Walk Audit Report

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SafeRoutes
Napa County

SHEARER
ELEMENTARY SCHOOL

SHEARER ELEMENTARY SCHOOL

1590 ELM STREET NAPA, CA

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EXECUTIVE **SUMMARY**

THE NAPA COUNTY SAFE ROUTES TO SCHOOL PROGRAM

The Napa County Safe Routes to School (SRTS) Program is a partnership between the Napa County Office of Education (NCOE), Napa County Bicycle Coalition (NCBC) and Napa Valley Transportation Authority (NVTA). Since 2008, the Program has provided high-quality bicycle and pedestrian safety education and encouragement programs and has worked closely with the public agency and school stakeholders to make walking and bicycling safer and more accessible for children throughout Napa County.

According to 2015 California Office of Traffic Safety (OTS) data, the data available when the SRTS program was applying for grant funding, Napa County ranked 1st in per capita number of collisions of bicyclists under the age 15, 2nd in total fatal and injury-causing collisions, and 3rd in overall pedestrian collisions. According to the most recent OTS data (2018), Napa County ranked 8th for bicyclist collisions statewide (58 counties), 7th for speed-related collisions, and 6th for total fatal and injury-causing collisions. A decades-long decline in the number of students walking and biking to school, as well as increased awareness of the significant traffic congestion, air pollution, and related issues associated with students being driven to school galvanized local agency partners to expand the existing program.

> The goal of the Walk Audit Report is to **identify, evaluate, prioritize, and offer solutions** to infrastructure and non-infrastructure barriers to students safely walking and biking to school in Napa County.

In 2017, the Napa County SRTS program secured funding through the Caltrans Active Transportation Program (ATP) and One Bay Area Grant (OBAG) Cycle II programs to expand education programs and initiate a series of evaluations at each public school countywide. NCOE has been leading education and engagement programs under the current program, while NCBC has led evaluations of active transportation barriers at all 36 school sites.

WHY SAFE ROUTES TO SCHOOL?

Safe Routes to School is national initiative committed to increasing the number of students who walk or bike to school, and making it safe, convenient, and fun for kids to do so. In doing so, SRTS aims to improve kids' safety and increase health and physical activity. Concerned by the declining number of students walking and biking to school over recent decades and the related long-term health and traffic consequences, Congress made federal funding available for SRTS programs nationwide in 2005. Since then, SRTS programs have been implemented at more than 14,000 schools in all 50 states.

Studies have linked SRTS programs to increased walking and biking to school[ab] and reduced pedestrian-motorist collisions[cd]. This can lead to safer, healthier, and more focused students, while also benefitting local and school communities.

Regularly walking or biking increases children's daily levels of physical fitness and improves their cardiovascular health[e].

Student health has been linked to improved academic performance[fg]. When students walk or bike to school, the fresh air and exercise allow them to arrive refreshed, energized and ready to focus. Children have a greater sense of spatial awareness and knowledge when they are actively engaged in their transportation, allowing them to better recognize and navigate their neighborhoods independently[h]. Families are also provided with a low-cost transportation option that can significantly reduce their annual expenses[i].

When a greater share of students walk or bike to school, local and school communities benefit too. Fewer cars being driven to school can improve the air quality of surrounding neighborhoods by decreasing air pollutant emissions and increase street safety through reduced traffic congestion and noise pollution. This can also improve campus safety and reduce circulation hazards around the school site. Walking or biking is a reliable form of transportation, which can reduce student absence and tardiness. By reducing the number of short-distance school bus trips, increased student walking and biking can also help school districts save funds by decreasing costly bus service.

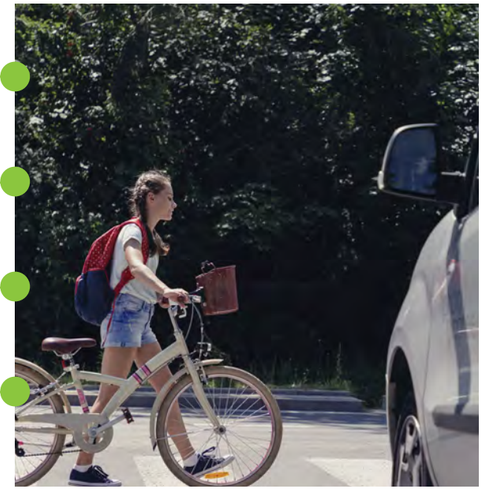
Schools and the community benefit immensely when students choose to walk or bike.

Student health has been linked to improved academic performance.

Walking or biking can provide a reliable form of transportation, leading to reduced student absence and tardiness.

Children arrive ready to learn and are less likely to experience discipline issues.

Fewer cars dropping off and picking up students improves campus safety and reduces circulation hazards.



THE SIX E'S

Safe Routes to School programs originally followed a comprehensive approach that addressed the "Five E's" – education, encouragement, enforcement, evaluation, and engineering. In 2017, when the Napa County SRTS program obtained funding to perform Walk Audit evaluations, the "Five E's" had recently been altered to add a sixth "E" – equity. In June 2020, after a significant portion of the Walk Audit evaluation work had been completed, the "Six E's" framework was again altered, dropping enforcement and adding engagement. These changes were led by the Safe Routes to School National Partnership.

The current "Six E's" framework is described below. Although enforcement is no longer one of the "Six E's", a brief definition of enforcement is included, as it was part of the approach used by the Napa County SRTS program during the majority of the Walk Audit evaluation process. Enforcement statistics are not emphasized in this report, as this element needs more study and review.

Engagement
Listen to community members and work with existing community organizations.

Equity
Recognize the unique barriers that different people face in living healthy, fulfilled lives, and craft policies, programs, and overall approaches with those various challenges and needs in mind.

Engineering
Design streets and schools for walkers and bikers to use safely and conveniently.

Encouragement
Promote walking and biking in the school community through events, programs and incentives.

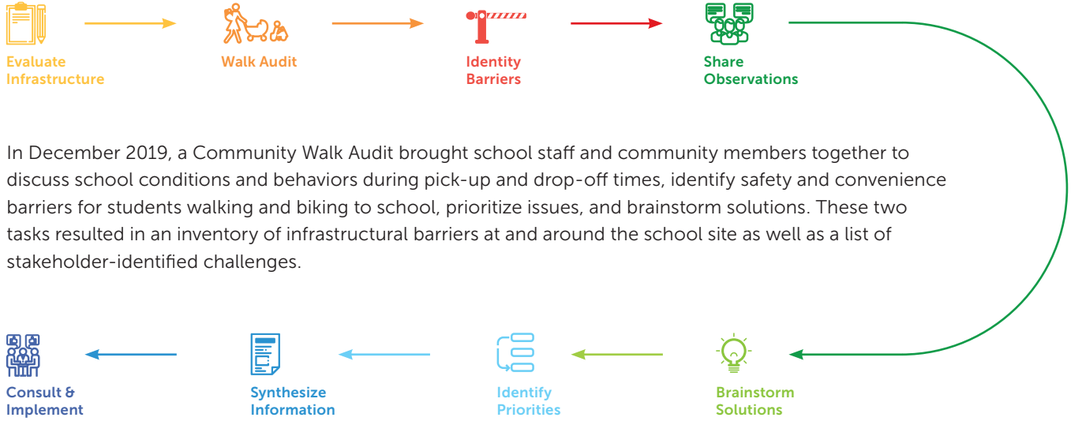
Education
Ensure that everyone learns how to travel safely and why biking and walking are important.

Evaluation
Track progress toward our shared safety goals, develop programs accordingly.

Enforcement (no longer an "E'):
Enforce traffic safety laws and school policies and target risky behaviors. No longer recommended as foundational to the start, maintenance, or growth of Safe Routes to School programs.

REPORT PROCESS

The SRTS team conducted a comprehensive evaluation of the barriers to students walking and biking to and from Shearer Elementary School, starting in the summer of 2018. Information on physical and behavioral challenges was collected in two phases. In August 2018, the SRTS team completed an initial infrastructure audit of the school site and the surrounding neighborhood within a half-mile of the school. SRTS team members walked and rode bicycles throughout the school neighborhood, taking photographs of barriers and logging them into Fulcrum, a GPS-enabled data collection smartphone app.



In December 2019, a Community Walk Audit brought school staff and community members together to discuss school conditions and behaviors during pick-up and drop-off times, identify safety and convenience barriers for students walking and biking to school, prioritize issues, and brainstorm solutions. These two tasks resulted in an inventory of infrastructural barriers at and around the school site as well as a list of stakeholder-identified challenges.

A report draft was shared with the Napa Valley Transportation Authority, the Napa County Office of Education, law enforcement, public works and planning representatives from the City of Napa, the local school district, and school stakeholders, and their feedback was incorporated into the final version. As part of the larger countywide project, the SRTS team engaged EMC Research, a national public opinion research firm to conduct a comprehensive survey of parents' perceptions around walking and biking to school (see Appendix A). The Walk Audit report outlines the information gathered during this multi-year process and provides recommendations for improvements.

SHEARER ELEMENTARY SCHOOL
SCHOOL SUMMARY

Principal	Bryan Gardner
First Bell	8:05 AM
Last Bell	2:15 PM (1:30 pm on Wednesdays)
District	Napa Valley Unified

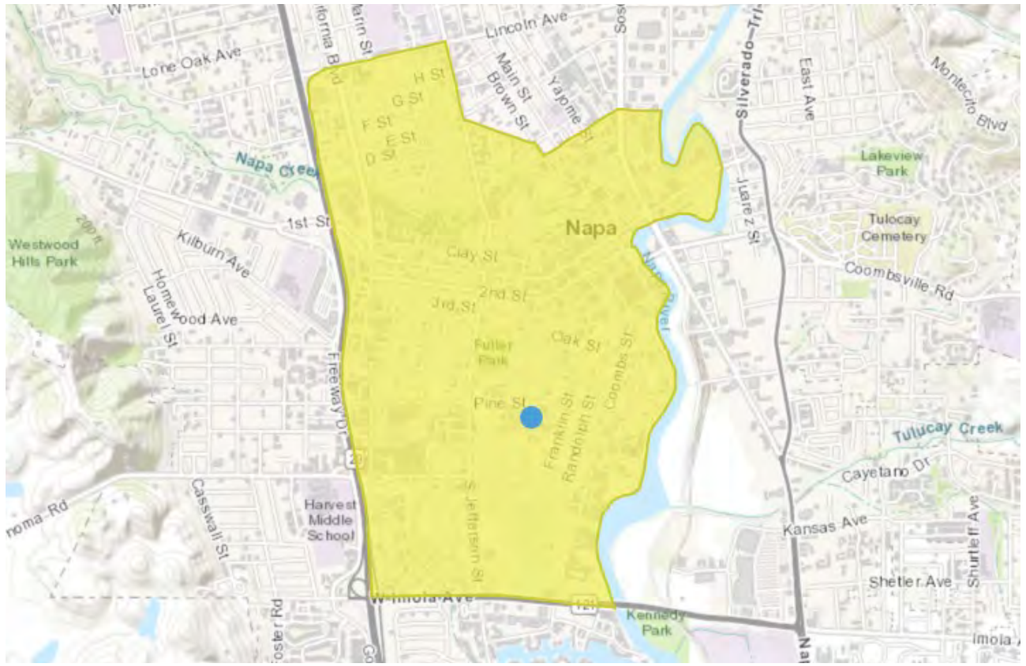
Grades	TK-5
Enrollment	460
Street	1590 Elm Street
City	Napa, CA 94559

Overall Facility Rating[j]: Good

While NVUSD has an open enrollment policy, Shearer Elementary's default enrollment area covers a large portion of south-central Napa, bordered by SR 29 to the west, West Imola Avenue to the south, the Napa River to the east, and sections of Lincoln Avenue, Hayes Street and Vallejo Street to the north.

Through the open enrollment policy, families may apply to NVUSD for their student to attend a school other than their school of residence. Out-of-district students may also apply through the open enrollment process. This often results in students living farther away from school, making them more likely to rely on driving for transportation. At schools where open enrollment students constitute a high proportion of their enrollment, this can cause higher vehicular traffic volumes around the school during pick-up and drop-off.

According to the most recent data (2020-21 school year), 19.8% of students attending Shearer Elementary reside outside of the school's enrollment boundary.



Map 1: The enrollment boundaries (shaded yellow) of Shearer Elementary School (blue dot).

DATA

A hand tally survey collected by the Napa County Office of Education in Spring 2019 indicated that roughly one in six students at Shearer Elementary walk to or from school, while over half (59%) arrive by family vehicle. Additional work is needed to establish a baseline of regular active transportation use for this school.

According to the results of the countywide EMC Research survey conducted in Spring 2021, 16% of respondents report that their K-8th grade children primarily walk to and/or from school and ~4% primarily bike. While nearly half (43%) say that their child has walked or biked to/from school at some point, 73% report using a single-family vehicle as the primary transportation method to and from school.

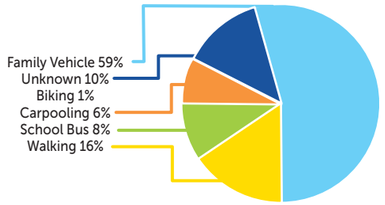


Figure 1: NCOE Hand Tally Data

Total Enrollment by Group (2019-20)

ETHNICITY	SHEARER ELEMENTARY SCHOOL	DISTRICT
Asian	0.2%	2.4%
Filipino	0.2%	6.9%
Hispanic or Latino	92.2%	55.6%
White	7.2%	28.4%
EXPERIENCE		
Socioeconomically Disadvantaged	94.1%	51.2%
English Learners	60.4%	20.5%
Students with Disabilities	12%	12.5%
Foster Youth	0.7%	0.4%
Homeless	2.4%	1.1%

Figure 3: Enrollment Data by Group

Countywide K-8 Primary Transportation to/from School (EMC Research)

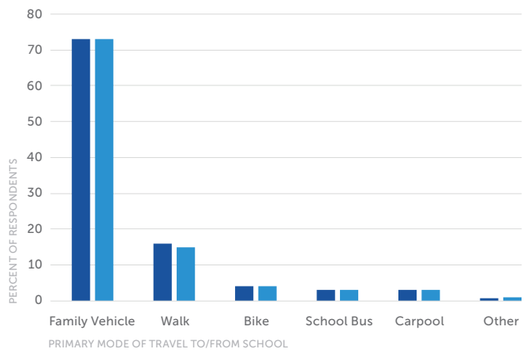


Figure 2: EMC Research Polling Results

Note: *Data from EMC Research survey represents countywide behaviors, and school or city-level breakdowns are not available. See Appendix A for details on survey methods and respondent profiles.*

Student Enrollment by Grade Level (2019-2020)

	NUMBER OF STUDENTS
Kindergarten	89
Grade 1	70
Grade 2	64
Grade 3	85
Grade 4	72
Grade 5	80
Total	**460**

Figure 4: Enrollment Data by Grade

NEIGHBORHOOD CONTEXT

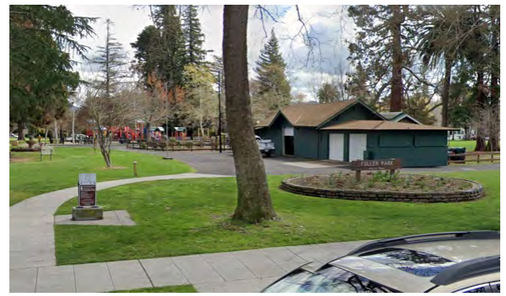
Shearer Elementary School is located in downtown Napa in the City of Napa's Central Planning Area, as defined in the existing General Plan. Also referred to as "Old Town," many neighborhoods in this area possess 19th century residences, some of which are used as bed-and-breakfast inns. However, some higher density housing, including small apartment complexes and multi-family residences, is located throughout the surrounding area, particularly to the east of the school. The neighborhoods to the north and east were primarily built from the 1880s to 1920s, though some were built later, and the neighborhoods to the south were primarily built from the 1930s to 1950s. The residences to the west range greatly in age, with some blocks being built primarily in the 1930s-1940s and some in the 1970s-1980s. Physical infrastructure can vary due to the range and period of construction in these neighborhoods.

Directly south of the school are mostly post-war tract subdivisions consisting of curvilinear streets with several cul-de-sacs. Curvilinear street patterns reduce pedestrian route choice, and while cul-de-sacs decrease traffic volumes and speeds in these areas, they also reduce pedestrian interconnectivity. The rest of the surrounding neighborhoods consist mainly of traditional neighborhoods, which feature gridiron street patterns and some cul-de-sacs to the west of the school. Gridiron street patterns are ideal for walkability, as they maximize pedestrian route choice and interconnectivity.

Destinations of interest to the north of the school include a popular market shop on the corner of Adams Street and Pine Street, Fuller Park, which students often go to after school, and downtown Napa. To the east of the school are residential neighborhoods, South Park, and the Napa River. West and south of the school are primarily residential neighborhoods. SR 29 is located about a mile west of the school.

The school offers two state-funded preschool programs, a Napa County funded afterschool COOL School program, and Napa Valley Parent University program.

Map 2: Shearer Elementary is located in central Napa, just south of the commercial downtown area.



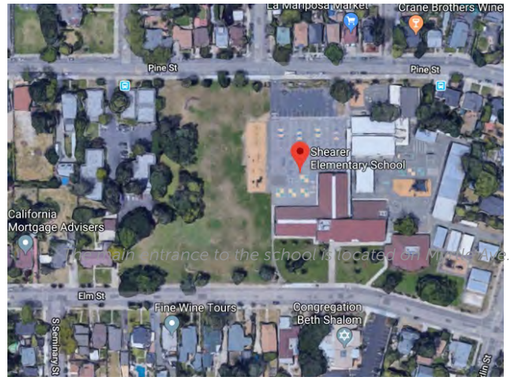
Fuller Park is located north of the school.

EXISTING **CONDITIONS**

The Safe Routes to School Team conducted an initial evaluation of the school site and surrounding area prior to conducting the Community Walk Audit. The Fulcrum App software was used to map and record significant point and segment issues within a half-mile range of the school. The team also collected information on local and school transportation policies and programs from conversations with the school's staff and administrators, as well as documents from the school and City websites.

SITE CIRCULATION

Shearer Elementary School's main office entrance is located on Elm Street, just west of the Elm Street and Franklin Street intersection. Two other entry points are located on Elm Street: a concrete path that leads to the building adjacent to the main office and an asphalt path that leads to the basketball courts on the west side of the school. There are two back entrances to school grounds on Pine Street, though both entrances are gated. The school's parking lot is also located on Pine Street, with the entrance right next to the intersection of Pine Street and Wilson Street and the exit on the east side of the parking lot. There is also an informal entry point to campus on Franklin Street, at an opening in the fence.



The school has two official loading zones. One is located on eastbound Pine Street between Wilson Street and Adams Street. It is marked by a white curb and signage indicating three-minute parking for loading during school hours. The second loading zone is located on westbound Elm Street, along the main entrance to the school. This loading zone is immediately followed by the bus loading zone further west.

Though not official loading zones, parents also use the unmarked curb on Elm Street and along Franklin Street to drop off students. However, the majority of parents drop off students on Pine Street. The school holds some Walk and Roll Wednesdays that hold check-in on Franklin Street, resulting in many students walking or biking on Franklin Street during these encouragement events.

The main entrance to the school on Elm Street (left) and one of the Pine Street entrances (right).

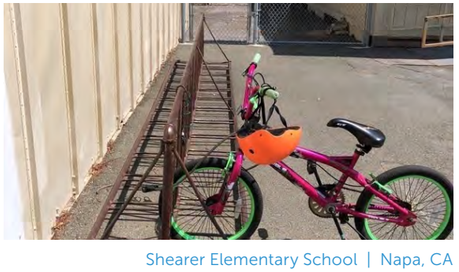
The Vine transit southbound stop at Jefferson and Pueblo.

White lines represent loading zones and the yellow line represents the bus loading zone.

Shearer Elementary School has one parking lot located on Pine Street, which is designated for staff parking. One-way circulation through this parking lot is indicated by white painted arrows and signage. Motorists enter the parking lot through the west entrance on Pine Street, located right next to the Pine Street crosswalk at Wilson Street, and exit through the east driveway back onto Pine Street. The gate to the exit of this parking lot is closed during morning drop-off hours to deter use of the lot as a drop-off zone. Parents sometimes use the staff parking lot to drop students off, though this is prohibited by the school.

Bus service through NVUSD is available for Shearer Elementary students and has three scheduled stops: two are in neighborhoods northwest of the school, and one is north of the school on 1st Street. Additionally, students who live beyond 1.25 miles walking distance from school and attend their school of residence may apply for transportation through NVUSD. The Vine transit W line, operated by the Napa Valley Transportation Authority, provides service in the Old Town Napa/Napa Abajo area as well as the Westwood neighborhood on the other side of SR 29 and has a few stops in the school neighborhood, with the closest stop to the school at the Pine Street and Seminary Street intersection.

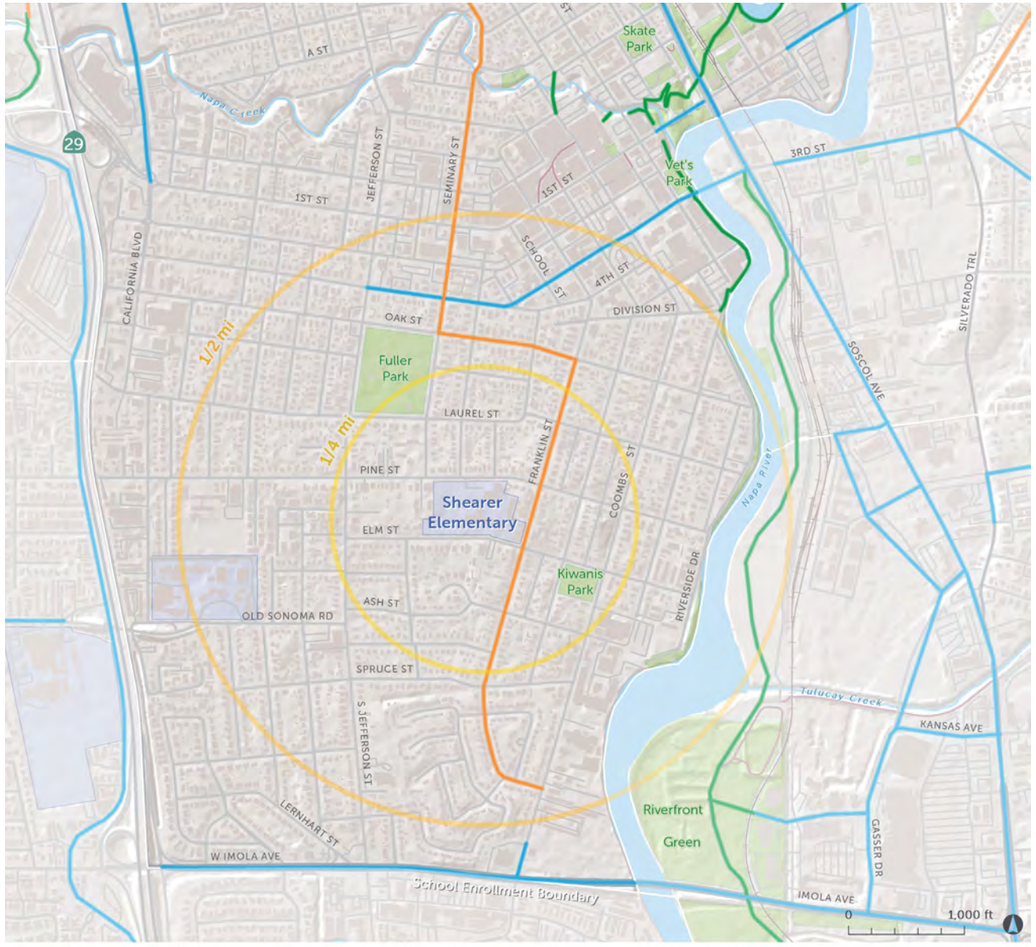
The entrance to the school parking lot is located next to a crosswalk across Pine Street.



BICYCLE AND PEDESTRIAN INFRASTRUCTURE

The school provides one bike rack, located in the northeast corner of the campus's blacktop. The bike rack has the potential to offer over 20 parking spaces; however, it is currently positioned against a structure so only half of the spaces are accessible.

MAP OF EXISTING BICYCLE FACILITIES



Map 3: Existing Bicycle Facilities
(Map source: Napa Valley Transportation Authority Napa Countywide Bicycle Plan (2019))

MAP OF EXISTING PEDESTRIAN FACILITIES

Map 4: Existing Pedestrian Facilities
(Map source: Napa Valley Transportation Authority Napa Countywide Pedestrian Plan (2016))

ENCOURAGEMENT AND EDUCATION PROGRAMS

Shearer Elementary School has participated regularly in countywide encouragement events, such as Bike to School Day, in recent years and has held regular Walk and Roll to School Wednesdays. Walk and Roll Wednesdays encourage students to walk, bike, skateboard, or otherwise roll to school by holding a welcome table that recognizes students who use active transportation and often hands out incentives. The majority of students participating in the countywide Walk and Roll to School Day walked to school, rather than biked or rolled. The school has provided some bike safety education to its students. Bike safety education focuses on 4th and 5th grade levels and includes between 5-10 hours of bicycle specific curriculum, spent both in the classroom and on-bike.

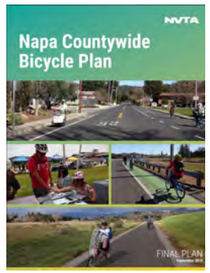
Bike to Work and School Day 2019 at Shearer Elementary School. Photo credit: Napa County Office of Education

YEAR	EVENT	STUDENT PARTICIPANTS
2015/16	Bike to School Day	36
2016/17	Bike Safety Education	22
2016/17	Bike to School Day	26
2017/18	Bike to School Day	33
2018/19	Walk and Roll to School Day	69
2018/19	Walk and Roll Wednesdays	140*
2018/19	Bike to School Day	8
2019/20	Walk and Roll to School Day	46
2019/20	Bike Safety Education	62
Nov 2019	Walk and Roll Wednesday	30
Jan 2020	Walk and Roll Wednesday	17
Feb 2020	Walk and Roll Wednesday	26

Figure 3: Encouragement and Education Data

** Walk and Roll Wednesday number is the sum of participants over the duration of the school year*

EXISTING PLANS



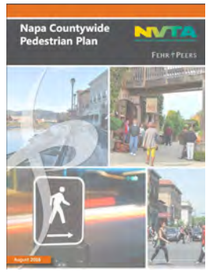
NVTA Napa Countywide Bicycle Plan (2019):

The Napa Countywide Bicycle Plan has some recommendations for bicycle facilities around the school site. The plan designates Jefferson Street as a study corridor and recommends installing Class III bike boulevards on Elm Street east of Franklin Street and on Ash Street from Franklin Street to Jefferson Street.

NVUSD Facilities Master Plan (2016):

NVUSD's Facilities Master Plan includes plans to install/upgrade fencing around the school perimeter and make site ADA improvements. School perimeter fencing is planned to provide a single point of entry and wayfinding signage for each elementary school in NVUSD. These projects may impact future circulation around the school site.

MEASURE H
BUILDING ON OUR VISION
NVUSD



NVTA Napa Countywide Pedestrian Plan (2016):

The Napa Countywide Pedestrian Plan lists potential enhancements along Jefferson Street from B Street to Old Sonoma Road for both the corridor as a whole and at specific intersections. The projects, Jefferson Street Intersection Improvements and Jefferson Street Corridor Improvements, include crossing enhancements at Jefferson/Pine and Jefferson/Elm intersections as well as sidewalks from Elm Street to Ash Street.

NVTA Napa Valley Countywide Transportation Plan: Advancing Mobility 2045 (2021):

The NVTA Countywide Transportation Plan is a long-range plan of countywide transportation priorities that provides a direction for the four- to five-year plan while considering a 25-year planning horizon. This plan is part of the regional planning process for the Regional Transportation Plan by the Metropolitan Transportation Commission. There are 28 projects by the City of Napa listed in the Plan – only three projects—Jefferson Street/Laurel Street Signal, Jefferson Street/Old Sonoma Road Signal, and Jefferson Street/Imola Avenue Intersection Modifications—are near the school area.

CITY OF NAPA

City of Napa General Plan 2020 (1998) / 2040 (Not Yet Adopted):

The current General Plan for the City of Napa was adopted in 1998; a General Plan update began in 2018 and at the time of this report, is still ongoing. The General Plan update strives to build a more livable, sustainable, and inclusive future for the City of Napa by outlining the City's plan for land use, housing, transportation, climate change, and more. One of the draft guiding principles for the General Plan update is to "increase travel options through enhanced walking, bicycling, and public transportation systems, and promote mobility through increased connectivity and intelligent transportation management."

WALK **AUDIT**

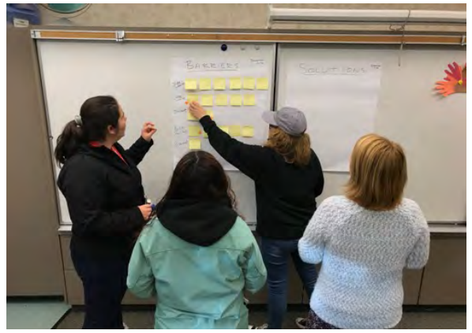
Date: 12/02/19
Day of the Week: Monday

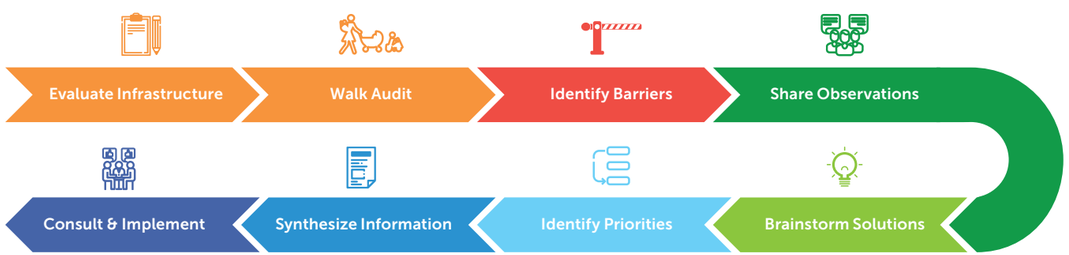
Meeting Time: 7:30 AM
Weather: Overcast/Drizzling

METHODOLOGY

The Community Walk Audit brought school stakeholders together to observe existing conditions during pick-up time, identify barriers to safe walking or biking, and explore solutions. The Walk Audit team consisted of three Napa County Office of Education COOL School AmeriCorps members, a teacher, and the school's speech therapist. The group met 30 minutes prior to the school bell for a brief presentation on the SRTS program and the process and purpose of Walk Audits. The team then walked to the front of the school on Elm Street, headed east on Elm Street, north on Franklin Street, and west on Pine Street, back to the school campus. During this walk, participants observed and discussed the physical infrastructure around the school as well as the behavior of motorists, pedestrians, and bicyclists in the school site area. They also shared their own experiences traveling to and from school on foot and by car. Fifteen minutes after the bell, the team returned to the classroom to discuss their observations, map issue areas, and record and prioritize the major barriers identified during the exercise.

During the prioritization exercise, participants wrote down several barriers that were of high priority to them on sticky notes, placed them on a poster, and organized them into sections based on similar topics. Then, participants were given five round stickers to place on issues that they felt were most important and needed to be solved most urgently. Participants could spread their stickers out or put multiple stickers on one issue. The group then reviewed the major barriers and explored potential solutions to each issue. Participants repeated the prioritization process with potential solutions to the barriers identified.





WALK AUDIT FINDINGS

This section of the report lists the barriers identified by Walk Audit participants during the Walk Audit activity. The barriers listed in the following table are the results of the Walk Audit prioritization activities – the content and language used reflect what Walk Audit participants wrote on their sticky notes.

The barrier identification and prioritization exercise resulted in a list of location-specific and geographically general barriers organized by Vote Score in the table below. Vote Score was determined during the prioritization exercise by the number of stickers and sticky notes addressing a particular issue, with a higher number correlating to a higher Vote Score, indicating a higher importance to Walk Audit participants.

Stakeholder-Identified Barriers:

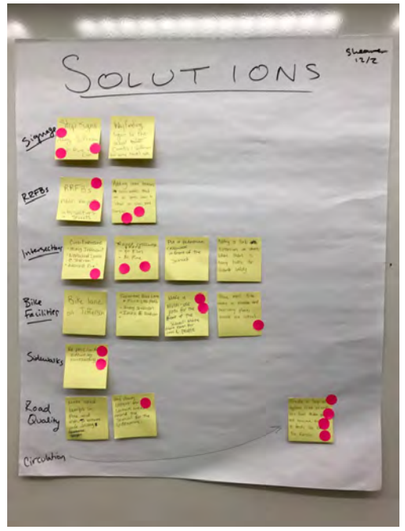
DESCRIPTION	LOCATION	VOTE SCORE
Lack of crosswalks near school entrance	Elm St. and Pine St.	9
Sidewalk issues (cracked/broken pavement, narrow, overgrown tree roots)	Franklin St.	8
More bike parking needed in more locations around school campus	School site	7
Speeding	Elm St. (Jefferson to Franklin)	6
Missing sidewalks	Northbound Jefferson St. (Imola to 3rd)	3
Missing sidewalks	North side of school at/through staff parking lot (Seminary)	3
Better bike facilities desired (bike lanes, better bike boulevard)	Franklin St.	2
Misuse of parking lot as drop-off, motorists conflict with pedestrians entering school through gate in parking lot	Staff parking lot	2
Rough pavement	Coombs	1
Lack of ADA compliance	Adams St. to Pine St.	1
Congestion	Pine St.	1
Bike symbols are in parking lane	Coombs	1

Figure 4: Walk Audit Stakeholder-Identified Barriers

Stakeholder-Identified Treatments:

DESCRIPTION	BARRIER ADDRESSED	LOCATION	PRIORITY
Rectangular Rapid Flashing Beacons	Low pedestrian visibility; poor motorist yielding behavior	Major intersections near school (Elm St., Pine St., Franklin St.)	9
Repave and widen sidewalks	Broken/narrow sidewalks	Streets surrounding school	5
Create a circulation plan	No circulation plan	General	5
Stop signs	Uncontrolled crosswalks, poor motorist yielding behavior, speeding	Jefferson St. (at Pine St. and Elm St.)	4
Raised crosswalk	Lack of crosswalks near school entrance; speeding; low pedestrian visibility	Elm St. and Pine St.	3
Curb extensions	Poor motorist yielding behavior, low pedestrian visibility, speeding, long crossing distances	High volume streets (Along Jefferson St., northbound Jefferson St. at Imola Ave., Adams St. at Pine St.)	3
Multi-use path	No bicycle facilities, bicycle facilities do not offer enough separation	School site	3
Improved bicycle facilities	No bicycle facilities	Jefferson St.	2
Improved bicycle parking	Not enough bicycle parking spaces/ locations	School site	2
Midblock crossing	Lack of crosswalks near school entrance	Elm St.	1
Wayfinding	No wayfinding signage	Coombs St. and Jefferson St.	1
Speed bumps	Speeding	Pine St and Elm St	1

Figure 5: Walk Audit Stakeholder-Identified Treatments

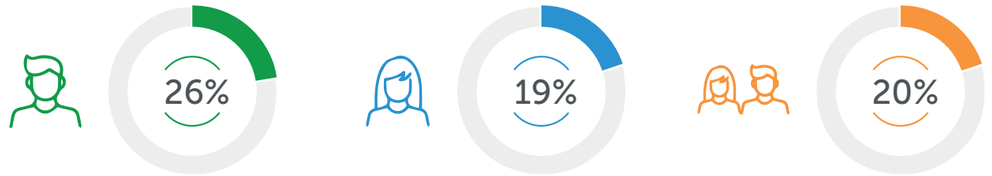


CONTEXT FOR **RECOMMENDATIONS**

IMPACT OF BARRIERS/HAZARDS ON COMMUNITY

Barriers to safe walking and bicycling, both infrastructure and non-infrastructure, can greatly discourage communities from engaging in active transportation. The quality, accessibility, and connectivity of bicyclist and pedestrian travel networks strongly influence the rates of walking and bicycling as a mode of daily transport[1]. Public policies and attitudes, such as traffic-calming measure enforcement and parking limitations, also contribute to the efficacy of pedestrian/bicycle networks. Thus, barriers to accessibility and connectivity must be addressed in order to encourage increased and safe walking and cycling.

Barriers that discourage walking and bicycling prevent communities from gaining the health benefits offered by active transportation. For children, physical activity can improve cognitive function, bone health, cardiorespiratory and muscular fitness, and mental wellness[2]. Adults benefit from lower risk of cardiovascular disease, hypertension, dementia, anxiety, and falls for older adults, as well as improved quality of life, physical function, bone health, and sleep.



However, only about **26% of men**, **19% of women**, and **20% of adolescents** are meeting the aerobic and muscle-strengthening guidelines developed by the Department of Health. Increased walking and biking to school can help boost that percentage by incorporating physical activity into one's daily routine and encouraging further active transportation choices.

Lack of safe bicycle/pedestrian facilities can also negatively impact the environment, as more people will choose to drive rather than bike or walk. Passenger cars and light-duty trucks produced **over half of the transportation sector emissions in 2017**[3].

50%

29%

The transportation sector produced the most greenhouse gas emission of any economic sector, releasing **up to 29% of total US greenhouse gas emissions** for the year.

Furthermore, **transportation emissions have increased around 400 million metric tons** since 1990 due to increased vehicle demand. Thus, decreasing vehicle use by creating bicycle/ pedestrian networks that are safe from potential hazards and barriers can help mitigate these environmental effects.

400 MILLION

In addition to the consequences already discussed, barriers to safe walking and bicycling can lead to increased collisions and conflicts between motorists, pedestrians, and bicyclists. Safety barriers can lead to more people choosing to drive, even if the destination is within walking or biking distance, increasing traffic congestion. Children have fewer opportunities to develop their sense of independence through walking and biking to school, and the community is hindered from enjoying the social and economic benefits of bicycling and walking. Safety barriers and hazards that discourage increased walking and bicycling can considerably impact many different parts of a community, which is why it is so crucial to address and resolve them.

[1] Kuzmyak, Richard J., Dill, Jennifer. "Walking and Bicycling in the United States: The Who, What, Where, and Why." TR News May-June 2012: 4-15. Web. [2] U.S. Department of Health and Human Services. Physical Activity Guidelines for Americans, 2nd edition. Washington, DC: U.S. Department of Health and Human Services; 2018. [3] Sources of Greenhouse Gas Emissions, United States Environmental Protection Agency. Web.

RECOMMENDATIONS

Recommendations were determined by Napa County Safe Routes to School staff, taking into account the feedback and results from the Walk Audit activity, Fulcrum data, existing plans, and local stakeholder input. Priority levels for recommendations were calculated through consideration of vehicle, pedestrian, and bicyclist traffic volumes; vehicular traffic speed; collision history; presence of existing bicycle/pedestrian facilities; proximity to major identified routes to school; high-level potential cost/complexity of recommendation; and Walk Audit participant input.

This section outlines and explains high and medium priority recommendations specific to the school site. School site-specific recommendations of all priority levels can be found in the "Table of Recommendations" section. Universal recommendations that apply to all school sites are described in Appendix B. Recommendations that are focused on infrastructure treatments are denoted by "NAI," and recommendations that suggest programmatic treatments are denoted by "NAP." Please note that implementing these recommendations will often require further evaluation and study, as well as design, right-of-way acquisition, compliance checks with existing laws, and coordination with utility, public safety, and other local government departments.

RECOMMENDATION #NAI-143: ELM STREET BIKE BOULEVARD

Narrative – Elm Street provides access to three school entrances, including the front office entrance, and is also the site for the bus loading zone. Elm Street connects to residential neighborhoods to the east and intersects with both Jefferson Street and Franklin Street, key north-south routes to the school used by many students living south of the school. As Elm Street provides the primary south entrance to the school, it experiences high school-related multimodal traffic during school arrival and dismissal times.

IDENTIFIED BARRIERS

- ***No bicycle facilities –*** The lack of bicycle facilities on the corridor fails to provide a dedicated space for bicyclists and indicate to motorists where to expect bicyclists, making the corridor appear unwelcoming to bicyclists.

RECOMMENDATIONS

- ***Class III bike boulevard –*** Install Class III bike boulevard with sharrows, signage, and traffic-calming measures.

There are no bicycle facilities on Elm Street.

RECOMMENDATION #NAI-149: FRANKLIN STREET BIKE BOULEVARD

Narrative – Franklin Street is a north-south collector from Pearl Street to Coombs Street and runs along the east side of Shearer Elementary campus. Land use along this corridor changes from mainly commercial in the downtown area to residential south of 4th Street. Franklin Street is a fairly long and straight corridor, which can facilitate motorist speeding in some locations, though stop signs in the school area help reduce this. As Franklin Street intersects with both Pine Street and Elm Street, where the main school entrances are, in addition to having an informal entrance and being the site of Walk and Roll Wednesdays at the school, many students travel along Franklin Street as part of their route to school.

IDENTIFIED BARRIERS

- ***No traffic-calming, faded facilities –*** The existing bicycle facilities on Franklin Street only provide sharrows and signage and do not provide traffic-calming along a highly-travelled school route. Additionally, many of the bike boulevard sharrow stencils are faded or have been covered by paving and were not repainted.

RECOMMENDATIONS

- ***Traffic-calming –*** Complete the existing bike facilities to full Class III standards through the installation of traffic-calming elements. Repaint faded or covered bike boulevard stencils and add stencils between Sycamore Street and Spruce Street, where they are missing.

Pueblo Avenue has narrow sidewalks and no bicycle facilities.

RECOMMENDATIONS #NAI-153, NAI-156, AND NAI-157: JEFFERSON STREET MULTIMODAL FACILITIES

Narrative – Jefferson Street borders the school block on the west side and is one of (if not the most) direct north-south route to many of the neighborhoods in the school enrollment boundary. A large portion of the school's enrollment boundary lives on the west side of Jefferson Street, and therefore must travel along or cross Jefferson Street to reach campus. Jefferson is an integral high-volume north-south arterial corridor that runs from Salvador Avenue to Atrium Parkway, spanning nearly the entire City limits on the east side of SR 29. Jefferson Street is a key part of direct routes to several residential neighborhoods, commercial destinations such as shopping centers, pharmacies, and health services, schools, and downtown throughout the east side of Napa; consequently, Jefferson plays a crucial role in the multimodal transportation network for the City of Napa.

IDENTIFIED BARRIERS

- ***Sidewalk gaps –*** Sidewalk gaps along northbound Jefferson Street from Locust Street to Spruce Street and from Ash Street to Elm Street force pedestrians to either walk in the road or cross the street in an unmarked location to reach the other existing sidewalk. Large sidewalk gaps can prevent students from walking to school altogether.
- ***High-speeds and volumes of traffic –*** Jefferson Street carries extremely high volumes of high-speed traffic, which many bicyclists and pedestrians do not feel comfortable or safe navigating.
- ***No bicycle facilities –*** The lack of bicycle facilities on the corridor fails to provide a dedicated space for bicyclists and indicate to motorists where to expect bicyclists, making the corridor appear unwelcoming to bicyclists.
- ***Speeding –*** Jefferson Street's current design, featuring wide lanes on a relatively straight corridor with no traffic-calming and little traffic control, facilitates frequent motorist speeding.

An informal dirt path has been created in the northbound Jefferson sidewalk gap by pedestrians travelling on Jefferson.

RECOMMENDATIONS

- ***NAI-153 Fill sidewalk gaps –*** Fill northbound sidewalk gaps to provide continuous pedestrian network.
- ***NAI-156 Road diet/redesign –*** Implement a road diet and redesign of corridor to improve and prioritize safe, accessible, and comfortable multi-modal transportation through a Complete Streets framework. Integrate specific recommendations from SRTS reports into road redesign. Recommendation bounds (2nd St to Hemlock St) reflect school area, road diet/redesign recommended for entire corridor.
- ***NAI-157 Traffic-calming –*** Implement quick-response traffic-calming treatments along corridor, prioritizing school area, to reduce frequent motorist speeding and improve conditions for bicyclists and pedestrians.

RECOMMENDATION #NAI-154: JEFFERSON AND ELM INTERSECTION

Narrative – Jefferson Street borders the school block on the west side and is one of (if not the most) direct north-south route to many of the neighborhoods in the school enrollment boundary. A large portion of the school's enrollment boundary lives on the west side of Jefferson Street, and therefore must travel along or cross Jefferson Street to reach campus. As Elm Street provides access to multiple school entrances, the Jefferson and Elm intersection is a key intersection in the school zone and along routes to school for students living south of the school.

IDENTIFIED BARRIERS

- ***High-speeds and volumes of traffic –*** Jefferson Street carries extremely high volumes of high-speed traffic, which many bicyclists and pedestrians do not feel comfortable or safe navigating.
- ***Uncontrolled Jefferson traffic –*** Uncontrolled high-volume and high-speed traffic on Jefferson can make turning left from Elm Street difficult for motorists, which can result in motorists making fast turning movements and not looking for pedestrians crossing.

The Jefferson and Elm intersection, facing south.

- ***No crosswalk –*** There is no crosswalk across Jefferson Street to the existing continuous southbound sidewalk, requiring southbound pedestrians to either detour up to Pine Street and back south, cross Jefferson Street in an unmarked location, or walk in the roadway.

RECOMMENDATIONS

- ***Repaint existing crosswalk with high-visibility school-zone pattern***
- ***Install high-visibility crosswalk with Rectangular Rapid Flashing Beacons and quick-build curb extensions across Jefferson so students can reach existing southbound sidewalk***

RECOMMENDATION #NAI-155: JEFFERSON AND PINE INTERSECTION

Narrative – Jefferson Street borders the school block on the west side and is one of (if not the most) direct north-south route to many of the neighborhoods in the school enrollment boundary. A large portion of the school's enrollment boundary lives on the west side of Jefferson Street, and therefore must travel along or cross Jefferson Street to reach campus. As Pine Street provides access to multiple school entrances, the Jefferson and Pine intersection is a key intersection in the school zone and along routes to school for students living north of the school.

IDENTIFIED BARRIERS

- ***High-speeds and volumes of traffic –*** Jefferson Street carries extremely high volumes of high-speed traffic, which many bicyclists and pedestrians do not feel comfortable or safe navigating.
- ***Uncontrolled Jefferson traffic –*** Uncontrolled high-volume and high-speed traffic on Jefferson can make crossing Jefferson Street challenging and a conflict-risk for pedestrians and bicyclists and allows motorists to drive through the intersection without slowing down. It can also result in motorists making fast turning movements and not looking for pedestrians crossing.

Pine and Jefferson intersection, facing west.

- ***Long crossing distances –*** Long crossing distances across Jefferson Street pushes bicyclists and pedestrians further out of the range of vision of motorists and requires them to be in the roadway for a longer time than necessary, increasing the risk of collisions.

RECOMMENDATIONS

- ***High-visibility crosswalks –*** Repaint all crosswalks with a high-visibility school-zone pattern to increase pedestrian visibility and motorist yielding behavior.
- ***Rectangular Rapid Flashing Beacons –*** Install Rectangular Rapid Flashing Beacons at one of the existing crosswalks across Jefferson Street to improve motorist yielding behavior.
- ***Quick-build curb extensions –*** Install quick-build curb extensions at all corners to slow traffic through the intersection, improve pedestrian visibility and motorist yielding behavior, and shorten crossing distance.

RECOMMENDATION #NAI-159: COOMBS STREET BIKE BOULEVARD

Narrative – Coombs Street is a north-south collector that extends from Grigsby Court to West Imola Avenue and runs through the neighborhoods east of the school. In addition to serving the residential neighborhoods, Coombs Street provides access to the downtown area, several commercial uses along its south end and on West Imola Avenue, and other key east-west corridors like 3rd Street and 1st Street. Coombs Street is a fairly long and straight corridor with no traffic-calming and little traffic control south of Division Street, which can facilitate motorist speeding. Due to its high traffic volumes and speeds, Coombs Street may act as a barrier to students walking or biking to school from the east neighborhoods if they must cross or travel along the corridor.

IDENTIFIED BARRIERS

- ***High-stress bicycle facilities –*** The existing Class III bicycle facilities are stressful for riders due to the lack of separation between high speeds and volumes of vehicle traffic.
- ***Motorist speeding –*** Motorist speeding on Coombs Street, which can be facilitated by wide, straight roads with little traffic-calming or traffic control, reduces motorists' range of vision and increases both risk of collisions and potential severity of collisions.

Sharrow stencils on Coombs Street suggest that bicyclists should ride next to parked cars, which places them in the "door zone" and at risk of conflicting with motorists exiting their vehicles.

RECOMMENDATIONS

- ***Traffic-calming –*** Complete the existing bike facilities to full Class III standards through the installation of significant traffic-calming elements. This corridor will require substantial traffic-calming treatments applied for bicycle boulevards due to the volumes of traffic and frequency of speeding.

RECOMMENDATION #NAI-173: JEFFERSON ST AND LAUREL ST INTERSECTION

Narrative – Jefferson Street borders the school block on the west side and is one of (if not the most) direct north-south route to many of the neighborhoods in the school enrollment boundary. A large portion of the school's enrollment boundary lives on the west side of Jefferson Street, and therefore must travel along or cross Jefferson Street to reach campus. Many students travelling north of the school who must cross Jefferson may prefer to cross at the Jefferson Street and Laurel Street intersection, as it is the closest intersection to the school that is fully stop controlled, which likely improves motorist yielding behavior compared to uncontrolled intersections. This intersection is also adjacent to Fuller Park, a popular student destination.

IDENTIFIED BARRIERS

- ***High-volume intersection –*** As an intersection between an arterial and a collector, this intersection experiences high volumes of vehicle traffic. As part of pedestrian and bicyclist routes to key destinations, including Fuller Park and Shearer Elementary, this creates a risk of road user conflict at the intersection.
- ***Motorist yielding behavior –*** Though this intersection likely sees better motorist yielding behavior than the uncontrolled crosswalks across Jefferson Street, yielding behavior can still be poor, especially during times of congestion, as motorists do not always fully stop or check for pedestrians in the intersection.
- ***Low-visibility crosswalks –*** The crosswalks are painted with a standard, parallel line pattern, despite being located along highly-travelled pedestrian routes to the park and school.
- ***Vehicles obstructing visibility –*** Missing "no parking" red zones in the intersection allow motorists to park adjacent to the crosswalks and obstruct pedestrian visibility.

Jefferson and Laurel intersection, facing north.

RECOMMENDATIONS

- ***Curb extensions –*** Install curb extensions on all corners to improve motorist yielding behavior and prevent motorists from parking next to crosswalks. Use quick-build materials for faster response.
- ***High-visibility crosswalks –*** Repaint all crosswalks with a high-visibility pattern to increase pedestrian visibility and motorist yielding behavior.

RECOMMENDATION #NAP-018: ENCOURAGEMENT EVENTS

Narrative – Shearer Elementary School has frequently participated in the annual encouragement events facilitated by Napa County Safe Routes to School: Bike to School Day and Walk and Roll to School Day. While annual programming can remind and excite students about the option of using active transportation to travel to school, the infrequency of these events makes them less effective at encouraging students to adopt active transportation as an everyday form of transportation. Increasing the frequency of encouragement events, in conjunction with infrastructure improvements, can help increase mode shift towards active transportation. Shearer Elementary School has already taken steps towards increasing encouragement events by holding monthly Walk and Roll Wednesdays in previous years.

IDENTIFIED BARRIERS

- ***Congestion in school zone –*** High volumes of vehicle traffic in the school zone during pick-up and drop-off can make the school zone feel chaotic and unwelcoming to bicyclists and pedestrians.
- ***Infrequent encouragement programs –*** While annual countywide encouragement events are a great place to start, infrequent encouragement events are not effective enough in normalizing active transportation as an everyday mode of transportation.

Walk and Roll to School Day welcome table at Shearer Elementary School. Photo credit: Napa County Office of Education.

RECOMMENDATIONS

- ***Encouragement programs –*** Continue to grow participation in annual encouragement events and organize additional encouragement events throughout the year (ex: Walk and Roll Wednesdays) with the goal of increasing frequency of events over time. While Shearer Elementary School has already done excellent work towards this recommendation, the impacts of the Covid-19 pandemic may have set the school back on encouragement events, so this recommendation is included in case encouragement programs have been paused.

RECOMMENDATION #NAP-019: BIKE AND PEDESTRIAN SAFETY EDUCATION

Narrative – Bicycle and pedestrian safety education is a crucial component of increasing biking and walking mode share at a school site, as it teaches students rules of the road and safe biking and pedestrian behaviors, such as scanning and signaling before turns for bicyclists. This understanding not only improves bicyclist and pedestrian safety, but also increases confidence and comfort for young bicyclists and pedestrians. Common unsafe behaviors that are done unknowingly due to lack of education, such as riding against traffic or failing to stop at stop signs on a bike, are hazardous to students, as this behavior is unpredictable to motorists and can increase risk of collisions. While many of these behaviors can be addressed by improved infrastructure, such as clearly marked bicycle facilities, implementing annual education on bicyclist and pedestrian safety within the school system raises awareness of rules of the road and encourages safe behavior.

IDENTIFIED BARRIERS

- ***Irregular safety education –*** Irregularly provided bicycle/pedestrian safety education can result in unintentional unsafe student bicyclist/pedestrian behavior and a sense of discomfort riding a bike.

RECOMMENDATIONS

- ***Bicycle and pedestrian safety education –*** Provide annual in-school bicycle and pedestrian safety education for all students to ensure that all students are familiar with rules of the road and best safety practices.

Bike education at Shearer Elementary School. Photo credit: Napa County Office of Education

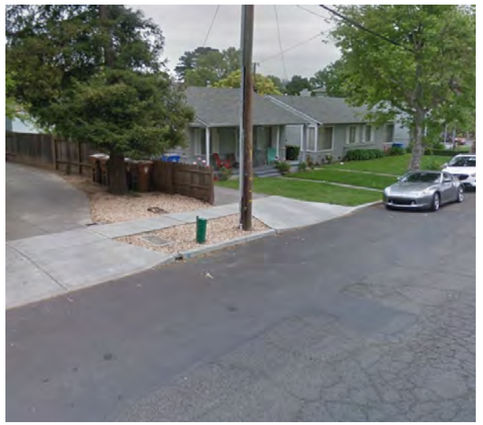
RECOMMENDATION #NAI-143: ELM STREET SIDEWALK GAPS

IDENTIFIED BARRIERS

- ***Sidewalk gaps –*** Sidewalk gaps along Elm Street east of the school force pedestrians to either walk in the road or cross the street in an unmarked location to reach the other existing sidewalk (if present). Large sections of missing sidewalks can prevent students from walking to school altogether.

RECOMMENDATIONS

- ***Fill sidewalk gaps –*** Fill sidewalk gaps to provide a continuous pedestrian network and reduce unnecessary pedestrian road crossings.



A westbound sidewalk gap on Elm Street.

RECOMMENDATION #NAI-142: ELM ST AND SOUTH SEMINARY ST CURB EXTENSIONS

IDENTIFIED BARRIERS

- ***Low-visibility crosswalks –*** The existing crosswalks are painted with a standard, parallel line pattern, despite being located in a highly-travelled school zone.

- ***Lack of red zones –*** The lack of "no parking" red zones around the crosswalks allows motorists to park adjacent to the crosswalks and obstruct pedestrian visibility.

- ***Uncontrolled traffic –*** Elm Street traffic is uncontrolled through this intersection, allowing motorists to drive through intersection without slowing down and reducing motorist yielding behavior.

RECOMMENDATIONS

- ***Curb extensions –*** Install curb extensions on all crosswalk curbs to improve motorist yielding behavior, slow motorists through the intersection and prevent motorists from parking adjacent to crosswalks.

- ***High-visibility crosswalks –*** Upgrade crosswalks to be high-visibility school-zone patterns to increase pedestrian visibility and motorist yielding behavior.

Elm Street traffic is uncontrolled at the Elm/Seminary intersection.

RECOMMENDATION #NAI-148: FRANKLIN STREET SOUTHBOUND SIDEWALK

IDENTIFIED BARRIERS

- ***Displaced sidewalk –*** The Franklin Street southbound sidewalk between Pine Street and Laurel Street is displaced, posing a trip hazard and a barrier for pedestrians who may be walking with strollers or using mobility assistance devices.

RECOMMENDATIONS

- ***Reconstruct sidewalk –*** Reconstruct the displaced southbound sidewalk to be level.

Motorist yielding behavior is poor at the California and Park intersection.

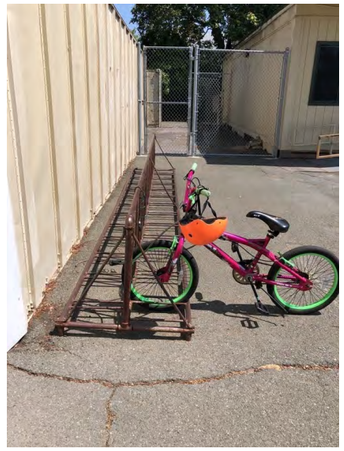
RECOMMENDATION #NAI-150: SCHOOL BIKE PARKING

IDENTIFIED BARRIERS

- ***Bike rack positioning –*** On-campus bicycle parking facilities are not near the main entrance, reducing awareness of available bike parking, and are positioned against a structure, causing half of the parking spaces to be inaccessible.

RECOMMENDATIONS

- ***Expand bike parking –*** Expand and relocate bike parking to be closer to campus entrances on Pine Street and Elm Street.



On-campus bike parking is located on the blacktop, tucked away from school entrances.

RECOMMENDATIONS #NAI-160 AND NAI-161: COOMBS ST INTERSECTIONS

IDENTIFIED BARRIERS

- ***Coombs Street and Elm Street***
  - ***Uncontrolled crosswalk –*** Traffic on Coombs Street is uncontrolled, allowing motorists to drive through the intersection without slowing down on a corridor that facilitates speeding, reducing motorist yielding behavior.
  - ***Vehicles obstructing visibility –*** Minimal or missing "no parking" red zones around the crossing allows motorists to park close to the crosswalk and obstruct pedestrian visibility.

Motorists parking adjacent to crosswalks reduce pedestrian visibility.

  - ***Low-visibility crosswalks –*** The crosswalks are painted with a standard, parallel line pattern, which does not provide the same visibility benefits as more substantial, higher-visibility patterns.
- ***Coombs Street and Pine Street***
  - ***Low-visibility crosswalks –*** The crosswalks are painted with a standard, parallel line pattern, which does not provide the same visibility benefits as more substantial, higher-visibility patterns.
  - ***Long crossing distance –*** The long crossing distance across Coombs Street pushes pedestrians further out of the range of vision of motorists and requires pedestrians to be in the roadway for longer than necessary.
  - ***Vehicles obstructing visibility –*** Minimal or missing "no parking" red zones around the crossing allows motorists to park close to the crosswalk and obstruct pedestrian visibility.
  - ***No crosswalks –*** There are no crosswalks across Pine Street, reducing motorist awareness of pedestrians crossing.

RECOMMENDATIONS

- ***Both locations***
  - ***High-visibility crosswalks –*** Upgrade crosswalks to be high-visibility patterns to increase pedestrian visibility and motorist yielding behavior.
  - ***Curb extensions –*** Install curb extensions on all four corners to improve pedestrian visibility and motorist yielding behavior, slow traffic through the intersection, and prevent motorists from parking adjacent to crosswalks.
- ***Coombs and Elm***
  - ***All Way Stop Control –*** Evaluate potential for All Way Stop Control given the role of this intersection in routes to Shearer Elementary School.
- ***Coombs and Pine***
  - ***Crosswalks –*** Install crosswalks across Pine Street to improve pedestrian visibility and motorist yielding behavior.

RECOMMENDATION #NAI-162: SEMINARY STREET BIKE BOULEVARD

IDENTIFIED BARRIERS

- ***Bike facilities end –*** The existing bike boulevard ends at Oak Street, falling short of the school.
- ***Uncontrolled traffic –*** Uncontrolled traffic at 1st, 2nd, and 3rd Streets result in poor motorist yielding behavior and long waiting times to cross.

Uncontrolled traffic at 1st Street can making crossing Seminary challenging for bicyclists and pedestrians.

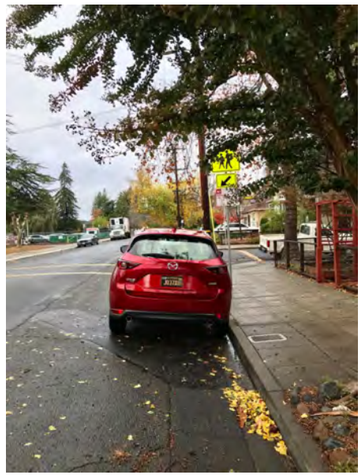
RECOMMENDATIONS

- ***Continue bike facilities –*** Continue Class III bike boulevard from Oak Street to Pine Street with sharrows, signage, and traffic-calming.
- ***Traffic control –*** Flip the stop signs on 1st St, 2nd St, and 3rd St to improve the north-south connection or install Rectangular Rapid Flashing Beacons to improve motorist yielding behavior.
- ***Curb extensions –*** Evaluate opportunities for curb extensions at the above listed intersections to improve pedestrian visibility and motorist yielding behavior.

RECOMMENDATION #NAI-164: PINE ST AND ADAMS ST CURB EXTENSIONS

IDENTIFIED BARRIERS

- ***Missing red zones –*** Missing or minimal "no parking" red zones around the crosswalks allows motorists to park adjacent to the crosswalks and obstruct pedestrian visibility.
- ***Low-visibility crosswalks –*** The existing crosswalks are painted with a standard, parallel line pattern, despite being located in a highly-travelled school zone.
- ***Uncontrolled traffic –*** Pine Street traffic is uncontrolled through this intersection, allowing motorists to drive through intersection without slowing down and reducing motorist yielding behavior.



Vehicles parking adjacent to the crosswalk across Pine Street at Adams Street greatly reduce pedestrian visibility.

RECOMMENDATIONS

- ***Curb extensions –*** Install curb extensions on all crosswalk curbs to improve motorist yielding behavior, slow motorists through the intersection and prevent motorists from parking adjacent to crosswalks.
- ***High-visibility crosswalks –*** Upgrade crosswalks to be high-visibility school-zone patterns to increase pedestrian visibility and motorist yielding behavior.
- ***Curb extensions –*** Evaluate opportunities for curb extensions at the above listed intersections to improve pedestrian visibility and motorist yielding behavior.

RECOMMENDATION #NAI-165: OLD SONOMA RD AND JEFFERSON ST INTERSECTION

IDENTIFIED BARRIERS

- ***Large, busy intersection –*** As an intersection between two arterials, this intersection experiences high volumes of vehicle traffic and is large and difficult to navigate due to its geometry.
- ***Free right turns –*** Free right turns off of Jefferson Street allow motorists to turn onto Old Sonoma Road without slowing down, reducing motorist yielding behavior.
- ***Right-turn cut-through –*** The Food City parking lot on the south side is frequently used by impatient motorists as a right-turn cut-throughs, which increases conflict risk with pedestrians travelling on the southbound Jefferson sidewalk, especially with the building blocking visibility of pedestrians.

The Jefferson/Old Sonoma intersection, facing south.

- ***Sidewalk ends –*** The southbound Jefferson sidewalk does not continue to intersection and ends at the right-turn cut-through, further reducing motorist awareness of pedestrians at that location.
- ***Low-visibility crosswalks –*** The crosswalks are faded and painted with a standard, parallel line pattern, despite being located in a highly-travelled intersection.

RECOMMENDATIONS

- ***Close driveway –*** Close the Food City parking lot driveway used for cut-through right turns onto Jefferson Street and bring the southbound Jefferson sidewalk up to meet the intersection.
- ***High-visibility crosswalks –*** Repaint crosswalks with a high-visibility pattern to increase pedestrian visibility and motorist yielding behavior.
- ***Intersection redesign –*** Implement significant intersection redesign: either small traffic circle/roundabout or square up intersection by closing free right turn from southbound Jefferson and extending northwest curb out.

RECOMMENDATION #NAI-170: SEMINARY ST AND PINE ST INTERSECTION

IDENTIFIED BARRIERS

- ***Missing red zones –*** Missing or minimal "no parking" red zones around the crosswalks allows motorists to park adjacent to the crosswalks and obstruct pedestrian visibility.
- ***Low-visibility crosswalks –*** The existing crosswalks are painted with a standard, parallel line pattern, despite being located in a highly-travelled school zone.
- ***Uncontrolled traffic –*** Pine Street traffic is uncontrolled through this intersection, allowing motorists to drive through intersection without slowing down and reducing motorist yielding behavior.

The crosswalks at the Pueblo Ave and Jefferson St intersection are extremely faded.

RECOMMENDATIONS

- ***Curb extensions –*** Install curb extensions on all crosswalk curbs to improve motorist yielding behavior, slow motorists through the intersection and prevent motorists from parking adjacent to crosswalks.
- ***High-visibility crosswalk –*** Upgrade crosswalk across Pine Street to be a high-visibility school-zone pattern to increase pedestrian visibility and motorist yielding behavior.

RECOMMENDATION #NAP-020: PINE STREET SCHOOL STREET PILOT PROGRAM

IDENTIFIED BARRIERS

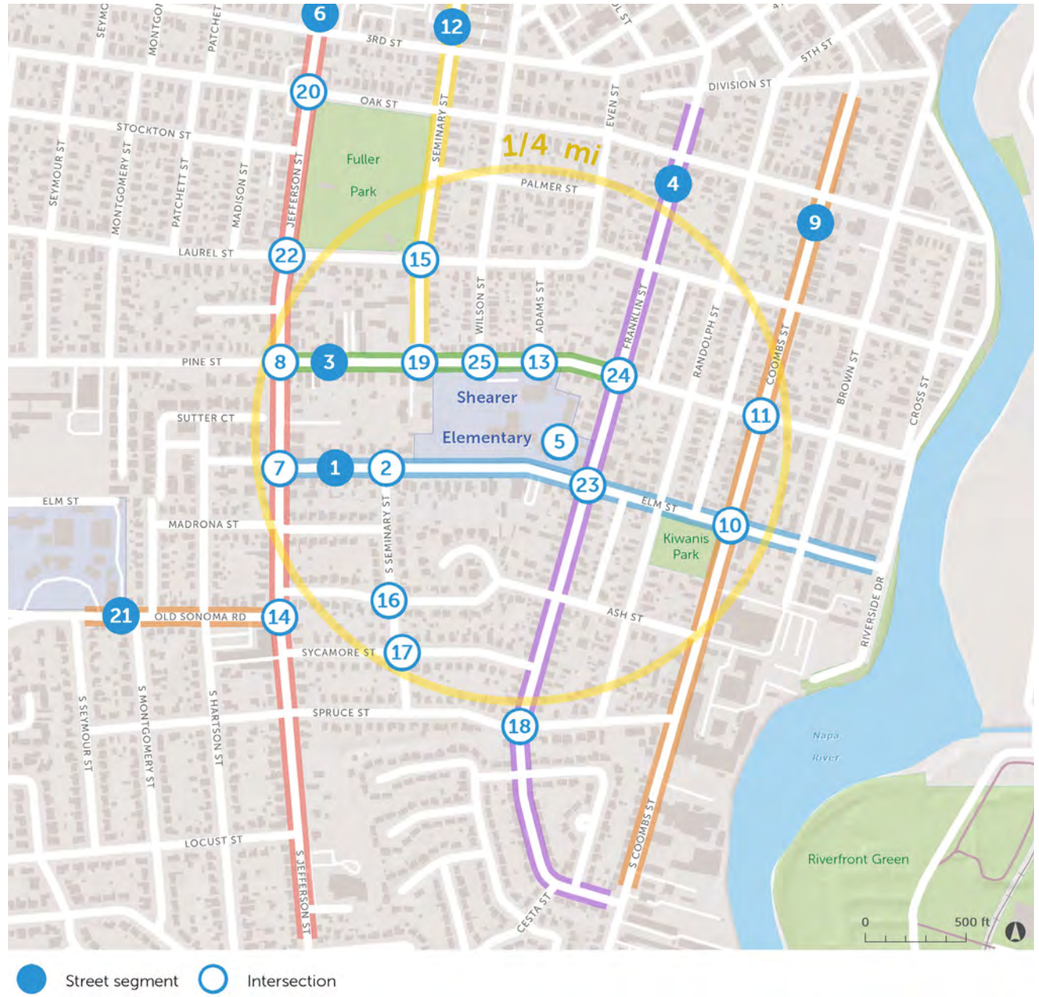
- ***Congestion in school zone –*** Congestion in the school zone during school arrival and dismissal times can increase conflict risk and make the school zone feel unpredictable and unsafe to bicyclists and pedestrians, especially in conjunction with infrastructure barriers.

RECOMMENDATIONS

- ***School Street –*** Implement a School Street pilot program on Pine Street based on existing pilot programs that originated in the United Kingdom and Canada, which involve collaborating with City officials and residents to close the street to through traffic during arrival and dismissal times to allow students to safely walk and bike to school.

A School Street program in action. Photo credit: City of Vancouver.

MAP OF RECOMMENDATIONS



Map 5: Recommendations

TABLE OF RECOMMENDATIONS

Infrastructure:

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
1	Elm Street from Jefferson Street to Riverside Drive	NAI-141	Lack of crosswalks near school entrance.	Install raised midblock crosswalk with RRFB across Elm Street at Shearer Elementary entrance.	$$	Low
		NAI-143	No bike facilities.	Install Class III bike boulevards with sharrows and signage and traffic-calming.	$$	High
		NAI-144	Sidewalk gaps east of the school.	Fill sidewalk gaps east of the school* (westbound: 1320 Elm Street to Randolph Street; Coombs Street to 1165 Elm Street Eastbound: DG path from Franklin Street to 1320 Elm Street; missing sidewalk from 1165 Elm Street to 1063 Elm Street and from 1033 Elm Street to Riverside Drive).	$$-$$$	Medium
		NAI-145	Eastbound sidewalk ends before reaching corner of Elm and Jefferson.	Complete eastbound sidewalk to corner of Jefferson Street and Elm Street.*	$	Low
		NAI-146	Sidewalks narrow at bus loading zone.	Widen sidewalk at bus drop-off using existing gravel path.	$	Low
2	Elm Street and South Seminary Street intersection	NAI-142	Low-visibility crosswalks in school zone, motorists park next to crosswalks and obstruct pedestrian visibility, uncontrolled Elm traffic frequently speeds.	Install curb extensions and upgrade existing crosswalks to high-visibility pattern.	$$	Medium
3	Pine Street from Jefferson Street to Franklin Street	NAI-147	Poor road quality – old road/ new road edge.	Repave road to eliminate old road/ new road edge.	$$-$$$	Low
4	Franklin Street from Division Street to South Coombs Street	NAI-148	Displaced, narrow southbound sidewalk between Pine Street and Laurel Street.	Reconstruct displaced southbound sidewalk to be level.	$$-$$$	Medium
		NAI-149	Bicycle facilities do not have traffic-calming on highly-travelled corridor (especially during peak school hours), bike boulevard paint has been covered by new pavement from Sycamore Street to Elm Street.	Upgrade Franklin Street corridor to full bike boulevard with appropriate traffic-calming. Repaint bike boulevard stencils where covered and paint sharrow stencils between Sycamore Street and Spruce Street.	$$	High

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
5	School site	NAI-150	Bike parking difficult to find and not near any entrance points, rack is positioned so only half of the spaces are accessible.	Expand and relocate bike parking closer to entrances on Pine Street and Elm Street.	$	Medium
		NAI-151	Missing sidewalk along west side of staff parking lot leading to pedestrian gate. Conflict between pedestrians and vehicles in staff parking lot.	Install sidewalk/raised pedestrian path along west side of parking lot from Pine Street to school campus gate.	$	Low
		NAI-152	Misuse of parking lot as drop-off – vehicles exit through entrance near crosswalk, conflicts with pedestrians.	Increase signage prohibiting student drop-off in staff parking lot on Pine Street to reduce conflicts with pedestrians.	$	Low
6	Jefferson Street from 2nd Street to Hemlock Street	NAI-153	Missing northbound sidewalks from Locust Street to Spruce Street and from Ash Street to Elm Street.	Near term: See Jefferson/Elm recommendation (NAI-154). Long term: Fill northbound sidewalk gaps.*	$$-$$$	High
		NAI-156	High-speed and high-volume arterial, no bicycle facilities.*	Implement road diet and redesign that prioritizes multimodal improvements and accomplishes Complete Streets criteria (bounds reflect school zone, recommended for entire corridor).	$$$-$$$$	High
		NAI-157	Speeding.	Implement quick-response traffic-calming treatments along corridor (bounds reflect school zone, recommended for entire corridor).	$-$$	High
		NAI-158	Rough road quality uncomfortable/difficult to bike on.	Repave road.	$$$-$$$$	Low
7	Jefferson Street and Elm Street intersection*	NAI-154	High speed/volume Jefferson traffic, difficult left turn from Elm Street results in motorists not looking for pedestrians crossing, no crosswalk across Jefferson to existing continuous southbound sidewalk.	Repaint existing crosswalk with high-visibility school-zone pattern, install high-visibility crosswalk with Rectangular Rapid Flashing Beacons and quick-build curb extensions across Jefferson so students can reach existing southbound sidewalk.	$$	High
8	Jefferson Street and Pine Street intersection*	NAI-155	High speed/volume Jefferson traffic uncontrolled, long crossing distance, poor motorist yielding behavior, difficult left turn from Pine Street results in motorists not looking for pedestrians crossing.	Repaint existing crosswalks with high-visibility school-zone pattern, install Rectangular Rapid Flashing Beacons at existing crosswalk across Jefferson, install quick-build curb extensions at all corners.	$$	High

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
9	Coombs Street from Division Street to Franklin Street	NAI-159	High-stress bicycle facilities – Long, straight corridor with no traffic-calming and minimal traffic control facilitates motorist speeding, high volumes/speeds of motorists, new road/old road edge.	Upgrade corridor to full bike boulevard with sharrows, signage, and significant traffic-calming measures. Bounds reflect school boundaries, recommended for whole corridor).*	$$	**High**
10	Coombs Street and Elm Street intersection	NAI-160	Uncontrolled Coombs Street traffic, poor motorist yielding behavior, cars park close to intersection and obstruct pedestrian visibility, low-visibility crosswalks on collector.	Upgrade crosswalks to high-visibility pattern, install curb extensions. Evaluate potential for All Way Stop Control.	$$-$$$	**Medium**
11	Coombs Street and Pine Street intersection	NAI-161	Low-visibility crosswalks, long crossing distance across Coombs Street, cars park close to intersection and obstruct pedestrian visibility, no crosswalks across Pine Street.	Upgrade crosswalks to high-visibility pattern, install crosswalks across Pine Street, install curb extensions.	$$	**Medium**
12	Seminary Street from First Street to Pine Street	NAI-162	Bike boulevard ends at Oak Street. Uncontrolled traffic at 1st, 2nd, and 3rd Streets result in poor motorist yielding behavior and long waiting times to cross.	Continue Class III bike boulevard from Oak to Pine with sharrows, signage, and traffic-calming. Flip stop signs on 1st St, 2nd St, and 3rd St to improve north-south connection or install Rectangular Rapid Flashing Beacons to improve motorist yielding behavior. Evaluate opportunities for curb extensions at intersections.	$-$$	**Medium**
13	Pine Street and Adams Street intersection	NAI-163	Students crossing in unmarked location in intersection to avoid crossing twice.	Add high-visibility school zone crosswalk across Pine St on west side of intersection.	$	**Low**
		NAI-164	Missing or minimal red zones allow motorists to park adjacent to crosswalks and obstruct visibility, low-visibility crosswalks in school zone, Pine St uncontrolled	Install curb extensions for all crosswalks, paint crosswalks with high-visibility pattern.	$$	**Medium**

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
14	Old Sonoma Road and Jefferson Street intersection*	NAI-165	Large, busy intersection. Free right turns off of Jefferson Street allow motorists through intersection without slowing down and reduce motorist yielding behavior. Parking lot on south side used as right-turn cut-throughs increases conflict risk, especially with building blocking visibility of pedestrians on southbound Jefferson sidewalk. Southbound Jefferson sidewalk does not continue to intersection. Faded, low-visibility crosswalks.	Close cut-through driveway through Food City parking lot used for right turns onto Jefferson St and bring southbound Jefferson sidewalk up to meet intersection. Repaint crosswalks with high visibility patterns. Implement significant intersection redesign: either small traffic circle/roundabout or square up intersection by closing free right turn from southbound Jefferson and extending northwest curb out.	$-$$$$	**Medium**
15	Seminary Street and Laurel Street intersection	NAI-166	No crosswalks across Seminary Street (provides access to Fuller Park). No traffic control for Laurel cross traffic.	Repaint high-visibility crosswalks across Laurel, install crosswalks across Seminary Street on both sides. Install curb extensions on all four corners.	$$	**Low**
16	South Seminary Street and Ash Street intersection	NAI-167	Oddly shaped intersection – long crossing distances and poor visibility.	Install curb extensions on northwest and southwest corners; paint crosswalks along all four legs of intersection.	$$	**Low**
17	South Seminary Street and Sycamore Street intersection	NAI-168	No crosswalks, intersection offset.	Paint crosswalk across Sycamore Street at northwest corner.	$	**Low**
18	Spruce Street and Franklin Street intersection	NAI-169	No crosswalks, long crossing distances.	Paint crosswalks across all legs of intersection, install curb extensions at least on northeast and southeast corners.	$$	**Low**
19	Pine Street and Seminary Street intersection	NAI-170	Poor pedestrian visibility due to limited or missing red zones, low-visibility crosswalks in school zone, Pine St traffic is uncontrolled.	Install curb extensions on all crosswalk corners. Upgrade crosswalk across Pine to high-visibility pattern.	$$	**Medium**
20	Jefferson Street and Oak Street intersection*	NAI-171	Long crossing distance across Jefferson Street, high-speed/ high-volume Jefferson traffic is uncontrolled, poor motorist yielding behavior, wide curb radii facilitate fast motorist turning movements, low-visibility crosswalks.	Install curb extensions (use quick-build for faster response) and high-visibility crosswalks. Paint crosswalk across south side of Oak St.	$-$$	**Low**
21	Old Sonoma Road from South Seymour Street to Jefferson Street	NAI-172	Sidewalk gaps, no bicycle facilities; long, straight, wide corridor facilitates motorist speeding .	Install Class II bike lanes*, fill sidewalk gaps*. Install curb extensions at South Seymour St crosswalk.	$$-$$$	**Low**

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
22	Jefferson Street and Laurel Street intersection*	NAI-173	High-volume intersection along pedestrian routes to key destinations (park, school), low-visibility crosswalks, motorists don't always fully stop or check for pedestrians, missing red zones allow motorists to park near crosswalks and obstruct visibility.	Install curb extensions (use quick-build for faster response) and high-visibility crosswalks.	$-$$	**High**
23	Elm Street and Franklin Street intersection	NAI-174	Low-visibility crosswalks, potential for poor pedestrian visibility due to lack of red zones.	Repaint crosswalks with high-visibility pattern. Install curb extensions on all corners.	$$	**Low**
24	Pine Street and Franklin Street intersection	NAI-175	Low-visibility crosswalk pattern, faded crosswalks.	Repaint crosswalks with high-visibility pattern. Install curb extensions on all corners.	$$	**Low**
25	Pine Street and Wilson Street intersection	NAI-176	Crosswalk across Pine Street is halfway in parking lot entrance. Potential for poor pedestrian visibility due to limited/missing red zones.	Upgrade crosswalks to high-visibility pattern and install curb extensions on corners where possible.	$-$$	**Low**

** = projects included in Napa Countywide Pedestrian Plan (2016) or Napa Countywide Bicycle Plan (2019)*

Programmatic Improvements:

	ISSUE	ID #	RECOMMENDATION	LOCATION	FREQUENCY	COST	PRIORITY
1	Congestion in school zone; misuse of staff parking lot as drop-off zone leading to vehicle-pedestrian conflict	NAP-017	Develop circulation policy to outline options for drop-off locations and best road user safety practices; distribute regularly to families.	School zone	Create plan/policy once, update as needed, distribute annually or as needed	$	**Low**
2	Infrequency of annual events, congestion in school zone	NAP-018	Continue growing participation in annual encouragement events. Organize additional encouragement events with goal of increasing frequency of events over time.	School site	Annual for countywide events; monthly for independent events	$	**High**
3	Infrequent bicycle/ pedestrian safety education	NAP-019	Annual bicycle and pedestrian safety education for all students.	School site	Annual	$	**High**
4	Congestion in school zone during school arrival/ dismissal times	NAP-020	Implement School Street pilot program.	Pine Street from Jefferson to Franklin	TBD; follow structure of existing pilot programs	$	**Medium**

COLLISION MAP AND DATA

Map 6: Collision Map (2016-2020) (Source: UC Berkeley Transportation Injury Mapping System: SRTS Collision Map Viewer)

Summary Statistics

RADIUS	FATAL	SEVERE INJURY	VISIBLE INJURY	COMPLAINT OF PAIN	PEDESTRIAN	BICYCLE	TOTAL
< .25 mi.	0	0	2	2	2	2	4
.25-.5 mi.	0	1	5	9	6	9	15
Total	0	1	7	11	8	11	19

Collision List

Date	Time	Primary	Secondary	Distance	Direction	Bike	Ped
2017-04-19	08:09	JEFFERSON ST	LAUREL ST	0.00	-	Yes	No
2018-06-02	09:09	JEFFERSON ST	LAUREL ST	0.00	-	No	Yes
2018-10-04	17:56	JEFFERSON ST	OAK ST	0.00	-	Yes	No
2019-11-08	15:25	JEFFERSON ST	3RD ST	3.00	S	No	Yes
2017-12-06	15:00	MADISON ST	STOCKTON ST	10.00	S	Yes	No
2018-01-06	17:38	JEFFERSON ST	STOCKTON ST	0.00	-	No	Yes
2018-08-25	09:58	3RD ST	CHURCH ST	0.00	-	Yes	No
2018-09-26	21:03	FRANKLIN ST	PINE ST	0.00	-	No	Yes
2021-05-17	09:15	COOMBS ST	OAK ST	0.00	-	Yes	No
2021-11-09	17:51	JEFFERSON ST	LAUREL ST	0.00	-	No	Yes
2020-01-20	15:02	OLD SONOMA RD	S MONTGOMERY ST	50.00	E	Yes	No
2021-06-09	16:56	JEFFERSON ST	LAUREL ST	0.00	-	No	Yes
2021-07-03	11:56	3RD ST	SCHOOL ST	0.00	-	No	Yes

APPENDICES

FIGURES & MAPS

FOOTNOTES

[a] Noreen McDonald, Ruth Steiner, Chanam Lee, Tori Rhoulac Smith, Xuemei Zhu and Yizhao Yang (2014). "Impact of the Safe Routes to School Program on Walking and Bicycling." Journal of the American Planning Association. Vol 80, Iss 2, p 153-167.

[b] Orion Stewart, Anne Vernez Moudon, and Charlotte Claybrooke (2014) Multistate Evaluation of Safe Routes to School Programs. American Journal of Health Promotion: January/February 2014, Vol. 28, No. sp3, pp. S89-S96.

[c] Peter A Muennig et al., 'The Cost-Effectiveness Of New York City's Safe Routes To School Program', American Journal Of Public Health, iss 0 (2014): 1-6.

[d] David Ragland, S Pande, J Bigham and FJ Cooper. (2014, January). Ten years later: examining the long-term impact of the California Safe Routes to School program. Presented at the Transportation Research Board 93rd Annual Meeting, Washington DC. Available at http://docs.trb.org/prp/14-4226.pdf.

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[f] Hillman CH, Pontifex MB, Raine LB, Castelli DM, Hall EE, Kramer AF. The effect of acute treadmill walking on cognitive control and academic achievement in preadolescent children. Neuroscience. 2009;159(3):1044-1054. doi:10.1016/j.neuroscience.2009.01.057

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[h] Appleyard, B. (2017). The meaning of livable streets to schoolchildren: An image mapping study of the effects of traffic on children's cognitive development of spatial knowledge. Journal of Transport & Health, 5.

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[j] Overall Facility Rating determined from 2019-20 School Accountability Report Card

APPENDIX A

EMC Survey Toplines

Safe Routes to School Walk Audit Report and Active Transportation Action Plan

Evaluation: Research & Methodology

- **Purpose: Gain insight into parent practices, perceptions, and attitudes around children walking and riding bicycles to and from school; explore barriers to behavior change**
- **Quantitative survey of 459 parents of K-8 students in Napa County**
  - Conducted online and by telephone, offered in English and Spanish
  - Conducted March 11 – April 12, 2021
  - Participants recruited via communications from school districts and targeted online and telephone contacts
  - *Survey methods were designed to include as many participants as possible; not a random sample*
- **Qualitative follow-up research**
  - One online focus group with 7 participants in English; 4 in-depth telephone interviews in Spanish
  - Conducted May 20 – 28, 2021
  - Targeted parents who lived within two miles of their school site and would like their children to walk or bike to school

Survey of Parents/Guardians of at least one child in K-8th Grade
Napa County, California
Hybrid Email-to-Web/Text-to-Web/Live Telephone Survey
Conducted March 11-April 12, 2021
n=459
EMC Research #21-6420

All numbers in this document represent percentage (%) values, unless otherwise noted.
Please note that due to rounding, percentages may not add up to exactly 100%.

INTRO: Your opinions are important! Thank you for participating in this survey EMC Research is conducting on behalf of the Napa County Safe Routes to School program in partnership with local school districts. You may have been contacted previously to complete this survey via telephone and we ask each individual only complete the survey once.

Your responses will remain completely confidential. Please try to answer every question even if you're not sure. If you need to, you may skip a question.

1. Are you the parent or guardian of any children currently attending kindergarten through eighth grade in one or more of the school districts located in Napa County below? *Please select the District(s) that your K-8th grade student(s) is/are currently enrolled in, check all that apply.* **(MULTIPLE RESPONSES ACCEPTED)**

Calistoga Joint Unified School District	0
Howell Mountain Elementary School District	-
Napa Valley Unified School District	97
Pope Valley Union Elementary School District	0
Saint Helena Unified School District	2
Another District or school in Napa County (please specify)	1
None of the above → **TERMINATE**	-
(No response) → **TERMINATE**	-

2. Please indicate below what grade(s) your child/children are in. *Please select all that apply.* **(MULTIPLE RESPONSES ACCEPTED)**

Kindergarten	22
1st grade	17
2nd grade	15
3rd grade	20
4th grade	15
5th grade	15
6th grade	14
7th grade	12
8th grade	9
9th through 12th grade → **TERMINATE IF ONLY RESPONSE SELECTED**	14
(No response) → **TERMINATE**	-

(IF MORE THAN ONE K-8 STUDENT: "Although you have multiple children in K-8, we ask that you please think about your **oldest K-8** child when answering the next questions."**)**

For these next few questions, please think back to when your **(**child was**/**children were**)** attending school **before** the COVID-19 pandemic.

3. On most days, what was the primary way your **(**K-8 child**/**oldest K-8 child**)** travelled **to** school?

Family vehicle (only children in your family)	73
Carpool (children from other families)	3
School bus	3
Other public transportation	0
Bike	4
Walk	16
Other (scooter, skateboard, inline skates, etc.)	0
(No response)	0

4. And on most days, what was the primary way your **(**K-8 child**/**oldest K-8 child**)** travelled **from** school?

Family vehicle (only children in your family)	73
Carpool (children from other families)	3
School bus	3
Other public transportation	1
Bike	4
Walk	15
Other (scooter, skateboard, inline skates, etc.)	0
(No response)	0

5. How long did it normally take your **(**K-8 child**/**oldest K-8 child**)** to get to/from school?

Less than 5 minutes	18
5-10 minutes	42
11-15 minutes	22
16-20 minutes	8
More than 20 minutes	9
(No response)	0

6. Has your **(**K-8 child**/**oldest K-8 child**)** ever walked or biked to/from school?

Yes	43
No	56
(No response)	0

7. **(ONLY ASKED IF Q6=1, 'Yes, has walked/biked to/from school')** In what grade did your child begin to walk or bike to/from school? **(n=199)**

Pre-school	7
Kindergarten	30
1st grade	9
2nd grade	6
3rd grade	10
4th grade	8
5th grade	9
6th grade	13
7th grade	6
8th grade	1
9th through 12th grade	1
(No response)	2

8. Thinking generally, what grade would you feel comfortable with a child walking or biking to/from school?

Pre-school	1
Kindergarten	5
1st grade	2
2nd grade	2
3rd grade	5
4th grade	14
5th grade	12
6th grade	16
7th grade	10
8th grade	7
9th through 12th grade	13
I would not feel comfortable at any grade	14
(No response)	1

9INT. Continuing to think about times **before** the COVID-19 pandemic, please indicate how comfortable **you** were with your **(**K-8 child**/**oldest K-8 child**)** doing each of the following.

SCALE:	Very Comfortable	Somewhat Comfortable	Not too Comfortable	Not at all Comfortable	(No Response)	Total Comfort.	Total Not Comfort.
(RANDOMIZE)							
9. Taking a bus to school	32	33	17	15	3	**65**	**32**
10. Walking to school without an adult	8	18	19	54	1	**26**	**73**
11. Riding a bike to school without an adult	7	17	22	53	2	**23**	**75**
12. Walking to school with an adult	66	19	6	8	1	**85**	**14**
13. Riding a bike to school with an adult	45	29	11	13	2	**74**	**24**
(END RANDOMIZE)							

14. **(ONLY ASKED IF Q10=3 OR 4, 'not comfortable')** What would you say is the **main** reason you were not comfortable with your **(**K-8 child**/**oldest K-8 child**)** **walking** to school without an adult?
(VERBATIM RESPONSES CODED INTO BELOW CATEGORIES) (n=335)

Worry for child's safety/Crime	28
Not old enough	19
Live too far away	17
Traffic/Busy streets	11
Street crossing/Intersections	6
Not enough sidewalks	5
Crossing Highway 29	3
Other	8
Don't know	1

15. **(ONLY ASKED IF Q11=3 OR 4, 'not comfortable')** What would you say is the **main** reason you were not comfortable with your **(**K-8 child**/**oldest K-8 child**)** **riding a bike** to school without an adult?
(VERBATIM RESPONSES CODED INTO BELOW CATEGORIES) (n=324)

Worry for child's safety/Crime	29
Not old enough	18
Traffic/Busy streets	13
Live too far away	9
Street crossing/Intersections	5
Crossing Highway 29	4
Can't ride a bike	4
Not enough sidewalks	3
No bike lanes	3
Other	10
Don't know	1

For these next few questions, please think back to when your **(**child was**/**children were**)** attending school **before** the COVID-19 pandemic.

16INT. Please indicate whether you agree or disagree with each of the following statements.

SCALE:	Strongly Agree	Somewhat Agree	Somewhat Disagree	Strongly Disagree	(No Response)	Total Agree	Total Disagree
(RANDOMIZE)							
16. I would generally like my K-8 **(**child**/**children**)** to be able to walk or bike to/from school.	43	32	12	12	0	**76**	**24**
17. My K-8 **(**child enjoys**/**children enjoy**)** walking and/or biking places.	57	31	8	4	0	**88**	**12**
18. I would never let my K-8 **(**child**/**children**)** walk or bike to/from school.	20	24	27	28	0	**44**	**55**
19. It is safe for children to walk or bike in my area.	13	45	22	20	-	**58**	**42**
20. There are enough bike paths and sidewalks for my K-8 **(**child**/**children**)** to walk or bike to/from school.	13	27	20	39	1	**40**	**60**
21. I am concerned about speeding or distracted drivers if/when my **(**child**/**children**)** walk or bike to/from school.	81	15	2	2	0	**96**	**4**
22. The school is too far away for my K-8 **(**child**/**children**)** to walk or bike there.	37	19	15	29	0	**55**	**45**
23. My K-8 **(**child**/**children**)** cannot bike to and from school because of their before- or after-school commitments.	13	26	25	35	1	**39**	**60**
24. Walking or biking to and from school is a good way for my K-8 **(**child**/**children**)** to get physical exercise.	69	25	3	3	1	**93**	**6**
25. Walking or biking to and from school is a good way for me to spend quality time with my K-8 **(**child**/**children**)**.	55	30	7	6	1	**85**	**14**
26. I would only allow my K-8 **(**child**/**children**)** to walk or bike to and from school if I, or another adult, can accompany them.	54	25	12	8	0	**79**	**21**
(END RANDOMIZE)							

27INT. Next, you will see some things that local schools and other organizations could do that may affect how you feel about your **(**K-8 child**/**oldest K-8 child**)** biking to school once the COVID-19 pandemic has ended. For each, please indicate if the item would make you feel more comfortable about allowing your **(**K-8 child**/**oldest K-8 child**)** to walk or bike to school once the COVID-19 pandemic has ended.

SCALE:	Much More Comfortable	Somewhat More Comfortable	A Little More Comfortable	(No Difference)	(Don't Know)
(RANDOMIZE)					
27. Limit how much children have to carry in their backpacks	36	25	14	24	1
28. Provide children and parents with information and maps on safe routes to and from school	37	24	16	22	1
29. Offer free bicycle safety courses for children to learn how to ride safely on local streets	43	21	21	15	0
30. Provide opportunities for children to practice biking in a car-free environment	42	23	14	20	-
31. Offer free pedestrian safety classes for children	39	20	21	19	1
32. Provide crossing guards at major intersections	62	22	10	6	-
33. Organize groups of students to walk or bike to/from school together	42	26	17	14	1
34. Provide a local parent or adult volunteer to walk or bike with children to/from school	36	27	15	20	1
35. Add designated bike lanes to roads	46	24	15	14	-
36. Improve the condition of existing bike lanes	47	23	14	16	1
37. Add more bike paths that are separated from the road	62	17	11	9	0
38. Add more sidewalks	53	21	13	12	1
39. Fix missing or broken sidewalks	56	19	15	10	1
40. Increase the visibility and safety of crosswalks	61	20	11	8	0
41. Increase the police presence on routes that lead to schools	52	23	13	12	1
42. Reduce the speed of traffic on streets that kids use to walk or bike to school	53	21	15	11	1
(END RANDOMIZE)					

43. Is there something else that could be done that would make you feel more comfortable about allowing your **(**K-8 child**/**oldest K-8 child**)** to walk or bike to school once the COVID-19 pandemic has ended? **(VERBATIM RESPONSES CODED INTO BELOW CATEGORIES)**

Nothing/No additional comments	42
Add or improve bike paths/Sidewalks/Crosswalks	15
Increase crossing guards/Supervision/Police presence	11
School is too far away/Can't use active modes	9
Speeding concerns/Increased road law enforcement	5
Increase safety related to Highway 29	2
Already walks/bikes/etc.	2
Provide bikes/Equipment/Storage	2
Other	10
Don't know/Refused	2

44. About how far does your **(**K-8 child**/**oldest K-8 child**)** live from school? If you're not sure, give your best guess.

Less than ½ mile	14
½ mile up to 1 mile	19
1 mile up to 2 miles	21
2 miles up to 3 miles	14
3 miles up to 5 miles	15
5 miles or more	16
(No response)	1

45. Does your **(**K-8 child**/**oldest K-8 child**)** currently have their own working bicycle?

Yes	79
No	21
(No response)	-

46. Did you ride a bicycle when you were your K-8 **(**child's**/**children's**)** age?

Yes	78
No	21
(No response)	0

These last questions are for statistical purposes only. Your responses will remain completely confidential.

47. Do you identify as…

Male	14
Female	83
Non-binary	-
Another gender identity	-
Prefer not to respond	3

48. What year were you born? **(YEARS CODED INTO CATEGORIES)**

18-29 (2003-1992)	5
30-39 (1982-1991)	36
40-49 (1972-1981)	45
50-64 (1957-1971)	12
65 or older (1956 or earlier)	1
Prefer not to respond	1

49. Do you consider yourself to be…

Hispanic or Latino	38
White or Caucasian	41
African American or Black	1
Asian or Pacific Islander	7
Something else	3
Prefer not to respond	10

50. Do you…

Own or are buying the home or apartment where you live	55
Rent or lease	35
Prefer not to respond	10

THANK YOU!

APPENDIX B

Universal Recommendations

Safe Routes to School Walk Audit Report and Active Transportation Action Plan

Appendix B
Napa County SRTS Walk Audit Report
Universal Recommendations

The Napa County Safe Routes to School (SRTS) Walk Audit Report Universal Recommendations apply to all public schools in Napa County, which reflects the schools served under the SRTS program. Universal recommendations are meant to supplement site-specific recommendations and address common barriers in the bicycle/pedestrian network around schools in a concise and consistent manner.

Universal Recommendation 1: High-Visibility School Zone Crosswalks

Federal Highway Administration data[1] indicates that high-visibility crosswalk striping improves the visibility of crosswalks compared to standard parallel lines and can improve yielding behavior by drivers[2]. Additionally, crosswalk visibility enhancements, which include but are not limited to high-visibility crosswalks, can reduce crashes by 23-48%[1].

- Recommendation: High-visibility (continental or ladder pattern) crosswalks should be implemented at the following locations:
    - Utilizing the California Vehicle Code (CVC) §21368 requirements for designating crosswalks as "school zone" crosswalks (painted yellow), all school zone crosswalks;
    - And, all marked crosswalks at an intersection with a designated collector or arterial roadway within 1320 feet (0.25 miles) of a school (following the same measuring method as CVC §21368)

This recommendation applies to existing and future crosswalks. It does not provide guidance for new crosswalk warrants; it is primarily focused on the improvement of crosswalks within the roughly ¼ mile radius examined through the Walk Audit process.

Universal Recommendation 2: Intersection Daylighting

Daylighting is the practice of removing visual barriers, including parked vehicles, within a certain distance of a crosswalk or intersection to greatly improve visibility for pedestrians, bicyclists, and motorists. The National Association of City Transportation Officials recommends removing parking within 20-25 feet of an intersection. Daylighting can be accomplished through permanent infrastructure, such as concrete curb extensions, or more cost-effective materials, such as paint and bollards.

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[1] https://safety.fhwa.dot.gov/ped_bike/step/docs/TechSheet_VizEnhancemt_508compliant.pdf

2 Pulugartha, S. S., V. Vasudevan, S. S. Nambisan, and M. R. Dangeti. Evaluating the Effectiveness on Infrastructure-Based Countermeasures on Pedestrian Safety. Presented at the 91st Annual Meeting of the Transportation Research Board, Washington, D.C., 2012.

- Recommendation: Daylighting strategies should be implemented at the following intersections:
    - Those that are in the school zone as defined by CVC §21368;
    - Those that are intersections with a designated collector or arterial roadway within 2640 feet (0.5 miles) of a school (following the same measuring method as CVC §21368).

Universal Recommendation 3: Sidewalk Width Adjacent to School Campus

A barrier frequently identified during Walk Audits throughout the county was that sidewalks immediately adjacent to the school were too narrow for the high volumes of pedestrians generated during school arrival and dismissal times. Most of these sidewalks were roughly 4 feet wide, including space for utility and signage poles. While these sidewalks may meet specific municipal standards, they do not accommodate high volumes of school-related pedestrians and can deter or prevent students from walking to school if they travel with their families, in groups, or use a mobility assistance device. This is especially so when sidewalks are obstructed by utility poles, signal boxes, and other objects.

- Recommendation: All sidewalks that lead to a school campus entrance should be a minimum of 6 feet wide within at least 250 feet of the school entrance; if a school has only one entrance, the sidewalk leading to that entrance should be a minimum of 8 feet wide within 250 feet of that entrance.

Universal Recommendation 4: Class III Bike Boulevard Traffic-Calming

Class III bicycle boulevards are on-street bicycle facilities that have traditionally been marked by signage and share-the-road stencils ("sharrows") painted in the vehicle travel lane. Class III facilities do not provide any separation between bicyclists and motorists and instead indicate to road users that bicyclists and motorists must share the road. Such facilities are intended to be installed on low-speed (25 mph or less*) and low-volume (<3,000 vehicles/day*) roadways; however, the current practice of implementing only signage and sharrows for Class III routes frequently does not meet the comfort and safety perception needs of the "Interested but Concerned" user profile of bicyclists, which includes an estimate of 51%-56% of the population and is typically the profile assumed for most school-age children. To create a lower stress bicycle network, the Federal Highway Administration describes improving bicycle boulevards by "slowing motor vehicle speeds and implementing other speed management measures."

- Recommendation: All Class III bicycle boulevards should be marked with sharrows and signage and must be treated with traffic-calming strategies to enforce the desired speed limit and prevent motorist speeding. Class III bicycle boulevards adjacent to school campuses or along roadways that facilitate

motorist speeding (long, straight, and/or minimal traffic control) should be prioritized for traffic-calming treatments.

* Metrics established by the Federal Highway Association in their 2019 Bikeway Selection Guide.

Universal Recommendation 5: Curb Ramps (Americans with Disabilities Act)

Some of the early Walk Audit reports specifically call out intersections or other pedestrian access points where curb ramps compliant with the Americans with Disabilities Act were missing, which creates a significant connectivity barrier for pedestrians who use mobility assistance devices. However, following these reports, the Napa County Safe Routes to School team recognized that many intersections and pedestrian access points were missing these curb ramps and that individually identifying each missing curb ramp would be redundant, particularly given data from the Napa Countywide Pedestrian Plan (2016). Consequently, though some early reports do mention lack of accessible curb ramps, a universal recommendation was created to address this important pedestrian barrier while avoiding redundancy in reports.

- Recommendation: In alignment with the Americans with Disabilities Act, when implementing recommendations made in Napa County Safe Routes to School reports that impact the curb at intersections, pedestrian crossings, or other pedestrian access points, curb ramps that are compliant with the Americans with Disabilities Act should be installed.

APPENDIX C

Quick Build Brochure

Safe Routes to School Walk Audit Report and Active Transportation Action Plan

QUICK-BUILD BIKEWAY NETWORKS FOR SAFER STREETS

Delivering Safer Streets in Weeks or Months, Instead of Years

How to Meet Public Demand for Safe Bikeway Networks—Affordably, Quickly, and Inclusively

Photo credit: Alta Planning + Design

CASE STUDY

Adeline Street in Berkeley got protected bike lanes 20 years ahead of schedule, when Bike East Bay worked closely with the city to incorporate planned lanes into the repaving schedule, saving time and money by simply adding bike infrastructure to an existing project, one funded through a local infrastructure bond measure. The City of Berkeley garnered extensive public input on the Adeline Corridor, making this a great example of quick-build speeding up existing bike infrastructure planning, bringing bike lanes to Berkeley in 2019 instead of 2039.

WHY QUICK-BUILD? WHY NOW?

Biking is up in many communities in California, including those that started with low rates of bicycling, as people seek out healthy and safe transportation and recreation. Californians are discovering they can be healthier and happier simply by getting out on two wheels.

Meanwhile, agency budgets are down. Plans to spend millions on infrastructure may no longer be realistic. More than ever, the public demands that transportation projects are equitable and responsive to the needs of neglected communities.

Quick-build is a method of building bike and pedestrian safety improvements—protected bike lanes, pedestrian crossings, slow streets, parklets, and more—now, within your budget. In challenging times, quick-build projects are crucial to building trust in the government's ability to deliver public benefit. And quick-build infrastructure can engage the public better than ever, and be more inclusive and equitable than traditional infrastructure.

> *"We as transportation experts need to be thinking strategically about whether or not we need to spend three years talking about doing something important, or three weeks to just try something."*
>
> — Warren Logan
>
> *Transportation Policy Director of Mobility and Interagency Relations at Oakland Mayor's Office*

WHAT IS QUICK-BUILD?

The Basics

- Quick-build projects use materials that can be installed quickly and at low cost. Build projects from posts, planters, and stripes of paint, not new pavement or curb alignments.
- **Quick-build projects are installed on a trial basis.** Temporary installations allow for adjusting or removing elements in response to public feedback. Successful projects may become permanent, exactly as installed, or upgraded with more durable materials.
- **Quick-build should incorporate rigorous community engagement.** A project on the ground can serve much more effectively than a PowerPoint or rendering for trying something out and allowing community residents to respond. Gather feedback and input, and change designs accordingly.

Materials

From paint, traffic cones, and A-boards to concrete curb barriers, planters, and temporary raised crosswalks, a wide variety of materials work well for creating quick-build projects. The full Quick-Build Toolkit provides thorough, detailed descriptions of materials that can make for an effective and inexpensive project to meet your community's needs.

Photo credits, top to bottom: Alta Planning + Design; Real Hartford; Alta Planning + Design; Street Plans Collaborative

CASE STUDY

In August of 2020, the City of San Luis Obispo converted one of the three motor vehicle lanes of downtown Higuera Street into a buffered bike lane, as part of Open SLO, the city's pilot program to expand the use of public spaces (with parklets and bike/ped spaces) during the COVID-19 pandemic. The project was installed with paint, took less than a week to install, and cost a mere $15K instead of the more than $150K it would have taken to put in a traditional bike lane by sealing and restriping the whole street as the city would normally do.

Photo credit: Bike SLO County

WHO?

Your Quick-Build Project Team

Team leader. Quick-build projects need a "chief" (usually city staff) tasked with project facilitation, keeping the momentum going, establishing lines of communication, and accepting and evaluating feedback.

Community leaders. Because evaluation and adjustment are essential for successful quick builds, make sure community leaders are on board from the beginning. Look to businesses, residential associations, places of worship, and nearby schools. Bring in bike/ped advocacy organizations and other CBOs, including those based in disadvantaged communities and led by people of color.

Department liaisons. Your project may impact transit, street sweeping, parking enforcement, maintenance, waste management and recycling, and emergency response. Involve other agencies as necessary to ensure you don't forget a critical aspect.

Elected Officials. They have the power to marshal funding for quick-build projects. They will hear from constituents, so communication channels between the project team and electeds must be open for effective project evaluation.

Communications. Ideally, include a dedicated communications person on your team. Because this is a new method, and people are used to years of discussion, publicize quick-build's temporary nature. Talk about the project's intended benefits, and listen to feedback about the actual impacts.

Community Engagement

Community engagement is essential and also very effective, because it's easy to engage people in providing feedback on real-world solutions that they can see and use. Here are the keys:

- Start engaging with the community before you install the project so that residents' opinions are included from the get-go.
- Be inclusive in your outreach, including perspectives from disadvantaged communities and people of color.
- Emphasize the project's temporary nature, and the ability to change the project after it's installed.
- Implement effective feedback mechanisms during the project, making sure to plan and budget for project adjustments in response to input.

CASE STUDY

The El Cajon Boulevard Business Improvement Association ("The Boulevard") got city councilmembers and the mayor on board to fund a pilot bus and bike lane along a 3-mile stretch of San Diego's El Cajon Boulevard. The Boulevard staff brought in diverse stakeholders and built on longstanding relationships to push the city to dedicate a lane for El Cajon Boulevard's new bus rapid transit line, and got bikes included on this Vision Zero corridor. The entire three-mile project, which launched in January 2020, cost $100K, funded by San Diego's general fund.

Photo credit: Holly Raines

WHERE?

Which Projects are Best for Quick-Build?

Some projects are better than others for the quick-build method.

- **Look to existing plans.** Your community's current active transportation plan already identifies key improvements and priorities. Most such plans will take decades to complete with traditional methods and funding. Quick-build can take those plans to reality much sooner.
- **Fill gaps in the bikeway network, especially now when more people are bicycling.** Look to improve intersections that are dangerous to navigate, short sections of crosstown routes that use busy streets, or long sections of streets that could become "slow streets" to connect neighborhoods.
- **Put disadvantaged communities first.** If your plan doesn't already incorporate an equity analysis to set priorities, this is your chance. Look at a model plan like Oakland's "Let's Bike Oakland" bicycle plan which incorporates a framework of equity and a focus on improving well-being for the city's most vulnerable groups.

If a project is funded and on schedule to be built within a year or two, turn your attention to projects that will take years without quick build. Projects that require expensive modifications—new traffic signals, bridges, reconfigured curbs—are not good quick-build candidates.

Photo credit: Alta Planning + Design

Funding for Quick-Build

POTENTIAL FUNDING SOURCES IN CALIFORNIA

Available funding for quick-build projects varies a lot from one municipality to the next. But here are a few ideas.

- Public works departments' essential repaving and repair projects are great opportunities to put in quick-build projects at low cost.
- Local and regional funds such as general fund, sales tax revenue, and Air Quality Management District funds can be used for quick-build projects.
- Tack on costs to another publicly-funded transportation project, or even a private project. For example, a development project that is required to repave and stripe new bike lanes might install a protected bike lane using quick-build materials instead.
- In 2020, the **Active Transportation Program** piloted a special quick-turnaround funding pot for quick-build projects, with an earlier (summer) deadline. Keep an eye on the ATP to see if they continue to offer this funding in future years. CalBike will be pushing them to do so.
- PeopleForBikes has a **small grant program** for infrastructure projects.
- AARP's **Community Challenge grant** could fund a quick-build project.

This resource was prepared in partnership with Alta Planning + Design. For more information see our complete **Quick-Build Guide**.

CALIFORNIA BICYCLE COALITION

APPENDIX D

Bike Parking Guidance

Safe Routes to School Walk Audit Report and Active Transportation Action Plan

ESSENTIALS OF

BIKE PARKING

Selecting and installing bicycle parking that works

apbp

Association of Pedestrian and Bicycle Professionals

Expertise for Active Transportation

Essentials of Bike Parking
Revision 1.0, September 2015

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Cover image: *Sign D4-3 from Standard Highway Signs, 2004 Edition, http://mutcd.fhwa.dot.gov/ser-shs_millennium_eng.htm*

APBP is an association of professionals who plan, implement and advocate for walkable and bicycle-friendly places.

Association of Pedestrian and Bicycle Professionals

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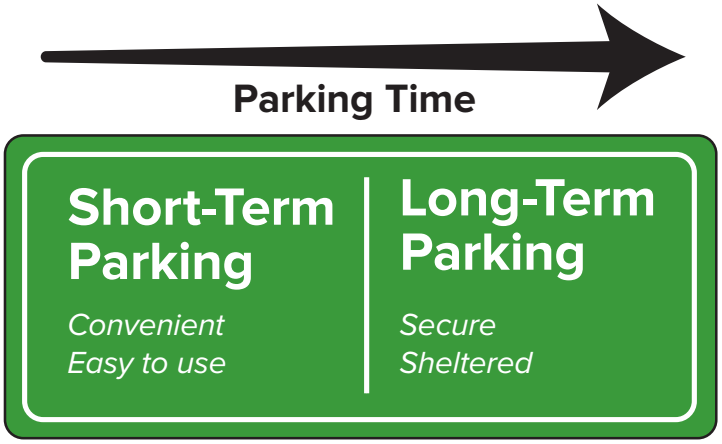
TABLE OF CONTENTS

INTRODUCTION

Among the necessary supports for bicycle transportation, bike parking stands out for being both vital and easy. Still, it requires some attention to get it right. Bike parking may go unused if it's not more appealing to users than the nearest sign post. A minor mistake in installation can make a quality rack unusable. The variety of bicycle sizes, shapes, and attachments continues to increase, and good bike parking should accommodate all types.

The Association of Pedestrian and Bicycle Professionals (APBP) prepared this guide for people planning to purchase or install bike parking fixtures on a limited scale. It is a brief overview of APBP's comprehensive *Bicycle Parking Guidelines* handbook, available at www.apbp.org.

This guide divides bike parking into short-term and long-term installations. These two kinds of parking serve different needs, and the starting point for most bike parking projects is recognizing whether the installation should serve short-term users, long-term users, or both. If users will typically be parking for two hours or longer, they are likely to value security and shelter above the convenience and ease that should characterize short-term parking.



SHORT-TERM PARKING

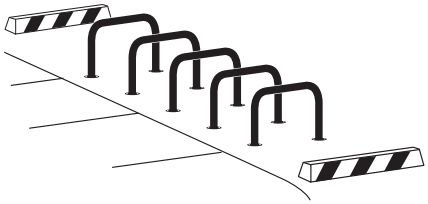
Effective bike parking for short-term users depends on two main factors: 1) proximity to the destination and 2) ease of use.

Short-term parking is designed to meet the needs of people visiting businesses and institutions, and others with similar needs—typically lasting up to two hours. Short-term users may be infrequent visitors to a location, so the parking installation needs to be readily visible and self-explanatory.

INVERTED U

POST & RING

CORRAL



SITE PLANNING

Location

Short-term bike parking should be visible from and close to the entrance it serves—50' or less is a good benchmark. Weather-protected parking makes bicycle transportation more viable for daily and year-round use, and it can reduce the motivation for users to bring wet bicycles into buildings. Area lighting is important for any location likely to see use outside of daylight hours.

Security

All racks must be sturdy and well-anchored, but location determines the security of short-term parking as much as any other factor. Users seek out parking that is visible to the public, and they particularly value racks that can be seen from within the destination. Areas with high incidence of bicycle theft may justify specific security features such as specialty racks, tamper-proof mounting techniques, or active surveillance.

Quantity

Many jurisdictions have ordinances governing bike parking quantity. APBP's full *Bicycle Parking Guidelines* offers complete recommendations for the amount and type of parking required in various contexts. In the absence of requirements, it's okay to start small—but bear in mind that perceived demand may be lower than the demand that develops once quality parking appears.

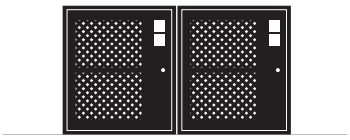
BIKE CORRALS

Some cities with limited sidewalk space and strong bicycle activity place bike parking in on-street "bike corrals" located in the street area adjacent to the curb. Bike corrals can sometimes make use of on-street areas that are unsuitable for auto parking. When replacing a single auto parking space, a corral can generally fit 8 to 12 bicycles. APBP's full *Bicycle Parking Guidelines* provides details about designing and siting bike corrals. **apbp.org**

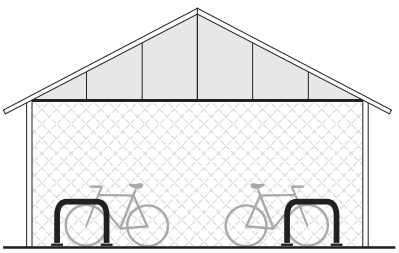
LONG-TERM PARKING

Users of long-term parking generally place high value on security and weather protection. Long-term parking is designed to meet the needs of employees, residents, public transit users, and others with similar needs. These users typically park either at home or at a routine destination such as a workplace. They often leave their bicycles unmonitored for a period of several hours or longer, so they require security and weather protection that let them park without unreasonable concern for loss or damage.

Long-term parking can take a variety of forms, including a room within a residential building or workplace, a secure enclosure within a parking garage, or a cluster of bike lockers at a transit center. Some long-term parking is open to the public—such as a staffed secure enclosure at a transit hub—and some of it is on private property with access limited to employees, residents, or other defined user groups.



BIKE LOCKERS



SHELTERED SECURE ENCLOSURE

SITE PLANNING

Location

Appropriate locations for long-term parking vary with context. Long-term parking users are typically willing to trade a degree of convenience for weather protection and increased security. Long-term installations emphasize physical security above public visibility. Signage may be needed for first-time users.

Security

Security is paramount for quality long-term parking. Access to parked bicycles can be limited individually (as with lockers) or in groups (as with locked bike rooms or other secure enclosures). Options for access control include user-supplied locks, keys, smart cards, and other technologies.

Quantity

Refer to local ordinances or the comprehensive APBP *Bicycle Parking Guidelines* to determine the amount and type of parking required for various contexts.

SPECIAL CONSIDERATIONS FOR LONG-TERM PARKING

In many ways, short-term and long-term parking function similarly and are served by the same guidelines. Some exceptions are noted below.

Density

The competition of uses for high-security and sheltered locations creates particular pressure on long-term parking to fit more bicycles in less space. When parking needs cannot be met with standard racks and spacing recommended in this guide, consider rack systems designed to increase parking density. See the high-density racks table on page 7. Note that increasing density without careful attention to user needs can create parking that excludes people because of age, ability, or bicycle type. This may result in people parking bicycles in other less desirable places or choosing not to bike at all.

Bicycle design variety

Long-term parking facilities should anticipate the presence of a variety of bicycles and accessories, including—depending on context—recumbents, trailers, children's bikes, long-tails, and others. To accommodate trailers and long bikes, a portion of the racks should be on the ground and should have an additional 36" of in-line clearance.

Performance criteria

The bike rack criteria in the next section apply to racks used in any installation, regardless of its purpose. Long-term installations often use lockers and group enclosures not discussed in this guide. Such equipment raises additional considerations that are discussed in detail in APBP's full *Bicycle Parking Guidelines*. **apbp.org**

INSTALLATION

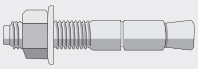
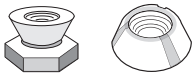
Selecting an appropriate installation surface and technique is key to creating bicycle parking that remains secure and attractive over time.

INSTALLATION SURFACE

A sturdy concrete pad is an ideal surface for installing bicycle parking. Other surfaces often encountered include asphalt, pavers, and soft surfaces such as earth or mulch. These surfaces can accommodate in-ground mounting or freestanding bike racks such as inverted-U racks mounted to rails. See APBP's *Bicycle Parking Guidelines* for details. **apbp.org**

INSTALLATION FASTENERS

When installing racks on existing concrete, consider the location and select appropriate fasteners. Drill any holes at least three inches from concrete edges or joints. Some locations benefit from security fasteners such as concrete spikes or tamper-resistant nuts on wedge anchors. Asphalt is too soft to hold wedge and spike anchors designed for use in concrete. Installing bike parking on asphalt typically requires freestanding racks and anchor techniques specific to asphalt.

FASTENERS		
CONCRETE SPIKE		Installs quickly in concrete with a hammer. Tamper-resistant. Removal may damage concrete and/or rack.
CONCRETE WEDGE ANCHOR		Allows for rack removal as needed. Not tamper-resistant, but can accommodate security nuts (below).
SECURITY NUTS		Use with concrete wedge anchors. Security nuts prevent removal with common hand tools.

INSTALLATION TECHNIQUES

When installing racks on existing concrete, choose those with a surface-mount flange and install with a hammer drill according to the specifications of the mounting hardware selected. When pouring a new concrete pad, consider bike parking fixtures designed to be embedded in the concrete. Because replacing or modifying an embedded rack is complicated and costly, this installation technique requires particular attention to location, spacing, rack quantity, and material.

BICYCLE RACK SELECTION

PERFORMANCE CRITERIA FOR BIKE PARKING RACKS

These criteria apply to any rack for short- or long-term use.

CRITERIA	DETAILS
Supports bike upright without putting stress on wheels	The rack should provide two points of contact with the frame—at least 6" apart horizontally. Or, if a rack cradles a bicycle's wheel, it must also support the frame securely at one point or more. The rack's high point should be at least 32".
Accommodates a variety of bicycles and attachments	The racks recommended on page 6 ("racks for all applications") serve nearly all common bike styles and attachments—if installed with proper clearances (see placement section). Avoid designs and spacing that restrict the length, height, or width of bicycles, attachments, or wheels.
Allows locking of frame and at least one wheel with a U-lock	A closed loop of the rack should allow a single U-lock to capture one wheel and a closed section of the bike frame. Rack tubes with a cross section larger than 2" can complicate the use of smaller U-locks.
Provides security and longevity features appropriate for the intended location	Steel and stainless steel are common and appropriate materials for most general-use racks. Use tamper-resistant mounting hardware in vulnerable locations. Rack finish must be appropriate to the location (see materials and coatings section).
Rack use is intuitive	First-time users should recognize the rack as bicycle parking and should be able to use it as intended without the need for written instructions.

RACK STYLES

The majority of manufactured bike racks fall into one of the categories on pages 6-8. Within a given style, there is wide variation among specific racks, resulting in inconsistent usability and durability. APBP recommends testing a rack before committing broadly to it.

RACKS FOR ALL APPLICATIONS

When properly designed and installed, these rack styles typically meet all performance criteria and are appropriate for use in nearly any application.

INVERTED U
also called staple, loop

Common style appropriate for many uses; two points of ground contact. Can be installed in series on rails to create a free-standing parking area in variable quantities. Available in many variations.

POST & RING

Common style appropriate for many uses; one point of ground contact. Compared to inverted-U racks, these are less prone to unintended perpendicular parking. Products exist for converting unused parking meter posts.

WHEELWELL-SECURE

Includes an element that cradles one wheel. Design and performance vary by manufacturer; typically contains bikes well, which is desirable for long-term parking and in large-scale installations (e.g. campus); accommodates fewer bicycle types and attachments than the two styles above.

This guide analyzes the most common styles of bike racks, but it is not exhaustive. Use the performance criteria on page 5 to evaluate rack styles not mentioned. Custom and artistic racks can contribute to site identity and appearance, but take care that such racks don't emphasize appearance over function or durability.

HIGH-DENSITY RACKS

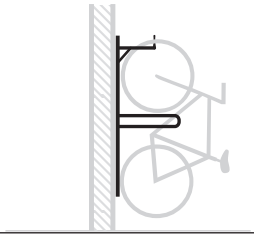
These rack styles do not meet all performance criteria but may be appropriate in certain constrained situations.

High-density rack systems can maximize the use of limited parking space, but they don't work for all users or bicycles. If installing these racks, reserve additional parking that accommodates bicycles with both wheels on the ground for users who are not able to lift a bicycle or operate a two-tier rack, or for bikes that are not compatible with two-tier or vertical racks.

STAGGERED WHEELWELL-SECURE

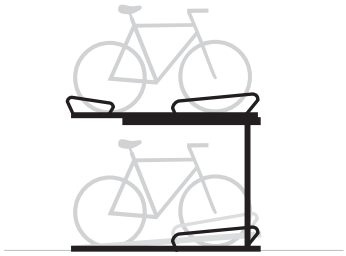
Variation of the wheelwell-secure rack designed to stagger handlebars vertically or horizontally to increase parking density. Reduces usability and limits kinds of bikes accommodated, but contains bikes well and aids in fitting more parking in constrained spaces.

VERTICAL



Typically used for high-density indoor parking. Not accessible to all users or all bikes, but can be used in combination with on-ground parking to increase overall parking density. Creates safety concerns not inherent to on-ground parking.

TWO-TIER



Typically used for high-density indoor parking. Performance varies widely. Models for public use include lift assist for upper-tier parking. Recommend testing before purchasing. Creates safety concerns not inherent to on-ground parking, and requires maintenance for moving parts.

RACKS TO AVOID

Because of performance concerns, APBP recommends selecting other racks instead of these.

WAVE
also called undulating or serpentine

Not intuitive or user-friendly; real-world use of this style often falls short of expectations; supports bike frame at only one location when used as intended.

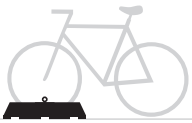
SCHOOLYARD
also called comb, grid

Does not allow locking of frame and can lead to wheel damage. Inappropriate for most public uses, but useful for temporary attended bike storage at events and in locations with no theft concerns. Sometimes preferred by recreational riders, who may travel without locks and tend to monitor their bikes while parked.

COATHANGER

This style has a top bar that limits the types of bikes it can accommodate.

WHEELWELL



Racks that cradle bicycles with only a wheelwell do not provide suitable security, pose a tripping hazard, and can lead to wheel damage.

BOLLARD

This style typically does not appropriately support a bike's frame at two separate locations.

SPIRAL

Despite possible aesthetic appeal, spiral racks have functional downsides related to access, real-world use, and the need to lift a wheel to park.

SWING ARM SECURED

These racks are intended to capture a bike's frame and both wheels with a pivoting arm. In practice, they accommodate only limited bike types and have moving parts that create unneeded complications.

RACK MATERIALS & COATINGS

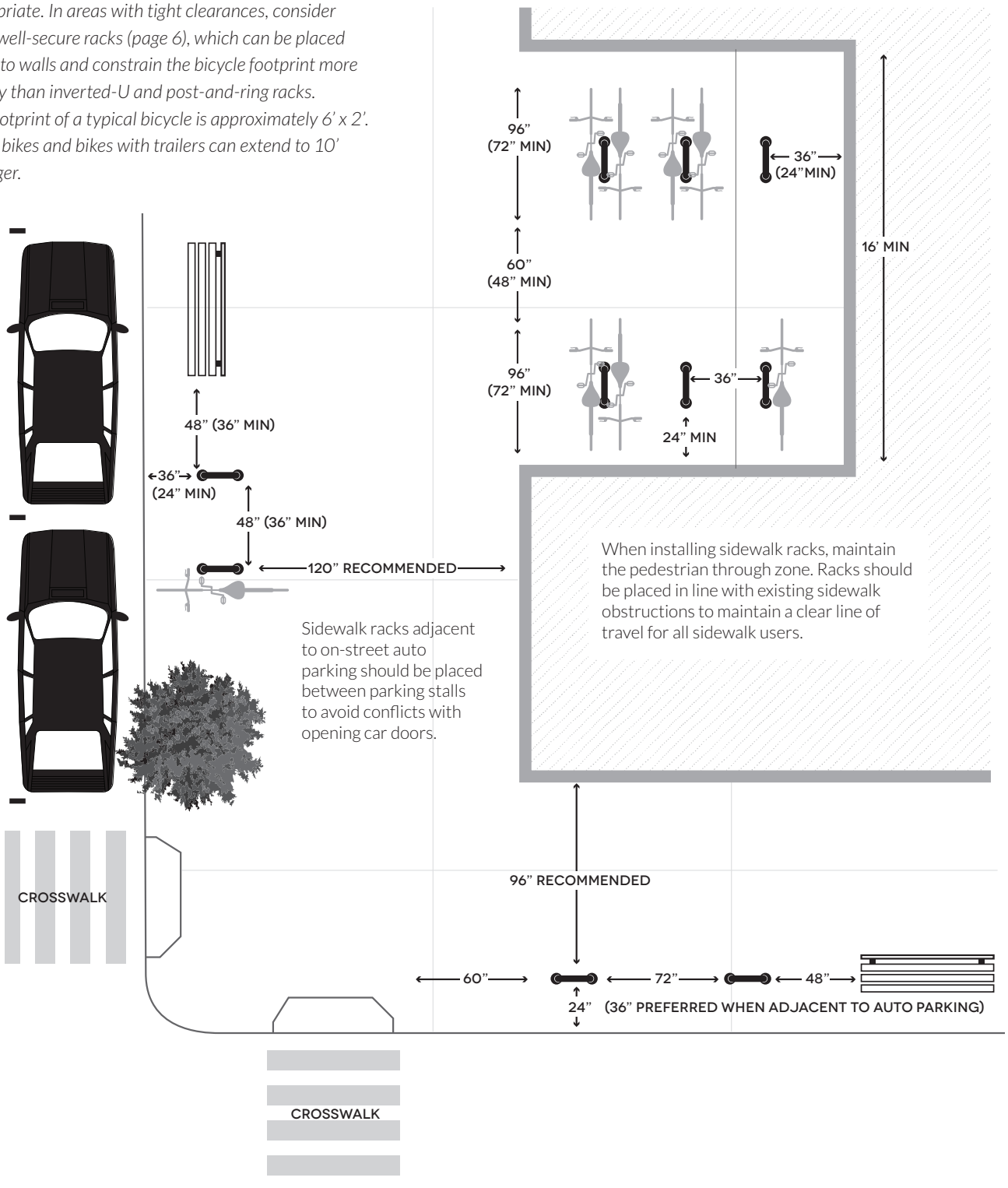
Most bicycle parking racks are made of carbon steel or stainless steel. Carbon steel requires a surface coating to resist rust while appropriate grades of stainless steel need no coating. Not all materials and coatings with the same name perform equally. Square tubing provides a security advantage as round tubing can be cut quietly with a hand-held pipe cutter. Before purchasing racks, talk to suppliers about your particular conditions and choose a material and coating that suit your needs. The following are common choices, depending on local considerations and preferences.

RACK MATERIAL – COATING	RELATIVE PURCHASE COST	DURABILITY	CAUTIONS
Carbon steel - galvanized	Usually lowest	Highly durable and low-maintenance; touch-up, if required, is easy and blends seamlessly	Utilitarian appearance; can be slightly rough to the touch
Carbon steel - powder coat* (TGIC or similar)	Generally marginally higher than galvanized	Poor durability	Requires ongoing maintenance; generally not durable enough for long service exposed to weather; not durable enough for large-scale public installations
Carbon steel - thermoplastic	Intermediate	Good durability	Appearance degrades over time with scratches and wear; not as durable as galvanized or stainless
Stainless steel - no coating needed, but may be machined for appearance	Highest	Low-maintenance and highest durability; most resistant to cutting	Can be a target for theft because of salvage value; maintaining appearance can be difficult in some locations

** When applied to carbon steel, TGIC powder coat should be applied over a zinc-rich primer or galvanization to prevent the spread of rust beneath the surface or at nicks in the finish.*

PLACEMENT

The following minimum spacing requirements apply to some common installations of fixtures like inverted-U or post-and-ring racks that park one bicycle roughly centered on each side of the rack. Recommended clearances are given first, with minimums in parentheses where appropriate. In areas with tight clearances, consider wheelwell-secure racks (page 6), which can be placed closer to walls and constrain the bicycle footprint more reliably than inverted-U and post-and-ring racks. The footprint of a typical bicycle is approximately 6' x 2'. Cargo bikes and bikes with trailers can extend to 10' or longer.



APPENDIX E

Recommendation
Cost Range Estimates

Safe Routes to School Walk Audit Report and Active Transportation Action Plan

Appendix E: Recommendation Cost Range Estimates

Cost estimate was one of many factors considered when prioritizing recommendations for Napa County Safe Routes to School Walk Audit reports. Recommendations in which a high cost estimate would considerably delay implementation of the recommendation may have been given a lower priority level in order to prioritize recommendations that are lower cost and therefore more likely to be installed more quickly. Cost was considered on a high-level scale; real cost ranges of recommendations may differ from cost range estimates included in Walk Audit reports.

Cost range estimates for Safe Routes to School Walk Audit recommendations are as follows:

$	< $25,000
$$	Between $25,000 and $250,000
$$$	$250,000 to $1 million
$$$$	> $1 million

APPENDIX F

Next Steps

Safe Routes to School Walk Audit Report and Active Transportation Action Plan

From Recommendations to Action: Next Steps

Napa County Bicycle Coalition (NCBC) has concluded the final task under the Napa County Safe Routes to School Program in coordination with the Napa County Office of Education, funded under the One Bay Area Grant and the Active Transportation Program.

Evaluation of active transportation barriers at school sites are complete and final reports of recommendations for each school in Napa County will be published in the spring of 2022. The NCBC team is already planning the next phase of Safe Routes to School that will help bring these recommendations into reality. Supported by a "Quick Strike" grant through the Metropolitan Transportation Commission (MTC), NCBC will continue its SRTS work over the course of this next year.

NCBC SRTS Quick Strike Program Elements (2022-2023):

- Engage parents in advocating for implementing the recommendations. Hold safety summits at various school sites that raise awareness of the recommendations and provide a forum for parents to discuss strategies and to plan next steps. Work with schools and other stakeholders to implement recommendations. Build a Safe Routes to School (SRTS) Advisory Committee, including "parent champions" from key school sites, to help guide the SRTS program into the next phase of growth and engagement and to help ensure the long-term viability of the program, providing a structure both for stakeholder feedback and input, as well as for increased local investment in future program activities.
    - Action Steps:
        - Hold up to seven safety summits at various school sites
        - Form SRTS advisory committee
- Provide education and encouragement programming at elementary and middle schools that includes bike rodeos throughout the year, Bike Month (and Bike to School Day) in the spring, and Walk and Roll to School Day in the fall. This programming aims to increase the number of students who walk or bike to school and to ensure that, as barriers are removed and facilities are improved, youth have the skills and confidence to take advantage of improvements.
    - Action Steps:
        - Hold up to 14 Bike Rodeos at elementary and middle schools
        - Provide outreach and support for Walk and Roll to School Day and Bike Month activities at up to seven school sites
        - Support local Agricultural & Hospitality Industry workers with bicycle safety education
- Conduct community-based safety education programming that reaches identified populations of concern. Through bilingual Family Biking Workshops, community rides in partnership with other local organizations, and safety education outreach to agricultural

and hospitality workers, NCBC will tailor our programming to help engage the full spectrum of our community.

    - Action Steps:
        - Conduct up to nine bilingual Family Biking Workshops
        - Conduct up to six community events and rides

- Secure future funding for the Safe Routes to School Partnership (SRTS). We believe that every student should be able to safely walk or ride a bike to school. The SRTS program provides vital safety education, encouragement, and community engagement programs to thousands of students annually while advocating for facilities that make active transportation safe and accessible. SRTS will be a key force in helping to make the Walk Audit recommendations a reality. Napa County is one of the only counties in the region that lacks dedicated, long-term funding for these programs and efforts, and without that support implementing the recommendations will face more barriers.
    - Action Steps:
        - Apply for competitive and discretionary grant funding
        - Seek funding support from jurisdictions
        - Seek funding support from community health
        - Provide annual program reports to stakeholders