

# BESS MAXWELL ELEMENTARY SCHOOL School Zone Circulation Study

Prepared for:

Del Norte  Local Transportation Commission

December 30, 2013



Prepared by:

TRAFFIC  
WORKS  
LLC

The logo for Traffic Works LLC features the word "TRAFFIC" in a serif font with a traffic light icon for the letter "I". Below it, the word "WORKS" is in a similar font with a stylized green and yellow circular graphic for the letter "O". The letters "LLC" are in a smaller font to the right.

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## INTRODUCTION

### *Project Purpose and Need*

Providing a safe travel environment is paramount for encouraging children, parents, and staff to walk and bike to and from school.

With student safety as a fundamental principle, the Del Norte Local Transportation Commission (Del Norte LTC) commissioned this School Zone Circulation Study, which reviews current traffic patterns within the school campus and on adjacent municipal streets. The goals of this Circulation Study are to reduce congestion, address safety concerns, and enhance access for pedestrians and bicyclists. The study area includes the Bess Maxwell Elementary School and surrounding school zone road network.

The School Zone Circulation Study identifies existing volumes and traffic patterns for:

- Pedestrian and bicycle movements
- Vehicle movements
- Student pick-up and drop-off
- Bus operations and staging
- Visitor, and School faculty/staff parking

With a thorough analysis of existing conditions at the school campus, this study develops solutions to address safety, congestion, and access issues and explores alternatives to better utilize school property and public right-of-way to encourage walking and cycling to school.

### *Process*

The Del Norte School Zone Circulation Study planning process was managed by the Del Norte LTC. The Del Norte LTC is the regional transportation planning agency for Del Norte County charged with facilitating coordinated transportation planning efforts for the Del Norte region. The Del Norte LTC member agencies are Del Norte County, the City of Crescent City, Crescent City Harbor District, Elk Valley Rancheria, Smith River Rancheria, and the Yurok Tribe.

The Del Norte School Zone Circulation Study planning process began in August, 2013 with an infrastructure audit of 14 school campuses within the county. An advisory panel, including a high level of participation from school leadership, provided insight and direction on traffic and safety concerns, as well as final recommendations on which campuses warranted an in-depth school zone circulation study.

## **Goals**

The goal of this School Zone Circulation Study is to create a coordinated system of mobility among all modes by identifying existing deficiencies and providing recommendations to enhance the safety, efficiency, and coordination among pedestrians, bicyclists, vehicles, and buses.

This study focuses on the following points to guide the development of recommendations:

- Maintain a safe campus
- Reduce the potential for conflicts among pedestrians, bicyclists, buses, and motorists
- Improve vehicular traffic circulation during peak morning and afternoon student drop-off and pick-up times
- Comply with state and federal guidelines
- Improve pedestrian access with Americans with Disabilities Act (ADA) accessible facilities
- Improve surrounding roadway facilities to encourage walking and biking to school

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## ***BESS MAXWELL ELEMENTARY SCHOOL***

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Bess Maxwell Elementary School is part of the Del Norte County Unified School District in Crescent City, California. Bess Maxwell is a kindergarten through fifth grade Elementary School. Located at the intersection of El Dorado Street and West Harding Avenue. Bess Maxwell is proximate to surrounding residential neighborhoods and several other schools. The 9 acre campus hosts the school building, playground, asphalt play area, open fields, and a paved parking lot accommodating approximately 75 parking spaces.

The consulting team monitored and evaluated the Bess Maxwell Elementary School campus' existing traffic circulation patterns on Thursday October 3, 2013. The following information was gathered during the field observations and provided by school staff during follow-up discussions. Additionally, infrastructure information provided is from observations made during the infrastructure audit performed on August 20, 2013.

## **EXISTING CONDITIONS**

The existing conditions presented below are intended to provide a snapshot of the current traffic circulation patterns both on campus and along the adjacent roadway network. This information was collected through discussions with the advisory panel, field observations, traffic counts and circulation observations conducted by traffic engineers, and conversations with school district representatives and school staff.

<b>Table 1. Bess Maxwell Elementary School Information</b>	
Student Enrollment	286
Number of Staff	21
School Day Schedule	K-3 <sup>rd</sup> : 7:50 am to 1:45 pm 4 <sup>th</sup> -5 <sup>th</sup> : 7:50 am to 2:20 pm Wed. Early Out, all Grades: 1:05 pm dismissal
Bus Drop-off / Pick-up	7:30 am to 7:40 am / 1:30 pm to 2:30 pm
Peak Parent Drop-off / Pick-up	7:45 am-8:00 am / 1:45 pm to 2:30 pm
Number of Buses	4 (am) / 4 (pm)
Estimated number of Passenger vehicles dropping-off / picking-up	70 / 70

***Campus Characteristics***

Bess Maxwell Elementary School is located on El Dorado Street in Crescent City, California and is bordered by Glenn Street to the west and Hamilton Avenue to the south. Pedestrians access the school primarily via El Dorado Street and Hamilton Avenue. A crossing guard is present during the peak morning and afternoon time periods to assist students crossing El Dorado Street and West Harding Street in front of the school’s main entrance.

The main entrance to the school is a half circle driveway on El Dorado Street with access to the designated drop-off curb in front of the school. Some parking is provided within the half circle driveway as well as head-in parking along El Dorado Street in front of the school. Additionally, a large parking lot (approximately 75 parking spaces) is provided south of the school buildings with access from El Dorado Street and Hamilton Avenue.

Del Norte High School is located just to the north of the Bess Maxwell campus and results in pedestrian, bicycle, and vehicle traffic traveling north along El Dorado Street in front of the main entrance. El Dorado Street, north of Bess Maxwell Entrance and West Harding Avenue intersection, is a one-way road in the northbound direction.

***Drop-off/Pick-up Operations and Parking***

Buses utilize both the main school driveway and the parking lot located south of the school for loading and unloading. Buses for students with access and functional needs utilize a bus area along the curb just within the main entrance. Additionally, a bus was observed using the loading and unloading zone along the curb in the south parking lot. Both zones are labeled in **Figure 1**, Existing Conditions. Students that ride the bus exit the school and travel along internal sidewalks to the loading zones. There are four buses in total providing service to Bess Maxwell Elementary School.

Staff and visitor parking is located on school property, south of the buildings. There is an entrance/exit on El Dorado Street just south of the main driveway exit and an exit only on Hamilton Avenue.

## Bess Maxwell Elementary School

School Zone Circulation Study

Del Norte County, California

December 30, 2013

Parent pick-ups and drop-offs occur primarily in the main circular driveway. However, parents were observed using the parking lot to the south of the buildings and parking along West Harding Avenue, having their children cross El Dorado at the crosswalk assisted by a crossing guard.

### **Assessments**

Collision data was obtained from the Transportation Injury Mapping System (TIMS) and is presented in **Figure 1**. Each point shown on **Figure 1** represents a single reported accident, all reported collisions occurring between 2007 and 2012 have been included. There are few reported collisions within the study area and no trends emerged from the data.



*View of school frontage showing no pedestrian facilities.*

Traffic counts were conducted at the study intersections during the peak traffic periods associated with school start and dismissal times on Thursday October 3, 2013. **Figure 1** shows the study intersections and the peak 15 minute traffic volumes.

Based on a review of the traffic counts that were collected and observations during the peak traffic periods, no operational issues are apparent at the study intersections. Given the existing intersection geometries, it is expected that traffic operations will be satisfactory for the foreseeable future.

### **Identification of Existing Conflicts and Deficiencies**

The following issues or challenges were identified during school observations or presented by advisory panel members and school staff during conversations.

- Reported speeding along El Dorado Street.
- Head-in (perpendicular) parking along El Dorado Street in front of the school creates conflicts with vehicles, bicycles, and pedestrians traveling along El Dorado Street. Vehicles were observed pulling out of their parking space into the travel lane on El Dorado Street. This creates significant conflict points between modes, especially between the reversing vehicle and pedestrians/bicycles traveling along El Dorado Street.



*View south from main entrance along El Dorado Street, showing the conflicts between parking and pedestrians.*

## Bess Maxwell Elementary School

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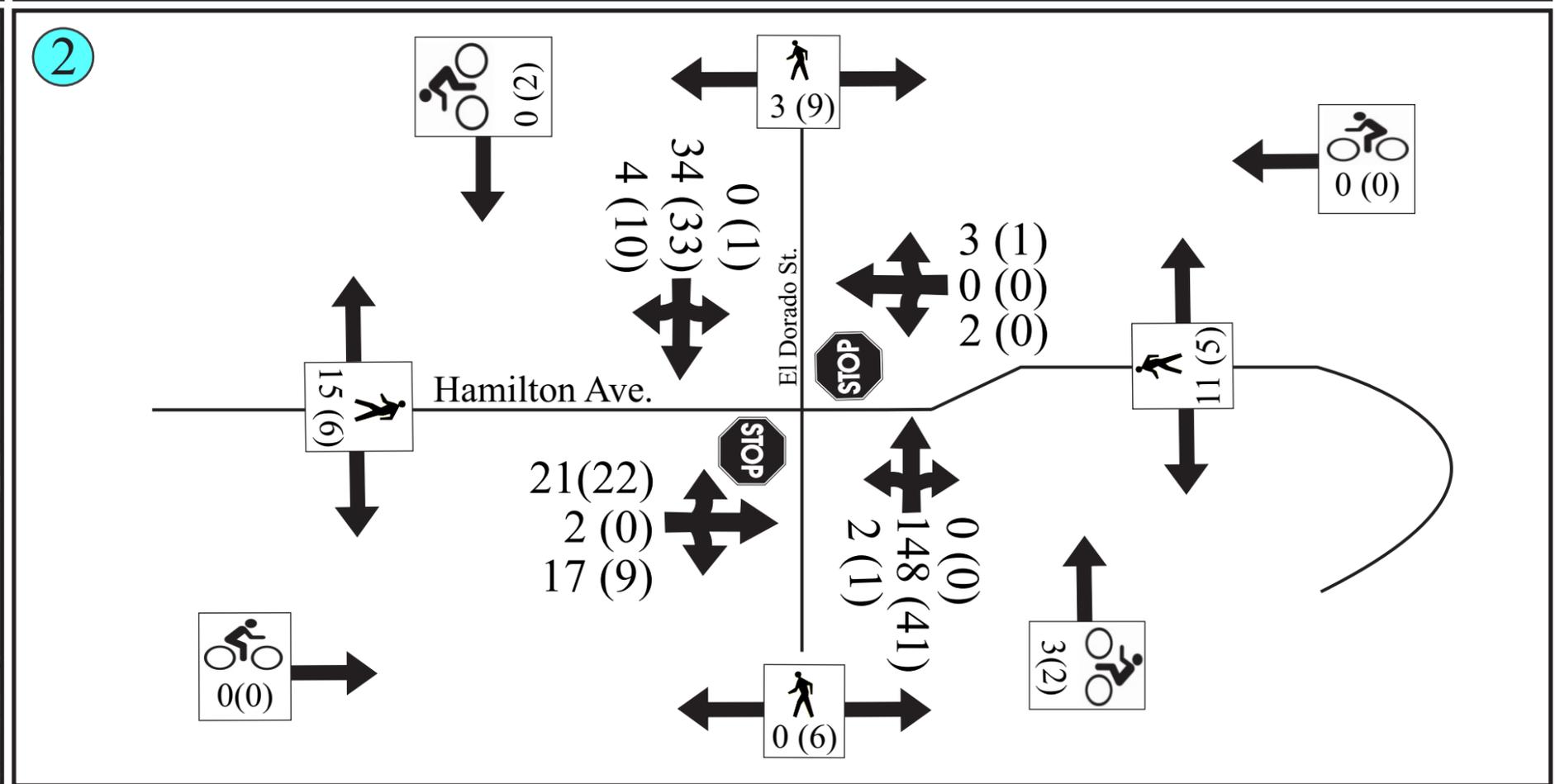
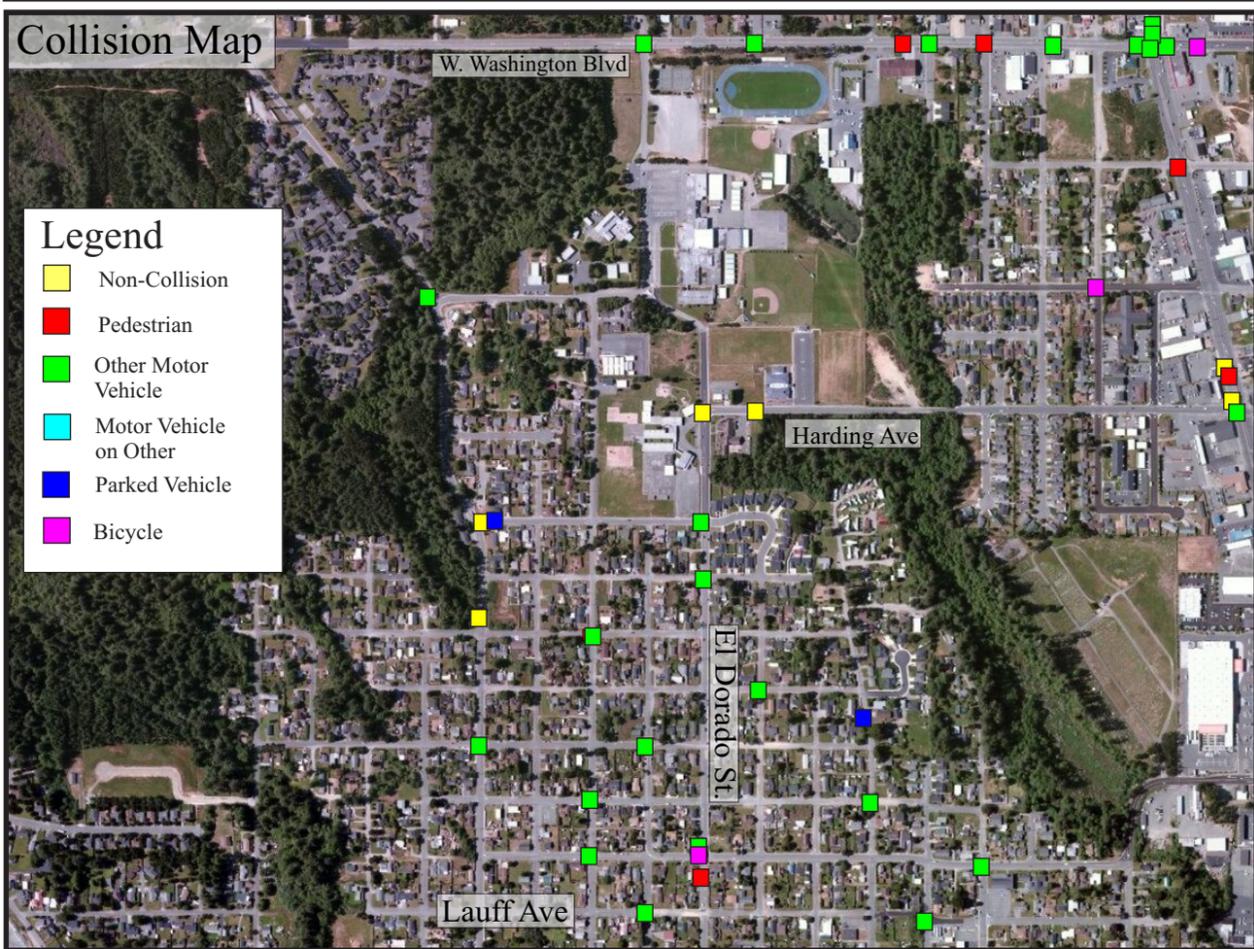
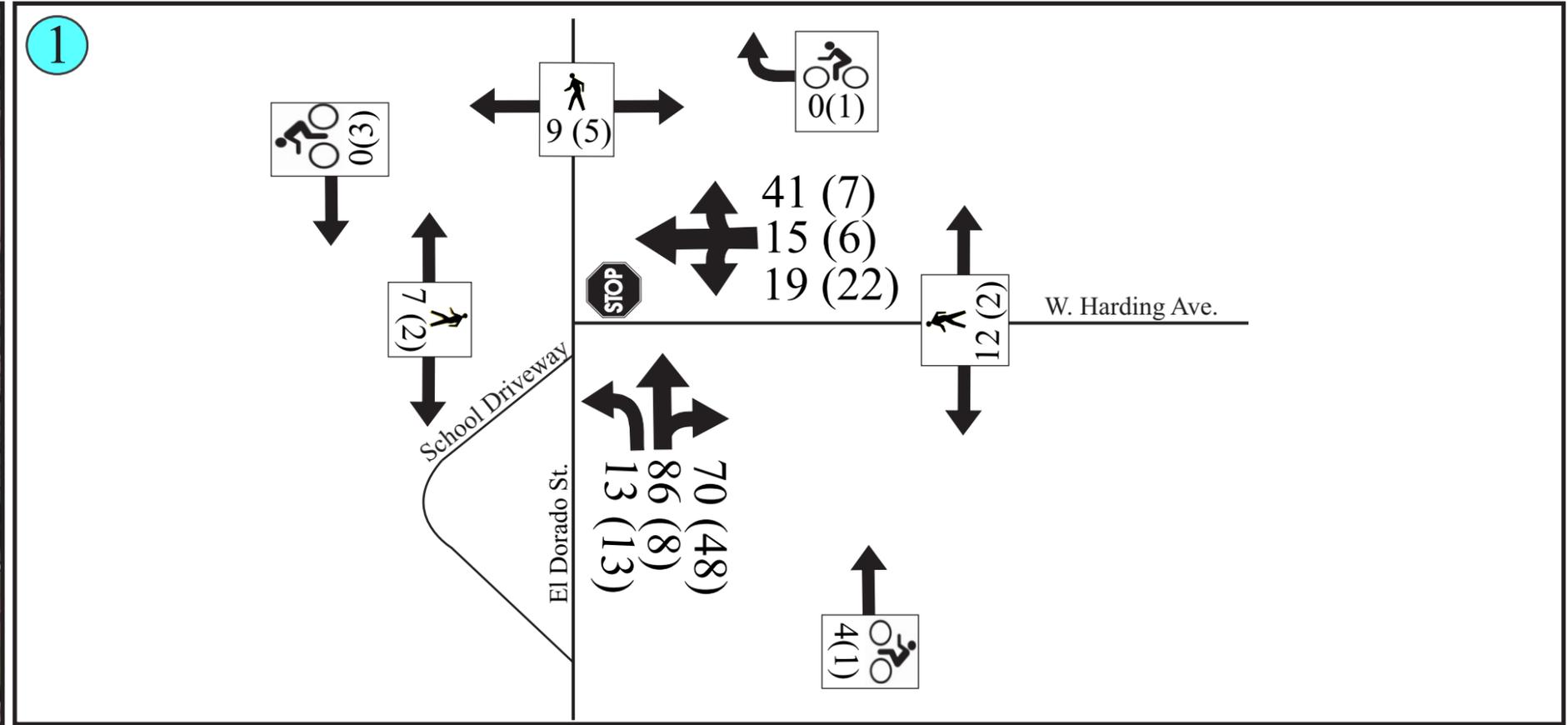
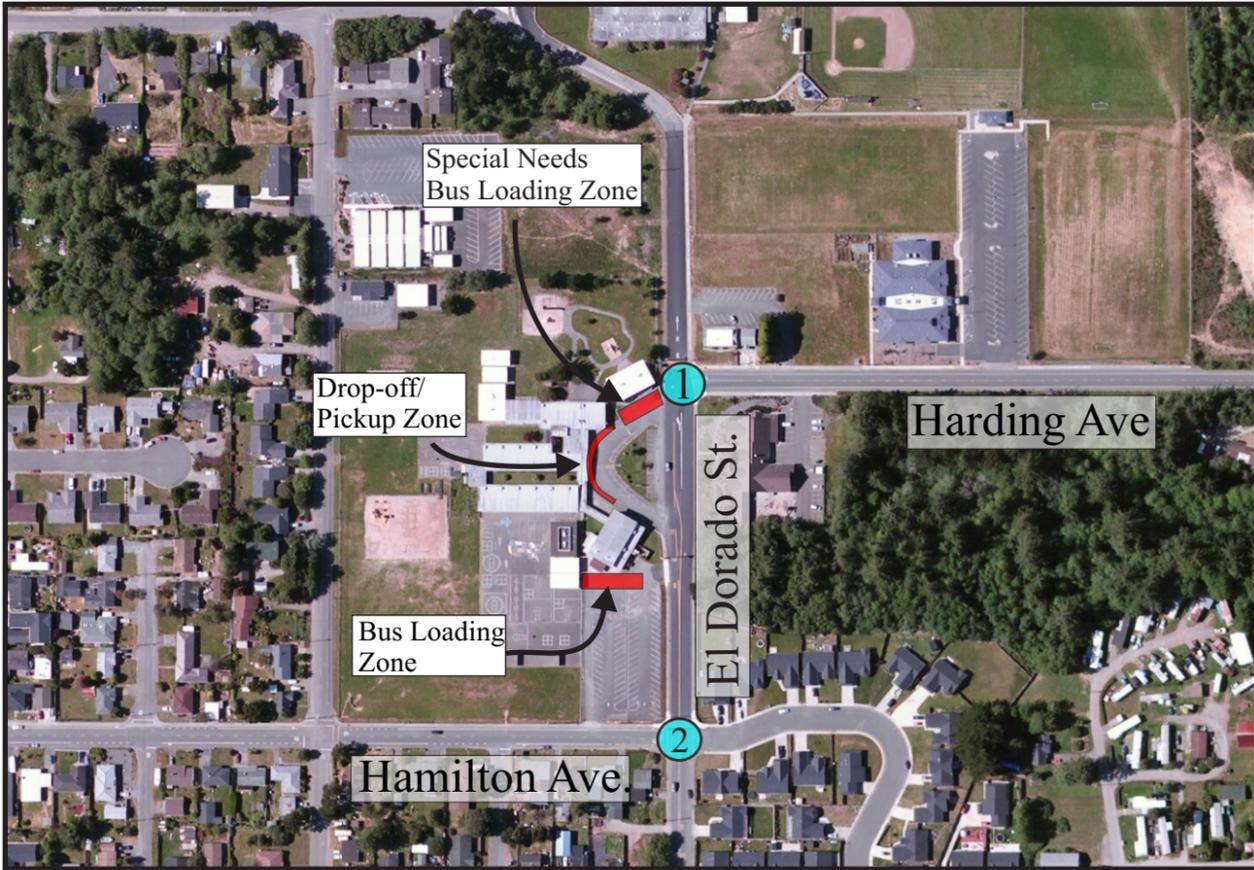
December 30, 2013

- No existing pedestrian facilities fronting the main entry/exit area.
- Wednesdays are regionally recognized half-days and all grades are dismissed at 1:05 PM. This results in a combined pick-up time of all grades (k-5), increasing the congestion at the loading zones as well as along the local roadways.
- Several sidewalks, pedestrian ramps, and crosswalks providing access to the school from the surrounding neighborhoods are not ADA compliant.
- A significant amount of traffic was observed traveling north to the high school and could possibly be contributing to the reported higher travel speeds along El Dorado Street.
- Local roads that are essential for providing connectivity to and from the school were found to have discontinuities in infrastructure (bike lanes and sidewalks).
- Crosswalk markings along travel routes to and from the school are inconsistent or missing.
- A number of school zone related signs in the surrounding area are not compliant with the standard school zone design criteria in the California MUTCD.
- Currently the bus and parent pick-up/drop-off circulation is not separated. Parents loading and unloading their children are mixed in with the buses that are loading and unloading.
- The lane configuration at the El Dorado Street / West Harding Avenue intersection is not ideal for the intersection configuration. El Dorado Street north of West Harding Avenue is a one-way street northbound with on-street parking allowed on the east side of the street. The current alignment encourages vehicles traveling north in the through/right lane to drift into the left turn lane. Additionally, when vehicles are stopped in the right turn lane waiting for pedestrians to clear the crosswalk before turning right, vehicles desiring to travel north on El Dorado Street were observed passing in the left turn lane. Although a level of service breakdown was not observed, the northbound right at this location is a heavier movement than the northbound left.

**Figures 1 and 2** summarize the current traffic patterns, parking locations, and document the existing deficiencies.



*View north on El Dorado Street, showing shift in alignment.*



**LEGEND**

xx(xx) - AM(PM) Volumes\*

- Pedestrian Volumes\*

- Bicycle Volumes\*

- Stop Sign

- Study Intersections

- Lane Configurations

NO SCALE

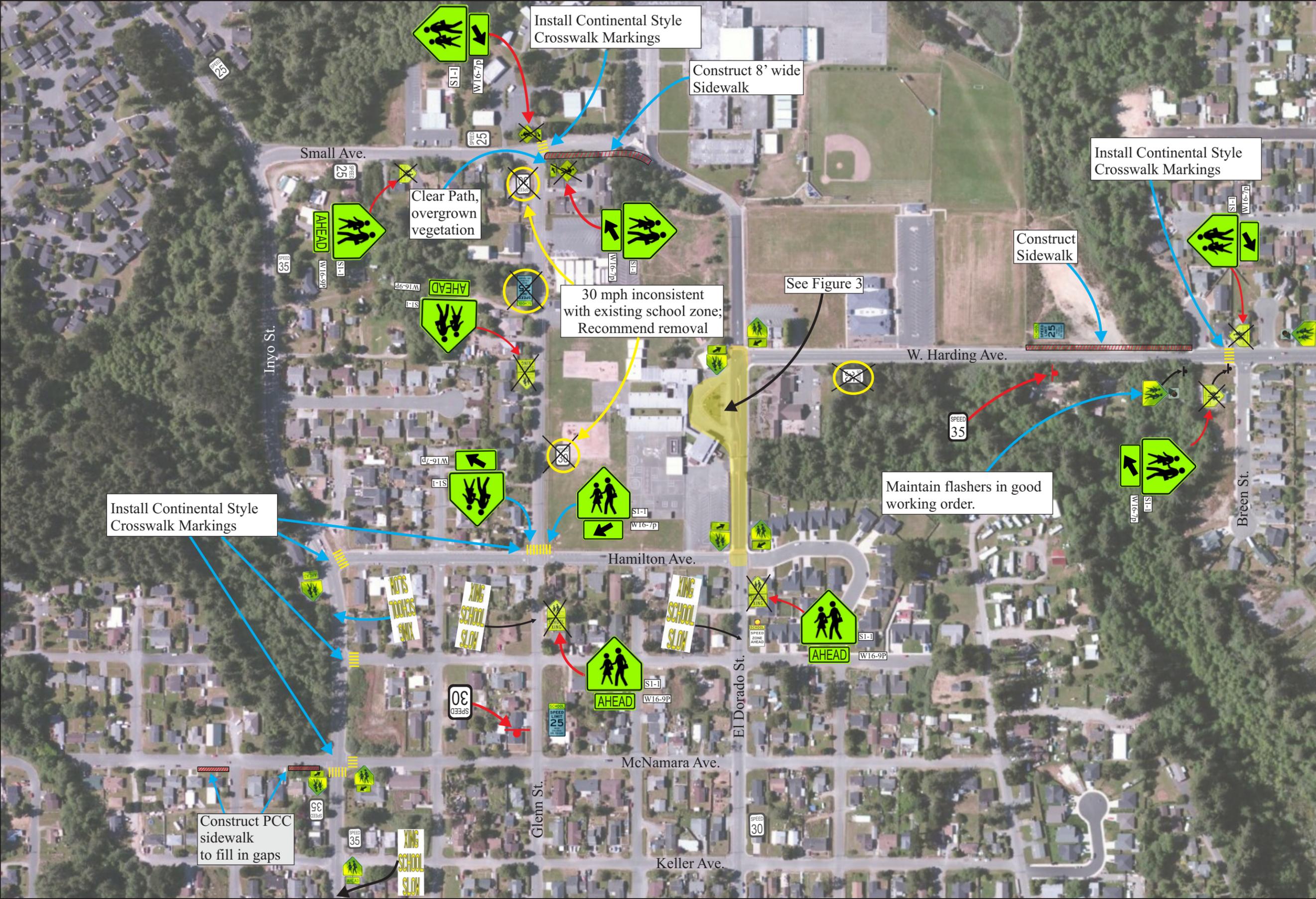
**School Circulation Study**  
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**FIGURE 1**  
Bess Maxwell Elementary School  
Existing Conditions

\*Volumes represent AM & PM Peak 15 minutes

**LEGEND**

-  - Existing School Crossing Sign
-  - Existing School Crossing Ahead Sign
-  - Existing School Crossing Sign
-  - Existing Speed Limit Sign
-  - Existing School Zone Sign
-  - Existing "SLOW SCHOOL XING" Pavement Legend
-  - Existing Bike Lane Sign
-  - Signs to Replace/ Add New
-  - Improvements to Add
-  - Signs to Remove



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**FIGURE 2**

**Bess Maxwell Elementary School  
Recommended School Zone Improvements**

## CONCEPT PLAN

Based on the existing conditions information collected and traffic assessment conducted, a concept plan with a list of recommendations for improvements was created.

The concepts presented here are intended to illustrate how to upgrade and improve the existing infrastructure to provide a safer functioning school zone. It is expected that additional design will be necessary to determine precise lane widths, optimal parking layouts, and necessary geometry to accommodate bus and passenger vehicle turning movements. **Figures 2 and 3** show the recommended improvements to the campus and adjacent roadways.

### *Recommendations and Proposed Improvements*

#### **Minimal Effort Improvements**

- Route all buses to load and unload along the curb in the south parking lot. Buses for students with access and functional needs should continue to load and unload at its current location due to the proximity to the classroom.
- Add a bicycle parking facility with shelter in front of the school. The location shown on **Figure 3** is an optional location. A better location may be available based on access and internal school layout.
- Replace all school related signs not conforming to California MUTCD standards in the surrounding neighborhood as well as signs located on the school property. Faded and/or damaged signs should be replaced at the same time.
- Upgrade and install, where needed, continental style longitudinal crosswalk markings at the locations shown in **Figure 2**.
- Replace existing "SLOW SCHOOL XING" pavement legends.

#### **Moderate Effort Improvements**

- Adjust the lane configuration at the El Dorado Street / West Harding Avenue intersection in the northbound direction. Restripe lanes to create a thru/left lane and an exclusive right turn lane.
- Narrow the travel lanes on El Dorado Street to add bike lanes between Hamilton Avenue and West Harding Avenue. This will complete the connection between Hamilton Avenue and West Harding Avenue.
- Construct a raised crosswalk at the existing crossing on the north leg of the El Dorado Street / West Harding Avenue intersection. This will help reduce the reported high speeds through this section.
- Construct sidewalk where shown in **Figure 2**, to create a connected network of sidewalks accessing the school campus.

**Major Effort Improvements**

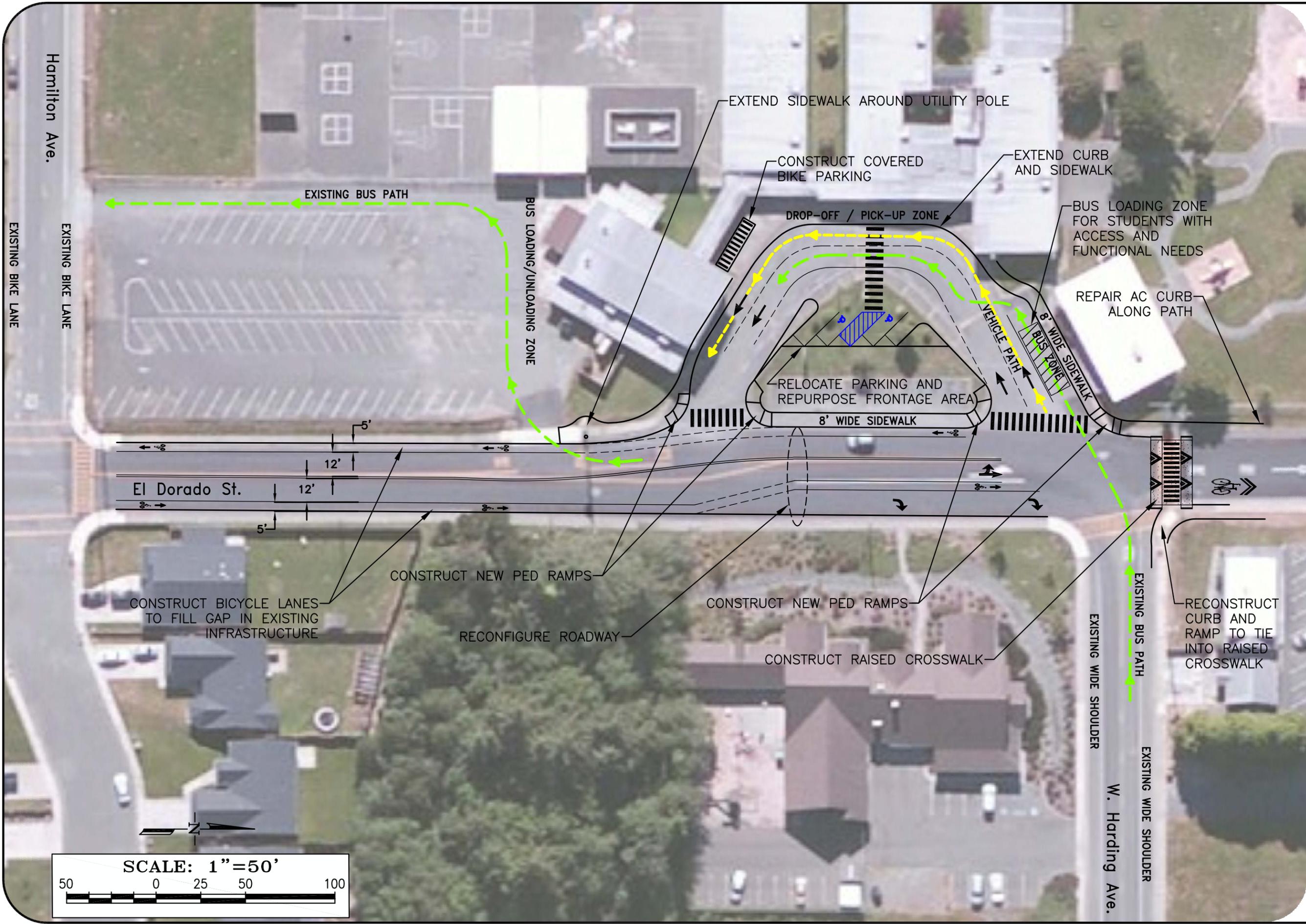
- Reconstruct the circular driveway center island at the main entrance. Remove parking along El Dorado Street and reconfigure the internal parking. Improve sidewalk connections at the front of campus by constructing an 8’ wide sidewalk. Extend curb and sidewalk along the drop-off / pick-up zone in the main driveway to better accommodate vehicles and children as shown in **Figure 3**.

**IMPLEMENTATION**

The proposed recommendations are presented in implementation phases, which may be modified as priorities and circumstances change over time. Implementation phases are meant to rank priorities for planning purposes. The estimated costs associated with each recommendation are approximate based on rough calculations and experience with similar construction projects and are meant to guide the implementation of recommendations in cost effective phases.

**Table 2. Estimated Costs by Implementation Phase**

<b>Recommended Improvement</b>		<b>Estimated Cost</b>
Phase 1	Route all buses (not special needs) through south parking lot	\$1,000
	Construct bike parking shelter in front of school	\$5,000
	Sign and pavement marking improvements	\$25,000
	Construct a raised crosswalk on El Dorado St. at West Harding Ave.	\$18,000
	Construct sidewalks to fill in gaps	\$50,000
	Restripe El Dorado Street, to reconfigure lanes and add bike lanes	\$30,000
	Design, Environmental, and Construction Administration:	\$40,000
	10% Contingency:	\$13,000
	Phase 1 Construction Total:	<b>\$182,000</b>
Phase 2	Reconstruct main entry area	\$100,000
	Design, Environmental, and Construction Administration:	\$30,000
	10% Contingency:	\$10,000
	Phase 2 Construction Total:	<b>\$140,000</b>
Total Project:		<b>\$322,000</b>



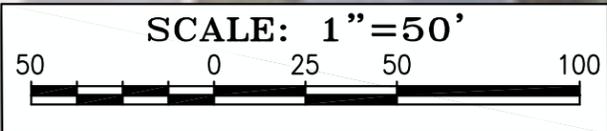
**BESS MAXWELL ELEMENTARY SCHOOL  
(CIRCULATION IMPROVEMENT CONCEPT)**

PREPARED FOR: DEL NORTE LTC

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Project #	J067	FIGURE	3
Date	November 26, 2018		
Scale	AS NOTED		



Bess Maxwell Elementary School

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**CONCLUSION**

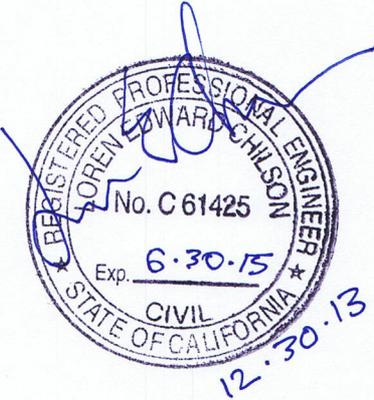
These recommendations will enhance the safety for pedestrians and cyclists, calm traffic on El Dorado Street, and improve vehicle operation through the intersection of El Dorado Street / West Harding Avenue / School entrance. Bess Maxwell is located proximate to neighborhoods as well as several schools (Del Norte High School, Castle Rock Charter School, Community School, and College of the Redwoods). This project would ultimately benefit these four schools within the surrounding neighborhood by updating school signs and pavement markings, making speed limit signs consistent, installing marked crosswalks where needed, and improve the connectivity of the pedestrian and bicycle network by making the connection on El Dorado Street and filling gaps in sidewalk infrastructure.

Finally, these recommended improvements and the generally phasing scheme, should be coordinated with and incorporated into future updates of the Facilities Plan for the Bess Maxwell Elementary School campus.

We sincerely appreciate the opportunity to assist the Del Norte LTC with this effort. Please do not hesitate to contact us at 530.897.0199 with any questions or concerns regarding this report.

Sincerely,  
TRAFFIC WORKS, LLC

Loren E. Chilson, PE  
Principal





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