

5. Site-Specific Improvement Concepts and Alternatives

This Phase 1 report attempts to pick up where prior studies, plans and public input left off. The objective of the current public participation process is to obtain comments and preferences regarding these previously-submitted ideas; get additional ideas, and use this input to develop alternative projects and concepts that respond to community needs and preferences, as well as the standards and constraints of Caltrans, Metro Transit, funding opportunities, and other practical considerations.

A series of site-specific concepts for improving bicycle and pedestrian connectivity, parking organization, and overall traffic safety was prepared based on ideas from cumulative public and agency input. These ideas get quite detailed in order to present realistic scenarios to address some significant specific barriers and challenges, but they are only in the conceptual stage – not proposals, let alone plans. Some of the concepts have only one solution idea – others have alternative or additive ideas to consider for the same challenge area.

On-line surveys and in-person outreach is intended to collect input and preferences about these ideas. Informed input depends on reviewing this report to understand the conditions, concepts, and considerations. Based on survey results and individual public and agency comments, these improvement concepts will be defined, refined, and evaluated and other concepts identified by the community in Phase 1 will be evaluated as part of Study Phase 2.

1. Improved bicycle and pedestrian connection – Henry Cowell State Park to Felton

Conditions/Challenges

This section of highway is generally flat and has relatively gentle curves. The south half is suburban residential with some commercial and a church. The northern half is in the Felton commercial district. Significant constraints occur only at the southern part. From the end of the central commercial district at Kirby Street there are wide (approximately 8') paved/gravel shoulders and some sections of sidewalk. Ladd's Auto Body has a similar pull-in parking configuration to downtown. South of Laurel Drive the shoulder diminishes to 4 feet or less. There is a crosswalk at Redwood Drive near the entrance to the state park, but there is no signal or lights.

Improvement Idea

Add minimum 4' shoulders/bike Lanes with path on east side (Survey option 1): The SLV Trail Study proposed widening shoulders to at least 4' where they are currently less, and adding a path on the east side to the Big Trees Road/park entrance.³

Part of the shoulder widening could potentially be accomplished by narrowing lanes from 12' to 11' Adding a sidewalk or path on the east. would require extending large box culverts/bridges at PM 5.55 and 5.8 and some minor grading. Barriers such as utility poles, signs, drainage ditches, trees, and driveways would have to be addressed.

The crosswalk at Redwood Drive could be improved with lighting and a user-activated warning light (RRFB).

Pros: would improve bicyclist and pedestrian safety from downtown south to the park.

Cons: moderately expensive.



South of downtown Felton

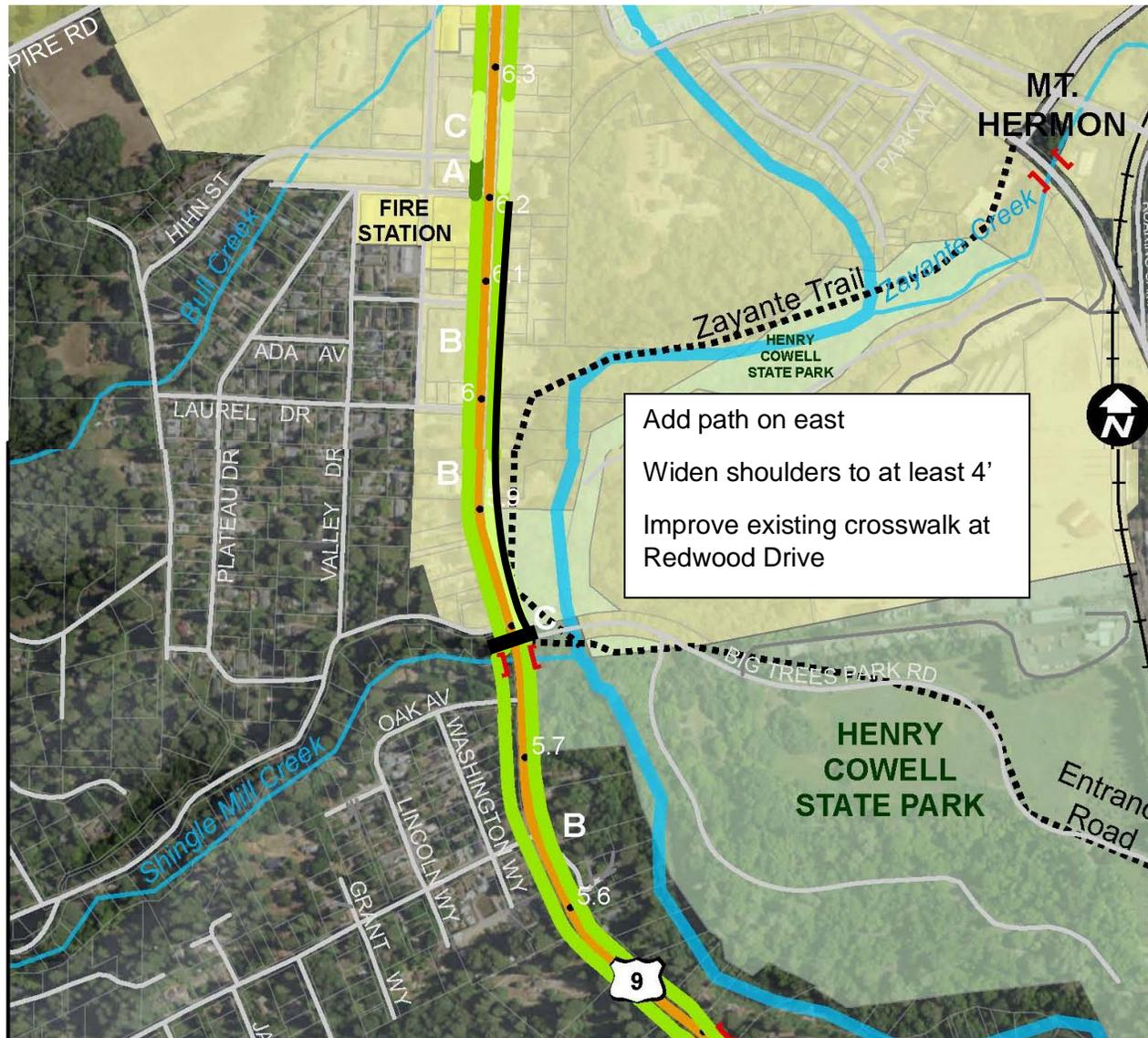


Looking north near state park

³ This suggestion was also put forth by resident advocates.

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Figure 5: Bicycle and pedestrian Improvements from Henry Cowell State Park to Felton



2. More organized parking/frontage in downtown Felton

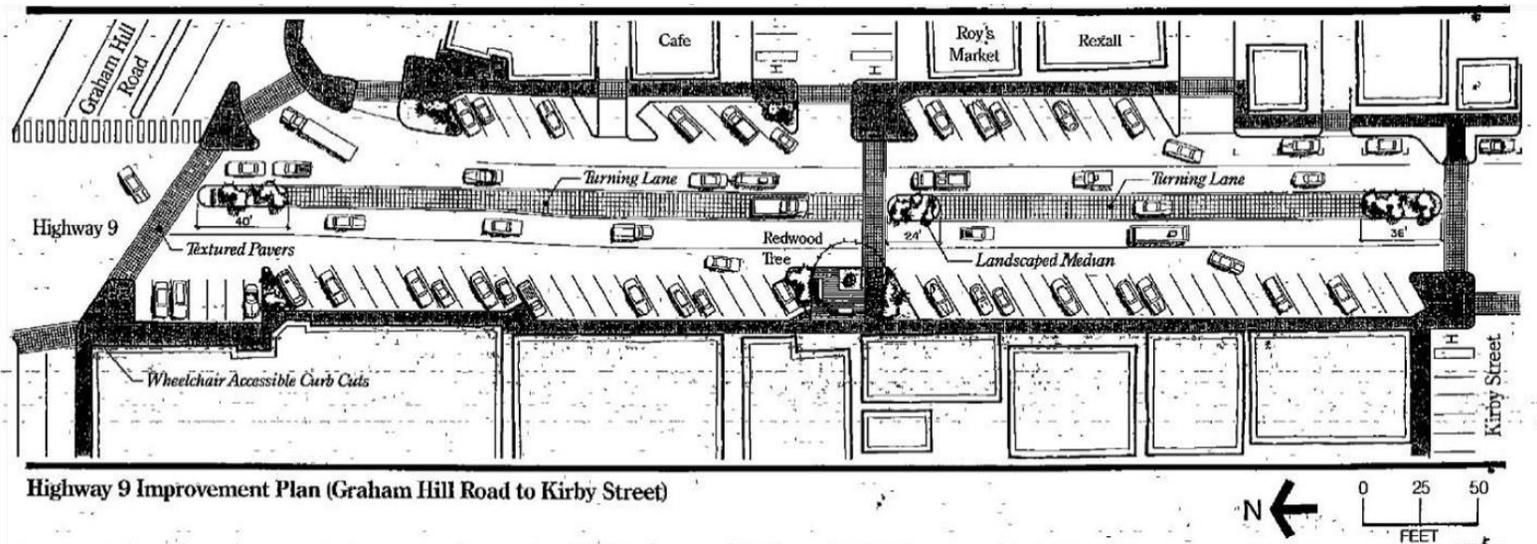
Conditions/Challenges

In the commercial area between Graham Hill Road and Kirby Street much of the parking is perpendicular, requiring backing into the highway, which does not meet Caltrans standards and would not be allowed if it was not “grandfathered.” This configuration leaves no safe designated space for bicyclists and pedestrians in the right-of-way, and tends to create an aesthetically unappealing frontage. The right-of-way (ROW) line is generally at the edge of the existing roadway on the west – the parking is on private property, but on the east the parking is in the ROW and the businesses generally have other parking lots.

Alternative Improvement Ideas

a. Convert to 45-degree angled parking, improve walkways at store fronts; add center turn lane (Survey option 2). The Felton Town Plan proposed 45-degree angled parking with a back-up aisle that occupies the space where the sidewalk and bike lane would normally be. It includes improved, more continuous sidewalks along the building frontages, and a 2-way left turn lane in the center.

Figure 6: Highway 9 pedestrian improvements from Felton Town Plan



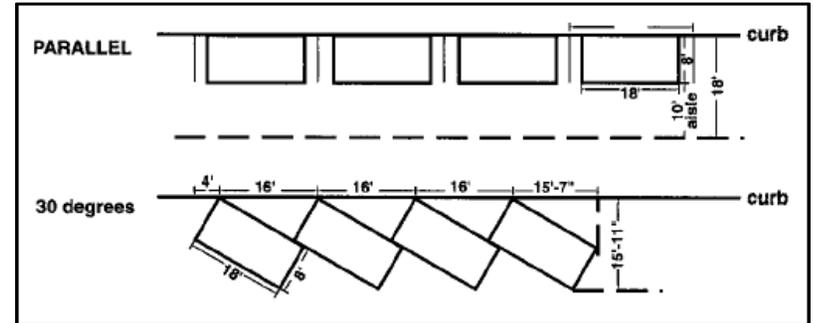
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Pros: Maintains existing storefront parking spaces while providing improved pedestrian facilities; provides some additional greenery in the medians; easier to turn into and pull out of specific businesses.

Cons: Does not meet Caltrans standards and could not be funded with transportation grants. Provides no dedicated space for bicyclists. Requires coordination with/between business/property owners.

b. Convert to separated 30 degree angled parking or conventional parallel parking with sidewalks in ROW (Survey option 3). Where there is at least 35 feet of space from the white lane stripe or “fog line” the parking could be reorganized to have consolidated entrances, and exits with 30-degree angled parking. A sidewalk could be constructed, separated from the parking by a narrow potentially landscaped median. Where there is less space, the parking would have to be parallel.

Figure 7: Sample layout of angled parking



Pros: Maintains existing storefront parking spaces while allowing for protected bicycle and pedestrian facilities; improved traffic circulation; better aesthetics and green space.

Cons: Requires coordination with/between business/property owners. Existing pull in parking on west side is on private property and not within Caltrans right-of-way, requires negotiation and coordination with businesses and property owners to plan improvements.

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Figure 8: Conceptual layout of sidewalk protected angled parking and bike lanes

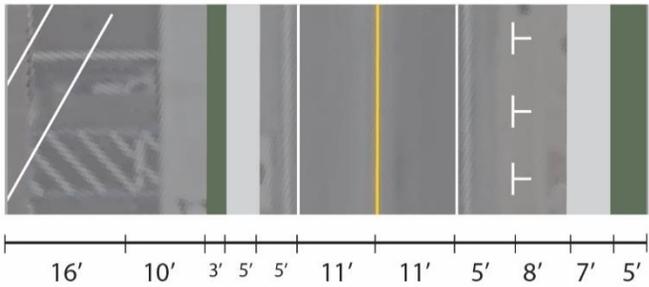


Figure 9: Cross-Section

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c. **Colored/textured shoulders.** A colored and textured shoulder has been used in similar settings to define a clearer zone for pedestrians and bicyclists. This would be a less intense treatment option that would designate the pedestrian space, and alert drivers to the presence of pedestrians.

Pros: Avoids interfering with private property and existing parking; relatively low cost. Can be done within Caltrans ROW.

Cons: Does not address traffic safety issue and non-compliance with current standards. Does not separate pedestrians and bicyclists from cars as much as other options.



Textured shoulders with pull-in parking in Capay Valley, CA



Textured shoulders used by pedestrians in Capay Valley, CA

3. Bicycle and pedestrian access at Graham Hill Road intersection

Conditions/Challenges

This corner has no formal bike or pedestrian facilities and little to no space except by walking or biking through the adjacent gas stations/repair shop parking lots. The lack of consolidated driveways exacerbates this condition. There is a redwood tree in a rock planter in the ROW on Graham Hill that occupies the space where the shoulder and sidewalk would otherwise be. There is little to no available shoulder or sidewalk.



Aerial of northwest corner of Graham Hill Road and Highway 9 and insets showing potential path/sidewalk

Alternative Improvement Ideas

a. Narrow the lanes to add space for bikes on the shoulder and a continuous sidewalk (Survey option 4). The existing lanes are typically 12 feet. If they were narrowed to 11 there would be enough space to add a sidewalk without impacting the private businesses, except by creating consolidated driveways. The redwood tree would still be a barrier - the walkway could potentially go around the back of the tree while the additional space is used to create at least a 4 foot shoulder (there may or may not be enough space in the ROW, or the tree and planter could be removed. Note that narrowing lanes on Highway 9 for this project conflicts with narrowing them to add more bike/ped space on the west side - doing both may require some ROW acquisition and additional impact on adjacent businesses.

Pros: supports safer biking and walking in a congested area.

Cons: narrower lanes may bother some driver; impact on businesses; moderate construction cost

b. Convert the intersection to a roundabout (Survey option 5). Roundabouts have been accepted by Caltrans as a preferred approach for heavily used intersections. Roundabouts have been shown to move traffic more efficiently with less delay than signalized intersections, and can be designed to accommodate bicyclists and pedestrians safely and efficiently. The space in the center is often used for community monument signs or signature elements such as a sculpture

Pros: provides for more efficient traffic flow, provides more space for bicyclists and pedestrians, provides opportunity for landmark feature.

Cons: may not fit in available area, expensive, disruptive during construction, some people are uncomfortable with the concept.



4. Bicycle and pedestrian connection to SLV schools from central Felton

Conditions/Challenges

The section of Highway 9 between Graham Hill Road/Empire Grade and the SLV schools complex currently includes a series of retaining walls that leave minimal space for bicyclists or pedestrians on the west side, and little space on the east side near Graham Hill Road. This is a very constrained section for bicyclist and pedestrian access in a location with high demand and relatively heavy traffic. Because the schools are on the west side, that is the most desirable alignment for access improvements. The constraints change in a number of ways along this stretch, but the primary challenges are a series of retaining walls on the west side in the central and southern portions of this section. In the central portion tall retaining walls have only approximately 4' shoulders at the base. Near the southern end a few residential properties on the west have steep driveways and tall retaining walls with as little as 2 feet of shoulder space.

The roadway in this section is approximately 43 feet wide, which leaves ample room for bike and pedestrian space if there are only 2 lanes, but there is a left turn lane at the north end of the largest wall, and at the south end the road widens into 4 lanes, including 2 southbound left turn lanes. Narrowing lanes would not provide enough space to create a separate pedestrian facility.

On the east side the commercial and residential properties toward the south end have driveways dropping down, and to the north the mostly residential properties have low retaining walls. The 1/3 mile from Clearview Place north to the schools has some constraints – slopes, trees, and landscaping in the ROW, but is relatively unconstrained compared to the section to the south.

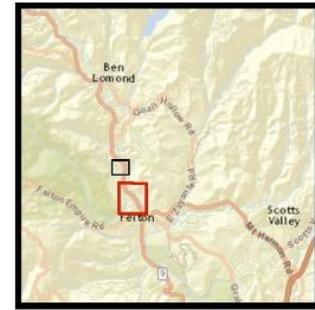
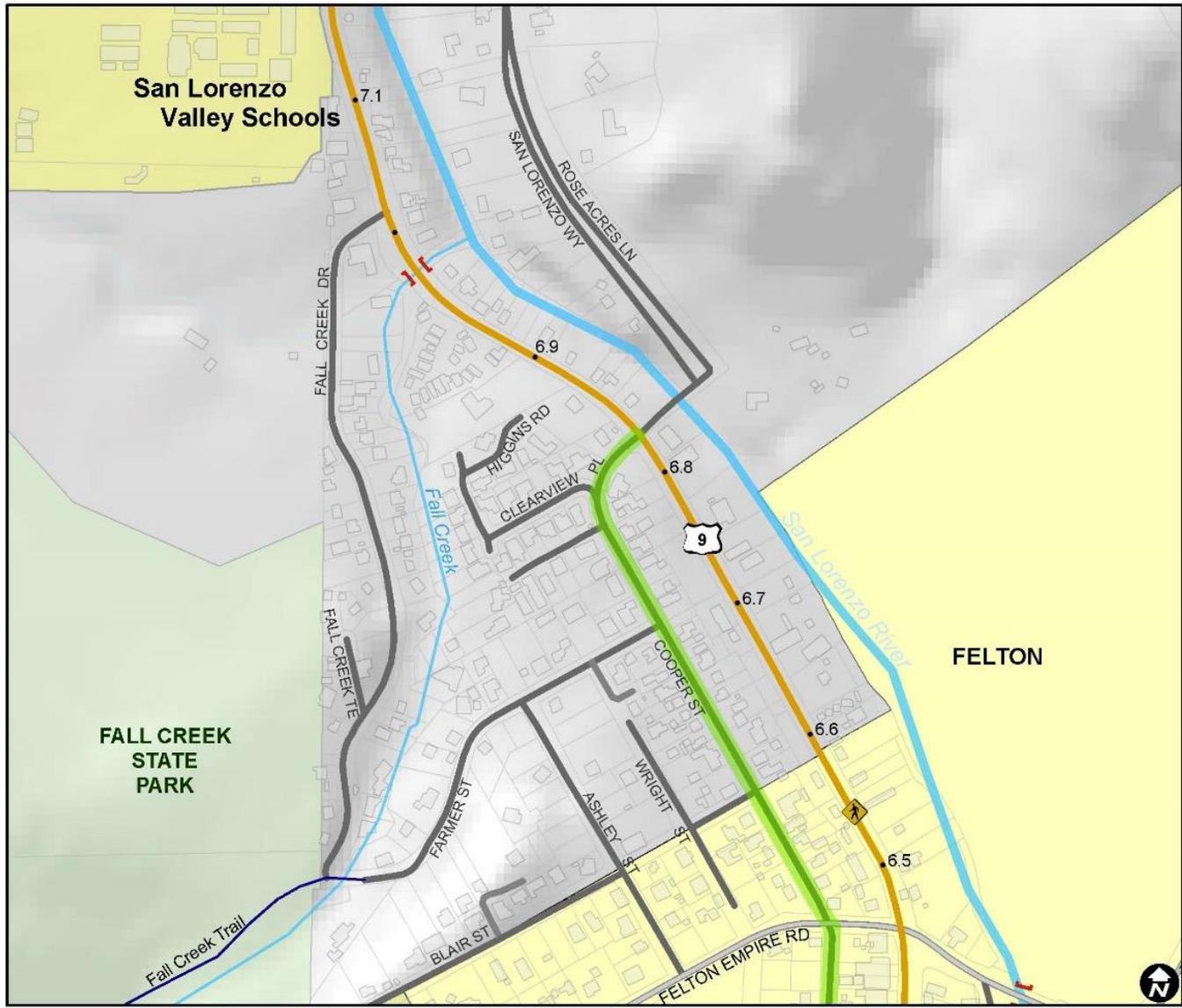
Figure 11 details the structures along the west side from Felton Empire Road/Graham Hill Road north to Clearview Place/San Lorenzo Way.



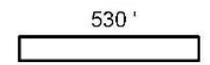
Children walking along highway 9 north of Felton

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Figure 10: SLV Schools to Felton Corridor

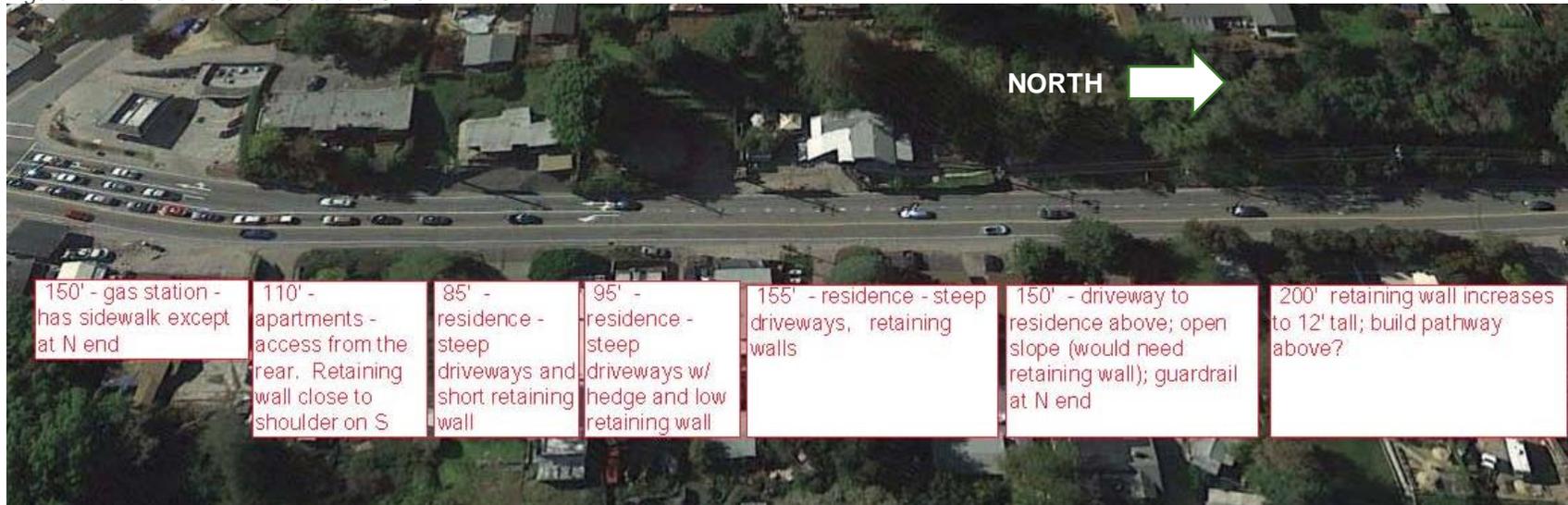


SLV Schools to Felton



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Figure 11: Constrains on west side of SR 9



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Wall at apartment building



Walls at single family residences



Walls at single family residences



Lower retaining wall

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Commercial property



Sloped driveway



Slopes beyond commercial property



Second, taller wall

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Taller wall



End of wall at Clearview Place



North of Clearview Place



At mobile home park

Alternative Improvement Ideas

a. **Separate Class I path on west side (Survey option 6).** A path could theoretically be constructed above the highway retaining wall, as illustrated in Figure 12. The ROW line is approximately 12' – 14' 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.

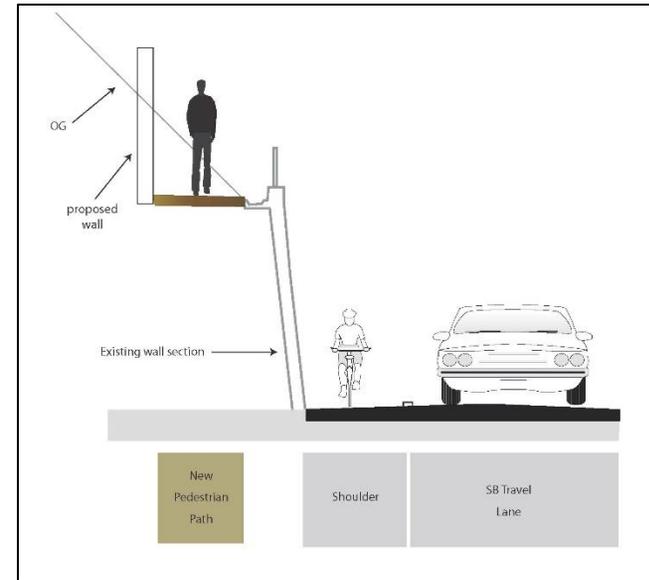
Constructing a Class I path or pedestrian path in the highway ROW on the west side the remaining approximately 1/3 mile to the schools is constrained by some slope and mature trees, but would be far more feasible/less expensive than the portion to the south.

Pros: safest for bike/ped connection to schools.

Cons: Impacts private properties; likely very expensive.

b. **Narrow lanes and add buffered bike (and pedestrian) lane on west side (Survey option 7).** While adding a separate path would get into expensive acquisition and construction, if the lanes were narrowed from present 12 feet to 11 feet and shifted to the east slightly a buffered bike lane or shared bike/pedestrian lane at least 8'

Figure 12: Cross-section with path constructed above wall



Armadillo buffers



Painted buffer



Tall wall looking south

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wide could be provided on the west side for most of the way – portions at the north and south ends of the wall sections may still require some reconstruction to get the necessary space. To remind/deter drivers from crossing into the bike/ped lane, “rumble strips” or raised “armadillos” could be installed.

Pros: safer for bikes and pedestrians than current condition; far less expensive and more easily implemented than separate path; narrower lanes often used to slow/calm traffic.

Cons: narrower lanes may bother some drivers, may not be acceptable to Caltrans depending on speed limits, etc.

c. **Add sidewalk on east side.** Adding a sidewalk on the east side may be feasible independent of lane narrowing or shift. There are mailboxes, signs and other private features in the public right-of-way that would have to be moved. The descending driveways would make it difficult for the sidewalk to comply with ADA access standards without reconstructing the driveways to be steeper – having the sidewalk slightly below the level of the highway with a curb might help.

Pros: safer for pedestrians; far less expensive and more easily implemented than separate path; don’t need to alter lanes.

Cons: not safer for bicyclists; school kids would have to cross 9 at least once, may discourage use. Impacts private fixtures and driveways. Slopes, cost.

d. **Cooper/Clearview/Fall Creek Bypass (Survey option 8).** (no access improvements). Cooper Street is a quiet residential street that parallels Hwy 9 to the west. It connects to Hwy 9 via Clearview Place (now a private road with steep slope – approximately 30% gradient) to the north of the segment with the retaining walls. This would be a much safer alternative to walking along the shoulder of the highway. It is closed to vehicles but physically open to bikes and pedestrians. In addition to this connection to Highway 9 there is a longer route via Fall Creek Road that some kids use to reach the back of the schools.

Pros: a safer alternative for walking or biking than continuing along the highway.



Existing shoulder on east side, site of potential sidewalk



Cooper Street

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Cons: formal legal access or improved gradients on Clearview Place would may require an easement or re-acquisition of the roadway; channeling significant bike and pedestrian traffic may be objectionable to the residential neighborhood; the route is longer than the highway – particularly the Fall Creek Road connection, and some kids may not use it

5. Transit and sidewalk access improvements SLV school entrance to Fall Creek Drive (Survey option 9).

Conditions/Challenges

The entrance to the SLV schools is not fully improved for bicycle and pedestrian access, including to the transit stops. Kids must walk or bike on the shoulders or in the dirt or mud, and the relationship of the transit stop to vehicle drop-off is awkward.

Improvement Idea

The proposed improvements include a relocated and improved bus stop shelter on the west side, sidewalks and paving around that shelter and connecting from the shelter on the east side to the crosswalk, and extension of a sidewalk on the west side to south of Fall Creek Drive.



Looking south away from the school, students are walking northbound on the shoulder of Highway 9 where sidewalk would be constructed.



Looking north towards school, young children bicycling on unimproved path on east side of Highway 9 headed toward school where the sidewalk would be constructed.

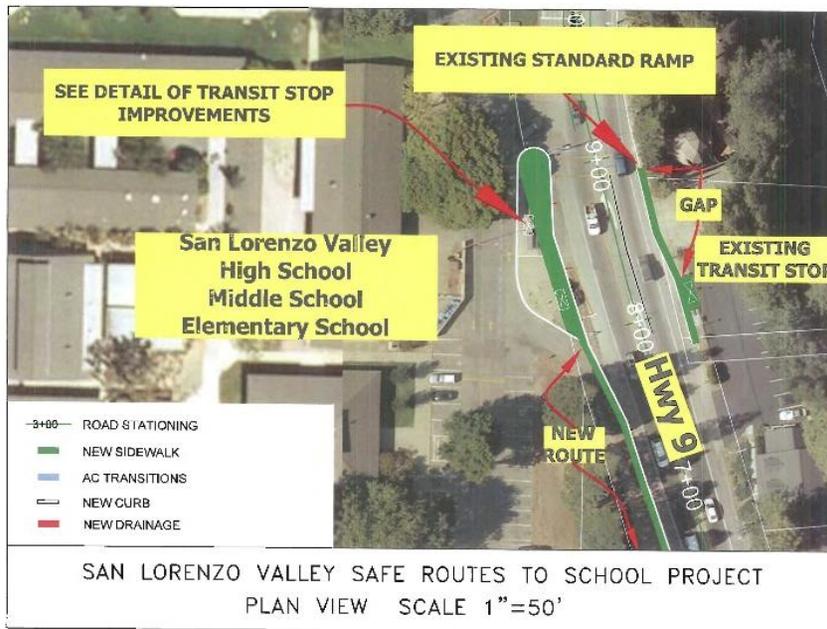
Images from Metro grant application

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Pros: provides safer access for walking or biking, including to the transit stops, and generally a better organized/improved drop-off area at the schools. Could be done more quickly and costs less than other options.

Cons: minor impact on adjacent properties

Images from Metro grant application



6. Improved bicycle and pedestrian connection from schools north to El Solyo Heights Drive

Conditions/Challenges

Along the west side of Highway 9 north of San Lorenzo Valley Middle School a series of retaining walls in the ROW present a major constraint for extending a path or sidewalk. The shoulder is approximately 8' wide at the south end of the walls, but narrows to approximately 3 feet at the north end. There is not sufficient lane or shoulder width to create space for a path. Given the proximity to the schools, and heavy, fast traffic in this vicinity, access improvements would be highly desirable. The stretch of constrained roadway only extends along the frontage of four residential properties; to the north and south there are few constraints to adding a sidepath. North of El Solyo Heights Drive there are no roads or structures fronting Highway 9 for about 1,800 feet, so there is less need for access improvements.

As shown in Figure 13, based on Caltrans record drawings, the wall is a substantial structure supported by deep piers. The top of the wall is approximately 7.5' above the roadway, and the ROW line is approximately 8 feet behind the wall.

Alternative Improvement Ideas

a. Add a sidewalk or path on west side above/behind the existing retaining walls (Survey option 10). The path could be constructed behind the existing wall and barrier, with the addition of a low retaining wall and fence as shown in Figure 13. The path would need to descend and climb to/from the intersecting driveways at a maximum 5% gradient to comply with ADA standards. This would be accomplished by the added retaining walls.

Ideally the 12' lanes would be narrowed to 11' to add space for bicyclists at the current "pinch point."

Pros: Access for pedestrians to the schools as well as to other destinations would be improved, and potentially access for southbound bicyclists.

Cons: Would reduce the yard area of existing residences; relatively expensive to implement.



Existing wall, looking north

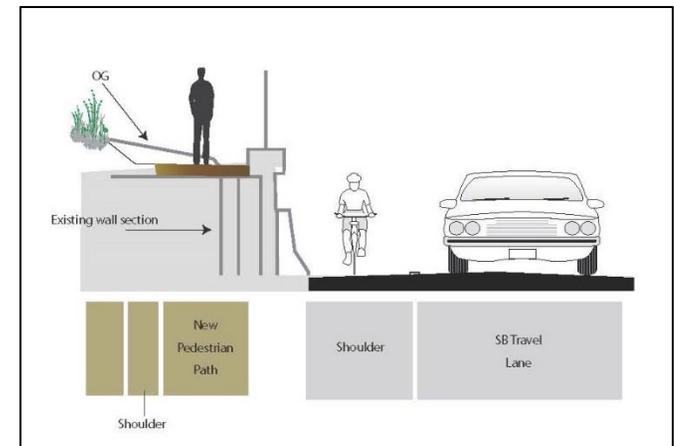


Figure 13: Cross-section of path above wall

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b. Bypass via El Solyo Heights Drive/Hacienda Way (Survey option 11). A bypass already exists for Middle School students (and potentially other students) in the form of an informal path leading to a small wooden bridge over a drainage, and connecting to Hacienda Way, near the northeast corner of the school grounds. Improving the bridge and constructing a formal multi-use path would involve construction on school property, but would be outside the fenced school yard, in an area with moderate slopes.

Figure 14: Connection from SLV Schools North



Hacienda Way Bypass

250'

Kimley»Horn



Hacienda Way

The connection back to Highway 9 via Hacienda Way and El Solyo Heights Drive could be improved by providing route signs and minor frontage improvements. A potential disadvantage is that it would be inappropriate to invite the public to use a route that crosses school property. This bypass would be for school access only – not for through public access.

Pros: The improvements would be relatively inexpensive to construct.

Cons: This is really formalizing a route that exists – it would only be useful for school students and would not improve conditions for bicyclists and pedestrians who are not headed to the schools

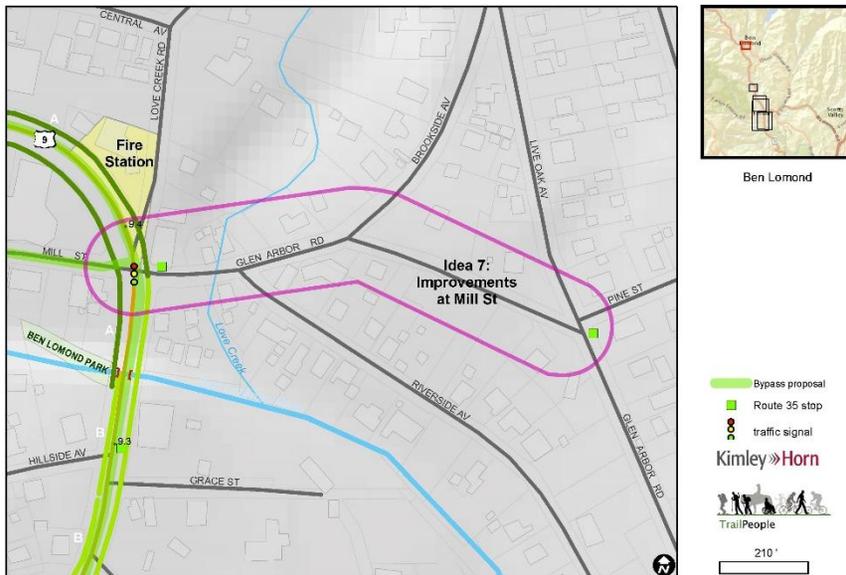
7. Crossing and Pedestrian Improvements at/to Mill Street/Highway 9 in Ben Lomond (Survey option 12).

Conditions/Challenges

Along Mill Street from the post office to Highway 9 and along Glen Arbor east to Pine Street (a populous residential area) there is no walking area and pedestrians of all ages must contend with cars, trucks and buses by walking in the roadways. In the winter both of these streets have significant runoff and there really is no place to walk safely. Also, Main Street at SR 9 is a wide intersection with long crossing times and frequently heavy, fast traffic. The curve limits sight distance ahead.



SR 9 at Mill Street intersection in Ben Lomond



Improvement Ideas

- a. Add crosswalk warning lights and lighting at Highway. At the Mill Street/Glen Arbor intersection add warning devices such as in-pavement flasher to overhead beacons to actively alert drivers to pedestrians crossing, install additional electrolier and convert to LED lights on Route 9.
- b. Add a walkway from Pine Street to Highway 9. Add a formal walkway, with associated drainage improvements on Glen Arbor Road connecting Highway 9 to Pine Street.

8. Pathway on SW side of SR 9 from Quality Inn/bridge south to Mill Street in Ben Lomond (Survey option 13)

Conditions/Challenges

There is a sidewalk and crosswalk at Mill Street but no formal pedestrian facility north until the sidewalk on the bridge over the river. There are private landscape improvements and several mature redwoods and firs at or near the shoulder that block the normal location of a sidewalk, and pull-in parking that would cross.

Improvement Idea

An informal paved path could wind behind or in front of the trees, assuming there is room in the highway ROW, to avoid or minimize tree removal. This situation is similar to many locations in SLV where mature trees and private landscaping or other features occupy what would otherwise be the pedestrian space

.Pros: would provide safer pedestrian access

Cons: would impact private improvements in the ROW and potentially mature trees



Existing shoulder between Mill Street road and Quality Inn/bridge



Location of proposed pathway

9. Add crosswalk bulb-outs in downtown Boulder Creek (Survey option 14)

Conditions/Challenges

This is a long straight stretch of “main street” highway with parking on both sides. Parking and traffic can block visibility of people trying to cross. The street can also appear bleak without trees or planting along the frontage.

Improvement Idea

Bulb-outs (or curb extensions) could be installed at crosswalks at Mountain, Lomond and Forest Streets and Highway 236. This would shorten crossing distance, make it easier to be seen, tend to slow traffic, and provide the opportunity for green drainage and to add trees and planting to the street⁴.

Closer to the southern town limits at Mountain Street there is no sidewalk to connect to the bulb-out, so rapid-flashing beacons or other enhanced pedestrian signage and striping may be an alternative to a bulb-out to help increase visibility and safety there.



Existing intersection in Boulder Creek

⁴ See Caltrans Highway Design Manual Chapter 300

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Figure 15: Proposed bulb-out and pedestrian safety improvement locations



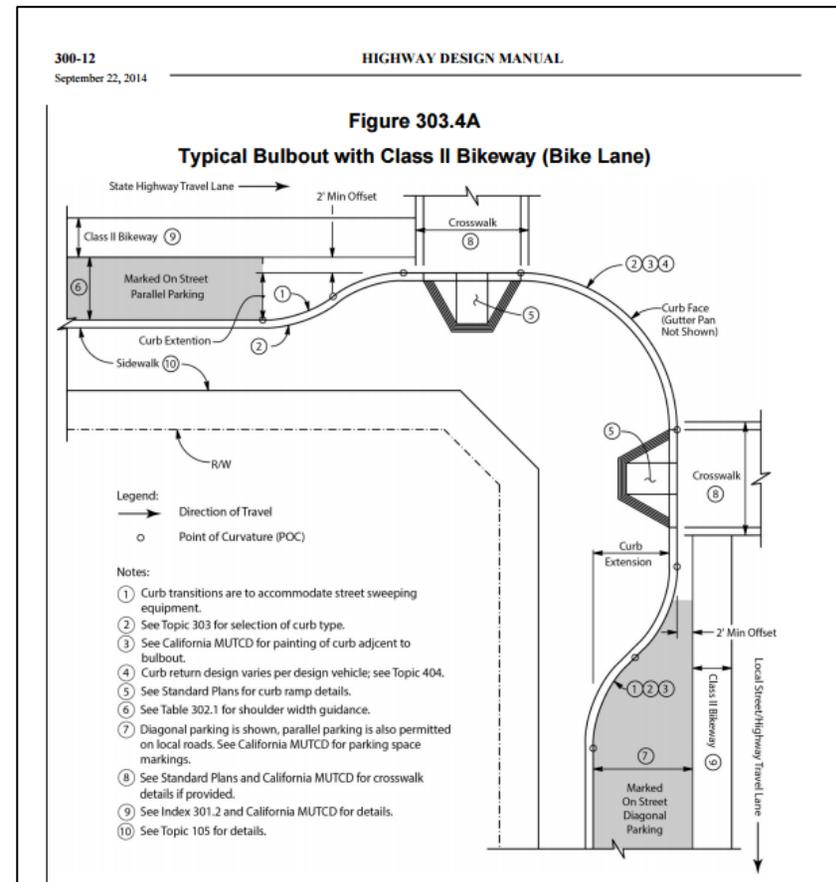
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Pros: decreases crossing distance and/or crossing visibility, traffic calming, potential for green drainage and landscaping

Cons: potential limits or conflicts related to Caltrans standards



Example bulb-out



Caltrans bulb-out guidelines

10. Sidewalk seating and storefront improvements in downtown Boulder Creek (Survey option 15).

Conditions/Challenges

Sidewalks in downtown are within the state highway ROW. Merchants would like to create outdoor eating/seating areas on sidewalks and do other sidewalk or storefront improvements, but the limitations and process to get approval from Caltrans are challenging.

Improvement Idea

Create guidelines that clarify limitations and standards; what can be done without a permit, and the process for obtaining one for improvements that may be acceptable.

Pros: Would make it easier for merchants and property owners to know what is possible and how to achieve it.

Cons: Some of the desired uses or improvements may conflict with Caltrans standards. Would require funding and a responsible party to prepare the guidelines.



Sidewalks in Boulder Creek

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Figure 16: As-builts for Highway 9 in Boulder Creek

