

Public Works Department  
Transportation Division

**California Street/Dwight Way Intersection Project  
Summary of Project Status, Selected Alternative, and Questions & Responses  
May 28, 2021**

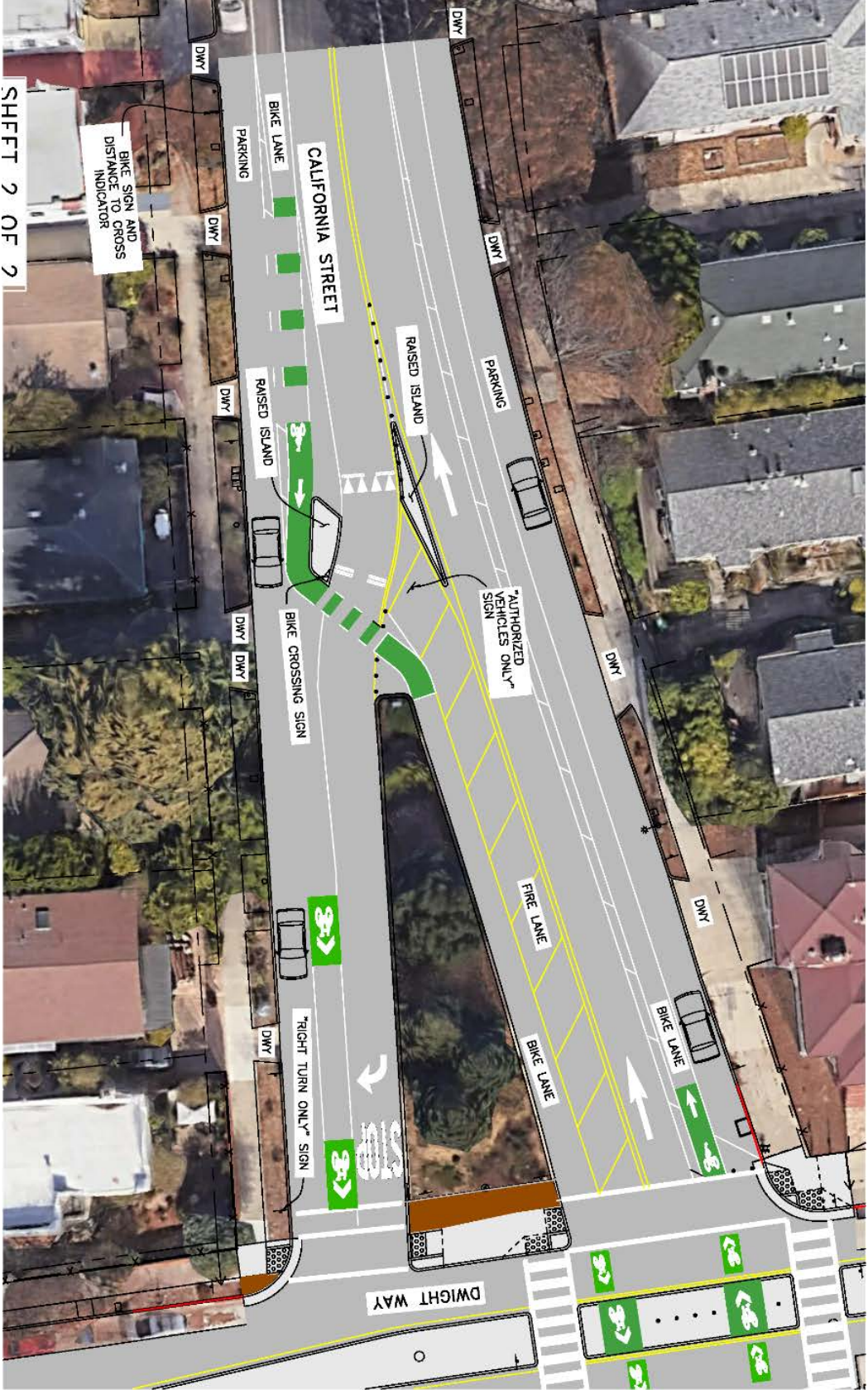
**Overview:** The City received numerous questions and comments following our presentation at the community meeting on May 12, 2021. We are following up with additional information, including project status, the selected alternative, and commonly-asked questions.

**Current Project Status:** As discussed in the community meeting, the City is proceeding with the design of pedestrian improvements, including relocating the western crosswalk (crossing Dwight) closer to the main California/Dwight intersection, sidewalk extensions at the southwest corner (along the south side of Dwight) and at the existing median on California (along the north side of Dwight), and new crosswalk and bike pavement markings in the intersection. In order to expedite the construction of this work, with construction hopefully starting this summer, staff will need to obtain permission from the City Manager to waive a purchasing ordinance and to amend an existing construction contract to add this work. If this is not successful, the work will need to be publicly bid, which will take additional time.

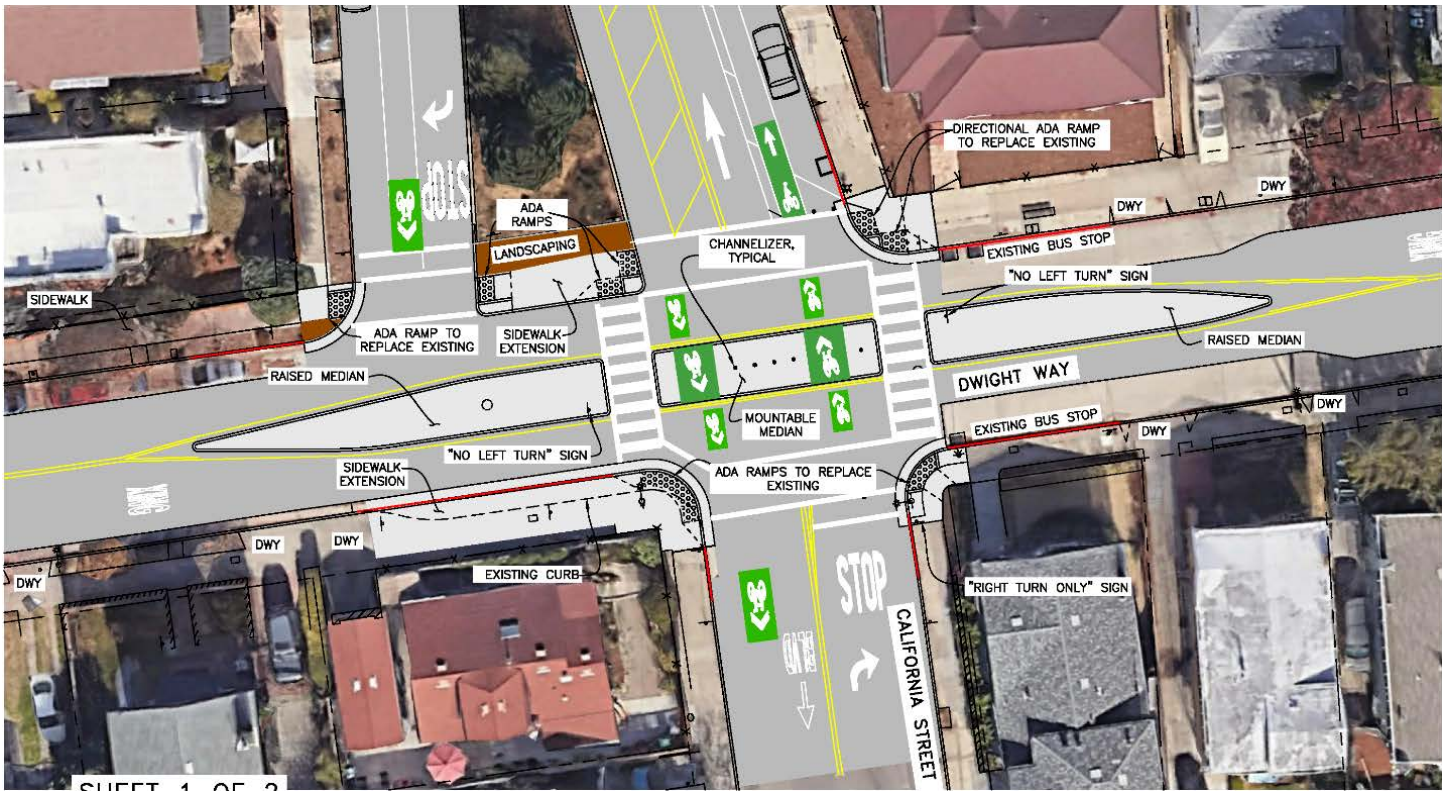
**Selected Alternative:** The City has decided to proceed with Alternative 1 for the physical changes, which includes a new median refuge island on Dwight, as shown in the figure below. This alternative also includes rehabilitated roadway pavement on Dwight and California and new pavement markings on California, north of Dwight.

This alternative was selected because it offers the best combination of safety-related features and complies with the City's Pedestrian, Bicycle, and General Plans, and leaves flexibility to add traffic control devices, many of which would not be feasible without the physical improvements

A median refuge island would reduce crossing distances for pedestrians and bicyclists, as the island would be sized to accommodate a bike towing a trailer, to allow pedestrians and bicyclists to focus on crossing one direction of traffic at a time.



SHEET 2 OF 2



A summary of traffic calming devices that City staff considered for use at the California/Dwight intersection, along with associated attributes of each device, is presented on the next page.

Reference:	Pedestrian Plan	Bicycle Plan	Bicycle Plan	General Plan	General Plan	General Plan	General Plan	Engineering judgement	CA MUTCD	CA MUTCD	CA MUTCD
	Makes it easier/safer to cross as a pedestrian	Makes it easier/safer to cross as a bicyclist <sup>1</sup>	Reduces traffic volumes on Bicycle Boulevard <sup>2</sup>	Reduces thru speeds on Dwight Way <sup>3</sup>	Maintains efficient vehicular traffic flow on Dwight Way, a Major Street <sup>4</sup>	Maintains emergency access route on Dwight Way <sup>4</sup>	Maintains transit reliability <sup>4</sup>	Compliance due to physical constraints (vs. compliance based on enforcement)	Is a traffic control device	Is a warning device	Appears to meet State standard criteria for consideration <sup>5</sup>
Marked crossing	✓	✓	◆	◆	◆	✓	◆	✗	✓	◆	◆
Median refuge island	✓	✓	✓	✓	✓	✓	✓	✓	◆	◆	◆
RRFB	✓	✓	⊗	⊗	⊗	✓	=	✗	✗	✓	✓
RRFB with median	✓	✓	✓	✓	⊗	✓	=	✓	✗	✓	✓
PHB	✓	✓	⊗	⊗	⊗	✓	⊗	✗	✓	✗	✓
Traffic signal	✓	✓	✗	=	✗	✓	✗	✗	✓	✗	✗
4-way stop <sup>6</sup>	✓	✓	✗	⊗	✗	✓	✗	✗	✓	✗	✗
Speed table	✓	✓	◆	✓	✗	✗	=	✓	◆	✗	◆

Legend:

- ◆ Not applicable
- ✓ Yes
- = Neutral/mixed
- ⊗ Likely no
- ✗ No

Footnotes:

1. When used properly, especially pertaining to RRFBs and PHBs.
2. For RRFBs and PHBs, some vehicles attempt to cross during pedestrian/bicycle crossing period.
3. Depends on driver reaction. For RRFBs, PHBs, and/or 4-way stops, some drivers increase speed after stopping.
4. As per Policy T-55 in the General Plan.
5. Requires further detailed study for a determination.
6. For more information on 4-way stop, see:

[https://www.cityofberkeley.info/uploadedFiles/Public Works/Level 3 - Transportation/StopSigns.pdf](https://www.cityofberkeley.info/uploadedFiles/Public%20Works/Level%203%20-%20Transportation/StopSigns.pdf)

Notes:

RRFB: Rectangular Rapid Flashing Beacons



PHB: Pedestrian Hybrid Beacon (also known as HAWK beacon - **H**igh-Intensity **A**ctivated **c**ross**W**alk beacon)



CA MUTCD: California Manual on Uniform Traffic Control Devices

In order to test the geometry of the median refuge island and to gather data on traffic diversions to adjacent streets, the City intends to install a temporary median refuge island, of similar materials as other quick-build traffic circles that were recently installed, such as bumper blocks and stanchions. This would occur after the pedestrian improvements are installed. During the time the temporary median refuge island is in place, City staff will gather data on traffic volumes and speeds on Dwight, California, and nearby streets. This data will be compared to recently-obtained data at the same locations. Based on an analysis of the results and change in traffic behavior, City staff will develop a plan to address potential traffic diversion/cut-through issues with traffic calming measures like speed tables.

Speed tables (similar to humps but wider) can be installed on parallel street(s) using a City paving contractor if City staff determines that the median has caused a significant diversion and/or increase in traffic speeds. If more than 15% of traffic exceeds the posted limit by 5mph or more, that is considered significant speeding and justifies speed tables or other traffic calming. At a minimum, the [existing traffic calming criteria](#) shown below would apply without the need for a neighborhood petition or to go through the rest of the process.

Minimum Criteria to Qualify for Traffic Calming	
SHALL meet the following two conditions:	AND at least <u>one</u> of these conditions :
1) Any residential street area; AND	- Where the 85th percentile speed profile is greater than 5 mph over the speed limit; OR - Proximity to school or park (within two blocks), or senior center (within one block) combined with 85 <sup>th</sup> percentile speed profile greater than 3 mph over the speed limit; OR
2) 50% + 1 of households within the petition area defined by City staff support the proposal.	- Mitigate a documented collision pattern (bike, pedestrian, motor vehicle); OR - Where there is a documented problem of a significant or inappropriate number of "through" motor vehicles on the street or in the neighborhood , per ITE volume guidelines for neighborhood streets (2500 vpd average)

If the traffic diversion/cut-through issues are addressed and the efficacy of the temporary median is established, City staff would design and install a permanent median.

**Questions & Responses:**

**Q: How is the proposed median refuge island, depicted as Alternative 1, intended to slow vehicles on Dwight?**

R: As described in <https://nacto.org/publication/urban-street-design-guide/design-controls/design-speed/speed-reduction-mechanisms/>, medians create a pinchpoint for traffic in the center of the roadway and can reduce pedestrian crossing distances. The median would narrow the effective width of traffic lanes on Dwight at the intersection, as the existing lanes on Dwight at the Dwight/California intersection are wider than needed. In general, extra-wide streets make many drivers comfortable driving faster, whereas narrower traffic lanes typically lead to reduced speeding.

**Q: Regarding Alternative 1, why can't there be a median for the crosswalk and still allow left turns?**

R: A break in the median to allow left turns is technically possible but would no longer provide a separated refuge for people on bikes and would not reduce traffic volumes on the Bike Boulevard (California Street), which is called for in the Bicycle Plan.

**Q: Also regarding Alternative 1, would the median be wide enough to accommodate a bike towing a child in a trailer? This is a common configuration going through this intersection.**

R: The median would have a minimum width of 10 feet, which should be sufficient to accommodate a bike towing a trailer. The actual width of the median would be determined based on a balance of vehicle lane width and safety buffer for bikes towing a trailer in the median.

**Q: I am really worried about the no left turn option at California making more traffic come down Jefferson and McGee and then turning left on Channing and then turning left again on California for people wanting to get to that block or turning right to go north on California.**

R: My understanding is that the absence of a protected southbound left turn signal from Sacramento to Dwight is causing some cars to turn left to eastbound Channing, right to Southbound California, then left to eastbound Dwight. As such, the City is looking to get funding to install a protected southbound left turn signal on Sacramento at Dwight.

**Q: If a median is installed, then left turns from Dwight and/or California could not occur. Why not make the west leg of California be one-way northbound and allow the left to take place there and then have the median start just to the east of that street.**

With that modification, eastbound left turns would be maintained instead of rerouting some traffic on Sacramento, Spaulding, or Jefferson. One potential issue though is that the southbound right turn traffic from California to Dwight would coincide with bikes and pedestrians crossing Dwight at the western crosswalk, as there is a concern that drivers would pay more attention to cars coming westbound on Dwight than to bikes riding through the intersection or pedestrians in the crosswalk in front of them or to their right. Also this layout would not decrease traffic volume on California, which is a designated Bicycle Boulevard. It also necessitates a detailed look at the west fork of California, where northbound California traffic would be in a direct head-on path with southbound vehicles and bicycles at the fork and would cross both southbound California vehicle and bike traffic. The northbound west fork would also have poor line of sight with respect to the northbound traffic on the east leg of the fork.

**Q: Have you considered a 4-way stop? How about a traffic signal?**

R: We have considered both of them. The 4-way stop would require all vehicles to stop, which makes it easier for pedestrians and bicyclists to cross the intersection (and complies in this respect to the City's Pedestrian and Bicycle Plans), but also makes traffic flow on Dwight Way, a Major Street, relatively inefficient (which goes against Policy T-55 in the City's General Plan). The 4-way stop is inexpensive to implement after the geometric changes in Alternative 1 are constructed, whereas the construction cost alone to implement a traffic signal is on the order of \$500k, which significantly exceeds the project budget. Both options would encourage more vehicle traffic on California Street, a Bicycle Boulevard, which goes against the Bicycle Plan. In particular, new traffic signals on Bicycle Boulevards are generally avoided because they

encourage more traffic to use the Bicycle Boulevard to cross the arterial roadway, which makes it less safe for bicyclists on the Bicycle Boulevard. Both also impede transit reliability, which goes against Policy T-55 in the General Plan. Furthermore, both do not appear to meet State standard criteria for consideration as traffic control measures at this location, although further detailed study would be needed. 4-way stops should be used where the traffic volumes on both streets are approximately the same, which is not the case at the California/Dwight intersection. We have found that drivers comply less with installed stop signs that do not meet State criteria for implementation, which could cause safety issues for pedestrians and bicyclists.

**Q: What about having a traffic light with a long natural red period that doesn't encourage through traffic on California? A bike or pedestrian could activate the light and interrupt the long red cycle.**

R: This sounds similar to a Pedestrian Hybrid Beacon (see below). We have found that cars piggyback on the crossing signal for pedestrians/bicyclists, which is not the intended usage for Pedestrian Hybrid Beacons. A similar situation could happen at a traffic light with a long-period red light; cars could speed to catch up to a pedestrian/bicyclist that is crossing (i.e., piggybacking). This can cause danger to pedestrians/bicyclists and increases traffic volume and speed on the Bicycle Boulevard. Also, if the period of the red light in a traffic signal is too long, it could encourage red light running, and pedestrians/bicyclists may believe the button is not working and try to cross the street against the signal.

**Q: Describe the City's experience with Pedestrian Hybrid Beacons and how they operate.**

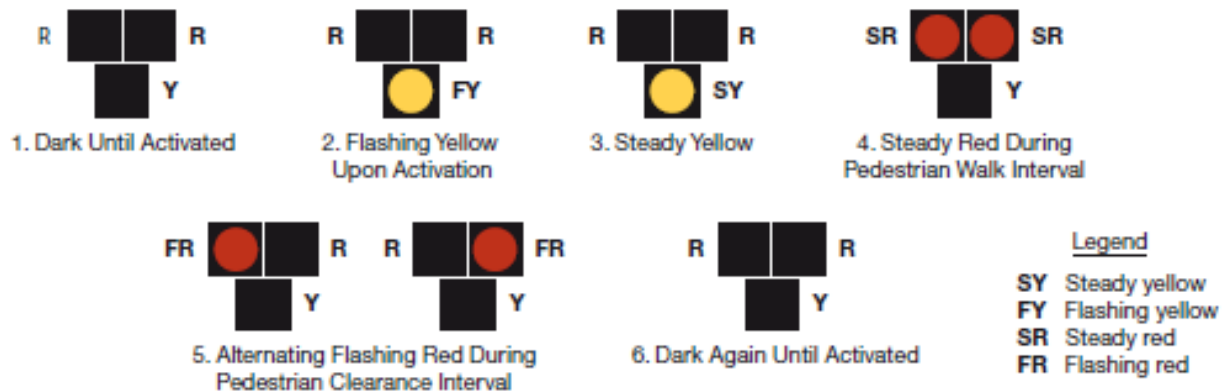
R: The City's first Pedestrian Hybrid Beacon (PHB, also known as HAWK [High Intensity Activated CrossWalk] beacons) was installed at the Ashby/Hillegass intersection in approximately 2018 to address pedestrian and bicyclist safety concerns with crossing Ashby Avenue, a Major Street as identified in the City's General Plan. PHBs are primarily intended for use as a traffic control device to stop vehicles to allow protected pedestrian crossings. PHBs differ from traditional traffic signals in that traffic on the cross street (Ashby) only stops when the PHB is activated and vehicles on the crossing street (Hillegass) do not have a signal to facilitate crossing; these vehicles are controlled on Hillegass with stop signs.

In order to provide a protected crossing for bicyclists, the City modified the PHB by adding video detection for bicycles. This approach was new and has caused technical challenges, mostly in accurately distinguishing bicycles from cars and vice versa and detecting bicycles under direct light and low light conditions. Although this PHB is actively used, City staff continue to work on the programming of this beacon in an effort to increase its detection accuracy.

Observed operational drawbacks to using PHBs at the Ashby/Hillegass intersection include (a) vehicles on Hillegass crossing or turning onto Ashby when the PHB is activated, resulting in potential conflicts with pedestrians/bicyclists and (b) bicycles not being detected, resulting in bicyclists crossing Ashby without an activated PHB.



As described in [https://safety.fhwa.dot.gov/ped\\_bike/tools\\_solve/fhwasa14014/](https://safety.fhwa.dot.gov/ped_bike/tools_solve/fhwasa14014/) PHBs operate as follows: The design of the PHB consists of two horizontally-arranged red lenses above a single yellow lens. As shown below, the signal face for drivers remains unlit or "dark" until the pedestrian activates the system. While the signal is dark, the pedestrian display shows a Don't Walk indication. To activate the PHB pedestrians push an accessible button located on a pole or post at the roadside. The actuated beacon then begins to flash yellow to warn motorists that the beacon has been activated. This brief flashing yellow interval is followed by a steady yellow interval, then by a steady red signal indicating motorists need to come to a complete stop and wait at the stop line. While motorists are seeing the steady red indication, the Walk sign is lit for pedestrians, allowing them to cross the roadway. After the pedestrian WALK phase ends, the pedestrian signal indication changes to a flashing DON'T WALK to notify pedestrians not to begin crossing. During the flashing Don't Walk phase, the PHB displays alternating flashing red lights to drivers. The flashing red indicates to drivers that they are to stop and yield to pedestrians in the crosswalk, and can proceed once pedestrians are clear.



Regarding the use of PHBs at California/Dwight, the project does not currently have enough funding for this option, but it could be added in the future as a supplement to a median refuge island, if this alternative is implemented. Also, there are programming issues that need to be worked out before the City can install these beacons in the future. The City has had difficulty in getting the PHB at Ashby/Hillegass working optimally to detect bicycles, as these types of beacons are most often only used to detect pedestrians.

**Q: Describe the City's experience with Rectangular Rapid Flashing Beacons and how they operate.**

Rectangular Rapid Flashing Beacons (RRFBs) are push-button actuated traffic warning devices to highlight the presence of pedestrians in a crosswalk. If used as a warning device for bicyclists, the RRFB would need to be modified to allow bicyclists to reach the push button while in the roadway without dismounting.

RRFBs have been installed in selected locations throughout Berkeley, such as Sacramento/Bancroft, Shattuck/Virginia, and MLK/Virginia. They appear to have a relatively

high degree of effectiveness for pedestrians, but there is less evidence on the effectiveness for bicyclists.

RRFBs typically operate as follows: The RRFB shall be normally dark, shall initiate operation only upon pedestrian actuation, and shall cease operation at a predetermined time (typically determined based on an average walking speed of about 3.5 feet/second) after the pedestrian actuation or, with passive detection, after the pedestrian clears the crosswalk. All RRFB units associated with a given crosswalk (including those with an advance crossing sign, if used) shall, when actuated, simultaneously commence operation of their rapid-flashing indications and shall cease operation simultaneously.

Observed operational drawbacks to using RRFBs include (a) these beacons are warning devices, not regulatory devices, and therefore do not compel vehicles to stop and (b) pedestrian/bicyclists are not able to easily determine whether the RRFB operating cycle is active or has concluded.

Regarding RRFBs, these devices could be added as part of an upcoming Phase 2, to accompany a median refuge island. Consideration would be given to PHBs or RRFBs to accompany the median refuge island.

**Q: Can speed bumps be installed on Dwight to slow vehicular traffic?**

R: Speed bumps (or humps) are no longer used in the City for traffic calming in part because of the slowed response time to emergency vehicles and chassis damage to fire trucks. However, speed tables, which are longer than speed bumps, are part of the City Traffic Engineer's toolbox of traffic calming options. Speed tables are not appropriate for use on Major Streets such as Dwight because Dwight is an arterial street that carries bus traffic and is an emergency response route.

**Q: Please install yellow crosswalk striping and add school safety signage, given the collision and near-collision history with school-age children.**

R: As per the California Vehicle Code, the crosswalk(s) would need to be within 600 feet of a school in order for yellow crosswalk striping and associated school safety signage to be installed.

**Q: The traffic data in the presentation appears to be from the 2000s. Is there more recent data that is being used for this project?**

R: The City recently collected traffic data, but the results were not available at the time of the community meeting on May 12.