Walk Audit Report

SafeRoutes
Napa County

RIVER MIDDLE SCHOOL

RIVER MIDDLE SCHOOL

1850 SALVADOR AVENUE
NAPA, CA

—

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EXECUTIVE **SUMMARY**

THE NAPA COUNTY SAFE ROUTES TO SCHOOL PROGRAM

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

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

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

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

WHY SAFE ROUTES TO SCHOOL?

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

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

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

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

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

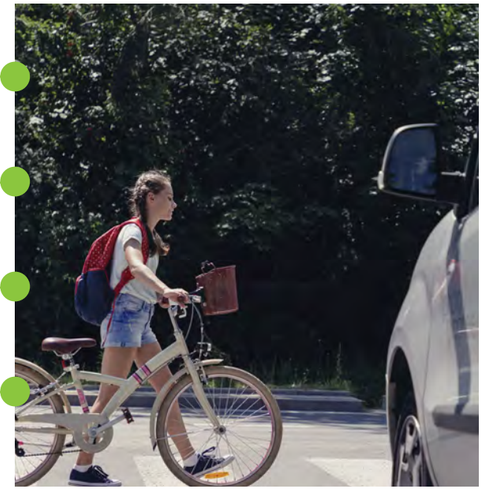
Schools and the community benefit immensely when students choose to walk or bike.

Student health has been linked to improved academic performance.

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

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

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



THE SIX E'S

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

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

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

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

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

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

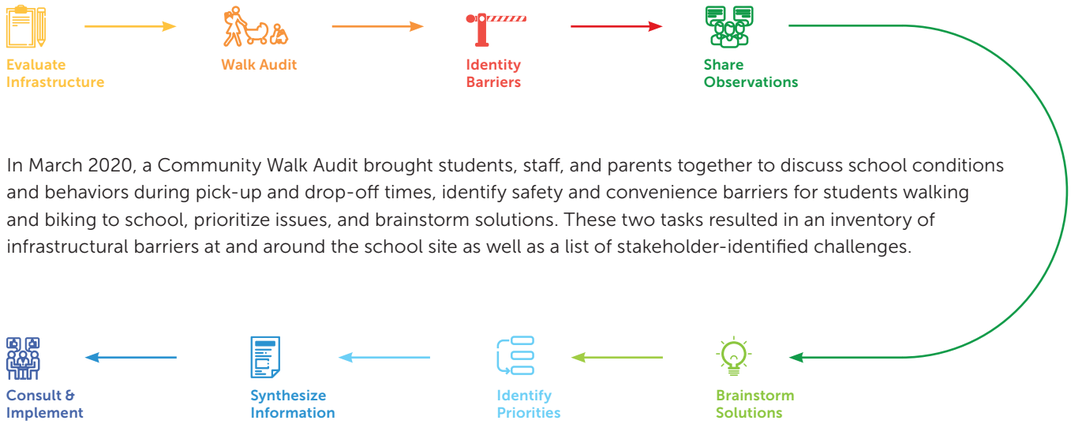
Education
Ensure that everyone learns how to travel safely and why biking and walking are important.

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

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

REPORT PROCESS

The SRTS team conducted a comprehensive evaluation of the barriers to students walking and biking to and from River Middle School, starting in the summer of 2018. Information on physical and behavioral challenges was collected in two phases. In September 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 March 2020, a Community Walk Audit brought students, staff, and parents together to discuss school conditions and behaviors during pick-up and drop-off times, identify safety and convenience barriers for students walking and biking to school, prioritize issues, and brainstorm solutions. These two tasks resulted in an inventory of infrastructural barriers at and around the school site as well as a list of stakeholder-identified challenges.

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

RIVER MIDDLE SCHOOL
SCHOOL SUMMARY

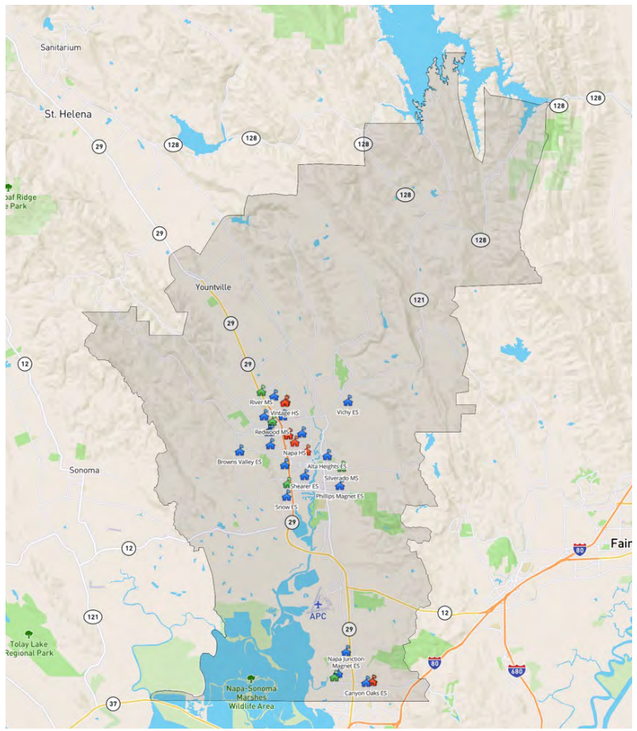
Principal	Catherine Adams (current) Peter Hartnack (previous)
First Bell	8:10 AM
Last Bell	2:50 PM (Wed. 12:30)
District	Napa Valley Unified

Grades	6-8
Enrollment	417
Street	1850 Salvador Avenue
City	Napa, CA 94558

Overall Facility Rating[j]: Exemplary

NVUSD has an open enrollment policy, and as River Middle School is part of the dual immersion school program, its enrollment boundary can include middle school students from anywhere in the NVUSD district boundaries.

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.



Map 1: NVUSD district enrollment boundaries.

DATA

No data is currently available regarding the number of students who walk and bike to school at River Middle School. Additional work is needed to establish a baseline of active transportation use for this school.

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

Total Enrollment by Group (2019-20)

ETHNICITY	RIVER MIDDLE SCHOOL	DISTRICT
Black or African American	0.7%	2.1%
American Indian or Alaska Native	0.2%	0.2%
Asian	2.4%	2.4%
Filipino	2.2%	6.9%
Hispanic or Latino	33.6%	55.6%
White	56.4%	28.4%
Two or More Races	4.6%	4.0%
EXPERIENCE		
Socioeconomically Disadvantaged	25.9%	51.2%
English Learners	7%	20.5%
Students with Disabilities	5.5%	12.5%

Figure 2: Enrollment Data by Group

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

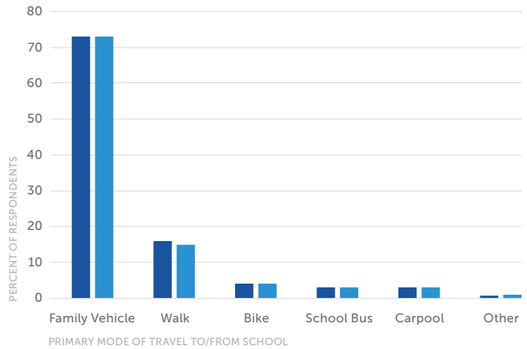


Figure 1: EMC Research Polling Results

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

Student Enrollment by Grade Level (2019-2020)

	NUMBER OF STUDENTS
Grade 6	164
Grade 7	127
Grade 8	126
Total	**417**

Figure 3: Enrollment Data by Grade

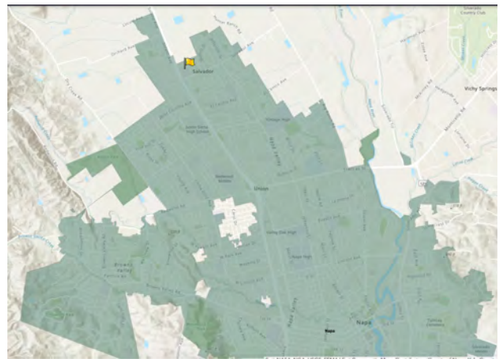
NEIGHBORHOOD CONTEXT

River Middle School is located on the corner of Salvador Avenue and Escuela Drive in north Napa. It is bordered to the north by Bella Drive, the east by Escuela Drive, the south by Salvador Avenue, a collector, and the west by SR 29, a state highway.

North of the school is a street of single-family housing built in the 1950s and a large vineyard. To the east is more single-family housing, mostly built in the 1960s and early 1970s, with some areas being built in the 1950s or early 2000s. To the south is a Chevron gas station, single-family housing that range in age from the 1950s to the 1990s, and a mobile home park. To the west are more mobile home parks, mostly built in the 1970s, 1990s, or 2000s.

The streets around the school have several loops and lollipops, which can reduce traffic but also decrease walkability by reducing pedestrian route choice and interconnectivity. Loops can also concentrate traffic on the few nearby collector roads.

Destinations of interest within walking distance of the school include the Napa Valley Vine Trail regional shared-use path, located across SR 29 from the school, and Willow Elementary School to the southeast, where students may have siblings.



Map 2: River Middle School (marked by a yellow flag) is located in north Napa.

River School moved into a new, reconstructed campus on Salvador Avenue in early 2020. An updated aerial map was unavailable to reflect the new campus.

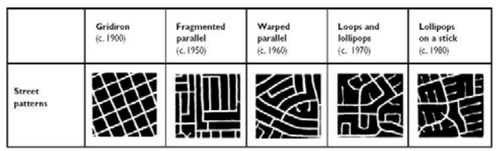


Figure 4: Street Patterns (Source: Southworth, 1997)

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

River Middle School campus is accessible through two entrances near the main office facing Salvador Avenue and four entrances along the loading zone off of Salvador Avenue. The school is set back so that the staff parking lot sits between it and Salvador Avenue. School traffic concentrates on Salvador Avenue primarily, as well as Escuela Drive.

The school's official loading zone is located in the larger parking lot on the west side of the campus and consists of a yellow curb along the east and north side of the parking lot. Circulation through the parking lot is indicated by painted white arrows. Motorists can enter the loading zone either on Salvador Avenue or on Escuela Drive by driving through the staff lot; however, the school discourages use of the Escuela Drive entrance. Motorists must drive around the perimeter of the parking lot to exit the loading zone and can only exit onto Salvador Avenue. Though the curb in front of the main office is a red zone, some motorists use it for student pick-up and drop-off. Some motorists also turn left out of the staff lot to exit onto Salvador Avenue, though this is prohibited, and motorists are supposed to drive through the circulation loop to exit the parking lot. Motorists also park along Escuela Drive to pick up and drop off students.

The loading zone is located in the larger, parent-use parking lot.

Students must cross the staff parking lot to reach the front entrances to campus.

Student pedestrians and bicyclists can either access the school from Salvador Avenue, crossing the school parking lot through the one crosswalk in front of the main office, or from Escuela Drive, walking along the sidewalk in front of the school.

At the time of the Walk Audit, a circulation plan/parking policy was regularly sent out to parents, especially as the school had been recently been adjusting to a new school site. In the future, the school planned to send out this plan at least three times per year, corresponding with the school's vacations. There was also a crossing guard stationed at the Salvador crosswalk in the mornings and afternoons, and the school recruits parent volunteers to help manage parking lot circulation.

The crosswalk between Salvador Avenue and front school entrances is adjacent to the driveway for both staff and parent parking lots.

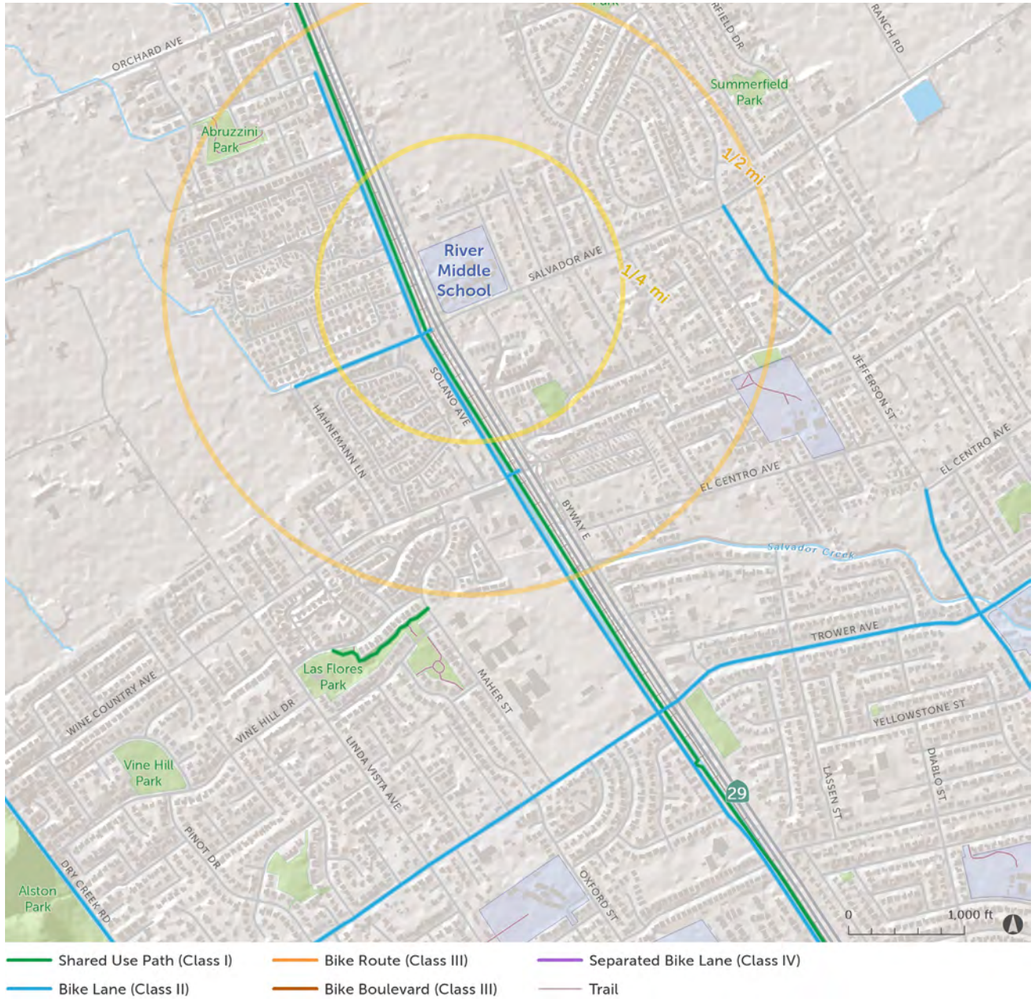
Pre-Covid, the Vine transit provided bus service that stopped at the corner of Byway East and Salvador Avenue.

Bus service through NVUSD is not available for River Middle School students. However, students who live beyond 3 miles walking distance and attend their school of residence may apply for transportation through NVUSD. There are public Vine transit bus stops located on the west side of Highway 29 just north and south of Salvador Avenue that are served by the 10: Up Valley Connector line.

BICYCLE AND PEDESTRIAN INFRASTRUCTURE

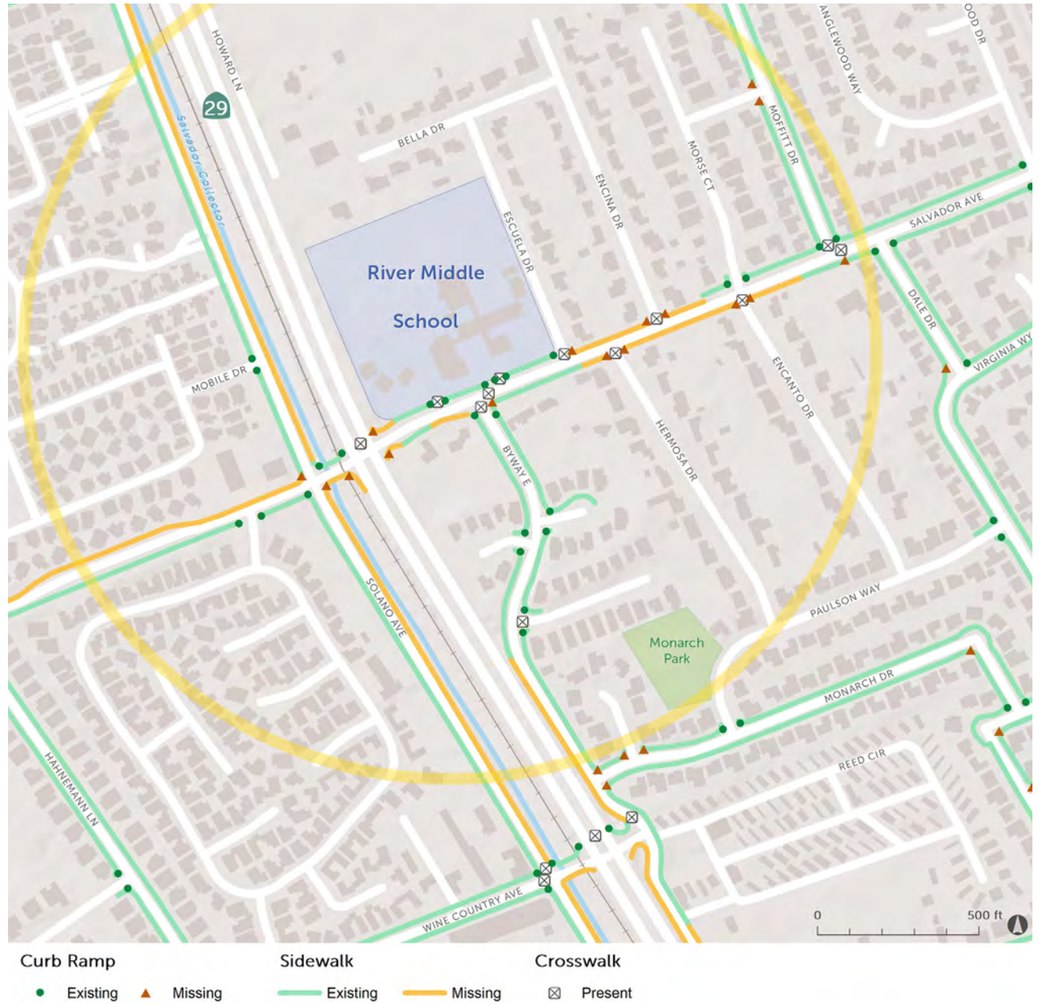
River Middle School provides both bike racks and bike lockers for students and staff to use. There are two nine-loop wave-style bike racks located at the front of the school, just west of the main entrance, and one nine-loop wave bike rack near the loading zone. Though these racks are bolted into the ground, they are visible from the street, making the bikes potentially vulnerable to theft. The bike lockers are located in front of the school as well, to the east of the main entrance.

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

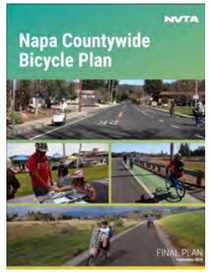
River Middle School has regularly participated in annual countywide events, such as Bike to School Day and Walk and Roll to School Day. Bike to School Day and Walk and Roll to School Day are annual encouragement events facilitated by Napa County Safe Routes to School in the spring and fall, respectively, that celebrate students making the healthy choice to walk or bike to school. However, the school has not expanded its encouragement program beyond these annual events and does not provide bicycle safety education to its students.

Bike to Work and School Day 2019.

YEAR	EVENT	STUDENT PARTICIPANTS
2015/16	Bike to School Day	44
2016/17	Bike to School Day	38
2018/19	Walk and Roll to School Day	49
2018/19	Bike to School Day	8
2019/20	Walk and Roll to School Day	40

Figure 5: Encouragement and Education Data

EXISTING PLANS



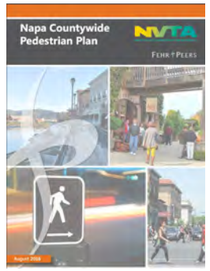
NVTA Napa Countywide Bicycle Plan (2019):

The Napa Countywide Bicycle Plan has a few recommendations improving bicycle facilities around the school site. Salvador Avenue and Jefferson Street are both designated as study corridors, and Salvador Avenue is recommended to have Class II bike lanes from SR 29 to Jefferson Street. Off of Salvador Avenue west of SR 29, Class II and III facilities are recommended along roads such as Hahnemann Lane and Wine Country Avenue.

NVUSD Facilities Master Plan (2016):

River School recently moved campuses from its old location at Old Sonoma Road to Salvador Avenue, as designed in the NVUSD Facilities Master Plan. This new campus includes site perimeter fencing that limits school access to a few points, influencing circulation around the school zone.

MEASURE H
BUILDING ON OUR VISION
NVUSD



NVTA Napa Countywide Pedestrian Plan (2016):

The Napa Countywide Pedestrian Plan includes a Salvador Avenue Complete Streets Project, which proposes widening Salvador Avenue from SR 29 to Jefferson Street to provide sidewalks and bike lanes.

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; two listed projects – Salvador Creek Bicycle Trail and Salvador Avenue Complete Streets – 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."

Caltrans District 4:

The Caltrans District 4 Bike Plan lists intersection improvements at the controlled intersections at Salvador Avenue, Wine Country Avenue, and Trower Road to accompany the Class I path on the west side of SR 29.

Caltrans

WALK **AUDIT**

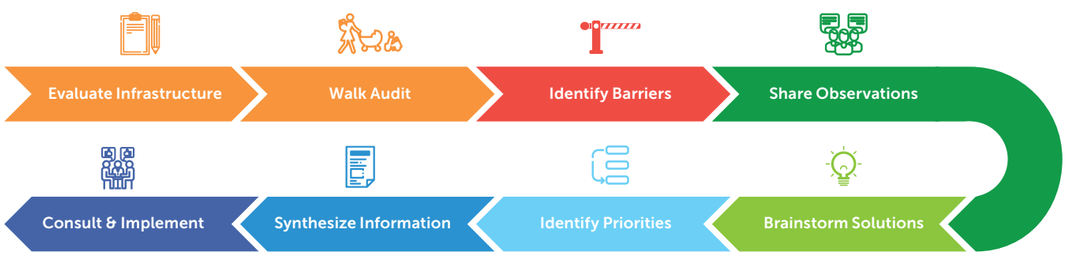
Date: 03/03/20
Day of the Week: Tuesday

Meeting Time: 2:30 PM
Weather: Sunny and warm

METHODOLOGY

The Community Walk Audit brought school stakeholders together to observe existing conditions during pick-up time, identify barriers to safe walking or biking, and explore solutions. The Walk Audit team consisted of three River Middle School students, one parent, an administrator, and the school's principal. The group met 30 minutes prior to the school bell for a brief presentation on the SRTS program and the process and purpose of Walk Audits. The team then walked west on Salvador Avenue to Highway 29, east on Salvador Avenue, north on Escuela Drive, and then returned to campus. During this walk, participants observed and discussed the physical infrastructure around the school as well as the behavior of motorists, pedestrians, and bicyclists in the school site area. They also shared their own experiences traveling to and from school on foot and by car. Fifteen minutes after the bell, the team returned to the classroom to discuss their observations, map issue areas, and record and prioritize the major barriers identified during the exercise.

During the prioritization exercise, participants wrote down three 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 three round stickers to place on issues that they felt were most important and needed to be solved most urgently. Participants could spread their stickers out or put multiple stickers on one issue. The group then reviewed the major barriers and explored potential solutions to each issue. Participants repeated the prioritization process with potential solutions to the barriers identified.



WALK AUDIT FINDINGS

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

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

Stakeholder-Identified Barriers:

DESCRIPTION	LOCATION	VOTE SCORE
Lack of sidewalks	Salvador Ave, especially east of Escuela Dr	7
Narrow sidewalks	Salvador Ave	6
Bike lane disappears	Salvador Ave	5
Motorists park in red zone in front of school main entrance	Staff parking lot area	4
Poor pedestrian visibility	Salvador Ave crosswalk	4
Visual barriers like trees block cross-traffic visibility, cars pull into crosswalk to see	Escuela Dr crosswalk	4
Bike lane and pedestrian access is insufficient/sporadic	Salvador Ave	2
Obstructed sidewalk	Escuela Dr	1
Poor sidewalk quality	General school area	1
Highway crossing	Highway 29 at Salvador Ave	1
Idling cars along side streets	Escuela Dr	1

Figure 6: Walk Audit Stakeholder-Identified Barriers

Stakeholder-Identified Treatments:

DESCRIPTION	BARRIER ADDRESSED	LOCATION	PRIORITY
Rectangular Rapid Flashing Beacons	Poor motorist yielding behavior, low pedestrian visibility	Salvador Ave	11
Widen sidewalks	Narrow sidewalks	General area	9
Speed feedback sign	Speeding	Salvador Ave near school	5
Curb extensions	Poor motorist yielding behavior, long crossing distance, fast motorist turns	Salvador Ave at Escuela Dr	4
Painted conflict markings	Low bicyclist visibility, bicyclist-motorist conflict area	General area	3
Vegetation management to improve intersection visibility	Poor visibility of cross-traffic	Salvador Ave at Escuela Dr	3
Raised crosswalk	Speeding, poor motorist yielding behavior	Escuela Dr crosswalk	2
Re-stripe crosswalk with high-visibility design	Poor motorist yielding behavior, low pedestrian visibility	Salvador Ave	1
Protected bike lane	High-stress bike facilities	General area	1
Increase wayfinding to direct drivers onto campus loading zone	Idling cars along side streets	General area	1
Multi-use path	High-stress bicycle and pedestrian facilities	General area	1

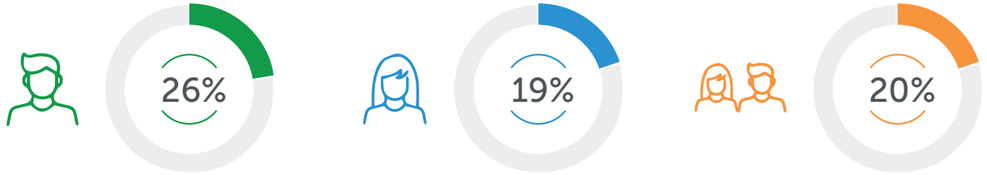
Figure 7: Walk Audit Stakeholder-Identified Treatments

CONTEXT FOR **RECOMMENDATIONS**

IMPACT OF BARRIERS/HAZARDS ON COMMUNITY

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

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



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

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

50%

29%

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

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

400 MILLION

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

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

RECOMMENDATIONS

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

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

RECOMMENDATIONS #NAI-358 AND NAI-359: SALVADOR AVENUE (SR 29 TO SUMMERFIELD DRIVE)

Narrative – Salvador Avenue is a key east-west arterial that borders the school on the south side and runs from Hahnemann Lane to Big Ranch Road. The school is primarily accessible from Salvador Avenue (there is one access point from Escuela Drive), and almost all school traffic of all modes must navigate Salvador Avenue to some extent to reach campus. As a result, most if not all school traffic is concentrated on this street during arrival and dismissal times. Salvador Avenue connects to several neighborhoods in north Napa and provides access to key transportation corridors, including the Vine Trail regional shared-use path, SR 29, Solano Avenue, Jefferson Street and Big Ranch Road. Through this connectivity, Salvador Avenue plays a significant role in multimodal transportation for this northeast region of Napa.

IDENTIFIED BARRIERS

- ***Auto-oriented corridor –*** Salvador Avenue's current design, featuring extremely wide lanes on a relatively straight corridor with no traffic-calming and little traffic control, prioritizes vehicle speed, volumes, and convenience and facilitates frequent motorist speeding.
- ***High speeds and volumes of traffic –*** Salvador Avenue carries high volumes of high-speed traffic, which many bicyclists and pedestrians do not feel comfortable or safe navigating.
- ***Bicycle/pedestrian infrastructure gaps –*** There are significant gaps in bicycle and pedestrian facilities along the corridor, and many areas of existing facilities are high-stress due to vehicle speeds and volumes. Sidewalk gaps include the westbound side SR 29 to Morse Court and the eastbound side SR 29 to Moffitt Drive and Kingsford Drive to Jefferson Street.

Sections of Salvador Avenue have no sidewalks or bicycle facilities.

RECOMMENDATIONS

- ***NAI-358 Long-term redesign***
  - ***Corridor study and redesign –*** Implement a redesign of the corridor to improve and prioritize safe, accessible, and comfortable multi-modal transportation through a Complete Streets framework as part of adopted Bike Plan corridor study designation. Integrate specific recommendations from SRTS reports into road redesign.
- ***NAI-359 Short-term treatments***
  - ***Narrow travel lanes –*** Narrow existing travel lanes to a consistent width (no wider than 11 feet) to reduce vehicle speeds and free up space for bicycle and pedestrian facilities.
  - ***Traffic-calming –*** Install quick-build traffic-calming elements throughout the corridor to reduce motorist speeds. See intersection-specific recommendations for curb extensions. Gradually introduce traffic-calming elements in the segment between City limits and Summerfield to slow down westbound traffic coming in from the rural area of Salvador, where motorists may be travelling at higher speeds.
  - ***Protected bike lanes –*** Install Class IV protected bike lanes from SR 29 to City limits – use quick-build materials for fast implementation.
  - ***Vine Trail connection –*** Extend the Class I Vine Trail shared-use path connection from the east side of the SR 29 intersection to the Byway East crosswalk by widening the sidewalk in this area to meet existing travel patterns.

RECOMMENDATION #NAI-372: SALVADOR AVENUE AND BYWAY EAST INTERSECTION

Narrative – The Salvador Avenue and Byway East intersection is located in front of the school's main entrance, and as the closest crosswalk across Salvador Avenue, is a natural crossing point for many students, particularly those travelling to neighborhoods south of the school. While Salvador Avenue has a significant sidewalk gap on the eastbound (south) side east of Byway East, there is an informal pedestrian path on the eastbound side that provides more room away from traffic for pedestrians than the westbound side, which also has a significant sidewalk gap. In addition to high levels of traffic around this intersection due to its vicinity to the highway and the role of both streets as collectors, this intersection becomes significantly congested during school arrival and dismissal times due to the school being almost exclusively accessible from Salvador Avenue. At the time of the Walk Audit, the school had stationed a crossing guard to manage traffic and help students cross Salvador.

IDENTIFIED BARRIERS

- ***High traffic volumes/speeds –*** This intersection between two collectors experiences high volumes of traffic, particularly during peak school hours. Salvador Avenue traffic is uncontrolled and motorists frequently speed through the intersection and fail to yield to pedestrians.
- ***Long crossing distances –*** Long crossing distance across Byway East pushes pedestrians further out of the range of vision of motorists and requires them to be in the roadway for a longer time than necessary, increasing the risk of collisions.
- ***Low-visibility crosswalk –*** The existing crosswalk across Byway East is faded and painted with a standard, parallel line pattern, despite being in a highly-travelled intersection in the school zone.

The set-back curb on Byway East extends crossing distance and facilitates fast motorist turning movements.

- ***Wide curb radii –*** Wide curb radii on the south side of the intersection facilitate fast motorist turning movements through the intersection, particularly on the southwest side where the curb is pushed back.
- ***Sidewalk gap –*** The Byway East sidewalk does not extend to the crosswalk across Salvador Avenue, creating a gap in the pedestrian network.
- ***Low pedestrian visibility –*** Vegetation on the southeast corner obstructs pedestrian visibility, particularly for pedestrians crossing Salvador, and visibility of cross-traffic, which leads to motorists blocking the crosswalk.

RECOMMENDATIONS

- ***Curb extensions –*** Install significant curb extensions on both sides of the crosswalk across Byway East to square up the intersection, reduce crossing distances, and improve pedestrian visibility.
- ***Byway East sidewalk –*** Pull up the northbound sidewalk on Byway East to the intersection to provide a continuous pedestrian path.
- ***Red zones –*** Install red zones around all crosswalks where curb extensions are not suggested to maintain pedestrian visibility.
- ***High-visibility crosswalk –*** Upgrade the existing crosswalk across Byway East to a high-visibility school zone pattern to improve pedestrian visibility and motorist yielding behavior.
- ***Salvador crosswalk –*** Install Rectangular Rapid Flashing Beacons and shark's teeth on travel lanes for the crosswalk across Salvador to improve motorist yielding behavior and pedestrian visibility. Install appropriate traffic-calming features approaching the crosswalk.
- ***Use quick-build materials for recommendations where possible for fast response time in the interim.***

RECOMMENDATION #NAI-378: SOLANO AVENUE AND SALVADOR AVENUE INTERSECTION

Narrative – The Solano Avenue and Salvador Avenue intersection is another intersection between two collectors, resulting in high volumes of traffic navigating the intersection, particularly during peak commute hours. Motorists entering or exiting SR 29 from Salvador Avenue West must navigate the Solano intersection to reach the highway. This intersection also serves the Vine Trail regional shared-use path, and is the nearest Vine Trail entrance to River Middle School, making it a key part of active transportation routes to the school.

IDENTIFIED BARRIERS

- ***Large, busy intersection –*** This intersection of two collectors is a busy intersection in the school area, as it is highly travelled by all modes of transportation, both school-related and non-school related, which can increase road user conflict risk and can feel chaotic and challenging for students. This intersection is both adjacent to SR 29, increasing vehicle volumes, and part of the Vine Trail shared-use path route, which increases volume of bicyclists and pedestrians in the intersection.

The Salvador and Solano intersection, facing east.

- ***Motorists obstruct crosswalk –*** Motorists block the Vine Trail crosswalk on the east side when entering the highway.
- ***Low-visibility crosswalks –*** The existing crosswalks are painted with a standard, parallel line pattern despite being in a highly-travelled school-zone area.

RECOMMENDATIONS

- ***High-visibility crosswalks –*** Upgrade the existing crosswalks to a high-visibility school-zone pattern to improve pedestrian visibility and motorist yielding behavior.
- ***Curb extension –*** Install a curb extension on the northeast corner to improve motorist yielding behavior and pedestrian visibility.
- ***Signage and stencils –*** Install signage and stencils reinforcing that motorists should keep crosswalks and the intersection clear.
- ***Further improvements –*** Evaluate and implement additional improvements to the Vine Trail crossings to address poor motorist yielding behavior and increase user comfort for school-aged users.

RECOMMENDATION #NAI-378: SR 29 AND SALVADOR AVENUE INTERSECTION

Narrative – River Middle School is located on the northeast corner of the SR 29 and Salvador Avenue intersection. Students must navigate the intersection when travelling along direct routes to neighborhoods west of the school, which includes multiple mobile home parks near the school, or to access the Vine Trail shared-use path. Given the school's large enrollment boundaries, access to the Vine Trail shared-use path is crucial, as it provides a separated bicyclist path throughout and beyond the City of Napa that would serve students from throughout the enrollment boundaries biking to campus.

IDENTIFIED BARRIERS

- ***Long crossing distance –*** The extremely long crossing distance across several lanes of SR 29 traffic pushes pedestrians further out of the range of vision of motorists and require pedestrians to be in the roadway for longer than necessary, increasing conflict risk and decreasing pedestrian and bicyclist sense of safety and comfort.
- ***High-speed and high-volume traffic –*** This intersection experiences extremely high-speed and high-volume traffic from SR 29, Salvador Avenue, and adjacent Solano Avenue, greatly reducing bicyclist and pedestrian sense of safety and comfort.

RECOMMENDATIONS

- ***Curb extension –*** Install curb extension on northeast corner to reduce crossing distance, slow motorists turning onto SR 29 from Salvador Avenue, and improve pedestrian visibility.
- ***Limit lines –*** Install advanced limit lines on southbound SR 29 to indicate to motorists where they should stop and improve pedestrian visibility by setting cars back from the crosswalk.
- ***Intersection design –*** The City should work with Caltrans to develop significant intersection design improvements that prioritize bicyclist and pedestrian safety and comfort for school-age children, particularly with consideration of Vine Trail access.

The long crossing distance across SR 29 at Salvador Avenue spans across several lanes of highway traffic.

RECOMMENDATION #NAP-056: GROUP ENCOURAGEMENT PROGRAMS

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

IDENTIFIED BARRIERS

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

RECOMMENDATIONS

- ***Group encouragement programs –*** Establish regularly-occurring bike trains/walking groups/carpools to reduce the number of vehicles in the school zone and improve visibility and comfort of student bicyclists/pedestrians through increased numbers.

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

RECOMMENDATION #NAP-057: BICYCLE SAFETY EDUCATION

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

IDENTIFIED BARRIERS

- ***No bicycle safety education –*** River Middle School has not historically provided students with bicycle safety education. A lack of bicycle safety education can result in unintentional unsafe student bicyclist behavior and a sense of discomfort riding a bike.

RECOMMENDATIONS

- ***Annual bike safety education –*** Provide annual bike safety education for all students, such as in-class/on-bike hybrid classes. Such programming is available to all Napa County public schools through the Napa County Safe Routes to School program.

Annual bike safety education helps prepare and encourage students to bike to school safely. Photo credit: Napa County Office of Education.

RECOMMENDATION #NAI-364: SALVADOR AVENUE AND MOFFITT DRIVE INTERSECTION

IDENTIFIED BARRIERS

- ***Faded crosswalks –*** The existing crosswalks in the intersection are faded, especially the one across Salvador, greatly reducing pedestrian visibility and motorist awareness of pedestrians.
- ***Uncontrolled Salvador traffic –*** High-speed and high-volume Salvador Avenue traffic is uncontrolled at this intersection, facilitating motorist speeding through the intersection and reducing motorist yielding behavior.
- ***Missing red zones –*** Missing red zones on the intersection curbs allows motorists to park adjacent to crosswalks and obstruct pedestrian visibility.

The Salvador and Moffitt intersection, facing east.

RECOMMENDATIONS

- ***Red zones –*** Paint red zone curbs on the northwest corner to prevent motorists from parking adjacent to crosswalks.
- ***Curb extensions –*** Install curb extensions for the crosswalk across Salvador Avenue to prevent motorists from parking adjacent to crosswalks, slow motorists through the intersection, and improve motorist yielding behavior. Move pedestrian crossing signage to curb extensions to make signage more visible.
- ***High-visibility crosswalk –*** Upgrade the Salvador crosswalk to a high-visibility pattern to improve motorist yielding behavior and pedestrian visibility.

RECOMMENDATION #NAI-365: SALVADOR AVENUE AND SPRINGWOOD DRIVE/ KINGSFORD DRIVE INTERSECTION

IDENTIFIED BARRIERS

- ***Long crossing distance –*** The long crossing distance across Salvador Avenue pushes pedestrians further out of the range of vision of motorists and requires pedestrians to be in the roadway for longer than necessary.
- ***One crosswalk, low visibility –*** Only one crosswalk exists in the intersection on the west side, and it is painted a low-visibility parallel line pattern.
- ***High speed/volume corridor –*** Salvador Avenue experiences high speeds and volumes of traffic which, though controlled at this location through a Rectangular Rapid Flashing Beacon, decreases pedestrian sense of safety and comfort crossing the street.

The Salvador and Springwood intersection, facing west.

- ***Missing red zones –*** Missing red zones on the intersection curbs allows motorists to park adjacent to crosswalks and obstruct pedestrian visibility.
- ***Wide curb radii –*** Wide curb radii facilitate fast motorist turning movements through the intersection.

RECOMMENDATIONS

- ***Curb extensions –*** Install curb extensions on all four corners to improve pedestrian visibility and motorist yielding behavior, slow motorists through the intersection, and prevent motorists from parking adjacent to crosswalks. Move the existing Rectangular Rapid Flashing Beacons to curb extensions to improve visibility of beacons.
- ***Crosswalks –*** Paint crosswalks on all four legs of the intersection, with Salvador Avenue crosswalks being painted a high-visibility pattern to improve pedestrian visibility.

RECOMMENDATION #NAI-369: SALVADOR AVENUE AND ESCUELA DRIVE INTERSECTION

IDENTIFIED BARRIERS

- ***Wide curb radii –*** Wide curb radii on the north curbs facilitate fast motorist turning movements through the intersection and increase crossing distance across Escuela Drive.
- ***Faded crosswalk –*** The existing crosswalk is extremely faded, reducing pedestrian visibility.


The crosswalk across Escuela Drive is extremely faded.

RECOMMENDATIONS

- ***Curb extensions –*** Install curb extensions on both sides of the crosswalk to reduce curb radii and crossing distance and improve pedestrian visibility.
- ***High-visibility crosswalk –*** Repaint the existing crosswalk, maintaining its high-visibility school-zone pattern to improve pedestrian visibility.

RECOMMENDATION #NAI-374: BYWAY EAST TRANSIT STOP

IDENTIFIED BARRIERS

- ***Vine Transit bus stop –*** The Vine Transit bus stop on northbound Byway East near the Salvador Avenue intersection provides no shelter and a couple of seats located far from bus stop, where transit users may not feel visible. While Vine transit does not currently serve this stop, it was reported to be highly-used by students at the time of the Walk Audit.


Existing bus seats are located far from the bus stop.

RECOMMENDATIONS

- ***Transit stop updates –*** If Vine transit plans to return service to this area, upgrade the identified Vine transit bus stop by paving the vegetation buffer to install bench/seats next to bus stop sign. Upgrade to a sheltered bus stop when possible.

RECOMMENDATION #NAI-376: HERMOSA DRIVE SIDEWALKS

IDENTIFIED BARRIERS

- ***Missing sidewalks –*** Sidewalks are missing on both sides of the street, creating a significant gap in the pedestrian network on a direct route to neighborhoods south of the school.

RECOMMENDATIONS

- ***Sidewalks –*** Install sidewalks on Hermosa Drive to fill the gap in the pedestrian network.

There are no sidewalks on Hermosa Drive.

RECOMMENDATION #NAP-058: ENCOURAGEMENT EVENTS

IDENTIFIED BARRIERS

- ***Infrequent encouragement programs –*** While annual countywide encouragement events are a great place to start, infrequent encouragement events are not effective enough in normalizing active transportation as an everyday mode of transportation.

RECOMMENDATIONS

- ***Encouragement programs –*** Continue to grow participation in annual encouragement events and organize additional encouragement events throughout the year (ex: Walk and Roll Wednesdays) with the goal of increasing frequency of events over time. Engage student leadership in organization and execution of encouragement events.

Marin County middle school students ran a "Hot Walk-alot" event to encourage active transportation to school. Photo credit: Marin County Safe Routes to School.

ADDITIONAL CONSIDERATIONS

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

RECOMMENDATION #NAI-183 AND NAI-184: JEFFERSON STREET MULTIMODAL ACCESS (SALVADOR/TROWER)

IDENTIFIED BARRIERS

- ***Sidewalk gaps***
- ***Auto-oriented corridor***
- ***High speeds and volumes of traffic***
- ***High-stress bicycle facilities***
- ***High-stress crosswalks***
- ***Minimal shade***

RECOMMENDATIONS

- ***Long-term***
  - ***Road diet and redesign***
- ***Short-term***
  - ***Fill bicycle facility gaps and extend bicycle facilities to intersection at Trower***
  - ***Quick-build traffic-calming elements***
  - ***Class IV protected bike lanes with conflict markings***
- ***Fill sidewalk gaps***

Relevant Reports:

- *Willow Elementary School Walk Audit Report*

RECOMMENDATION #NAI-363: SALVADOR AVENUE AND JEFFERSON STREET INTERSECTION

IDENTIFIED BARRIERS

- ***High traffic volumes/speeds***
- ***No crosswalks***
- ***Long crossing distances***
- ***Wide curb radii***
- ***Free right turn***

RECOMMENDATIONS

- ***Traffic control***
- ***Curb extensions***
- ***High-visibility crosswalks***
- ***Intersection redesign – consider mini-roundabout***

Relevant Reports:

- *Willow Elementary School Walk Audit Report*

MAP OF RECOMMENDATIONS

Map 5: Recommendations

TABLE OF RECOMMENDATIONS

Infrastructure:

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
1	Salvador Avenue from SR 29 to Summerfield Drive	NAI-358	Auto-oriented corridor – road design facilitates frequent motorist speeding. High speeds and high volumes of vehicle traffic, no traffic-calming. Significant gaps in bicyclist and pedestrian facilities, high-stress existing bicycle and pedestrian facilities. Sidewalk gaps (WB: SR 29 to Morse Court; EB: SR 29 to Moffitt Drive and Kingsford Drive to Jefferson Street); narrow existing sidewalks.	Long-term: Road redesign of corridor to improve and prioritize safe, accessible, and comfortable multi-modal transportation through a Complete Streets framework* as part of corridor study designation in adopted Bike Plan*. Integrate specific recommendations from SRTS reports into road redesign.	$$-$$$$	**High**
		NAI-359		Short-term: Narrow travel lanes. Install quick-build traffic-calming elements throughout corridor. See intersection-specific recommendations for curb extensions. Install Class IV protected bike lanes from SR 29 to City limits – use quick-build materials for fast implementation Extend Class I Vine Trail connection from east side of SR 29 intersection to Byway East crosswalk. Gradually introduce traffic calming in segment between City limits and Summerfield to slow down westbound traffic coming in from rural area of Salvador.	$$-$$$$	**High**
2	Salvador Avenue and Moffitt Drive intersection	NAI-364	Faded existing crosswalks, no traffic control or calming for high-speed and high-volume Salvador Ave traffic. Lack of red zones allows vehicles to park close to crosswalks.	Paint red curbs on Moffitt Drive and Salvador on northwest corner. Install curb extensions for crosswalk across Salvador, move pedestrian crossing signage to curb extensions, and upgrade crosswalk to high-visibility pattern.	$$	**Medium**
3	Salvador Avenue and Springwood Drive/ Kingsford Drive intersection	NAI-365	Long crossing distance across Salvador Avenue, only one existing crosswalk on west side, existing crosswalk is low-visibility pattern, high-speed and high-volume corridor (Salvador Ave), vehicles park close to crosswalk and obstruct pedestrian visibility, wide curb radii facilitate fast motorist turning movements.	Install curb extensions on all four corners, paint crosswalks on all four legs of intersection and upgrade Salvador Ave crosswalks to high-visibility pattern. Move existing Rectangular Rapid Flashing Beacons to curb extensions.	$$	**Medium**

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
4	Salvador Avenue and Escuela Drive intersection	NAI-369	Long crossing distance, wide curb radii facilitate fast motorist turning movements, faded crosswalk.	Install curb extensions on both sides of the crosswalk, repaint crosswalk with a high-visibility school-zone pattern.	$$	**Medium**
5	Escuela Drive from Salvador Avenue to Bella Drive	NAI-370	Obstructed, narrow southbound sidewalk with gap near Bella Drive; missing northbound sidewalk.	Widen existing sidewalk, fill in gaps where sidewalk is missing.	$$	**Low**
		NAI-371	No bicycle facilities.	Install Class III bicycle boulevards with sharrows, signage and traffic-calming.	$	**Low**
6	Byway East and Salvador Avenue intersection	NAI-372	High speed/volume corridor (Salvador), no traffic-control or calming at Salvador crosswalk, long crossing distance across Byway East, faded low-visibility crosswalk pattern across Byway East, wide turning radii on Byway East corners, Byway East sidewalk does not extend to crosswalk, vegetation on southeast corner obstructs pedestrian visibility and visibility of cross-traffic	Install significant curb extensions on both sides of crosswalk across Byway East to square up intersection and pull up northbound sidewalk to intersection, install red zones around crosswalk. Use quick-build materials in interim for fast response time. Upgrade Byway East crosswalk to high-visibility school-zone pattern. Install Rectangular Rapid Flashing Beacons for crosswalk across Salvador, install shark's teeth on Salvador travel lanes, install traffic-calming features approaching intersection on Salvador (see Salvador corridor recommendation).	$$-$$$	**High**
7	Byway East from Salvador Avenue to El Centro Avenue	NAI-373	Narrow existing sidewalks.	Widen existing sidewalks between Salvador and El Centro Ave.	$$$	**Low**
		NAI-374	Vine Transit bus stop seats located far from bus stop, no other waiting space or shelter provided.	If Vine transit plans to return service to this area, upgrade Vine transit bus stop near Salvador Avenue intersection by paving vegetation buffer to install bench/seats next to bus stop sign. Upgrade to sheltered bus stop when possible.	$-$$	**Medium**
		NAI-375	Long, fairly straight corridor with little traffic control and no traffic-calming facilitates speeding, particularly as corridor is used as highway bypass.	Implement traffic-calming along corridor from Salvador Avenue to El Centro Avenue, with focus on slowing traffic in school zone.	$-$$$	**Low**
8	Hermosa Drive from Salvador Avenue to Paulson Way	NAI-376	Missing sidewalks on both sides of the street, likely preferred route to neighborhoods south of the school.	Install sidewalks.*	$$-$$$	**Medium**
9	Encanto Drive from Salvador Avenue to Paulson Way	NAI-377	No sidewalks on both sides of the street.	Install sidewalks.*	$$-$$$	**Low**
10	Solano Avenue and Salvador Avenue intersection	NAI-378	Low-visibility pattern school zone crosswalks. Motorists approaching SR 29 block crosswalk and intersection. High speeds and volumes of vehicle traffic from both Solano Avenue and adjacent SR 29. Important intersection for Vine Trail shared-use path access.	Upgrade existing crosswalks to high-visibility school zone pattern. Install signage and stencils reinforcing that motorists should keep intersection clear. Install curb extension on northeast corner to improve motorist yielding behavior and pedestrian visibility. Improve Vine Trail crossings to address poor motorist yielding behavior and increase user comfort for school-aged users.	$$-$$$	**High**
11	SR 29 and Salvador Avenue intersection	NAI-379	Long crossing distance across SR 29, extremely high-speed and high-volume traffic on highway, as well as high speeds and volumes on Salvador and adjacent Solano. Important intersection for Vine Trail shared-use path access.	Push westbound (north) Salvador sidewalk out in curb extension on northeast corner. Install stop lines on southbound SR 29 to improve pedestrian visibility. City should work with Caltrans to develop significant intersection design improvements that prioritize bicyclist and pedestrian safety and comfort for school-age children, particularly with consideration of Vine Trail access.	$$-$$$	**High**

	LOCATION	ID #	BARRIER	RECOMMENDATION	COST	PRIORITY
12	Jefferson Street from Salvador Avenue to Trower Avenue	NAI-182	Poor road quality around Trower Avenue intersection.	Repave road and paint bike facilities up to intersection.	$$$$	**Low**
		NAI-183	Sidewalk gaps along both sides of Jefferson Street (northbound: 4066 Jefferson Street to 4010 Jefferson Street; southbound: El Centro Avenue south to 3912 Jefferson Street).	Long term: Fill sidewalk gaps.*	$$	**High**
		NAI-184	Wide, straight, auto-oriented corridor designed to prioritize vehicle speed. Road design facilitates frequent motorist speeding. Narrow sidewalks with gaps, infrequent and high-stress crosswalks across the corridor, and minimal shade make this challenging and unwelcoming for pedestrians. High-stress, inconsistent bike facilities are not comfortable for most riders. Bike facility gaps (northbound: Darling Street to El Centro east; southbound: Joshua Court to El Centro Avenue west, 3916 Jefferson Street to Trower Avenue); northbound lane north of Trower and southbound lane south of Trower do not reach intersection.	Long-term: Road diet and redesign of corridor to improve and prioritize safe, accessible, and comfortable multi-modal transportation through a Complete Streets framework as part of adopted Bike Plan corridor study designation*. Integrate specific recommendations from SRTS reports into road redesign.	$$	**High**
13	Salvador Avenue and Jefferson Street intersection	NAI-363	High-volume intersection. No crosswalks, low visibility, especially on southbound Jefferson, only stop-controlled at Jefferson, speeding on Salvador Ave, long crossing distances, wide curb radii on north side, free right onto Jefferson facilitates fast motorist turning and reduces yielding behavior.	Create four-way stop. Remove free right turn lane on Salvador Ave. Install curb extensions on all four corners that accommodate bicycle facilities. Paint high-visibility crosswalks on all four legs. Consider redesign of intersection to mini-roundabout.	$-$$	**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	Idling cars along southbound Escuela Drive	NAP-055	Initiate student-led Idle-Free campaign	Escuela Drive	Throughout school year	$	**Low**
2	Congestion in school zone	NAP-056	Establish carpool program/walking school bus/bike train program to reduce congestion in school zone	School site	Monthly, with goal of increasing frequency	$	**High**
3	No bicycle safety education provided	NAP-057	Provide bike safety education to all students	School site	Annual	$	**High**
4	Limited encouragement events	NAP-058	Continue to grow participation in annual encouragement events; engage student leadership to hold additional encouragement events throughout the year, with the goal of increasing frequency of events	School site	Annual (countywide events)/Quarterly (independent events)	$	**Medium**

COLLISION MAP AND DATA

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

Summary Statistics

RADIUS	FATAL	SEVERE INJURY	VISIBLE INJURY	COMPLAINT OF PAIN	PEDESTRIAN	BICYCLE	TOTAL
< .25 mi.	0	0	0	2	1	1	2
.25-.5 mi.	2	1	2	2	3	4	7
Total	2	1	2	4	4	5	9

Collision List

Case ID	Date	Time	Primary	Secondary	Distance	Direction	Bike	Ped
9211698	2020-07-31	05:15	RT 29	WINE COUNTRY AV	0.00	-	No	Yes
8099759	2016-07-29	09:18	SOLANO AV	WINE COUNTRY AV	0.00	-	Yes	No
8622264	2018-05-13	17:31	BYWAY EAST	REED CIR	0.00	-	Yes	No
8947541	2019-09-22	15:52	MAHER ST	WINE COUNTRY AV	0.00	-	Yes	No

Figure 8: 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.

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APPENDIX A

EMC Survey Toplines

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

Evaluation: Research & Methodology

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Yes	43
No	56
(No response)	0

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

Yes	79
No	21
(No response)	-

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

Yes	78
No	21
(No response)	0

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

47. Do you identify as…

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

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

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

49. Do you consider yourself to be…

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

50. Do you…

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

THANK YOU!

APPENDIX B

Universal Recommendations

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

Appendix B
Napa County SRTS Walk Audit Report
Universal Recommendations

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

Universal Recommendation 1: High-Visibility School Zone Crosswalks

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

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

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

Universal Recommendation 2: Intersection Daylighting

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

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

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

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

Universal Recommendation 3: Sidewalk Width Adjacent to School Campus

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

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

Universal Recommendation 4: Class III Bike Boulevard Traffic-Calming

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

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

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

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

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

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

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

APPENDIX C

Quick Build Brochure

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

QUICK-BUILD BIKEWAY NETWORKS FOR SAFER STREETS

Delivering Safer Streets in Weeks or Months, Instead of Years

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

Photo credit: Alta Planning + Design

CASE STUDY

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

WHY QUICK-BUILD? WHY NOW?

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

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

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

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

WHAT IS QUICK-BUILD?

The Basics

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

Materials

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

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

CASE STUDY

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

Photo credit: Bike SLO County

WHO?

Your Quick-Build Project Team

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

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

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

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

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

Community Engagement

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

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

CASE STUDY

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

Photo credit: Holly Raines

WHERE?

Which Projects are Best for Quick-Build?

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

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

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

Photo credit: Alta Planning + Design

Funding for Quick-Build

POTENTIAL FUNDING SOURCES IN CALIFORNIA

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

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

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

CALIFORNIA BICYCLE COALITION

APPENDIX D

Bike Parking Guidance

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

ESSENTIALS OF

BIKE PARKING

Selecting and installing bicycle parking that works

apbp

Association of Pedestrian and Bicycle Professionals

Expertise for Active Transportation

Essentials of Bike Parking
Revision 1.0, September 2015

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

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

Association of Pedestrian and Bicycle Professionals

bikeparking@apbp.org
www.apbp.org

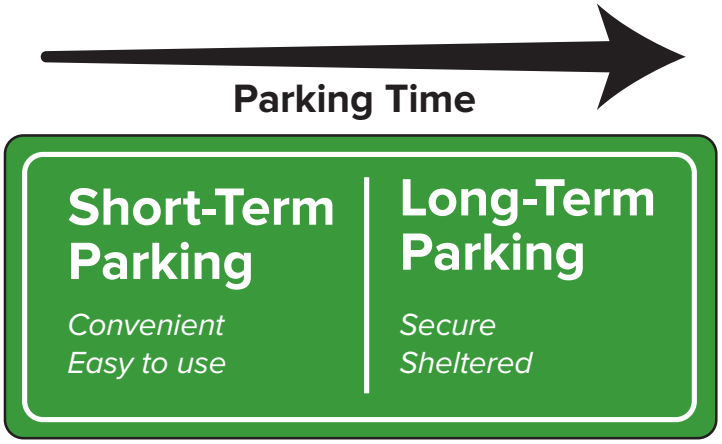
TABLE OF CONTENTS

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

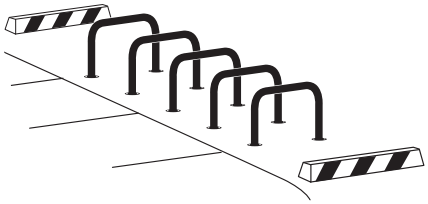
Effective bike parking for short-term users depends on two main factors: 1) proximity to the destination and 2) ease of use.

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.

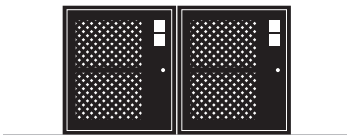
BIKE CORRALS

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**

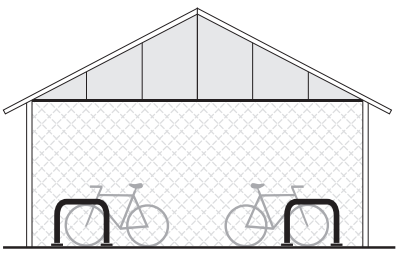
LONG-TERM PARKING

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

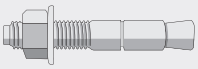
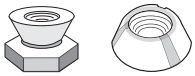
Selecting an appropriate installation surface and technique is key to creating bicycle parking that remains secure and attractive over time.

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

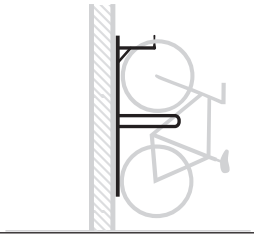
These rack styles do not meet all performance criteria but may be appropriate in certain constrained situations.

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

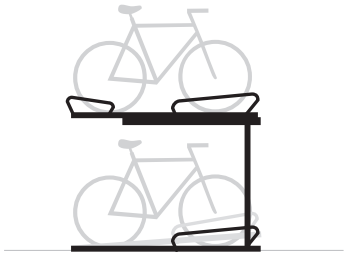
Variation of the wheelwell-secure rack designed to stagger handlebars vertically or horizontally to increase parking density. Reduces usability and limits kinds of bikes accommodated, but contains bikes well and aids in fitting more parking in constrained spaces.

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.

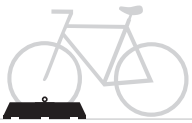
SCHOOLYARD
also called comb, grid

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

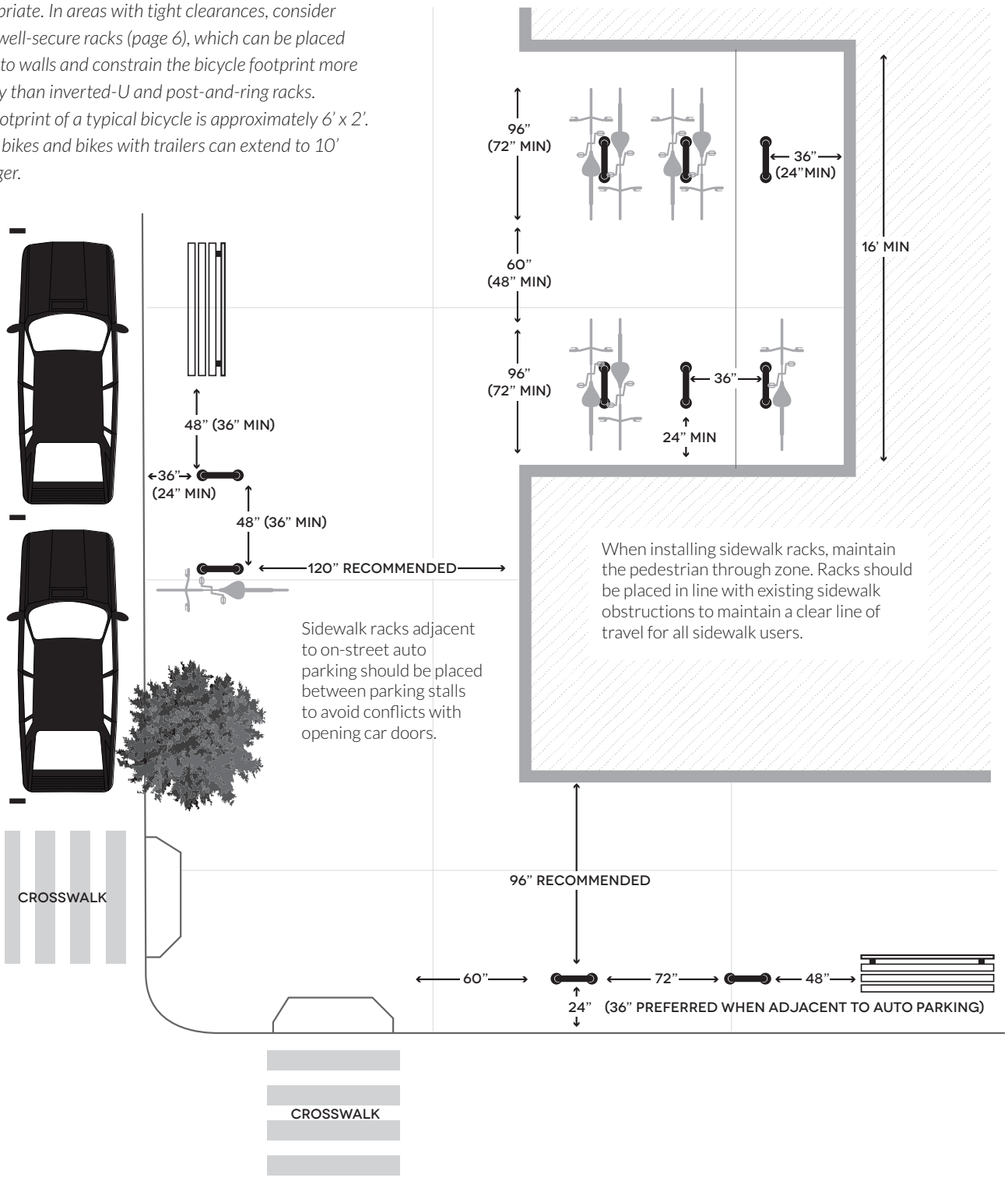
Most bicycle parking racks are made of carbon steel or stainless steel. Carbon steel requires a surface coating to resist rust while appropriate grades of stainless steel need no coating. Not all materials and coatings with the same name perform equally. Square tubing provides a security advantage as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