

El Camino Bike Lanes – Caltrans Questions

General Questions

The goal of these questions is to understand the broader context of these bike lanes, and how similar projects have proceeded elsewhere.

1. Can you confirm if [DIB-94 guidelines](#) apply to this project? If not, why not, and are there any alternative standards that we can reference?

Yes. DIB 94 guidelines were applied for the new bikeway design.

2. Does Menlo Park have plans to add bike lanes? If so, is there any timeline or design concepts that you can share?

We are not aware of any plans for adding new bike lanes by Menlo Park currently.

3. Can you share examples in the last ~5 years where Caltrans rolled out similar Complete Streets concepts?

- o Ideally, we can see examples from arterials in mid-size cities, with a mix of protected and unprotected bike lanes. A simple list of examples would suffice, but it'd be great to see any more detailed notes or case studies if those are available.
 - East 14th St in Ashland (Unincorporated Alameda County) uses more permanent materials but has a mix of bike lanes and separated bike lanes throughout the corridor on Caltrans Road.
 - Hwy 152 in Gilroy used a repaving project to incorporate bike lanes on 1st St. This project installed buffered bike lanes with no vertical separation.
 - Hwy 12 Broadway in the City of Sonoma also used a repaving project to incorporate bike lanes. This project installed buffered bike lanes with no vertical separation.

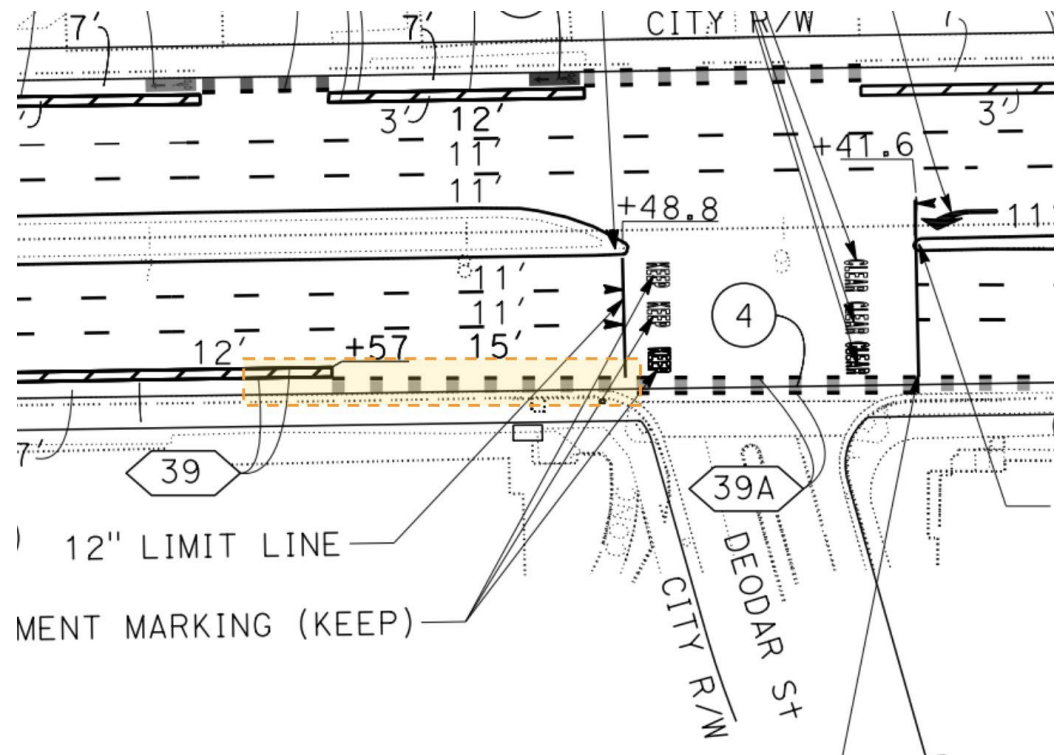
Physical Design Questions

The goal of these questions is to understand safety risks and opportunities within existing designs.

Protective Buffer Questions

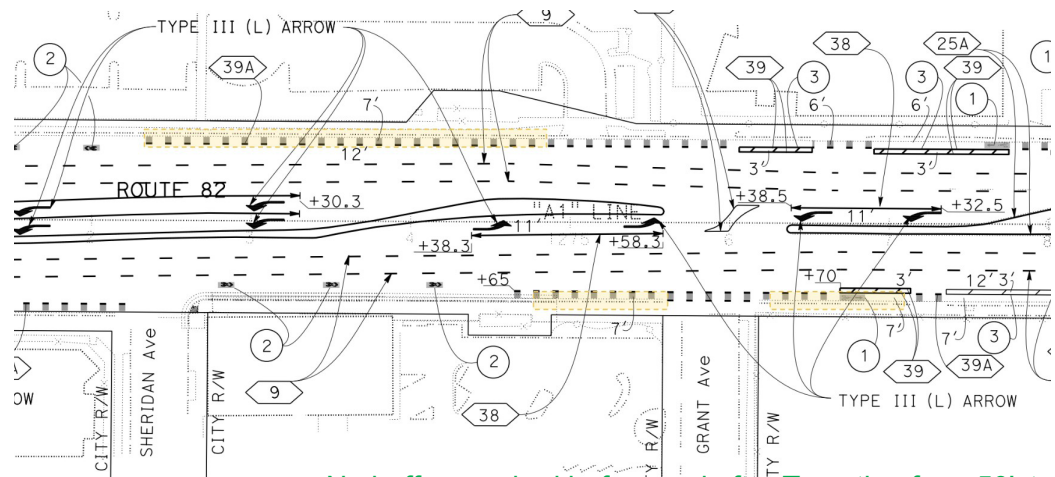
1. Can we extend protective buffers more aggressively at intersections?
 - a. Specifically, I've found several cases where the protective buffer ends 20+ feet before an intersection, which allows drivers to take fast right-turns through the cycling lane. (Similar conditions exist at Vista Ave, Dinah's Court, etc.)
 - b. For reference, see the highlighted section at Deodar, where: (1) protection ends ~50 feet ahead of the intersection; (2) there seems to be no driveway or bus stop; and (3) the travel lane is sufficiently wide to include a buffer.

In accordance with Caltrans standards, there should not be protective buffers at intersections 50 ft to 200 ft.



2. What are the exact guidelines for the width of bike lanes and protective buffers? Would it be feasible or sensible to convert 7' bike lanes without any protective buffer to a 5' bike lane with a 2' buffer?
 - a. There are several unprotected sections with a 7' bike lane, without other conflicts like bus stops and driveways. Presumably, these areas are unprotected because the right-of-way is too narrow to include a buffer. However, these unprotected 7' lanes could plausibly become a narrower bike lane with a 1.5' to 2' buffer. (To be clear, I'm not saying this is the right tradeoff – I'm just asking whether this is reasonable.)

- b. For example, see some highlighted sections near Sheridan and Grant, where a 7' bike lane abuts a 12' car lane. **At this location, bike lane width varies from 5 to 7 feet.**



No buffer required before and after T-section from 50' to 200'

Bike Box Questions

3. Can you confirm whether cars will be allowed to make a right-turn on red at bike boxes?
How does Caltrans determine which intersections get a bike box?
 - a. I'm trying to understand if it's reasonable to add more bike boxes, especially along [city recommended / safe school routes](#).

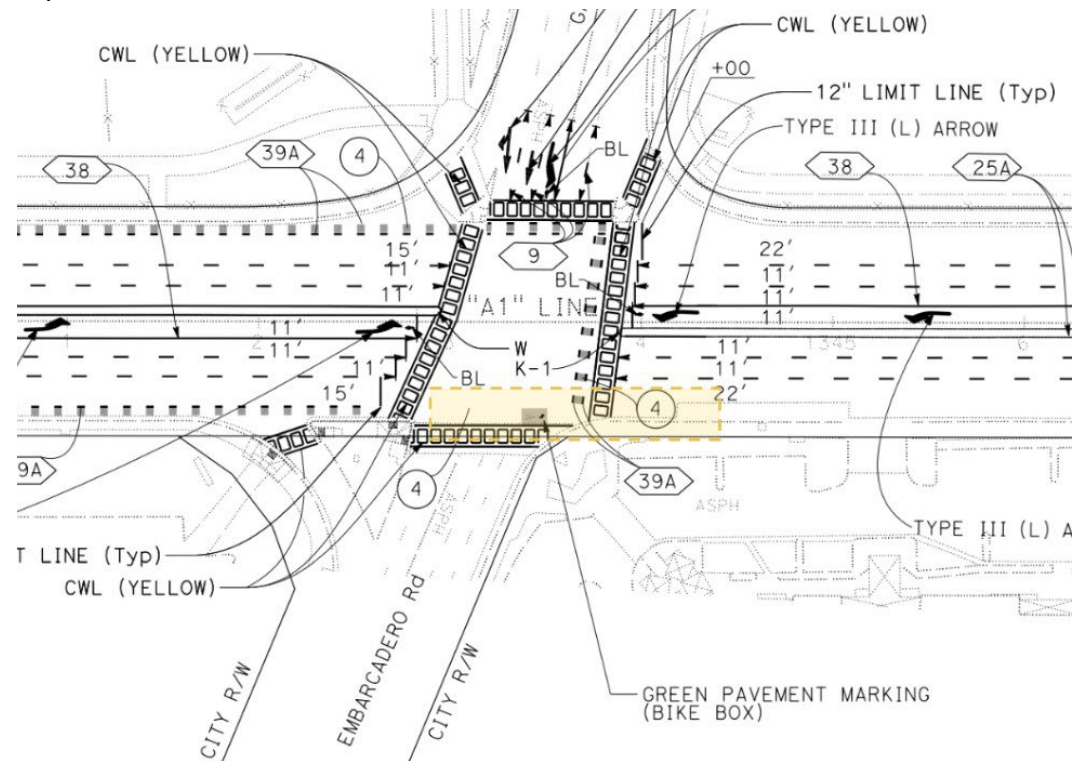
Bike boxes were picked for locations to either reduce turning collision (California Ave) or to act as a wayfinding to direct cyclists to turn (Embarcadero). This counter measures increases cyclists' visibility to motorists and to allow bicyclists to get ahead of queuing traffic during the red signal phase. Bike boxes can be used with a 'no turn on red' sign to clarify that the motorist cannot make a right turn on red.

4. How did you decide the placement of the 'Two-Stage Turn Queue' bike boxes at Stanford Ave and Embarcadero?

The purpose of the bike box at Embarcadero and Stanford Ave is to direct northbound cyclists to the bike path along Stanford University. The green cross bike at the intersection is also serving this purpose. The bikeways end here, and it is not advisable for cyclists to attempt to maneuver the undercrossing/ on ramps at Palm Ave/University Ave. This design is consistent with the MassDOT Separated bike lane design guide on how to transition from a two-way bikeway (Mass DOT page 86).

- a. My understanding is that these are the only left turn bike boxes along El Camino in Palo Alto. I worry that if there are only two bike boxes of their type, that neither cyclists nor drivers will understand how to use them.
- b. I also worry that the green bike box in the middle of Embarcadero will be misperceived as a signal that the bike lane continues onward. Moving cyclists might not realize that the box is intended for left turns only, and instead think the box is part of green striping that invites them to keep riding forward into an

unprotected 22' car lane.

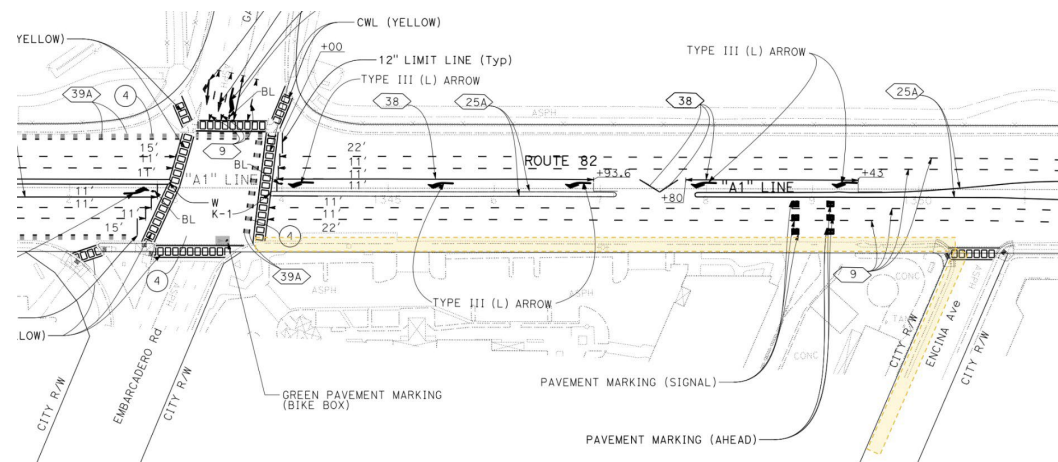


Route Design

5. Did Caltrans consider extending the Northbound bike lane from Embarcadero to Encina Ave?

- a. See how the area seems sufficiently wide, with a ~22' right travel lane.

The route wasn't extended to Encina Ave, because the bikeway would have to end prior to University. The signalized intersection at Embarcadero offers a way for cyclists to transition to the Stanford Path.



- b. By continuing to Encina Ave, there's a more natural way for cyclists to reach Caltrain, Palo Alto Medical Foundation, Town and Country, and the Embarcadero Bike Path.

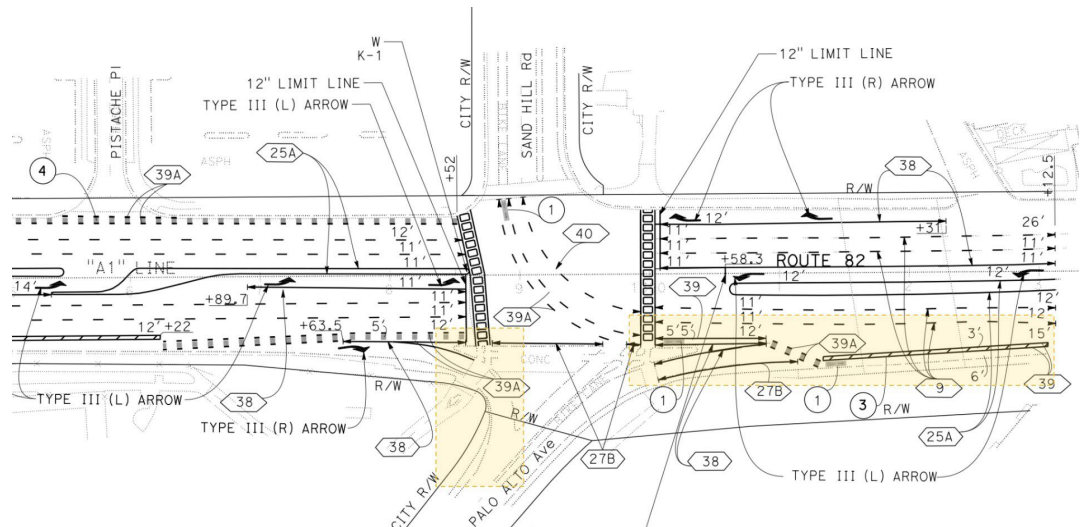
There are positives and negatives about continuing the bikeway to Encina Ave. While it does provide more connections to the Embarcadero Bike Path, Churchill and Embarcadero Rd both have connections to the Embarcadero Bike Path as well. The design didn't want to encourage cyclists to proceed northbound on El Camino after

Embarcadero Rd. The bike box has a left arrow pointing cyclists toward the Stanford Path.

- c. As noted above, I think the green bike box + abrupt end of the bike lane is potentially dangerous, inviting cyclists to ride straight where they have no protection. By continuing the bike lane forward, we could add green paint that wraps around the corner of Encina, which signals that cyclists should continue through the Embarcadero bike path.

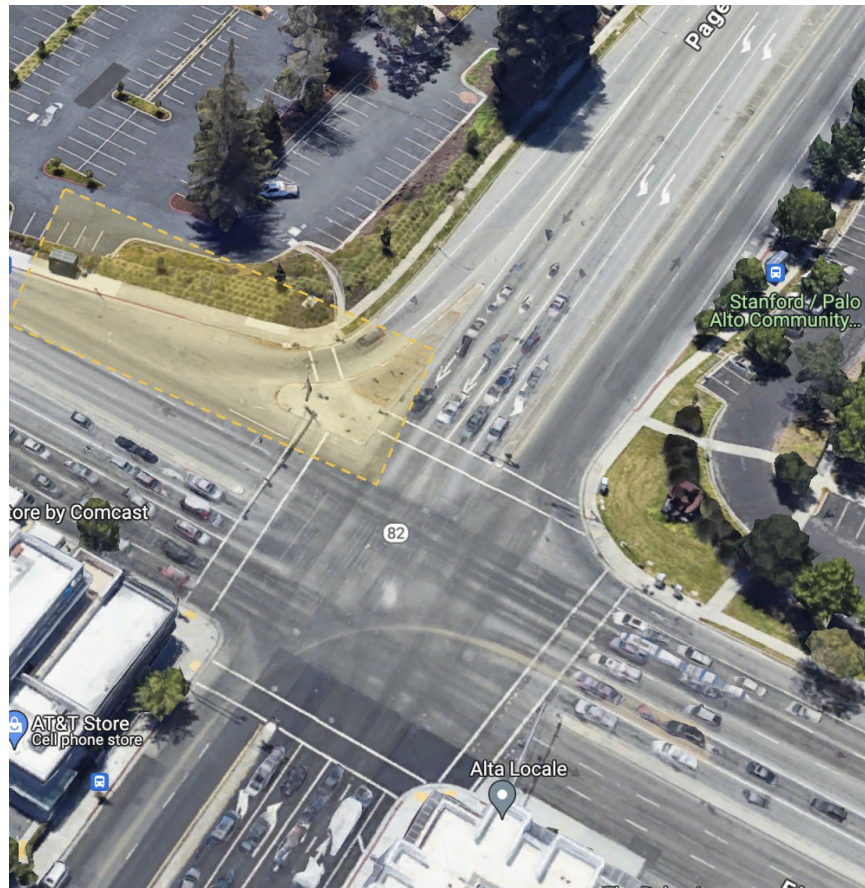
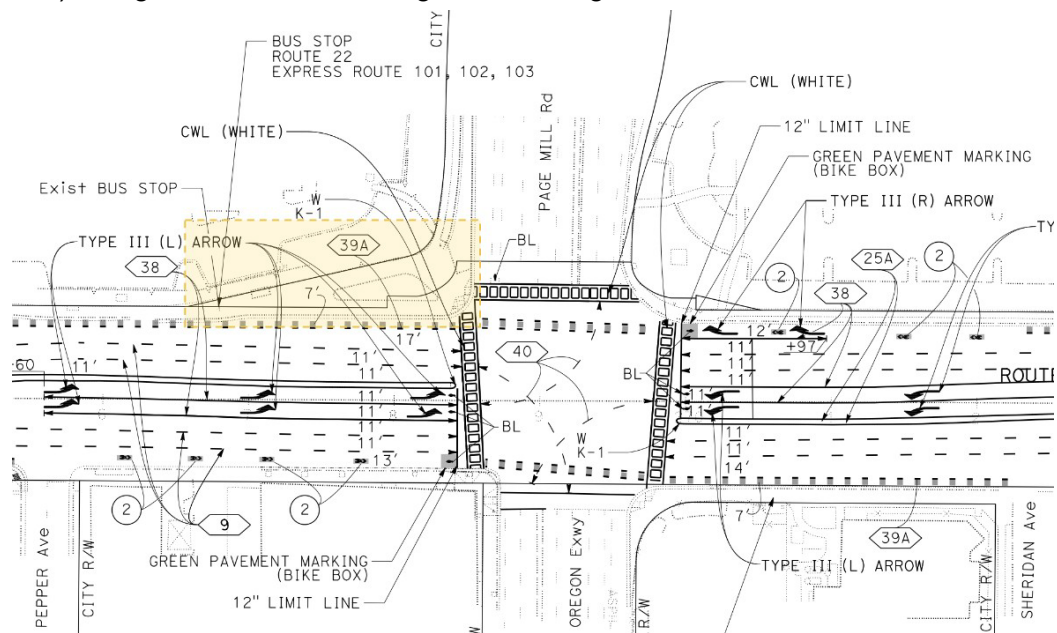
6. How are cyclists expected to continue north-bound in Menlo Park after Sand Hill?
 - a. See how the north-bound intersection at Palo Alto Ave contains two flowing, fast right turns (one onto Palo Alto Ave; one off of Palo Alto Ave). It's not clear how the bike lane then continues into Menlo Park.

This is the end of Caltrans paving project limit so the bikeway ends after Sand Hill. The current design tried to continue the bikeways as long as possible before dropping it.



7. Have there been attempts to limit fast turns onto El Camino? More specifically, is there any communication with the county about Page Mill Road? The County informed the future project to improve this intersection and plan to begin after the Caltrans paving project is completed. The draft plan shows extending the corner sidewalk and removing the right turn lane at the porkchop island.
 - a. For example, the highlighted section of Page Mill includes a porkchop / pedestrian island. Cars drive through that channel extremely quickly, and sight angles are awkward. It seems likely that the bike lane will be used as an extremely dangerous merging lane for cars. Ideally we can coordinate with the county to eliminate the porkchop (or at least add signs, lighting, more green paint, etc.).

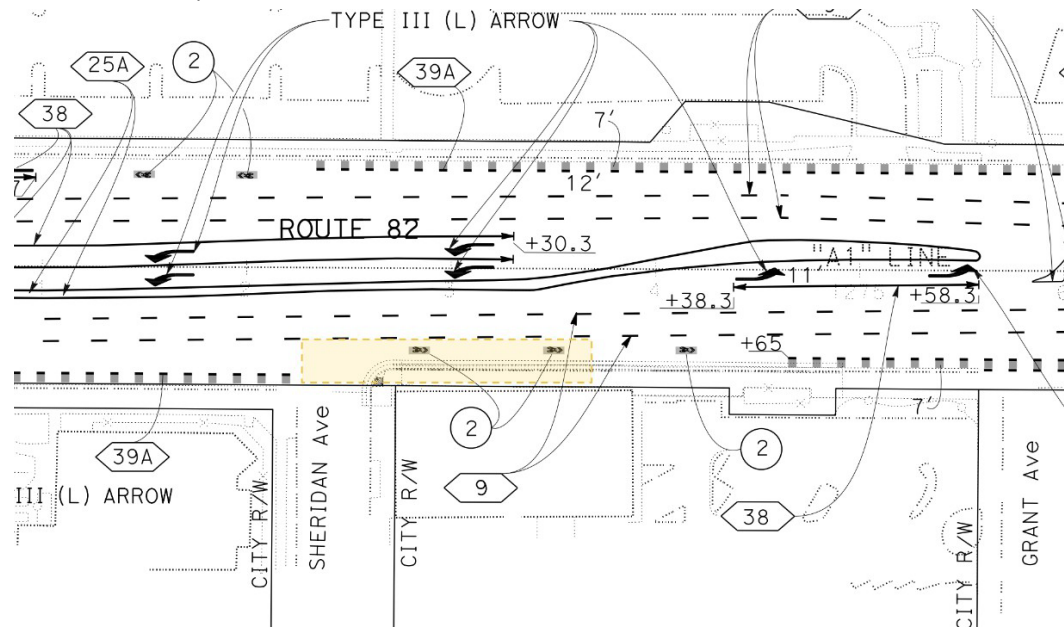
- b. Note there are other fast-flowing right turns (like at Los Altos Ave and Palo Alto Ave) though none seem as dangerous as Page Mill.



8. At locations where protected bike lanes abruptly end, will there be signs to warn cyclists and drivers? What will the signs say?

Sharrow markings are used to warn cyclists that a bike lane is ending.

- a. See intersection at Sheridan. Inexperienced cyclists may panic if they suddenly realize they're sharing a car lane. (Similar conditions exist at Embarcadero, Churchill, etc..)



9. What are the design guidelines for lane width, including for bus lanes?
 - a. Potentially lanes could be slightly narrowed (like from 11' to 10.5' for the central lanes, and 12' to 11' on the outer lane). This could allow a narrow Class 2 bike lane at Sheridan, rather than having to resort to sharrows.

All the lane width will be reduced to 11' and a class II bike lane will be placed here.

Misc Design Questions

10. Can you briefly discuss any drainage improvements? Are there any guidelines for the design of sewer grates?

There is no drainage improvement work in Palo Alto under this paving project. Most of the grates are shown as bicycle proof ones but we need to review all the existing grate types.

- a. I want to make sure we take reasonable steps to prevent flooding², and avoid accidents where bike wheels get caught in grates.

11. Could design improvements for bus lanes be in scope? How much money or time would Caltrans need to consider a design like the example from DIB-94 below, where the bike lane is slightly elevated?

There is insufficient Caltrans Right of Way to accommodate the separated bus lane as the figure/ example below.

Figure 7-G - Diagram of an integrated bicycle/pedestrian zone at a bus stop (MassDOT Separated **Bike** lane Guide)

