

SAN MATEO COUNTY SAFE ROUTES TO SCHOOLS SAN MATEO FOSTER CITY SCHOOL DISTRICT



BOREL MIDDLE SCHOOL WALK AND BIKE AUDIT FINAL REPORT 06.24.13



San Mateo County
SAFE ROUTES TO SCHOOL
Healthy Kids • Green Communities • Safe Journeys



Prepared by



Kimley-Horn
and Associates, Inc.

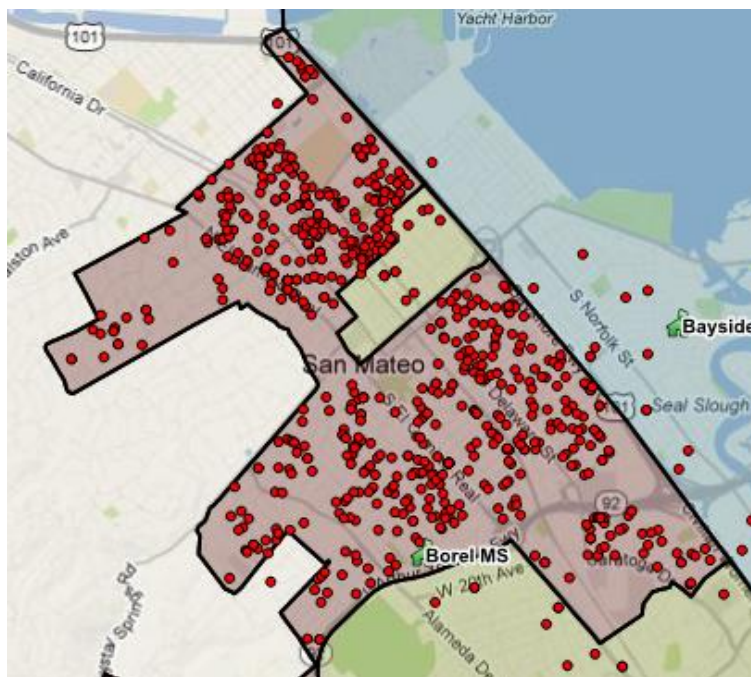
Introduction

In partnership with the San Mateo County Office of Education, the San Mateo Foster City School District planned to complete Walking and Bicycling Audits at each of its Elementary and Middle School campus during the 2012/2013 or 2013/2014 school years. Walking and bicycling audits are field visits to identify barriers or challenges to students using these modes to travel between home and school. Also known as assessments, audits generally include a tour of the school area, where participants identify issues related to walking and biking, followed by a debriefing and brainstorming session to rank high-priority concerns and identify potential solutions. Walking and bicycling audits provide community stakeholders with the information they need to analyze the design and condition of the transportation network.

A Walking and Bicycling Audit was completed for Borel Middle School on January 14, 2013. Staff and parents from Borel Middle School, as well as staff from the City of San Mateo and School District partnered with the selected engineering safety firm of Kimley-Horn and Associates to complete the field audit and brainstorming session of concerns and solutions. Specific to Borel Middle School, the school has a special site council consisting of school staff, parents, and children with whom the audit was coordinated. Subsequent to the field audit and debrief, the issues discussed have been incorporated into this report and recommendations for improvements suggested herein.

School Boundaries

Below is a map showing the Borel Middle School enrollment boundary (represented by the area shaded in red) and the current student enrollment (represented by red dots). This map helps to provide general origin/destination information for the routes students may utilize walking or biking to school.



Borel Middle School Boundaries

Survey Results

In Fall 2012, a student parent survey was conducted for Borel Middle School. A total of 611 responses were collected for 740 students. The number of responses varied per survey.

Gender Percentages

	Count	Percent
Male	338	48%
Female	369	52%
Total	707	100%

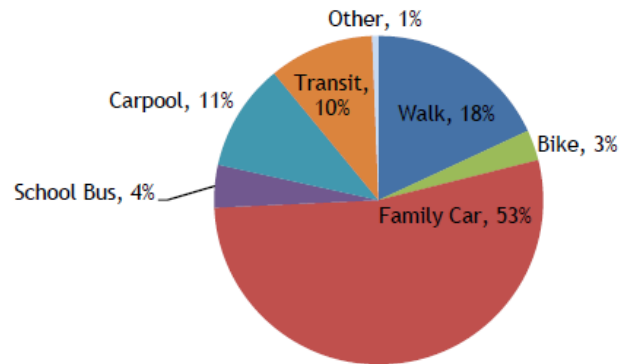
Approximate Distance between Home and School

	Number	Percent
¼ mile or less	89	13%
¼ - ½ mile	61	9%
½ - 1 mile	117	17%
1 – 2 miles	252	37%
More than 2 miles	157	23%
Total	676	100%

❖ The majority of students, 60 percent, live more than a mile away from school. Thirteen percent of students live within a quarter mile of the school and 22 percent within a half mile of the school.

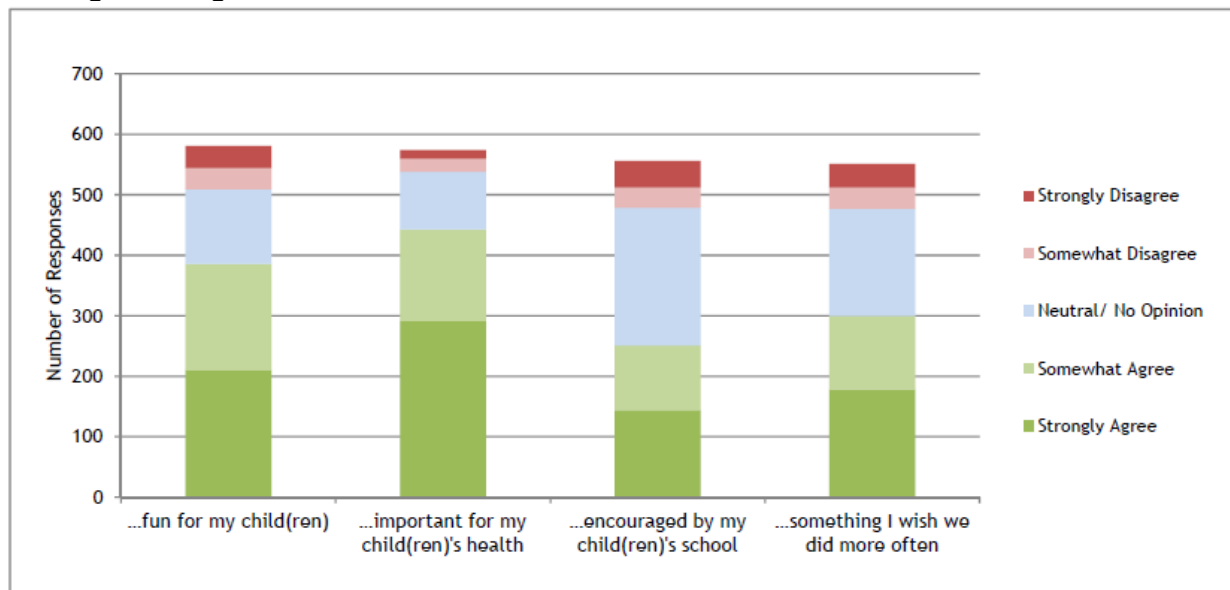
❖ For all trips to and from school, the main mode of transportation is by family car at 53 percent. Another common mode of transportation is by walking at 18 percent.

Mode Split for All School Trips (n=7221)



❖ A majority of parents stated that walking or biking was important for their children's health. Other common statements include that walking or biking is fun for their children and is something parents wished they did more often.

Walking or Biking to school is...



Field Walking Audit

The field audit at Borel Middle School focused on the following main areas of concern by the group:

- Barneson Avenue (in front of school): The school frontage on Barneson Avenue results in the majority of drop-off and pickup activities occurring on Barneson Avenue or the side-streets between Tilia Street and Edinburgh Street. Barneson Avenue is signed as 25mph and traffic during drop-off and pickup periods generally adheres to the speed limit due to the vehicle congestion in the area; however, some speeding was observed outside the concentrated 15 minute periods for drop-off and pickup.
- Barneson Avenue/Quince Street intersection: Each of the side streets that connect to Barneson Avenue experience an increased level of traffic during drop-off and pickup periods including Tilia Street, Shafter Street, Rhus Street, Quince Street, and Edinburgh Street. The crosswalks at Quince Street and Edinburgh Street were observed to be the most heavily used with the Edinburgh Street intersection as a 4-way stop but Quince Street intersection only stopped on the side street.
- Barneson Avenue (between Edinburgh Street and El Camino Real): Many of the students attending Borel Middle School live east of the school and use Barneson Avenue as the main walking route. Barneson Avenue has contiguous sidewalks between the school property and El Camino Real and includes pedestrian ramps at the majority of the crossing locations. The majority of students that walk to campus were observed using this section of Barneson Avenue.
- Borel Avenue (between Shafter Street and Edinburgh Street): The school does not have dedicated student busing; however, there are multiple SamTrans bus routes that serve the school and bus stops are mainly located on the backside of the school property on Borel Avenue. Four bus stops are location on this section of Borel Avenue, on the north side of the roadway. In addition, this is a secondary drop-off and pick-up area for students and parents and many students were observed crossing Borel Avenue at locations with no dedicated crosswalk or stop-controlled intersection.
- Edinburgh Street (between Barneson and Hobart Avenue): Many students use Edinburgh Street to walk to/from school. In addition, since Edinburgh is a convenient north-south alternative to Alameda de Las Pulgas, many parents use this section of Edinburgh to drive their students to/from school.

Additional observations about walking and biking activities near the school campus:














- Walking to campus: Observations as well as experience from the site council noted that many students walk to/from campus daily and this is the most highly used alternative transportation mode besides parents using personal vehicles.
- Biking to campus: A much smaller percentage of students biking to/from school. Bike racks are located behind the faculty parking lot, interior to campus in a safe and secure location. On a daily basis, bike racks are moderately utilized but no additional bike racks are required. No alternate location for the bike racks was determined that may increase the incentive for biking or safe storage of bicycles.

The **Existing SR2S Elements** figure illustrates the existing pedestrian and bicycle safety devices already in place in the study area.

Borel Middle Safe Route to School Walk and Bike Audit



Legend:

-  School Crossing
-  Bus Stop
-  Countdown Pedestrian Signals
-  Existing Curb Ramp
-  No Curb Ramp
-  School Crosswalk
-  Ladder School Crosswalk
-  White Crosswalk
-  Crossing Guard
-  No Sidewalk
-  SLOW SCHOOL XING Pavement Marking
-  Green Curb Marking
-  Red Curb Marking

Proposed Safe Route to School Elements

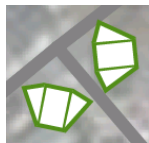
The **Proposed SR2S Elements** and **Proposed SR2S Elements (Near School)** figures illustrate the SR2S Plan on a conceptual basis. A brief discussion is provided below for each of the improvements proposed:

Alameda de Las Pulgas



1. **Install Curb Extensions:** Curb extensions can improve safety for pedestrian at an intersection by reducing the crossing distance and exposure for pedestrian and the speed of turning vehicles. The SR2S Plan proposes that curb extensions be installed at the south leg of the intersection of Alameda de Las Pulgas and Barneson Avenue. The curb extension will extend the curb 8 feet.

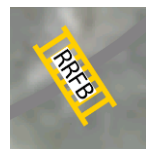
Barneson Avenue (East to West):



2. **Install Pedestrian Ramps:** Sidewalks exist on both sides of Barneson Avenue from El Camino Real to Alameda de Las Pulgas. There are pedestrian ramps along this corridor except at the intersection at Kalmia Street. The proposed SR2S plan show installing a pedestrian ramp at Kalmia Street as a pedestrian gap closure.



3. **Install Curb Extension.** The SR2S plan proposes that curb extensions be installed on the west and south leg of the intersection of Barneson Avenue and Edinburgh Street and the east leg of the intersection at Quince Street. The curb extension will extend 8 feet. The proposed curb extensions are intended to shorten the crossing distance for the many students that utilize this intersection to walk to/from school. In addition, curb extensions will eliminate the vehicles that currently tend to squeeze along the curb and make right turns at the same time as through movements. This activity creates more conflicting movements at the intersection obscuring pedestrians from driver recognition.



4. **Install Enhanced Crossings:** It is recommended that an enhanced crossing be installed at Barneson Avenue and Quince Street to facilitate safer crossing. This installation is recommended as a Rectangular Rapid Flashing Beacon (RRFB) for improved visibility of motorists. In addition, curb extensions are recommended to shorten the crossing distance at the east leg crosswalk and the curbs adjacent to the intersection will be red curbed to disallow parking for better visualization of pedestrians crossing. The east crosswalk was chosen as the location for enhancement based on the current use by more students of this crosswalk.

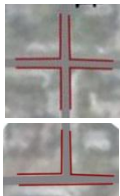


5. **Remove School Crosswalk:** The SR2S Plan proposes that the west crosswalk at the intersection at Barneson Avenue and Quince Street to be removed. The enhanced crossing on the east leg of the

intersection should be utilized to focus pedestrians and driver recognition of pedestrians to one location.



- Add Keep Clear:** It was observed that the intersection at Barneson Avenue and Quince Street was blocked due to parents dropping off their children at school. In order to keep the intersection clear, it is proposed that “Keep Clear” pavement markings be added to intersection.



- Add Red Curb Making:** The SR2S Plan proposes that red curb marking should be placed 25 feet from the corner of the intersections at Quince Street, Rhus Street, Shafter Street, and Tilia Street. The curb marking will prevent cars from parking close to the intersection, which could become a visual obstruction for pedestrians and turning vehicles.



- Add White Curb Marking:** To designated drop-off and pick-up areas adjacent to the school, white curb marking should be added along Barneson Avenue between Edinburgh Street and Quince and between Rhus Street and Shafter Street.



- Install Pedestrian School Crossing:** It is proposed that a school pedestrian crossing be added on the north leg of Barneson Avenue and Tilia Street.

Borel Avenue (East to West):



- Add Pedestrian School Crossing:** It was observed that many students utilize the gate at the south end of school campus. The SR2S Plan proposes a pedestrian school crossing be installed to increase the safety of students crossing Borel Avenue.



- Install Pedestrian Ramps:** Sidewalks exist on both sides of Borel Avenue from Edinburgh Street to Shafter Street; however, there are no pedestrian ramps at this intersection. The proposed SR2S plan show installing a pedestrian ramp at the north leg of Edinburgh Street and Shafter Street as a pedestrian gap closure. Another pedestrian ramp will be installed on the south end of the proposed pedestrian school crossing at the south entrance to the school.

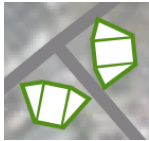
Edinburgh Street (North to South):



- Install Stop Signs:** There are currently stop signs for traffic on Hobart Avenue approaching the intersection of Edinburgh Street and Hobart Avenue. To reduce the speed of vehicles traveling along Edinburgh Street, it is proposed that signs stops be installed on Edinburgh Street at the “north” intersection of Hobart street w/Edinburgh Street.



13. **Add Pedestrian School Crossing:** The SR2S Plan recommends that school pedestrian crossings be installed at the east and south leg of the Edinburgh Street and Hobart Avenue.



14. **Install Pedestrian Ramps:** It was observing that the east and west legs of Hobart Avenue are offset roughly 95 feet apart at Edinburgh Street. While there are pedestrian ramps on the east and west leg of this intersection, it will be necessary to install a ramp on the west end of the proposed crosswalk at Hobart Avenue. This ramp will provide pedestrian gap closure.

Hobart Avenue:



15. **Install Pedestrian Ramps:** Sidewalks exist on both sides of Hobart Avenue from Edinburgh Street to Alameda de Las Pulgas. There are pedestrian ramps along this corridor except at the intersection at Rhus Street and Tilia Street. The proposed SR2S plan show installing a pedestrian ramp at Rhus Street and Tilia Street as a pedestrian gap closure.

Shafter Street:



16. **Install Pedestrian Path:** Currently, there is no dedicated walking area on the east side of Shafter Street between Barneson Avenue and Borel Ave. To provide a gap closure for pedestrians, it is suggested that a sidewalk or pedestrian path be installed along this section of Shafter Street.

Overall School Zone Study Area:

17. Some of the current school-related roadway signage is not current based on the most recent version of the 2012 California Manual on Uniform Traffic Control Devices (MUTCD). This most recent version includes some updates to sign text and/or images, as well as standard for sign retro-reflectivity. It is recommended that future efforts for funding the elements of this plan also inventory the status of the current school signage and update all signs to the current standard.

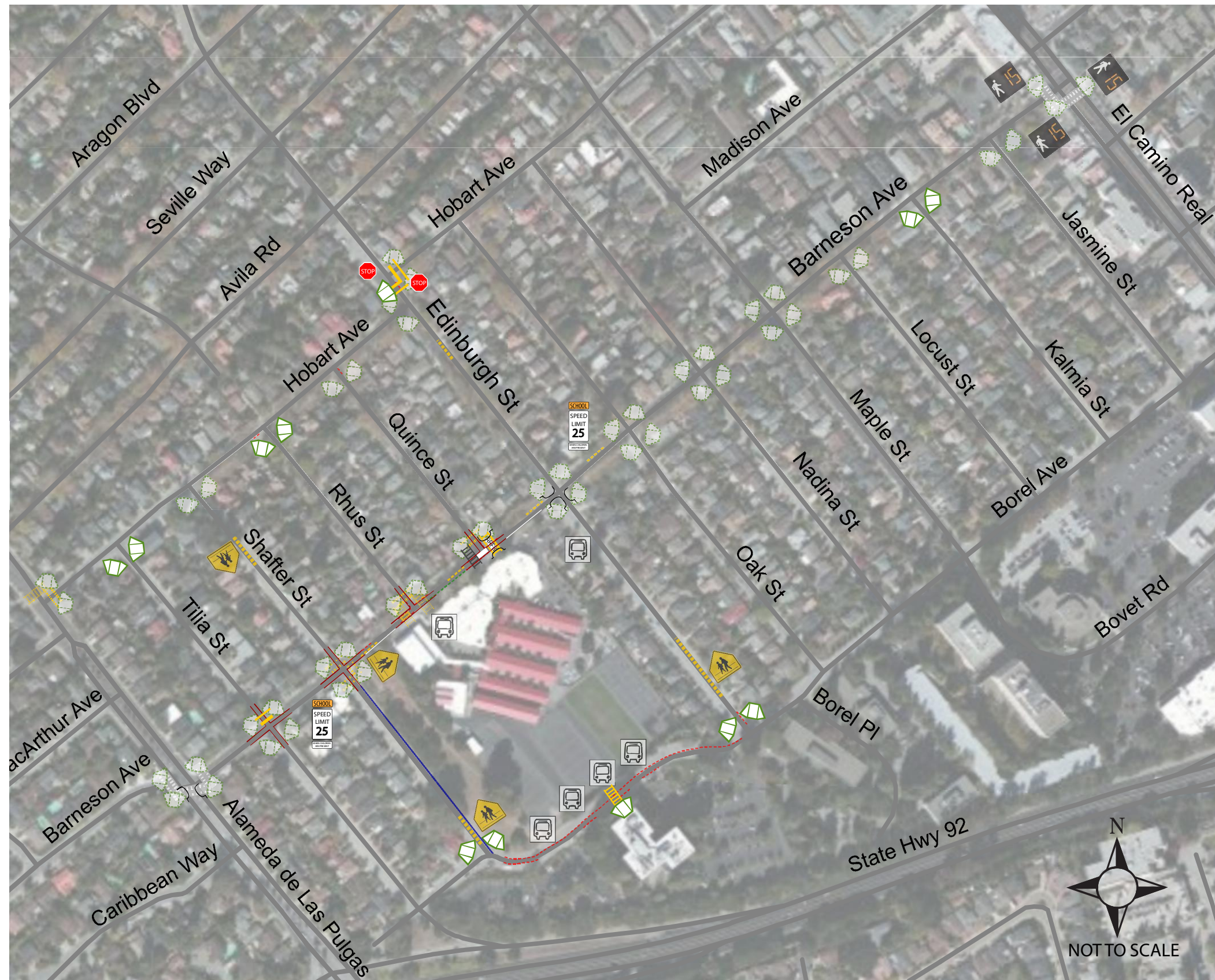
Vehicular Drop-off and Pickup Procedure:

18. Although the primary goal of the Walk and Bike Audit is the encouragement of additional walking and biking through safety improvements of physical roadway features, the general safety of school areas is also observed. Borel Middle School would greatly benefit from the establishment and publication of a set vehicular drop-off and pickup policy. A plan developed in concert between school staff and parent representatives, and distributed to parents each semester, would greatly improve the vehicular-related safety around the school campus. A pickup plan may locate specific grades to certain locations around the school to reduce congestion in one specific area, while being customized for sibling student pickups and other factors.

Speed Limit in School Zone:











19. It is recommended that the City of San Mateo review the potential implementation of reduced Speed Limits in School Zones throughout the City. The California Vehicle Code (CVC) and the California Manual of Uniform Traffic Control Devices (MUTCD) allow the reduction of speeds limits in school zones to 20 or 15 miles per hour for up to 500 feet from school grounds. The City, as the local authority, may by ordinance or resolution adopt the lower prima facie limit upon the basis of an engineering and traffic survey. CVC Section 22358.4 and MUTCD Section 7B.15 are the applicable standards setting forth the requirements for the potential decrease of local speed limits near schools.

Borel Middle Safe Route to School Walk and Bike Audit















Legend:

Existing

-  School Crossing
-  Bus Stop
-  Pedestrian Countdown Signals
-  Curb Ramp
-  School Crosswalk
-  Ladder School Crosswalk
-  White Crosswalk
-  SLOW SCHOOL XING Pavement Marking
-  Green Curb Marking
-  Red Curb Marking

Proposed Improvements

-  School Zone Speed Limit Sign
-  Stop Sign
-  Curb Ramp
-  Curb Extension
-  School Crosswalk
-  School Ladder Crosswalk
-  Enhanced School Crosswalk
(Recommending Rectangular Rapid Flashing Beacon)
-  Remove School Crosswalk
-  Sidewalk or Asphalt Path
-  Red Curb Marking
-  White Curb Marking
-  Keep Clear Pavement Marking












Borel Middle Safe Route to School Walk and Bike Audit














Legend:

Existing


















-  School Crossing
-  Bus Stop
-  Curb Ramp
-  School Crosswalk
-  Ladder School Crosswalk
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-  School Zone Speed Limit Sign
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-  Red Curb Marking
-  White Curb Marking
-  Keep Clear Pavement Marking

Typical SR2S Element Summary

More details of the recommended elements included herein, as well as other typical SR2S elements are summarized in the table below.

SR2S Element	Application in accordance with:	Image	Dimensions (W x H)	Typical purpose	Typical Cost Range
SIGNS					
SCHOOL SPEED LIMIT	California MUTCD, Part 7, Section 7B.11 (School Speed Limit Assembly C (CA))		(24" x 8") + (18" x 24") + (24" x 10")	To indicated the speed limit where a reduce speed zone for a school area has been established	\$300 - \$500
SPEED LIMIT FEEDBACK	California MUTCD, Part 2, Sections 2B.13 (Vehicle Speed Feedback Sign)		(30" x 30")	To display to approaching drivers the speed at which they are traveling. Enhances driver awareness of their speed, especially when used in condition with speed limit sign (R2-1)	\$12, 500 - \$17, 500
NO PARKING ANYTIME	California MUTCD, Part 7, Section 7B.14 (R26(CA))		(12" x 18")	To prevent parked or waiting vehicles from blocking pedestrians' views , and drivers' view of pedestrians	\$300 - \$500
NO STOPPING ANYTIME	California MUTCD Part 2, Section 2B.39 (R26(S)(CA))		(12" x 18")	To inform motorist of a no stopping zone at a specific location where red curb marking is not used.	\$300 - \$500
SCHOOL PASSENGER LOADING ONLY	California MUTCD, Part 2, Section 2B.39 (R25D(CA))		(12" x 18")	To inform motorist of curb restriction at location for loading or unloading passengers for the time as specified by local ordinance.	\$300 - \$500
PEDESTRIAN ELEMENTS					
SCHOOL CROSSING WARNING SIGN	California MUTCD, Part 7, Section 7B.08 (School Warning Assembly A (CA))		(30" x 30") + (24" x 8")	Installed at marked crosswalk, or as close to it as possible to show the location of the school crossing.	\$300 - \$500
PEDESTRIAN COUNTDOWN SIGNAL	California MUTCD, Part 4, Section 4E.07			To inform pedestrians of the number of seconds remaining in the pedestrian change interval.	\$1,500
RECTANGULAR RAPID FLASHING BEACON (RRFB)	Federal High Administration approval per California MUTCD, Section 1A.10, Approval No. IA-11-83-RRFB-California Statewide		Beacon (4" x 29") + Warning Signs	For use at uncontrolled pedestrian and school crosswalk locations.	\$50,000
IN-ROADWAY LIGHTS	California MUTCD Part 4, Chapter 4L		~10" deep x ~7.5" Diameter	To warn road users that they are approaching a condition on or adjacent to the roadway that might not be readily apparent and might require the road user to slow down and/or come to a stop.	\$50,000
CURB RAMP	Caltrans 2010 Standard Plan A88A and A88B		Varies	To make sidewalks accessible for those who need mobility or visual assistance.	\$500 - \$800
BICYCLE ELEMENTS					
BICYCLE LANE	California MUTCD, Part 9, Section 9C.04		Varies	Pavement marking designated that portion of the roadway for preferential use by bicyclists.	\$100-\$150 per bike and arrow
BICYCLE LANE SIGN	California MUTCD, Part 9, Section 9B.04 (R81(CA))		(12" x 8")	Installed at the beginning of each designated Bike Lane and along each Bike Lane at all major changes to regulated bicycle and motor vehicle traffic.	\$300 - \$500
NO PARKING BIKE LANE SIGN	California MUTCD, Part 9, Section 9B.10 (R7-9)		(12" x 18")	To restrict parking, standing, or stopping in a bicycle lane.	\$300 - \$500
BICYCLE + SHARE THE ROAD	California MUTCD, Part 9, Section 9B.18 (W11-1 + W16-1)		(30" x30") + (18" x 24")	To warn motorist to watch for bicyclists traveling along the highway.	\$300 - \$500
ROADWAY IMPROVEMENTS					
CURB EXTENSIONS	City Jurisdiction		Varies	Improves safety for pedestrians and motorist at intersection. Increases visibility and reduces speed of turning vehicles.	Varies
RAISED PEDESTRIAN CROSSINGS	City Jurisdiction		Varies	Improves safety for pedestrians by increases visibility for drivers and reduces speed of vehicles.	Varies
SLOW SCHOOL XING PAVEMENT MARKINGS	California MUTCD, Part 7, Section 7C. 06 (7C-101 (CA))		N/A	Warning drivers in advance of all yellow school crosswalks.	\$400

School Staff, Faculty, Parents, and Students Participating

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Janet Esaki
Paula Spaulding
Mary John
Kimberly Jo-Vogel
Berit Dailey
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