Walk Audit Report

SafeRoutes
Napa County

WEST PARK
ELEMENTARY SCHOOL

WEST PARK ELEMENTARY SCHOOL

2315 WEST PARK AVENUE NAPA, CA

—

TABLE OF CONTENTS

ACKNOWLEDGEMENTS

NAPA COUNTY SAFE ROUTES TO SCHOOL PROGRAM

Napa County Bicycle Coalition
Madeline Oliver, Program Coordinator
Carlotta Sainato, Program Coordinator
Patrick Band, Executive Director
Kara Vernor, Executive Director

Napa County Office of Education
Grant Dinsdale, Community Programs Site Coordinator, Safe Routes to School
Willow Williams, Community Programs Outreach Coordinator
Christine Wedding, Community Programs Manager
Sara Sitch, Community Programs Director

Napa Valley Transportation Authority
Diana Meehan, Senior Planner

SCHOOL OFFICIALS

Napa Valley Unified School District
Dr. Rosanna Muccetti, Superintendent
Amye Scott, Principal (previous)
Katelyn Estudillo, Principal (current)

CITY STAFF

City of Napa Public Works Department
City of Napa Community Development Department
City of Napa Fire Department
City of Napa Police Department
Napa County Public Works
Napa County Sheriff's Department
Napa County Planning Department – Roads Division
Napa County Fire Department

WALK AUDIT PARTICIPANTS

Angela Eddleman, Parent
Tiffanie Feigel, Parent
Lisa Hiserman, Parent
Wendi Piscia, Parent
Kim Schager, Parent
Amanda Alvarez, Teacher
Amye Scott, Principal

REPORT DESIGN

Ana Rizzo, Graphic Design
Amber Manfree, GIS Mapping

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.

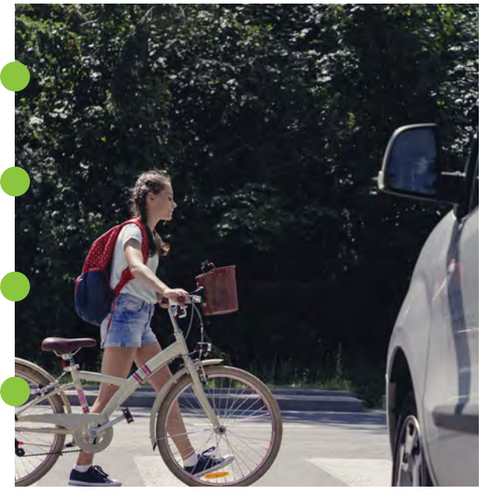
Schools and the community benefit immensely when students choose to walk or bike.

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.

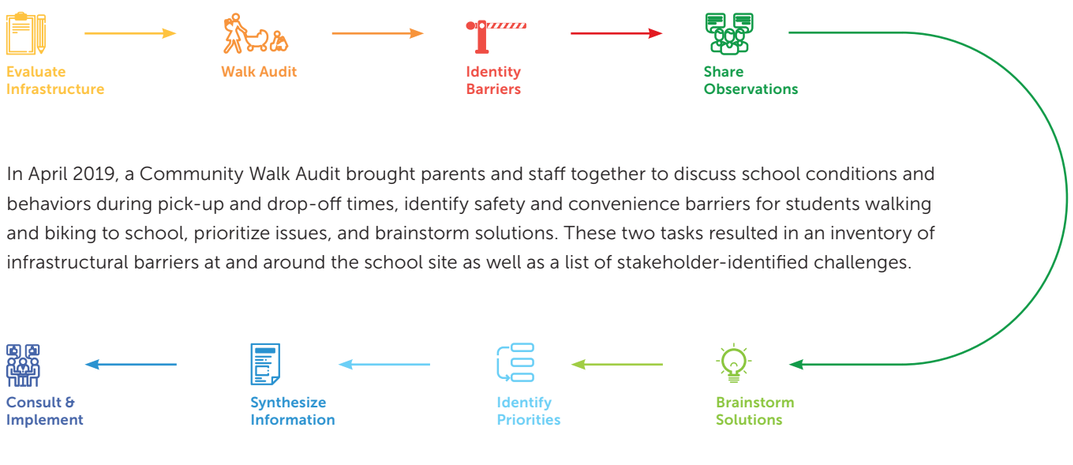
Education
Ensure that everyone learns how to travel safely and why biking and walking are important.

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



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

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

WEST PARK ELEMENTARY SCHOOL
SCHOOL SUMMARY

Principal	Amye Scott (previous) Katelyn Estudillo (current)
First Bell	8:00 AM
Last Bell	2:25 PM (1:05 pm on Wed.)
District	Napa Valley Unified

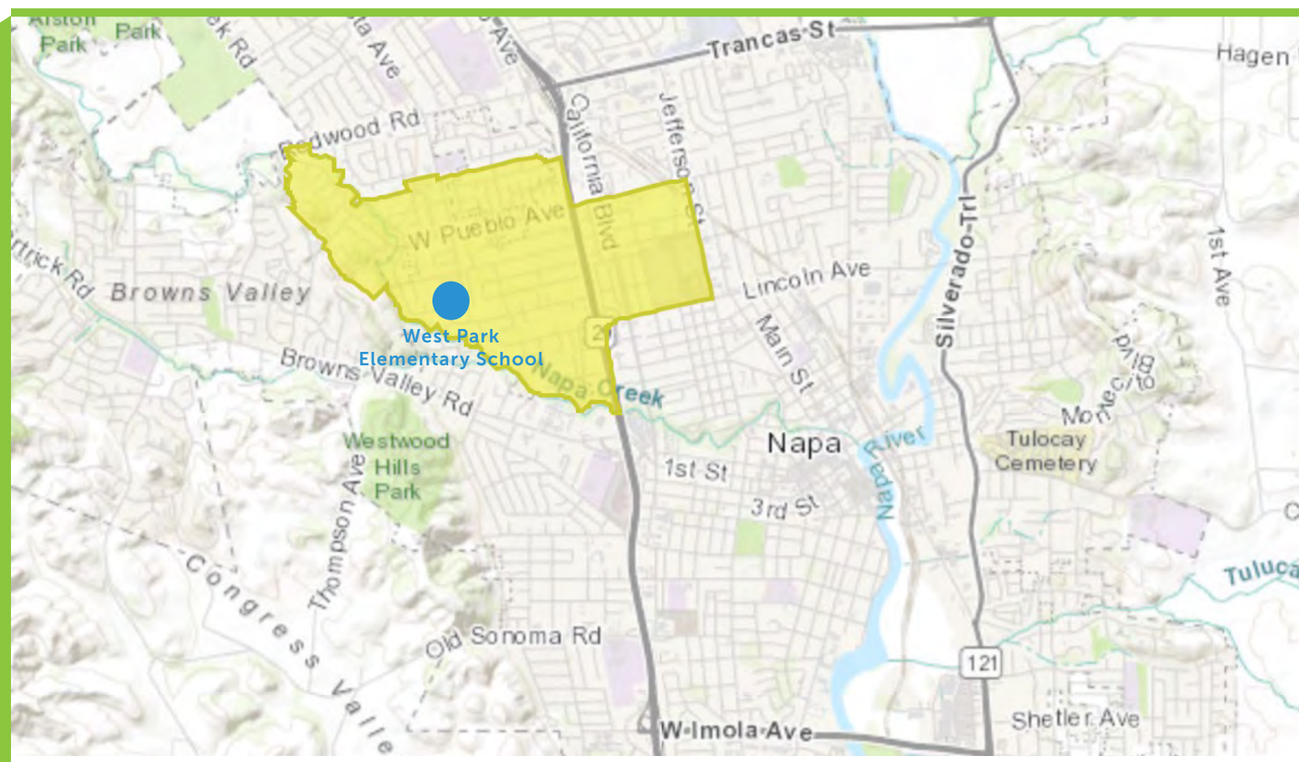
Grades	K-5
Enrollment	313
Street	2315 West Park Avenue
City	Napa, CA 94558

Overall Facility Rating[j]: Good

While NVUSD has an open enrollment policy, West Park's default enrollment area primarily covers a section of neighborhoods west of Highway 29 in north/central Napa just south of Pueblo Vista Elementary School. Its southwest border follows Napa Creek, while its northwest border follows Ridgetop Way and Hidden Valley Lane. It also includes several blocks east of Highway 29, bordered by Pueblo Avenue, Jefferson Street, and Lincoln Avenue.

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), 42.9% of students attending West Park Elementary reside outside of the school's enrollment boundary.



Map 1: Enrollment boundary for West Park Elementary School, shaded in yellow.

DATA

No data is currently available regarding the number of students who walk and bike to school at West Park 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 (2018-19)

ETHNICITY	WEST PARK ELEMENTARY SCHOOL	DISTRICT
Black or African American	1.3%	2.1%
American Indian or Alaska Native	0.0%	0.2%
Asian	0.0%	2.4%
Filipino	0.0%	6.9%
Hispanic or Latino	37.6%	54.9%
White	45.4%	29.2%
Native Hawaiian or Pacific Islander	0.0%	0.2%
Two or More Races	5.1%	3.9%
Not Reported	0.0%	0.3%
EXPERIENCE		
Socioeconomically Disadvantaged	46.0%	50.7%
English Learners	25.9%	21.2%
Students with Disabilities	20.8%	11.5%
Foster Youth	1.0%	0.3%
Homeless	1.6%	1.3%

Figure 2: Enrollment Data by Group

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

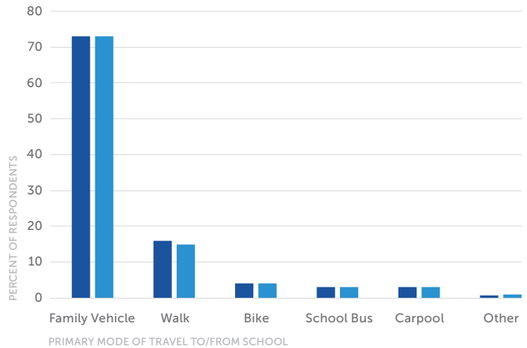


Figure 1: EMC Research Polling Results

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 (2018-2019)

	NUMBER OF STUDENTS
Kindergarten	45
Grade 1	50
Grade 2	46
Grade 3	46
Grade 4	71
Grade 5	55
Total	**313**

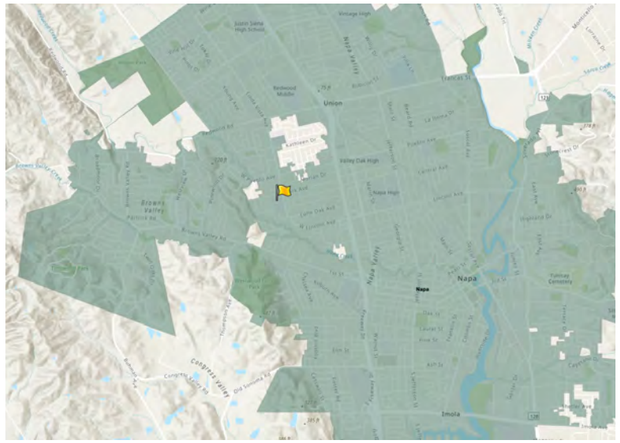
Figure 3: Enrollment Data by Grade

NEIGHBORHOOD CONTEXT

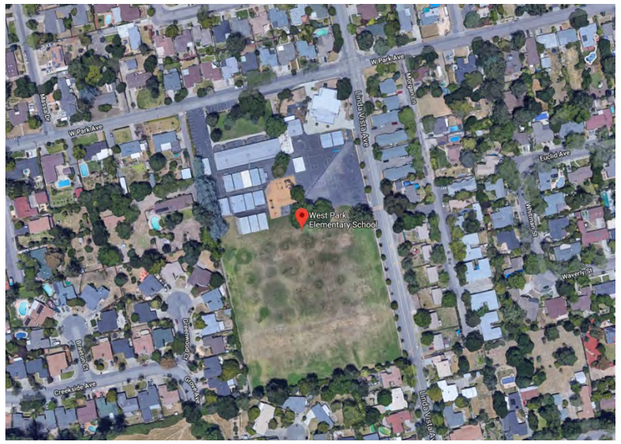
West Park Elementary School is located in west Napa on the corner of West Park Avenue and Linda Vista Avenue in a neighborhood comprised of primarily single-family residences. West Park Elementary is located within Napa's Pueblo Planning Area, which consists mostly of single-family homes, though the largest senior special needs housing development in Napa is located just a few blocks north of West Park. There are also some commercial uses on Solano Avenue, over a half-mile away.

The West Park enrollment boundary includes some neighborhoods east of Highway 29 in Napa's Beard Planning Area, which is characterized by a variety of uses, including commercial strips, multi-family housing, single-family housing, and a light industrial area. West Park's east enrollment boundary is the area bound by Pueblo Avenue to the north, Jefferson Street to the east, and Lincoln Avenue to the south, which includes single-family residences and some multi-family residences.

Most of the neighborhoods in West Park's enrollment boundaries are post-war tract subdivisions, defined by the uniformity in their street patterns. The rest of the neighborhoods are deep-lot subdivisions, characterized by typically narrow, gridiron street patterns. These neighborhoods were primarily built in the 1950s through the 1970s. West of Highway 29, most of the neighborhoods feature several cul-de-sacs amongst a fragmented parallel street network. Though cul-de-sacs reduce traffic volume and speeds, these street patterns also reduce pedestrian access points and walkability. East of Highway 29 has a mixed gridiron and fragmented parallel street design. While these street designs provide the greatest route choice and interconnectivity for pedestrians, Highway 29 is a significant barrier to pedestrians/bicyclists heading to West Park Elementary from east of Highway 29.



Map 2: School site location in city.



West Park Elementary School is surrounded by single-family residences

For students living east of Highway 29, the Lincoln Avenue overpass is the fastest way to travel west to the school.

EXISTING **CONDITIONS**

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

SITE CIRCULATION

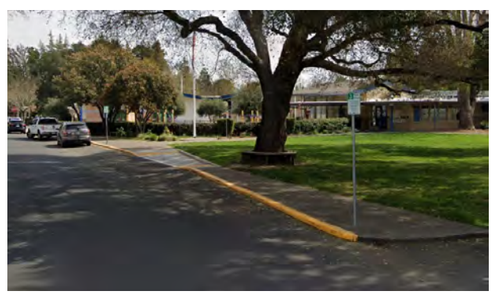
West Park Elementary is bordered by West Park Avenue to the north and Linda Vista Avenue, a collector, to the east. The campus's main entrance is on West Park Avenue, along with a smaller gated entrance east of the main entrance and an access point along the staff parking lot to the west of the main entrance. There are also three gated entrances along the sports field on Linda Vista Avenue. Campus can also be accessed via a pedestrian path that connects the southwest corner of the school field to Grove Avenue, a cul-de-sac adjacent to the school. This provides an alternate route to walking along West Park Avenue for students living in the neighborhoods west of the school. Several informal paths stemming from this path have been made.

Due to the street network design in the area around the school, the most direct routes to the school from the surrounding neighborhoods usually require all modes of school traffic (motorists, bicyclists, and pedestrians) to travel along the few collector/collector-like streets in the area. These streets include Linda Vista Avenue, West Pueblo Avenue, West Park Avenue, Lone Oak Drive, and West Lincoln Avenue.

The school parking lot is located along eastbound West Park Avenue on the western edge of campus with about a dozen stalls reserved for staff members. East of the parking lot are nine perpendicular on-street parking stalls, followed by the loading zone. The school's loading zone is marked by a yellow curb and signage along eastbound West Park Avenue in front of the school's main entrance. The loading zone is set back from the travel lane and runs roughly 160 feet. As most of the school's default enrollment boundary is east of campus, most motorists approach the school heading westbound and make U-turns on West Park Avenue to enter the loading zone.

Aerial photo of West Park Elementary School.

Cars queue up for the loading zone along West Park Ave during morning drop-off



School loading zone on West Park Avenue

During arrival and dismissal, motorists load and unload students on both sides of West Park Avenue and Linda Vista Avenue near the school. Since the northbound side of Linda Vista Avenue has a large sidewalk gap, students who are dropped off on that side of the street often cross the street without a crosswalk to reach the existing sidewalk.

he school does not provide any formal parking or drop-off and pick-up policies on their website. Traffic safety reminders are sent out to parents in monthly newsletters, which are available on the school website. These reminders emphasize proper use of the loading zone and crosswalks, while discouraging U-turns, double parking, and parking in the staff parking lot and loading zones.

The school manages pick-up and drop-off procedure by having a staff member present at the loading curb and a crossing guard stationed at the Linda Vista Avenue crosswalk.

Bus service through NVUSD is available for West Park Elementary students to the Boys and Girls Club only. Students who live beyond 1.25 miles walking distance from school and attend their school of residence may apply for transportation through NVUSD. The bus loading zone is located on southbound Linda Vista Avenue, in front of the school's field. The Vine transit N line, operated by the Napa Valley Transportation Authority, has a stop near the West Pueblo Avenue and Linda Vista Avenue intersection and provides service in north/central Napa, mostly along Trancas Street and Jefferson Street.

REMINDERS:

- The parking lot on the west side of the school is for **STAFF ONLY**. This is for the safety of our students and staff members. **This area is off limits between 7:30 a.m.—3:30 p.m.,** M-F. Please **DO NOT** park at any time in the spaces marked for STAFF in the front parking lot as well.
- Please use the cross walks. Remember to escort your child across the street.
- **The Yellow Curb in front of the school is a NO PARKING zone.** This area is for drop off and pick up only. **DO NOT** leave your vehicle unattended while waiting in this zone.
- Please do NOT park in the "Bus Zone" on Linda Vista. Napa PD will give citations.

An example of a traffic safety reminder provided to families by school staff.

BICYCLE AND PEDESTRIAN INFRASTRUCTURE

The school provides two 8-space racks for bike parking located behind the school's multi-purpose room.

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

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

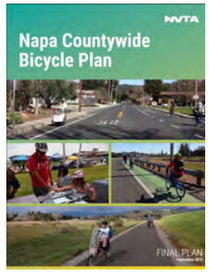
The school has also provided some bike safety education to students in the form of a bike rodeo led by the Napa County Safe Routes to School program. Bike rodeos are mainly on-bike lessons where students learn the rules of the road by navigating a roadway-designed obstacle course.

Walk and Roll to School Day (photographed above at Northwood Elementary School in Napa) celebrates active travel to school.

YEAR	EVENT	STUDENT PARTICIPANTS
2015/16	Bike to School Day	32
2016/17	Bike to School Day	48
2018/19	Bike Rodeo	315
2018/19	Bike to School Day	22
2019/20	Walk and Roll to School Day	27
2019/20	Bike Rodeo	N/A – Cancelled due to COVID

Figure 4: Encouragement and Education Data

EXISTING PLANS



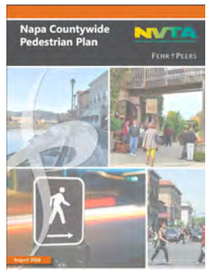
NVTA Napa Countywide Bicycle Plan (2019):

The Napa Countywide Bicycle Plan recommends some bicycle facility improvements around the school site. The Bicycle Plan recommends installing Class II bike lanes along Linda Vista Avenue and Class III bike boulevards on West Pueblo Avenue and West Lincoln Avenue.

NVUSD Facilities Master Plan (2016):

The NVUSD Facilities Master Plan lists several projects for West Park Elementary School, including installation of site perimeter fencing and site ADA improvements. School perimeter fencing is planned to provide a single point of entry and wayfinding signage for each elementary school in NVUSD. These projects may impact circulation around the school site.

MEASURE H
BUILDING ON OUR VISION
NVUSD



NVTA Napa Countywide Pedestrian Plan (2016):

The Pedestrian Plan recommends two projects near the school. The first is the installation of a new bridge and extension of Linda Vista Avenue over Redwood Creek. The second is an overpass from West Pueblo Avenue to Pueblo Avenue, which would provide a new crossing over SR 29.

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

The NVTA Countywide Transportation Plan is a long-range plan of countywide transportation priorities that provides a direction for the four- to five-year plan while considering a 25-year planning horizon. This plan is part of the regional planning process for the Regional Transportation Plan by the Metropolitan Transportation Commission. There are 28 projects by the City of Napa listed in the Plan – only one project, the Linda Vista Avenue Bridge and Extension, would 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**

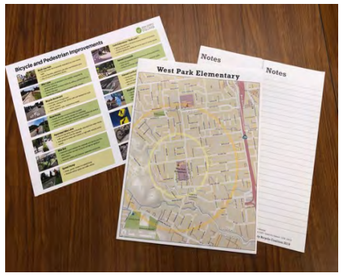
Date: 4/11/19
Day of the Week: Thursday

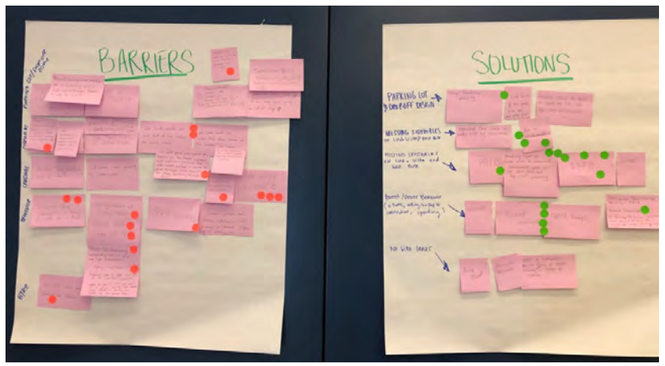
Meeting Time: 7:45 AM
Weather: Overcast

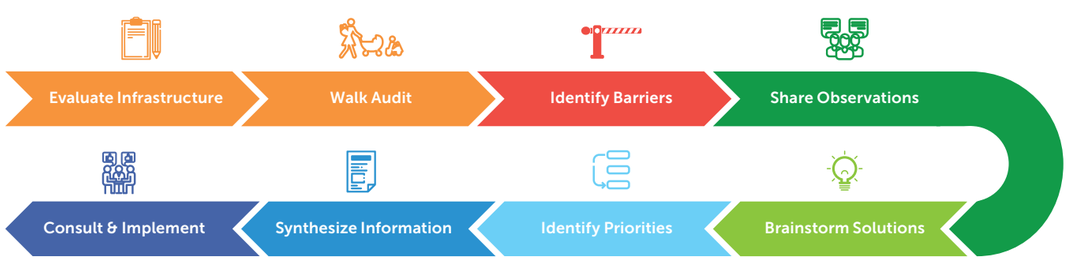
METHODOLOGY

The Community Walk Audit brought stakeholders together to observe existing conditions during morning drop-off, identify barriers to safe walking or biking, and brainstorm solutions. The Walk Audit team consisted of five parents, a teacher, and the principal. The Walk Audit team met 30 minutes prior to the school bell for a brief presentation on the SRTS program and the process and purpose of Walk Audits. The team then moved to the front of the school 15 minutes before the school bell to walk along West Park Avenue and Linda Vista Avenue and to observe the drop-off space and how parents and students circulate through and behave in the space. Ten minutes after the bell, the team returned to the classroom to discuss their observations, map issue areas, and record and prioritize the major barriers identified during the exercise.

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







WALK AUDIT FINDINGS

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

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

Stakeholder-Identified Barriers:

DESCRIPTION	LOCATION	VOTE SCORE
Parents do not completely stop at intersections	Linda Vista Avenue	10
No sidewalk, street narrows, parents still park, reduces space for families to walk and parents to drive	West Park Avenue, west of staff lot to Messa	6
No pedestrian path through lot, students walk through lot, parents use lot to load, ADA parking spot prevents school from blocking lot off from traffic	Staff parking lot	5
Parents pulling U-turns	West Park Avenue	4
Insufficient crosswalks	Linda Vista Avenue	4
Lack of sidewalks	Linda Vista Avenue Northbound	3
Speeding	School area	3
Donation bins block view	School site	2
Kids crossing outside of a crosswalk	West Park Avenue	2
No bike lanes	School area	2
Lack of signage	Near Roberto and Linda Vista	1
Lack of police presence during pick-up/drop-off	School site	1

Figure 5: Walk Audit Stakeholder-Identified Barriers

Stakeholder-Identified Treatments:

DESCRIPTION	BARRIER ADDRESSED	LOCATION	PRIORITY
Install Rectangular Rapid Flashing Beacons	Poor motorist yielding behavior	Linda Vista crosswalk	13
Install raised crosswalks and/or speed humps	Speeding	School area	5
Install sidewalks	Missing sidewalks	Linda Vista Avenue and West Park Avenue	4
Replace portion of front yard with larger loading space and/or additional parking	Congestion/back-up in loading zone	School site, West Park Avenue	3
Move handicap parking and donation box, close off staff lot to motor vehicle traffic	Staff lot used as drop-off zone by motorists	Staff parking lot	2
Extend fire curb	Low pedestrian visibility at crosswalk	Linda Vista Avenue by crosswalk	2
Bike Boulevard	No bike facilities	Linda Vista Avenue	2
Install crosswalk	No crosswalk near motorist drop-off area on westbound side	West Park Avenue by staff lot	1
Social media campaign to encourage safe driving in school zone	Speeding; Motorists pulling U-Turns; Staff lot used as drop-off zone by motorists	School zone	1

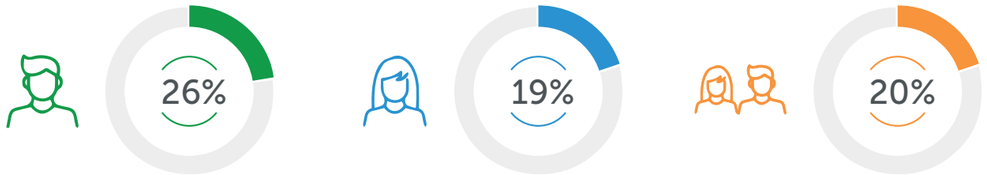
Figure 6: Walk Audit Stakeholder-Identified Treatments

CONTEXT FOR **RECOMMENDATIONS**

IMPACT OF BARRIERS/HAZARDS ON COMMUNITY

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

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

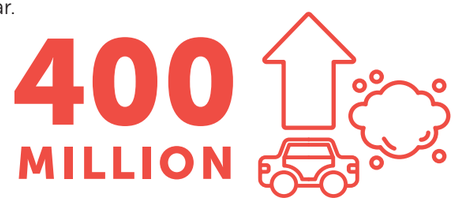


However, only about **26% of men**, **19% of women**, and **20% of adolescents** are meeting the aerobic and muscle-strengthening guidelines developed by the Department of Health. Increased walking and biking to school can help boost that percentage by incorporating physical activity into one's daily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

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

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-048: WEST PARK AVE AND LINDA VISTA AVE INTERSECTION

Narrative – The West Park Avenue and Linda Vista Avenue intersection is a key intersection on the route to school for a large portion of the school population, given that the only formal entrances to campus are on these two streets and that Linda Vista Avenue is the primary north-south collector for the surrounding neighborhoods. The majority of the school enrollment boundary area is north or east of the campus, so students from these neighborhoods must often travel along West Park Avenue and Linda Vista Avenue as part of the most direct route to school. The loading zone in front of the school on West Park Avenue also concentrates vehicle traffic around the intersection, as West Park Avenue west of the school is a dead end and motorists would otherwise have to take a detour on Massa Drive to access the loading zone without navigating the Linda Vista intersection.

IDENTIFIED BARRIERS

- ***Busy intersection –*** This intersection is highly travelled by all modes of transportation to access the school, which can feel chaotic and challenging during peak school hours.
- ***Poor motorist yielding behavior –*** Failure of motorists to yield to pedestrians in the intersection increases risk of collisions.
- ***Faded crosswalks –*** The existing crosswalks at the intersection are extremely faded, reducing pedestrian visibility.

Faded, low-visibility crosswalk patterns reduce pedestrian visibility in the school zone.

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

RECOMMENDATIONS

- ***Curb extensions –*** Install curb extensions on all four corners of the intersection to improve motorist yielding behavior, reduce pedestrian crossing distance, and prevent motorists from parking adjacent to crosswalks.
- ***High-visibility crosswalks –*** Upgrade crosswalks to be high-visibility school-zone patterns to increase pedestrian visibility and motorist yielding behavior.

RECOMMENDATION #NAI-050: WEST PARK AVENUE SIDEWALK CONNECTIVITY

Narrative – In addition to providing access to three of the school's entrances, the main office, and the school parking lot and loading zone, West Park Avenue provides an important east-west connection for the surrounding neighborhoods. As one of the primary access roads to the school, West Park Avenue experiences high volumes of multimodal traffic during peak school hours; as a result, it is crucial that infrastructure accommodates students traveling by all modes.

IDENTIFIED BARRIERS

- ***Sidewalk gaps –*** Sidewalk gaps along West Park Avenue (eastbound side from Bradford Street to the school parking stalls; westbound side from the school parking lot to the west end of the road; both sides from Solano Avenue to Linda Vista Avenue) create gaps in the pedestrian network that force pedestrians to either walk in the road or cross the street in an unmarked location to reach the other existing sidewalk (if present). Large sections of missing sidewalks can prevent students from walking to school altogether.

West Park Avenue sidewalk gaps can result in students walking in the street.

RECOMMENDATIONS

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

RECOMMENDATIONS #NAI-052 AND NAI-054: LINDA VISTA AVE BIKE/PED IMPROVEMENTS

Narrative – Linda Vista Avenue is the key north-south collector for the surrounding neighborhoods, serving both West Park Elementary School and Pueblo Vista Magnet School in the Pueblo area. As the neighborhood collector, Linda Vista Avenue experiences high volumes of motor vehicle traffic during peak morning and afternoon commute hours in addition to multimodal school-related traffic, as it is along the most direct route to the school from many of the branching residential streets. The three gated entrances to the campus on Linda Vista Avenue make the segment between West Park Avenue and Lone Oak Avenue particularly busy during school hours.

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.
- ***Poor motorist yielding behavior -*** Failure of motorists to yield to pedestrians at the existing midblock crosswalk between West Park Avenue and Lone Oak Avenue increases risk of collisions.
- ***Faded crosswalk –*** The existing midblock crosswalk between West Park Avenue and Lone Oak Avenue is faded, reducing pedestrian visibility.

There are no bicycle facilities on Linda Vista Avenue.

RECOMMENDATIONS

- ***NAI-052 Class II bike lanes –*** Install Class II bike lanes from West Pueblo Avenue to Lone Oak Avenue, per the adopted 2019 Bicycle Plan (segment reflects ½ mile radius of school - consider for entire corridor as indicated in the Bicycle Plan)
- ***NAI-054 Midblock crosswalk improvements –*** Install Rectangular Rapid Flashing Beacons at the existing midblock crosswalk and repaint the high-visibility crosswalk; install temporary painted curb extensions with bollards until sidewalk gap closure (NAI-053) is complete when concrete curb extensions can be installed.

RECOMMENDATION #NAP-006: BIKE/PEDESTRIAN SAFETY EDUCATION

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

IDENTIFIED BARRIERS

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

RECOMMENDATIONS

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

Bike rodeos, like the one photographed above at Browns Valley Elementary, are one form of bike safety education that teach kids rules of the road and safe biking practices.

RECOMMENDATION #NAP-007: BIKE/PEDESTRIAN ENCOURAGEMENT PROGRAMS

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

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.
- ***Infrequency of encouragement events –*** 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).

Walk and Roll to School Day (photographed above at Northwood Elementary School) is one of the annual encouragement events facilitated by the Napa County Safe Routes to School program.

RECOMMENDATION #NAI-046: SIDEWALK ACCESS TO CAMPUS

IDENTIFIED BARRIERS

- ***Pedestrian and vehicle conflicts –*** Student pedestrians approaching campus on West Park Avenue from west of the school must walk through the staff parking lot to access a sidewalk that leads to campus in order to avoid walking in the street behind the perpendicular parking stalls, as the campus sidewalk does not extend all the way to West Park Avenue, resulting in conflicts with motorists.

RECOMMENDATIONS

- ***Extend sidewalk –*** Continue the eastbound sidewalk off of West Park Avenue across the entrance to the staff parking lot and connect the sidewalk to existing path leading to campus.

Students must walk through the parking lot on West Park Avenue to access the sidewalk to campus.

RECOMMENDATION #NAI-053: LINDA VISTA AVE SIDEWALK GAP

IDENTIFIED BARRIERS

- ***Sidewalk gap –*** The northbound sidewalk gap on Linda Vista Avenue (a key north-south collector) between West Park Avenue and Lone Oak Avenue creates a gap in the pedestrian network that forces pedestrians to either walk in the road or cross the street in an unmarked location to reach the other existing sidewalk.

RECOMMENDATIONS

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

The northbound sidewalk on Linda Vista Avenue ends without a crosswalk.

RECOMMENDATIONS #NAI-055 AND NAI-056: WEST PUEBLO AVENUE BIKE/PED FACILITIES

IDENTIFIED BARRIERS

- ***No bicycle facilities –*** The lack of bicycle facilities on West Pueblo Avenue (a key east-west collector) fails to provide a dedicated space for bicyclists and indicate to motorists where to expect bicyclists, making the corridor appear unwelcoming to bicyclists.
- ***Sidewalk gaps –*** Sidewalk gaps on both sides of West Pueblo Avenue between Linda Vista Avenue and Carol Drive create gaps in the pedestrian network that force pedestrians to either walk in the road or cross the street in an unmarked location to reach the other existing sidewalk (if present). Large sections of missing sidewalks can prevent students from walking to school altogether.

Sidewalk gaps along West Pueblo Avenue are a barrier to students walking to school.

RECOMMENDATIONS

- ***NAI-055 Class II bike lanes –*** Install Class II bike lanes from Solano Avenue to Pinewood Drive to provide a dedicated space for bicyclists.
- ***NAI-056 Fill sidewalk gaps –*** Fill sidewalk gaps to provide a continuous pedestrian network and reduce unnecessary pedestrian road crossings.

RECOMMENDATIONS #NAI-057 AND NAI-058: WEST LINCOLN AVENUE BIKE/ PED FACILITIES

IDENTIFIED BARRIERS

- ***Poor sight lines –*** The curvature of the western segment of West Lincoln Avenue (an east-west collector) reduces motorist sight lines and reaction time to share the road with bicyclists**.**
- ***No bicycle facilities –*** The lack of bicycle facilities on West Lincoln Avenue 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.

West Lincoln Avenue near Lone Oak Avenue has no sidewalks or bicycle facilities.

- ***Sidewalk gaps –*** Sidewalk gaps on both sides of West Lincoln Avenue between Lone Oak Avenue and Solano Avenue create gaps in the pedestrian network that force pedestrians to either walk in the road or cross the street in an unmarked location to reach the other existing sidewalk (if present). Large sections of missing sidewalks can prevent students from walking to school.

RECOMMENDATIONS

- ***NAI-057 Bicycle facilities –*** From Solano Avenue to 2140 West Lincoln Avenue, install Class II bike lanes; From 2140 West Lincoln Avenue to Lone Oak Avenue, install Class III bike boulevards with sharrows, signage, and traffic-calming with reduction of speed limit to 20 mph.
- ***NAI-058 Fill sidewalk gaps –*** Fill sidewalk gaps to provide a continuous pedestrian network and reduce unnecessary pedestrian road crossings.

RECOMMENDATION #NAI-060: LINDA VISTA AVE AND WEST PUEBLO CURB EXTENSIONS

IDENTIFIED BARRIERS

- ***Faded crosswalks –*** The existing crosswalks at the Linda Vista Avenue and West Pueblo Avenue intersection are extremely faded, reducing pedestrian visibility.
- ***Wide curb radii –*** Wide curb radii facilitate fast motorist turning motions through the intersection. The geometry of the curbs also places pedestrians trying to cross the street further into the periphery, reducing pedestrian visibility, increasing crossing distance, and forcing pedestrians to step into the street to be seen by motorists.

Cars parking adjacent to crosswalks, as seen on the left, block pedestrian visibility.

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

RECOMMENDATIONS

- ***Repaint crosswalks –*** Repaint the faded existing crosswalks to improve pedestrian visibility.
- ***Curb extensions –*** Install curb extensions on all corners to improve pedestrian visibility, slow motorist traffic through the intersection, and improve motorist yielding behavior.

RECOMMENDATION #NAI-062: LINDA VISTA AVE AND LONE OAK AVE INTERSECTION

IDENTIFIED BARRIERS

- ***High traffic volume –*** The Linda Vista Avenue and Lone Oak Avenue intersection is highly travelled during peak school hours, as it provides access to one of the two streets with campus entrances, which can feel chaotic and challenging.
- ***Wide curb radii –*** Wide curb radii facilitate fast motorist turning motions through the intersection.
- ***Low-visibility crosswalk –*** The existing crosswalk across Linda Vista Avenue is painted with a standard, parallel line pattern, despite being located in a highly-travelled school zone.

Lone Oak Avenue traffic is uncontrolled approaching the Linda Vista Avenue intersection.

RECOMMENDATIONS

- ***Curb extensions –*** Install curb extensions on the Linda Vista Avenue crosswalk corners to shorten crossing distance, slow motorist traffic through the intersection, and improve motorist yielding behavior.
- ***High-visibility crosswalk –*** Upgrade the existing crosswalk to be a high-visibility school-zone pattern to increase pedestrian visibility and motorist yielding behavior.

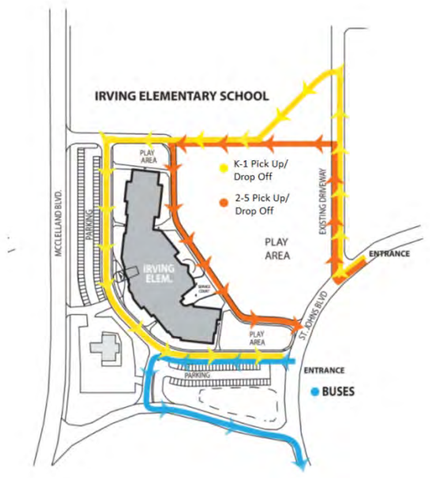
RECOMMENDATION #NAP-005: SCHOOL CIRCULATION PLAN

IDENTIFIED BARRIERS

- ***Unsafe motorist behavior –*** Unsafe motorist behavior, such as illegal parking, use of the staff parking lot as a loading zone, illegal/dangerous U-turns, and speeding in the school zone during arrival and dismissal times makes the school zone feel unsafe for student bicyclists and pedestrians.

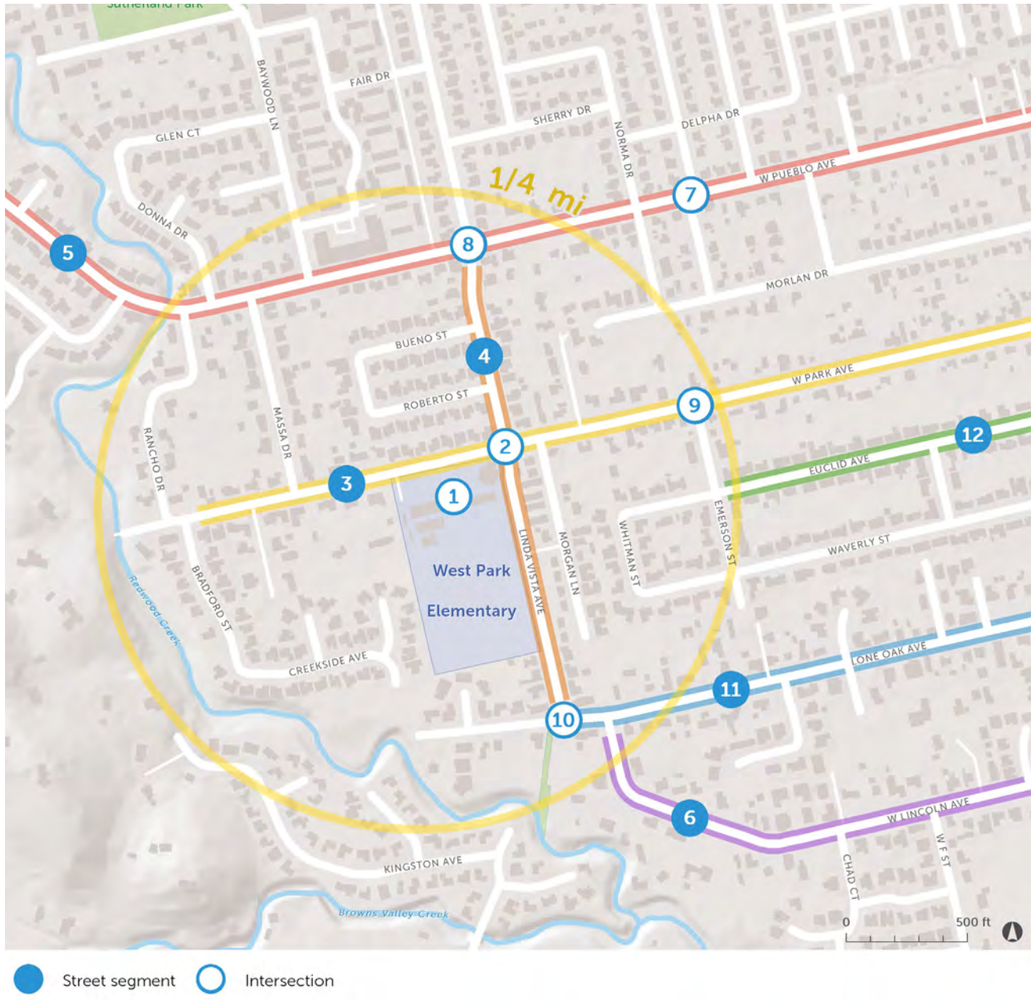
RECOMMENDATIONS

- ***Create and implement circulation plan/policy with annual and as-needed communications to families of plan/policy –*** Create a comprehensive circulation plan and prioritize outreach and education of this plan to families. A circulation map specifies how motorists, pedestrians, and bicyclists should circulate through the school zone and can include policies for safe motorist behavior.



An example of a circulation map from Irving Elementary School.

MAP OF RECOMMENDATIONS



Map 5: Recommendations

TABLE OF RECOMMENDATIONS

Infrastructure:

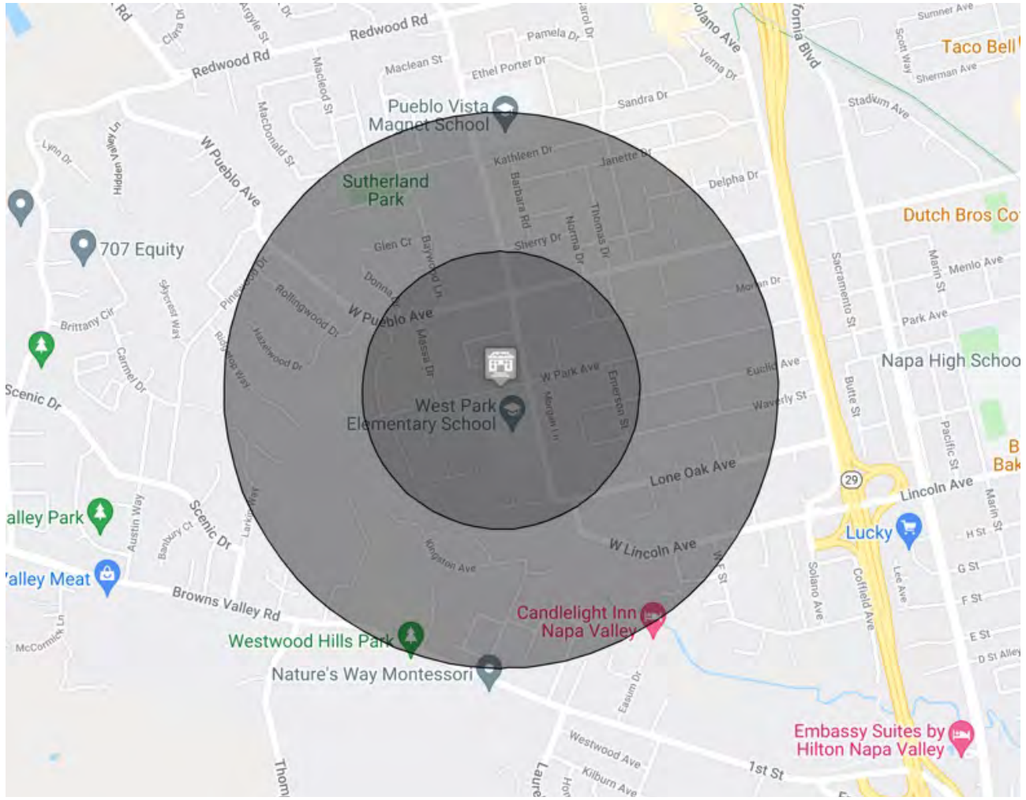
	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
1	School grounds	NAI-046	Pedestrian and vehicle conflicts in staff parking lot	Continue eastbound sidewalk across staff parking lot entrance and connect to sidewalk leading to campus	$	**Medium**
		NAI-047	Bike racks difficult to find, not bolted to surface	Bolt existing bike rack to concrete, add additional bike parking near West Park Avenue side of the school	$	**Low**
2	West Park Avenue and Linda Vista Avenue intersection	NAI-048	Busy intersection, poor motorist yielding behavior, faded crosswalk, lack of red curbs allow motorists to park adjacent to crosswalks and obstruct visibility	Install curb extensions on all four corners, upgrade existing crosswalks to high-visibility pattern	$$-$$$	**High**
		NAI-049		Upgrade roadway stencils and pedestrian crossing signage to improve driver awareness of pedestrians in intersection	$	**Low**
3	West Park Avenue from Bradford Street to Solano Avenue	NAI-050	Sidewalk gaps (eastbound: Bradford St to school parking stalls; westbound: school parking lot to west end of road; both sides: Solano Ave to Linda Vista Ave)	Fill sidewalk gaps*	$$$	**High**
		NAI-051	No crosswalk to access front of school west of Linda Vista Avenue, students cross without crosswalk	Consider installing new high-visibility midblock crosswalk connecting to east side of staff parking lot with curb extensions on both sides	$	**Low**
4	Linda Vista Avenue from West Pueblo Avenue to Lone Oak Avenue	NAI-052	No bicycle facilities	Install Class II bike lanes from West Pueblo Avenue to Lone Oak Avenue* (recommended for whole corridor per Bike Plan)	$-$$	**High**
		NAI-053	Northbound sidewalk gap between West Park Avenue and Lone Oak Avenue	Fill sidewalk gap*	$$	**Medium**
		NAI-054	Motorist speeding, poor motorist yielding behavior at existing midblock crosswalk, faded midblock crosswalk	Install Rectangular Rapid Flashing Beacons at existing midblock crosswalk and repaint high-visibility crosswalk; install temporary painted curb extensions with bollards until sidewalk gap closure (NAI-053) is complete when concrete curb extensions can be installed.	$-$$	**High**
5	West Pueblo Avenue from Solano Avenue to Pinewood Drive	NAI-055	No bicycle facilities*	Install Class II bike lanes	$$	**Medium**
		NAI-056	Sidewalk gaps on both sides between Linda Vista Avenue and Carol Drive	Fill sidewalk gaps	$$	**Medium**
6	West Lincoln Avenue from Solano Avenue to Lone Oak Avenue	NAI-057	Poor sight lines due to curves in road, no bicycle facilities*, motorist speeding	Install Class II bike lanes from Solano Ave to 2140 W. Lincoln Ave; Install Class III bike boulevards with sharrows, signage, and traffic-calming from 2140 W Lincoln Ave to Lone Oak Ave, with reduction of speed limit to 20mph	$$	**Medium**
		NAI-058	No sidewalks/sidewalk gaps from Lone Oak Avenue to Solano Avenue	Install sidewalks where missing	$$-$$$	**Medium**
7	West Pueblo Avenue and Thomas Drive/ Pueblo Place intersection	NAI-059	Faded existing crosswalk, existing crosswalk is diagonal and increases crossing distance, no crosswalk across Pueblo Place, parking encroachment on south sidewalk in front of Pueblo Market	Add curbs to south sidewalk in front of Pueblo Market; relocate crosswalk to east side of intersection; install crosswalk across Pueblo Place	$	**Low**
8	Linda Vista Avenue and West Pueblo Avenue intersection	NAI-060	Faded crosswalks, set-back curbs create long crossing distance and reduce pedestrian visibility, wide curb radii facilitate fast motorist turning movement, lack of red curbs allows motorists to park adjacent to crosswalk and obstruct visibility	Repaint crosswalks and install curb extensions on all corners	$$	**Medium**
9	West Park Avenue and Emerson Street	NAI-061	Wide curb radii facilitate fast motorist turning movement, set-back curbs increase crossing distance and reduce pedestrian visibility	Install curb extension on southwest corner	$	**Low**
10	Linda Vista Avenue and Lone Oak Avenue intersection	NAI-062	High traffic volume turning from Lone Oak to Linda Vista with no stop control; wide curb radii facilitates fast motorist turning movement; low-visibility crosswalk pattern in school zone	Install curb extensions on Linda Vista Ave corners; upgrade crosswalk to high-visibility pattern	$$	**Medium**
11	Lone Oak Avenue from Linda Vista Avenue to Solano Avenue	NAI-063	Sidewalk gaps on both sides	Fill sidewalk gaps on both sides of the street	$$	**Low**
12	Euclid Avenue from Emerson Street to Solano Avenue	NAI-064	No sidewalks	Install sidewalks	$$-$$$	**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	Unsafe motorist behavior in the school zone during arrival and dismissal times	NAP-005	Create and implement circulation plan/policy with annual and as-need communications to families of plan/policy	School zone	Annual/as-needed	$	**Medium**
2	Irregularly provided bicycle/pedestrian safety education	NAP-006	Provide annual in-school bicycle and pedestrian safety education for all students	School site	Annual	$	**High**
3	Congestion in school zone; infrequency of encouragement events	NAP-007	Continue growing participation in annual encouragement events. Organize additional encouragement events with goal of increasing frequency of events over time	School site	Annual for countywide events; quarterly for additional events with goal of increasing frequency	$	**High**

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	0	0	0	0	0
.25-.5 mi.	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0

Figure 7: Collision Data (2016-2020) (Source: UC Berkeley Transportation Injury Mapping System: SRTS Collision Map Viewer)

APPENDICES

FIGURES & MAPS

FOOTNOTES

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

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

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

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

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

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

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

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

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

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

APPENDIX A

EMC Survey Toplines

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

Evaluation: Research & Methodology

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Yes	43
No	56
(No response)	0

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Yes	79
No	21
(No response)	-

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

Yes	78
No	21
(No response)	0

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

47. Do you identify as…

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

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

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

49. Do you consider yourself to be…

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

50. Do you…

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

THANK YOU!

APPENDIX B

Universal Recommendations

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

Appendix B
Napa County SRTS Walk Audit Report
Universal Recommendations

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

Universal Recommendation 1: High-Visibility School Zone Crosswalks

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

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

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

Universal Recommendation 2: Intersection Daylighting

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

---

[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

Acknowledgments

Lead author - Nathan Broom

Contributors - Eric Anderson, Vince Caristo, Ryan Dodge, Jennifer Donlon-Wyant, Sarah Figliozzi, Elco Gauw, Dan Jatres, David Loutzenheiser, Heath Maddox, Brian Patterson, Cara Seiderman

Alta Planning + Design donated their expertise in the design and illustration of this guide. Cat Cheng, lead designer, Jillian Portelance, production designer.

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

bikeparking@apbp.org
www.apbp.org

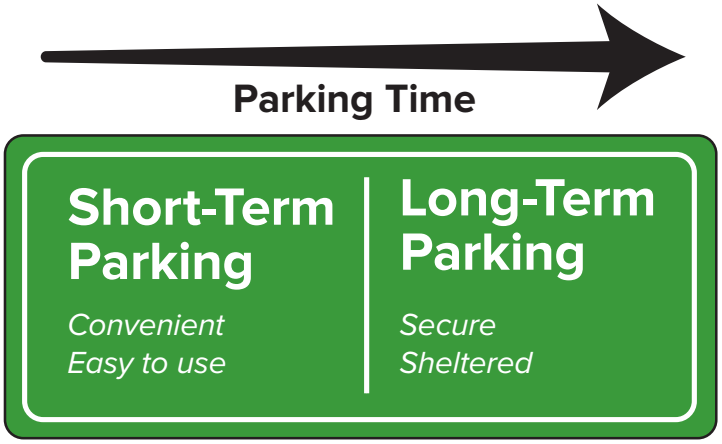
TABLE OF CONTENTS

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

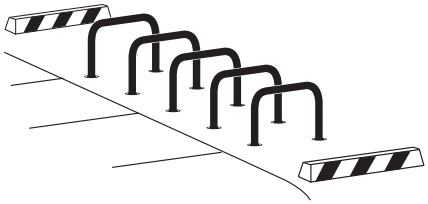
Effective bike parking for short-term users depends on two main factors: 1) proximity to the destination and 2) ease of use.

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.

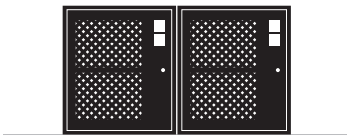
BIKE CORRALS

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**

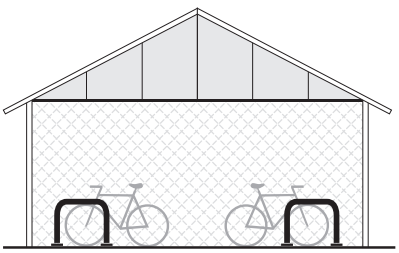
LONG-TERM PARKING

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

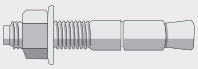
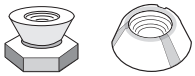
Selecting an appropriate installation surface and technique is key to creating bicycle parking that remains secure and attractive over time.

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

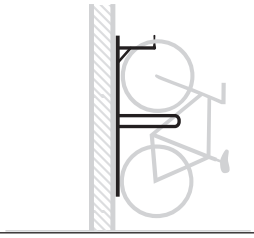
These rack styles do not meet all performance criteria but may be appropriate in certain constrained situations.

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

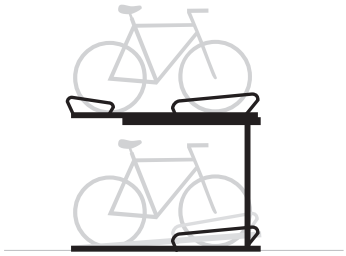
Variation of the wheelwell-secure rack designed to stagger handlebars vertically or horizontally to increase parking density. Reduces usability and limits kinds of bikes accommodated, but contains bikes well and aids in fitting more parking in constrained spaces.

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.

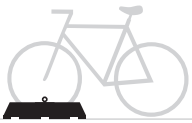
SCHOOLYARD
also called comb, grid

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

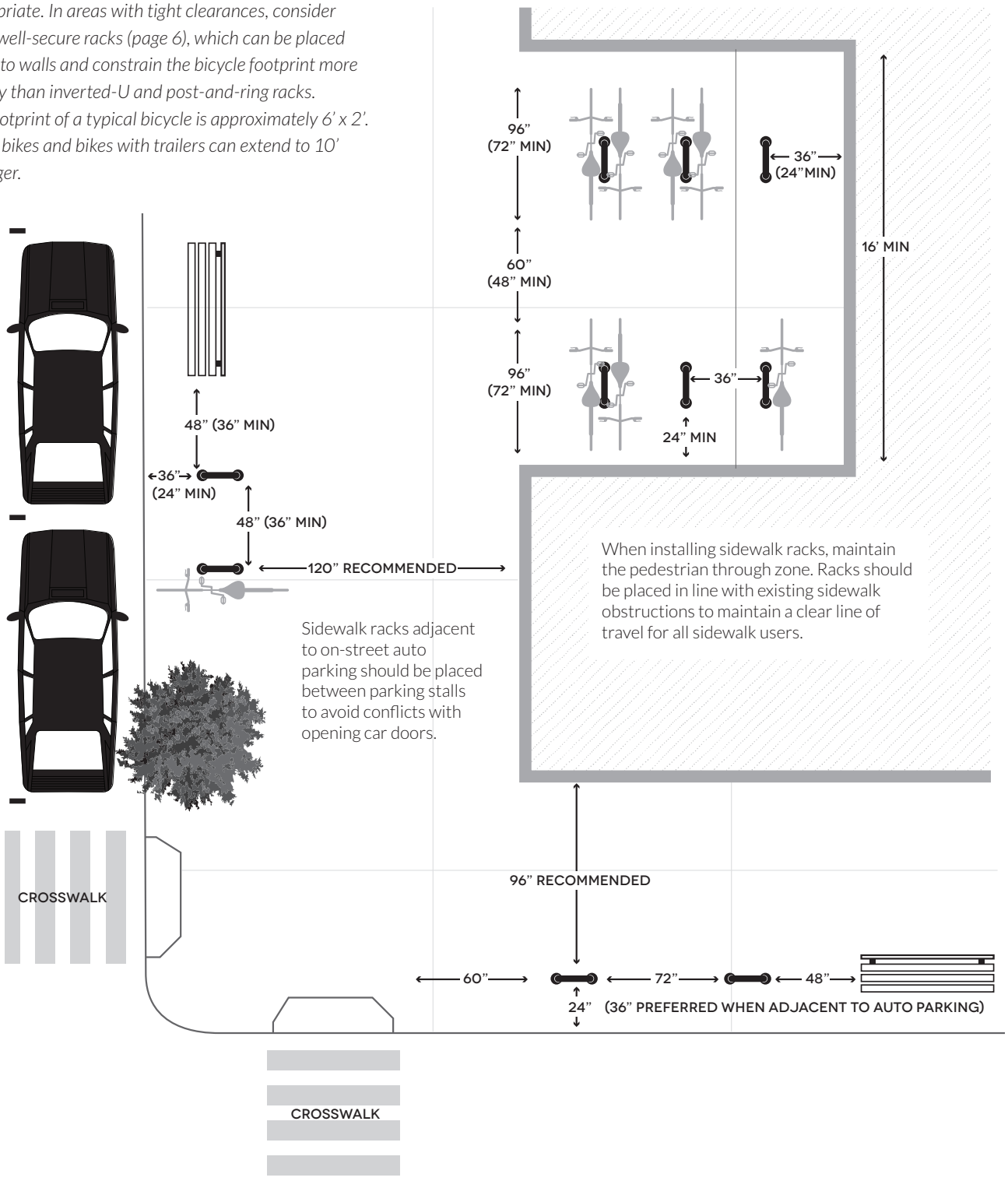
Most bicycle parking racks are made of carbon steel or stainless steel. Carbon steel requires a surface coating to resist rust while appropriate grades of stainless steel need no coating. Not all materials and coatings with the same name perform equally. Square tubing provides a security advantage as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