

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

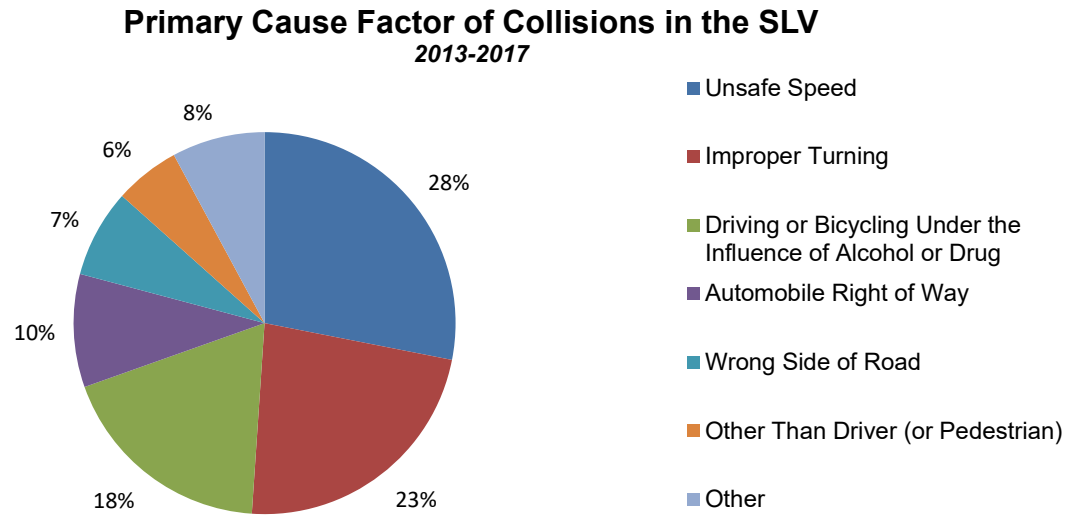
STREET	Between Cross Streets		Avg. Daily Traffic	Count Date
Bear Creek Rd	west of	Skyline Blvd	2,724	Oct, 2010
Felton Empire Rd	2301 Empire Grade	Krazy Acre Ln	2,079	Jul, 2011
Glen Arbor Rd	west of	Highway 9	4,337	Jul, 2011
Graham Hill Rd	Mt Hermon Rd	Lockewood Ln	6,749	Jul, 2011
Graham Hill Rd	Hwy 9	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.

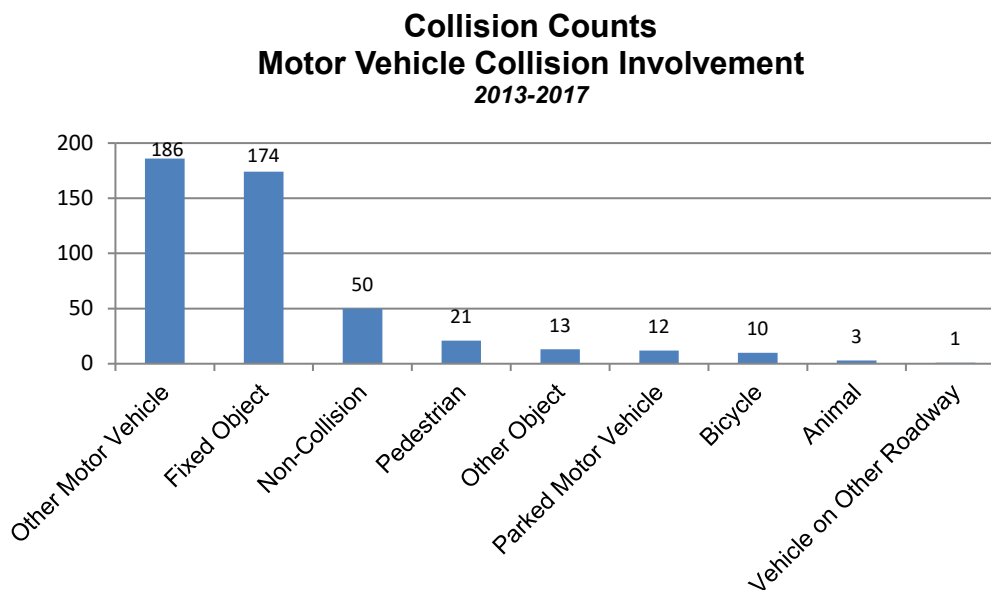
Collisions: California Highway Patrol (CHP) is responsible for traffic enforcement through the SLV, though officers are responsible for covering very large areas. There have been a number of significant collisions in the past decade in the SLV. Leading causes of injury and fatal collisions 2013-2017 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.

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.

Figure 2.8: Downtown Felton Looking North



Credit: SCCRTC

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

Figure 2.10: Rural Cross Section with Bicycle Access and Turnouts



Credit: TrailPeople, photo - Google Streetview

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 as a buffering, should be considered in width-constrained areas and around curves. See *Bicycle Facilities* toolkit options in Appendix A.

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.

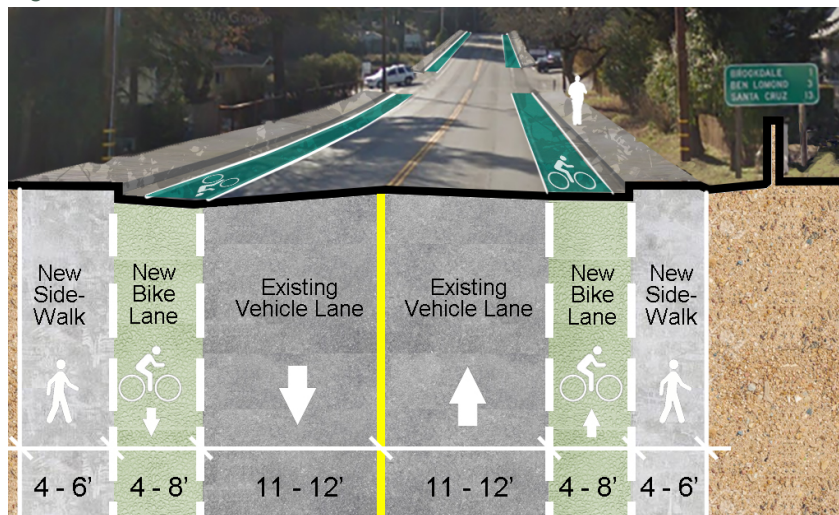
b2) Rural Cross Section: Turnouts

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**).

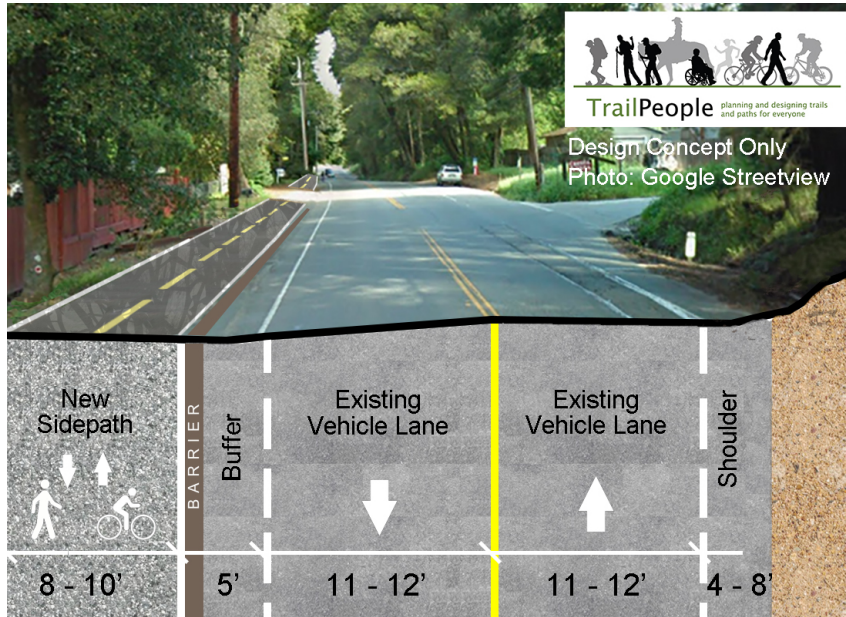
Figure 2.11: Suburban Cross Section



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:

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

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.

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

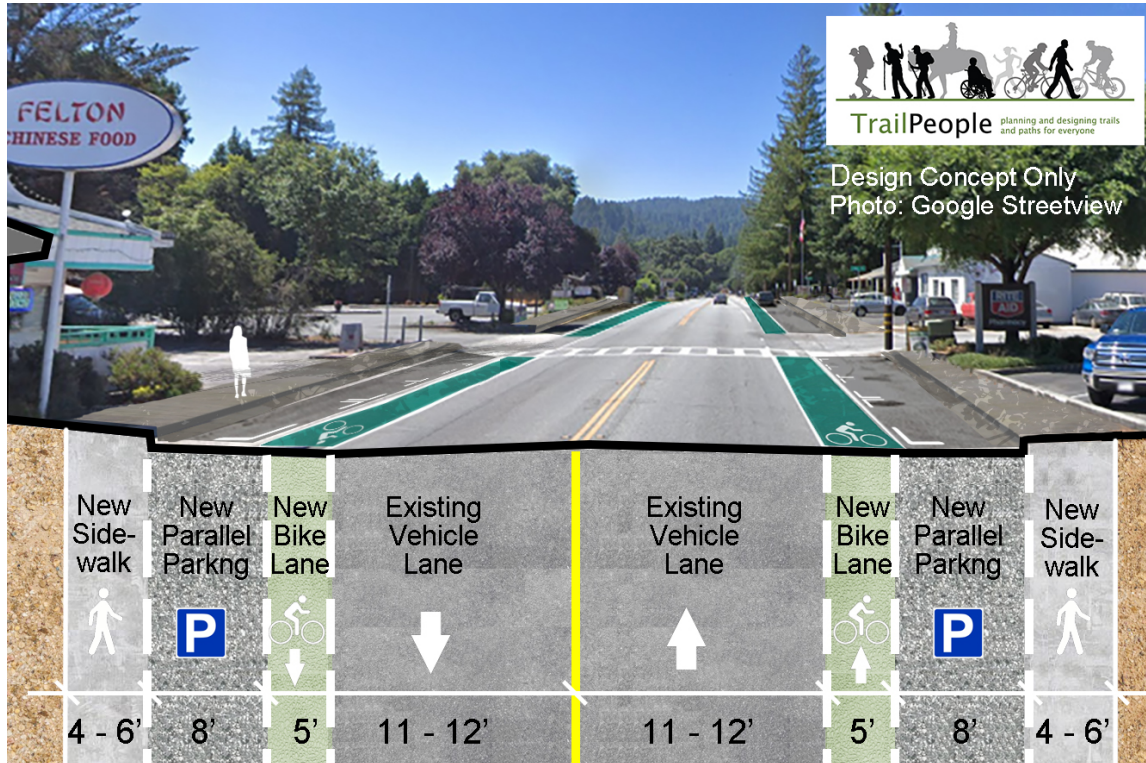


Credit: FHWA

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

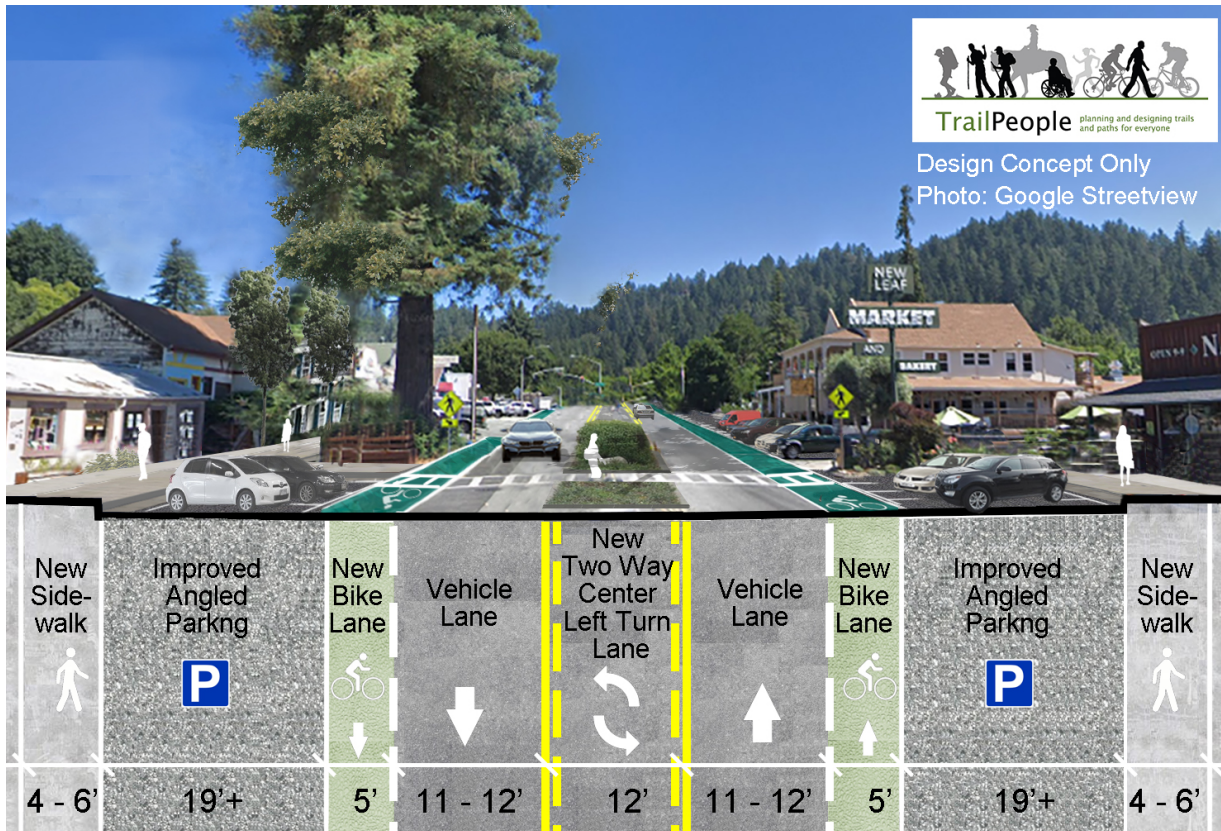


Credit: TrailPeople, photo - Google Streetview

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



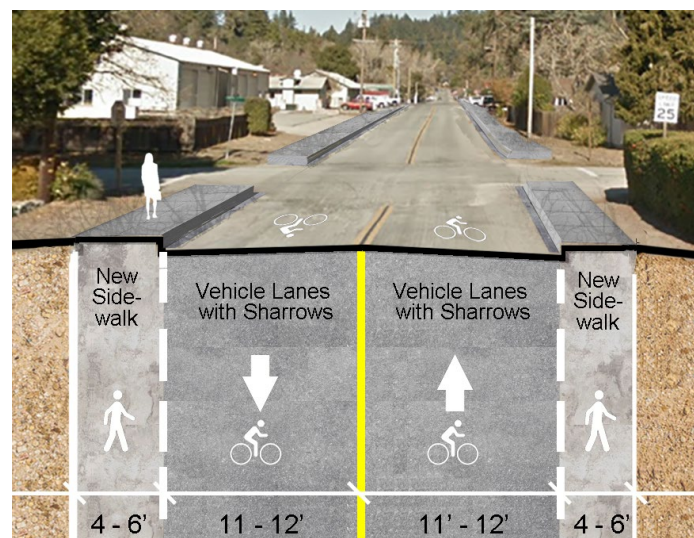
Credit: TrailPeople, photo - Google Streetview.

Modified designs may include a cycle-track, with bicycle lane next to sidewalk rather than vehicle lane

f) Suburban Neighborhood 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.

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.

Figure 2.19: Priority C – Bicycle Facilities on Highway 9



Credit: SCCRTC

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.

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

Figure 2.20: Maintenance and Emergency Preparedness



Credit: Santa Cruz County Department of Public Works

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 "Name of town #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

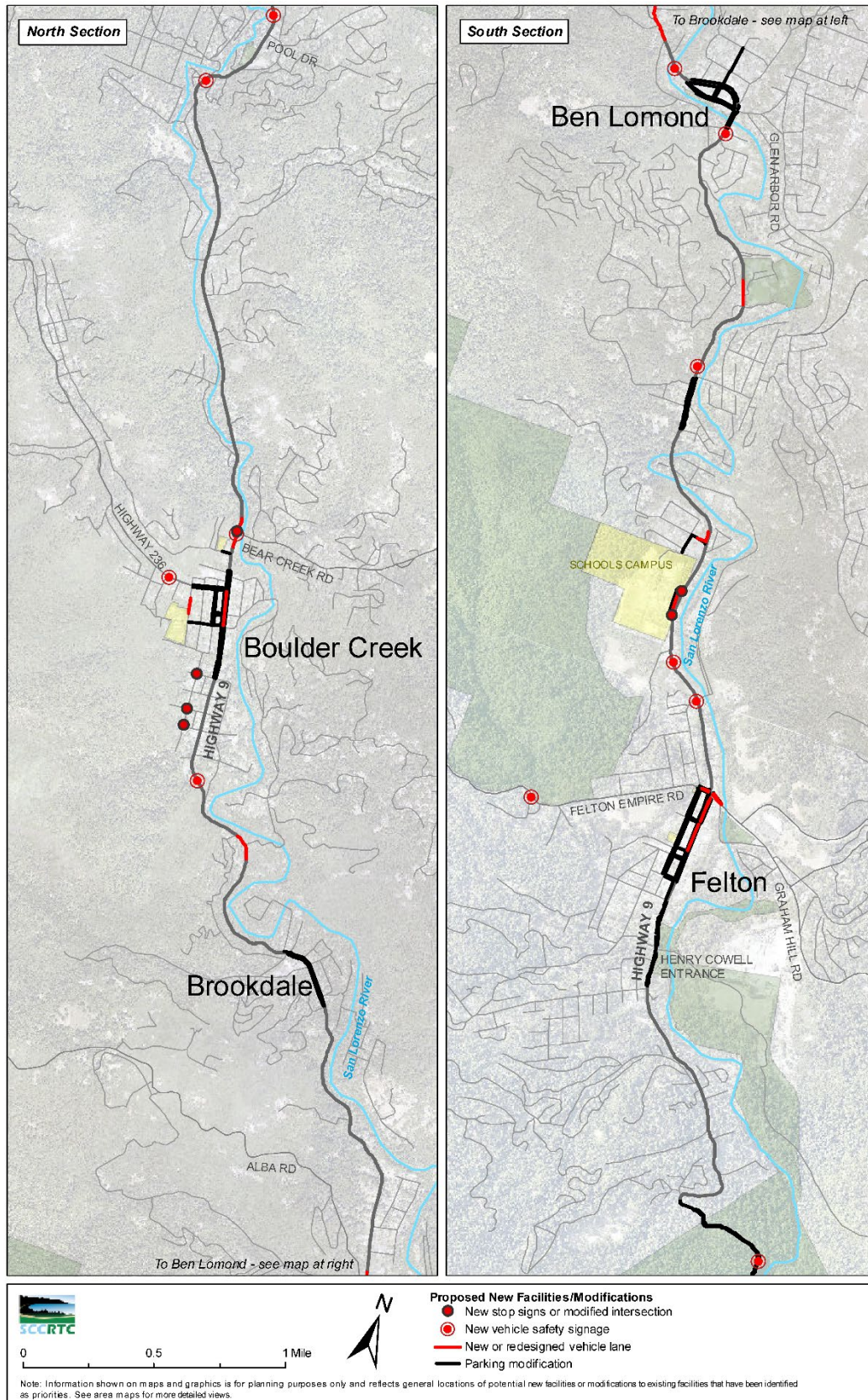


Figure 2.22: Pedestrian Priority Projects Overview

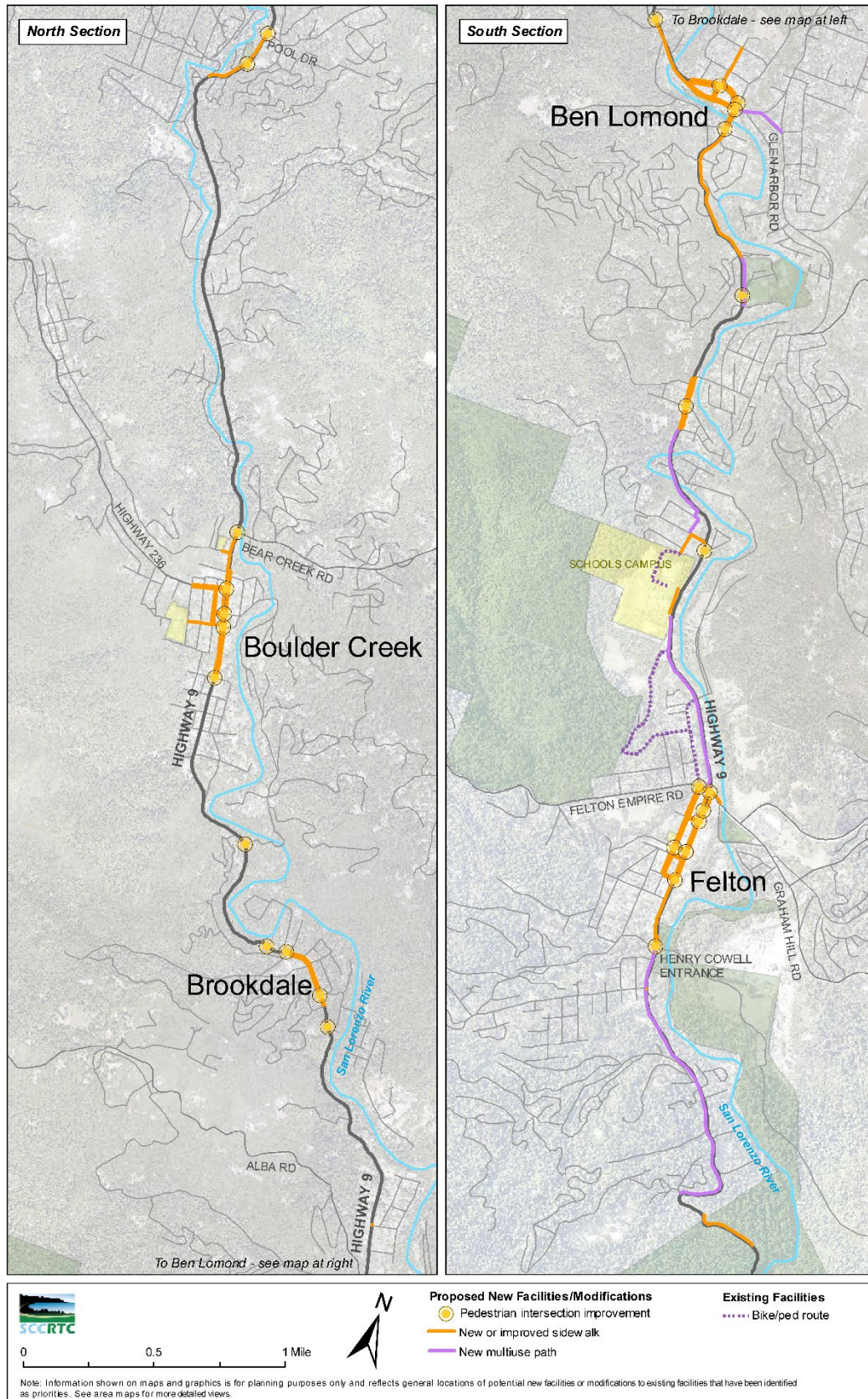


Figure 2.23: Bicycle Priority Projects Overview

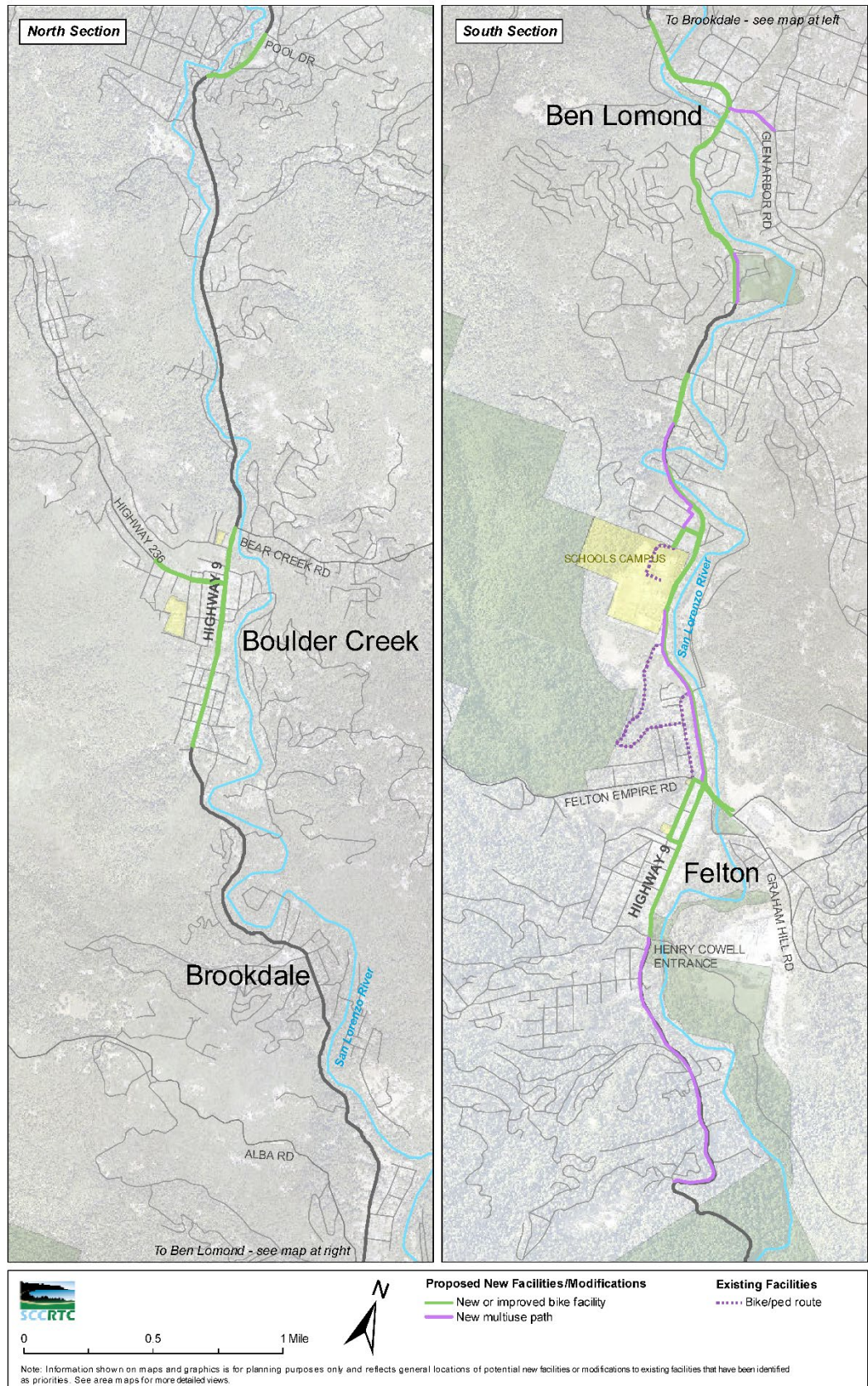


Figure 2.24: Transit Priority Projects Overview

