

TECHNICAL MEMORANDUM

To: Kailash Mozumder, City of Capitola
From: Derek Wu P.E., Kimley-Horn and Associates, Inc.
Date: May 18, 2021
Re: **Clares Street / Wharf Road – Pedestrian and Bicycle Concept Improvements**

1. Introduction

This technical memorandum presents the concept layouts of potential pedestrian and bicycle improvements at the Clares Street and Wharf Road intersection in the City of Capitola. The City of Capitola (City) is planning to construct traffic calming improvements on Clares Street from 41st Avenue to Wharf Road to reduce vehicle speeds and improve accessibility for bicyclists and pedestrians along the corridor.

In 2017, Kimley-Horn was retained by the City to collect daily traffic volumes and speed surveys in the study area and develop potential traffic calming options along Clares Street. The traffic calming alternatives investigated included mini-roundabouts, chicanes, bulb-outs, raised medians, and enhanced pedestrian crossings. In 2019, Kimley-Horn prepared additional pedestrian crossing alternatives and a technical memorandum summarizing the speed and roadway impacts from the traffic calming options.

2. Existing Conditions

Clares Street between 41st Avenue and Wharf Road is an existing east-west two-lane collector street with a right-of-way width of approximately 53 to 60 feet. It is an asphalt paved road with one lane in each direction and provides access to a mixture of single-family dwellings, mobile home parks, apartment complexes, and office parks in the neighboring area. The Clares Street roadway cross-section generally consists of 12-foot travel lanes, 4-foot Class II bike lanes, 8-foot wide on-street parking, utility poles spaced approximately 150 feet on the north side, and 4-foot minimum sidewalks.

The intersection of Clares Street and Wharf Road is all-way stop controlled on the three approach legs. Striping at the intersection provides 10-foot wide crosswalks in each direction with appropriate curb ramp and sidewalk facilities to accommodate pedestrian access. The posted speed limit along Clares Street and Wharf road is 25 mph. A figure summarizing the existing roadway conditions is shown in the **Appendix**.

3. Pedestrian and Bicycle Concept Improvements

To supplement the City's traffic calming options along Clares Street, Kimley-Horn was tasked to evaluate intersection improvements at Clares/Wharf that would enhance bicycle and pedestrian access. Geo-referenced aerial photographs and Santa Cruz County GIS data were used to establish a base map for determining existing topographic features and developing preliminary concepts.

Layouts of each design alternative are shown in the **Appendix**. The potential intersection improvements at Clares/Wharf are discussed below and prepared with the following features:

- Alternative 1 Signing and Striping Enhancements
- Alternative 2 Lighting and Visibility Enhancements
- Alternative 3 Bike Box Striping Enhancements

High-Visibility Crosswalk Markings

High-visibility crosswalks are preferred over parallel line crosswalks and should be provided at all established pedestrian crossings. Crosswalks with retro-reflective paint is recommended to enhance visibility to oncoming vehicles. The crosswalks at Clares/Wharf are currently striped with a white continental pattern. Refreshing this striping and adding the parallel markings to delineate the width of the pedestrian pathway would create a ladder crosswalk pattern which could enhance intersection visibility.

Parking Restrictions on the Crosswalk Approach

Parking restrictions can include the removal of parking space markings, installation of new “parking prohibition” pavement markings or curb paint, and signs. The minimum setback is 20 feet in advance of the crosswalk where speeds are 25 mph or less, and 30 feet where speeds are between 26 and 35 mph. The southside of Clares Street provides on-street parking prior to the intersection with about 20-feet of red curb next to the existing fire hydrant. Extending the no-parking zone along the Clares Street approach would improve visibility and sightlines for pedestrians using the sidewalk and crosswalk on the southwest corner of the intersection.

Green Bike Lane Pavement Markings

Per FHWA and MUTCD guidance, green pavement markings to are allowed to supplement delineation of bicycle facilities through intersections and traffic conflict areas. The addition of green pavement markings can enhance the conspicuity of the bicycle facilities for all road users. Since Clares Street and Wharf Road provide Class II bike lanes along the curb, the addition of green bike markings and a bike box at the approach legs can further enhance visibility of bicycle travel way within the intersection.

Colored Pavement in Crosswalks

Colored pavements consist of differently colored road paving materials, such as colored asphalt or concrete, or paint or other marking materials applied to the surface of a road or island to simulate a colored pavement. Colored pavement is considered a traffic control device and subject to MUTCD guidelines if it attempts to communicate with any roadway user or it incorporates retroreflective properties.

Colored pavement can also be a purely aesthetic treatment such as crosswalk art as an opportunity to represent the neighborhood community. Some jurisdictions, such as the City of Seattle, have established their own protocol and public process for evaluating and designing special painted crosswalks. When used in this manner, colored pavement is not a traffic control device provided that it does not attempt to communicate with the motorist or incorporates retroreflective properties.

It should be noted that several studies have concluded that colored/decorative pavement does not contribute to an increase in pedestrian safety. Decorative crosswalk art or patterns that degrades the contrast of the white transverse markings delineating the legal crosswalk pathway are to be avoided.

Examples of acceptable crosswalk treatments include brick lattice patterns, paving bricks, paving stones, setts, cobbles, or other resources designed to simulate such paving. Acceptable colors for these materials would be red, rust, brown, burgundy, clay, tan or similar earth tone equivalents. All elements of pattern and color for these treatments are to be uniform, consistent, repetitive, and expected so as not to be a source of distraction.

Embedded LED in Signs

Embedded Light Emitting Diodes (LED) in sign faces improve safety at intersections by enhancing driver awareness of traffic-control signs. LEDs can be embedded in standard highway warning and regulatory signs to outline either the sign itself or the words and symbols on the sign. The LEDs may be set to flash or operate in steady mode. LEDs may be illuminated 24 hours a day or be activated by vehicles or pedestrians. Due to the low power requirements of LEDs, signs with embedded LEDs can typically be powered using stand-alone solar panel units. This treatment is applicable for regulatory and warning signs at unsignalized intersections with the intended purpose of improving the visual conspicuity of the signs.

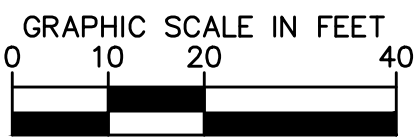
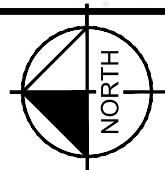
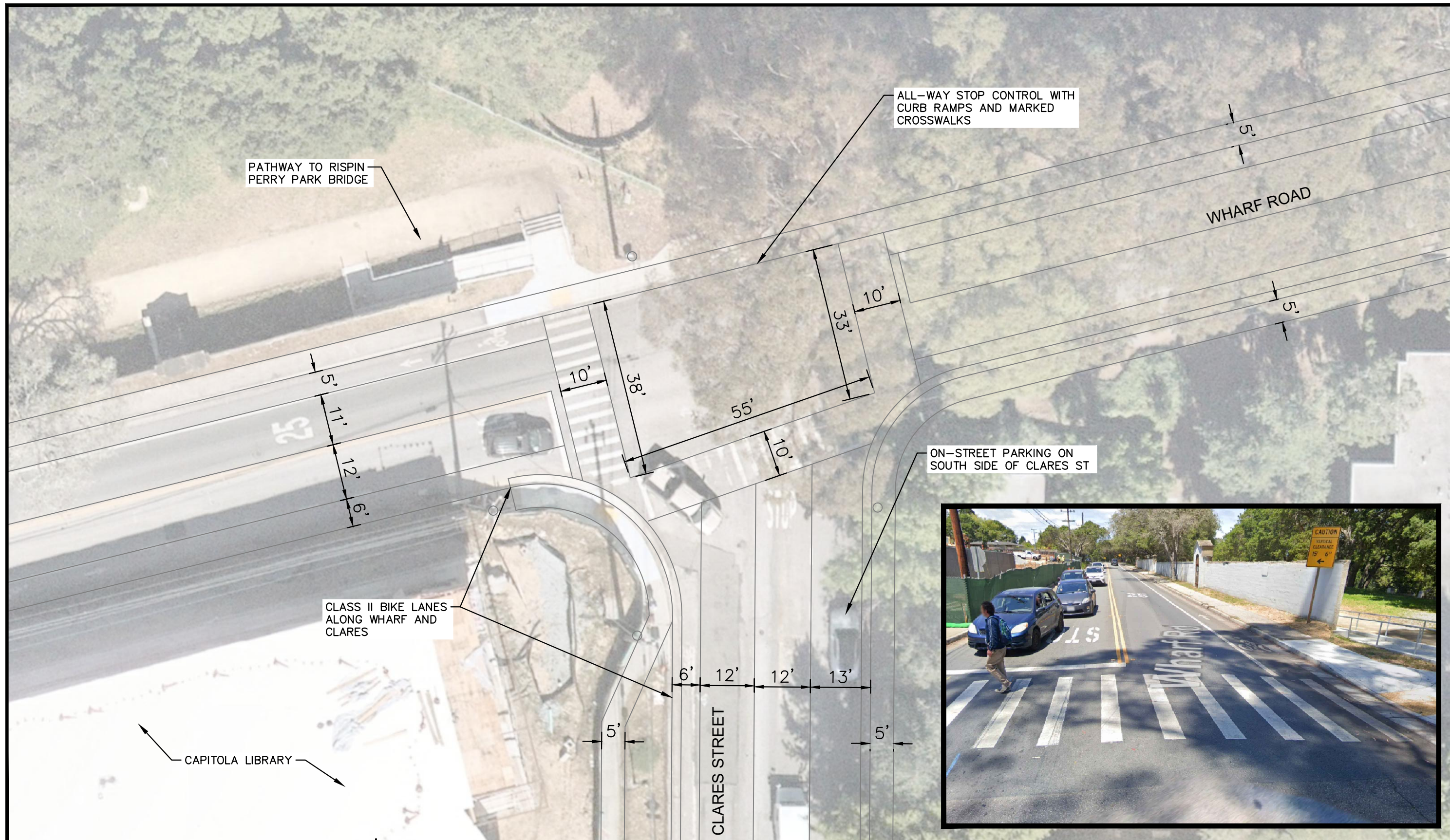
Lighting Improvements at Crosswalks

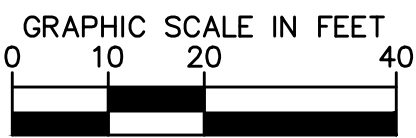
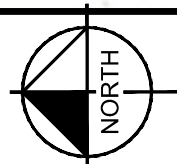
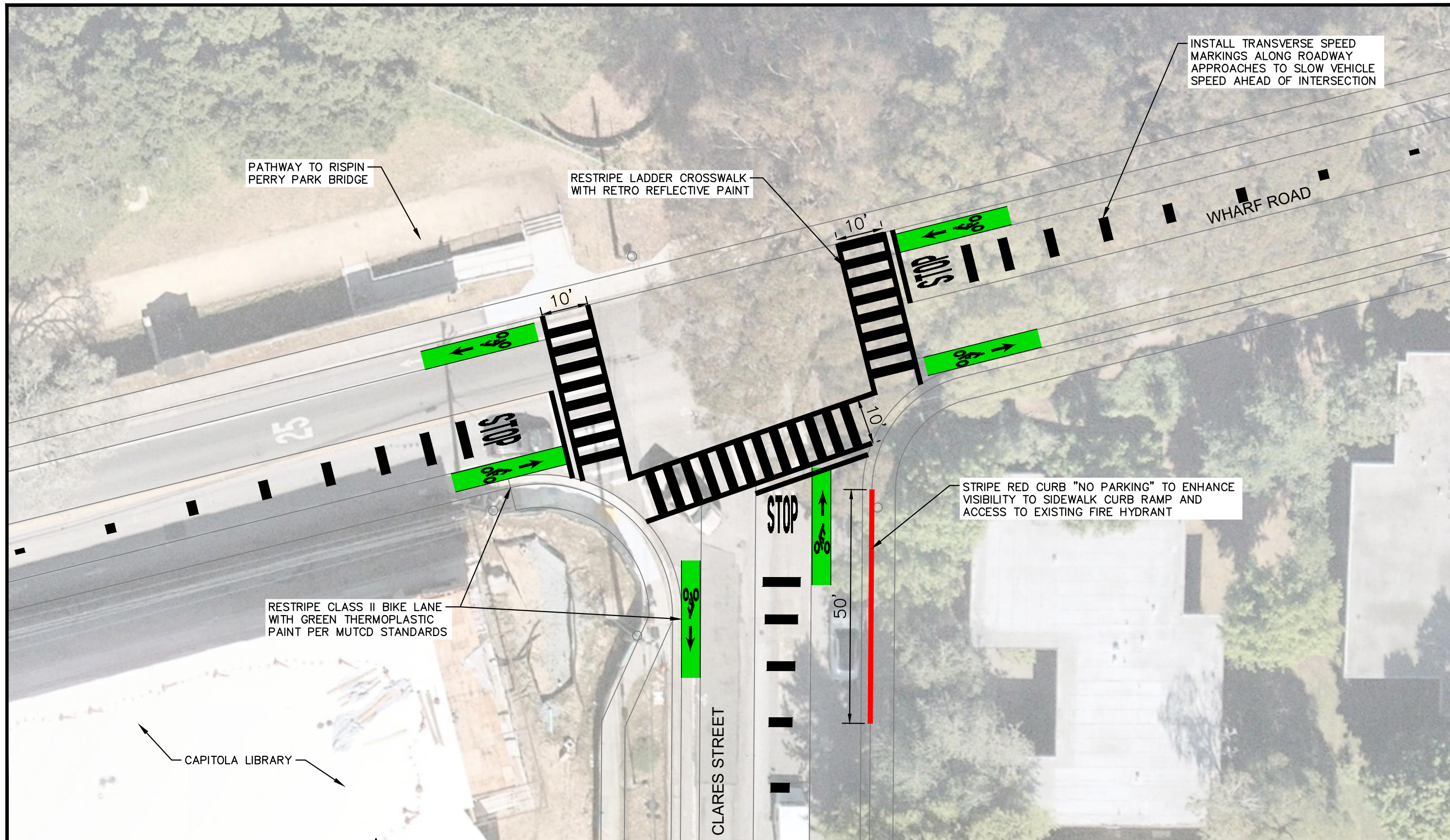
Sufficient lighting conditions at intersections is vital to provide visibility for all users, especially for pedestrians crossing the roadway at night. The Clares/Wharf intersection currently has one light source in the northwest corner by the Capitola Library which does not illuminate all the crosswalk paths within the intersection. To improve visibility at night, additional light sources can be installed in the southeast and southwest corners to existing utility poles. Consideration should be given to placing lights in advance of intersection crosswalks to illuminate the front of the pedestrian and avoid creating a silhouette.

4. Appendix

- Figure 1 – Existing Conditions
- Figure 2 – Alternative 1 Signing and Striping Enhancements
- Figure 3 – Alternative 2 Lighting and Visibility Enhancements
- Figure 4 – Alternative 3 Bike Box Striping Enhancements

5. References





OPTION A: INSTALL NON-RETRO REFLECTIVE COLORED PAVEMENT WITH TEXTURED PATTERNS TO ENHANCE CROSSWALK VISIBILITY.

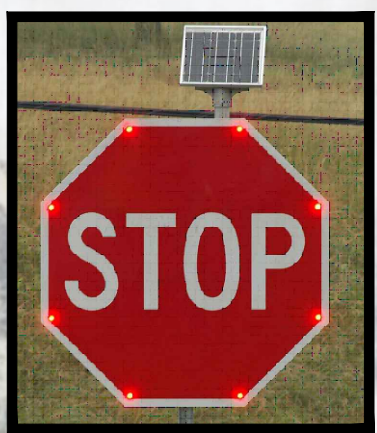
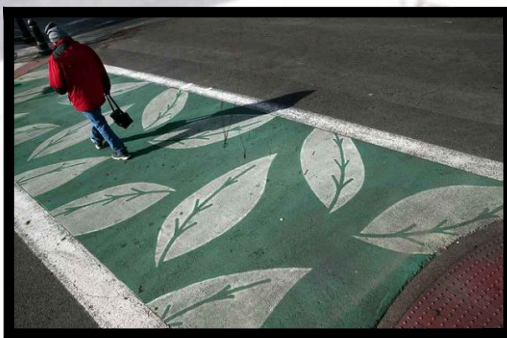
OPTION B: INSTALL DECORATIVE COLORED PAVEMENT IN CROSSWALK. REFER TO MUTCD CHAPTER 3G FOR ACCEPTABLE APPLICATIONS.

PATHWAY TO RISPIN PERRY PARK BRIDGE

INSTALL LIGHTING FIXTURE ON EXISTING UTILITY POLES TO ENHANCE PEDESTRIAN VISIBILITY AT NIGHT

RECONSTRUCT PEDESTRIAN CURB RAMP TO ADA STANDARDS WITH YELLOW DETECTABLE WARNING STRIP

INSTALL R1-1 STOP SIGNS WITH EMBEDDED FLASHING LED LIGHTS TO ENHANCE STOP CONTROL OF APPROACHING VEHICLES.



CLARES STREET

WHARF ROAD

