Walk Audit Report

SafeRoutes
Napa County

ALTA HEIGHTS
ELEMENTARY SCHOOL

ALTA HEIGHTS ELEMENTARY SCHOOL

15 MONTECITO BOULEVARD NAPA, CA

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

NAPA COUNTY SAFE ROUTES TO SCHOOL PROGRAM

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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.

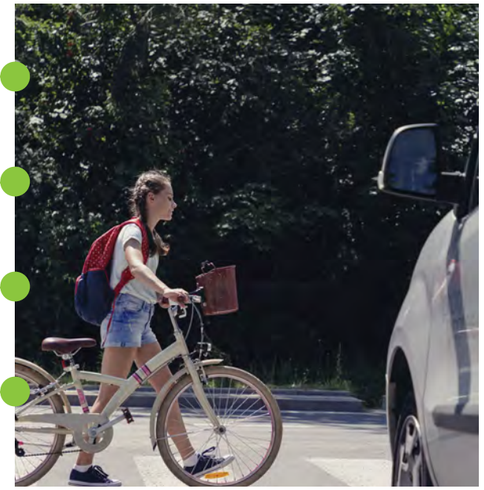
Schools and the community benefit immensely when students choose to walk or bike.

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.

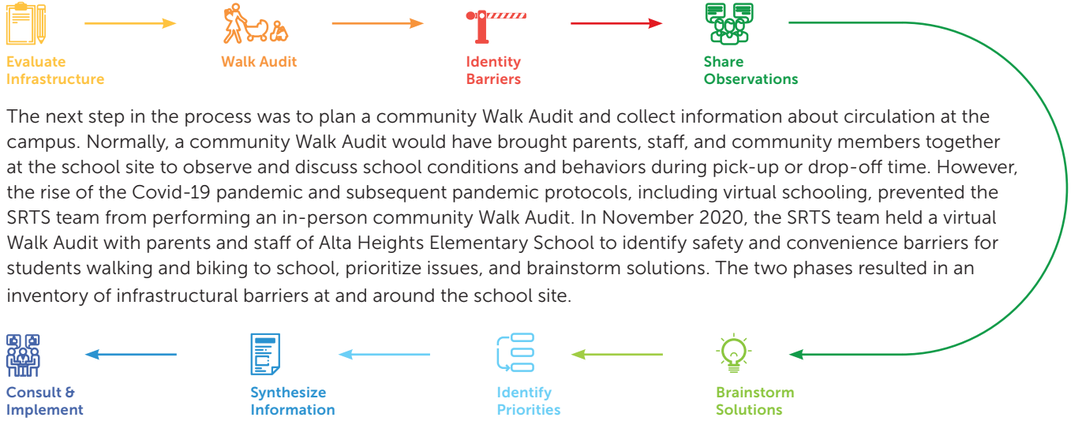
Education
Ensure that everyone learns how to travel safely and why biking and walking are important.

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 Alta Heights 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.



The next step in the process was to plan a community Walk Audit and collect information about circulation at the campus. Normally, a community Walk Audit would have brought parents, staff, and community members together at the school site to observe and discuss school conditions and behaviors during pick-up or drop-off time. However, the rise of the Covid-19 pandemic and subsequent pandemic protocols, including virtual schooling, prevented the SRTS team from performing an in-person community Walk Audit. In November 2020, the SRTS team held a virtual Walk Audit with parents and staff of Alta Heights Elementary School to identify safety and convenience barriers for students walking and biking to school, prioritize issues, and brainstorm solutions. The two phases resulted in an inventory of infrastructural barriers at and around the school site.

A report draft was shared with the Napa Valley Transportation Authority, the Napa County Office of Education, public works and planning representatives from the City of Napa, the local school district, law enforcement, 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.

ALTA HEIGHTS ELEMENTARY SCHOOL
SCHOOL SUMMARY

Principal	Kirsten Gerhardt (previous) Ted Ward (current)
First Bell	8:05 AM
Last Bell	2:35 PM (12:45 pm on Wednesdays)
District	Napa Valley Unified

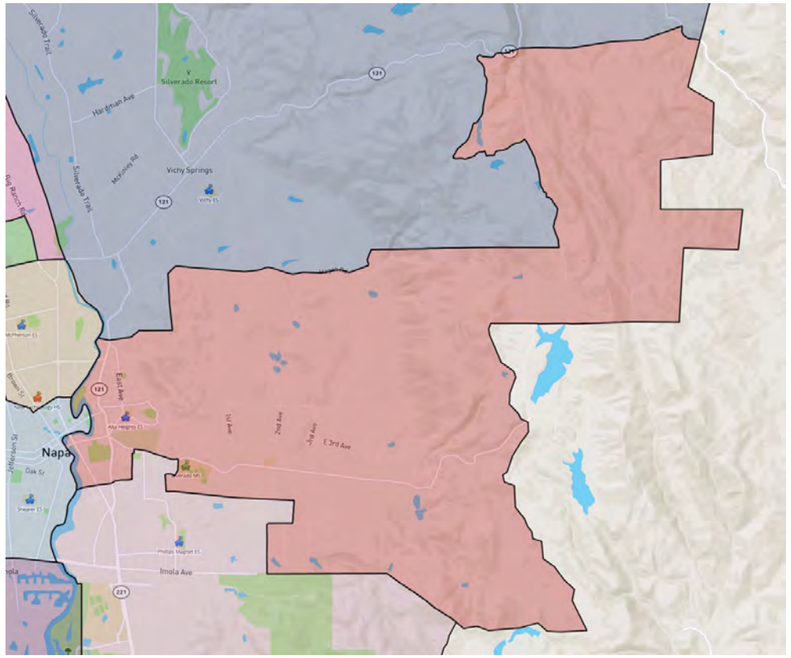
Grades	K-5
Enrollment	287
Street	15 Montecito Boulevard
City	Napa, CA 94559

Overall Facility Rating[j]: Good

While NVUSD has an open enrollment policy, Alta Heights' default enrollment area covers portions of southeast and southcentral Napa, including a large unincorporated portion of Napa County to the east. In the City, it is bordered by the Napa River to the west, Ashtar Drive to the north, and Sousa Lane and Coombsville Road to the south.

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), 63.4% of students attending Alta Heights Elementary reside outside of the school's enrollment boundary.



Map 1: The enrollment boundaries (shaded red) Alta Heights Elementary School (blue school icon).

DATA

No data is currently available regarding the number of students who walk and bike to school at Alta Heights Elementary School. Additional work is needed to establish a baseline of 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.

Total Enrollment by Group (2019-20)

ETHNICITY	ALTA HEIGHTS ELEMENTARY SCHOOL	DISTRICT
Black or African American	0.3%	2.1%
Asian	1.0%	2.4%
Filipino	0.3%	6.9%
Hispanic or Latino	43.2%	55.6%
Native Hawaiian or Pacific Islander	0.3%	0.2%
White	49.5%	28.4%
Two or More Races	4.9%	4.0%
EXPERIENCE		
Socioeconomically Disadvantaged	46.0%	51.2%
English Learners	22.3%	20.5%
Students with Disabilities	9.4%	12.5%
Foster Youth	0.3%	0.4%
Homeless	1.0%	1.1%

Figure 2: Enrollment Data by Group

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

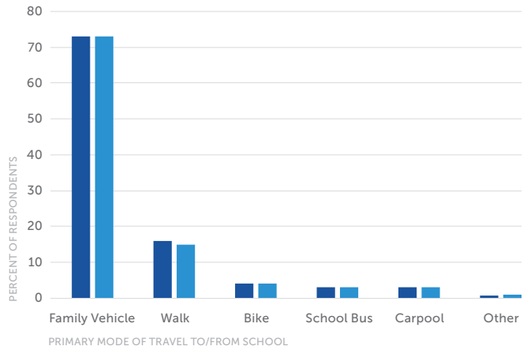


Figure 1: EMC Research Polling Results

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	64
Grade 1	46
Grade 2	42
Grade 3	45
Grade 4	43
Grade 5	47
Total	**287**

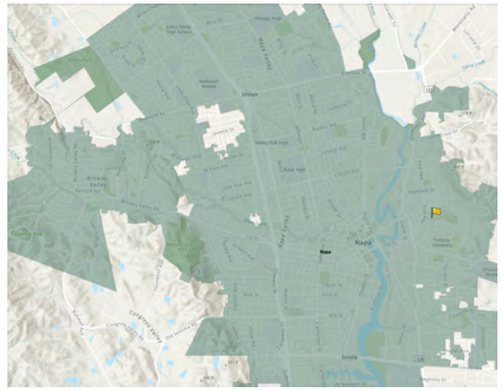
Figure 3: Enrollment Data by Grade

NEIGHBORHOOD CONTEXT

Alta Heights Elementary School is located in the Alta Heights neighborhood in east Napa. The neighborhood stretches from the Napa River east up into the hills. Many of the streets are steep, especially farther east approaching the hill. The school is located along East Avenue between Montecito Boulevard to the south and East 1st Street to the north.

The neighborhood around the school is mostly single-family residences, with some multi-family residential buildings southwest on East Avenue. To the hills in the east, the neighborhoods become more sprawling and less dense. The streets to the north are a mix of grid and fragmented parallel street patterns, with some dead-end streets. East of the school is Lakeside Park, a city park featuring a walking trail accessible from Lakeview Drive. To the south is a small neighborhood of single- and multi-family housing, a preschool, and Tulocay Cemetary.

East Avenue is the main corridor used to access the school. It is a north-south collector that connects to the south to Silverado Trail and Coombsville Road. To the north along East Avenue is Esther Deaver Park, a small neighborhood park. East Avenue also connects to Clark Street and Lincoln Avenue, a main east-west arterial. First Street is located two blocks north of the school. It connects to Silverado Trail and to the Oxbow District and downtown Napa, two large commercial districts. There are also commercial districts located along Silverado Trail near the school.



Map 2: Alta Heights Elementary School (marked by a yellow flag) is located in east Napa.

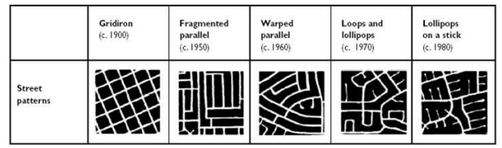
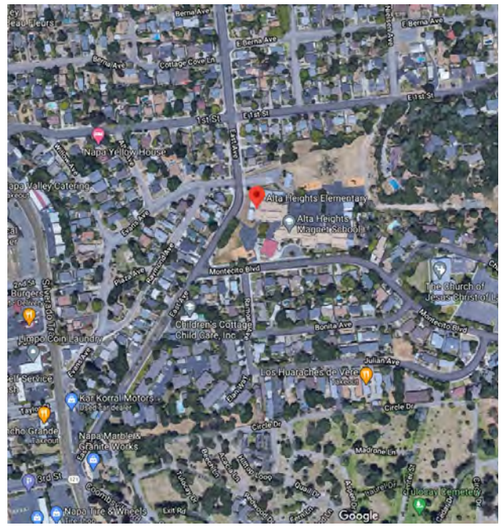


Figure 4: Street Patterns (Source: Southworth, 1997)



Alta Heights Elementary School is surrounded primarily by residences and Lakeview Park to the east.

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

Alta Heights Elementary School's main entrance is on Montecito Boulevard, but the school can also be accessed along East Avenue and East 1st Street.

On the south side of the campus there is a one-way loop in front of the main campus entrance on Montecito Boulevard with two ADA-accessible parking stalls and one regular parking stall. At the time of the Walk Audit activity, school stakeholders reported that motorists use this loop as a student loading zone. A sidewalk connecting to Montecito Boulevard runs along the west and north side of this circulation loop, but does not connect to the sidewalk on the east side. There is a second entrance to campus on Montecito just east of the circulation loop down a flight of stairs.

There are two asphalt pedestrian paths leading to campus from the northbound East Avenue sidewalk. Northbound East Avenue is marked with signage and white painted curbs to indicate a 3-minute loading zone time limit during school hours. The school has a parking lot on the northwest edge of the campus at the East Avenue and Evans Avenue intersection, with 13 parking stalls reserved for staff members only. The school has communicated to families that this parking lot is for staff parking only, and is not to be used for student loading. Given the presence of the motorist loading zone, the parking lot, and pedestrian access to campus, East Avenue is highly-travelled by school-related traffic.

The front of Alta Heights Elementary School on Montecito Boulevard.

The circulation loop in front of Alta Height's front entrance to campus.

East Avenue provides pedestrian access to campus (left) and is also used as a loading zone (right).

The back entrance to campus on East 1st Street.

Bus service through NVUSD is not available for Alta Heights Elementary students. However, 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, operated by the Napa Valley Transportation Authority, does not provide service in the area.

On East 1st Street is a back entrance to campus along an asphalt path that connects to the school's blacktop. A gate blocks this entrance from vehicle access. Many students from the neighborhoods north of the school use this entrance to avoid East Avenue traffic during peak school and commute hours.

The school does not provide any information on their website regarding a pick-up/drop-off policy, but it does provide direction on how students who walk to school should do so.

WALKING TO AND FROM SCHOOL

Students walking to school should walk on the sidewalk and cross streets at marked crossings and intersections where possible.

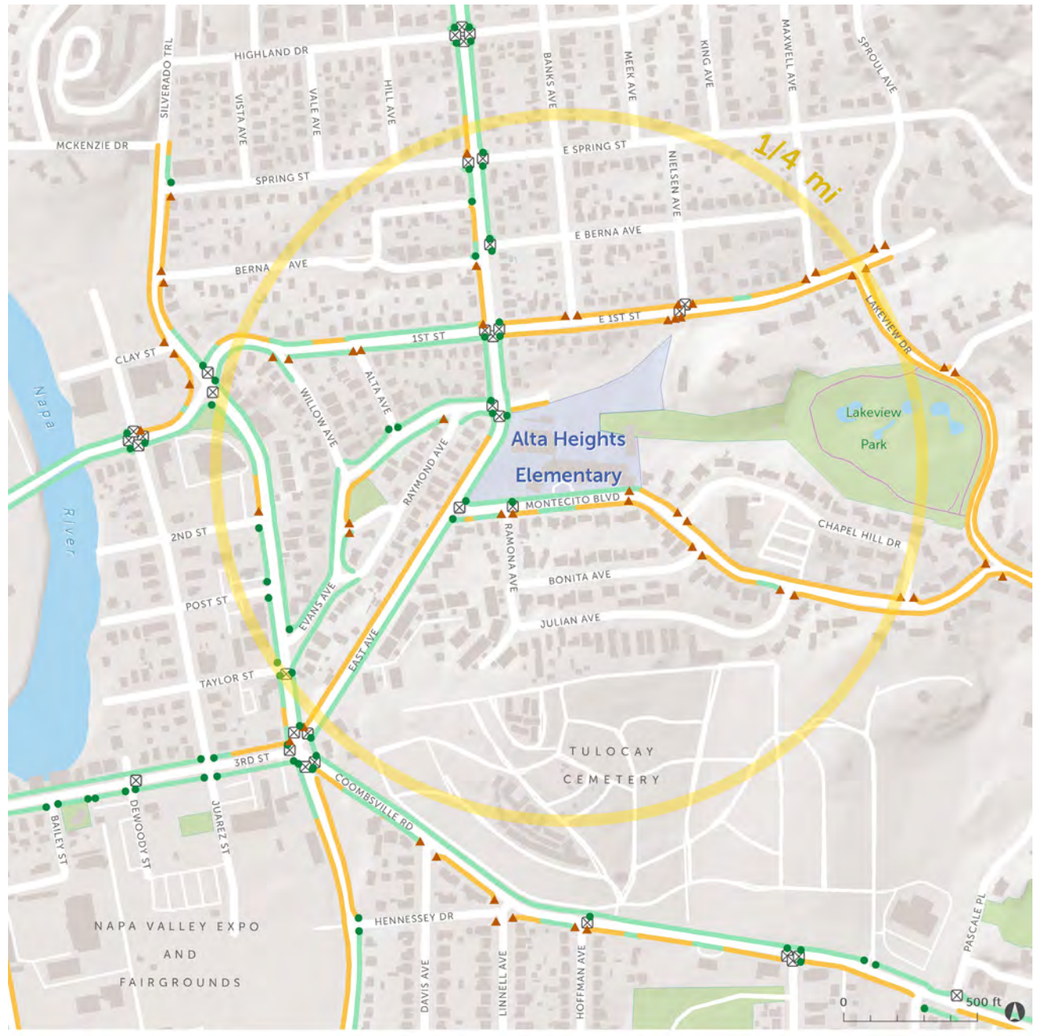
BICYCLE AND PEDESTRIAN INFRASTRUCTURE

Alta Heights Elementary School provides bike parking on campus for students. There is one grid rack on the north end of campus, and another rack on the south end, east of the loading zone near the stairway entrance, totaling roughly 28 bike parking spaces.

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

Alta Heights Elementary School has regularly participated in annual countywide encouragement events such as Bike to School Day and Walk and Roll to School Day. Bike to School Day and Walk and Roll to School Day are annual encouragement events facilitated by Napa County Safe Routes to School in the spring and fall, respectively, that celebrate students making the healthy choice to walk or bike to school. The school has not expanded its encouragement program beyond these annual events.

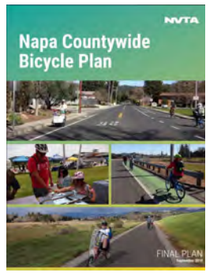
The school has also provided some bike safety education to students in the form of bike rodeos led by the Napa County Safe Routes to School program and one bike safety education class. Bike rodeos are mainly on-bike lessons where students learn the rules of the road by navigating a roadway-designed obstacle course, and bike safety classes provide more in-depth instruction in a hybrid classroom/on-bike setting.

Walk and Roll to School Day 2018 at Alta Heights Elementary School.

YEAR	EVENT	STUDENT PARTICIPANTS
2015/16	Bike to School Day	4
2016/17	Bike Safety Class	13
2016/17	Bike Rodeo	370
2016/17	Bike to School Day	23
2018/19	Walk and Roll to School Day	53
2018/19	Bike to School Day	43
2019/20	Walk and Roll to School Day	143
2019/20	Bike Rodeo cancelled due to COVID-19	N/A

Figure 5: Encouragement and Education Data

EXISTING PLANS



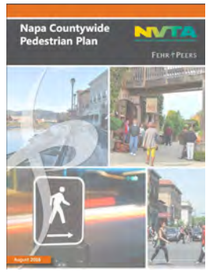
NVTA Napa Countywide Bicycle Plan (2019):

The Napa Countywide Bicycle Plan recommends adding some bicycle facilities around the school site. The Plan suggests installing a Class II bike lane along Silverado Trail and a Class III urban bikeway along First Street between Silverado Trail and East Avenue.

NVUSD Facilities Master Plan (2016):

NVUSD's Facilities Master Plan lists projects for Alta Heights Elementary School, including installing/upgrading fencing around the school perimeter, ADA improvements, and replacement of four portable classrooms with new construction.

MEASURE H
BUILDING ON OUR VISION
NVUSD



NVTA Napa Countywide Pedestrian Plan (2016):

The Napa Countywide Pedestrian Plan lists one recommended project near the school site. The 5-Way Intersection Modification includes altering the intersection alignment and enhancing crossings at the intersection at Silverado Trail, Third Street, Coombsville Road, and East Avenue.

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. One listed project, the Five-Way Intersection Modification that will redesign the intersection of Silverado Trail, Third Street, Coombsville Road, and East Avenue, will impact the school site.

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: 11/12/20
Day of the Week: Thursday

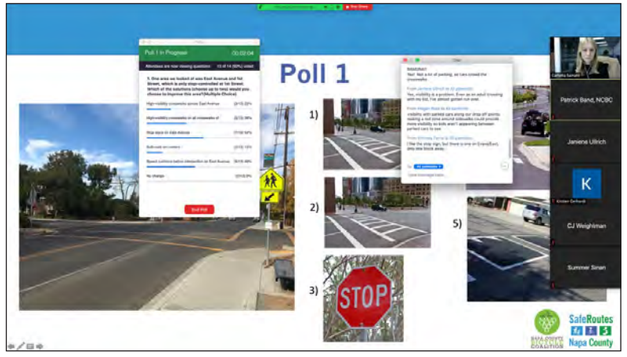
Meeting Time: 6:15 PM
Meeting Server: Zoom Webinar

METHODOLOGY

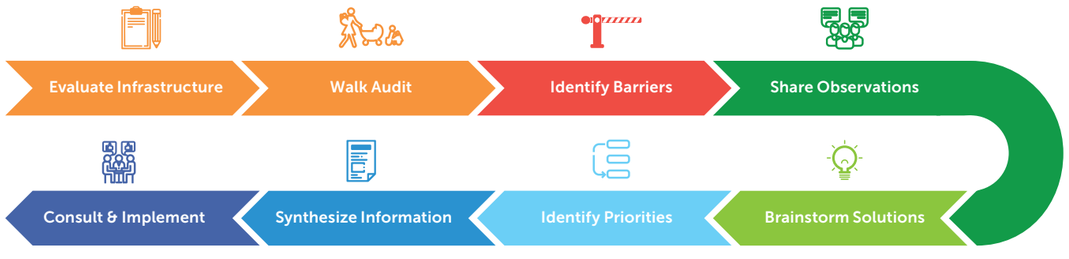
Normally, the Community Walk Audit process would bring together school stakeholders, including parents and school staff, with the SRTS team to observe existing circulation conditions during pick-up or drop-off time, identify barriers to safe walking or biking, and brainstorm solutions. During the observation period, participants would discuss the physical infrastructure around the school as well as the behavior of motorists, pedestrians, and bicyclists in the area, while also sharing their own experiences traveling to and from school on foot, bike, and by car. Following observation, the team would discuss their observations, map issue areas, and record and prioritize the major barriers identified during the exercise.

An example of a Walk Audit group from Willow Elementary School in Napa.

Due to the spread of Covid-19 in early 2020 and subsequent Shelter-in-Place mandates and social distancing guidelines, the SRTS team was unable to hold an in-person Community Walk Audit for Alta Heights Elementary School. In November 2020, the SRTS team hosted a virtual Walk Audit activity via Zoom with nine parents, the school's principal, and three school teachers. During this virtual Walk Audit, the SRTS team showed photos and videos of infrastructure at and around the school, took audience polls, and facilitated conversations with school stakeholders to identify barriers to students walking and biking to school based on usual school circulation before the pandemic.



A screenshot from the virtual Alta Heights Walk Audit



VIRTUAL WALK AUDIT FINDINGS

Most of the virtual Walk Audit was conducted through verbal conversations or comments through the chat function. SRTS staff noted stakeholder comments, which are summarized below:

- ***General***
  - In general school area, motorists fail to yield to pedestrians at intersections and rush through intersections to avoid waiting.
  - Crosswalks are not visible enough.
  - Visibility with parked cars along drop-off points.

- ***Montecito Boulevard***
  - Poor lighting (along street and in front of the school).
  - Illegal/unsafe U-turns.
  - Congestion, motorists block crosswalks.

- ***Montecito and Ramona intersection***
  - Sun can decrease pedestrian visibility.
  - Motorist speeding.

- ***East Avenue***
  - Illegal/unsafe U-turns.
  - Motorists use staff parking lot for drop-off, conflicts with pedestrians walking on East.
  - Speeding/inattentive drivers, makes crossing difficult
  - Biking feels unsafe – bicyclists use parking lane as bike lane due to lack of bicycle facilities. When cars are parked, bicyclists usually go to sidewalk.
  - Sidewalk gaps on west side.
  - Unstable surfaces (gravel, rocks).

- ***East and Montecito intersection***
  - Illegal/unsafe U-turns.

- ***East and 1st intersection***
  - Speeding, motorist failure to yield

- ***1st Street/East 1st Street corridor***
  - Sight barrier with hill that blocks view of crosswalk near Nielsen
  - Many students use East 1st back entrance
  - Speeding

- ***Silverado Trail/Coombsville/Third Street 5-Way Intersection***
  - Major concern for students in Coombsville neighborhoods

- ***Terrace Drive***
  - Missing/narrow sidewalks

- ***Silverado Trail***
  - Likely a barrier for any student who must cross Silverado Trail to get to campus

Additionally, a couple of poll questions provided some guidance as the type of treatments Walk Audit participants would be comfortable with.

POLL QUESTION 1:

One area we looked at was East Avenue and 1st Street, which is only stop-controlled at 1st Street. Which of the solutions (choose up to two) would you choose to improve this area?

- Stop signs on East Avenue: ***7 votes***
- Speed cushions before intersection on East Avenue: ***6 votes***
- High-visibility crosswalks on all crosswalks: ***5 votes***
- High-visibility crosswalks across East Avenue: ***3 votes***
- Curb extensions on corners: ***2 votes***

POLL QUESTION 2:

East Avenue is a collector road with relatively low traffic volumes (peak times likely in the morning and evening) but high speeds. To make this a bike-friendly corridor for students, which improvements would you most like to see? (Choose two)

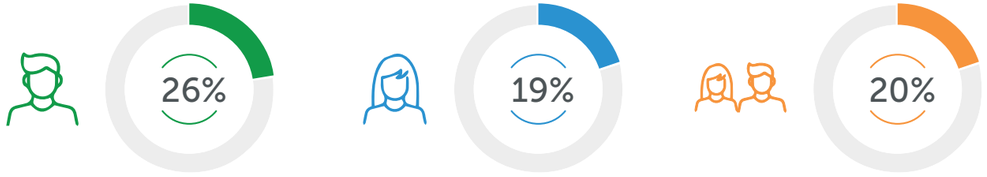
- Class II bike lanes (painted bike lanes): ***8 votes***
- Chicanes: ***4 votes***
- Speed cushions: ***3 votes***
- Class III bike boulevards (sharrow stencils on road and signage): ***2 votes***
- Raised crosswalks across East Avenue that act as speed tables: ***1 vote***
- More stop signs along East Avenue: ***1 vote***

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.

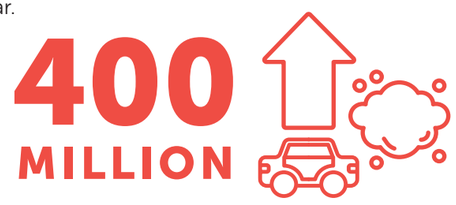


However, only about **26% of men**, **19% of women**, and **20% of adolescents** are meeting the aerobic and muscle-strengthening guidelines developed by the Department of Health. Increased walking and biking to school can help boost that percentage by incorporating physical activity into one's daily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

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.



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.

RECOMMENDATIONS #NAI-426 AND NAI-427: EAST AVENUE (NORTH SEGMENT) BIKE FACILITIES AND TRAFFIC-CALMING

Narrative – East Avenue is a north-south collector that borders the school on the west side. East Avenue intersects with the Silverado Trail at its north and south ends, and intersects with other residential streets that lead to the Silverado Trail, such as Highland Drive, Spring Street, and 1st Street. East Avenue experiences high volumes of multimodal school-related traffic, as a school loading zone, the staff parking lot, and two campus entrances are located on East Avenue. For many students who live in the neighborhoods north of the school, the northern segment of East Avenue (from Silverado Trail north to 1st Street) is along direct routes to campus, or must be crossed to access other parallel north-south streets that lead to campus, such as Banks Avenue.

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.
- ***Motorist speeding –*** Walk Audit participants identified speeding along East Avenue as a significant barrier to students walking and biking to school. East Avenue (from Silverado Trail north to 1st Street) is a long, straight corridor with no traffic-calming or traffic control, which facilitates motorist speeding.

East Avenue in front of the school, facing north.

RECOMMENDATIONS

- ***Class III bike boulevard –*** Install Class III bike boulevard with sharrows, signage, and comprehensive traffic-calming measures.
- ***Traffic-calming –*** As part of traffic-calming modifications, update intersections at Summit Avenue, Highland Drive, and Spring Street as traffic-calming opportunities with crosswalks (high-visibility across East Avenue) and curb extensions or other horizontal traffic-calming.

RECOMMENDATION #NAI-428: EAST AVENUE (SOUTH SEGMENT) BIKE FACILITIES AND TRAFFIC-CALMING

Narrative – East Avenue is a north-south collector that borders the school on the west side and intersects with the Silverado Trail at its north and south ends. East Avenue experiences high volumes of multimodal school-related traffic, as a school loading zone, the staff parking lot, and two campus entrances are located on East Avenue. All of these facilities are located between 1st Street and Montecito Boulevard, concentrating school traffic on the south segment (1st Street to Silverado Trail south) during arrival and dismissal times. Additionally, Montecito Boulevard intersects with East Avenue in this southern segment, so many students and families travelling to the Montecito school entrances must navigate this area of East Avenue.

IDENTIFIED BARRIERS

- ***Motorist speeding –*** Walk Audit participants identified speeding along East Avenue as a significant barrier to students walking and biking to school. East Avenue (from 1st Street to Silverado Trail south) is a long, straight corridor with no traffic-calming and little traffic control, which facilitates motorist speeding.
- ***No bicycle facilities/high-stress bicycle facilities –*** From 1st Street to Montecito Boulevard, there are no bicycle facilities. From Montecito Boulevard to Silverado Trail/Third Street, there is only a southbound bike lane, which is faded, obstructed by trash bins, and high-stress adjacent to high volumes of traffic and speeding traffic.

East Avenue south of the school, facing north.

RECOMMENDATIONS

- ***Traffic-calming and bicycle facilities –*** Due to the limited Right of Way along this segment, multiple stakeholders, and elevation challenges, specific recommendations for traffic-calming and bicycle facilities require additional study. Identify and implement opportunities to calm traffic and enhance bicycle facilities by reducing traffic speeds and improving separation of users, with focus on achieving low-stress bicyclist/pedestrian area for elementary school students.

RECOMMENDATION #NAI-431: EAST AVENUE AND MONTECITO BOULEVARD INTERSECTION

Narrative – The East Avenue and Montecito Boulevard intersection is located at the southwest corner of the school block, and plays a key role in arrival and dismissal time circulation. The front entrance to the school, as well as a second entrance nearby, and the school loading loop are located on Montecito Boulevard. While there are some residential areas east of the school that can access Montecito Boulevard from the east side, most residences in the school's enrollment boundaries require students and families to navigate the Montecito and East intersection to reach Montecito entrances.

IDENTIFIED BARRIERS

- ***Intersection geometry –*** The skewed intersection geometry creates extremely wide curb radii and long crossing distance (up to 80'), which reduces pedestrian visibility and can lead to poor motorist yielding behavior and fast motorist turning movements through the intersection. The width of the westbound lane allows right-turning vehicles to sneak up to the intersection and often into the crosswalk with obstructed visibility from left-turning traffic.
- ***Low-visibility crosswalk –*** The existing crosswalk is painted with a standard, parallel line pattern despite being in a highly-travelled school zone.

The East and Montecito intersection, facing East Ave.

- ***Minimal/missing red zones –*** Minimal/missing red zones in the intersection allow motorists to park close to the intersection and obstruct pedestrian visibility.

RECOMMENDATIONS

- ***Curb extensions –*** Install curb extensions on both curbs of the Montecito crosswalk to square up the intersection, reduce crossing distances and curb radii, and limit potential for multiple rows of westbound traffic queueing at intersection. Crossing distance can also be reduced with pedestrian refuge island.
- ***High-visibility crosswalk –*** Upgrade the existing crosswalk to a high-visibility school-zone pattern to improve pedestrian visibility and motorist yielding behavior.

RECOMMENDATION #NAI-432: EAST AVENUE AND 1ST STREET INTERSECTION

Narrative – The East Avenue and 1st Street intersection is an intersection of two collectors, though 1st Street becomes an arterial west of the Silverado Trail. As described in the narratives for the East Avenue corridor, East Avenue is highly travelled by school-related traffic due to its access points and school facilities as well as its connectivity to other important access streets to the school, such as Montecito Boulevard. East 1st Street is one of those access streets, as the school's back entrance is located on East 1st Street near Nielsen Avenue. As a result, the East and 1st intersection experiences high volumes of traffic during school arrival and dismissal times.

IDENTIFIED BARRIERS

- ***Uncontrolled East Ave traffic –*** East Avenue, which experiences high volumes of traffic during school arrival and dismissal and frequent motorist speeding, is uncontrolled at this intersection, facilitating motorists approaching the intersection without slowing down and reducing motorist yielding behavior.
- ***Poor motorist yielding –*** Walk Audit participants reported poor motorist yielding behavior at this intersection to be a barrier to students walking and biking to school.
- ***Low pedestrian visibility –*** East Avenue motorists who do not slow down approaching the uncontrolled intersection have reduced range of vision and are less likely to see pedestrians waiting. Additionally, the crosswalks are painted with a standard, parallel line crosswalk pattern despite being in a highly-travelled school zone.


The East and 1st intersection, facing north.

- ***Missing red zones –*** Missing red zones in the intersection allow motorists to park close to the intersection and obstruct pedestrian visibility.

RECOMMENDATIONS

- ***High-visibility crosswalks –*** Paint high-visibility school-zone pattern crosswalks on all legs of the intersection to improve pedestrian visibility and motorist yielding behavior.
- ***Curb extensions –*** Install curb extensions on all corners of the intersection to improve pedestrian visibility and motorist yielding behavior and slow motorists through the intersection.
- ***Consider all-way stop –*** Consider implementation of All-Way Stop Control at the intersection given the vicinity to the school.

RECOMMENDATION #NAI-433: EAST AVENUE AND EVANS AVENUE INTERSECTION

Narrative – The East and Evans intersection, just one block south of the East and First intersection, was identified by Walk Audit participants as a conflict-risk area. As one of the few stop-controlled crosswalks across East Avenue in the school area, this is common pedestrian route to campus. Additionally, the East Avenue loading zone is located immediately south of this intersection, so many motorists navigate the intersection during arrival and dismissal. The entrance to the staff parking lot is also on the east side of this intersection, which motorists use to drop off and pick up students, despite this use of the lot being prohibited. Consequently, there is a lot of motorist and pedestrian activity throughout this intersection during school arrival and dismissal times.

IDENTIFIED BARRIERS

- ***Low-visibility crosswalk –*** The existing crosswalks are painted with a standard, parallel line pattern despite being in a highly-travelled school zone.
- ***Poor motorist yielding –*** Walk Audit participants reported poor motorist yielding behavior at this intersection to be a barrier to students walking and biking to school.
- ***Missing red zones/ADA spot –*** Missing red zones in the intersection and the placement of the ADA-accessible parking space immediately adjacent to the crosswalk allow motorists to park next to the intersection and obstruct pedestrian visibility.

East and Evans intersection, facing north.

RECOMMENDATIONS

- ***High-visibility crosswalks –*** Upgrade the existing crosswalks to a high-visibility school-zone pattern to improve pedestrian visibility and motorist yielding behavior.
- ***Curb extensions –*** Install curb extensions on all crosswalk curbs to improve pedestrian visibility and motorist yielding behavior and prevent motorists from parking next to crosswalks. This will require relocation of the ADA-accessible space on northbound East Avenue.

RECOMMENDATION #NAP-069: GROUP ENCOURAGEMENT PROGRAMS

Narrative – Vehicle congestion in the school zone can be a significant barrier to students walking and biking to school, especially when paired with bicycle and pedestrian infrastructure gaps. While infrastructure recommendations are underway, establishing group encouragement programs, such as walking school buses, bike trains, or carpool networks, can help reduce the number of vehicles in the school zone while improving road user comfort by establishing a greater bicyclist/pedestrian road presence through numbers and providing adult supervision that can be a shared responsibility amongst families.

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. Walk Audit participants discussed congestion as a barrier specifically on Montecito Boulevard, East Avenue, and 1st Street/East 1st Street, in addition to behaviors by impatient motorists in congested traffic (blocking sidewalks, failure to yield, etc.).

RECOMMENDATIONS

- ***Walking bus/bike train/carpool program –*** Develop a walking school bus/bike train program to increase the number of students who walk and bike to school while improving sense of safety by forming an adult-supervised group. A carpool program can also be developed to reduce the number of cars in the school zone and may be more feasible for students who live farther away.

An example of a bike train group led by parent volunteers at El Roble Elementary School in Gilroy. (Photo by Ihui Lopez, Silicon Valley Bicycle Coalition).

RECOMMENDATION #NAP-070: BICYCLE/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 –*** While Alta Heights Elementary School has provided some bicycle safety education in the past, 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 rodeos, photographed above at Willow Elementary School in 2018, are one form of bicycle safety education.

RECOMMENDATIONS #NAI-419 – NAI-421: MONTECITO BOULEVARD RECOMMENDATIONS

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.

- ***Motorist speeding –*** Montecito Boulevard is a long street with no traffic control or calming, which facilitates speeding. This particularly a concern for westbound traffic, which is travelling downhill and moving from a more rural setting into a school zone.

- ***Rolled curb –*** The rolled curb on the westbound side of Montecito in front of the main entrance to school allows vehicles to park vehicles mounted on the sidewalk and obstruct the path of pedestrians.

Montecito Boulevard in front of the school, facing west.

RECOMMENDATIONS

- ***Class III bike boulevard –*** Add Class III bike boulevard with sharrows, signage, and traffic-calming from East to Pascale to future Bike Plan update.

- ***Traffic-calming –*** Gradually implement traffic-calming measures for westbound motorists as they approach school zone, starting at Lakeview Drive. The Montecito/Ramona recommendation (NAI-424) will help calm eastbound traffic in the school zone. Consider curb extensions or other horizontal narrowing at Julian Avenue and Chapel Hill Drive (west) as traffic-calming opportunity areas.

- ***Vertical curb –*** Upgrade the westbound rolled curb to a vertical curb with driveways where needed to deter motorists from parking on the sidewalk.

RECOMMENDATION #NAI-424: MONTECITO BOULEVARD AND RAMONA AVENUE INTERSECTION

IDENTIFIED BARRIERS

- ***Poor motorist yielding behavior –*** Walk Audit participants reported poor motorist yielding behavior at the Montecito/Ramona intersection as a significant barrier to students walking and biking to school.
- ***Low pedestrian visibility –*** The low-visibility crosswalk pattern (two parallel lines) and lighting issues from sunlight both reduce pedestrian visibility in the crosswalk.
- ***Uncontrolled traffic –*** Traffic on Montecito Boulevard is uncontrolled, which facilitates poor motorist yielding behavior when motorists are driving impatiently due to congestion, and reduces motorist range of vision if motorists are speeding on Montecito.

The Montecito and Ramona intersection.

- ***Missing red zones –*** Missing red zones on Ramona Avenue allow vehicles to park adjacent to the intersection and obstruct pedestrian visibility.
- ***Missing crosswalk –*** There is no crosswalk across Ramona Avenue, despite being a highly-travelled intersection in the school zone.

RECOMMENDATIONS

- ***High-visibility crosswalks –*** Paint high-visibility school-zone crosswalks across Montecito and Ramona to improve pedestrian visibility and motorist yielding behavior.
- ***Curb extensions –*** Install curb extensions for the crosswalk across Montecito and move pedestrian crossing signs to curb extensions to slow motorists through the intersection and improve motorist yielding behavior and pedestrian visibility.
- ***Shark's teeth –*** Paint shark's teeth for Montecito traffic approaching the intersection to indicate to motorists where to stop when yielding to pedestrians.
- ***Red zones –*** Paint red zones on Ramona to prevent motorists from parking close to the intersection.

RECOMMENDATION #NAI-425: EAST AVENUE (NORTH SEGMENT) SIDEWALKS

IDENTIFIED BARRIERS

- ***Sidewalk gaps –*** There are several sidewalk gaps along southbound East Avenue between Silverado Trail (north) and 1st Street, and limited/challenging crosswalks across East Avenue to reach the complete northbound sidewalk or other north/south streets along routes to campus. Sidewalk gaps either require students to walk in the roadway or cross the road excessively or in unmarked locations, and can deter students from walking altogether.

RECOMMENDATIONS

- ***Sidewalks –*** Fill sidewalk gaps to provide a continuous pedestrian network along this key corridor to the school.

The southbound East Avenue sidewalk ends just north of the 1st Street intersection.

RECOMMENDATION #NAI-429: EAST AVENUE (SOUTH SEGMENT) SIDEWALKS

IDENTIFIED BARRIERS

- ***Narrow, obstructed sidewalk –*** From Montecito Boulevard to Silverado Trail, the only existing sidewalk along East Avenue is on the northbound side is narrow, immediately adjacent to high-speed traffic with no buffer, and is frequently obstructed by utility and sign poles, which is a significant barrier for pedestrians with mobility assistance devices or strollers.

RECOMMENDATIONS

- ***Widen sidewalk –*** Widen the northbound sidewalk from Silverado Trail to Montecito Boulevard as much as possible while maintaining a 10-foot vehicle travel lane (standard width) to accommodate high volumes of pedestrians in the school zone and improve accessibility.
- ***Remove obstructions –*** Identify and pursue opportunities to remove sidewalk obstructions, which are largely utility and sign poles, to improve accessibility.
- ***Southbound sidewalk –*** Add sidewalk on the southbound side where missing from Evans Avenue to Silverado Trail to improve pedestrian connectivity and access.

A utility pole blocks half of the sidewalk on northbound East Avenue.

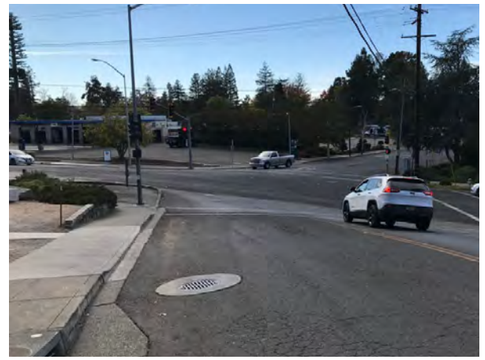
RECOMMENDATION #NAI-434: EAST AVENUE FIVE-WAY INTERSECTION

IDENTIFIED BARRIERS

- ***Five-way intersection –*** The five-way intersection of East Avenue/Silverado Trail/3rd Street/Coombsville Road experiences high volumes and speeds of traffic, has long crossing distances, wide curb radii, and free right turns, all of which increase risk of collisions with bicyclists and pedestrians and make the intersection challenging and unwelcoming.

RECOMMENDATIONS

- ***Intersection redesign –*** Fully redesign the intersection with implementation of Complete Streets elements. The City currently has plans for a double roundabout; implementation of such should include elements including Class I shared-use path access through the roundabouts, access ramps, and Rectangular Rapid Flashing Beacons at crosswalks.



The 5-way intersection, as seen from East Avenue.

RECOMMENDATION #NAI-437: EAST 1ST STREET AND NIELSEN AVENUE INTERSECTION

IDENTIFIED BARRIERS

- ***Low pedestrian visibility –*** Multiple factors reduce pedestrian visibility at the back entrance to campus at the East 1st Street and Nielsen Avenue intersection, including low-visibility crosswalk pattern, vegetation shade, uncontrolled East 1st Street traffic, and road elevation change west of the intersection.

RECOMMENDATIONS

- ***High-visibility crosswalk –*** Upgrade the existing crosswalk across East 1st Street at Nielsen Avenue to high-visibility school-zone pattern to improve pedestrian visibility and motorist yielding behavior.
- ***Stop sign –*** Install a stop sign for southbound Nielsen Avenue to reinforce stop requirement to motorists.
- ***Traffic-calming –*** Consider traffic-calming elements for East 1st Street traffic approaching the East 1st Street crosswalk or additional pedestrian visibility improvements for the crosswalk to improve pedestrian sense of safety and comfort using the back entrance to campus.

The East 1st Street and Nielsen Avenue intersection, facing east.

RECOMMENDATION #NAP-071: ENCOURAGEMENT EVENTS

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.

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.

Walk and Roll Wednesdays, such as the one photographed above at McPherson Elementary School in Napa, are an example of fun and easy encouragement events that schools can hold independently.

RECOMMENDATION #NAP-072: CIRCULATION POLICY

IDENTIFIED BARRIERS

- ***Unsafe driving behavior –*** Walk Audit participants identified unsafe driver behavior in the school zone as a barrier to students walking and biking to school. Such behaviors included motorist speeding, frequent U-turns, failure to yield, and use of staff lot for drop-off.

RECOMMENDATIONS

- ***Circulation policy –*** Create a comprehensive circulation policy and prioritize outreach and education of this plan to families. Emphasize prohibited behaviors that are seen regularly in the school zone, including use of staff lot for drop-off, frequent U-turns, and failure to yield.

Arrival and Departure Expectations

To ensure the safety of all Northwood students and a positive community culture during drop-off and pick-up, please follow these guidelines:

- **Morning/Drop Off:**
  - Parents are encouraged to walk their children from home or park along Oxford or Berks (or Linda Vista) and walk or bike in.
  - **The Rear Parking Lot is for Buses and Staff Only. No through traffic.**
  - The Front Parking Lot is reserved for Staff Parking and ADA Accessible Parking.
  - We have a Loading/Drop-off zone in front of the school. Drivers must stay in their vehicles at all times. Kinder parents needing to undo child seat restraints should park along the street and walk in with students.
  - Unaccompanied students wait on the Yellow Line in front of the office until 8:00 am bell, then go to their classroom dots until 8:05 am bell.
- **Afternoon/Pick Up:**
  - Parents are encouraged to walk their children home or park along Oxford or Berks (or Linda Vista) and walk in.
  - Gate to Loading/Drop-off zone will open promptly at 2:30 pm. Drivers must stay in their vehicles at all times and continue moving forward.
  - Students picked up late need to wait on the benches in front of school or in the office. Students may not play on the playground after school. We ask students to wait at least 15 minutes before we call someone.
- **Last Wednesday of the Month Mornings:**
  - Students wait out front on the yellow lines for the 8:00 am bell, then move to tables for assembly.
- **Rainy Days:**
  - Students wait in MU room until their teacher picks them up at 8:05 am

An example circulation policy from Northwood Elementary School in the City of Napa.

ADDITIONAL CONSIDERATIONS

Improvements listed in this section are those within a half-mile radius that are either considered significant to the school area but are not located along routes to the school based on the school's enrollment boundary or were ranked as a higher priority during the Walk Audit for another nearby school. These barriers are listed as high or medium priority due to their impact on routes to nearby schools in the neighboring areas and will be analyzed in more depth in the reports for the affected schools.

RECOMMENDATION #NAI-439: TERRACE DRIVE CORRIDOR (COOMBSVILLE TO SHURTLEFF)

IDENTIFIED BARRIERS

- ***Significant sidewalk gaps, narrow existing sidewalks.***
- ***No bicycle facilities.***
- ***High volumes of traffic.***
- ***Long, straight, wide corridor with little traffic control and no traffic-calming facilitates motorist speeding.***

RECOMMENDATIONS

- ***Complete Bike Plan corridor study (potential for Class II or Class I bike facilities).***
- ***Fill sidewalk gaps and widen sidewalks.***

Relevant Reports:

- *Silverado Middle School Walk Audit Report*

RECOMMENDATIONS #NAI-440, NAI-441, AND NAI-443: COOMBSVILLE ROAD (SILVERADO TRAIL TO MIDDLE SCHOOL)

IDENTIFIED BARRIERS

- ***High-stress bicycle facilities***
- ***Several eastbound sidewalk gaps***
- ***Motorists make fast turns through intersections.***
- ***Long crossing distances, missing crosswalks, wide curb radii at many intersections.***

RECOMMENDATIONS

- ***Class IV protected bike lanes. Include green conflict paint.***
- ***Fill eastbound sidewalk gaps.***
- ***High-visibility crosswalks. Intersection modifications to shorten crossing distance, slow vehicle traffic, and improve pedestrian visibility.***

Relevant Reports:

- *Silverado Middle School Walk Audit Report*

MAP OF RECOMMENDATIONS

Map 5: Recommendations

TABLE OF RECOMMENDATIONS

Infrastructure:

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
1	School grounds	NAI-416	Not enough lighting in front of school/at school exits.	Install pedestrian-scale lighting at primary entrances and exits to campus, as well as common pedestrian/bicyclist routes on-campus.	$	Low
		NAI-417	Congestion in drop-off loop on Montecito (partially due to left turns), motorists block sidewalks.	Improve visibility by marking curbs red that are adjacent to loading zone exits/entrances. Reduce widths of entrance/exit to loading zone to prevent two cars trying to enter/exit at same time and reduce crossing distance of pedestrians. Install signage prohibiting blocking sidewalk. Consider implementing "no left turn during pick-up/drop-off hours" rule for loading zone.	$	Low
2	Montecito Boulevard from East Avenue to Lakeview Drive	NAI-418	Sidewalks end on both sides just east of the school (just west of Chapel Hill Dr).	Extend sidewalk on at least one side of street (preferably both) from existing terminus to Lakeview Drive to improve safety and access.	$$-$$$	Low
		NAI-419	No bicycle facilities.	Add Class III bike boulevard with sharrows, signage, and traffic-calming from East to Pascale to future Bike Plan update.	$$	Medium
		NAI-420	Long street with no traffic control or calming (focusing on school area East Ave to Lakeview Dr but this applies further east), facilitates speeding, especially for westbound traffic going downhill from neighborhoods that are more rural and vehicle-oriented.	Implement traffic-calming measures for westbound motorists as they approach school zone (gradual implementation starting at Lakeview Drive). Curb extension recommendation at Montecito/Ramona will help calm eastbound traffic. Consider curb extensions or other horizontal narrowing at Julian and Chapel Hill (west) to reduce vehicle speeds.	$-$$$	Medium
		NAI-421	Rolled curb on westbound side in front of main entrance to school allows vehicles to obstruct sidewalk.	Upgrade westbound rolled curb to vertical curb with driveways for loading zone along school frontage.	$	Medium
		NAI-422	Motorists making illegal U-Turns in front of school (especially if circle is full).	Add no U-Turn signage in front of the school. Consider raised median between East and Ramona or narrowing of roadway.	$	Low
		NAI-423	Not enough lighting.	Install additional overhead lighting and/or pedestrian-scale lighting along Montecito from East Ave to Lakeview Drive (prioritize segment from East Ave to Chapel Hill Dr).	$$-$$$	Low
3	Montecito Boulevard and Ramona Avenue intersection	NAI-424	Poor motorist yielding behavior, low-visibility crosswalk in school zone, sunlight reduces pedestrian visibility in crosswalk, uncontrolled traffic on Montecito frequently speeds through intersection, lack of red zones on Ramona Ave allow motorists to park close to intersection. No crosswalk across Ramona Ave.	Paint high-visibility school-zone crosswalks across Montecito and Ramona. Install curb extensions for crosswalk across Montecito and move pedestrian crossing signs to curb extensions. Paint shark's teeth for Montecito traffic approaching intersection. Paint red zones on Ramona Ave to prevent cars from parking close to crosswalk.	$$	High
4	East Avenue (north segment) from Silverado Trail (north) to 1st Street	NAI-425	Several significant southbound sidewalk gaps, limited crosswalks across East Ave to reach complete sidewalk or alternative north/south routes to the school back entrance (Meek Ave, Banks Ave).	Fill sidewalk gaps.*	$$-$$$	Medium
		NAI-426	No bicycle facilities	Install Class III bike boulevard with sharrows, signage, and comprehensive traffic-calming measures.	$$	High
		NAI-427	Long, straight corridor with no traffic-calming or traffic control, facilitating motorist speeding. Speeding reported by participants.	Implement traffic-calming along corridor as recommended in bike facility recommendation. Improve intersections at Summit Ave, Highland Dr, and Spring St with crosswalks (high-visibility across East Ave) and curb extensions or other traffic-calming.	$$	High

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
5	East Avenue (south segment) from 1st Street to Silverado Trail (south)	NAI-428	Long, straight corridor with no traffic-calming and only one stop at Evans Ave, facilitating motorist speeding (esp northbound). Speeding reported by participants.	Identify and implement opportunities to calm traffic and enhance bicycle facilities by reducing traffic speeds and improving separation of users, with focus on achieving low-stress bike/ped area for elementary school students.	$$-$$$$	**High**
			No bike facilities from 1st to Montecito. From Montecito Boulevard to Silverado Trail/ Third Street: Bike lane only going southbound, no bike facility northbound. Bike lane paint faded, bike lane obstructed by trash cans, high-stress bike route.			
		NAI-429	From Montecito to Silverado Trail, only existing sidewalk on northbound side is narrow, right next to high-speed traffic with no buffer, and frequently obstructed by utility and sign poles.	Widen northbound sidewalk from Silverado to Montecito as much as possible while maintaining a 10 ft vehicle travel lane. Identify and pursue opportunities to remove sidewalk obstructions. Add sidewalk on southbound side where missing for entire corridor bounds.*	$$-$$$	**Medium**
		NAI-430	Motorists making dangerous U-turns in school zone from Montecito to 1st St, using staff lot to park and conflicting with student peds/bicyclist on East Ave.	Add no U-turn signage to school loading zone signage. Enhance signage at staff lot to about prohibited student drop-off, potentially including stencils.	$	**Low**
6	East Avenue and Montecito Boulevard intersection	NAI-431	Skewed intersection with extremely wide curb radii and long crossing distance (up to 80') lead to poor motorist yielding, fast motorist turning movements, and poor pedestrian visibility. Low-visibility crosswalk pattern in school zone. Minimal/missing red zones allow vehicles to park close to intersection and obstruct ped visibility. Width of westbound lane allows right-turning vehicles to sneak up to crosswalk when they can't see pedestrians crossing.	Install curb extensions on both curbs of Montecito crosswalk to square up intersection and limit potential for multiple rows of westbound traffic queueing at intersection. Crossing distance can also be reduced with pedestrian refuge island. Upgrade crosswalk to high-visibility school zone pattern.	$$	**High**
7	East Avenue and 1st Street intersection	NAI-432	High volumes and speeds of uncontrolled traffic on East Avenue, poor motorist yielding behavior (reported by participants), low pedestrian visibility due to high speed, uncontrolled traffic and low-visibility crosswalks. Lack of red curbs allow vehicles to park right next to crosswalks.	Install high-visibility school-zone crosswalks across all legs of the intersection. Install curb extensions on all corners. Consider implementation of All-Way Stop Control given vicinity to school.	$$	**High**

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
8	East Avenue and Evans Avenue intersection	NAI-433	Low-visibility crosswalks in school zone, poor motorist yielding (reported by participants). ADA parking spot is right next to crosswalk on northbound side. Lack of red zones on Evans Ave and East Ave on north side of intersection allow motorists to obstruct visibility.	Upgrade crosswalks to high-visibility school zone pattern. Install curb extensions on all crosswalk curbs – will require relocation of ADA-accessible space on northbound East Ave.	$$	**High**
9	East Avenue, 3rd Street, Silverado Trail, and Coombsville Road intersection*	NAI-434	Difficult 5-way intersection, long crossing distances, high traffic volumes and speeds, confusing angles, free right turns.	Full redesign of intersection with implementation of Complete Streets elements. City plans for roundabout implementation should include elements including Class I shared-use path access through roundabouts, access ramps, Rectangular Rapid Flashing Beacons at crosswalks.	$$$$	**Medium**
10	East 1st Street from East Avenue to Nielsen Avenue	NAI-435	No sidewalks from East Avenue to Nielsen Avenue (back school entrance).	Narrow travel lanes and construct a sidewalk (5 ft minimum) on eastbound side that connects to school's back entrance, formalizing on-street parking for eastbound side.	$$	**Low**
		NAI-436	Wide, straight street with little traffic control and no traffic-calming facilitates motorist speeding in school zone.	Add school speed limit sign to existing school zone sign at East 1st St and Maxwell Ave.	$	**Low**
11	East 1st Street and Nielsen Avenue intersection	NAI-437	Low pedestrian visibility at back entrance (Nielsen Ave) due to low-visibility crosswalk, shade from vegetation, uncontrolled E 1st St traffic (narrows range of vision), road elevation change just west of crosswalk, generally low-visibility entrance to school (set back in foliage, not apparent).	Upgrade crosswalk across East 1st St at Nielsen Ave to high-visibility school zone pattern. Consider traffic-calming elements for East 1st St traffic approaching Nielsen Ave crosswalk or additional pedestrian visibility improvements. Install stop sign for southbound Nielsen Ave.	$-$$	**Medium**
12	Third Street approaching Silverado Trail intersection	NAI-438	Bike lanes disappear approaching intersection with Silverado Trail. Have to get into traffic lane in order to cross intersection onto East Avenue without using pedestrian crosswalks. High traffic speeds/volumes.	Complete bicycle facilities to intersection in interim given long project timeline of roundabout project.	$	**Low**
13	Terrace Drive from Coombsville Road to Shurtleff Avenue	NAI-439	Significant sidewalk gaps, narrow existing sidewalks. No bicycle facilities. Collector carries significant volumes of traffic. Long, straight, wide corridor with little traffic control and no traffic-calming facilitates motorist speeding.	Complete corridor study as indicated in Bicycle Plan* (potential for Class II or Class I bike facilities). Fill sidewalk gaps* and widen sidewalks to minimum 5'.	$$$$	**Medium**

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
14	Coombsville Road from Silverado Trail to Silverado Middle School	NAI-440	Class II bike lanes are substandard, faded, or missing in some locations; high-stress on arterial corridor with high speeds and volumes of traffic.	Upgrade bike lanes to Class IV protected bike lanes. Include green conflict paint in locations of bicyclist/motorist conflict risk (major side streets and driveways) where full separation is not feasible.	$$	**High**
		NAI-441	Several sidewalk gaps on eastbound side (Silverado Middle School side); westbound sidewalk gap between Jacks Lane and Pascale Place	Fill eastbound sidewalk gaps.*	$$-$$$	**High**
		NAI-442		Fill westbound sidewalk gap.*	$$	**Low**
		NAI-443	Motorists turning left off Coombsville turn fast to prevent traffic build-up and focus on oncoming traffic (not peds/bikes). Long crossing distances, missing crosswalks, wide curb radii.	All crosswalks upgraded to high-visibility pattern and other modifications to shorten crossing distance, slow vehicle traffic, and improve pedestrian visibility. Large intersections that require significant re-design to improve bicyclist/pedestrian safety and comfort include Terrace Dr, Tamarisk Dr, and Linnell/ Hennessy.	$-$$$$	**High**

** = 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 (Montecito, East, 1st/East 1st), impatient motorist behavior (blocking sidewalks, failure to yield, etc.)	NAP-069	Develop walking school bus and bike train programs to reduce number of vehicles in school zone. Develop carpool program to reduce number of vehicles in school zone.	School site	Weekly, with goal of increasing frequency	$	**High**
2	Irregular bicycle/ pedestrian safety education	NAP-070	Provide annual bicycle and pedestrian safety education to all students.	School site	Annual	$	**High**
3	Congestion in school zone, infrequent encouragement programs	NAP-071	Continue growing participation in annual countywide encouragement events. Host independent encouragement events in between annual events.	School site	Annual for countywide events. Monthly for independent encouragement events.	$	**Medium**
4	Unsafe driving behavior in school zone (speeding, frequent U-turns, failure to yield, use staff lot for drop-off)	NAP-072	Develop and distribute circulation policy, with reminders sent out on an as-needed basis. Emphasize prohibited behaviors that are seen regularly – use of staff lot for drop-off, frequent U-turns, failure to yield, etc.	School site	Annual	$	**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	1	2	0	1	2	3
.25-.5 mi.	0	0	3	8	5	6	11
Total	0	1	5	8	6	8	14

Collision List

Case ID	Date	Time	Primary	Secondary	Distance	Direction	Bike	Ped
6071018	2013-05-10	23:37	1ST ST	JUAREZ ST	0.00	-	No	Yes
6082436	2013-05-24	09:04	1ST ST	SILVERADO TRL	0.00	-	No	Yes
6221419	2013-09-16	20:01	EAST AV	E 1ST ST	0.00	-	No	Yes
8361027	2017-04-23	17:44	VIA DEL ARROYO	MONTE VISTA DR	22.00	S	Yes	No
8197830	2016-12-16	10:33	3RD ST	BURNELL ST	0.00	-	Yes	No
8138511	2016-09-28	13:23	3RD ST	BURNELL ST	0.00	-	Yes	No
8052682	2016-05-27	18:34	3RD ST	DEWOODY ST	0.00	-	No	Yes
7155287	2015-12-13	01:08	EAST AV	SPRING ST	20.00	N	Yes	No
7070866	2015-09-01	22:07	WINDING WY	SILVERADO TRL	50.00	W	No	Yes
6953427	2015-05-30	13:29	SILVERADO TRL	2ND ST	75.00	N	Yes	No
6735045	2014-12-16	08:59	1ST ST	SILVERADO TRL	0.00	-	Yes	No
6648393	2014-09-28	20:33	SILVERADO TRL	TAYLOR ST	100.00	N	Yes	No
6417504	2014-02-20	13:11	3RD ST	SILVERADO TRL	0.00	-	No	Yes
6380769	2014-01-29	12:48	HENNESSY DR	SILVERADO TRL	0.00	-	Yes	No

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

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.

[e] Davison K, Werder J and Lawson, C. "Children's Active Commuting to School: Current Knowledge and Future Directions." Preventing Chronic Disease, 5(3): A100, July 2008.

[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

[g] Castelli, D.M., Glowacki, E., Barcelona, J.M., Calvert, H.G., & Hwang, J. (2015). Active Education: Growing Evidence on Physical Activity and Academic Performance. [Research brief.] Active Living Research. http://activelivingresearch.org/sites/default/files/ALR_Brief_ActiveEduc....

[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.

[i] AAA. Cost of Owning and Operating Vehicle in U.S. Increased 1.9% According to AAA's 2012 Your Driving Costs Study. 2012. http://newsroom.aaa.com/2012/04/costof-owning-and-operating-vehicle-in-u....

[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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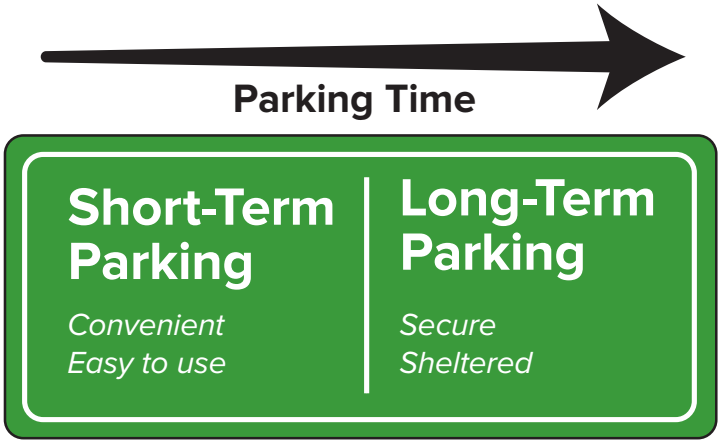
TABLE OF CONTENTS

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

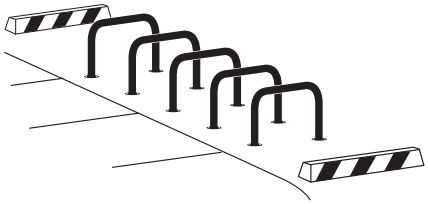
Effective bike parking for short-term users depends on two main factors: 1) proximity to the destination and 2) ease of use.

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.

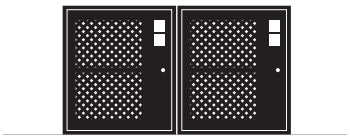
BIKE CORRALS

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**

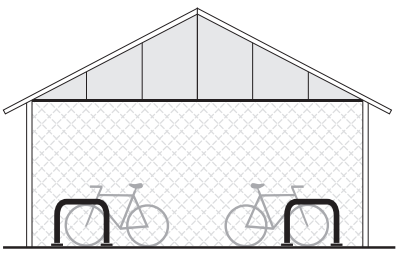
LONG-TERM PARKING

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

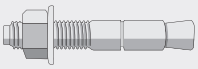
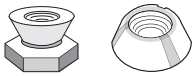
Selecting an appropriate installation surface and technique is key to creating bicycle parking that remains secure and attractive over time.

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

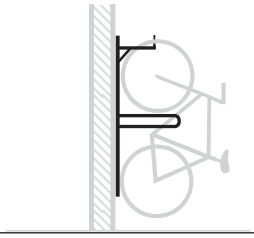
These rack styles do not meet all performance criteria but may be appropriate in certain constrained situations.

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

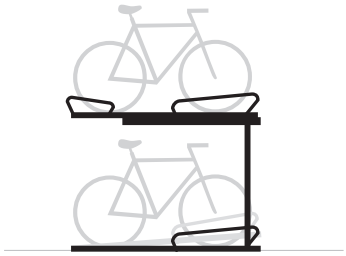
Variation of the wheelwell-secure rack designed to stagger handlebars vertically or horizontally to increase parking density. Reduces usability and limits kinds of bikes accommodated, but contains bikes well and aids in fitting more parking in constrained spaces.

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.

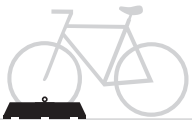
SCHOOLYARD
also called comb, grid

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

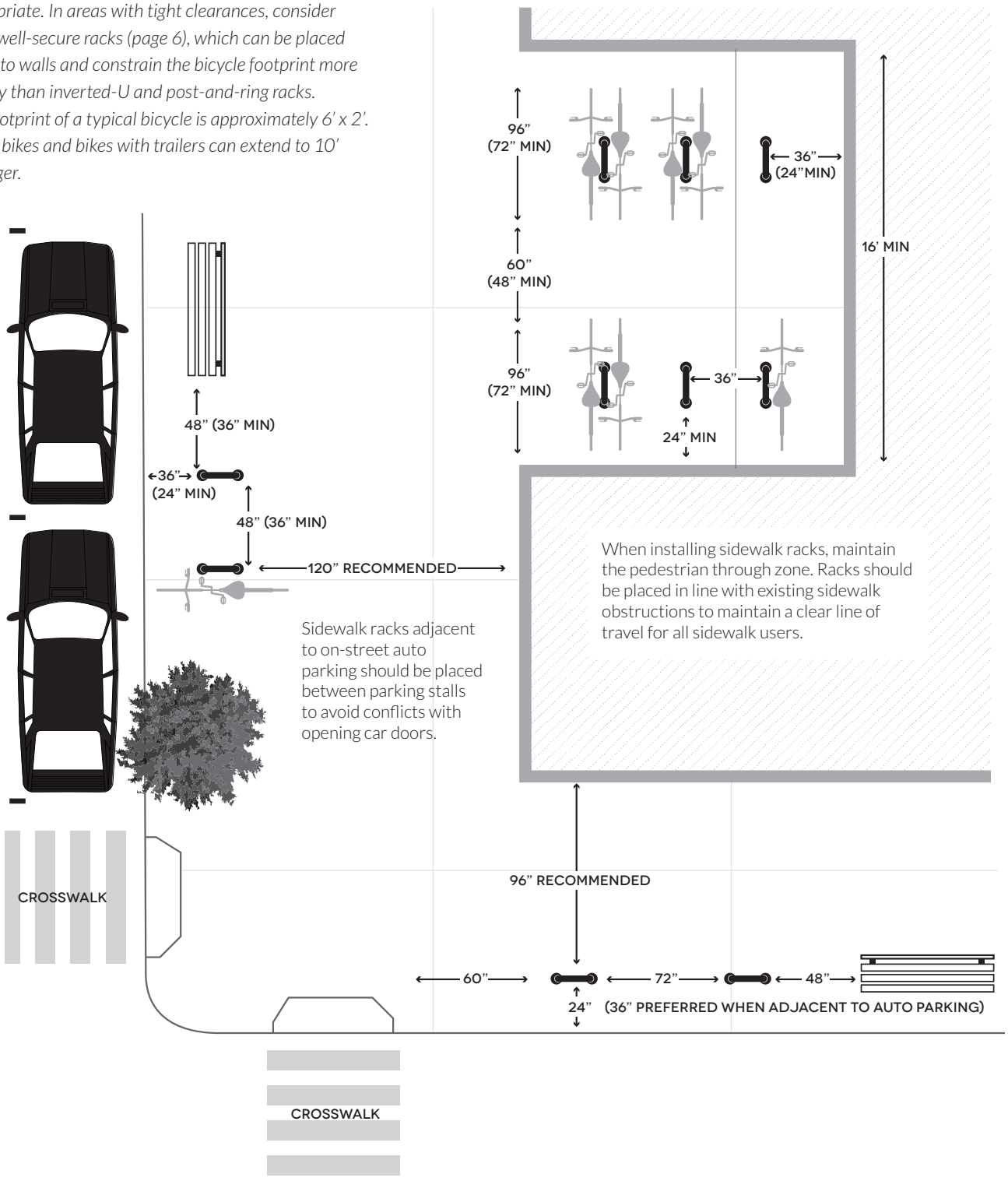
Most bicycle parking racks are made of carbon steel or stainless steel. Carbon steel requires a surface coating to resist rust while appropriate grades of stainless steel need no coating. Not all materials and coatings with the same name perform equally. Square tubing provides a security advantage as 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