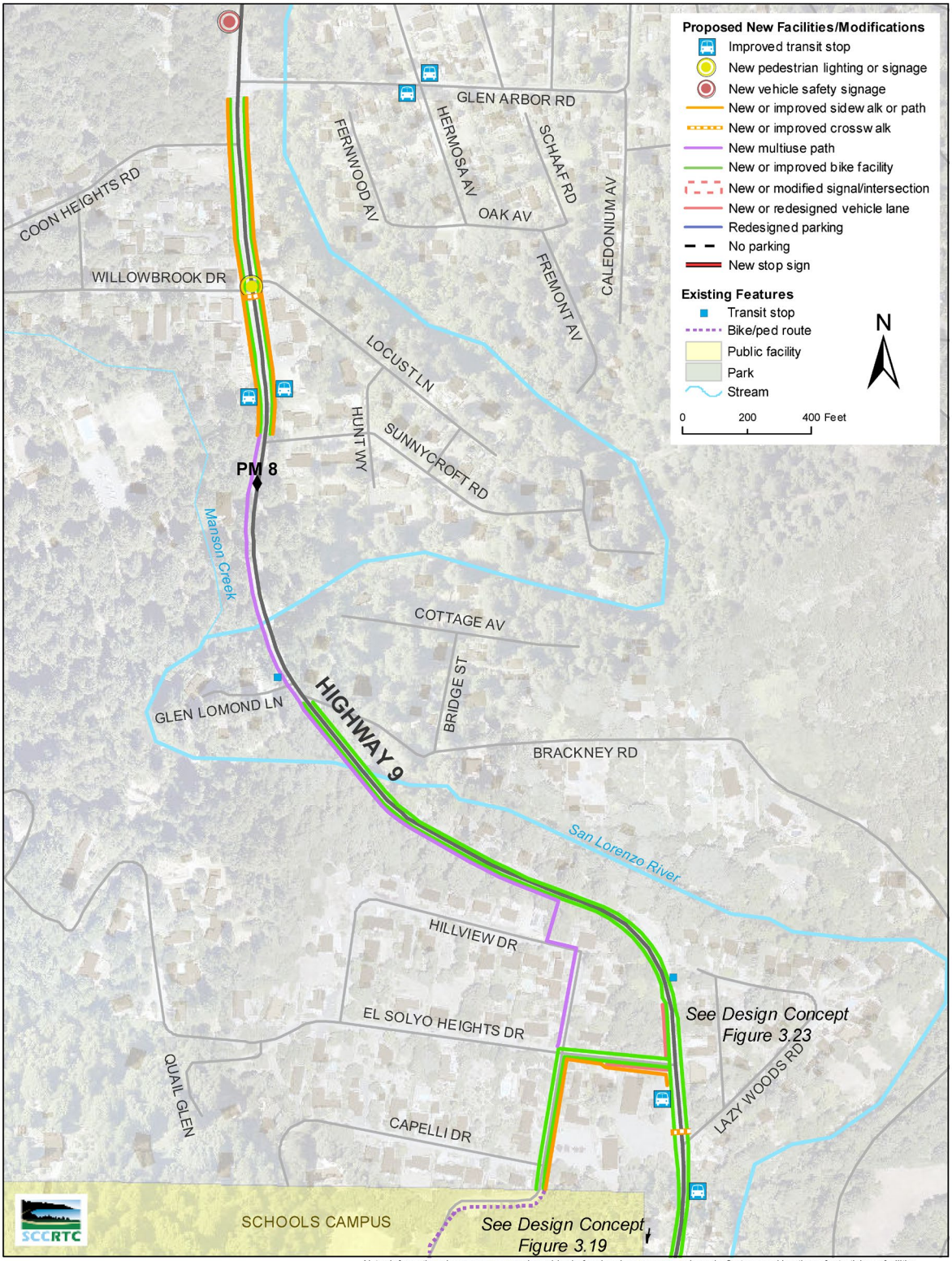


South Schools Campus Access

Note: Information shown on maps and graphics is for planning purposes only and reflects general locations of potential new facilities or modifications to existing facilities that have been identified as priorities. These are not engineering level, exact locations. A more expansive list of ideas is included in the Appendix. Most existing facilities (e.g. sidewalks) not shown on maps will remain.

Credit: SCCRTC

Figure 3.14: North Schools Campus Access



North Schools Campus Access

Note: Information shown on maps and graphics is for planning purposes only and reflects general locations of potential new facilities or modifications to existing facilities that have been identified as priorities. These are not engineering level, exact locations. A more expansive list of ideas is included in the Appendix. Most existing facilities (e.g. sidewalks) not shown on maps will remain.

Credit: SCCRTC

Priority Projects

Project 9 – Pedestrian and Bicycle Connections to San Lorenzo Valley Schools Campus from Felton

This project seeks to create safe pedestrian and bicycle access between the Highway 9/Graham Hill Rd/Felton Empire Rd intersection (Felton town center) and the SLV Schools Campus (San Lorenzo Valley Elementary, Middle, and High Schools), and has consistently been identified as one of the highest priority projects in the San Lorenzo Valley. This project may occur exclusively on Highway 9, or additionally on a combination of county and privately maintained roads.

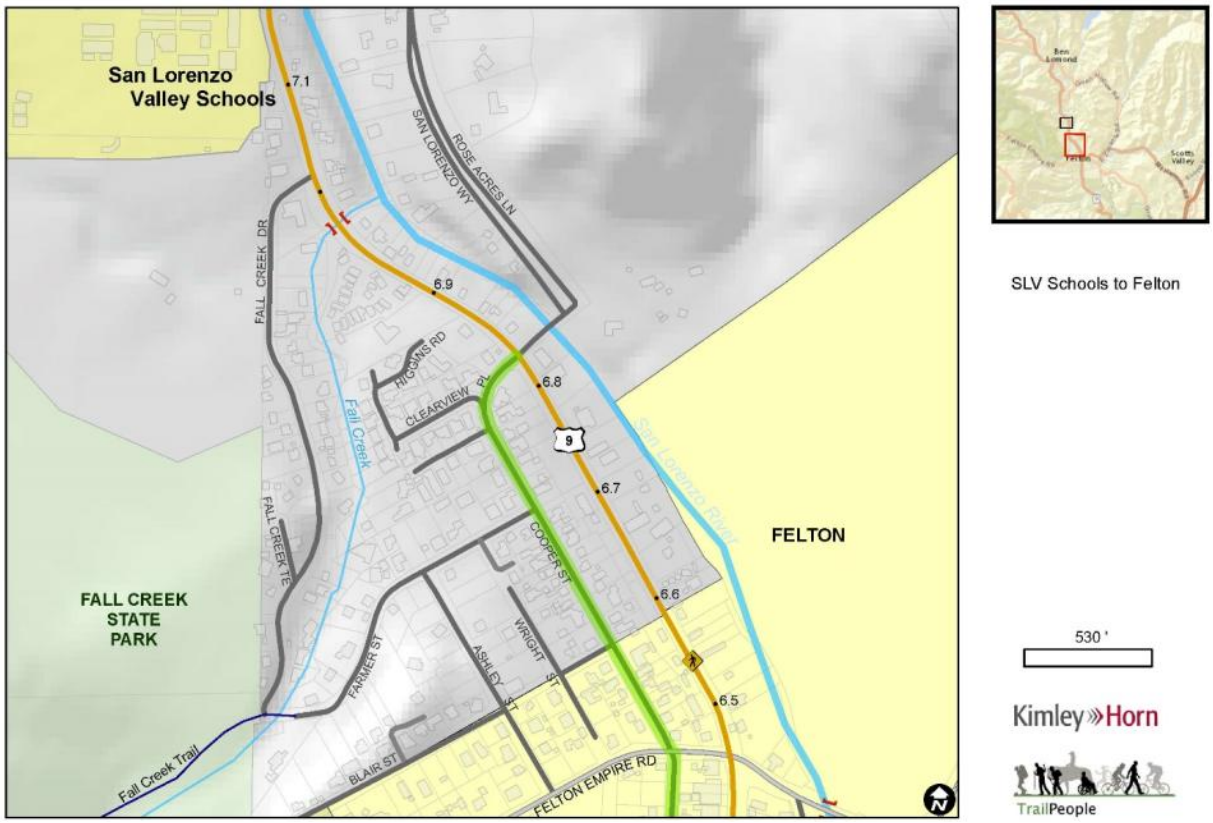
Three potential options have been identified for pedestrian and bicycle facilities, pending further feasibility analysis. Because the schools are on the west side of Highway 9, that is generally the most desirable alignment for pedestrian facilities to minimize students crossing the highway and this alignment may require shifting or narrowing auto travel lanes.

- ***SLV Schools Campus to Fall Creek Drive Multiuse Path:*** This option includes a multiuse path on the west side of Highway 9 from the High School entrance to Fall Creek Dr, a low-volume residential street. An existing pedestrian bridge at the end of Fall Creek Dr crosses Fall Creek and connects to the end of Farmer St. Farmer St is not a County-maintained road, and as a private road an easement or maintenance agreement may be required to formalize this access route. Farmer St and Cooper St are low-volume residential streets that can serve as a bicycle and pedestrian route to Felton Empire Rd and Gushee St and the other proposed bicycle and pedestrian facilities in the Felton town center (see Projects 4 through 8).
- ***SLV Schools Campus - Cooper Street Bypass:*** This option would extend the path on Highway 9 from Fall Creek Dr south to roadways that connect to Cooper St, then install signage to indicate Cooper St as bike/ped route enabling users to bypass the narrowest sections of Highway 9. Cooper St is a quiet residential street that parallels Highway 9 one block to the west (see **Figure 3.15**). It connects to Highway 9 via a short road segment across from San Lorenzo Wy (Clearview Pl) at the north end that the County closed as a public road several years ago. The County retained a 15-foot easement down the center of Clearview Pl for non-vehicular access. There are also two private driveways on Highway 9 between Fall Creek Dr and Clearview Pl that connect to Higgins Rd, which leads to Cooper St. Exploration of public easements on these two private roads could also be considered, as they are less steep than the existing public easement on Clearview Pl.

  A multiuse path or FHWA sidepath connecting to one of these easement options could provide a formalized alternative connection to downtown Felton, compared to walking along the shoulder of Highway 9. Cooper St could serve as a connection to the Felton Empire/Gushee crosswalk (see Project 5) and the rest of the bicycle and pedestrian improvement proposed around the Felton town center (see Projects 4 through 8).

  A significant challenge of this bypass is that the short section of Clearview Pl that connects to the highway has a steep slope (approximately 30% gradient). Access could potentially be improved by construction of a series of ramps, but this would require extending beyond the 15-foot access easement. The two alternate easement options on private property have slightly gentler slopes.

Figure 3.15: Cooper Street Bypass Concept



- ***SLV Schools Campus to Felton Empire Road via Highway 9:*** Class 1 multiuse path or sidepath on the west side of Highway 9 from Clearview Pl to the Highway 9/Graham Hill Rd intersection, as well as northbound bike lane on the east side from Graham Hill Rd to the SLV Schools Campus.

  This may include narrowing travel lanes to 11 feet (requiring a Caltrans design exception), a physically buffered pedestrian/bike space (see Appendix A, Section 5.4: *Buffered Bike Lane – Physical Buffer),* a path above west side retaining wall, and/or pedestrian facilities on the eastside of Highway 9.

  Due to the extremely constrained right-of-way widths, slopes, retaining walls, and steep driveways in the section of Highway 9 between Clearview Pl and Graham Hill Rd, building new bike and/or pedestrian facilities south of Clearview Pl would be significantly more expensive than options described above. However, this is the flattest, most direct route between the town center and schools.

Children Walking Along Highway 9 North of Graham Hill Road

Credit: Trail People

- ***Near term:*** While adding a grade separated path is preferable, nearer-term options under evaluation and described in Section 4.3 of this document include: signage to encourage pedestrians and bicyclists to use county roads and to alert drivers that pedestrians may be in the area, narrowing lanes to 11 feet, which may require a Caltrans design exception, shifting lanes east, and reducing landscaping on the west side of Highway 9 to widen shoulders and provide for a buffered bike lane or shared bike/pedestrian space (see Appendix A Section 5.4 *Buffered Bike Lane – Physical Buffer)*, pavement treatments that remind/deter drivers from crossing into the shoulder and paths, and barriers separating autos on Highway 9 from shoulders (such as buffered bicycle lanes/multiuse paths, flexible posts or moveable delineators, inflexible posts/barriers, guardrails, k-rail, reflective bumps, raised "armadillos", and/or landscaping). An additional 25 mph speed limit sign and increased enforcement in this area could help reduce vehicle speeds approaching the Graham Hill intersection.

Installation of a 4-foot striped northbound bike lane may require additional widening and repaving. See Appendix A Toolkit Sections 2.6 *Rumble Strips,* 2.7 *Guardrails*, 5.4, *Buffered Bike Lane – Physical Buffer* and 5.6 *Bicycle Safety Signage* for a description of other potential physical buffers and treatments that provide separation between autos and bicyclists/ pedestrians.

Rumble strips were also considered (see Appendix A Section 2.6 *Rumble Strips*) but rumble strips are opposed by stakeholder cyclist groups due to the difficulty maneuvering over rumble strips on a bicycle. A maintenance agreement between Caltrans and the County of Santa Cruz may be required to allow the installation of some buffers, such as flexible delineators.

Temporary Movable Buffers

Armadillo Buffers

Painted Buffers

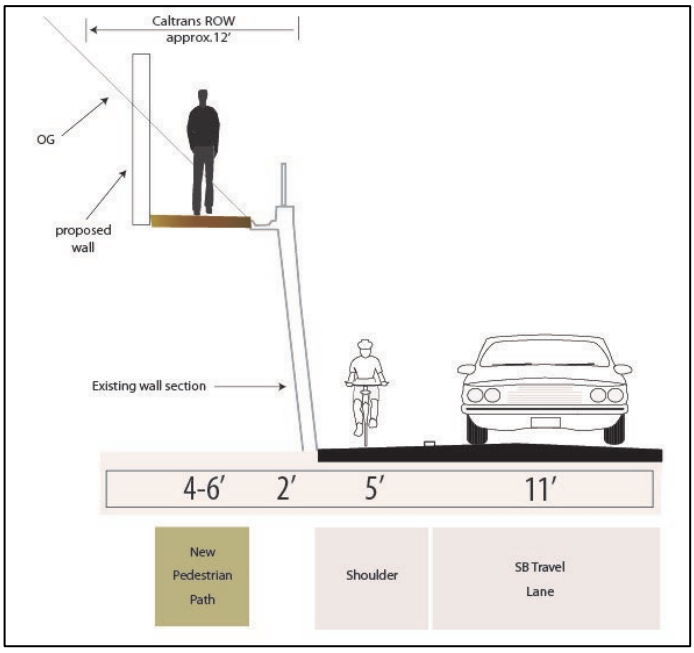
Possible Feasibility Considerations: Residences immediately adjacent to the existing auto travel lanes on Highway 9 and retaining walls on the west side currently leave only as little as 12 inches of shoulder and no separate walkway space, presenting a considerable feasibility constraint. About 4 feet of shoulder exists on the east side, with a steep drop off to private property below. No existing pedestrian or bicycle facilities in this segment.

In addition to constraints discussed above, reaching Fall Creek Dr might require driveway reconstruction and narrowed travel lanes. Reaching Clearview Pl might additionally require significant grading, bridge reconstruction, and right-of-way. Farmer St is not a County-maintained road and an easement may be required from the owners to formalize any access improvements. Reaching Graham Hill Rd might require significant retaining wall reconstruction. Evaluate utility undergrounding and new water line as method to cost-share and widen the roadway to provide space for bicyclists and pedestrians.

A path could theoretically be constructed above highway retaining walls, as illustrated in **Figure 3.16**. The right-of-way (ROW) line is approximately 12 – 14 feet behind the walls. This would require an additional low retaining wall, and extension walls may be needed to climb and descend behind the wall at an ADA-compliant maximum 5% grade. Completing the path south past the residential structures with walls may require the acquisition and removal of some residential structures.

Constructing a Class I path or pedestrian path in the highway ROW on the west side the remaining approximately 1/3 mile to the schools is constrained by some slope and mature trees, but would be far more feasible/less expensive than the portion farther south towards Graham Hill Rd.

Figure 3.16: Path Above Retaining Wall Concept



Credit: Kimley Horn

Project 10 –San Lorenzo Valley Schools Campus Site Access

This project seeks to re-organize access to the San Lorenzo Valley High School, Middle School, and Elementary School (jointly referred to as the SLV Schools Campus in this plan) to improve access to the SLV Schools Campus for all modes of transportation, and to improve traffic flow for traffic traveling past the campus. Components of this project could occur on the Caltrans right-of-way or SLVUSD property.

Currently, there are three separate entrances to the school campuses, one each for the Elementary, Middle, and High Schools. This design results in delays on Highway 9 during peak student pick up and drop off times, particularly in the morning when it coincides with the morning commute. Currently, there is a stop light at the High School entrance only. There is currently no formal pedestrian or bicycle access to the schools, and students in Middle School and older do not benefit from school bus service. Without access to traditional yellow school bus service, many middle school and high school students utilize Santa Cruz METRO public transit buses to travel to and from school.

Initially, some shorter-term, lower-cost options to make improvements to circulation could be considered, such as:

- **At the High School entrance,** the area adjacent to the transit stop currently serves as a staging area for recycling/refuse collection and a trade skills outdoor classroom. This area could be converted to internal campus circulation instead, to create pedestrian walking and crossing facilities, and to allow more space for vehicles entering and exiting the High School to navigate what is currently a very tight turn. The right and left turn lanes into the High School entrance could also be lengthened to hold more waiting vehicles, so that through traffic could continue flowing.

- Evaluate adding a “no right turn on red” sign at the High School entrance signal light for traffic traveling southbound on Highway 9 to reduce conflicts with cars exiting campus.
- To aid circulation in this area, the current bus-only entrance road into the High School Campus could be widened to include a right turn-only exit for other vehicles exiting the High School parking lot.
- **At the Elementary School entrance**, the driveway could be widened to allow two lanes each for inbound and outbound traffic. The current inbound design of one lane for student drop off and one for a left turn into the Elementary School parking lot for staff and school buses would remain in place. Two lanes outbound would allow more storage capacity for vehicles seeking to turn left or right. A dedicated right turn lane on Highway 9 and a sidewalk on the north side of the Elementary School entrance road would allow multiple vehicles to drop off their students simultaneously while removing waiting cars from the travel lane. In the short term, limit drop-off/pick-up parking to one side of the Elementary School parking lot to increase traffic flow.
- Between the High School and Elementary School entrances along the boundary between the Caltrans right-of-way and the SLV Schools campus property, a multiuse path or sidepath could be built to allow Elementary School students using the multiuse path to travel from Felton to the SLV Schools Campus (see Project 9) to complete their trip to the Elementary school on bicycle or foot. This path would continue up the south side of the Elementary School entrance and cross the Elementary School parking lot. There is currently a steep embankment with retaining walls along this section. The retaining walls would need to be moved or the path would have to be constructed above the walls on school property and an additional retaining wall and a fence to separate the path from school grounds would be needed above the path.

Figure 3.17: San Lorenzo Valley High School Entrance

Credit: SCCRTC

In the short-term, both school campus entrances would benefit from re-striping to narrow highway vehicle lanes, addition of bike lanes, and lengthening of all turn/merge lanes, see **Figures 3.18** and **3.19.** In the medium and longer-term, projects involving grading and tree removal such as the path between the high school and elementary school entrances could be completed. In the long-term, the SLV Campus circulation long-term redesign concept could be considered, with displaced left turn and transit island described below.

Possible Alternative Improvements:

a) **Major SLV Campus circulation redesign:** This concept (see **Figure 3.20**) could provide a higher level of congestion relief than projects listed above, but more detailed environmental and engineering analysis would be needed prior to pursuing this high cost project. The project would entail extensive grading and retaining wall construction, with temporary

impacts on the highway and school access. Such a project would likely need to be locally led, through a partnership between the San Lorenzo Valley Unified School District and County of Santa Cruz, with Caltrans providing oversight. Property acquired for additional right-of-way would likely be County owned. Modifications could include:

- Redesign of schools site access and circulation for drop-offs, pick-ups, and parking into unified loop pattern for all schools;
- Redesign of turn lanes/signals at school entrances, which could include unification of all school traffic and its separation from highway through traffic via campus traffic/bypass lane, adding/extending turn lanes, adding a traffic light at the elementary entrance for exiting transit buses only;
- Relocation and redesign of the existing transit stop into a new transit stop between Highway 9 and the proposed campus bypass lane; and
- Construction of a multiuse path and/or bike lanes between the High School and Elementary School entrances, as well as the sidewalks and crosswalks needed for students to safely access the new transit stop and the pedestrian and bicycle facilities heading south toward Felton (see Project 9).

The basis of the SLV Campus circulation redesign long-term concept is a “displaced left turn” intersection, where traffic turns left well in advance (at the current High School entrance) of its intended left turn (at the current Elementary School entrance) so that that intersection at the current Elementary School entrance has no left turn phase in the signal. At the current Elementary School entrance, through traffic would flow continuously, unless stopped to allow transit buses to exit the northbound side of the transit boarding island. See Appendix A Section 1.5 *Displaced Left Turn* for more information on displaced left or “continuous flow” intersections.

Schools campus traffic coming from Ben Lomond on southbound Highway 9 would also have free-flowing access into the new SLV Schools Campus unified entrance, at the site of the current Elementary School entrance. Drivers dropping off Elementary or Middle School students would do so in the Elementary School parking lot before using the unified exit at the signal (at the current High School entrance), while drivers dropping off High School students would drive past the Elementary School parking lot and drop their students off in front of the High School. High School student drivers would continue to the High School student lot at the far southern end of the SLV Schools Campus.

Northbound transit buses would also turn left into the displaced left turn and pull onto the campus frontage road to drop off and pick up riders at the transit island before re-entering northbound Highway 9 through traffic at a new signal at the current Elementary School entrance. Southbound transit buses would pull off of southbound Highway 9 to drop off/pick up at the transit island and merge back into through traffic at a modified signal light at the current High School entrance.

New pedestrian walking and crossing facilities with shorter pedestrian-scale lighting would connect the transit boarding island to the SLV Schools Campus, as well as the path heading south to Felton that is proposed in Project 9. Bike lanes on Highway 9 in front of the SLV Schools Campus would connect to bicycle facilities north and south of the SLV Schools Campus (see Projects 9, 11, and 12).

*Credit: The long-term improvement concept drawing shown in **Figure 3.20** was created by Jim Helmer, a practicing Registered California Traffic Engineer and Civil Engineer and resident of Ben Lomond, in collaboration with Shawn Vogtman of WMH Engineering and*

with input from administration, teachers, and staff of the SLV Elementary, Middle, and High Schools.

b) **Alternate school bypass:** This community member-provided concept would create pedestrian and bicycle access which would skirt the school campus. Modifications for a bypass on the eastern boundary of the campus complex could include:

- Repair/replacement of foot bridge at Hacienda Dr to edge of Elementary School campus
- Pedestrian and bicycle path on SLVUSD land between Elementary School campus and Highway 9 from the foot bridge to the southeastern corner of the campus complex (high school baseball fields)
- Acquisition of right-of-way behind residences on Highway 9 between the SLV Schools Campus and Fall Creek Dr, so that the path could connect to Fall Creek Dr and the pedestrian and bicycle improvements outlined in Project 9.

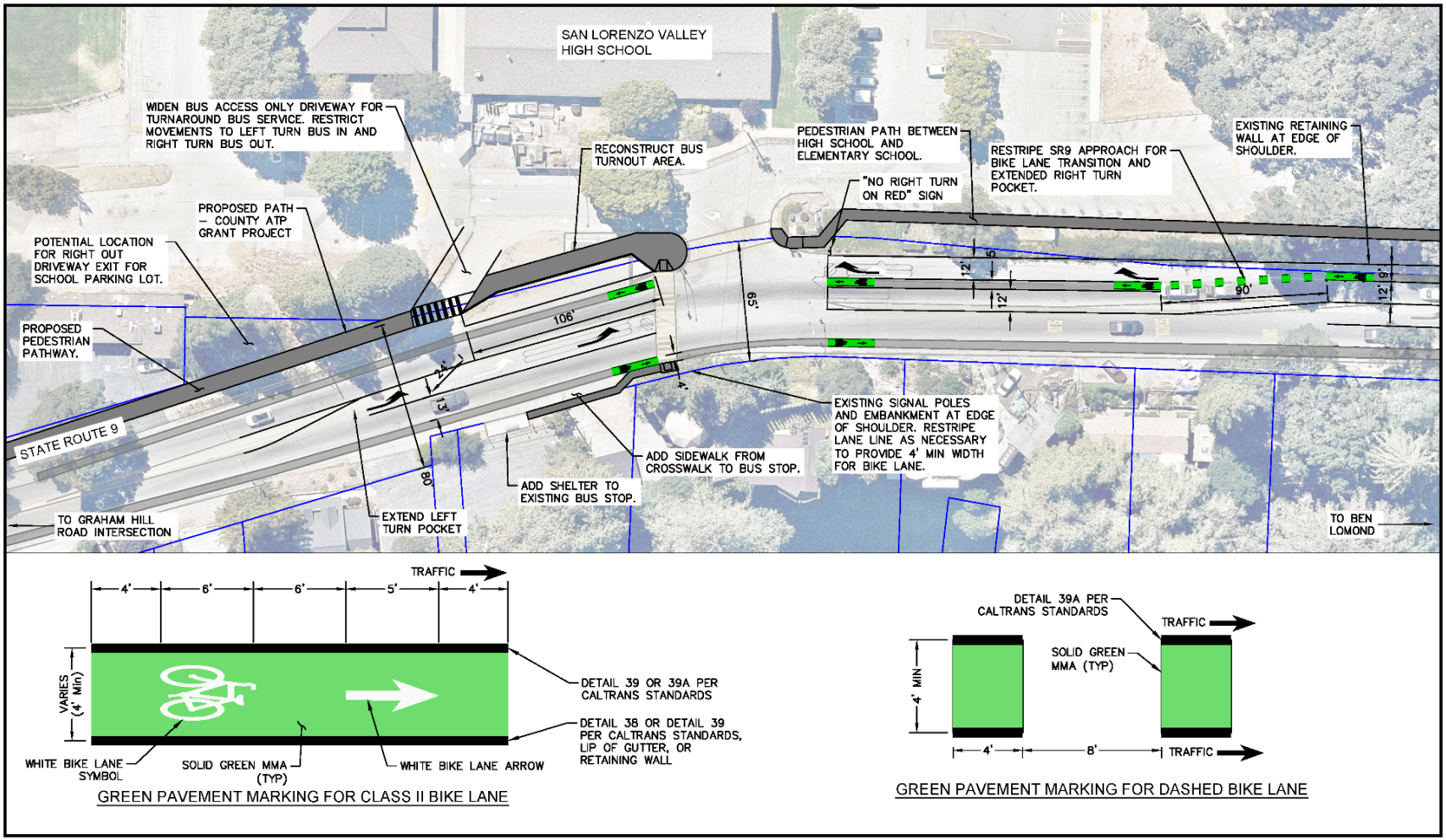
A second option of the western boundary of the campus complex could include:

- Pedestrian and bicycle path on SLVUSD land behind the Middle School soccer field in the northwest corner of the campus complex
- Modification of current service road around the western and southern boundaries of the campus complex (High School playing fields)
- This option would also require acquisition of right-of-way to connect to Fall Creek Dr

SLVUSD district staff have initially indicated these proposals represent “a significant investment and responsibility from the district to fix [pedestrian and bicycle access on] Highway 9, which the district cannot afford. The bridge alone involves many aspects including ADA and Fish and Game due to the creek, [the district] had this estimated out and it was not economically feasible to replace.”

Possible Feasibility Considerations: All options to improve access past and through the campuses would have potential feasibility constraints, though they would increase significantly for the major circulation redesign alternative. The existing High School and Elementary School entrances are located on a steep grade, and retaining walls are utilized to create the current roadway design. Any modifications to this design creating transportation facilities on the property between the current travel lanes and the existing parking lots between the two entrances would require additional grading, tree removal, and the construction of new retaining walls. Grading and retaining walls would create additional concerns regarding sight distances for and visibility of pedestrians using any new pedestrian facilities in the area, as well as ADA accessibility concerns.

Figure 3.18: SLV Schools Campus Improvement Short-Term Design Concept – Existing High School Entrance



Kimley»Horn

GRAPHIC SCALE IN FEET
0 25 50 100

— APPROXIMATE R/W PER SANTA CRUZ COUNTY GIS

FV-197061001 JUNE 2019

*EXHIBIT IS FOR ILLUSTRATIVE PURPOSES ONLY. PROPERTY LINES, SATELLITE PHOTO OF BUILDINGS, ETC. MAY NOT BE IN PRECISE LOCATIONS. EXACT LOCATION OF PARKING SPOTS, SHADED TREES, AND OTHER ELEMENTS TBD DURING DESIGN PHASE.

PROJECT 10 - ALTERNATIVE 1 (SHORT-TERM)
SLV HIGH SCHOOL DRIVEWAY IMPROVEMENTS
SANTA CRUZ COUNTY

SR 9 COMPLETE STREETS CORRIDOR STUDY

Figure 3.19: SLV Schools Campus Improvement Short-Term Design Concept – Existing Elementary School Entrance

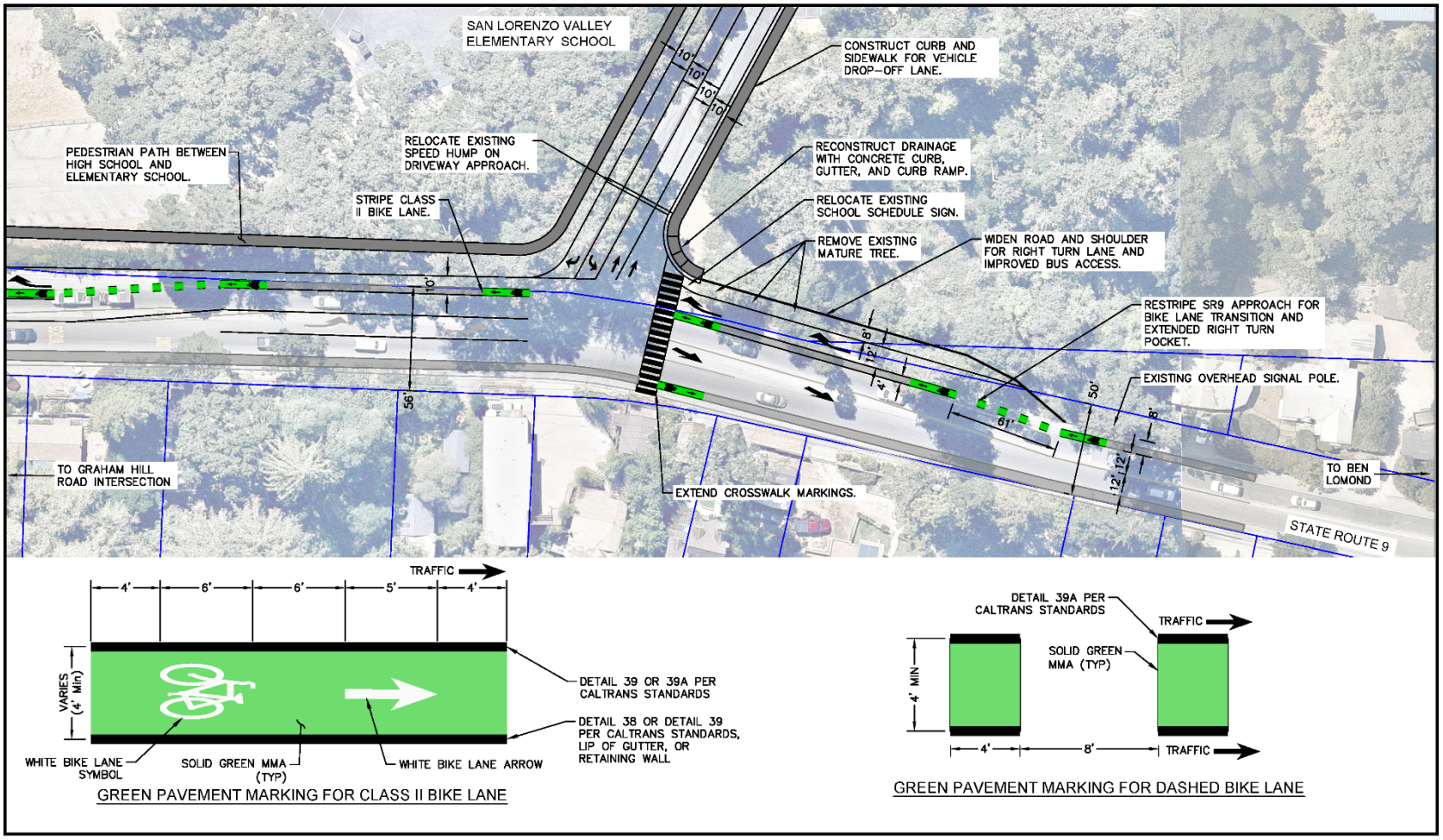
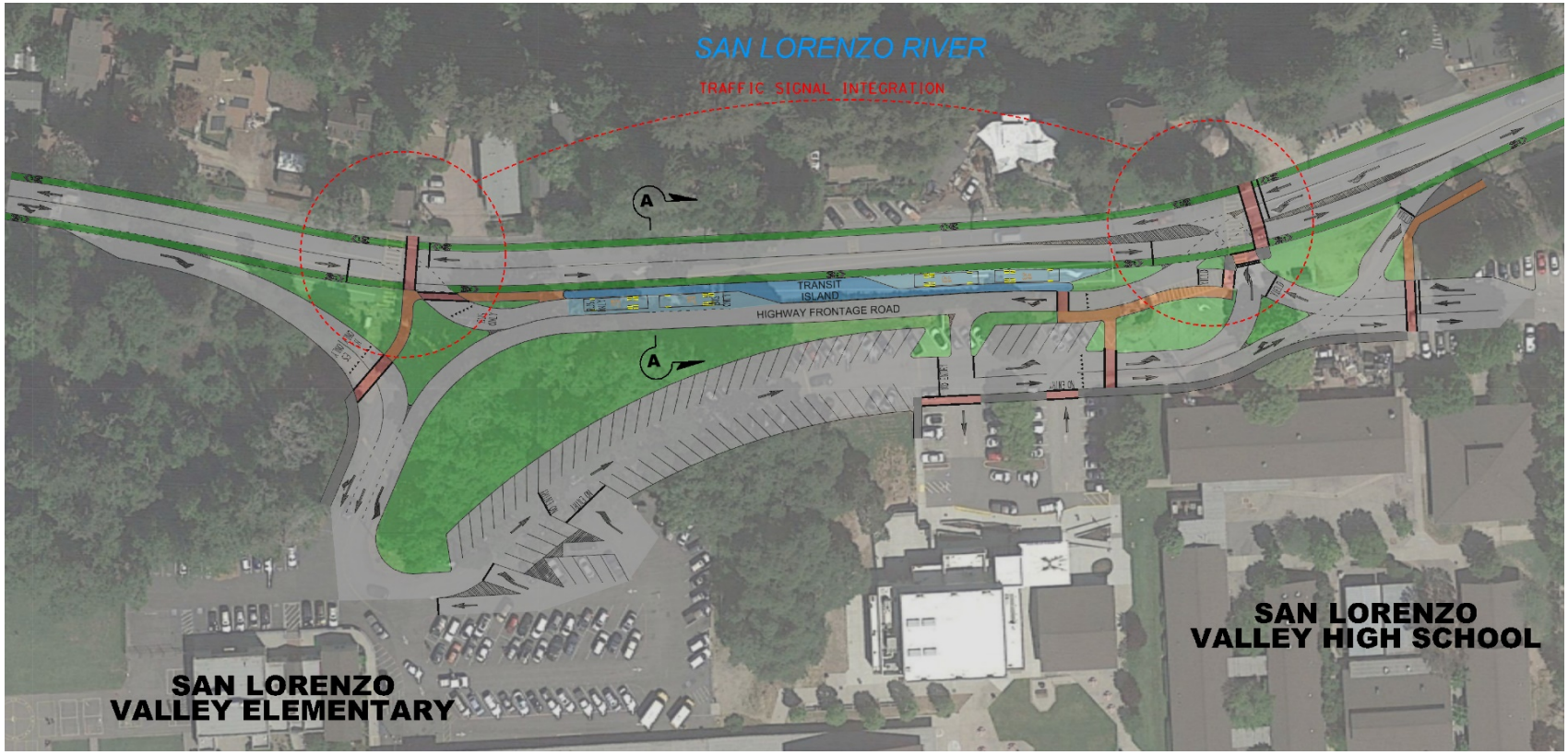


Figure 3.20: SLV Schools Campus Improvement Long-Term Design Concept



Credit: Concept produced by Jim Helmer and Shawn Vogtman of WMH Engineering. Concept only, would be considered in future planning efforts. Some aspects of this design may not be feasible but would be further evaluated as funding becomes available.

Project 11 – North San Lorenzo Valley Schools Pedestrian and Bicycle Connections

This project seeks to improve pedestrian and bicycle connections to the San Lorenzo Valley Schools from Brackney Rd in the north and improve transit access for transit stops serving El Solyo Heights Dr and the Middle School. Project improvements could occur on Highway 9, county roads, and/or private property, see **Figure 3.23**. Improvements may include:

- Bicycle sharrows markings on Hacienda Wy and El Solyo Heights downhill, with a bike lane on the uphill side of El Solyo Heights from Highway 9 to Hacienda Way.
- Right turn pockets on both El Solyo Heights and Highway 9 at this intersection to formalize queuing that currently occurs. Current sight lines around the curve of Highway 9 southbound may affect Highway 9 right turn pocket length or feasibility.
- Pedestrian facilities (path or sidewalk) on El Solyo Heights and Hacienda Wy
- Upgrade the crosswalk on Highway 9 at Lazy Woods Rd, near El Solyo Heights, potentially including analysis of a pedestrian activated flasher (RRFB).
- Upgrade both El Solyo area transit stops, add shelters, and analyze moving the northbound transit stop closer to the existing crosswalk.
- Pedestrian and bicycle facilities connecting the Middle School to Brackney Rd in the north. This component may include a trail bypass of Highway 9 via Hacienda Wy and Hillview Dr to the Middle School (see description below), or a pathway on Caltrans property above the retaining wall along Highway 9.
- Longer-term bicycle facility options may include widening the shoulder on Highway 9 between El Solyo Heights and Brackney Rd to create space for bike lanes.

Figure 3.21: Existing Informal Brackney Trail Location

An informal trail to the SLV schools currently exists between the southeast end of the closest bridge over the San Lorenzo River (between El Solyo Heights Dr and Brackney Rd) and corner of Hillview Dr and Hacienda Wy (see **Figure 3.21**).

If an easement were secured, the trail could be formalized. This trail would allow students, other pedestrians, and potentially bicyclists to avoid the curve on Highway 9 north of El Solyo Heights that has poor sight distance and narrow shoulders.

Project 11 would connect to bicycle and pedestrian facilities that would run from Brackney Rd past Willowbrook Dr area businesses to the southernmost intersection of Glen Arbor Dr with Highway 9 (Glen Arbor Dr S), as outlined in Project 12, allowing bicycle and pedestrian access to the schools to become available for the Glen Arbor neighborhood, one of the larger and more densely populated neighborhoods in the San Lorenzo Valley.

Figure 3.22: Start of Existing Informal Trail from Brackney to Hillview

Credit: SCCRTC

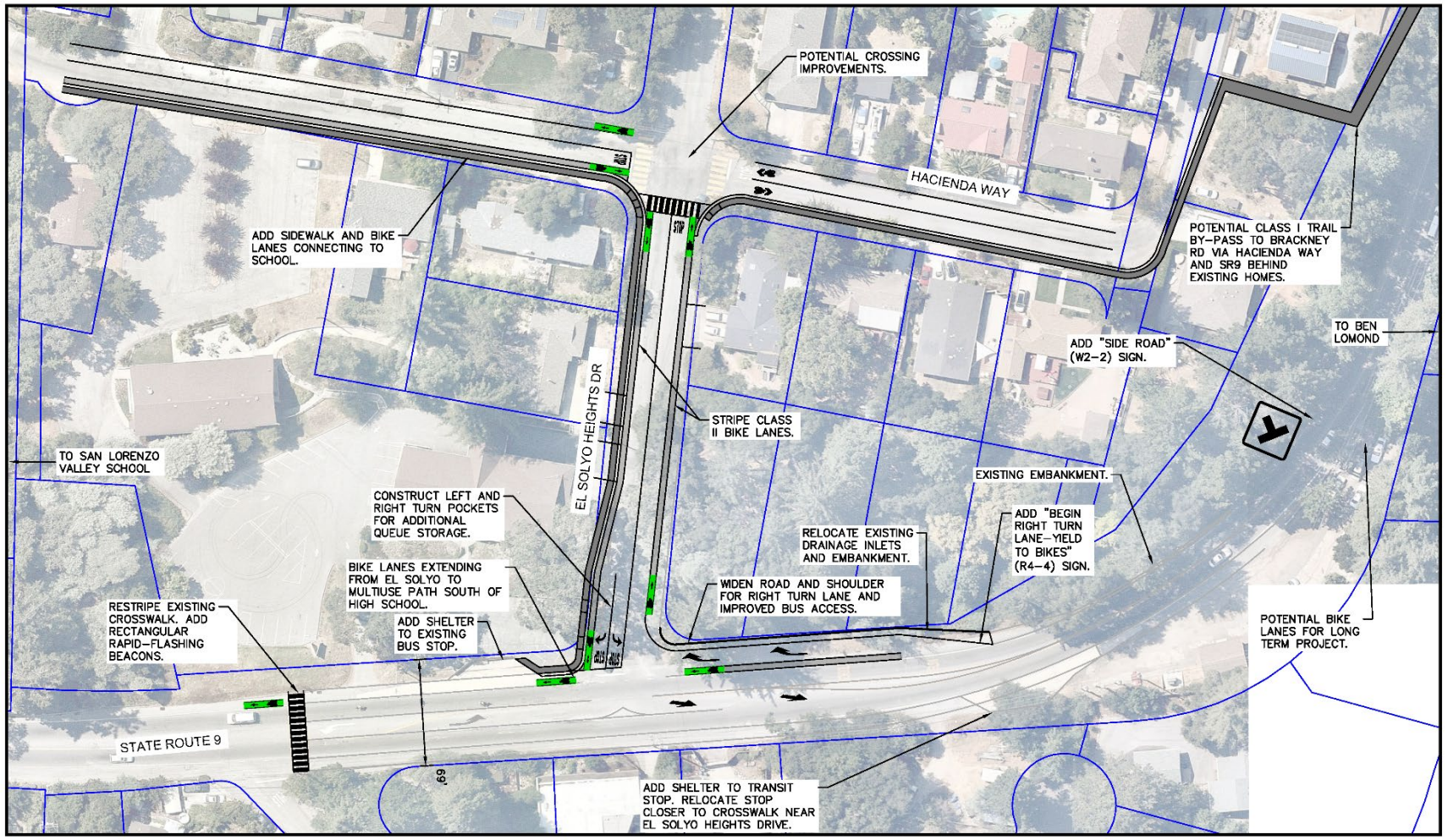
Converting the existing informal dirt trail from just south of the bridge at Brackney Rd to Hacienda Wy into Class I multiuse path or FHWA sidepath would require extensive retaining wall and embankment work, as well as right-of-way (ROW) acquisition. Other components of this project could require widening or repaving, as well as the construction of curb and gutter, sidewalks, and accompanying drainage. Formalizing the current informal trail would be contingent on building ADA-accessible facilities north to a pedestrian crosswalk that allows pedestrians and bicycles to cross to the east side of Highway 9. This crosswalk is a component of Project 12.

Possible Alternative Improvements: Other community suggestions have included:

- Relocate crosswalk at Lazy Woods farther north to El Solyo Heights and install a crosswalk/stop light that intersection. This would require additional analysis of sight and stopping distances for Highway 9 traffic traveling southbound.
- Keep northbound transit stop at current location, adding pathway on Highway 9 to crosswalk. The current transit stop has a wider shoulder than locations south, though it is quite far from the El Solyo Heights intersection and the Middle School.
- Install additional crosswalk on northern “high” side of Hacienda at El Solyo Heights. Requires lengthening culvert.

Possible Feasibility Considerations: Potential right-of-way impacts for Hacienda and El Solyo Heights sidewalks, Hacienda to Brackney trail, and relocation of northbound transit stop north of El Solyo Heights. Bike lane on El Solyo could require grading and tree removal. Converting existing informal trail to an ADA accessible facility could require extensive retaining wall and grading work and lighting to make feasible. Adding a merge lane on Highway 9 from El Solyo was also suggested, but due to right-of-way constraints would require additional analysis.

Figure 3.23: EL Solyo Heights and Highway 9 Intersection Improvement Design Concept



Project 12 – Willowbrook Drive Commercial Area Improvements and Glen Arbor Bike/Ped Connection

This project would improve pedestrian and bicycle access on Highway 9 to the businesses and neighborhoods surrounding the intersections of Willowbrook Dr, Locust Ln, and Sunnycroft Rd with Highway 9, as well as bike/ped connections south to Brackney Rd and north to the southern intersection of Glen Arbor Rd with Highway 9 (Glen Arbor Rd S).

This project could be implemented in phases as funding opportunities become available:

- **Tier I:** Analyze installation of a crosswalk on Highway 9 at the intersection with Willowbrook Dr, including RRFB or other pedestrian actuated lights, bulb-outs, and/or a pedestrian refuge island within the existing two-way left turn lane. Installation of new crosswalks is subject to Caltrans review process. This intersection is currently not striped, but is a legal crossing location, and there have been multiple collisions involving pedestrians at this location in the last decade.
- **Tier II:** Create bicycle and pedestrian facilities from Brackney Rd (and the terminus of the path in Project 11) to the transit stops at Sunnycroft Rd. Due to right-of-way constraints, particularly on the narrow bridges over the San Lorenzo River, a Class I multiuse path or sidepath would likely be a more feasible option than sidewalks and bike lanes.
- **Tier III:** Extend bicycle and pedestrian facilities along the frontage of the businesses around Willowbrook Dr to Glen Arbor Rd S. The right-of-way is likely wide enough in this area for separated pedestrian sidewalks and bike lanes. Add bicycle parking at businesses.
- Improvement of the Highway 9 and Sunnycroft transit stops (Stop ID# 1535 and 2125) by adding a paved area, a bench, and shelters would also be analyzed as part of this project.

This segment of Highway 9 has a center turn lane for driveway access. Parking areas and driveways merge with each other and the highway shoulder, leaving no designated space or facilities for pedestrians in the area. The bridge between El Solyo Heights and Brackney is approximately 270 feet long and has 5-foot sidewalks, on each side but no bike lanes or shoulders. North of Brackney to Glen Arbor S, the Caltrans right-of-way is 55 feet or wider, though the paved roadway is considerably narrower.

Pedestrian refuge islands are feasible where they do not conflict with turns onto local streets. Improvements would require reconstruction of drainage facilities, existing parking layout and driveway access to reduce conflict points. Other components of this project could require widening or repaving, as well as the construction of curb/gutter sidewalks and accompanying drainage.

Possible Feasibility Considerations: Potential right-of-way impacts for multiuse path Brackney to Sunnycroft, and sidewalks Sunnycroft to Glen Arbor Rd S. Reconstruction of private driveways and landscaping could also be necessary.

3.3. Ben Lomond

Existing Conditions

South of Ben Lomond, Glen Arbor Road S to Highlands Park. This short segment features very steep terrain and sharp curves, and the highway is very close to the river. This segment is served by the primary METRO line for the San Lorenzo Valley, route 35, which runs on 60-minute headways in this segment, as half of the departures run via Glen Arbor Rd instead. This segment has average daily traffic volumes of approximately 15,400 vehicles.

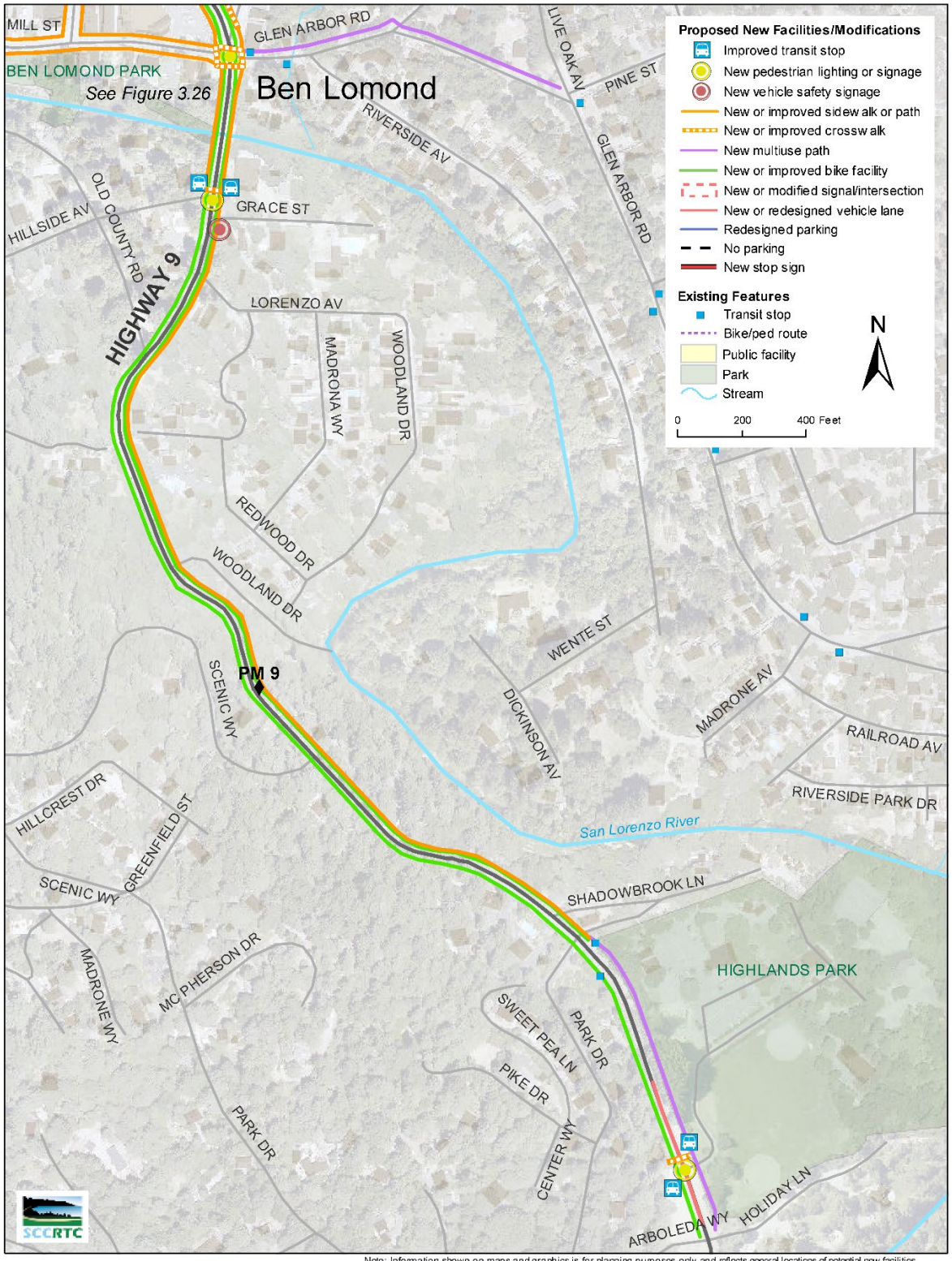
South Ben Lomond, Highlands Park to Hillside Avenue. This segment (4,000 feet) passes through more gentle topography in a suburban/rural residential setting that generally offers some room for widening and/or a separate path, though there are at least two constrained spots. A better bicycle and pedestrian connection to Highlands Park has been mentioned as a priority in community meetings. This segment is served by the primary METRO line for the San Lorenzo Valley, Route 35, which runs on a 60-minute headway in this segment, as half of the departures run via Glen Arbor Rd instead. This segment has average daily traffic volumes of approximately 16,000 vehicles.

Central and North Ben Lomond, Hillside Avenue to California Drive The south end of this segment (5,600 feet) passes through the central business district of Ben Lomond. To the north are residential areas. The terrain consists of gentle slopes and the highway is straight or has wide sweeping curves. The shoulders are relatively wide, and sidewalks exist on both sides of Highway 9 between the two ends of Mill St (Mill St N and Mill St S), though they are not continuous on the east side. Where there are no sidewalks, the paved shoulder often blends in to the parking and access for roadside business. There is ample room for improvements through most of the area, though utility poles, fences, and some trees create constraints, and there is a narrow section around Post Mile 9.6. This segment is served by the primary METRO line for the San Lorenzo Valley, Route 35, which runs on 30-minute headways in both directions and connects the SLV to downtown Santa Cruz. This segment has average daily traffic volumes of approximately 15,900 vehicles.

Figure 3.24: Downtown Ben Lomond Showing Existing Sidewalks

Credit: SCCRTC

Figure 3.25: Highlands Park Area

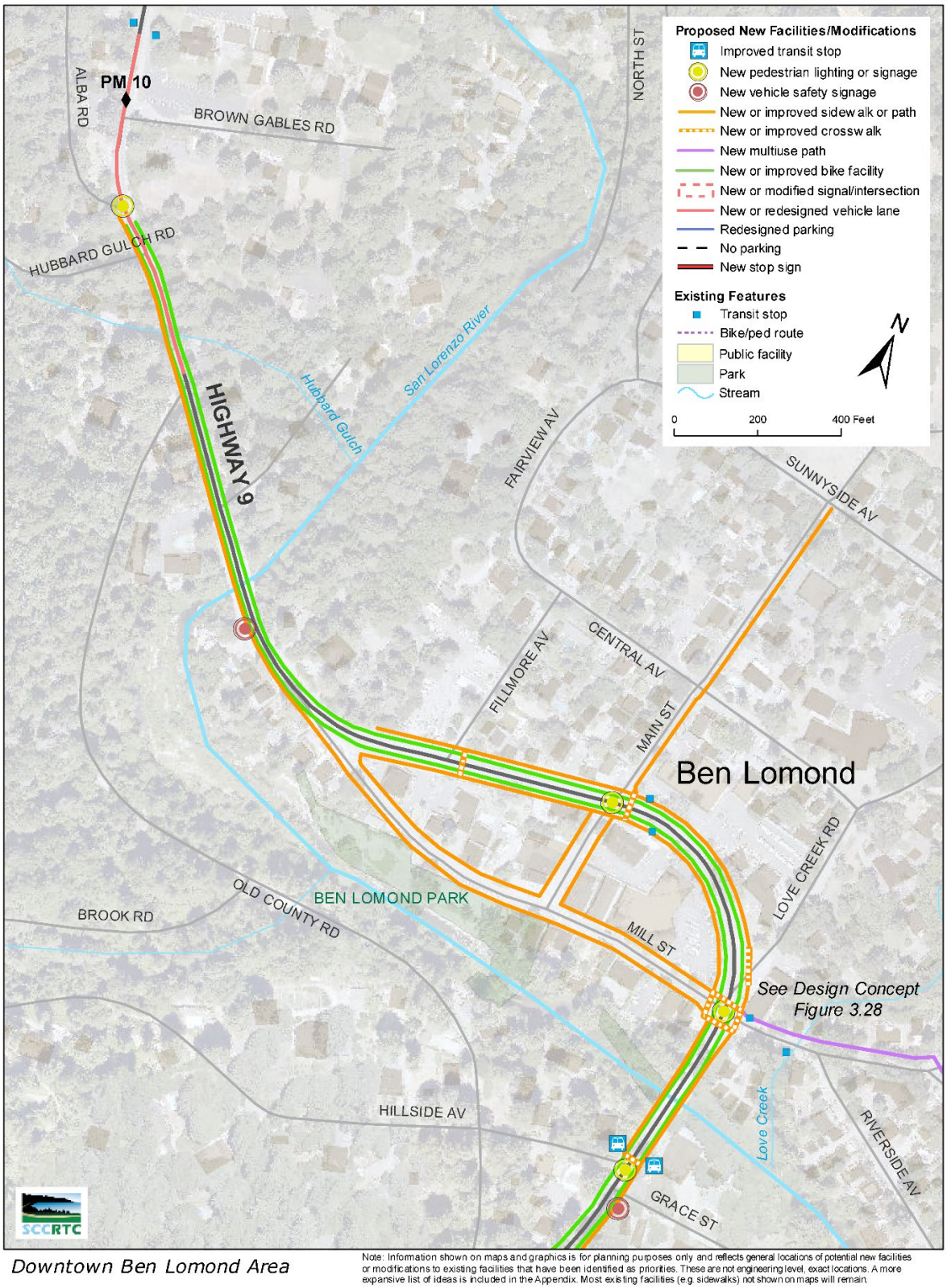


Highlands Park Area

Note: Information shown on maps and graphics is for planning purposes only and reflects general locations of potential new facilities or modifications to existing facilities that have been identified as priorities. These are not engineering level, exact locations. A more expansive list of ideas is included in the Appendix. Most existing facilities (e.g. sidewalks) not shown on maps will remain.

Credit: SCCRTC

Figure 3.26: Downtown Ben Lomond Area



Downtown Ben Lomond Area

Note: Information shown on maps and graphics is for planning purposes only and reflects general locations of potential new facilities or modifications to existing facilities that have been identified as priorities. These are not engineering level, exact locations. A more expansive list of ideas is included in the Appendix. Most existing facilities (e.g. sidewalks) not shown on maps will remain.

Credit: SCCRTC

Priority Projects

Project 13 –Pedestrian and Bicycle Connections from Ben Lomond to Highlands Park

This project would improve bicycle and pedestrian access between Ben Lomond and Highlands Park. Improvements would likely occur on Highway 9 but could occur on county roads. Bicycle and pedestrian facilities options include:

- Bike lanes/shoulder widening to 5 feet on both sides of Highway 9 from Ben Lomond south to Highlands Park;
- Walking path on east side of Highway 9 from Hillside Ave in Ben Lomond south to Highlands Park. If this segment is found to be too constrained for both bike lanes and a pedestrian path a multiuse path should be considered, see **Figure 2.12** in Chapter 2 *Corridor Vision* for a sample highway section with sidepath.
- *Longer-term option:* Highlands Park to the southern intersection of Glen Arbor Rd with Highway 9 (Glen Arbor Rd S). This short section of Highway 9 features very steep terrain and sharp curves in close proximity to the river. The SLV Trail Feasibility Study (Segment 9) recommends limited shoulder widening to 4 feet on both sides of Highway 9 and an informal path on east side behind the guardrail.

Adding wider shoulders for bicycles and adding pedestrian facilities along either of these sections of Highway 9 may involve realigning the roadway, putting drainage systems under the shoulder and building new retaining walls.

Improvements to the front entrance of Highlands Park on Highway 9 include:

- Upgrading the Highlands Park transit stops on Highway 9 with concrete pads, benches, and shelters;
- Upgrading the existing crosswalk on Highway 9 with bulb-outs, high-visibility striping, signage, and potentially a Rectangular Rapid Flashing Beacon (RRFB);
- Left turn and merge pockets for vehicles turning from or merging onto Highway 9 southbound.

Possible Alternative Improvements: Glen Arbor Rd winds through a suburban/rural residential setting, adjacent to the San Lorenzo River, roughly parallel to Highway 9. A bypass of Highway 9 via multiuse bicycle/pedestrian facilities on Glen Arbor Rd from Pine St south to a connection to Highland Park over the San Lorenzo River was analyzed but eliminated from consideration in the *SLV Trail Feasibility Study* (2006) and the draft of this plan due to cost, physical, land use, and environmental constraints. A path on Glen Arbor from Mill St S/Highway 9/Glen Arbor N intersection to Pine St north of this section is part of Project 15.

Adding a bicycle and pedestrian bridge over the San Lorenzo River to connect Glen Arbor Rd to the back/eastside of Highlands Park near Maple Dr or Riverside Park Dr was also considered and eliminated from the priority project list due to several practical challenges, including cost, potential easements across or purchase of private land, limited parking opportunities, slope, grading and tree removal, and other constraints at the river. An additional study connecting Glen Arbor Rd and Highlands Park, including any footbridge over the San Lorenzo River would be necessary to determine the most appropriate route and bridge location, the extent of impacts and feasibility.

Possible Feasibility Considerations: Similar to other areas along Highway 9 with right-of-way constraints, a continuous pedestrian and bicycle connection may require new or relocating

drainage, embankments and utilities, repaving and potential narrowing of the auto travel lanes, removal of tress, and/or modifications to guardrails or retaining walls.

Project 14 – Ben Lomond Crosswalk and Transit Improvements

This project seeks to improve crosswalks and transit connections on Highway 9 in the Ben Lomond town center.

Improvements in this area could include:

- On Highway 9 at Main St, re-striping the crosswalk to "square up" the crosswalk and shorten crossing distances. "Corral-style"/staggered/offset crosswalks with refuge island and/or bulb-outs may also be considered (see Appendix A Section 4.4, **Figure A11b**), if found to be feasible immediately adjacent to the Main St transit stops. The signpost of the existing RRFB on the northbound side of the road should be moved further south, to increase visibility of the activated sign for vehicles traveling northbound and to ensure stopped buses no longer obstruct the sign and activated flasher. A pedestrian refuge island at this location would not likely be feasible due at the current crosswalk location at the intersection but moving the crosswalk could be analyzed.

Figure 3.27: Existing Northbound Hillside Avenue Transit Stop

Credit: SCCRTC

- Addition of a new crosswalk at the intersection with Hillside Ave to provide better access to the transit stops, which would require the full Caltrans design process.
- Transit stop improvements for the Hillside Ave transit stops, including concrete pads, benches, and shelters.
- A new crosswalk on Highway 9 at Fillmore St, with at least one bulb-out on the west side of Highway 9 has also been proposed by the community. Caltrans has indicated that the feasibility of this location will require additional analysis due to the existing crosswalk at Main St one block south. See Appendix A Section 4.1 *New Crosswalk* for more information.

Preliminary Concept Designs for downtown Ben Lomond are shown in **Figure 3.28**. Infrastructure changes from Projects 14, 15, 16, and 17 are shown together in this figure, although they may be analyzed and implemented separately.

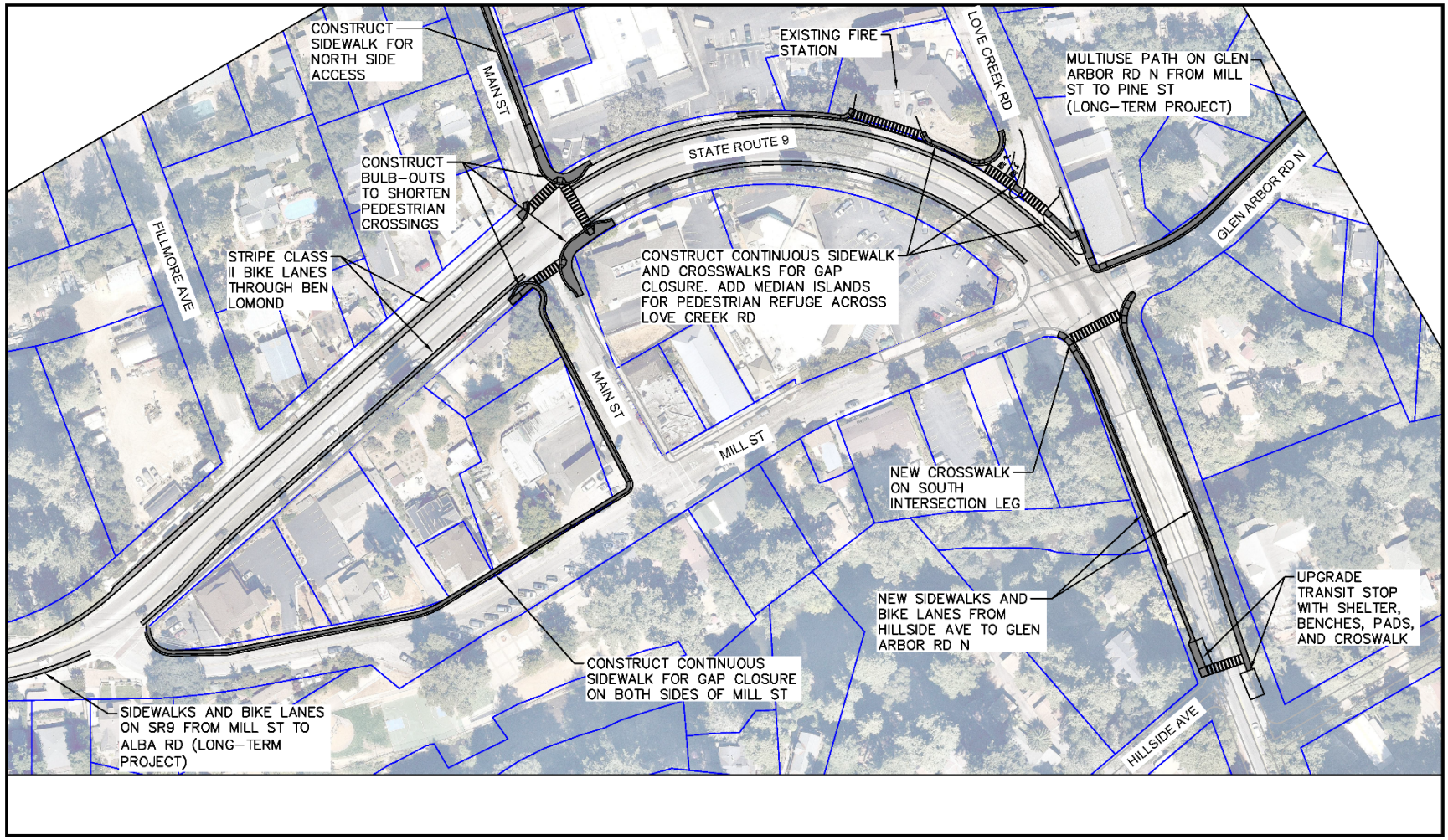
The terrain at these project locations consist of gentle slopes and the highway is straight. Shoulders are relatively wide, and sidewalks exist on both sides of Highway 9 between Mill St N and Main St, and on the south/west side to Mill St S/Glen Arbor Rd N. In areas without sidewalks, paved shoulder often blends into the parking and access for roadside business. No

pedestrian facilities currently exist south of the San Lorenzo River bridge at Mill St S/Glen Arbor Rd N.

Bulb-outs are feasible at Main St with the existing cross-section based on the available Right-of-Way (ROW), but they would conflict with current turn movements. Bulb-outs would need to be designed to accommodate drainage to/from the existing curb & gutter. A striped crosswalk at the Hillside Ave intersection was found to be feasible during initial analysis, as well as improvements at the existing transit stops. Paved bus pullout and crossing improvements on east side could require relocation of an existing utility pole and a rock wall near a parking area, while the west side could require shoulder paving and landscape removal.

Possible Feasibility Considerations: Grading and landscaping reconstruction could be required for the upgrades to the Hillside Ave transit stops.

Figure 3.28: Ben Lomond Town Center Design Concept



Kimley»Horn

NORTH

GRAPHIC SCALE IN FEET
0 50 100 200

— EXISTING R/W PER SANTA CRUZ COUNTY GIS

FV-197061001 JUNE 2019

*EXHIBIT IS FOR ILLUSTRATIVE PURPOSES ONLY. PROPERTY LINES, SATELLITE PHOTO OF BUILDINGS, ETC. MAY NOT BE IN PRECISE LOCATIONS. EXACT LOCATION OF PARKING SPOTS, SHADED TREES, AND OTHER ELEMENTS TBD DURING DESIGN PHASE.

PROJECT 14, 15, 16, 17
BIKE / PED CONNECTION IN BEN LOMOND
HILLSIDE AVENUE TO ALBA ROAD

SR 9 COMPLETE STREETS CORRIDOR STUDY

Project 15 – Mill Street and Glen Arbor Road Pedestrian Improvements

This project would fill gaps in pedestrian facilities in Ben Lomond on Highway 9 and county roads and increase visibility of crossing facilities. Improvements could include:

- Adding a fourth crosswalk on the south leg of the Mill St S/Glen Arbor Rd N/Highway 9 intersection.
- Installing pedestrian signal heads with walk/don't walk indications to both new and existing crosswalks at that intersection.
- On Mill St between its two intersections with Highway 9, fill gaps in existing sidewalks on both sides of the street, per the Ben Lomond Town Plan.
- Add a multiuse path or sidepath connection on north/eastside of Glen Arbor Rd from Hwy 9 to Brookside Ave in the short term, and then continuing on to the Glen Arbor Rd and Pine St transit stop in the longer term. See Project 13 for potential bicycle and pedestrian connections further south to Highlands Park.

Preliminary Concept Designs for downtown Ben Lomond are shown in **Figure 3.28**. Infrastructure changes from Projects 14, 15, 16, and 17 are shown together in this figure, although they may be analyzed and implemented separately.

At Mill St S/Glen Arbor Rd N/Highway 9 intersection, a crosswalk on the south leg can be added by reconstructing curb ramps and modifying signal operations.

Possible Alternative Improvements: A potential long-term project could extend the walkway on the north/east side of Glen Arbor Rd from Brookside Ave to Newell Creek Rd with a crosswalk at Madrone Ave.

Possible Feasibility Considerations: Bicycle and pedestrian connection on Glen Arbor Rd between Mill St/Highway 9 and Pine St could require significant landscaping and driveway reconstruction, as well as narrowing travel lanes and right-of-way impacts. Filling gaps in sidewalks on Mill St could have potential driveway reconstruction and right-of-way impacts, the county has indicated that completing the sidewalk on the east side of Mill St is a low priority due to these constraints and the existing sidewalk on the west side.

Project 16 – Ben Lomond Downtown Core Multiuse Improvements

This project seeks to improve facilities for autos, pedestrians, and bicycles on Highway 9 and county roads in the Ben Lomond town center. This project is tiered, as it can be incrementally phased as funding opportunities become available. Concurrent with improving pedestrian and bicycle facilities, formalizing parking stalls adjacent to sidewalks and/or bike lanes wherever feasible in the town center and adding bicycle parking at businesses.

- **Tier I:** Install new walkways and crosswalk striping to close the gap in pedestrian facilities on Highway 9 in front of 9450 Highway 9 (Henflings), the Ben Lomond Fire Department, and across Love Creek Rd at Highway 9 to the Mill St S/Glen Arbor Rd S signal to provide continuous pedestrian facilities on both sides of Highway 9 between Mills St N and Mill St S.

  Evaluate options to redesign Highway 9/Love Creek Rd/Glen Arbor Rd N intersection to provide safer pedestrian access, particularly on the northeast corner of the intersection. Upgrade the existing unmarked crossing at the Love Creek Rd intersection with Highway 9,

including striping and shortening the crossing distance via bulb-outs, wider sidewalks, or other design modifications, could be included in this tier or completed separately.

- **Tier II:** Fill gaps in sidewalks and lighting on Main St from Highway 9 to the Post Office and Sunnyside Ave (potentially on the east side only).
- **Tier III**: Stripe bike lanes on Highway 9 between Mill St N and Mill St N/Glen Arbor S, including green hatch markings in intersection approaches where autos cross the bike lane.
- **Tier IV:** Fill gaps in sidewalks on Main St between Mill St and Highway 9, per the Ben Lomond Town Plan.

Tier V: Add sidewalks and bike lanes on Highway 9 from Hillside Ave to the San Lorenzo River bridge and the Mill St S/Glen Arbor Rd S intersection to provide access to the Hillside Ave transit stops. Add or include shade trees, benches, tree wells, and other aesthetic features, consistent with *Caltrans' Main Street-California (2013)*. Reducing speeding and implementing traffic calming elements throughout Ben Lomond town center is described in Chapter 2 *Priority A*.

The terrain consists of gentle slopes and minor curves. Shoulders are relatively wide, and sidewalks exist on the west side of Highway 9 between either end of Mill St (Mill St N and Mill St S), as well as on the east side of Highway 9 between Mill St N and 9450 Highway 9 (Henflings). Outside of the town center, paved shoulders often blend in to the parking and access for roadside business. There are currently no pedestrian facilities south of the San Lorenzo River bridge at Glen Arbor Rd N/Mill St S. Initial analysis indicates shoulders are wide enough for bicycle facilities and parking along Highway 9 in the town center, however the shoulders narrow past the San Lorenzo River bridge near Hillside Ave.

A sidewalk on the east side of Main St may be easier to implement than both sides. Some utility poles and private driveways may need to be relocated. Crosswalk and curb ramps required at intersections and design should meet ADA Standards.

Sidewalk gap closure on Highway 9 between the 9450 Highway 9 (Henflings) and the corner of Love Creek Rd could require reconstruction of the existing fire station driveway to meet ADA standards and minimize crossing length across the Love Creek Rd intersection. The Fire Department requests informal parking and perpendicular parking at Henflings be maintained for volunteers responding to calls.

Possible Feasibility Considerations: All components of this project could require landscaping and reconstruction of some driveways. Bike lanes and walkways have the potential to also require relocation of some on-street parking.

Project 17 – Pedestrian and Bicycle Connections from Mill Street to Alba Road

This project would improve pedestrian and bicycle connections on Highway 9 from the intersection of Highway 9 and Mill St N to Hubbard Gulch Rd and Alba Rd. This project could include:

- Pedestrian walkway and lighting on the west side of Highway 9 from Mills St N to Alba Rd, potentially a first segment could be a walkway on Highway 9 from Mill St N to 9733 Highway 9 (Quality Inn) north of the San Lorenzo River, before extending the facilities to Alba Rd. These facilities could entail either a path around a stand of redwood trees between Mills St N and the Quality Inn, or a traditional sidewalk which would require the removal of several trees within the Caltrans right-of-way.

- Bike lanes on Highway 9, extending the bike lanes provided in Project 16 from the Mill St N intersection to the Alba Rd intersection. Bike lanes could require repaving or widening of roadway.

Figure 3.29: Trees at West Shoulder of Highway 9, North of Mill Street N

Credit: Kimley Horn

Currently, there are sidewalks and a crosswalk across Mill St N at Highway 9, but no formal pedestrian or bicyclist facilities continue north, except the sidewalk on the bridge over the San Lorenzo River. There are private landscape improvements and several mature redwoods and firs at or near the shoulder that block the potential location of a sidewalk, and private pull-in parking that would cross the route of potential pedestrian facilities.

Possible Alternative Improvements: A shorter-term option to create right-of-way space for bicyclists and possibly pedestrians would entail moving the vehicle travel lanes eastward to create more space on the westside of Highway 9.

Possible Feasibility Considerations: Pedestrian facilities could have right-of-way impacts and could require tree removal and landscaping and driveway reconstruction.

Project 18 – Hubbard Gulch/Alba Road Operational Improvements

This project seeks to improve operations for autos and pedestrians at the intersection of Highway 9 and Alba Rd and Highway 9 and Hubbard Gulch Rd.

Currently, a center turn lane between Hubbard Gulch and Alba Intersections exists, but striping is ambiguous, with turn/merge areas not clearly marked and which could require advanced warning signage. This project could include:

- Restripe the Alba Rd and Hubbard Gulch Rd turn/merge pockets on Highway 9 to comply with current Caltrans guidelines, see Appendix A Section 1.4 *Turn and Merge Pockets.*
- New crosswalk with high-visibility reflective ladder markings to provide pedestrian access across Highway 9 near transit stops just north of Alba Rd intersection. Installation of new crosswalks is subject to Caltrans review process.
- Improve line of sight at these intersections, potentially through tree trimming, fence modifications, or vegetation removal.

Realignment of Hubbard Gulch Rd and Alba Rd approaches to optimize sight distance is constrained by existing right-of-way, utility poles, and trees. Reconstruction of the intersections could be investigated as a long-term improvement.

Possible Feasibility Considerations: Improving line of sight could have right-of-way impacts, require utility pole relocation, and require landscaping or tree removal. Sight distance and transit stop locations should be considered when determining crosswalk location.

3.4. Brookdale

Existing Conditions

Existing Conditions South of Brookdale, California Drive to Western Avenue. This segment (3,500 feet) passes through very steep terrain and has sharp curves. It is a low-density residential area, with some areas undeveloped due to steep slopes. The highway is close to the river at the north end, with steep drop-offs and one recent major slope failure. This segment is served by the primary METRO line for the San Lorenzo Valley, route 35, which runs on 30-minute headways in both directions and connects the SLV to downtown Santa Cruz.

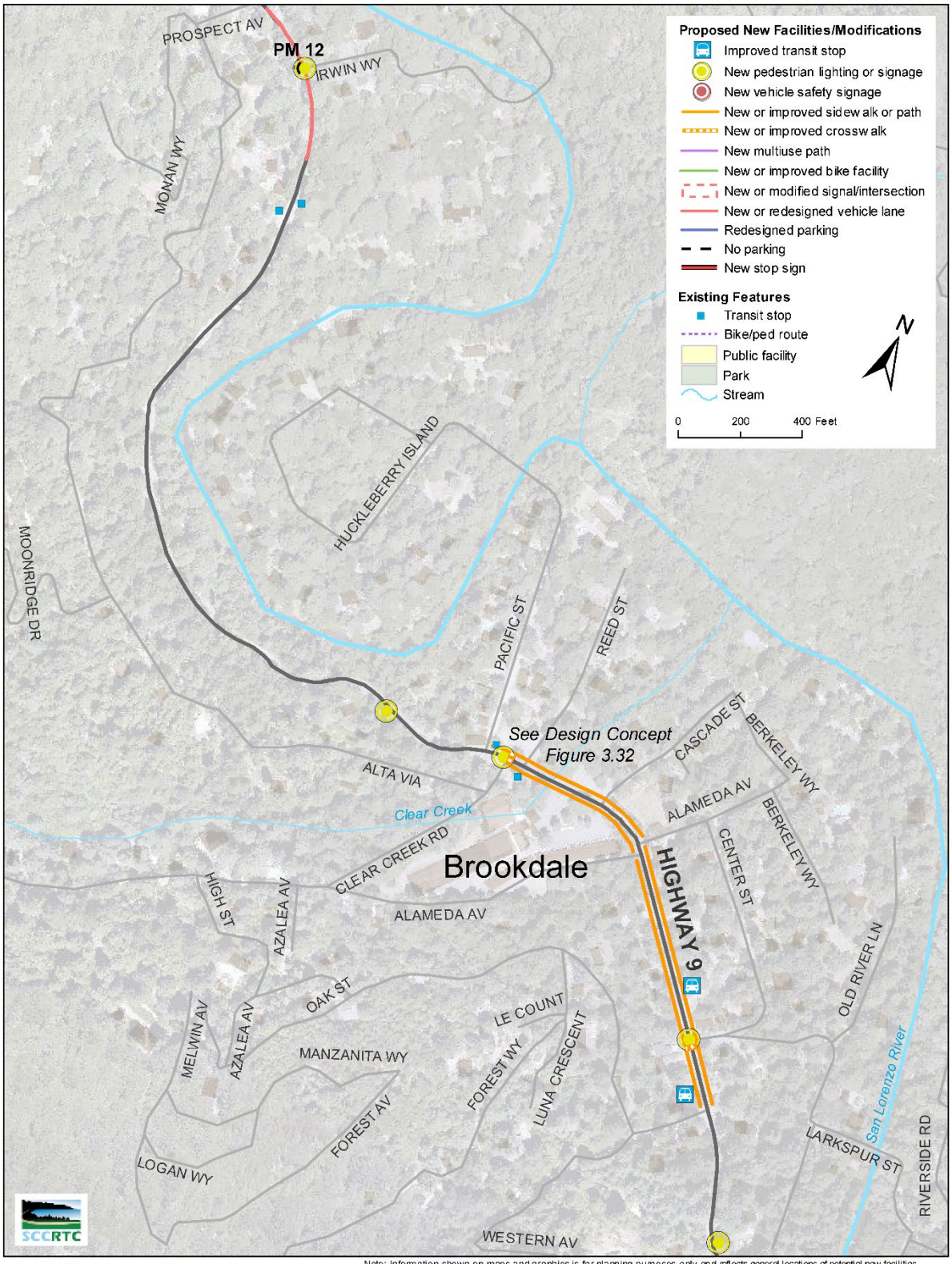
Existing Conditions in Central Brookdale, Western Avenue to Pacific Street. The road straightens out and the terrain is less steep through this short segment (1,900 feet), however it is densely developed with older residences and commercial uses, primarily on small lots. Though the terrain offers opportunity for widening or a separate path, there are many redwood trees and private improvements close to the road that present constraints. But because of the residential population and tourist activity centered around the historic Brookdale Lodge, improvements may be desirable in this area. This segment is served by the primary METRO line for the San Lorenzo Valley, route 35, which runs on 30-minute headways in both directions and connects the SLV to downtown Santa Cruz. This segment has average daily traffic volumes of approximately 11,900 vehicles.

Existing Conditions North of Brookdale, Pacific Street to River Street. This segment (approx. 4,350 feet) has steep slopes and is in close proximity to the river in the southern portion, however there is room for improvements in the north central portion. This segment is served by the primary METRO line for the San Lorenzo Valley, route 35, which runs on 30-minute headways in both directions and connects the SLV to downtown Santa Cruz.

Priority Projects

Priority projects for Brookdale are mapped and described on the following pages.

Figure 3.30: Downtown Brookdale Area



Downtown Brookdale Area

Note: Information shown on maps and graphics is for planning purposes only and reflects general locations of potential new facilities or modifications to existing facilities that have been identified as priorities. These are not engineering level, exact locations. A more expansive list of ideas is included in the Appendix. Most existing facilities (e.g. sidewalks) not shown on maps will remain.

Credit: SCCRTC

Priority Projects

Project 19 – Brookdale Sidewalks

This project would create pedestrian facilities along Highway 9 in the Brookdale town center where no such facilities currently exist.

While the preference is to construct sidewalks as a complete project, the project could be incrementally phased as new developments and maintenance are constructed or funding opportunities become available. Potential improvements include:

- **Tier I:** Construction of sidewalks along one or both sides of Highway 9 from Pacific St to Alameda Ave
- **Tier II:** Extend sidewalk(s) from Alameda Ave to the transit stops at Western Ave

Preliminary Concept Designs for Brookdale are shown in **Figure 3.32**. Infrastructure changes from Projects 19 and 20 are shown together in this figure, although they may be analyzed and implemented separately.

Add or include shade trees, benches, tree wells, and other aesthetic features, consistent with *Caltrans' Main Street-California (2013)*.

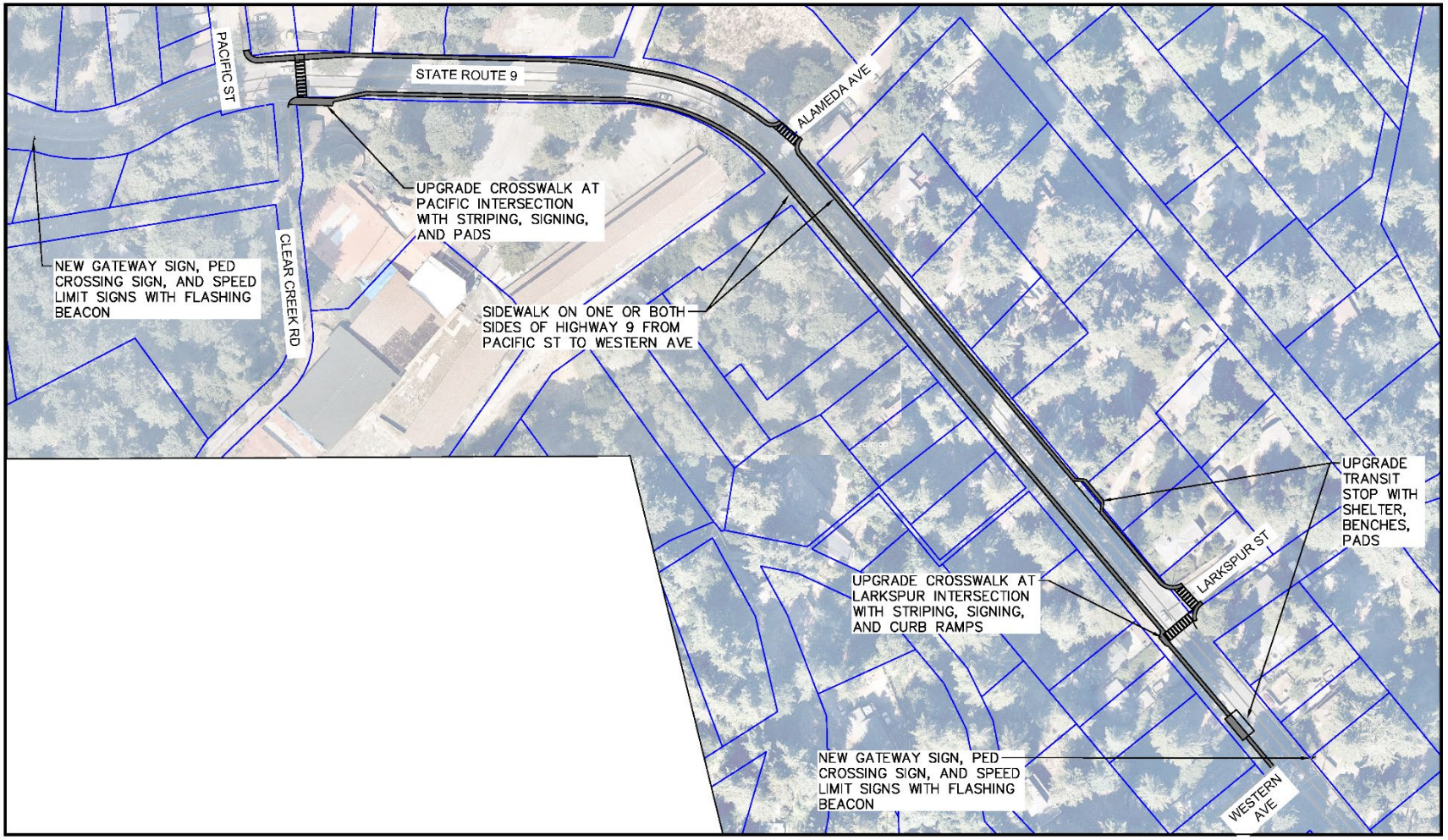
Figure 3.31: Berkeley Way and Highway 9 in Brookdale, Looking North

Credit: SCCRTC

The area has many mature redwood trees and private improvements close to the road that present constraints for widening past the travel way. Curb and gutter sidewalks could require the relocation of poles, guardrails, drainage ditches, and bridge cross sections, as well as installation of accompanying drainage and tree removal.

Possible Feasibility Considerations: Sidewalks in Brookdale, especially on both sides, could require significant tree removal, landscaping and driveway reconstruction, and have right-of-way impacts.

Figure 3.32 Brookdale Town Center Design Concept



Project 20 – Brookdale Crosswalk Improvements

This project seeks to add enhanced safety features to existing pedestrian crosswalks on Highway 9 in Brookdale at Pacific St/Clear Creek Rd and Larkspur St. Improvements could include:

- Install high-visibility ladder markings, yield striping, high-visibility pedestrian signs, and bulb-outs or protected concrete landing pads at existing pedestrian crossings at Pacific/Clear Creek and Larkspur St.
- Analyze a potential pedestrian refuge island and RRFB at the Pacific St/Clear Creek Rd crosswalk. This location has feasibility concerns but has been consistently identified by the community as a priority location for a refuge island and flashing beacons.
- Advanced warning beacons on the north and south ends of the town as gateway signs to alert drivers of the approaching crosswalk and the posted speed limit. Such beacons are part of Priority A for other locations throughout the SLV (see *Corridor Wide Priorities*, Section 2.4), but because Brookdale has no stop, control beacons were included here as a priority component of crosswalk improvements.
- Remove redwood tree at east side of Pacific crosswalk to enhance pedestrian visibility, pending further analysis. Stakeholders and community leaders at the 2018 focus groups supported tree removal if it would provide a major improvement in safety for pedestrians and bicyclists, particularly children. Tree removal is typically mitigated by planting several trees elsewhere.

Figure 3.33: Larkspur Street and Highway 9 in Brookdale, Looking North

Credit: SCCRTC

Preliminary Concept Designs for Brookdale are shown in **Figure 3.32**. Infrastructure changes from Projects 19 and 20 are shown together in this figure, although they may be analyzed and implemented separately.

Bulb-out and pedestrian refuges would need to address drainage, complement pedestrian paths, and may require widening of the roadway.

Possible Alternative Improvements: An all-way stop sign at the intersection of Pacific/Clear Creek and Highway 9, and/or relocation of the crosswalk from the current Clear Creek Rd location would require additional study and intersection analysis including an intersection control evaluation (ICE).

Possible Feasibility Considerations: A pedestrian island refuge at the Pacific/Clear Creek crossing may not be feasible due to engineering constraints and would require further analysis. Pedestrian activated flashers at Pacific/Clear Creek could also be considered, but initial analysis indicates they may be infeasible due to a blind curve just north of the crossing.

The crosswalk north of Pacific St/Clear Creek Rd is undergoing evaluation as part of a successful 2018 HSIP grant.

Project 21 – Irwin Way and Highway 9 Intersection Improvements

This project seeks to reduce collisions and improve intersection operations at the intersection of Irwin Wy and Highway 9. The project could include:

- Installation of a center left turn pocket and merge pocket, or a two-way left turn lane on Highway 9 at Irwin Wy intersection.
- Installation of smaller pedestrian-scale streetlights (e.g. double-acorn style) at the intersection, as described in *Corridor Priority E*, see Chapter 2 Section 2.4.

Possible Feasibility Considerations: Roadway widening could require removal of large native redwoods, relocation of several utility poles, require retaining walls/drainage, and require Right-of-Way (ROW) acquisition to the west. High construction cost and complexity would make this project difficult to implement. Turn/merge pocket could require extensive grading and tree removal, potential right-of-way impacts. While lighting Irwin Wy and other intersections has been identified as a safety need, several community members have expressed concerns about light pollution and potential impacts on wildlife.

3.5. Boulder Creek

Existing Conditions

Central Boulder Creek, River Street to Bear Creek Road

This segment (approx. 5,000 feet) passes through relatively flat terrain and the road straightens out. The shoulders are narrow in the southern portion. There is room to widen or create a separate path except there are many adjacent utility poles, fences, ditches, and low embankments on the west side. In some cases, there are already informal paths or walkways. The northern portion of this segment consists of the central business district of Boulder Creek. North of River St there are wide shoulders, most of which are taken up by parallel parking, and sidewalks along the storefronts. The central portion has narrower shoulders and discontinuous space for pedestrians off the shoulder due to encroaching fences, signs, and some embankments. This segment is served by the primary METRO line for the San Lorenzo Valley, route 35, which runs on 30-minute headways in both directions and connects the SLV to downtown Santa Cruz. This segment has average daily traffic volumes of approximately 12,000 to 18,000 vehicles.

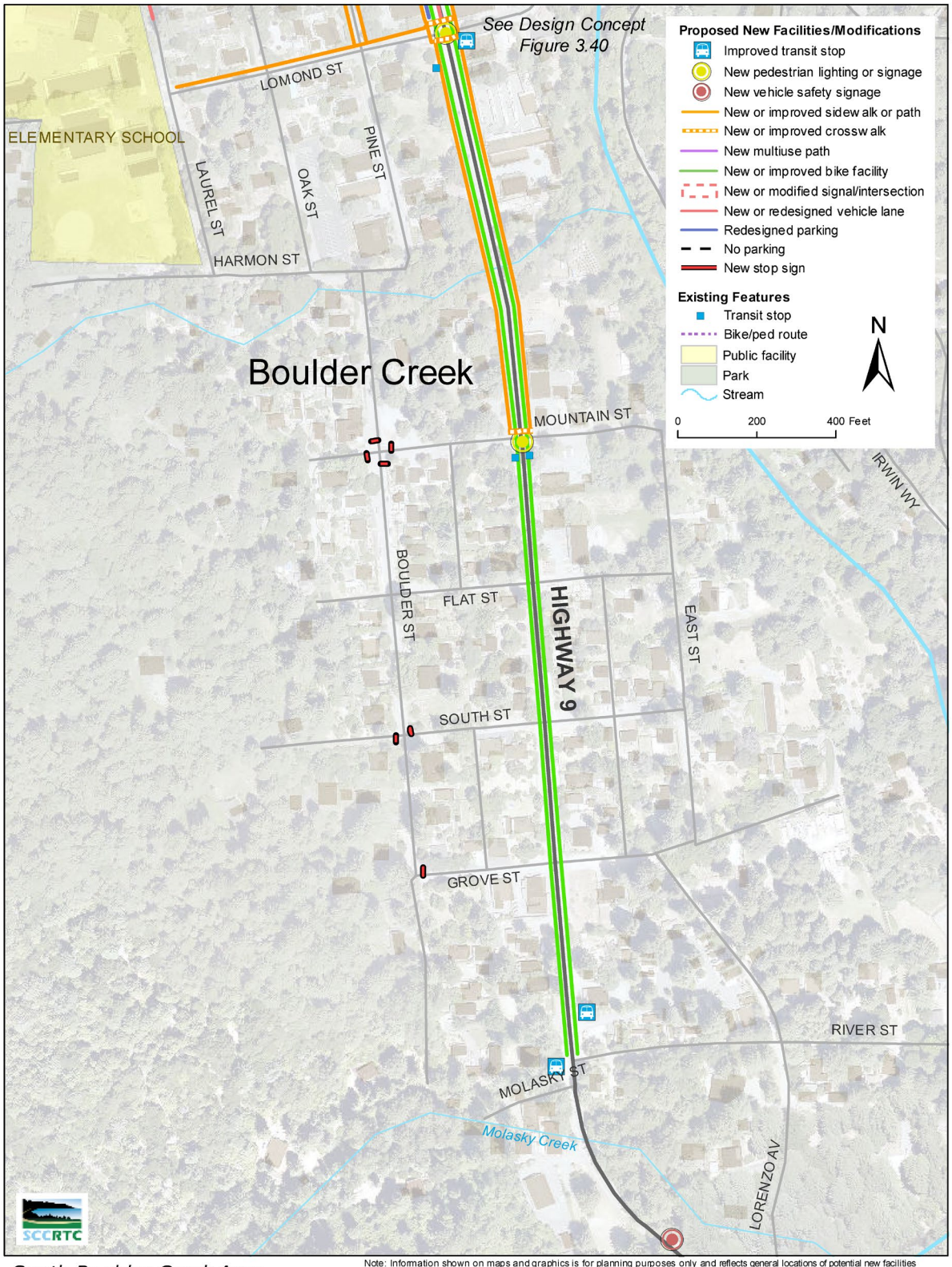
North of Boulder Creek, Bear Creek Road to Northern Intersection of Highway 9 and Highway 236

The northern portion of the project area is mountainous redwood forest with fewer connecting roads than the other portions of the study area. Much of the adjacent land includes a series of rural residential neighborhoods. A few small commercial businesses dot a stretch of Highway 9 between Pleasant Wy and Pool Dr, along with one school – Ocean View Charter, and a YMCA camp. This segment is served only intermittently by the primary METRO line for the San Lorenzo Valley, route 35, which alternates between serving the Country Club on Highway 236 and the Mountain Store at Pool Dr. The Pool Dr transit stop is the final stop on the route and is served every 60 minutes. This segment has average daily traffic volumes of approximately 10,000 (north of Bear Creek Rd) to 4,200 vehicles (near North Junction Highway 236).

Figure 3.34: Lomond Street and Highway 9 in Boulder Creek, Looking North

Credit: SCCRTC

Figure 3.35: South Boulder Creek Area

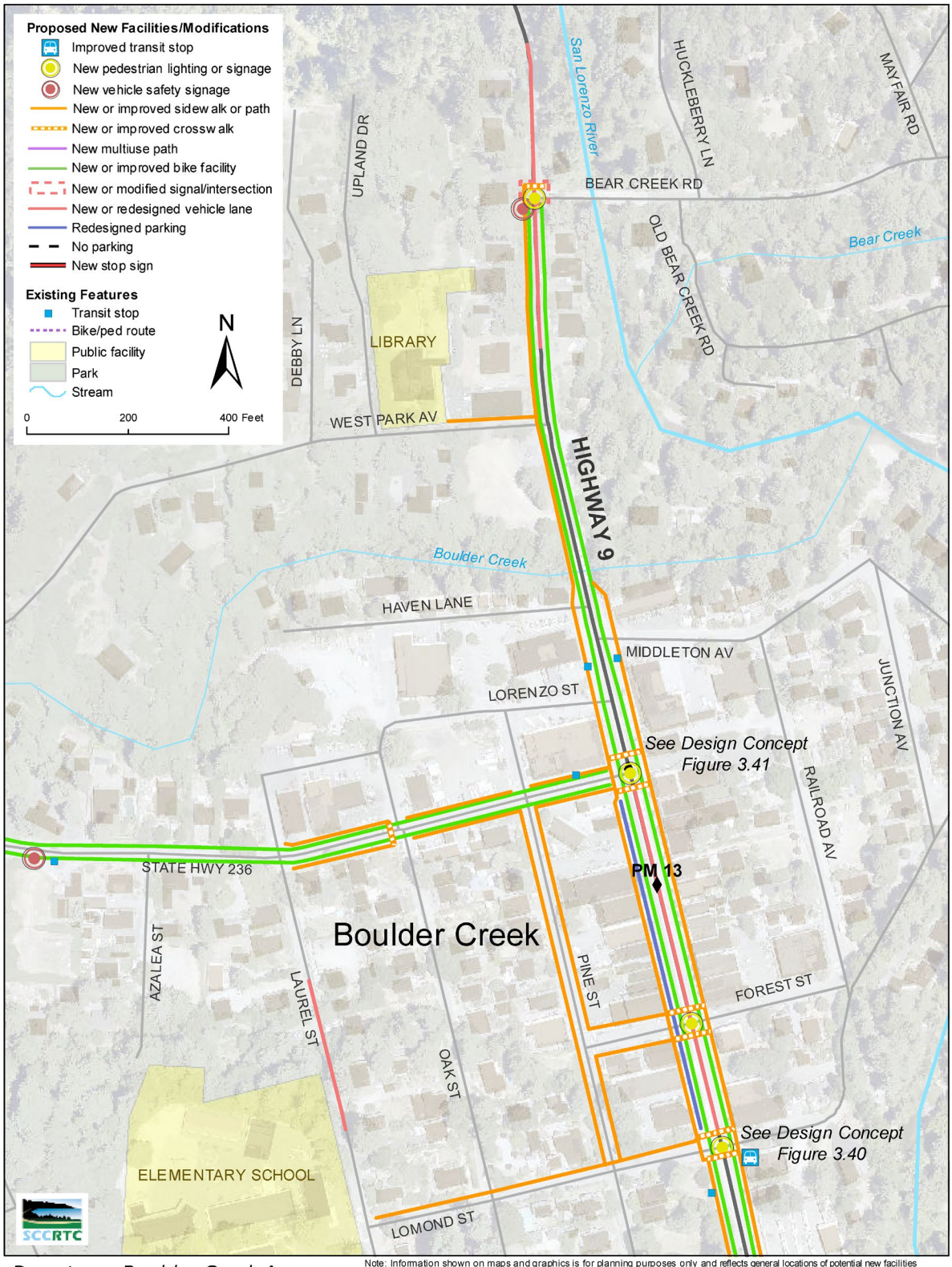


South Boulder Creek Area

Note: Information shown on maps and graphics is for planning purposes only and reflects general locations of potential new facilities or modifications to existing facilities that have been identified as priorities. These are not engineering level, exact locations. A more expansive list of ideas is included in the Appendix. Most existing facilities (e.g. sidewalks) not shown on maps will remain.

Credit: SCCRTC

Figure 3.36: Downtown Boulder Creek Area

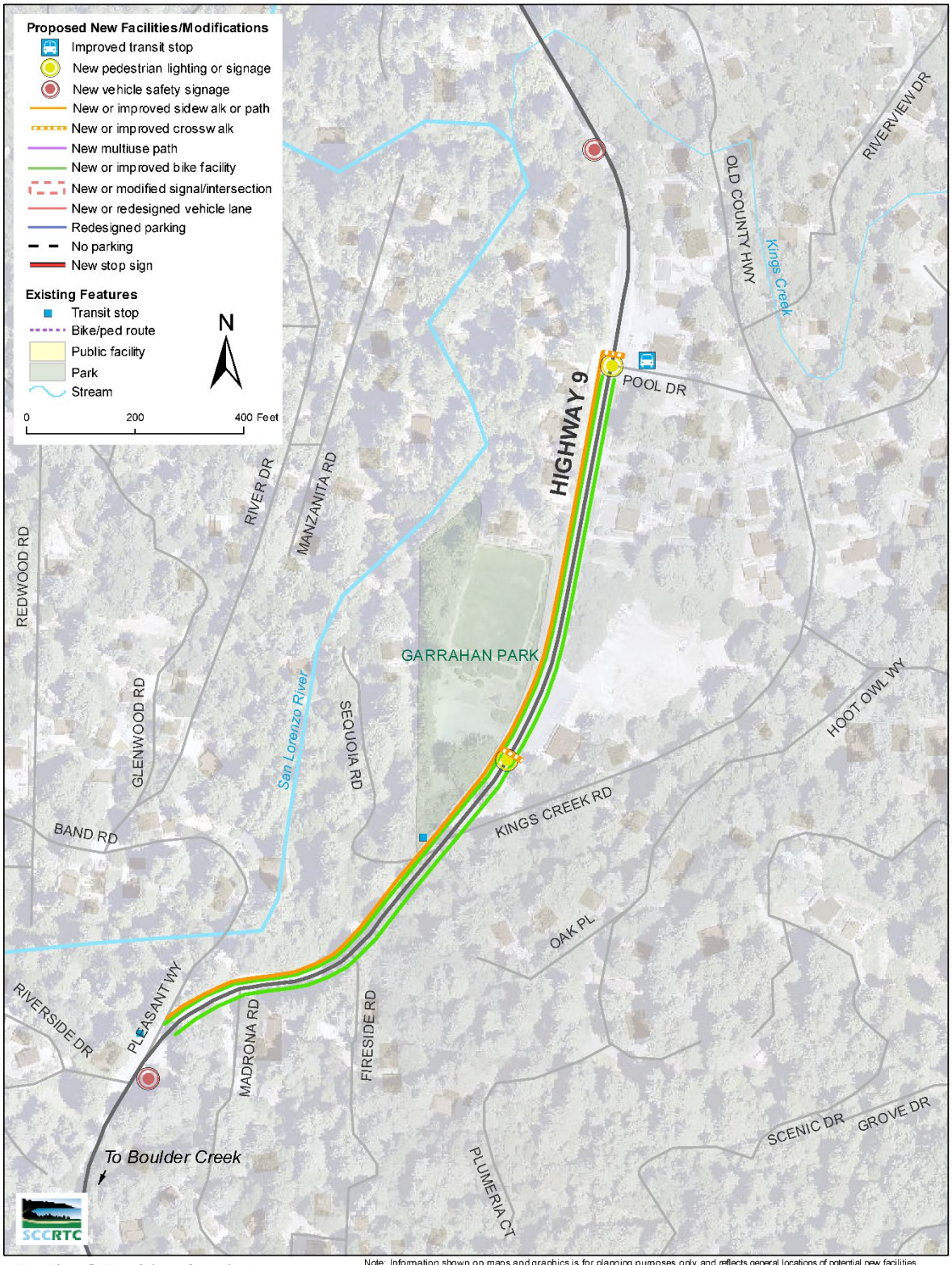


Downtown Boulder Creek Area

Note: Information shown on maps and graphics is for planning purposes only and reflects general locations of potential new facilities or modifications to existing facilities that have been identified as priorities. These are not engineering level, exact locations. A more expansive list of ideas is included in the Appendix. Most existing facilities (e.g. sidewalks) not shown on maps will remain.

Credit: SCCRTC

Figure 3.37: North of Boulder Creek Area



North of Boulder Creek Area

Note: Information shown on maps and graphics is for planning purposes only and reflects general locations of potential new facilities or modifications to existing facilities that have been identified as priorities. These are not engineering level, exact locations. A more expansive list of ideas is included in the Appendix. Most existing facilities (e.g. sidewalks) not shown on maps will remain.

Credit: SCCRTC

Priority Projects

Project 22 – Boulder Creek Elementary Neighborhood Multimodal Improvements

This project seeks to improve multimodal safety and connectivity on Highway 9 and county roads, to Boulder Creek Elementary School and the surrounding neighborhood from Highway 9 (Central Ave). Potential options include:

- New transit stop for northbound buses on the southeast corner of the Highway 9/Lomond St intersection. Currently, transit users must board/alight from northbound buses on the other end of the town. This transit stop would include a bench and shelter.
- A new crosswalk on the south leg of the Lomond St intersection with Highway 9 (Central Ave) to provide access to and from the new transit stop, as well as improve pedestrian access to the existing transit stop for southbound buses on the southwest corner of the intersection. This new crosswalk would include bulb-outs. Analyze if the existing paint striped pedestrian island could be converted to a concrete refuge island, and the potential for landscaping in the refuge island and a pedestrian activated flasher to be added. Consider features to prevent vehicles, including delivery trucks, from parking in middle of highway, obstructing view of pedestrians crossing.
- Upgrade existing crosswalk on the north leg of the intersection of Highway 9 and Lomond St, including bulb-outs.
- Pedestrian facilities on the north side of Lomond St between Highway 9 and Boulder Creek Elementary, connecting to curb ramps at Lomond St and Laurel St. Pedestrian facilities should include safe path of travel from elementary school bus drop-off locations to the elementary school entrance.
- Speed bumps/humps on neighborhood streets near Elementary School.
- Evaluate stop control warrant for Mountain St, Flat St, South St, and Grove St where they cross Boulder St and consider adding stop signs to these uncontrolled intersections to improve safety for vehicles accessing Boulder Creek Elementary.

Figure 3.38: Lomond Street and Pine Street, Looking Toward the Elementary School

Credit: SCCRTC

- Reconstruction of Laurel St between Lomond St and Highway 236 (Big Basin Wy). Currently, the width of the deteriorating roadway cannot consistently accommodate two-way traffic. This component has considerable feasibility concerns, see Feasibility Considerations below.

Preliminary Concept Designs for southern downtown Boulder Creek are shown in **Figure 3.40**. Infrastructure changes from Projects 22, 23, 24, and 25 are shown together in this figure, although they may be analyzed and implemented separately.

Traffic calming features on Highway 9 north of Lorenzo Ave before curve to slow traffic traveling northbound into town center would complement this project. This may include speed feedback signs, signage alerting drivers that pedestrian present, and/or other methods discussed under *Corridor Priority A* in Chapter 2. Pedestrian scale lighting at the intersections near Boulder Creek Elementary on Laurel and Lomond streets is described in *Corridor Priority E* (Chapter 2 Section 2.4)

To fit a sidewalk along Lomond St would likely require removal of some on-street parking and right-of-way acquisition. Curb and gutter sidewalks require accompanying drainage. Additionally, the sloping terrain on Lomond St would require roadway reconstruction to meet ADA sidewalk standards. A sidewalk or sidepath on the north side of Lomond St could be provided to connect with existing non-accessible wood step path on the north side of Lomond St west of Oak St.

This project extends work done as part of the County's 2016/2017 Boulder Creek Elementary School Safe Routes to Schools Improvement Project, which included crosswalks, a curb, gutter, sidewalk, a 300-foot retaining wall, and drainage improvements on Laurel St between Lomond St and Harmon St along Boulder Creek Elementary School. In addition, a short walkway was constructed on the east side of Laurel St at the intersection of Lomond St in order to provide a connection to an existing railroad tie and gravel staircase that was constructed by volunteers. A walkway was also constructed on Harmon St from Laurel St to Oak St.

Possible Feasibility Considerations: New stop signs would require stop sign warrant analysis. Pedestrian facilities on Lomond and the reconstruction of Laurel St could both require extensive grading and landscaping/driveway reconstruction and have right-of-way impacts. It is unlikely the Lomond St pedestrian facilities would be able to meet ADA compliance due to the steep hill. Bicycle facilities were also considered for Lomond St, but were eliminated from the priority list due to community opposition regarding the steepness of roadway and prioritization of pedestrian facilities on limited right-of-way. Such facilities may be considered in the future, or on alternate routes such as Laurel St for Safe Routes to School bicycle access.

Project 23 – Boulder Creek Crosswalk Improvements

This project would provide additional crosswalk safety features at pedestrian crossings on Highway 9 and Highway 236 throughout the commercial area of Boulder Creek. Improvements in this project could include pedestrian crossing visibility and safety upgrades to:

- Highway 9 at Mountain St, south of Lomond St.
- Highway 9 at Forest St, including pedestrian activated flashers (RRFBs)*
- Highway 9 at Highway 236, stripe new crosswalk on the north leg of the intersection to improve transit stop access, increase stop sign visibility, and add pedestrian scale lighting. Though not typical at stop-controlled intersections, addition of a pedestrian activated flasher could also be analyzed here as this stop sign is frequently ignored by drivers.
- Highway 236 at Oak St, stripe new crosswalk on west leg of intersection.

Preliminary Concept Designs for downtown Boulder Creek are shown in **Figures 3.40 and 3.41**. Infrastructure changes from Projects 22, 23, 24, 25, and 26 are shown together in this figure, although they may be analyzed and implemented separately.

Treatments at these crosswalks could include signage, high-visibility striping, and curb extensions (bulb-outs) to shorten crossing distance and increase visibility of pedestrians. Bulb-outs are feasible within the existing highway cross-section due to available Right-of-Way (ROW) and sidewalk facilities. Bulb-outs should be designed to accommodate drainage with existing curb and gutter, consider right turns, as well as vehicle and truck turning movements.

Reducing speeding and implementing traffic calming elements throughout Boulder Creek town center is described in Chapter 2 *Priority A*.

Possible Alternative Improvements: A midblock pedestrian crossing with high-visibility laddering and pedestrian refuge island was also proposed for Highway 9 between Forest St and Highway 236 near the alley south of 13141 CA-9, but due to the existing crosswalks at Highway 236 and Forest St, half a block to the north and south this may not be feasible. New midblock crossings are not supported by Caltrans. See Appendix A Section 4.1 *New Crosswalk* for more information.

Figure 3.39: Existing Crosswalk at Forest Street and Highway 9

Credit: SCCRTC

Possible Feasibility Considerations: No major feasibility constraints. Truck and bus turning radius will need to be considered. Some community members have expressed interest in landscaped medians; Caltrans does not typically support planting of trees or other landscape that may impact sight distances. Any additional lighting, including flashing lights at crosswalks, should take into consideration historic rural character.

**Crosswalk improvements at Forest St are currently funded by Caltrans.*

Figure 3.40: Boulder Creek Town Center Design Concept – Lomond Street and Forest Street Intersections

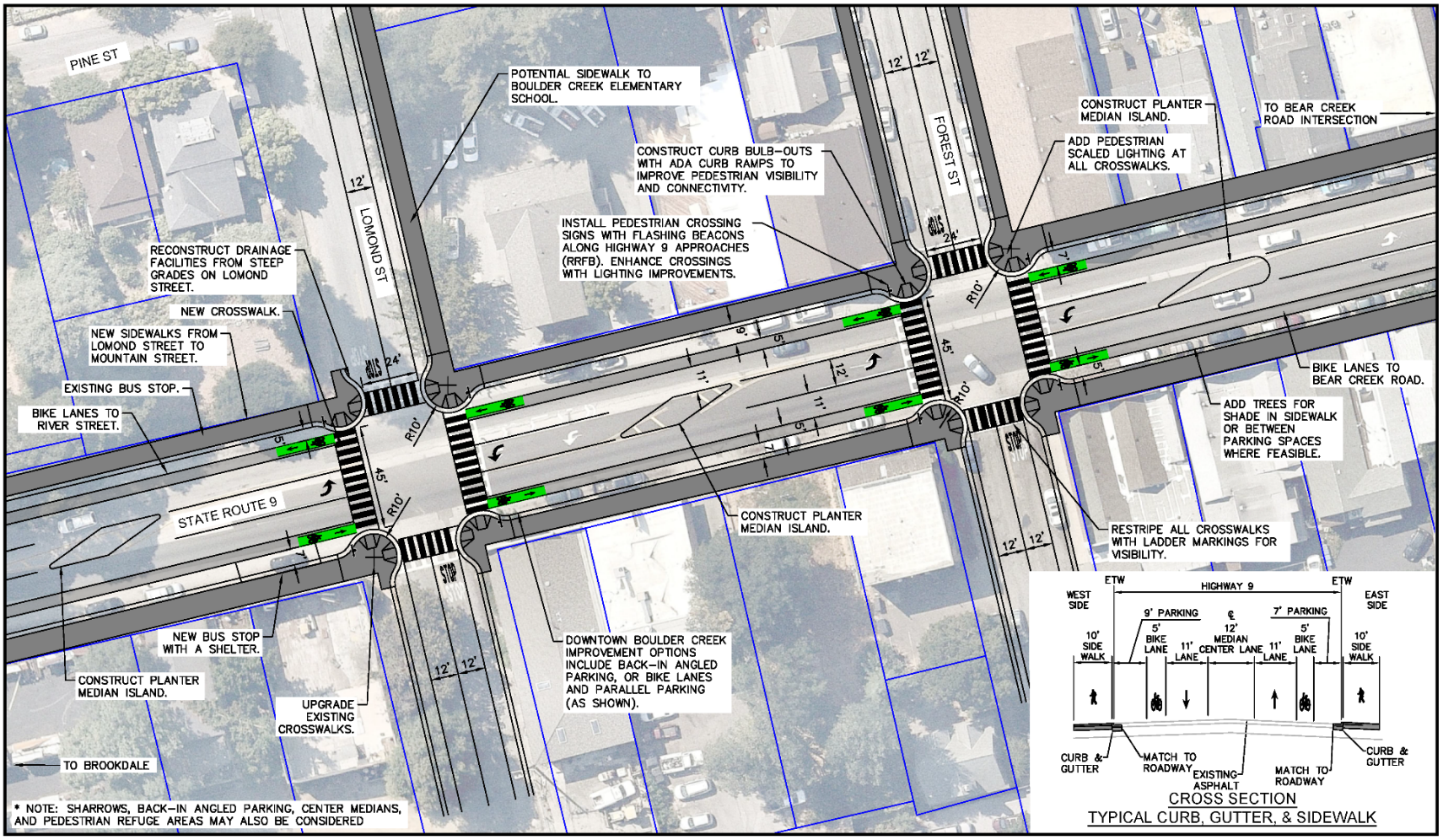


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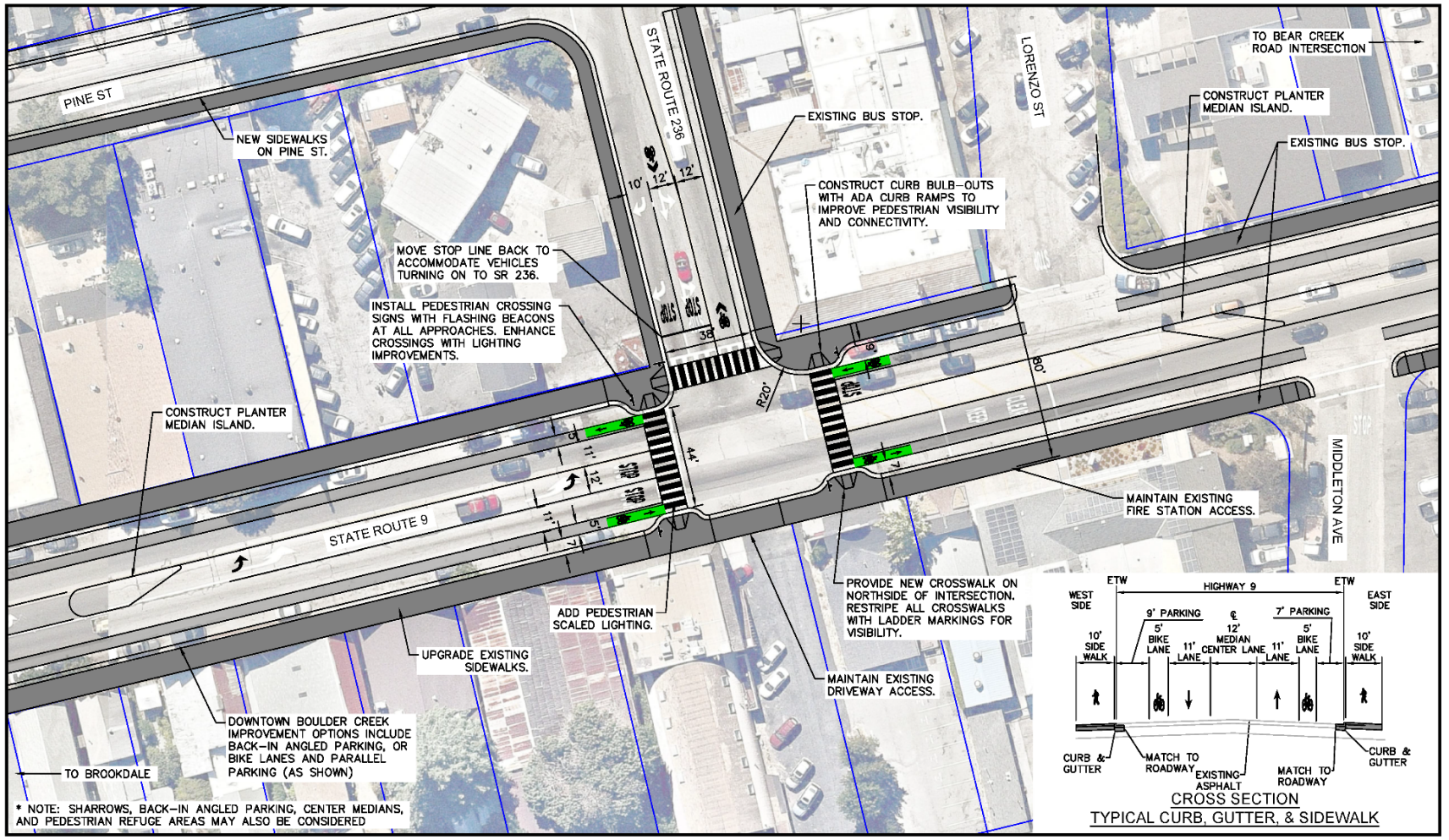
*EXHIBIT IS FOR ILLUSTRATIVE PURPOSES ONLY. PROPERTY LINES, SATELLITE PHOTO OF BUILDINGS, ETC. MAY NOT BE IN PRECISE LOCATIONS. EXACT LOCATION OF PARKING SPOTS, SHADED TREES, AND OTHER ELEMENTS TBD DURING DESIGN PHASE.

PROJECT 23, 24
LOMOND ST / FOREST ST / SR9 INTERSECTION IMPROVEMENTS
SANTA CRUZ COUNTY

SR 9 COMPLETE STREETS CORRIDOR STUDY

Figure 3.41: Boulder Creek Town Center Design Concept – Highway 236 Intersection



Kimley»Horn

GRAPHIC SCALE IN FEET
0 20 40 80

– APPROXIMATE R/W PER SANTA CRUZ COUNTY GIS

PROJECT 23, 24
SR236 / SR9 INTERSECTION IMPROVEMENTS
SANTA CRUZ COUNTY

SR 9 COMPLETE STREETS CORRIDOR STUDY

FV-197061001 JUNE 2019

*EXHIBIT IS FOR ILLUSTRATIVE PURPOSES ONLY. PROPERTY LINES, SATELLITE PHOTO OF BUILDINGS, ETC. MAY NOT BE IN PRECISE LOCATIONS. EXACT LOCATION OF PARKING SPOTS, SHADED TREES, AND OTHER ELEMENTS TBD DURING DESIGN PHASE.

Project 24 – Parking Improvements or Bicycle Facilities in Downtown Boulder Creek

This project seeks to improve the Caltrans right-of-way in downtown Boulder Creek, to narrow the travel way and slow vehicle speeds, and to increase available parking or provide facilities for cyclists. Improvements would either involve converting some of the current parallel parking to back-in angled parking in the Boulder Creek town center to increase the number of available parking spaces, or providing bicycle facilities (see Feasibility Considerations). Improvements could include:

- Adding parking: Pave shoulders on side streets and install back-in angled parking with tree wells on Highway 9 from Highway 236 to Lomond St, as well as analysis of options for additional formalized parking in the Boulder Creek town center. Back-in angled parking requires only the first move of entering a parallel parking space to completely park, and offers drivers better visibility of bicyclists and other traffic when they are exiting a parking space.
- Adding bicycle facilities. Tiers reflect priorities if bicycle lanes need to be incrementally constructed as funding opportunities become available.
    - **Tier I:** Add bike sharrows on Highway 9
    - **Tier II:** Bike lanes from Middleton Ave and the Boulder Creek Bridge to Mountain St
    - **Tier III:** Bike lanes extended south to River St
- Signage to alert bicyclists of alternate routes on Lomond St - Railroad Ave - Middleton Ave.
- Prohibiting parking in the center turn lane of Highway 9, encourage truck deliveries to occur behind shops to improve traffic flow and increase pedestrian visibility along the highway. Planted medians could be an effective way of meeting this need.
- Modifying center merge lanes on Highway 9 for cars turning left onto Highway 9 from east side streets by including planted medians to reduce speeds between left turn pockets.

Preliminary Concept Designs for downtown Boulder Creek are shown in **Figures 3.40 and 3.41**. Infrastructure changes from Projects 22, 23, 24, 25, and 26 are shown together in this figure, although they may be analyzed and implemented separately. Back-in angled parking option not shown.

Figure 3.42: Highway 9 in Boulder Creek, Looking South from Highway 9/236 Intersection

Credit: SCCRTC

The extent and feasibility of parallel-to-angled parking conversion would require further study, as there is potentially only sufficient space for back-in angled parking on one side of the highway. Class II bicycle lanes on

Highway 9 shoulder are feasible with some restriping and shoulder repaving. Tier III improvements would require shoulder widening to accommodate bicycle facilities south of Mountain St.

Possible Alternative Improvements: The draft plan included a two-way center turn lane through the town center. The Boulder Creek Specific Plan (1992) and some community members and businesses requested a two-way center turn lane not be added along Highway 9. The 1992 plan also notes that strategically located and sized park-and-walk/park-and-ride lot(s) may be beneficial. If back-in angled parking is only feasible on one side, it has been suggested they be placed on the east side, in combination with street trees.

Possible Feasibility Considerations: Purchase of additional right-of-way for this project is highly unlikely due to the dense and historic nature of downtown Boulder Creek. Between Middleton Ave and Mountain St there is not enough roadway width to allow for center turn lanes, bike lanes and angled parking, even on one side only. During project implementation, the community and Caltrans will need to come to a resolution over which improvements (parking, bicycle lanes, turn lanes) are the priority for Boulder Creek. Any improvement combination could require narrowing of auto travel lanes.

Project 25 – Sidewalk and Storefront Improvements in Downtown Boulder Creek

This project expands and improves sidewalks on Highway 9, Highway 236, and county roads in the Boulder Creek town center. Improvements in this project could include:

- Widen existing sidewalks and fill gaps in sidewalks on Highway 9 between Middleton Ave/Boulder Creek Bridge and Lomond St along Highway 9.
- Extend sidewalks on Highway 9 south to Mountain St and the end of the continuous commercial corridor.
- New sidewalks on Pine St from Lomond St to Highway 236/Big Basin Wy, and on Highway 236 from Highway 9 to Laurel St, consistent with the Boulder Creek Specific Plan (1992).
- Add bicycle parking through commercial area.

Preliminary Concept Designs for downtown Boulder Creek are shown in **Figures 3.40 and 3.41**. Infrastructure changes from Projects 22, 23, 24, 25, and 26 are shown together in this figure, although they may be analyzed and implemented separately.

Add or include shade trees, benches, tree wells, and other aesthetic features, consistent with *Caltrans' Main Street-California (2013)*. Reducing speeding and implementing traffic calming elements throughout Boulder Creek town center is described in Chapter 2 *Priority A*.

Possible Feasibility Considerations: New and updated sidewalks should include shade trees, especially on the east side of Highway 9, and pedestrian-scale lighting wherever feasible. Widening sidewalks could impact other options for use of the right-of-way, such as back-in angled parking, bike lanes, or median islands (Project 24). The community should be consulted during the design process for downtown Boulder Creek improvements to determine their priorities.

Previous community input had identified interest, particularly on the part of some businesses, of widening sidewalks to allow dining in the town center sidewalk improvements. Currently, California state law (*California Streets and Highway Code – Section 731*) prohibits tables for dining within Caltrans right of way except under a special event permit or in areas where state property is relinquished to a local municipality. Feasibility of these projects depends on the

ability to relinquish right-of-way, changes in Caltrans design standards, and property owner agreement.

Street furniture such as benches, bicycle racks, planters, water fountains, and trash receptacles are permitted within the Caltrans right-of-way if they do not obstruct walkways and are maintained by a local agency. Installation of or updates to curb and gutter sidewalks could require drainage work.

Potential right-of-way impacts to adjacent businesses. Could require driveway reconstruction or some on-street parking relocation. Reference the 1992 Boulder Creek Specific Plan when considering tree placement. Retain historic pistons and rings along sidewalks.

Project 26 – Pedestrian and Bicycle Connections to the Boulder Creek Library and Bear Creek Road, Traffic Calming on Highway 236

This project seeks to improve pedestrian and bicycle connections on Highway 9 and county roads from the Boulder Creek town center to the Boulder Creek Library and Bear Creek Rd. Improvements in this project could include:

- Sidepath or sidewalk on the west side of Highway 9 from the end of the existing sidewalks on the Boulder Creek Bridge to Bear Creek Rd, including shade trees. Sidepath or sidewalk on West Park Ave, possibly the north side only, to connect to the Boulder Creek Library (and eventually to Ridge Dr).
- Extending the bike lanes proposed in Project 24 past Middleton Ave and the Boulder Creek Bridge to Bear Creek Rd.
- Traffic calming features north of library/near West Park Ave on Highway 9 and on Highway 236 near Redwood Ave to slow traffic traveling into town center. May include speed feedback signs, signage alerting drivers to watch for pedestrians.
- Traffic calming and pedestrian access to transit stops on Highway 236 near Boulder Creek Golf and Country Club neighborhood. May include stop signs at Highway 236/West-East Hilton Dr intersection, radar feedback signage, school bus stop signage, concrete platform for East Hilton transit stop, and installation of curb 200 feet on northwest side of intersection.

Preliminary Concept Designs for northern downtown Boulder Creek are shown in **Figure 3.41**. Infrastructure changes from Projects 23, 24, 25, and 26 are shown together in this figure, although they may be analyzed and implemented separately.

Sidewalks would include shade trees wherever feasible. The existing sidewalks heading north on Highway 9 are inconsistent after Highway 236 and end after the bridge over Boulder Creek. Continuing a sidewalk on the west side of Highway 9 to the library would require grading and reconstruction of existing ditches on the shoulder. Four-foot bike lanes are feasible if pavement is graded and resurfaced. Sidewalks could continue up West Park Ave approximately 250 feet on the north side of the road to connect to the entrance of the Boulder Creek Library.

Possible Feasibility Considerations: Bike lanes could require relocation of on-street parking. Pedestrian facilities have potential right-of-way impacts, could require landscaping and driveway reconstruction, and grades could be a challenge in meeting ADA standards.

Project 27 –Highway 9/Bear Creek Road Intersection Improvements

This project seeks to improve auto circulation and pedestrian access at the Highway 9/Bear Creek Rd intersection. Improvements in this project could include:

- Left turn and merge lanes on Highway 9 to increase throughput and improve safety for vehicles turning from Bear Creek Rd onto Highway 9 southbound
- Improve lines of sight for drivers on Bear Creek Rd entering Highway 9
- Analysis and installation of traffic control (e.g. stop sign) for vehicles on Highway 9, which would increase throughput for vehicles turning left from Bear Creek Rd onto Highway 9 southbound during commute times, reduce speeds as vehicles begin to enter the town on Highway 9, and make it easier for pedestrians to cross. Could include analysis of a stop sign for southbound vehicles on Highway 9, 3-way stop, a roundabout, a traffic light, flashing red lights with new stop signs, flashing yellow signs, and other mechanisms.
- Installation of a crosswalk across Highway 9 at the Bear Creek Rd intersection, likely on the north leg, if a stop sign is installed. Installation of new crosswalks is subject to Caltrans review process.

Bear Creek Rd is narrow at this intersection due to the bridge over the San Lorenzo River. There are ditches and utility poles adjacent to the edge of shoulder. There are no pedestrian or bicycle facilities and the shoulder width is typically less than 4-feet.

Figure 3.43: Bear Creek Road and Highway 9, Looking East During Rush Hour

Credit: SCCRTC

The addition of a center turn lane at the intersection would require a minimum cross-section width of at least 52-feet over a 500-foot-long section on Highway 9. Widening the west side of the road to avoid bridge constraints would impact right-of-way and removal of embankment, trees, and utilities. All pedestrian and bicycle facilities would require roadway widening as well.

Possible Feasibility Considerations: New traffic control at intersection, including stop signs, would require traffic studies and stop sign warrant analysis. There is some community disagreement about adding stop signs, the number of stop signs and any lights; which will need to be evaluated in more detail during project implementation. Turn/merge pocket and improving line-of-sight would require roadway widening and could have right-of-way impacts and/or require tree removal or grading.

Project 28 – Bicycle/Pedestrian Improvements at Garrahan Park and Mountain Store

This project would add bicycle and pedestrian improvements on Highway 9 that would connect Garrahan Park and the Mountain Store transit stop to the surrounding neighborhoods. Improvements could include:

- Two new crosswalks with high-visibility ladder markings, high-visibility pedestrian signs, and yield striping: one connecting the Garrahan Park entrance to the intersection of Kings Creek Rd and Highway 9, and one on the north side of the intersection of Highway 9 and Pool Dr.

  The Pool Dr crosswalk could include an advance warning flashing beacon alerting southbound drivers to the presence of a crosswalk and the posted speed limit and/or an RRFB, bulb-outs to increase visibility of pedestrians, or pedestrian refuge island, though this was initially determined to be infeasible due to the blind curve just north of the intersection. Installation of new crosswalks is subject to Caltrans review process. The crossing at Pool Dr is currently under evaluation as part of a successful 2018 HSIP grant.

- Bike lanes on Highway 9 from Pleasant Wy to Pool Dr
- Sidewalks or sidepath on Highway 9 from Pleasant Wy to Pool Dr, including shade trees. More right-of-way may be available for this project on the west side of Highway 9.

Narrowing of vehicle travel lanes and slowing of vehicle traffic at this location using bulb-outs would be complemented by similar facilities at the Redwood Dr intersection south of Felton (see Project 3) to create a “gateway” effect at either end of the more populated Felton to Boulder Creek core segment of the San Lorenzo Valley slowing vehicles from speeds reached in the more rural, unpopulated segments.

Pedestrian and bicycle facilities on Highway 9 would require roadway widening and relocation of existing ditch facilities. Crosswalks determined to be feasible during initial analysis but could require advance signing or flashing beacons for visibility. A pedestrian refuge island is feasible if the roadway is widened. Bulb-outs are feasible with drainage improvements.

Possible Feasibility Considerations: Bike lanes and pedestrian facilities could both have right-of-way impacts, and require grading, tree removal, or retaining wall/landscape/roadway reconstruction.

4. Project Evaluation & Implementation

A key function of the **Highway 9/San Lorenzo Valley Complete Streets Corridor Transportation Plan** is to create an actionable short-term and longer-term multimodal plan that addresses transportation challenges along Highway 9 through the San Lorenzo Valley (generally Felton to Boulder Creek) and within the town centers, as well as provide a vision for the corridor in the future. Since there is insufficient funding to implement of all the projects and priorities identified in this plan, this chapter provides the results of the project evaluation and recommendations for implementation, including a discussion of potential funding sources. See Chapter 3 *Priority Projects by Location* and Appendix B *Identified Projects List* for more information about all of the projects and priorities.

4.1. Evaluation Criteria

As described in Chapter 1 *Introduction*, performance criteria were identified to evaluate potential transportation projects and concepts. The criteria were developed based on public input received during Phase 1 of plan development and criteria used in regional, state, and federal grant programs and plans. These criteria are not intended to result in a formal, weighted scoring to determine which projects will be funded from specific grants or revenues. Rather, they are used to compare and contrast a range of investment options in this transportation corridor and identify priorities for implementation.

The criteria listed below were used in the evaluation of priority projects. More detail on these criteria is provided in Chapter 1.

- **Safety**: ability of projects to potentially reduce collisions; eliminate perceived safety issues; eliminate hazards; improve drainage; reduce speeding; improve access to/for emergency services.

- **Pedestrian Access and Connectivity:** likelihood of project to increase walking; fill gaps in pedestrian network; increase pedestrian access and safety along the corridor and address physical conditions that place pedestrians in close proximity to traffic, especially areas with higher speeds and volumes.

- **Bike Access and Connectivity:** likelihood of project to increase bicycle trips; increase bicyclist access and safety along the corridor and address physical conditions that place bicyclists in close proximity to traffic, especially areas with higher speeds and volumes.

- **Transit Connectivity:** increase access to and number of trips taken by transit.

- **Sustainability/Reduce emissions and vehicle miles traveled (VMT):** shift trips or miles traveled in single occupancy vehicles to carpool, walk, bike, transit; reduce trip distances; reduce idling.

- **Improve Traffic Flow for Vehicles:** maintain traffic flow, reduce congestion at intersections, reduce travel times through intersections.

- **System Preservation:** maintain and improve condition of transportation infrastructure; extend useful life of facilities and maintain state of good repair.
- **Anticipated Use:** number of people anticipated to benefit from or use a facility or project.
- **Economic Vitality:** support access to town centers; increase access to jobs; support goods movement.
- **Town Character Compatibility:** ensure consistency with rural mountain character and aesthetics; minimize removal of trees or vegetation.
- **Public Support:** support for projects; frequency of comments and interest in projects.
- **Ease of Implementation:** consider potential right-of-way, environmental impacts, earthwork, design standards, and financing options.

Information used to assess criteria included:

- Collision data from Caltrans, CHP, and the Statewide Integrated Traffic Records System (SWITRS)
- Traffic and speed limit data
- Transit ridership information
- Physical conditions, land use information, data from GIS maps, maps of key destinations, gaps in pedestrian facilities
- County Parcel Maps and Caltrans right-of-way maps (right-of-way assessment)
- Observations and site visits
- California Air Resources Board data on emissions and project type
- Proposed project benefit characteristics
- Design standards and guidelines
- Public and stakeholder input

4.2. Evaluation of Priority Projects

Figure 4.2 on the next page shows how well the priority projects (described in more detail in Chapter 3 *Priority Projects by Location*) address objectives for the corridor, relative to other priority projects. A set of symbols are used to illustrate the level to which potential projects meet each criterion. Results of the performance evaluation were used to also develop phased project implementation recommendations described in Section 4.3.

Figure 4.1: Project Scoring Symbols

Symbol	Associated Scoring Level
●	High performance/score
◐	Medium performance/score
○	Lower performance/score
N/A	Not applicable/no score

Projects with higher performance scores receive an “A” for Implementation Priority, projects with medium scores receive a “B” and projects with a lower score receive a “C” on the Implementation Priority. Generally, “A” projects have higher public support, achieve more of the objectives for the corridor and/or can be more easily implemented. “B” and “C” projects are not necessarily less likely to be implemented than “A” projects, they simply may become longer-term investments.

Figure 4.2 - Priority Project Evaluation

Comparative Score: ● = High Performance, ◐ = Medium Performance, and ○ = Lower Performance

Corridor-wide Priorities *(see Chapter 2 for more information)*

Project #	Projects / Concepts to be explored for possible implementation	Location	Improve Safety	Pedestrian Access & Connectivity	Bicycle Access & Connectivity	Sustainability, Emission, & VMT Reduction	Improve Traffic Flow for Vehicles	Preservation of Existing Facilities	Anticipated Use	Transit Connectivity	Economic Vitality	Town Character Compatibility	Public Support	Ease of Implementation	Implementation Priority
A	SLV Corridor Reduce Speeding and other Safety Measures	Corridor Wide	●	◐	◐	○	◐	◐	●	○	◐	◐	●	◐	A
B	SLV Corridor Transit and Travel Demand Management		◐	○	◐	●	◐	◐	●	●	◐	◐	◐	◐	B
C	SLV Corridor Bicycle facilities or Separated Paths		◐	◐	●	●	◐	◐	●	○	◐	◐	●	◐	B
D	SLV Corridor Increase Turnouts		◐	○	○	●	●	◐	●	○	◐	◐	◐	◐	C
E	SLV Corridor Pedestrian Crossing Safety, Lighting, and other Visibility		◐	●	●	◐	◐	●	●	●	○	●	●	◐	A
F	Roadway Maintenance		◐	◐	◐	◐	◐	●	●	◐	◐	●	●	●	A
G	Emergency Preparedness and Resiliency		●	◐	◐	◐	◐	●	●	◐	◐	●	◐	●	B

Location-Based Priorities *(See Chapter 3 for more information on projects)*

Project #	Projects / Concepts to be explored for possible implementation	Location	Improve Safety	Pedestrian Access & Connectivity	Bicycle Access & Connectivity	Sustainability, Emission, & VMT Reduction	Improve Traffic Flow for Vehicles	Preservation of Existing Facilities	Anticipated Use	Transit Connectivity	Economic Vitality	Town Character Compatibility	Public Support	Ease of Implementation	Implementation Priority
1	Henry Cowell State Park Access and Parking	Felton	◐	○	○	●	◐	◐	○	○	◐	◐	◐	◐	C
2	Southern Felton Neighborhood Bicycle and Walking paths		◐	○	○	●	◐	◐	○	○	◐	○	●	○	B
3	Henry Cowell State Park to Downtown Felton Pedestrian and Bicycle Connection		◐	○	○	●	◐	◐	◐	○	◐	○	●	○	C
4	Downtown Felton Crosswalks		●	●	●	●	●	◐	●	◐	●	●	◐	◐	A
5	Downtown Felton Bicycle and Walking Connections near Library		◐	●	●	●	◐	◐	●	◐	◐	◐	◐	●	B
6	Downtown Felton Pedestrian Walking Facilities		◐	●	●	●	◐	◐	●	◐	◐	◐	●	◐	A
7	Downtown Felton Roadway, Bicycle, and Parking Improvements		●	●	●	●	◐	◐	●	◐	●	●	●	◐	B
8	Highway 9 and Graham Hill Rd Intersection Redesign		●	●	●	●	●	●	●	◐	●	◐	●	○	A
9	Bike/Pedestrian Connection to SLV Schools Campus from Felton	SLV Schools	●	●	●	●	◐	◐	●	○	◐	◐	●	◐	A
10	SLV Schools Campus Site Access		●	●	●	●	●	◐	●	●	◐	●	●	◐	A
11	North SLV Schools Pedestrian and Bicycle Connections		●	●	●	●	◐	◐	◐	○	◐	◐	●	◐	B

Note: ● = High Performance Score, ◐ = Medium Performance Score, and ○ = Lower Performance Score

Project #	Projects / Concepts to be explored for possible implementation	Location	Improve Safety	Pedestrian Access & Connectivity	Bicycle Access & Connectivity	Sustainability, Emission, & VMT Reduction	Improve Traffic Flow for Vehicles	Preservation of Existing Facilities	Anticipated Use	Transit Connectivity	Economic Vitality	Town Character Compatibility	Public Support	Ease of Implementation	Implementation Priority
12	Willowbrook Dr Commercial Area Improvements and Glen Arbor Bike/Pedestrian Connection	Ben Lomond	●	●	●	●	◐	◐	◐	◐	◐	◐	●	◐	B
13	Bike/Pedestrian Connections from Ben Lomond to Highlands Park		●	●	●	●	◐	◐	◐	○	◐	◐	●	○	B
14	Ben Lomond Crosswalks and Transit Improvements		●	●	●	●	◐	◐	●	●	◐	◐	◐	◐	A
15	Mill St and Glen Arbor Rd Pedestrian Improvements		◐	●	●	●	◐	◐	◐	○	◐	○	●	◐	B
16	Ben Lomond Downtown Core Multiuse Improvements		◐	●	●	●	◐	◐	●	○	◐	◐	◐	◐	B
17	Pedestrian and Bicycle Connections from Mill St to Alba Rd		◐	◐	○	◐	◐	◐	◐	○	◐	◐	●	◐	C
18	Hubbard Gulch/Alba Rd Operational Improvements		◐	○	◐	●	◐	◐	◐	○	◐	◐	◐	◐	C
19	Brookdale Sidewalks	Brookdale	◐	◐	○	●	◐	◐	◐	◐	◐	◐	●	○	C
20	Brookdale Crosswalk Improvements		●	●	◐	●	◐	◐	◐	◐	◐	◐	●	●	A
21	Irwin Way/Highway 9 Intersection Improvements		●	○	○	●	●	◐	◐	○	◐	◐	◐	○	C

Note: ● = High Performance Score, ◐ = Medium Performance Score, and ○ = Lower Performance Score

Project #	Projects / Concepts to be explored for possible implementation	Location	Improve Safety	Pedestrian Access & Connectivity	Bicycle Access & Connectivity	Sustainability, Emission, & VMT Reduction	Improve Traffic Flow for Vehicles	Preservation of Existing Facilities	Anticipated Use	Transit Connectivity	Economic Vitality	Town Character Compatibility	Public Support	Ease of Implementation	Implementation Priority
22	**Boulder Creek Elementary Neighborhood Multimodal Improvements**	Boulder Creek	●	●	●	●	◐	◐	◐	●	◐	◐	◐	◐	**B**
23	**Boulder Creek Crosswalk Improvements**		●	●	●	●	●	●	●	◐	●	◐	◐	◐	**A**
24	**Parking or Bicycle Facilities in downtown Boulder Creek**		●	○	●	●	◐	◐	●	○	◐	●	●	●	**A**
25	**Sidewalk and Storefront improvements downtown Boulder Creek**		○	○	○	○	◐	○	●	○	◐	◐	◐	●	**C**
26	**Pedestrian & Bicycle Connections to Boulder Creek Library & Bear Creek Rd, Traffic Calming Hwy 236**		◐	●	●	●	◐	◐	●	○	◐	◐	●	◐	**B**
27	**Highway 9/Bear Creek Rd Intersection Improvements**		●	◐	○	●	●	◐	●	○	◐	○	◐	○	**B**
28	**Pedestrian & Improvements at Garrahan Park and Mt Store**	North	●	◐	○	◐	◐	◐	○	◐	◐	◐	◐	◐	**C**

Note: ● = High Performance Score, ◐ = Medium Performance Score, and ○ = Lower Performance Score

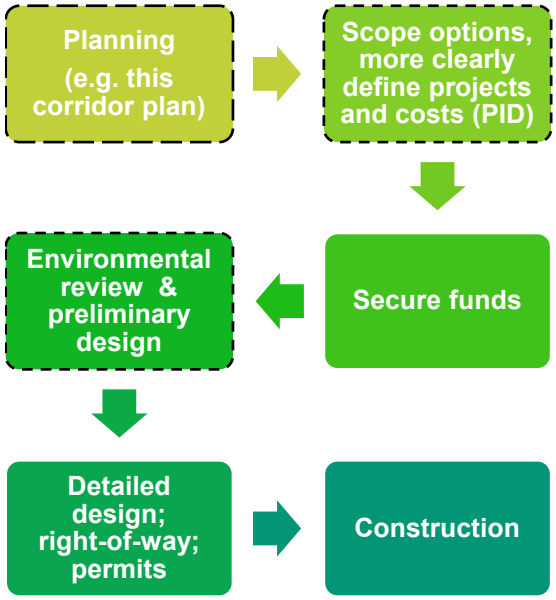
4.3. Implementation

This Complete Streets Corridor Plan will be used to guide and coordinate transportation investments along the Highway 9 corridor through the SLV. It will serve as a toolkit for Caltrans, Santa Cruz County Public Works, Santa Cruz County Planning, the Santa Cruz County Regional Transportation Commission (RTC), SLV Unified Schools District (SLVUSD), residents, and businesses to use to improve this transportation corridor.

Implementation of this plan and the concepts that have been identified as priorities will occur incrementally, in a variety of ways, over several decades, as funding becomes available. While some projects or components of projects could be implemented fairly quickly, some high-priority projects will be longer-term, especially since implementing transportation projects can be challenging. Significant obstacles can include securing construction and maintenance funding, project area topography, right-of-way property acquisition, encroachment permits or easements, providing access for all roadway users, and meeting environmental and design standards. Implementing this plan will require partnerships between Caltrans and multiple county agencies, as well as ongoing support from the community. Partners will also need to work together to find common ground on project designs, locations, and funding mechanisms.

Figure 4.3 - Next Steps: Implementation Process

Public input is usually provided during planning, scoping, environmental review, and preliminary design phases.



It is anticipated that many projects or components of projects identified in this plan will be implemented independently as stand-alone projects or may be “repackaged” to include elements of several projects. However, some projects or components of projects will instead be incorporated into other transportation or non-transportation projects in the San Lorenzo Valley, which may be implemented by public or private entities. This may include projects under the Caltrans State Highway Operation and Protection Program (SHOPP), Santa Cruz County maintenance, operational, and preservation projects, land use developments, or major infrastructure modifications.

New developments and storm damage repair work provide opportunities to implement portions of some of the recommendations, especially bicycle and pedestrian improvements. However, contiguous facilities are preferable, where possible. Finally, outside funding (such as grants) may be available to finance the design and construction of other projects and programs that fit the criteria of those funding programs. This could result in some lower priority projects moving forward more quickly than others.

For larger projects on Highway 9, the first step is development of a Caltrans Project Initiation Document (or PID), which includes more detailed project scoping – including development of cost estimates and identification of varying design options. The County of Santa Cruz, Caltrans, and the RTC are also expected to continue to apply for eligible grant funding opportunities and may utilize Measure D sales tax revenues to serve as match to leverage other funds. Transportation agencies (Caltrans, County, RTC, METRO, etc.) should consider partnering with

one another, as well as SLVUSD, non-profits, and private sector partners to better compete for Federal and State funding opportunities.

Phased Implementation Priorities

As noted above, implementing this plan and projects identified as priorities will be incremental and the timing of project implementation may vary based on other projects planned in an area, funding availability, community support, and other factors. **While the following list serves as a guide to be utilized when partners decide where to focus staff time and funding in the short and medium term, all of the potential projects and concepts described in Chapter 3 *Priority Projects by Location* and listed in Figure 4.2 above have been identified as priorities**. Chapter 3 provides additional information on potential phased implementation options for Projects 1 through 28. As funds become available, other projects identified as needs in the corridor may also be implemented, even if they are not called out below. This includes many projects listed in Appendix B *Identified Projects List.*

Projects may be combined or repackaged during project development and implementation. Escalating the cost estimates that were developed for the 2006 SLV Trail Feasibility Study, the average cost to construct new bicycle and pedestrian facilities is $4.3 million per mile.

Corridor-wide

Overall, slowing traffic, improving pedestrian access and reducing crashes (auto, pedestrian, and bicycle) were the highest priorities identified by community members.

See Chapter 2 *Corridor Vision* for descriptions of Corridor-Wide Priorities A-G, as well as the Preferred Roadway Cross Sections.

Ongoing and Near-Term Actions

- Maintenance: Ongoing, regular maintenance and winterization of roadways throughout the SLV (Priority F). When feasible, complete street components should also be incorporated as maintenance projects are implemented, consistent with preferred cross sections (Chapter 2 *Corridor Vision*) and project lists (Chapter 3 *Priority Projects by Location*).
- Safety: Reduce speeding through town centers (Priority A) and support state legislative and administrative actions to modify the California Vehicle Code to allow for lower prima facie speed limits on state highways. (see Priority A in Chapter 2 for list of potential methods).
- Widen shoulders (Priority C): Overall restriping to provide wider shoulders and shift lines away from vegetation and roadway edge. May include shifting or narrowing traffic lanes in order to maximize early implementation of bike lanes and/or wider shoulders, especially in areas regularly used by pedestrians and bicyclists and locations where trees have been struck by vehicles. Shoulders should also be widened to meet current standards as other projects, such as emergency repairs, are implemented. Where wider shoulders are not feasible, stripe bicycle sharrows, especially at curves.
- Crosswalks: Upgrade and increase visibility of existing crosswalks and add new crosswalks, especially in village cores and areas with history of pedestrian injury and fatal collisions (multiple locations, see Chapter 3 *Priority Projects by Location* and *Priority E*). This includes the installation of pedestrian activated flashing safety beacons at major crossing points. It may also include interim measures such as painting curbs red to increase visibility of pedestrians at intersections. Several locations identified in this plan were already approved for funding through a successful HSIP grant and will start

design in 2019. These include the Henry Cowell State Park Entrance (Redwood Dr), the Felton midblock crossing at Wild Roots Market, Clear Creek/Pacific St in Brookdale, Forest St in Boulder Creek, and Pool Dr (Mountain Store).

Short-Term Actions

- Lighting: Improve lighting at intersections with incidents of collisions (Priority E).

Medium Term

- Emergency Preparedness & Resiliency: Update emergency response, evacuation, and resiliency plans and implement warning systems (Priority G).
- Transit: Evaluate microtransit as potential supplement or alternative to some fixed-route service; upgrade bus stops (Priority B).
- Transit: Secure funding for ongoing operation of existing service and increase service (Priority B).

Long Term

- Turnouts: Increase number of turnouts (Priority D).
- Parking: Complete parking assessment for village business districts.
- Corridor-wide upgrades consistent with varying cross sections for rural, suburban and urban sections (see Chapter 2, *Section 2.3 Preferred Roadway Cross Sections*).

SLV Schools Access

Short-Term Actions

- SLV Schools Campus Circulation (See Chapter 3 *Projects 9-11*): Prepare a Project Initiation Document (PID) or other scoping document to provide more detailed evaluation of options for improving traffic flow, safety and access to the SLV Schools Campus in Felton and secure funding for implementation.
- Implement interim measures between Graham Hill Rd and the high school entrance until larger projects can be completed. While the feasibility of the following requires additional analysis, options might include:
    - Signage, which may include speed limit signs with flashing beacons, radar speed feedback signs, temporary radar feedback trailers; signs alerting drivers to watch for pedestrians, and "Bikes May Use Full Lane," "Pass 3 ft Min," and school bus stop ahead signs; and signage to encourage pedestrians to use alternate routes (e.g. Clearview Place to Cooper St)
    - Flashing beacons at crosswalks (e.g. RRFBs)
    - Bike sharrow markings, where shoulder very constrained
    - Ongoing maintenance: Trim bushes to improve visibility
    - Education - ongoing/regular public education and reminders about distracted and impaired driving, share the road, watch for pedestrians, driving mountainous roads
    - Targeted, increased CHP enforcement
    - Restriping to narrow lanes, widen shoulders, and possibly buffer shoulder, where feasible
    - Temporary barriers or demonstration projects along westside (southbound) shoulders
- If phased construction is necessary, prioritize pedestrian access between Graham Hill Rd and high school entrance (Project 9).

- Traffic flow/restriping modifications within existing right-of-way to lengthen turn/merge lanes along the school entrances and other identified short-term restriping options identified in Project 10.
- Restriping roadway to add bike lanes from southerly terminus of Glen Arbor Rd/Highway 9 past the SLV Schools Campus, then to Fall Creek Rd (bicycle component of Projects 9, 10, and 11).

Medium Term

- Minor grading, paving, tree removal and other construction to further improve circulation on the campuses (Project 10).
- Bicycle facilities from Graham Hill Rd to school entrances (Project 9).
- Pedestrian pathway connecting Highway 9/Brackney to Hillview Dr/Hacienda and ultimately the middle school campus (Project 11).
- Other bike and pedestrian access improvements north of the elementary school to Willowbrook (first) and Glen Arbor Dr (Projects 11 and 12).
- SLV Schools Campus Circulation Redesign: Reconstruction of campus entrances (Project 10). While this is one of the highest ranked projects, this is a more complex concept due to grading, other major modifications, and cost.

Longer Term

- Protected bike and pedestrian multiuse path from campus to Graham Hill Rd/Felton-Empire Rd via Highway 9 (in Project 9).
- Safe Route to Schools education and Transportation Demand Management (TDM) programs, including carpools and walking school buses. (Part of Corridor-wide Priority B).
- Roadway and transit improvements to El Solyo Heights (Project 11).

Felton

Short-Term Actions

- Downtown Felton pedestrian crosswalk improvements and new or improved sidewalks along Highway 9 (Projects 4 and 6).
- Highway 9/Graham Hill Rd Intersection: Make multimodal modifications to intersection, including bus turnouts (Project 8 - Tier 1).
- Downtown Felton bike lanes (part of Project 7).

Medium Term

- Downtown Felton roadway and parking modifications (Project 7).
- Pedestrian and bicycle pedestrian connections from the village core south to southern neighborhoods and Henry Cowell State Park (Projects 2 and 3).
- Bicycle and walking connections for Gushee, Hihn and other County roads to provide Felton Library access (Project 5).

Longer Term

- Highway 9/Graham Hill Rd Intersection: Extend vehicle lanes on all legs to maximum extent possible (Project 8 - Tier 2).
- Highway 9/Graham Hill Rd Intersection: Complete intersection redesign to improve circulation, pedestrian, and bicycle access through the intersection (Project 8). While this is one of the highest ranked projects, an extensive redesign of the intersection is considered a long-term project due to cost and significant modifications required.

- Parking and access improvements for Henry Cowell State Park (Project 1).

Ben Lomond and Brookdale

Short-Term Actions

- Pedestrian safety projects in Ben Lomond and Brookdale (components of Projects 14 and 16, as well as Projects 19 and 20), including new or improved sidewalks along Highway 9 and increasing visibility of crosswalks.
- Stripe bicycle lanes on Highway 9 through Ben Lomond town center (Project 16).
- Southbound Highway 9 between San Lorenzo River/Quality Inn and Mill St in Ben Lomond: Restripe to shift lanes east or narrow lanes in order to widen western shoulder; potential redwood tree removal (part of Project 17).
- Pedestrian Facilities from the town center north to hotel (part of Project 17).
- Projects that reduce speeding (part of Corridor-wide priorities).

Medium Term

- Irwin Way intersection modifications (Project 21). Add left turn lane from Highway 9 to Highlands Park (Project 13).
- Pedestrian improvements on Main St and formalizing additional parking in Ben Lomond (Project 16).
- Pedestrian and bicycle improvement for the Willowbrook Dr commercial area, with connection to Glen Arbor Rd S (Project 12).
- Hillside Ave transit stop improvements (component of Project 14).

Longer Term

- Pedestrian and Bicycle Facilities from the town center to Alba Rd (rest of Project 17).
- Add paths from Ben Lomond town center to Highlands Park (Project 13).
- Pedestrian Improvements on Glen Arbor Rd and Mill St (Project 15).
- Hubbard Gulch/Alba Rd operational improvements (Project 18).

Boulder Creek

Short-Term Actions

- Boulder Creek sidewalk and crosswalk improvements (Projects 23 and 25). Includes shade trees on eastside of Highway 9 and intersection extensions (bulb-outs) to increase pedestrian visibility.
- Bicycle sharrows through downtown (Project 24).
- Slow speeds through town center. May include traffic calming design strategies to slow down cars on Highway 236 and Highway 9, such as narrowing automobile lane widths, raised medians, gateway treatments, speed feedback, and other signage (Priority A).

Medium Term

- Analysis of options to increase parking supply in downtown, which may include back-in diagonal parking (Project 24).
- Highway 9/Bear Creek Rd intersection: Analysis of options and implementation of modifications to improve safety and traffic flow (Project 27).
- Pedestrian crosswalks at Lomond St/ Highway 9 (Project 22).

Longer Term

- Bike and pedestrian facilities north to library and Bear Creek Rd (Project 26).
- Boulder Creek Elementary Safe Routes to Schools connections (Project 22).
- Pedestrian and Bicycle Improvements at Garrahan Park and Mountain Store (Project 28).

Implementation Considerations

Because Highway 9 and Highway 236 are Caltrans facilities, any projects on these corridors are subject to Caltrans policies and procedures. Insufficient state or local funds to maintain new infrastructure poses a significant challenge in implementation of any project. Even if projects are initiated by the RTC, County of Santa Cruz, or other local agencies, subsequent phases of project development, construction, and maintenance will also rely on continued partnerships with Caltrans. For maximum flexibility in implementing projects, Caltrans has stated that full local control could be achieved through relinquishment of roadways to the County of Santa Cruz. While Caltrans District 5 considers Highway 9 as a potential candidate for relinquishment, the County of Santa Cruz has indicated it is not interested in this option since there is insufficient local funding available to maintain all the county's existing roadways.

Implementation Tasks

As noted above, timing of project implementation may vary based on other projects planned in an area, funding availability, community support, and other factors. The following serves as a general guide of some of things that entities should consider when implementing any type of project in the SLV – including projects or components of projects in this plan, maintenance, new or remodeled residential or commercial developments, utility work (e.g. cable, power, water, sewage), mitigations, major infrastructure projects:

- ✓ Identify and review projects identified in this plan that are **in the vicinity** of the other construction projects and integrate wherever feasible. This includes:
  - Chapter 2 corridor-wide priorities and cross sections: maintenance, shoulder widening, turnouts, pedestrian crossings, etc.
  - Chapter 3 area specific projects
  - More comprehensive list of community ideas, including those in Appendix B
  - Every Caltrans project is now reviewed for complete streets through its project development teams. If there is an opportunity to add elements

TRANSPORTATION PROJECT IMPLEMENTATION PROCESS

Steps involved in construction of transportation projects include the following. The timing for each of these steps can take months to years depending on the complexity of the projects:

- ✓ Determine lead agency for project implementation
- ✓ Project scoping and cost estimating (Project initiation document, project applications, etc.)
- ✓ Secure funds
- ✓ Environmental review and preliminary design with outreach to stakeholders, including public outreach in accordance with CEQA
- ✓ Final design engineering and specifications
- ✓ Securing permits (include encroachment permits if non-Caltrans entity is the lead and impacting highway right-of-way); establish maintenance agreements, if needed
- ✓ Utility and other right-of-way
- ✓ Advertise for bids
- ✓ Review and award of construction contract
- ✓ Traffic management plan during construction – notify residents of construction schedule
- ✓ Construction
- ✓ Project closeout
- ✓ Ongoing maintenance

that improve conditions for bicycles, to add pedestrian facilities, or to partner and coordinate with other entities on implementation, including via funding, Caltrans has indicated that they will do so.

- ✓ Determine lead agency and conduct more detailed analysis of high-priority projects to determine feasibility of project and design options.
- ✓ Interagency coordination and consultation – Contact each of the following agencies early in project development process:
  - Caltrans as the owner-operator
  - County Public Works and Planning Departments
  - City of Santa Cruz Water Department. The Water Department is going to need to maintain and replace its water transmission lines and may consider realigning the main pipeline along Glen Arbor and Highway 9 to Henry Cowell entrance, which may provide the opportunity to add a multiuse path alongside the roadway.
  - Santa Cruz METRO – to discuss bus stop and bus pad locations, potential new bus service or stops, as well as bus stop lighting and shelters and walkways to bus stops that could be integrated with new developments and construction projects.
  - Fire departments
  - SLV Unified School District
  - Santa Cruz County Office of Emergency Services
  - RTC – Bicycle Committee and/or Elderly-Disabled Transportation Advisory Committee when projects may impact bicyclists, pedestrians, or transit users
  - Other stakeholders
- ✓ Public outreach and review of more detailed design/alternatives prior to final design.
- ✓ Determine who will maintain a project.
- ✓ Dig once: Both the County of Santa Cruz and Caltrans have “dig once” ordinances or policies. Installation of telecommunications cable, conduit and other related equipment should be installed wherever practical and feasible.

4.4. Funding Opportunities Overview

Implementation of all the roadway, bicycle, pedestrian, transit, and other priority projects identified in this plan will require a range of federal, state, and local funds. For some projects it will be necessary to cobble together several funding sources and partnerships for construction and maintenance responsibilities.

In general, the public and businesses contribute to transportation funding programs through taxes and fees, primarily collected at the gas pump and at cash registers. A small portion of automobile registration fees also help fund California Highway Patrol, call boxes, and some air quality projects. Caltrans, the California Transportation Commission (CTC), local jurisdictions, the Santa Cruz County Regional Transportation Commission (RTC), and Santa Cruz Metropolitan Transit District (METRO) are responsible for evaluating and selecting projects to receive most of these funds.

The majority of revenues available for transportation projects are highly restricted (or “dedicated”) by federal, state, or local regulations for use by specific jurisdictions, agencies and/or types of projects. These are specifically limited to certain types of projects, such as state highway safety, ongoing maintenance, transit operations, freight, rail, and/or bicycle and pedestrian projects. Local and state measures approved since 2016, including Measure D sales tax and the Senate Bill 1 fuel taxes and fees, provide for increased transportation investments. However, revenues available for transportation projects and programs are still insufficient to address all of the priorities that have been identified by the community. In identifying projects

that can be reasonably implemented along the Highway 9 corridor, this study considers which projects could reasonably compete for funding from available funding programs.

The following programs stand out as the best opportunities to secure funds for projects along the Highway 9 corridor through the SLV. Appendix C *Funding Opportunities* contains additional information on these and other federal, state, regional, and local grants and project programming process.

Measure D

The Measure D sales tax, approved by over two-thirds of Santa Cruz County voters in 2016, will provide $10 million for transportation projects in the San Lorenzo Valley-Highway 9 corridor over 30 years. This funding will be valuable for initiating more detailed planning and design, constructing some high-priority projects, and providing matching funds to leverage additional grant funding. An important objective of the study and plan is to leverage this money with other funding sources to be able to accomplish more significant improvements in the corridor. Additionally, the County of Santa Cruz receives a portion of Measure D funds for county road projects. Recently, the County has focused those funds on addressing the backlog of roadway repairs on county roads.

State Highway Operation and Protection Program (SHOPP)

The Caltrans' State Highway Operation and Protection Program (SHOPP) is focused on reducing collisions and maintaining the state highway system. Adding Complete Streets elements to state highway projects may be one of the best ways to tap into traditional sources such as the State Highway Operations and Protection Program (SHOPP) which has recently been significantly augmented by SB 1. The Caltrans 10-year SHOPP plan includes several projects on Highway 9, including pavement rehabilitation and storm damage repairs. Ongoing maintenance (Priority F) of state highways, including tree trimming, pothole repairs, sign replacements, and restriping are typically funded through Caltrans maintenance budget. Caltrans District 5 has indicated that local funding participation may be necessary for incorporation of some concepts within SHOPP projects, especially storm damage projects which are heavily restricted.

Active Transportation Program (ATP) Grants

This statewide program consolidates funding from federal transportation sources and state funding (approximately $220 million statewide each year) for projects that improve facilities for walking and bicycling.

Key criteria: Projects must address existing walking and biking safety issues evidenced by collisions; show potential to increase the number of people walking and bicycling and reduce driving trips to key destinations, such as schools; show benefits to economically disadvantaged areas; be part of a comprehensive, coordinated multi-agency plan with strong public support.

The ATP is probably the best opportunity for bicycle and pedestrian projects in the SLV, in terms of funding available and projects envisioned. Santa Cruz County Public Works has identified access to the SLV schools as a priority for these funds and successfully received funding for speed-feedback signs to slow traffic near schools. Showing a larger-scale phased project with demonstrated benefits may increase chances to win one of these highly-competitive grants.

Highway Safety Improvement Program (HSIP)

HSIP funds are federal funds used to reduce traffic fatalities and serious injuries on all public roads, including non-State-owned public roads and roads on tribal lands. The HSIP requires a data-driven, strategic approach to improving safety, with a focus on the ability of projects to reduce collisions. In 2018, the RTC successfully applied for funds to install new crosswalks and increase visibility at several locations prioritized through this Highway 9/SLV Corridor planning effort. See Section 4.3, *Corridor-wide* for locations funded by the grant.

Urban Greening Grant Program

The Urban Greening Grant Program is a statewide program that focuses on urban greening through conversion of pavement to green space. This is typically done by incorporating more natural drainage and stormwater treatment features and is combined with elements to reduce vehicle miles travelled by improving bicycle, pedestrian, and transit access. Approximately $26 million was available in 2018.

Better Utilizing Investments to Leverage Development (BUILD) Transportation Grants

This U.S. Department of Transportation program (formerly called TIGER) invests in road, rail, transit, and port projects that enhance economic development and improve access to reliable and safe transportation. Over $350 million was awarded for 30 bicycle and pedestrian projects between 2009 and 2018. This highly-competitive program is oriented to large scale visionary projects and in 2018 awards focused on rural areas. Comparable recent examples include $10 million in 2016 to the City of Live Oak, CA, near Chico, for a $17.3 million project to reconstruct Highway 99 through downtown with complete streets elements; and a planning grant of $236,000 to the City of Goleta, CA in 2014 toward the $700,000 design of a complete streets corridor in the 0.8 mile Old Town neighborhood corridor along Hollister Avenue.

Surface Transportation Block Grant program (STBG) and State Transportation Improvement Program (STIP)

The Surface Transportation Block Grant Program (STBG) and State Transportation Improvement Program (STIP) are federal and state funding programs which are distributed to regional agencies statewide based on formulas that consider population and lane miles. The Regional Transportation Commission (RTC) is responsible for selecting projects throughout Santa Cruz County to receive these funds, based on evaluation criteria set forth in the Regional Transportation Plan (RTP). In recent years, the RTC has prioritized projects that serve the greatest number of users, preserve existing transportation infrastructure, improve safety, reduce the number of miles driven, and reduce associated air pollution and greenhouse gas emissions.

Transit Programs

Bus transit service in Santa Cruz County is funded by a combination of local sales taxes, federal and state formula and/or grant funds, and rider fares. Sales tax sources include a half-cent tax dedicated to METRO and 16% of Measure D and Transportation Development Act (TDA) funds. Available transit funding is primarily used to maintain existing transit services provided by Santa Cruz METRO. This includes operation of bus routes in the SLV, replacement of buses every ten to fifteen years, and maintenance of bus stops. Lift Line Paratransit services are funded in part by Measure D and Transportation Development Act (TDA) sales taxes. Grants to permanently expand service are very limited. However, some Cap and Trade, air quality, and other grant programs that are typically focused on reducing vehicle emissions by increasing the number of

people riding the bus may be available to test out new models for transit in the SLV. These funds may also be available to improve bus stops.

California Highway Patrol (CHP) and Office of Traffic Safety (OTS) Programs

CHP is responsible for traffic patrol on state highways and roadways in the unincorporated areas of Santa Cruz County. OTS has grant programs aimed at increasing awareness of traffic rules, rights, and responsibilities, with an emphasis on bicycle and pedestrian safety skills for students and impaired driver education. OTS Selective Traffic Enforcement Program (STEP) grants focus on traffic enforcement and education, including impaired driving enforcement, DUI checkpoints enforcement operations focusing on distracted driving, motorcycle safety, and pedestrian and bicycle safety.

Other Local Funds

Developer fees and the establishment of new benefit assessment subzones (or County Service Areas) are another option to address priority projects and roadway repairs in the SLV. These subzones are typically small neighborhood benefit assessment areas. They raise funds for pavement maintenance and other projects at the local level. These subzones are typically self-initiated and citizen-driven through a petition process through the County Board of Supervisors. The funding generated can only be utilized in the neighborhoods where the residential subzones were created.

4.5. Summary

This plan identifies options to improve transportation in the San Lorenzo Valley, with a focus on the Highway 9 corridor. It was developed based on review of existing conditions and evaluation of projects and concepts that were identified as priorities by the community. While funding is insufficient to address all of the priority projects and concepts identified in this plan, it provides a vision and blueprint for the corridor in the future which can be implemented incrementally as opportunities arise.