Walk Audit Report

SafeRoutes
Napa County

MCPHERSON
ELEMENTARY SCHOOL

MCPHERSON ELEMENTARY SCHOOL

2670 YAJOME STREET NAPA, CA

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EXECUTIVE **SUMMARY**

THE NAPA COUNTY SAFE ROUTES TO SCHOOL PROGRAM

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

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

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

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

WHY SAFE ROUTES TO SCHOOL?

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

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

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

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

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

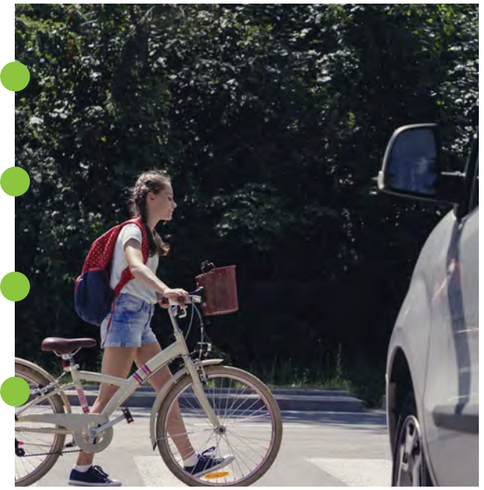
Schools and the community benefit immensely when students choose to walk or bike.

Student health has been linked to improved academic performance.

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

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

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



THE SIX E'S

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

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

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

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

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

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

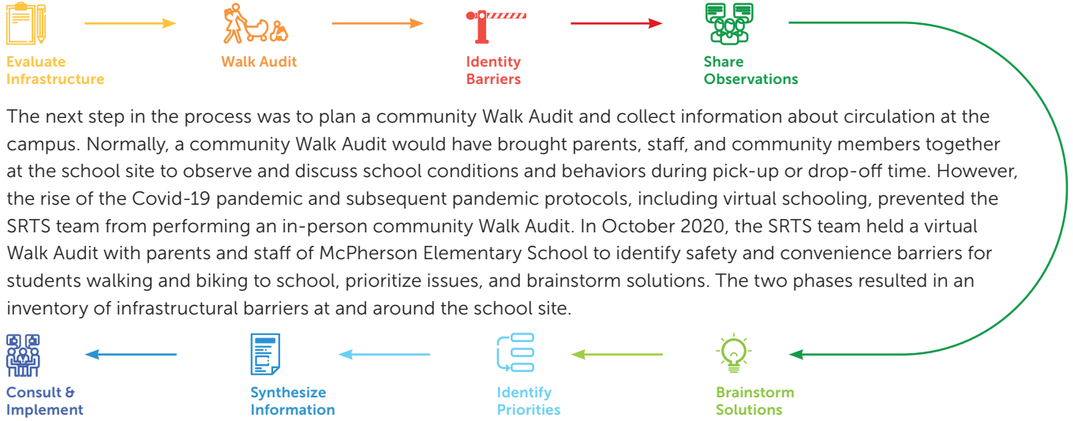
Education
Ensure that everyone learns how to travel safely and why biking and walking are important.

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

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

REPORT PROCESS

The SRTS team conducted a comprehensive evaluation of the barriers to students walking and biking to and from McPherson 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 October 2020, the SRTS team held a virtual Walk Audit with parents and staff of McPherson 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.

MCPHERSON ELEMENTARY SCHOOL
SCHOOL SUMMARY

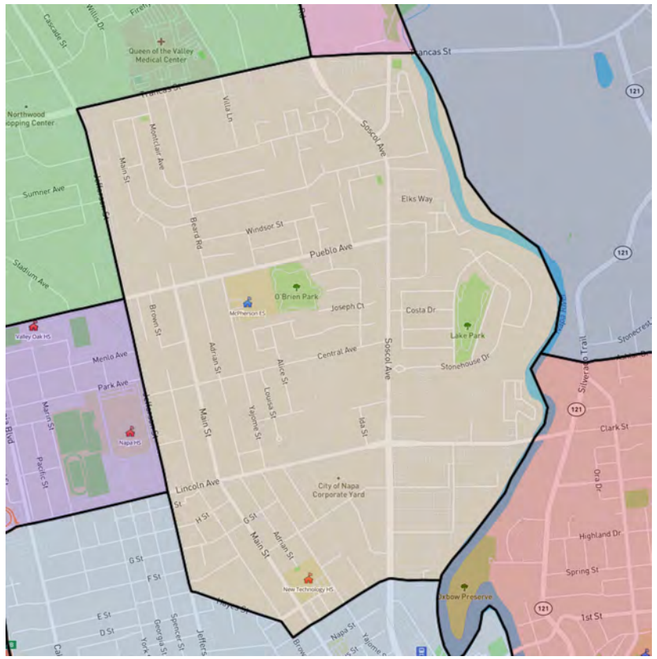
Principal	Troy Knox	Grades	K-5
First Bell	8:15 AM	Enrollment	412
Last Bell	2:40 PM	Street	2670 Yajome St.
District	Napa Valley Unified	City	Napa, CA 94558

Overall Facility Rating[j]**: Good**

While NVUSD has an open enrollment policy, McPherson Elementary's default enrollment area covers an urban portion of central Napa. It is bordered by Jefferson Street to the west, Trancas Street to the north, the Napa River to the east, and Vallejo Street and Hayes Street 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), 17.8% of students attending McPherson Elementary School reside outside of the school's enrollment boundary.



Map 1: The enrollment boundaries (shaded light brown) of McPherson Elementary School (blue school icon).

DATA

No data is currently available regarding the number of students who walk and bike to school at McPherson 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	MCPHERSON ELEMENTARY SCHOOL	DISTRICT
American Indian or Alaska Native	0.2%	0.2%
Asian	1.0%	2.4%
Filipino	0.2%	6.9%
Hispanic or Latino	95.1%	55.6%
White	2.4%	28.4%
Two or More Races	1.0%	4.0%
EXPERIENCE		
Socioeconomically Disadvantaged	94.2%	51.2%
English Learners	67.2%	20.5%
Students with Disabilities	8.7%	12.5%
Foster Youth	0.2%	0.4%
Homeless	1.0%	1.1%

Figure 2: Enrollment Data by Group

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

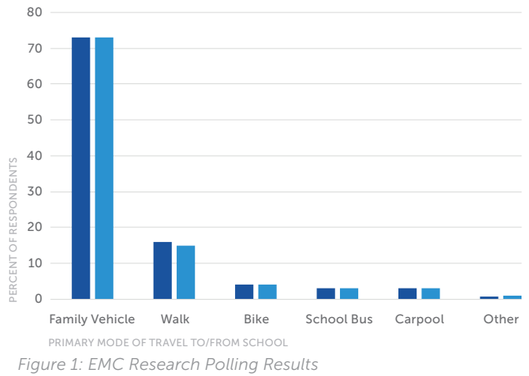


Figure 1: EMC Research Polling Results

***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)

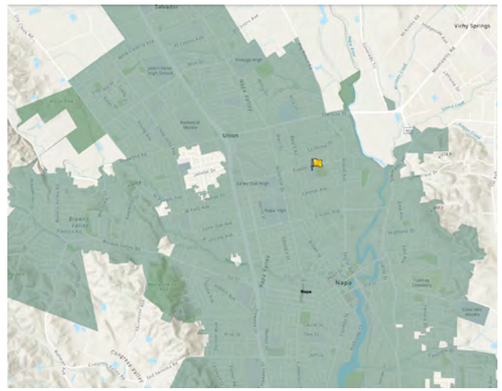
	NUMBER OF STUDENTS
Kindergarten	64
Grade 1	62
Grade 2	65
Grade 3	74
Grade 4	72
Grade 5	75
Total	**412**

Figure 3: Enrollment Data by Grade

NEIGHBORHOOD CONTEXT

McPherson Elementary School is located in the City of Napa's Beard Planning Area in central Napa, which is characterized by its variety of land uses including commercial strips, single- and multi-family housing, and a light industrial area. The school is located on the corner of two collectors, Pueblo Avenue and Yajome Street, and is also served by Soscol Avenue to the east and Jefferson Street to the west, two north-south arterials.

McPherson Elementary School is primarily surrounded by single-family residences, with multi-family residences along major streets such as Soscol Avenue, Pueblo Avenue, and Lincoln Avenue further south of the school. Immediately adjacent to the campus on the east side is O'Brien Park, and a few blocks north of the school are several health and medical-related commercial spaces.
The street network in the school neighborhoods is largely composed of fragmented parallel and warped parallel streets, with some lollipops and loops east of the school. These street patterns can reduce walkability by increasing block size and reducing pedestrian route choice. Housing on the east side of Soscol Avenue near the school, which includes a few multi-family residential complexes, are primarily loop structure and bordered by the Napa River, consequently concentrating traffic from these neighborhoods onto Soscol Avenue in the school area.



Map 2: McPherson Elementary School (marked by a yellow flag) is located in central Napa.

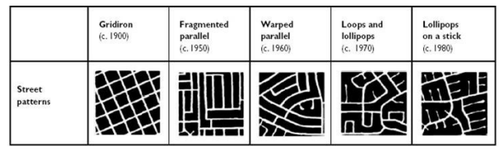
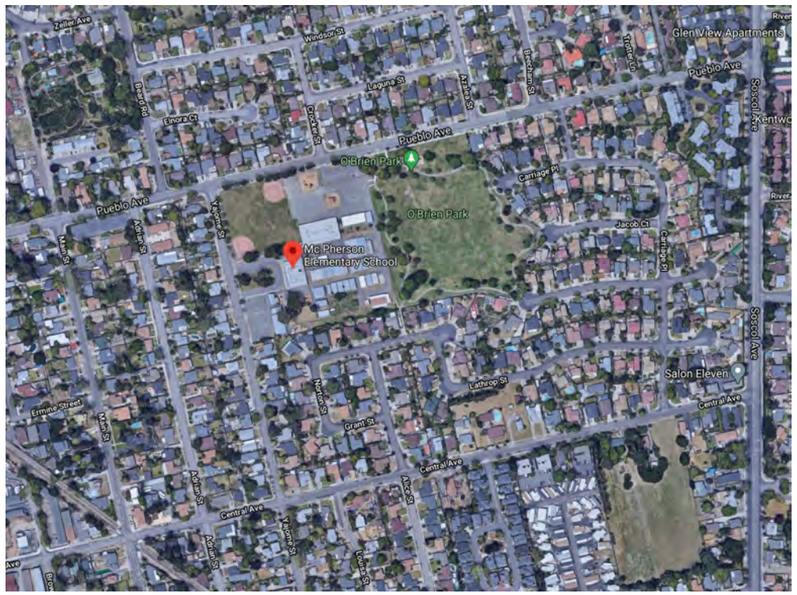


Figure 4: Street Patterns (Source: Southworth, 1997)



McPherson Elementary School is surrounded by primarily single-family residences, with some multi-family housing nearby.

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

McPherson Elementary School's main entrance is on Yajome Street. The campus is set back so one of the school's parking lots/the school loading zone is between the main entrance and Yajome Street. Motorists enter and exit this parking lot/school loading zone on Yajome Street and navigate the loading zone/parking lot in a one-way fashion, so pedestrians crossing the driveways only have to focus on one direction of traffic at a time. The school loading zone runs along the south and east sides of the lot. Sidewalks from Yajome Street to campus border the perimeter of the parking lot, so bicyclists and pedestrians can access campus without entering the parking lot or crossing driveways.

Sidewalks around the parking lot/loading zone provide pedestrian access to the main campus entrance on Yajome Street.

The school entrance from O'Brien Park.

The school can also be accessed from three gated entrances on Pueblo Avenue, though one of these entrances is located in the school's north parking lot near Pueblo Avenue and Crocker Street, and is likely meant for motorists parking in the lot. There is one gated entrance to campus through O'Brien Park on the northwest side of the park, and the path around the park connects to bicyclist/pedestrian entrances on four neighborhood streets (Lathrop, Joseph, Jacob, and Carriage) as well as Pueblo Avenue. These connections allow students traveling from south or east of the school to avoid busier school streets such as Pueblo and Yajome.

A staff member sometimes serves as a crossing guard at the intersection of Crocker Street and Pueblo Avenue for the crosswalk across Pueblo Avenue. The school does not have a formal circulation policy.

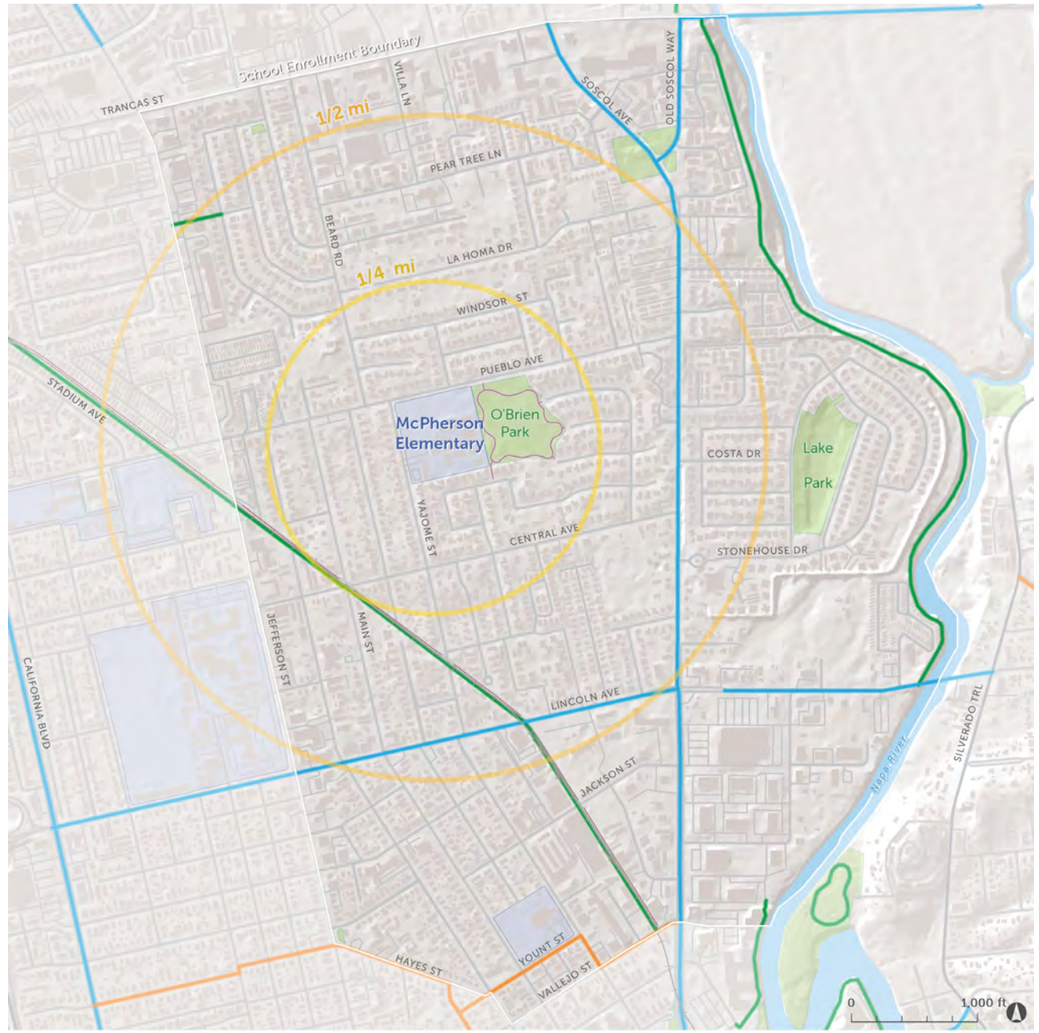
Bus service through NVUSD is not available for McPherson Elementary students. However, students who live beyond 1.25 miles walking distance from school and attend their school of residence may apply for transportation through NVUSD. The Vine transit N line, operated by the Napa Valley Transportation Authority, provides service in north/central Napa, mostly along Trancas Street and Jefferson Street, and has a stop on Jefferson Street at Pueblo Avenue.

The Pueblo and Crocker intersection, facing north.

BICYCLE AND PEDESTRIAN INFRASTRUCTURE

McPherson Elementary School provides bike parking on campus for students. There is one grid rack and one wave rack, providing a total of 18 spaces. These bike racks are stored within school gates.

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

McPherson Elementary School students stop by the welcome table on Walk and Roll to School Day 2019.

McPherson Elementary School currently promotes walking and biking to school through participation in education and encouragement events and ongoing programs like Walk and Roll Wednesdays.

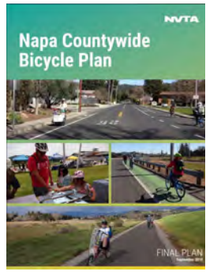
McPherson Elementary School has consistently participated in annual countywide encouragement events such as Bike to School Day and Walk and Roll to School Day. Bike to School Day and Walk and Roll to School Day are annual encouragement events facilitated by Napa County Safe Routes to School in the spring and fall, respectively, that celebrate students making the healthy choice to walk or bike to school. The school had also begun to expand its encouragement program beyond these annual events through monthly Walk and Roll Wednesdays during the 2029/20 school year.

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. Bike rodeos are mainly on-bike lessons where students learn the rules of the road by navigating a roadway-designed obstacle course.

YEAR	EVENT	STUDENT PARTICIPANTS
2015/16	Bike to School Day	20
2016/17	Bike Rodeo	531
2016/17	Bike to School Day	89
2018/19	Walk and Roll to School Day	45
2018/19	Bike to School Day	14
2019/20	Walk and Roll to School Day	41
2019/20	Walk and Roll Wednesdays (4)	81

Figure 5: Encouragement and Education Data

EXISTING PLANS



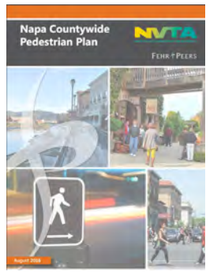
NVTA Napa Countywide Bicycle Plan (2019):

The Napa Countywide Bicycle Plan recommends improving bicycle facilities around the school site. It recommends the installation of Class II bicycle lanes along Pueblo Avenue and a Class III urban bikeway along Yajome Street, Central Avenue, and Beard Road. Jefferson Street to the west is designated as a study corridor.

NVUSD Facilities Master Plan (2016):

NVUSD's Facilities Master Plan lists several projects for McPherson Elementary School. These projects include installation/upgrade of fencing around the school perimeter, site ADA improvements, and new construction for Administration Services. At the time of this report and the virtual Walk Audit, the fencing installation was complete.

MEASURE H
BUILDING ON OUR VISION
NVUSD



NVTA Napa Countywide Pedestrian Plan (2016):

The improvement nearest to the school listed in the Napa Countywide Pedestrian Plan is a Pueblo Avenue overpass from West Pueblo Avenue to Pueblo Avenue, which is just under a mile away from the school.

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 no planned projects that will impact the school area.

CITY OF NAPA

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

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

WALK **AUDIT**

Date: 10/20/20
Day of the Week: Tuesday

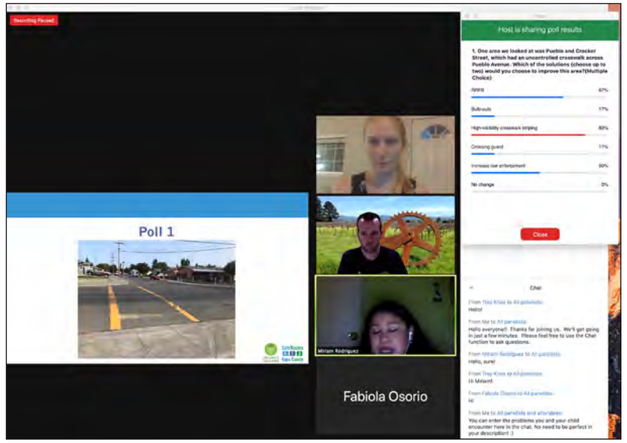
Meeting Time: 6:00 PM
Meeting Server: Zoom Webinar

METHODOLOGY

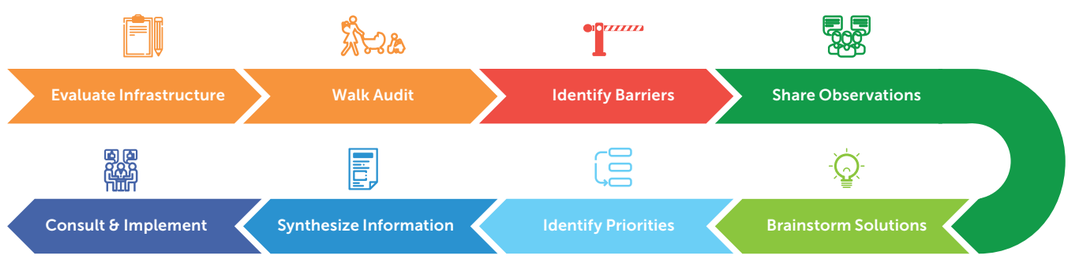
Normally, the Community Walk Audit process would bring together school stakeholders, including parents and school staff, with the SRTS team to observe existing circulation conditions during pick-up or drop-off time, identify barriers to safe walking or biking, and brainstorm solutions. During the observation 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 McPherson Elementary School. In October 2020, the SRTS team hosted a virtual Walk Audit activity via Zoom with four parents, the school's principal, and two school staff members. 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 McPherson 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 logged below:

- ***Speeding on Pueblo Avenue***
- ***Motorist failure to yield at Pueblo and Beard intersection and Central and Alice intersection, the latter being a key route for students living in apartments south of the school***
- ***Impatient motorist behavior in school zone – especially Pueblo and Main***
- ***Crossing guard at Crocker and Pueblo is not consistently present***

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 Pueblo and Crocker Street, which had an uncontrolled crosswalk across Pueblo Avenue. Which of the solutions (choose up to two) would you choose to improve this area?

- High-visibility crosswalk striping: ***5 votes***
- Rectangular Rapid Flashing Beacons: ***4 votes***
- Increase law enforcement: ***3 votes***
- Bulb-outs: ***1 vote***
- Crossing guard: ***1 vote***

POLL QUESTION 2:

There are no bike facilities on Yajome Street – which of the following solutions would you choose to improve this area? (Choose one).

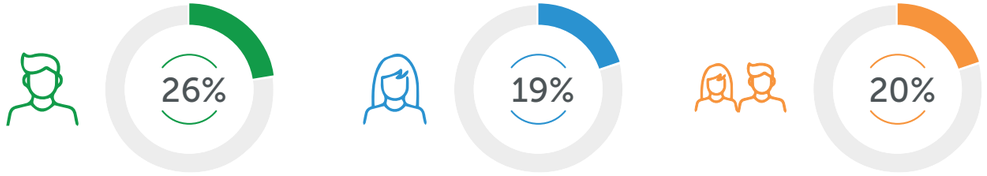
- Class II bike lanes with green conflict markings (painted bike lanes with green paint): ***2 votes***
- Class II bike lanes (painted bike lanes): ***2 votes***
- Class IV protected bike lanes (bike lanes with vertical separation – curbs, flexiposts, etc.): ***2 votes***

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.

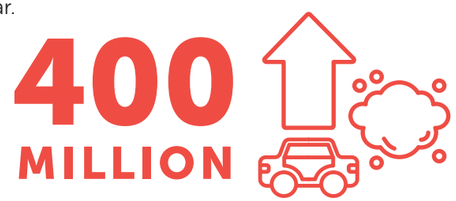


However, only about **26% of men**, **19% of women**, and **20% of adolescents** are meeting the aerobic and muscle-strengthening guidelines developed by the Department of Health. Increased walking and biking to school can help boost that percentage by incorporating physical activity into one's daily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

RECOMMENDATION #NAI-313: YAJOME STREET BICYCLE FACILITIES (PUEBLO/LINCOLN)

Narrative – Yajome Street is a north-south collector that borders campus on the west side and provides access to the school's main entrance, one of the school parking lots, and the loading zone. Yajome Street extends far south of the school zone area, providing a route to key streets like Lincoln Avenue, the downtown area, residential neighborhoods, and New Tech High School. As a result, Yajome Street is highly-travelled and is a part of many direct routes to the campus. Additionally, the Vine Trail Class I shared-use path crosses Yajome near Paul Avenue, which is a natural Vine Trail access point for students. As a result, bicycle access along Yajome is crucial for school-related active transportation.

IDENTIFIED BARRIERS

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

RECOMMENDATIONS

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

There are no bicycle facilities on Yajome Street.

RECOMMENDATION #NAI-299: YAJOME STREET VINE TRAIL CROSSING

Narrative – The Vine Trail Class I shared-use path runs north-south in a diagonal line through central Napa following the existing railroad tracks, providing a separated bicyclist and pedestrian path through this busy area of the city. For students travelling along the Vine Trail from south of the school, the Vine Trail entrance on Yajome Street is likely a natural exit/entrance to the Vine Trail, as Yajome Street then leads to the school's main entrance.

IDENTIFIED BARRIERS

- ***No crosswalks –*** There are no crosswalks at the Vine Trail crossing across Yajome Street greatly reducing motorist awareness of bicyclists and pedestrians crossing at these locations.

RECOMMENDATIONS

- ***High-visibility crosswalk –*** Paint high-visibility crosswalks at the Yajome Vine Trail crossing to increase Vine Trail user visibility and motorist yielding behavior.
- ***Curb extensions –*** Install curb extensions for crosswalks (creative design solutions may be required due to vicinity to railroad tracks) to improve Vine Trail user visibility, prevent motorists from parking close to the crosswalk, and to slow motorists through the crossings.

There is no crosswalk at the Vine Trail crossing on Yajome Street.

RECOMMENDATION #NAI-398: PUEBLO AND BEARD INTERSECTION

Narrative – The Pueblo Avenue and Beard Road intersection is just northwest of the school and is along direct routes to school for many students living north of the campus. This intersection has the closest stop-controlled crosswalk across Pueblo Avenue to the school, and therefore may be a more comfortable location for students crossing Pueblo than other uncontrolled crosswalks. As Pueblo Avenue provides access to three entrances to the campus, this intersection is highly-travelled during school hours.

IDENTIFIED BARRIERS

- ***Low-visibility crosswalks –*** The existing crosswalks are faded and painted with a standard, parallel line pattern, despite being in a highly-travelled school zone.
- ***Poor motorist yielding behavior –*** Walk Audit participants identified this intersection as a barrier to students walking and biking to school due to poor motorist yielding behavior.
- ***Wide curb radii –*** Wide curb radii on the north side of the intersection facilitate fast motorist turning movements through the intersection and increase crossing distance.

The Pueblo and Beard intersection facing east.

RECOMMENDATIONS

- ***Curb extensions –*** Install curb extensions on all crosswalk curbs to improve pedestrian visibility, improve motorist yielding behavior, and decrease curb radii.
- ***High-visibility crosswalks –*** Upgrade the existing crosswalks to a high-visibility school-zone pattern to improve pedestrian visibility and motorist yielding behavior.

RECOMMENDATION #NAI-401: PUEBLO AND CROCKER INTERSECTION

Narrative – The Pueblo Avenue and Crocker Street intersection is adjacent to the north side of campus, with the crosswalk across Pueblo Avenue located in front of one of the school's gated entrances as well as the entrance to the school's Pueblo Avenue parking lot. For many students travelling from neighborhoods northeast of the school, this is the closest crosswalk across Pueblo Avenue. Pre-pandemic, the school had a crossing guard stationed at this intersection; however, as was confirmed during the Walk Audit, this crossing guard is not always available.

IDENTIFIED BARRIERS

- ***Wide curb radii –*** Set-back curbs on Crocker Street create wide curb radii, facilitating fast motorist turning movements, and increases the pedestrian crossing distance.
- ***Missing red zones –*** Missing red zones on Crocker Street allow vehicles to park adjacent to crosswalks and obstruct pedestrian visibility.
- ***Low-visibility crosswalks –*** The existing crosswalks are painted with a standard, parallel line pattern, despite being in a highly-travelled school zone.
- ***Uncontrolled Pueblo traffic –*** Pueblo Avenue, which experiences high-volumes of traffic and frequent motorist speeding, is uncontrolled at this intersection, facilitating motorists approaching the intersection without slowing down and reducing motorist yielding behavior.
- ***Conflict point –*** The crosswalk across Pueblo Avenue is in a high potential conflict point, as it is immediately adjacent to a school parking lot entrance high potential conflict point.
- ***Pedestrian sign blocked –*** Trees on Pueblo Avenue obscure the pedestrian crossing sign for eastbound motorists, further reducing driver awareness of pedestrians.


The Pueblo and Crocker intersection facing north.

RECOMMENDATIONS

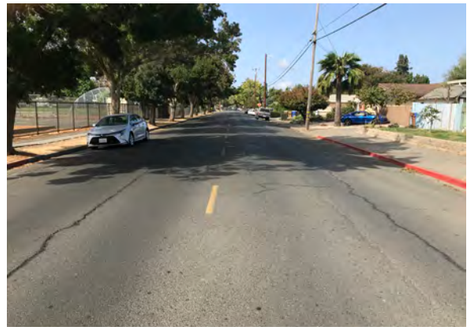
- ***Curb extensions –*** Install curb extensions on all crosswalk curbs to improve pedestrian visibility and motorist yielding behavior, slow motorists through the intersection, and decrease curb radii.
- ***High-visibility crosswalks –*** Upgrade the existing crosswalks to a high-visibility school-zone pattern to improve pedestrian visibility and motorist yielding behavior.
- ***Rectangular Rapid Flashing Beacons –*** The City of Napa has plans and grant funding to install Rectangular Rapid Flashing Beacons for the crosswalk across Pueblo Avenue, which will improve pedestrian visibility and motorist yielding behavior.
- ***Shark's teeth –*** Paint shark's teeth on the Pueblo Avenue travel lanes to indicate to motorists where to stop when yielding to pedestrians.
- ***Red curbs –*** Paint red zones on Crocker Street north of the crosswalk to prevent motorists from parking adjacent to the crosswalk.

RECOMMENDATIONS NAI-405 AND NAI-406: PUEBLO AVENUE CORRIDOR (JEFFERSON/SOSCOL)

Narrative – Pueblo Avenue (from Jefferson Street to Soscol Avenue) is a collector serving several neighborhood streets, McPherson Elementary School, and O'Brien Park. Pueblo Avenue continues west and provides direct access to the Vine Trail shared-use path, mobile home parks, and the Boys and Girls Club Pueblo location. For students travelling from north of the school and many neighborhoods to the east of the school (especially those on the east side of Soscol), the Pueblo Avenue entrances to campus are the closest access points. As a result, this corridor is highly-travelled, particularly during school hours, and is a part of key routes to both school and the Boys and Girls Club.

IDENTIFIED BARRIERS

- ***High speed/volume traffic –*** Pueblo Avenue (from Jefferson Street to Soscol Avenue) is a high-volume collector corridor and is long, straight, and has no traffic-calming and little traffic control, which facilitates frequent motorist speeding.
- ***Motorist speeding –*** Motorist speeding, which can be facilitated by wide, straight roads with little traffic-calming or traffic control, reduces motorists' range of vision and increases both risk of collisions and potential severity of collisions.
- ***Vehicles obstructing visibility –*** Missing "no parking" red zones around intersections allows motorists to park adjacent to the crosswalks and obstruct pedestrian visibility.
- ***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.



There are no bicycle facilities on Pueblo Avenue.

RECOMMENDATIONS

- ***Traffic-calming and daylighting –*** Implement traffic-calming measures and daylighting strategies along corridor
- ***Class II bike lanes –*** Install Class II bike facilities per the adopted 2019 Bicycle Plan to provide a dedicated space for bicyclists.

RECOMMENDATION #NAI-414: CENTRAL AND ALICE INTERSECTION

Narrative – The Central Avenue and Alice Street intersection was identified by Walk Audit participants as a key part of direct routes to school for students living in apartments south of the school. Travelling north along Alice Street leads to Lathrop Street, where students can enter O'Brien Park and reach the school entrance from the park. This entrance also allows students to avoid arrival/dismissal time traffic congestion on Yajome Street.

IDENTIFIED BARRIERS

- ***Poor motorist yielding behavior –*** Walk Audit participants identified poor motorist yielding behavior, particularly by Central Avenue motorists, as a significant barrier to students walking and biking to school.
- ***Wide curb radii –*** Wide curb radii facilitate fast motorist turns through the intersection.
- ***Missing red zones –*** Missing red zones in the intersection allow motorists to park adjacent to crosswalks, obstructing pedestrian visibility.

The Central and Alice intersection facing west.

- ***Low-visibility crosswalks –*** The existing crosswalks are faded and painted with a standard, parallel line pattern, despite being in a highly-travelled school zone.
- ***No curb ramps –*** While installation of ADA-accessible curb ramps are included as a universal SRTS recommendation (see Appendix B), the missing curb ramps at this location warrant discussion due to this intersection being highly-travelled by students who may be walking with family members with mobility assistance devices or strollers.

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 the Central Avenue crosswalk curbs to improve pedestrian visibility and motorist yielding behavior and slow motorists through the intersection.
- ***Rectangular Rapid Flashing Beacons –*** Install Rectangular Rapid Flashing Beacons for the crosswalk across Central Avenue to improve motorist yielding behavior and pedestrian visibility.
- ***Paint –*** Paint shark's teeth on Central Avenue travel lanes to indicate to motorists where to stop when yielding to pedestrians and paint red curbs on the southwest corner to prevent motorists from parking adjacent to the crosswalk.
- ***ADA curb ramps –*** Install ADA-compliant curb ramps on all curbs to ensure accessibility.

RECOMMENDATION #NAP-065: 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 McPherson 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.

RECOMMENDATION NAP-067: 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.

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).

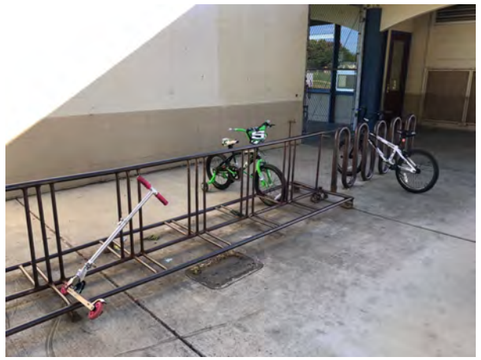
RECOMMENDATION #NAI-396: MCPHERSON ELEMENTARY CAMPUS BIKE PARKING

IDENTIFIED BARRIERS

- ***Low volume of bike parking –*** Existing bicycle parking on campus only provides enough bike parking for 5% of the school population. A perceived lack of secure bike parking in visible, convenient locations near school entrances can deter students from biking to school.

RECOMMENDATIONS

- ***Bike parking –*** Increase secure bike parking to accommodate 20% bike and roll mode share, provide bike parking at major school entrances.



Existing bike parking at McPherson Elementary School.

RECOMMENDATION #NAI-397: PUEBLO AND YAJOME INTERSECTION

IDENTIFIED BARRIERS

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

- ***Wide curb radii –*** Wide curb radii facilitate fast motorist turning movements through the intersection, and the set-back geometry of the curbs push pedestrians further out of motorists's range of vision.

- ***Vehicles obstructing visibility –*** Missing "no parking" red zones allows motorists to park adjacent to the crosswalk and obstruct pedestrian visibility.

RECOMMENDATIONS

- ***Curb extensions –*** Install curb extensions on the southeast and southwest curbs to improve motorist yielding behavior, reduce curb radii, and prevent motorists from parking adjacent to the crosswalk.

- ***High-visibility crosswalk –*** Upgrade the existing crosswalk to a high-visibility school-zone pattern to improve pedestrian visibility and motorist yielding behavior.

- ***Westbound curb extension –*** Evaluate the potential for a curb extension on westbound Pueblo Avenue at the intersection to further reduce vehicle speeds.

Yajome and Pueblo intersection, facing north.

RECOMMENDATION #NAI-399: BEARD ROAD BICYCLE FACILITIES

IDENTIFIED BARRIERS

- ***High-stress bicycle facilities –*** The existing Class III bike boulevard on Beard Road is marked only with sharrows placed in the door zone. Beard Road is a long, straight corridor with no traffic-calming or traffic control, which facilitates motorist speeding that sharrows alone do not mitigate.

RECOMMENDATIONS

- ***Class III bike boulevard –*** Update the Class III bike boulevard to have sharrows, signage, and traffic-calming from Pueblo Avenue to Pear Tree Lane. The La Homa and Pear Tree intersections are important traffic-calming opportunity locations along corridor.

Sharrows on Beard Road indicate that bicyclists should ride next to parked cars in the door zone.

RECOMMENDATION #NAI-402: PUEBLO AND SOSCOL INTERSECTION

IDENTIFIED BARRIERS

- ***Soscol Ave traffic –*** Soscol Avenue carries high volumes of high-speed traffic, which can make bicyclists and pedestrians feel unsafe and uncomfortable in the intersection.

- ***Faded crosswalks –*** The existing crosswalks are extremely faded, reducing pedestrian visibility and sense of comfort.

- ***Wide curb radii –*** Wide curb radii on the west side of the intersection facilitate fast motorist turning movements, and pushed-back curbs increase crossing distance of pedestrians.

Soscol and Pueblo intersection, facing north.

- ***Long crossing distances –*** Long crossing distances across the intersection pushes pedestrians further out of the range of vision of motorists and requires them to be in the roadway for a longer time than necessary.

RECOMMENDATIONS

- ***Curb extensions –*** Install curb extensions on the northwest and southwest corners to square up the intersection, reduce curb radii and crossing distance, and improve pedestrian visibility.

- ***High-visibility crosswalks –*** Repaint the existing crosswalks with a high-visibility pattern to improve pedestrian visibility in the intersection.

RECOMMENDATIONS #NAI-403, NAI-404, AND NAP-064: SOSCOL AVENUE CORRIDOR (TRANCAS/LINCOLN)

IDENTIFIED BARRIERS

- ***Auto-oriented corridor –*** Soscol Avenue's current design, featuring wide lanes on a relatively straight corridor with no traffic-calming and little traffic control, prioritizes vehicle speed, volumes, and convenience and facilitates frequent motorist speeding.
- ***High-speeds and volumes of traffic –*** Soscol Avenue carries extremely high volumes of high-speed traffic, which many bicyclists and pedestrians do not feel comfortable or safe navigating.

Soscol Avenue facing south.

- ***High-stress bicycle facilities –*** The existing Class II bicycle facilities are stressful for riders due to the lack of separation between high speeds and volumes of vehicle traffic and high conflict-risk intersections.
- ***High-stress crosswalks –*** All crosswalks across Soscol Avenue require crossing long distances, and many pose a risk of turning conflicts, making these crosswalks high-stress for pedestrians.
- ***Bike lane obstructions –*** The existing bike lanes on Soscol Avenue are frequently obstructed with debris, gravel, broken glass, and garbage, posing a flat tire or fall risk, or pushing bicyclists into the roadway.

RECOMMENDATIONS

- ***NAI-403 Long term treatments***
  - ***Road diet –*** Implement a road diet and redesign of corridor to improve and prioritize safe, accessible, and comfortable multi-modal transportation through a Complete Streets framework. Integrate specific recommendations from SRTS reports into road redesign. Class IV protected bike lanes preferred for this corridor with reclaimed space from road diet.
- ***NAI-404 Near-term treatments***
  - ***Repaint existing bike lanes and paint green conflict markings for bike facilities at major side streets and driveways to improve bicyclist visibility.*** If repaving provides opportunity to narrow travel lanes and widen bike lanes, do so.
  - ***Install traffic-calming measures along the corridor to reduce motorist speeding.***
- ***NAP-064 Bike lane maintenance –*** Ensure that existing bike lanes are being fully cleared of debris with regular street sweeping and increase frequency of sweeping if maintenance issues continue.

RECOMMENDATION #NAI-412: LATHROP STREET O'BRIEN PARK ENTRANCE

IDENTIFIED BARRIERS

- ***Vehicles obstructing visibility –*** Missing "no parking" red zones around the intersections allows motorists to park adjacent to the intersections and obstruct pedestrian visibility.
- ***Low-visibility crosswalk in school zone –*** The existing crosswalk is painted with a standard, parallel line pattern, despite being located in a highly-travelled school zone.


The O'Brien Park entrance, facing Lathrop Street.

RECOMMENDATIONS

- ***High-visibility crosswalk –*** Upgrade crosswalk to be high-visibility school-zone pattern to increase pedestrian visibility and motorist yielding behavior.
- ***Red curbs –*** Paint red curb "no parking" zones around the crosswalk to prevent motorists from obstructing visibility – consider upgrading to curb extensions if motorists do not comply.

RECOMMENDATIONS #NAI-292 – NAI-295: YAJOME AND LINCOLN INTERSECTION

IDENTIFIED BARRIERS

- ***Yajome widens –*** Yajome Street on the south side of the intersection widens leading up to the intersection, greatly increasing pedestrian crossing distance across Yajome Street and pushing pedestrians and bicyclists further out of the line of sight of motorists.

- ***Uncontrolled Lincoln traffic –*** Uncontrolled high-volume and high-speed traffic on Lincoln can make turning left from Yajome difficult for motorists, which can result in motorists making fast turning movements and not looking for pedestrians crossing. This may also result in motorists making fast turns off of Lincoln Avenue onto Yajome Street.

Poor sight lines cause motorists to block the crosswalk in order to see oncoming traffic.

- ***Vehicles obstructing visibility –*** Missing "no parking" red zones around the intersection allows motorists to park adjacent to the intersection and existing crosswalk and obstruct pedestrian visibility.

- ***Bicycle/motorist conflict area –*** Leading up to the intersection, existing bicycle lanes become dashed in advance of the intersection to signal to motorists that they may merge with the bicycle lane to turn right. Given the high speeds on Lincoln Avenue and vehicle volumes on both corridors, this creates a potential bicycle/motorist conflict area when bicyclists are travelling straight on Lincoln and motorists are turning right onto Yajome.

- ***Missing crosswalks –*** There are no crosswalks across Yajome Street on the north side and across Lincoln Avenue, greatly reducing pedestrian visibility and requiring pedestrians to take a detour to cross Lincoln Avenue.

RECOMMENDATIONS

- ***Curb extensions –*** Install curb extensions on all four corners of the intersection to reduce motorist speeds, improve pedestrian visibility, and reduce crossing distances, with significant extensions on the southwest and/or southeast corners to square up the south side of the intersection. The curb extensions on the south side should focus on the Yajome sides and should not obstruct Lincoln Ave bike lanes.

- ***Yajome crosswalk –*** Paint a crosswalk across the north side of Yajome Street to improve pedestrian visibility.

- ***Lincoln crosswalk –*** Paint a high-visibility crosswalk across Lincoln Avenue and install Rectangular Rapid Flashing Beacons and sharks' teeth on Lincoln Ave travel lanes to improve motorist yielding behavior and provide a direct crossing across Lincoln Avenue.

- ***Conflict markings –*** Paint green conflict markings in existing Lincoln Avenue bicycle facilities leading up to the intersection on both sides to improve bicyclist visibility.

RECOMMENDATION #NAI-287: CENTRAL AVE BIKE BOULEVARD

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 –*** Motorist speeding, which can be facilitated by wide, straight roads with little traffic-calming or traffic control, reduces motorists' range of vision and increases both risk of collisions and potential severity of collisions.

There are no bicycle facilities on Central Avenue.

RECOMMENDATIONS

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

RECOMMENDATION #NAI-413: CENTRAL AND YAJOME INTERSECTION

IDENTIFIED BARRIERS

- ***Missing red zones –*** Missing red zones in the intersection allow motorists to park adjacent to crosswalks, obstructing pedestrian visibility.
- ***Low-visibility crosswalks –*** The existing crosswalks are faded and painted with a standard, parallel line pattern, despite being in a highly-travelled school zone.
- ***No curb ramps –*** While installation of ADA-accessible curb ramps is included as a universal SRTS recommendation (see Appendix B), the missing curb ramps at this location warrant discussion due to this intersection being highly-travelled by students who may be walking with family members with mobility assistance devices or strollers.

Central and Yajome intersection, facing west.

RECOMMENDATIONS

- ***Red curbs –*** Paint red curbs to mark "no parking" on all four corners of the intersection to prevent motorists from obstructing visibility.

- ***High-visibility crosswalks –*** Upgrade the existing crosswalks to a high-visibility school-zone pattern to improve pedestrian visibility and motorist yielding behavior.

- ***ADA curb ramps –*** Install ADA-compliant curb ramps on all curbs to ensure accessibility.

RECOMMENDATION #NAP-066: 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, are an example of fun and easy encouragement events that schools can hold independently.

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-104: PUEBLO AVE AND JEFFERSON ST INTERSECTION

IDENTIFIED BARRIERS

- ***High volume intersection***
- ***Low-visibility crosswalks***
- ***Long crossing distance***

RECOMMENDATIONS

- ***High-visibility crosswalks***
- ***Leading Pedestrian Intervals***
- ***Curb extensions***

Relevant Reports:

- *Valley Oak High School Walk Audit Report*
- *Napa High School Walk Audit Report*

RECOMMENDATIONS #NAI-259 AND NAI-260: LINCOLN AVENUE FROM CALIFORNIA TO SOSCOL

IDENTIFIED BARRIERS

- ***Auto-oriented corridor***
- ***High speeds and volumes of traffic***
- ***High-stress bicycle facilities***

RECOMMENDATIONS

- ***Road diet and installation of multimodal improvements***
- ***Class IV protected bike lane***
- ***Conflict markings***

Relevant Reports:

- *Napa High School Walk Audit Report*
- *New Tech High School Walk Audit Report*

RECOMMENDATION #NAI-281: CENTRAL AND MAIN VINE TRAIL INTERSECTION

IDENTIFIED BARRIERS

- ***Poor pavement condition***
- ***Low-visibility/missing striping***
- ***Low pedestrian visibility***

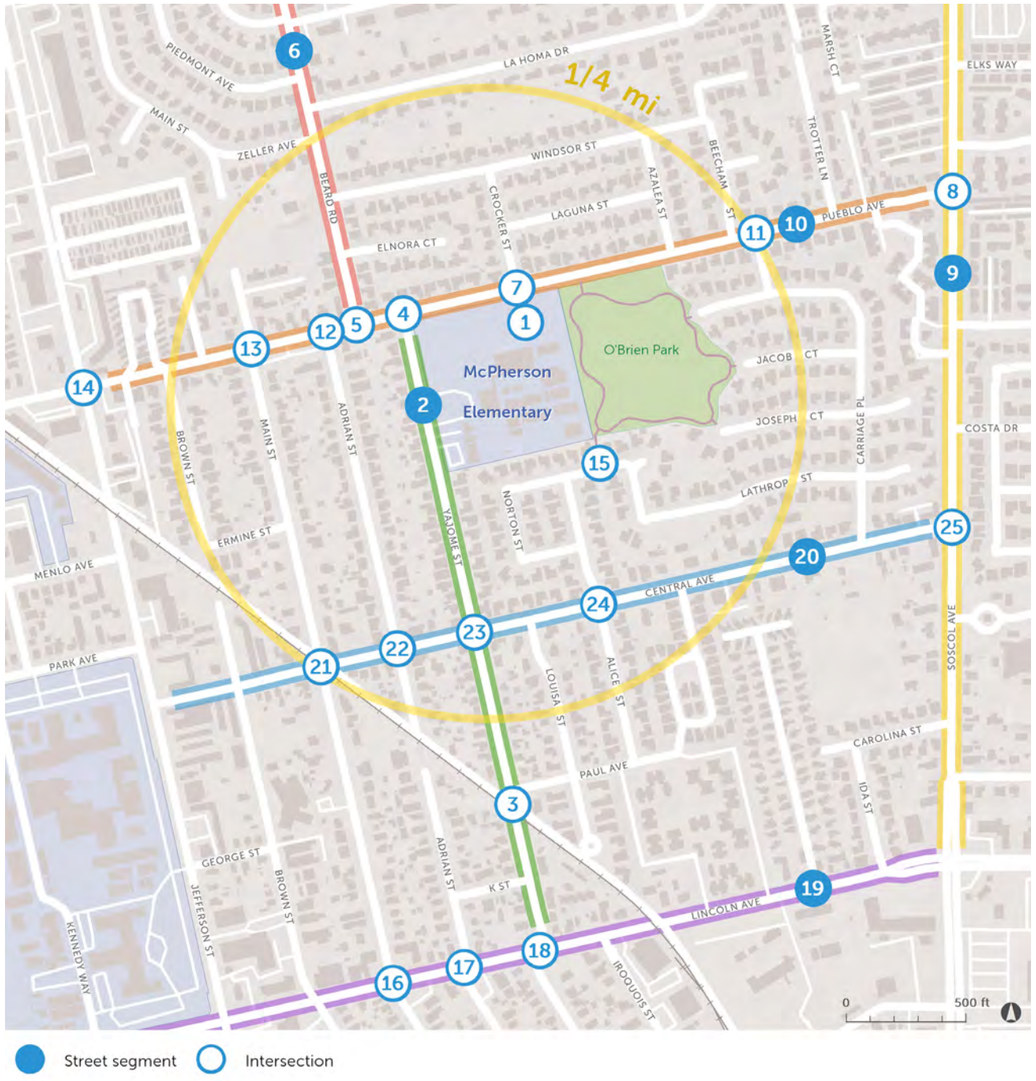
RECOMMENDATIONS

- ***High-visibility crosswalks***
- ***Curb extensions***
- ***Increase pedestrian/bike signage***

Relevant Reports:

- *Napa High School Walk Audit Report*

MAP OF RECOMMENDATIONS



Map 5: Recommendations

TABLE OF RECOMMENDATIONS

Infrastructure:

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
1	School grounds	NAI-396	Low volume of bike parking available (enough for 5% of school population).	Increase secure bike parking to accommodate 20% bike and roll mode share, provide bike parking at major school entrances.	$	**Medium**
2	Yajome Street from Pueblo Avenue to Lincoln Avenue	NAI-313	No bicycle facilities.	Install Class III bike boulevard with sharrows, signage, and traffic-calming.*	$$	**High**
		NAI-314	Southbound sidewalk gap from K St to Lincoln Ave.	Fill sidewalk gap.*	$	**Low**
3	Yajome Street Vine Trail crossing (intersection)	NAI-299	No crosswalk across Yajome at Vine Trail crossing.	Install curb extensions at Vine Trail curbs and paint high-visibility crosswalk across Yajome to mark Vine Trail crossing path.	$$	**High**
4	Pueblo Avenue and Yajome Street intersection	NAI-397	Low-visibility crosswalk pattern in school zone, wide curb radii facilitate fast right turn movements and push pedestrians out of sight. No red zones allow motorists to park close to crosswalk	Install curb extensions on southeast and southwest curbs. Upgrade crosswalk to high-visibility school zone pattern. Evaluate potential for curb extension on westbound Pueblo at intersection to further reduce vehicle speeds.	$$	**Medium**
5	Pueblo Avenue and Beard Road intersection	NAI-398	Faded crosswalk across Pueblo Ave, poor motorist yielding behavior, low-visibility crosswalk pattern in the school zone, wide curb radii on north leg facilitate fast motorist turning movements and increase crossing distance.	Install curb extensions on all crosswalk curbs, upgrade crosswalks to high-visibility school-zone pattern.	$$	**High**
6	Beard Road from Pear Tree Lane to Pueblo Avenue	NAI-399	Existing Class III marked with sharrows placed in door zone only. Long, straight corridor with no traffic-calming or traffic control facilitates motorist speeding.	Install Class III bike boulevard with sharrows, signage, and traffic-calming (crucial) from Pueblo Ave to Pear Tree Lane.* La Homa and Pear Tree intersections are important traffic-calming locations along corridor.	$$	**Medium**
		NAI-400	Southbound sidewalk gap between Zeller Ave and Pueblo Ave.	Fill southbound sidewalk gap.*	$$	**Low**

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
7	Pueblo Avenue and Crocker Street intersection	NAI-401	Faded crosswalk and long crossing distance across Crocker, no red zones on Crocker allows vehicles to park close to crosswalks, low-visibility crosswalk patterns in school zone, high-speed/volume traffic on Pueblo, high potential conflict point (next to parking lot entrance), tree obscures pedestrian sign for eastbound motorists.	Curb extensions for all curbs of crosswalks, upgrade both crosswalks to high-visibility pattern, install RRFB for crosswalk across Pueblo Ave (already planned), paint shark's teeth on Pueblo Ave, paint red zones on Crocker St north of crosswalk.	$$	**High**
8	Pueblo Avenue and Soscol Avenue intersection	NAI-402	High speeds and volumes of traffic on Soscol Ave, extremely faded crosswalks, wide curb radii facilitate fast motorist turning movements and reduce visibility of pedestrians, long crossing distances.	Install curb extensions on northwest and southwest corners to square up intersection and reduce curb radii. Repaint crosswalks with high-visibility patterns.	$-$$	**Medium**
9	Soscol Avenue from Trancas Street to Lincoln Avenue	NAI-403	Significant central north/south collector/arterial – wide, straight, auto-oriented corridor designed to prioritize vehicle speed and convenience. Road design facilitates frequent motorist speeding. Infrequent and uncomfortable crosswalks across the corridor, high-stress unprotected bicycle facilities with frequent debris obstructions and faded paint.	Long term: Road diet and redesign of corridor to improve and prioritize safe, accessible, and comfortable multi-modal transportation through a Complete Streets framework. Integrate specific recommendations from SRTS reports into road redesign. Class IV protected bike lanes preferred for this corridor with reclaimed space from road diet.	$$$$	**Medium**
		NAI-404		Near-term solutions: Repaint bike lanes. Paint conflict markings for bike facilities at major side streets and driveways. Traffic-calming measures along corridor. If repaving provides opportunity to narrow travel lanes and widen bike lanes, do so.	$-$$$	**Medium**
10	Pueblo Avenue from Jefferson Street to Soscol Avenue	NAI-405	High speeds and volumes of traffic, speeding, vehicles park close to intersections and obstruct visibility of pedestrians and oncoming traffic. See collision history.	Implement traffic-calming measures and daylighting strategies along corridor.	$$-$$$	**High**
		NAI-406	No bicycle facilities.	Install Class II bike facilities.*	$$	**High**
		NAI-407	Westbound sidewalk gap between Soscol Ave and Beecham St.	Fill sidewalk gap.*	$-$$	**Low**
		NAI-408	Displaced eastbound sidewalks from tree roots from Coolidge Dr to Soscol Ave.	Address tree root displacement issue and repair sidewalks.	$-$$	**Low**

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
11	Pueblo Avenue and Coolidge Drive intersection	NAI-409	No crosswalk across Coolidge Drive.	Paint crosswalk across Coolidge Drive.	$	**Low**
12	Pueblo Avenue and Adrian Street intersection	NAI-410	No crosswalk across Adrian Street.	Paint high-visibility school-zone crosswalk across Adrian Street.	$	**Low**
13	Pueblo Avenue and Main Street intersection	NAI-411	Impatient motorist behavior, uncontrolled Pueblo Ave traffic, wide curb radii on south leg facilitate fast motorist turning movements.	Curb extensions on southwest, southeast, and northeast corners. Paint high-visibility pattern across Pueblo Ave.	$$	**Low**
14	Pueblo Avenue and Jefferson Street intersection	NAI-104	High volume intersection of collector and arterial roads, faded low-visibility pattern crosswalks, long crossing distances. See collision history.	Repaint crosswalks with high-visibility pattern; install Leading Pedestrian Intervals for all crosswalks to reduce turning conflicts. Based on results of corridor study* and potential for road diet (Jefferson), consider installation of curb extensions at all four corners of intersection.	$-$$	**Medium**
15	Lathrop Street entrance to O'Brien Park	NAI-412	Cars park close to crosswalk and obstruct pedestrian visibility, low-visibility crosswalk in school zone, curb ramp missing on one side of midblock crosswalk	Upgrade crosswalk to high-visibility crosswalk. Paint red curb "no parking" zones around crosswalk – consider upgrading to curb extensions if motorists do not comply	$	**Medium**
16	Lincoln Avenue and Main Street intersection	NAI-290	Faded crosswalks, wide corner radii, large intersection with high speeds/volumes of vehicle traffic on Lincoln Ave.	Repaint crosswalks with high-visibility pattern, install curb extension on southeast side.	$-$$	**Low**
17	Lincoln Avenue and Adrian Street intersection	NAI-291	Impatient motorist behavior, uncontrolled Pueblo Ave traffic, wide curb radii on south leg facilitate fast motorist turning movements.	Paint crosswalks across Adrian Street, install curb extensions on north corners and paint red curbs on Adrian St on south curbs.	$$	**Low**

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
18	Lincoln Avenue and Yajome Street intersection	NAI-292	Yajome St (south side) – widens at intersection, increasing ped crossing distance and facilitating fast right turns onto Lincoln Ave. No stop control for high speed/volume Lincoln Ave traffic may cause drivers on Yajome to make fast turns/ crossings without looking for bicyclists/peds. Bike facilities disappear through intersection.	Install significant curb extension on southwest corner and curb extension on southeast corner (Yajome sides only) to square up intersection, reduce crossing distance, and calm traffic.	$$	**Medium**
		NAI-293	Yajome St (north side) – no crosswalk across Yajome St, wide curb radii on both north corners, bike facilities disappear through intersection, cars park close to intersection and obstruct visibility.	Paint crosswalk across Yajome. Install curb extensions on both north corners, removing one parking space on both Lincoln and Yajome per curb extension (improve pedestrian visibility and motorist visibility so motorists don't block crosswalk).	$$	**Medium**
		NAI-294	Bicyclist/motorist conflict area leading up to intersection with motorist right turns onto Yajome.	Paint green conflict markings in existing Lincoln Avenue bicycle facilities leading up to intersection on both sides.	$	**Medium**
		NAI-295	No crosswalk across Lincoln Avenue to connect Yajome Street.	Install high-visibility crosswalk across Lincoln Avenue with Rectangular Rapid Flashing Beacons at northeast corner of Lincoln/Yajome. Install sharks' teeth on Lincoln Ave travel lanes.	$$	**Low**
		NAI-296	Southbound Yajome sidewalk north of Lincoln Ave does not reach intersection.	Fill sidewalk gap.*	$	**Low**
19	Lincoln Avenue from California Boulevard to Soscol Avenue	NAI-259	High-stress bicycle facilities – poor road quality, dips/fall hazards from storm drains, narrow and unprotected next to high speed and high-volume traffic.	Implement a road diet along Lincoln Avenue to create a street with one travel lane in each direction and a middle turn lane. Use reclaimed space for multimodal improvements (widen sidewalks, install low-stress bike facilities). Due to high multimodal use, may require a Corridor Plan similar to Imola Ave.	$$$-$$$$	**High**
		NAI-260		Install a Class IV bike lane – can be parking protected to preserve some parking in some locations but should remove parking around intersections and driveways. Install conflict markings at (major) intersections and driveways. Buffered Class II bike lanes can also be used in areas where Class IV is not feasible.	$$	**High**

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
20	Central Avenue from Jefferson Street to Soscol Avenue	NAI-286	No eastbound sidewalk from Jefferson Street to Main Street.	Install eastbound sidewalk where missing.*	$$	**Low**
		NAI-287	No bicycle facilities, speeding.	Install Class III bike boulevard with sharrows, signage, and traffic-calming.*	$$	**Medium**
21	Central Avenue and Main Street intersection	NAI-281	Poor sight lines and pavement condition, lack of striping for Vine Trail crossing. Poor pavement condition, low-visibility crosswalk on north side and missing crosswalk on east side for Vine Trail users, low pedestrian visibility due to the railroad crossing/the geometry of the intersection and parked vehicles close to the intersection.	Paint high-visibility crosswalks across north and east leg for Vine Trail path and install curb extensions for both crosswalks, increase pedestrian/bike crossing signage.	$$	**Medium**
		NAI-282		Repave road through and around intersection and replace/implement existing and recommended striping.	$$	**Low**
22	Central Avenue and Adrian Street intersection	NAI-297	No crosswalks.	Install crosswalks on all legs of intersection.	$	**Low**
23	Central Avenue and Yajome Street intersection	NAI-413	Cars park adjacent to crosswalks and obstruct pedestrian visibility, faded-low-visibility crosswalks in school zone. No curb ramps at any of the corners – common route to school with students who may be walking with family (may have strollers).	Paint red curbs on all four corners. Repaint crosswalks with high-visibility school-zone crosswalks. Install ADA-compliant curb ramps on all corners.	$	**Medium**
24	Central Avenue and Alice Street intersection	NAI-414	Poor motorist yielding behavior (Central Ave motorists), wide curb radii facilitate fast motorist turns, missing red zones allow motorists to park adjacent to crosswalks, faded low-visibility school zone crosswalks. Curbs are not ADA-accessible. (route from mobile home parks to McPherson; many students come from Napa apartments south of school).	Upgrade both existing crosswalks to high-visibility pattern. Install curb extensions on both sides of crosswalk across Central Avenue. Install Rectangular Rapid Flashing Beacons for crosswalk across Central Avenue. Paint shark's teeth on Central Ave travel lanes and red curbs on southwest corner. Install ADA-compliant curb ramps on all curbs.	$$	**High**
25	Soscol Avenue and Central Avenue intersection	NAI-415	Uncontrolled high-volume and high-speed traffic on Soscol, long crossing distance, faded low-visibility crosswalk – all creates low ped visibility and poor motorist yielding. Lack of red curbs on Central could result in vehicles parking next to crosswalk.	Install a high-visibility crosswalk across Soscol Avenue, install curb extensions on northwest and southwest corners (accommodate bicycle facilities).	$$	**Low**

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

Programmatic Improvements:

	ISSUE	ID #	RECOMMENDATION	LOCATION	FREQUENCY	COST	PRIORITY
1	Bicycle facilities frequently littered with debris, flat-tire/fall risk and/or pushes bicyclists into roadway.	NAP-064	Improve maintenance of bike facilities by slowing street sweeping to ensure bike lanes remain clear of debris. Increase sweeping frequency if needed.	Soscol Avenue from Trancas Street to Lincoln Avenue	Consistent with street-sweeping schedule, increase as-needed	$	**Medium**
2	No regular bicycle/pedestrian safety education program.	NAP-065	Provide annual bicycle and pedestrian safety education to all students.	School site	Annual	$	**High**
3	Congestion in school zone, infrequency of encouragement events.	NAP-066	Continue growing participation in annual countywide encouragement events. Hold independent encouragement events on a monthly basis, with goal of increasing frequency.	School site	Countywide events – annual; independent events – monthly	$	**Medium**
4	Congestion in school zone.	NAP-067	Establish walking school bus/bike train/carpool program to reduce vehicles in the school zone.	School site	Monthly, with goal of increasing frequency	$	**High**
5	Congestion and conflict in school zone during pick-up/drop-off.	NAP-068	Develop and distribute circulation policy.	School grounds	Annually	$	**Low**

COLLISION MAP AND DATA

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

Summary Statistics

RADIUS	FATAL	SEVERE INJURY	VISIBLE INJURY	COMPLAINT OF PAIN	PEDESTRIAN	BICYCLE	TOTAL
< .25 mi.	0	0	1	1	1	1	2
.25-.5 mi.	0	1	7	10	8	10	18
Total	0	1	8	11	9	11	20

Collision List

Case ID	Date	Time	Primary	Secondary	Distance	Direction	Bike	Ped
8030876	2016-04-24	16:02	JEFFERSON ST	PUEBLO AV	0.00	-	No	Yes
8099755	2016-07-24	21:49	LINCOLN AV	YAJOME ST	0.00	-	Yes	No
8185858	2016-11-07	16:16	JEFFERSON ST	PUEBLO AV	0.00	-	Yes	No
8566390	2018-02-09	15:59	PUEBLO AV	YAJOME ST	0.00	-	Yes	No
8675344	2018-08-01	15:19	JEFFERSON ST	GEORGE ST	0.00	-	Yes	No
8689574	2018-08-11	13:00	LINCOLN AV	MAIN ST	0.00	-	Yes	No
8712401	2018-09-19	07:44	CENTRAL AV	JEFFERSON ST	0.00	-	No	Yes
8440559	2017-08-22	08:02	BROWN ST	LINCOLN AV	0.00	-	Yes	No
8490099	2017-08-31	18:44	PUEBLO AV	JEFFERSON ST	10.00	W	Yes	No
8537145	2018-01-05	15:08	PUEBLO AV	JEFFERSON ST	300.00	W	Yes	No
8680095	2018-07-30	21:56	BROWN ST	LINCOLN AV	0.00	-	No	Yes
8680107	2018-07-24	13:11	COOPER CT	PUEBLO AV	164.00	N	No	Yes
8703316	2018-08-20	15:24	JEFFERSON ST	PUEBLO AV	120.00	N	Yes	No
8804227	2019-02-16	06:16	PUEBLO AV	SOSCOL AV	0.00	-	No	Yes
8847750	2019-04-12	18:13	JEFFERSON ST	PUEBLO AV	0.00	-	No	Yes
9199730	2020-11-24	11:57	JEFFERSON ST	PUEBLO AV	0.00	-	No	Yes
8712405	2018-09-24	07:24	PUEBLO AV	SOSCOL AV	0.00	-	Yes	No
8737906	2018-11-02	18:41	LINCOLN AV	LINCOLN AV 770	0.00	-	No	Yes
8791250	2019-01-19	18:00	JEFFERSON ST	PARK AV	30.00	S	Yes	No
9210887	2020-10-02	20:47	LINCOLN AV	IROQUOIS ST	75.00	E	No	Yes

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

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

[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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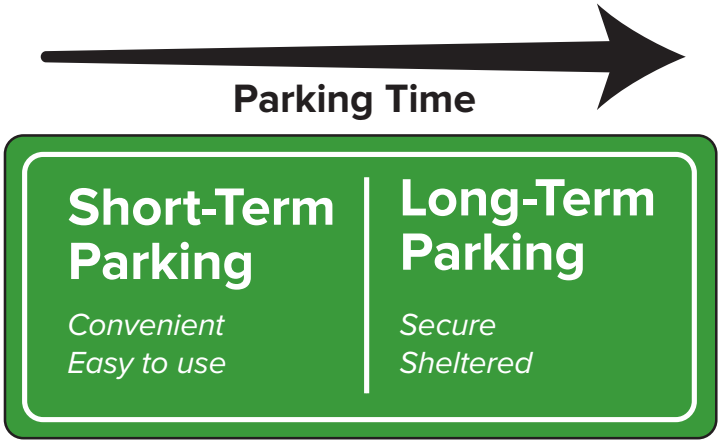
TABLE OF CONTENTS

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

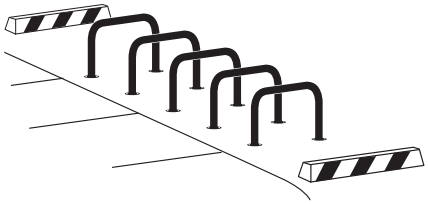
Effective bike parking for short-term users depends on two main factors: 1) proximity to the destination and 2) ease of use.

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.

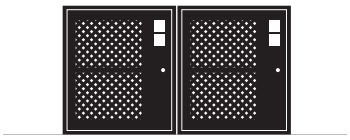
BIKE CORRALS

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**

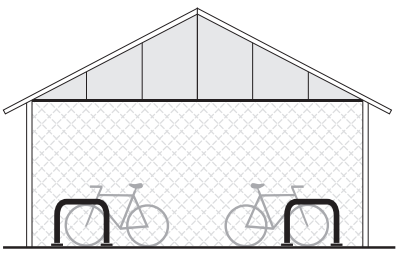
LONG-TERM PARKING

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

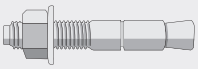
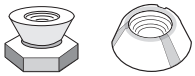
Selecting an appropriate installation surface and technique is key to creating bicycle parking that remains secure and attractive over time.

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

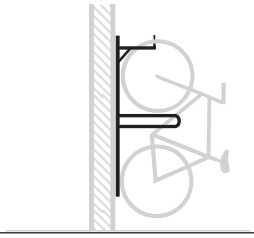
These rack styles do not meet all performance criteria but may be appropriate in certain constrained situations.

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

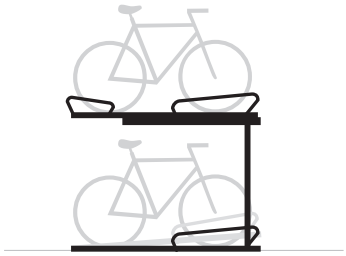
Variation of the wheelwell-secure rack designed to stagger handlebars vertically or horizontally to increase parking density. Reduces usability and limits kinds of bikes accommodated, but contains bikes well and aids in fitting more parking in constrained spaces.

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.

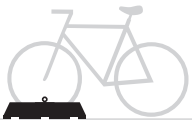
SCHOOLYARD
also called comb, grid

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

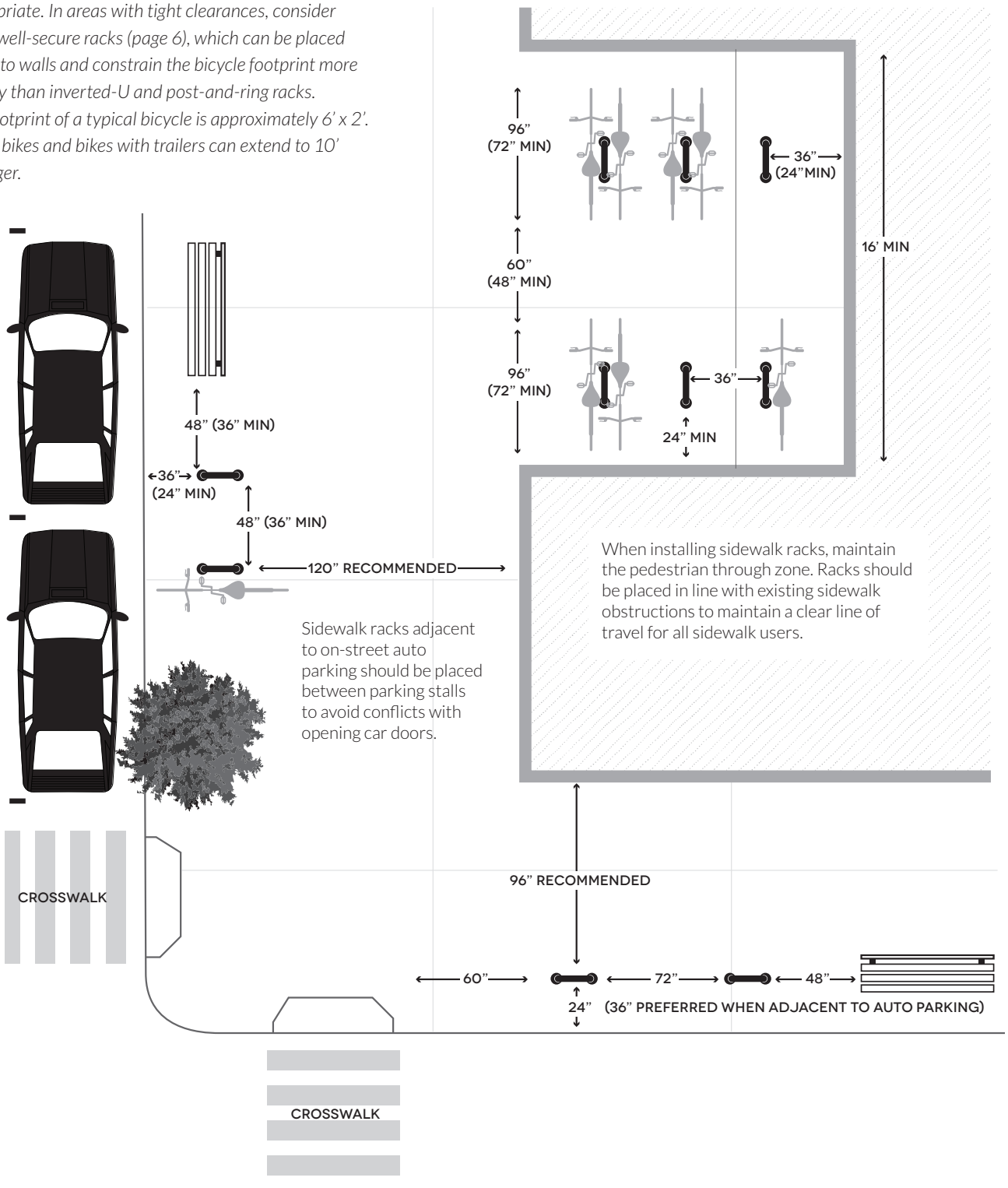
Most bicycle parking racks are made of carbon steel or stainless steel. Carbon steel requires a surface coating to resist rust while appropriate grades of stainless steel need no coating. Not all materials and coatings with the same name perform equally. Square tubing provides a security advantage as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