

Bikeways at Bus Stops

VTA is in the process of releasing Passenger Facilities Standards and Guidelines. This memo provides the guidelines and standards for bus stops adjacent to bikeways that are included in that document. Due to requests by Member Agency staff, we have released this memo early. The Passenger Facilities Standards and Guidelines should be released soon. Figure numbers and formatting in this memo will differ from the Passenger Facilities Standards and Guidelines, but guidance and standards will remain the same.

These standards were developed using California Manual of Uniform Traffic Control Devices (CA MUTCD 2014, Revision 5), Caltrans Design Information Bulletin 89, Public Right-Of-Way Access Guidelines (PROWAG), FHWA Separated Bike Lane Planning and Design Guide, and NACTO's Urban Bikeway Design and Transit Street Design Guides as well as informed by lessons learned from on-the-ground, early implementation of quick-build projects in Santa Clara County.

Early in the implementation process, Member Agency staff are encouraged to notify VTA of any possible conflicts between bikeway facility installation and bus stops by emailing bus.stop@vta.org. VTA staff will work with you to determine the best design for your facility to reduce conflicts between roadway users.

General Guidance

California Vehicle Code permits bus operators to cross over a bike lane, including buffered bike lanes, to service a coach stop. Operators must pull over to the curb when it is safe to do so. Bicyclists must yield to buses once they are at the curb.

It is important that people using the bike lane have the expectation that there may be a conflict at a bus stop. This is particularly true for enhanced bike lane treatments like green bike lanes and buffered bike lanes, as people riding on these bikeways feel more separated from motor vehicle traffic. Dashing a bike lane adjacent to a bus stop provides that expectation and is supported by state and national design guidance.

Bike Lane Striping

VTA recommends the following practices for bicycle lanes through bus stop areas:

- Dash bike lanes at bus stops. Dashed area should include the bus stop area and 50-foot merging area.
- If room is available to provide a six-foot bike lane, stripe a dashed bike lane outside of the 10' bus pad.
- If no room is available, stripe dashed bike lane through the bus pad.
- If green colored pavement is used in the bike lane, dash it at bus stops.
- If the bike lane includes a painted buffer, two options are recommended:
 - Dash the buffer boundary at the bus stop or
 - Eliminate the painted buffer in advance of the bus stop and treat as for a standard bike lane.

- When marking bike lanes through a bus pad, select materials that will adhere to and hold up well on Portland cement.

The following four figures illustrate examples of bicycle lane marking at bus stops.

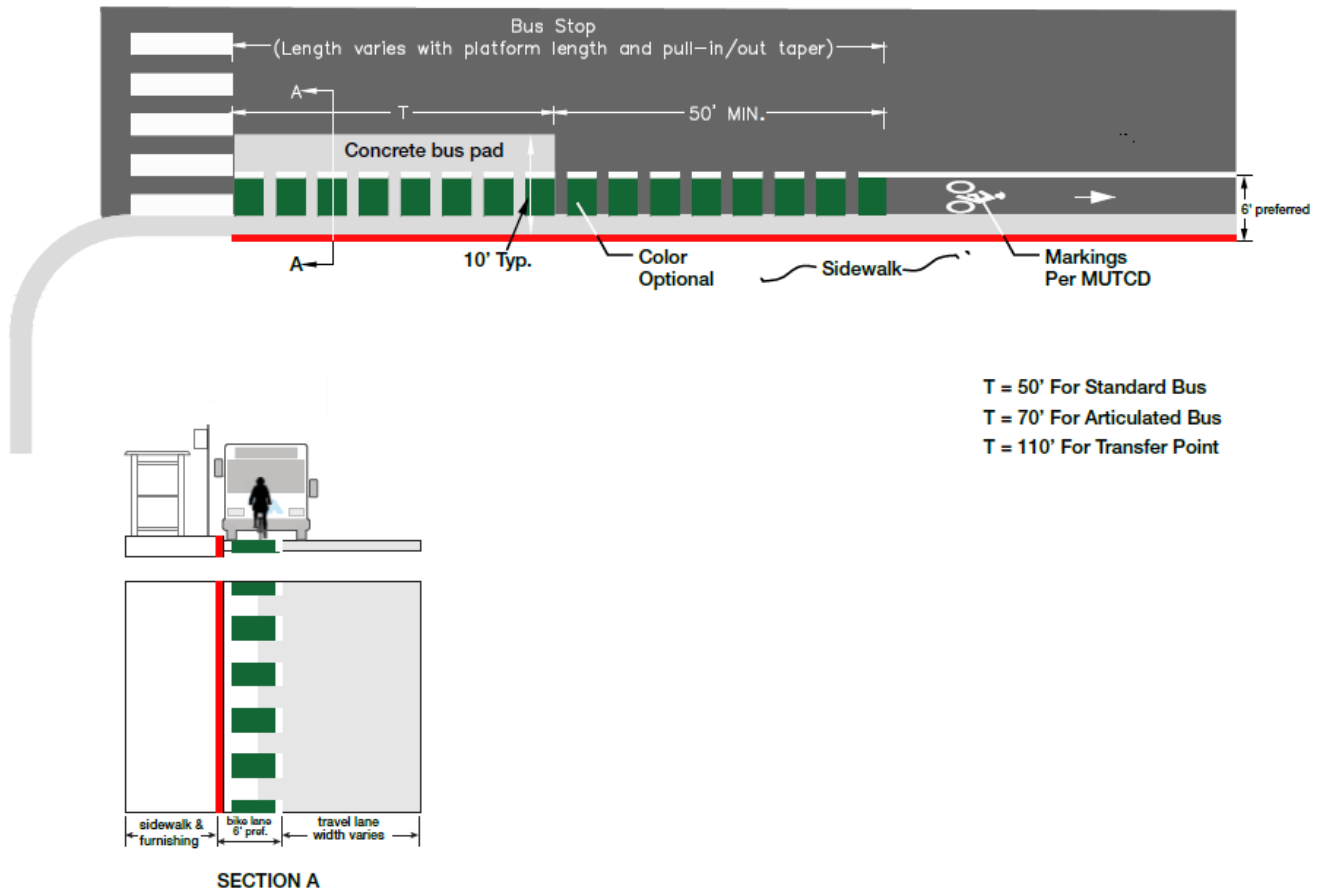


Figure 1: Bus stop in standard bike lane, no parking

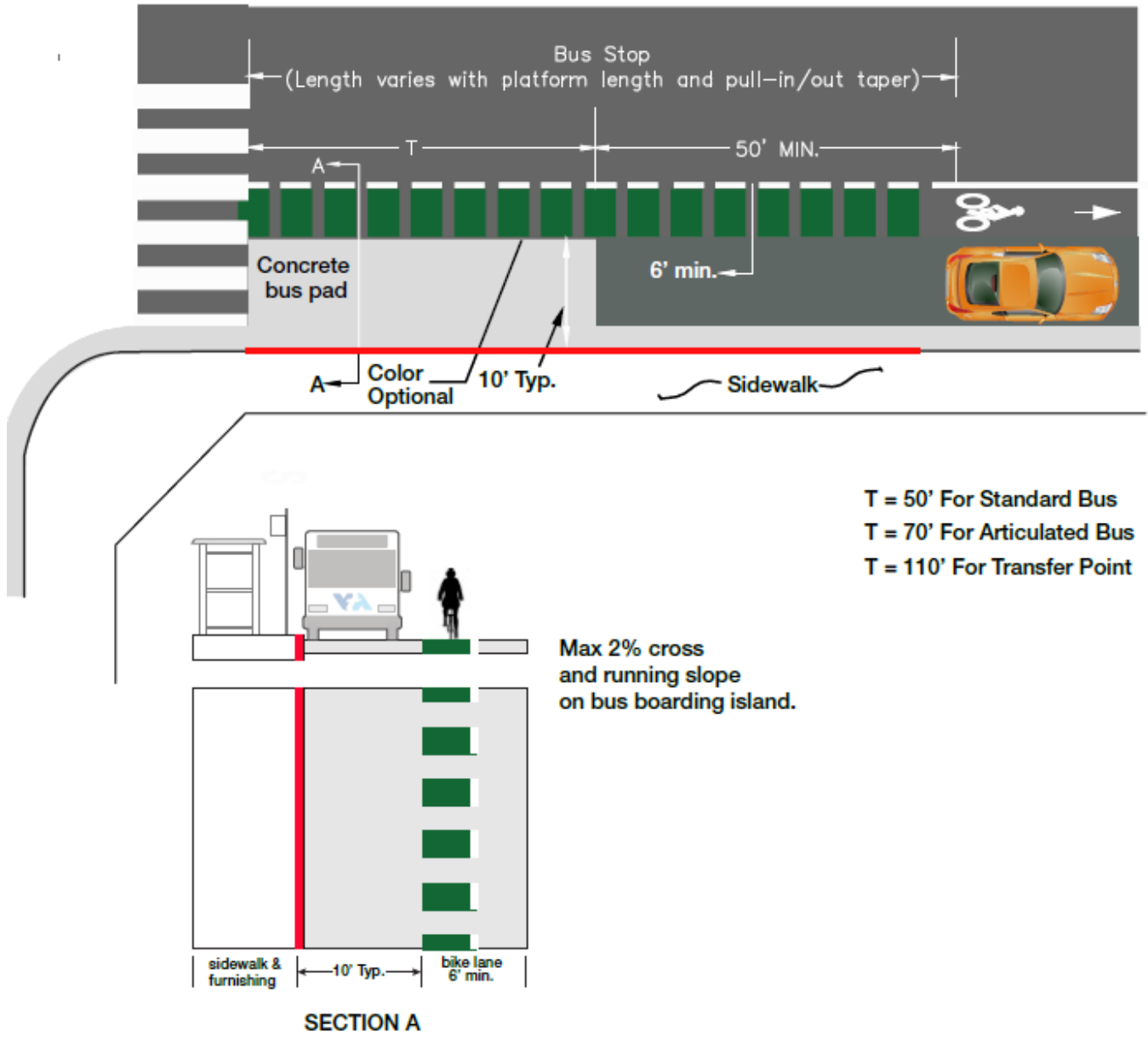


Figure 2: Bus stop in parking lane with standard bike lane

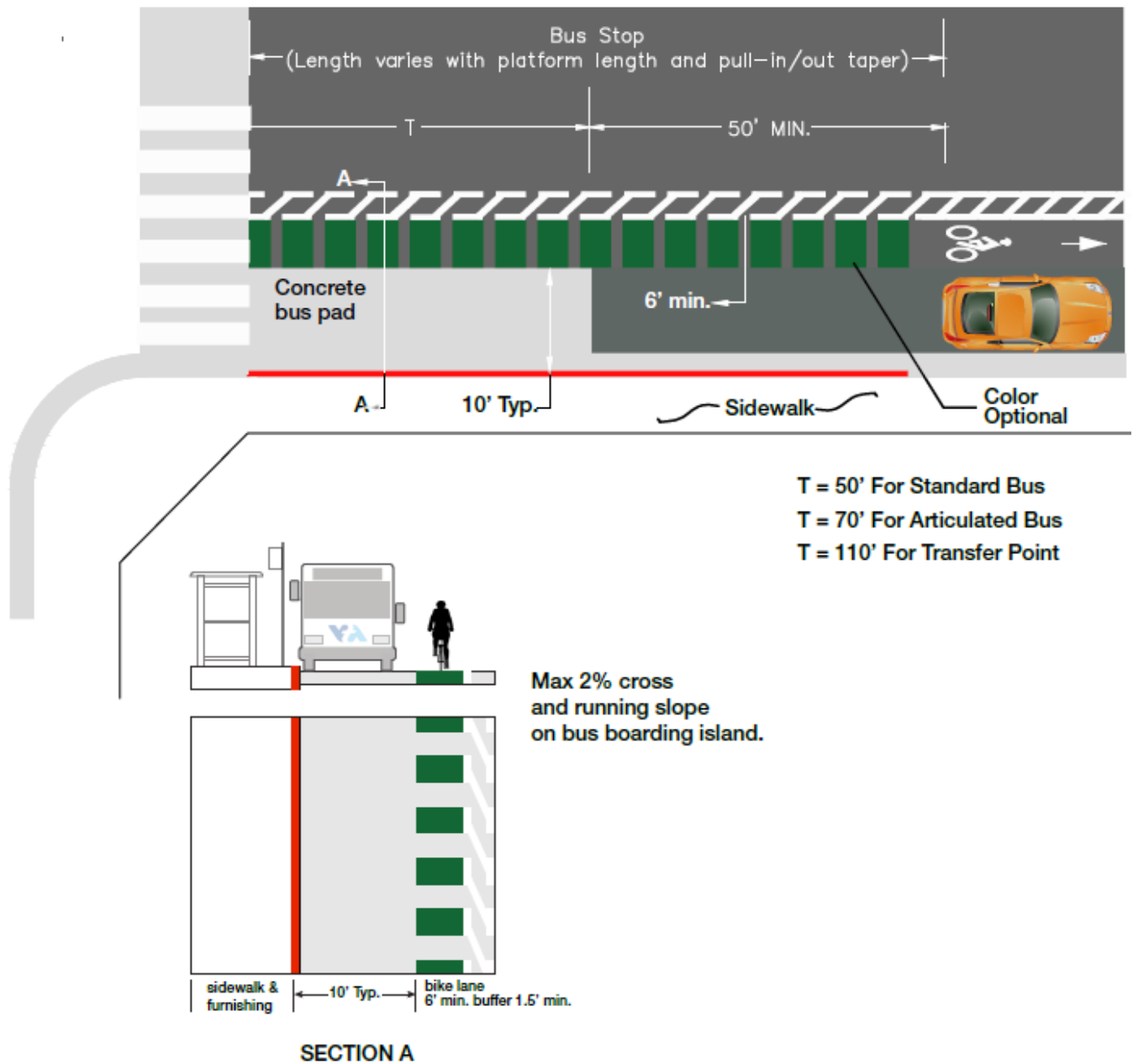


Figure 3: Bus stop in parking lane with buffered bike lane

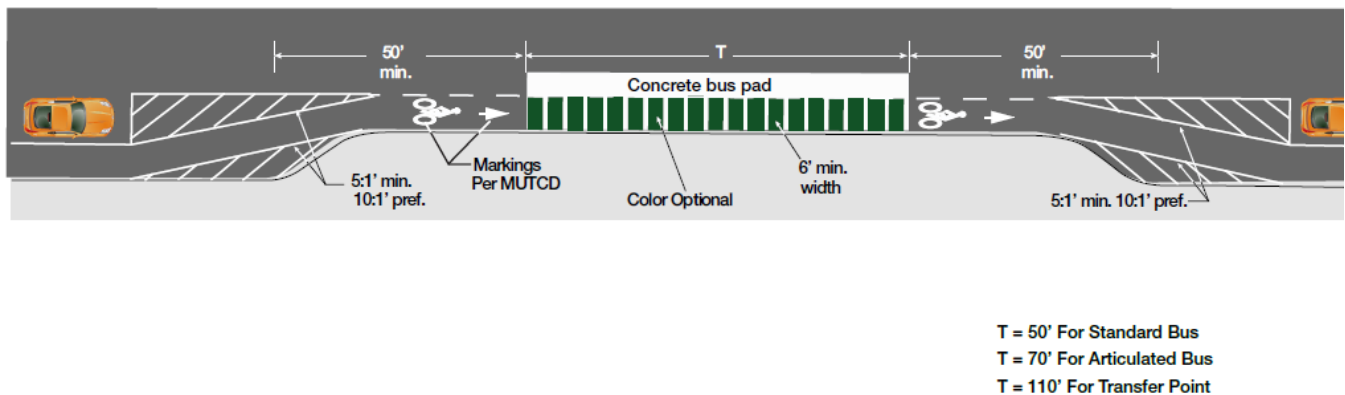


Figure 4: Bus stop where bikeway is shifted into bus stop

Bikeway Widths

VTA recommends the following bikeway widths through bus stop areas:

- Traditional bike lane, per VTA Bicycle Technical Guidelines (2012)
 - Six feet wide minimum
 - Eight feet wide on streets with posted speeds 45 mph or greater
- Buffered bike lane
 - Six feet wide bike lane minimum, with minimum 1.5-foot buffer
- Cycletrack/Separated bikeway
 - One way: seven foot preferred
 - Two-way: 10 feet minimum, 12 feet preferred

Bus Boarding Islands General Requirements

Bus boarding islands must meet all ADA requirements for bus stops.

VTA requires the following:

- Bus boarding island must provide a clear, dedicated boarding area eight feet deep by five feet wide. The boarding area may not be shared by bicyclists.
- Boarding island depth eight foot (min) to 10 feet (preferred). Length is determined by number of lines and length of buses using the stop. Minimum depth to accommodate a railing on the bus boarding island is nine feet. Minimum depth to accommodate a shelter on the bus boarding island is 10 feet.
- Cross slope and running slope no greater than two percent for entire platform.
- Four-foot-wide (minimum) continuous, clear pedestrian access route between the bus boarding island and the sidewalk.
- Railing or other vertical separation element at back edge of platform if the cycletrack is at street level or if it is a two-way cycletrack.
- Provide directional indicators from sidewalk to bus boarding island to indicate to visually impaired pedestrians the path of travel.
- Install bus stop sign at back of bus boarding island.

- Vertical elements (signs, railings, etc..) must be at least 24 inches away from the street edge of the bus boarding island.

Pedestrian Crossing at Bus Boarding Island

Bicyclists must yield to pedestrians at the bus boarding island. The bikeway and pedestrian crossing should be designed to indicate this responsibility to bicyclists. Treatments to slow bicyclists and improve yielding should be installed as appropriate or needed. For new installations, consider temporary signage clarifying right-of-way.

People with visual, mobility, auditory, and other impairments travel by bus. The bus boarding island and access routes to the island from the sidewalk must meet ADA requirements.

VTA recommends:

- If not integrated into an existing street crossing, the pedestrian crossing should be at the same level as the sidewalk and bus boarding island.
- Provide designated crossing(s) for pedestrians across the bikeway. Preferably, one crossing at the front door and one crossing at the rear door.
- Crossings should be striped with high visibility markings.
- Minimum 10-foot-wide crossing width (perpendicular to pedestrian movement).
- Provide detectable warning surfaces (truncated domes) at either end of the crosswalk.
- Provide directional indicators from sidewalk to bus boarding island to indicate to visually impaired pedestrians the path of travel.
- Maintain unobstructed sight lines between pedestrians and bicyclists. Pay particular attention to vertical separation elements or bus shelters on the bus boarding island.

Signage at Bus Boarding Islands

Signs indicate to transit customers, including visually impaired customers, and indicate to bus operators where to stop the bus.

- Two signs required. One at the sidewalk adjacent to the pedestrian crossing. A second one on the bus boarding island.
- Directional indicators should lead from the sidewalk sign to the boarding area on the bus boarding island.

One-Way Cycletrack at Bus Boarding Islands

Bicyclists must yield to pedestrians at the bus boarding island. Treatments to slow bicyclists and improve yielding should be installed as appropriate or needed.

Where the bikeway is at the level of the roadbed (Figure 5 and Figure 6):

- Raise the pedestrian crossing to be at the same grade as the sidewalk and bus boarding platform. If this is not feasible, provide ADA-accessible curb ramps at either end of the pedestrian crossing and ensure that there is at least a four-foot wide accessible path on the platform adjacent to the curb ramp.
- Install a guardrail or similar vertical separation on the bus boarding island. Provide minimum six-inch shy distance between the edge of the vertical separation and the bikeway. Maintain a

minimum eight-foot depth clear space on the bus boarding island between the vertical element and the road edge of the boarding island. Vertical elements must not block sightlines between pedestrians and bicyclists.

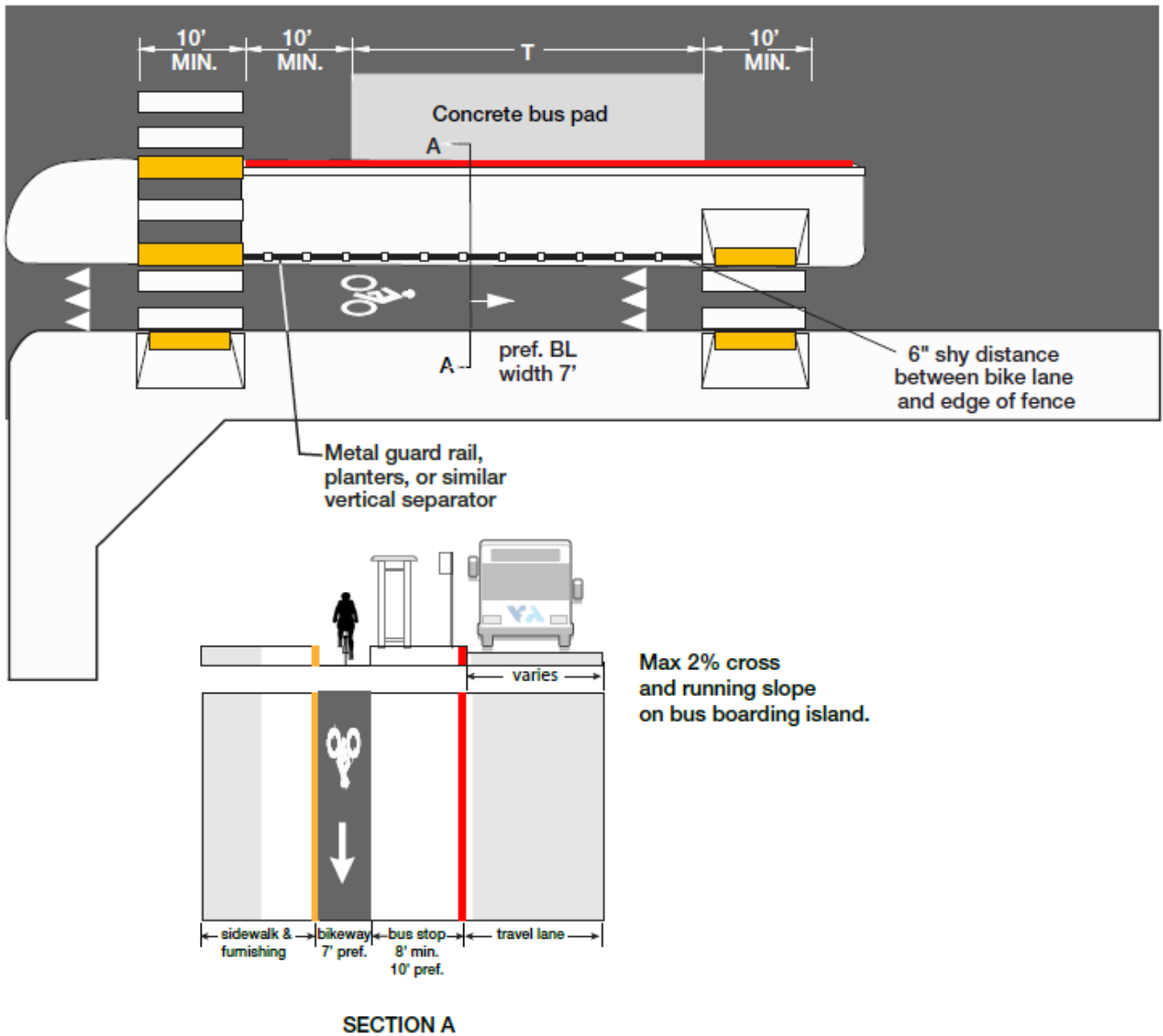


Figure 5: Bus stop where bikeway is at the same level as the roadway

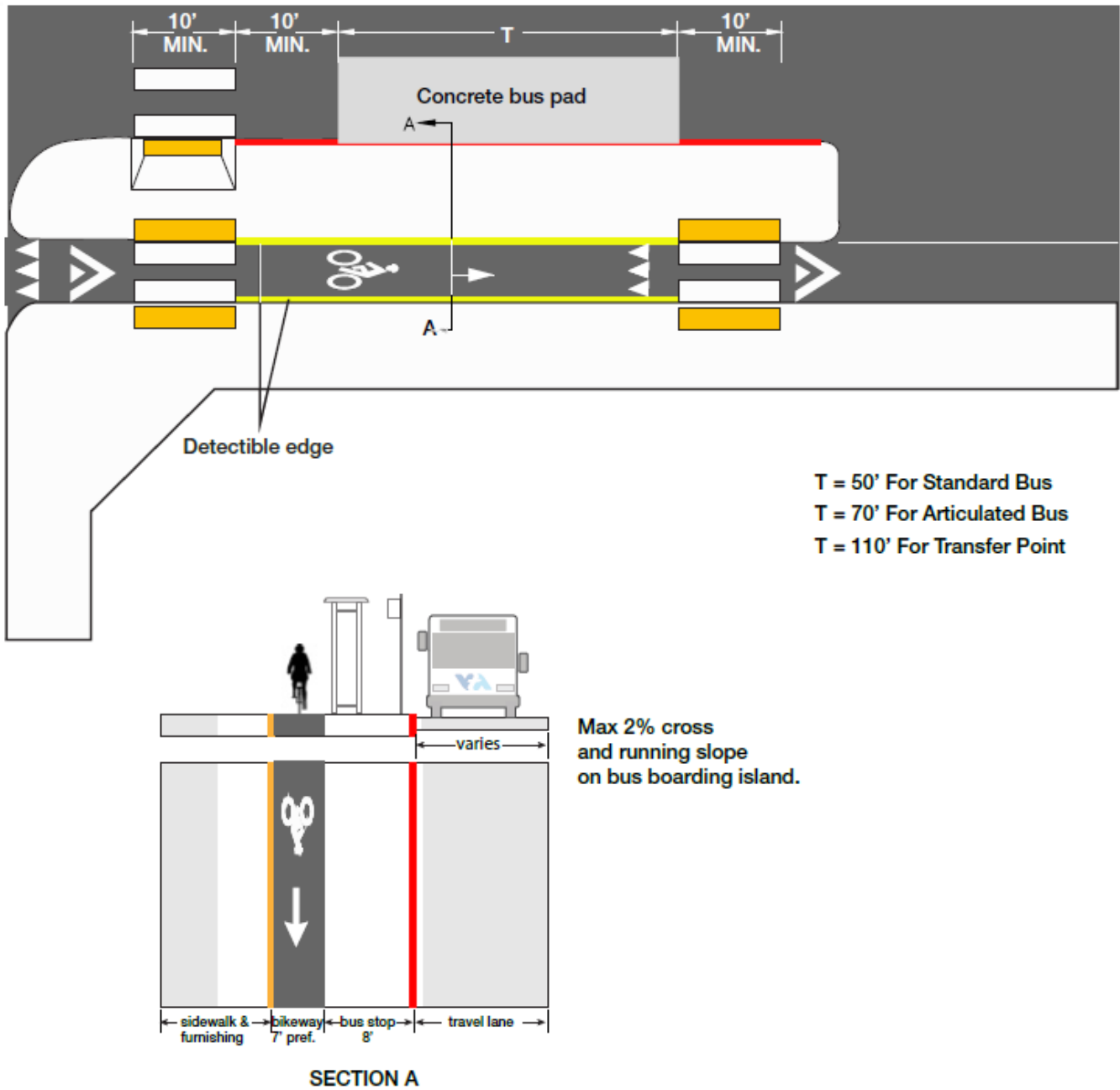


Figure 7: Bus stop where bikeway is raised to the same level as the bus boarding island and the sidewalk

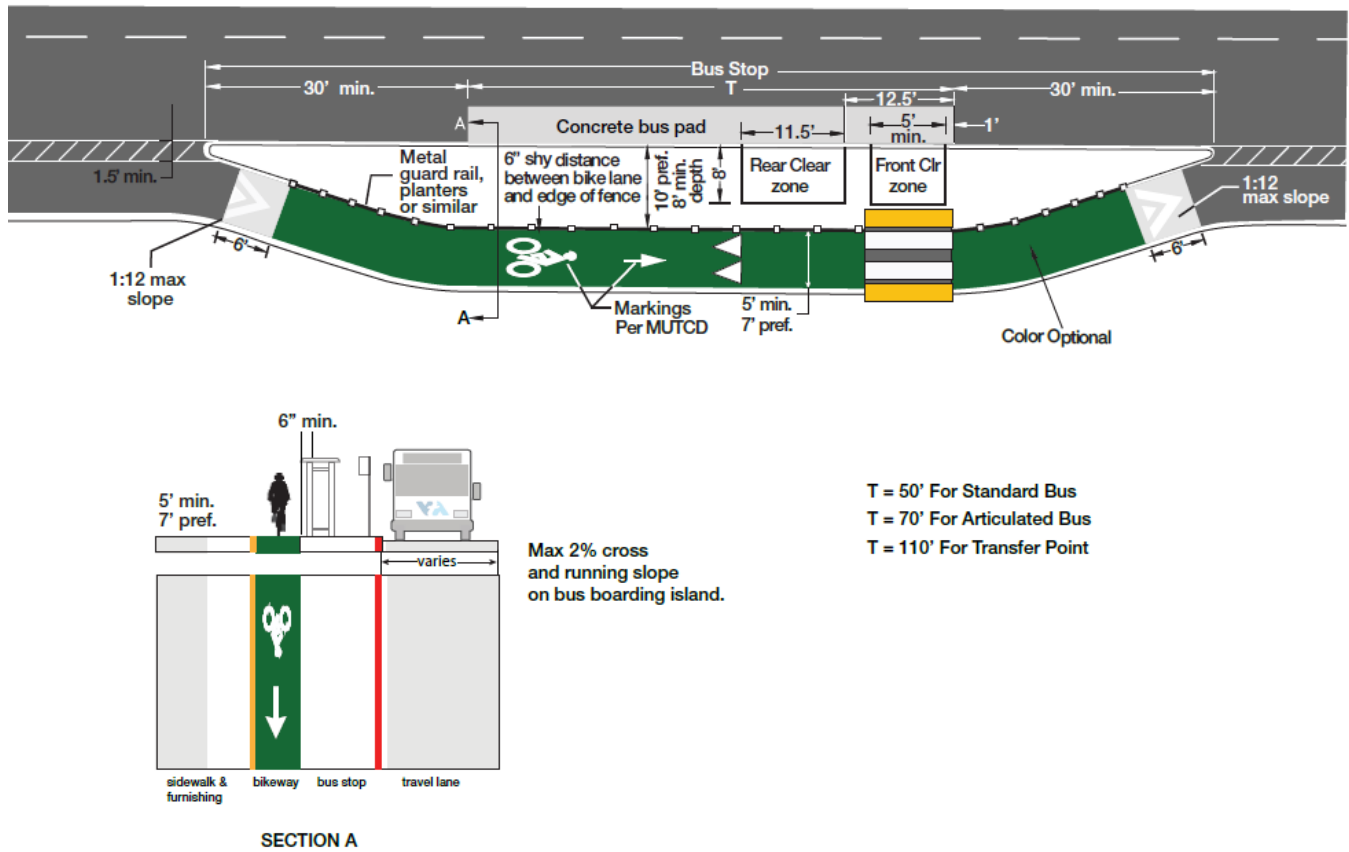


Figure 8: Bus stop where bikeway is raised to the same level as the bus boarding island and sidewalk

Two-way Cycletrack at Bus Boarding Island

Bicyclists must yield to pedestrians at the bus boarding island. Treatments to slow bicyclists and improve yielding should be installed as appropriate or needed. This is especially important at two-way cycletracks where pedestrians may not realize bicyclists could be approaching from both directions.

Where the bikeway is at the level of the roadbed, treat as for a one-way cycletrack (Figure 9).

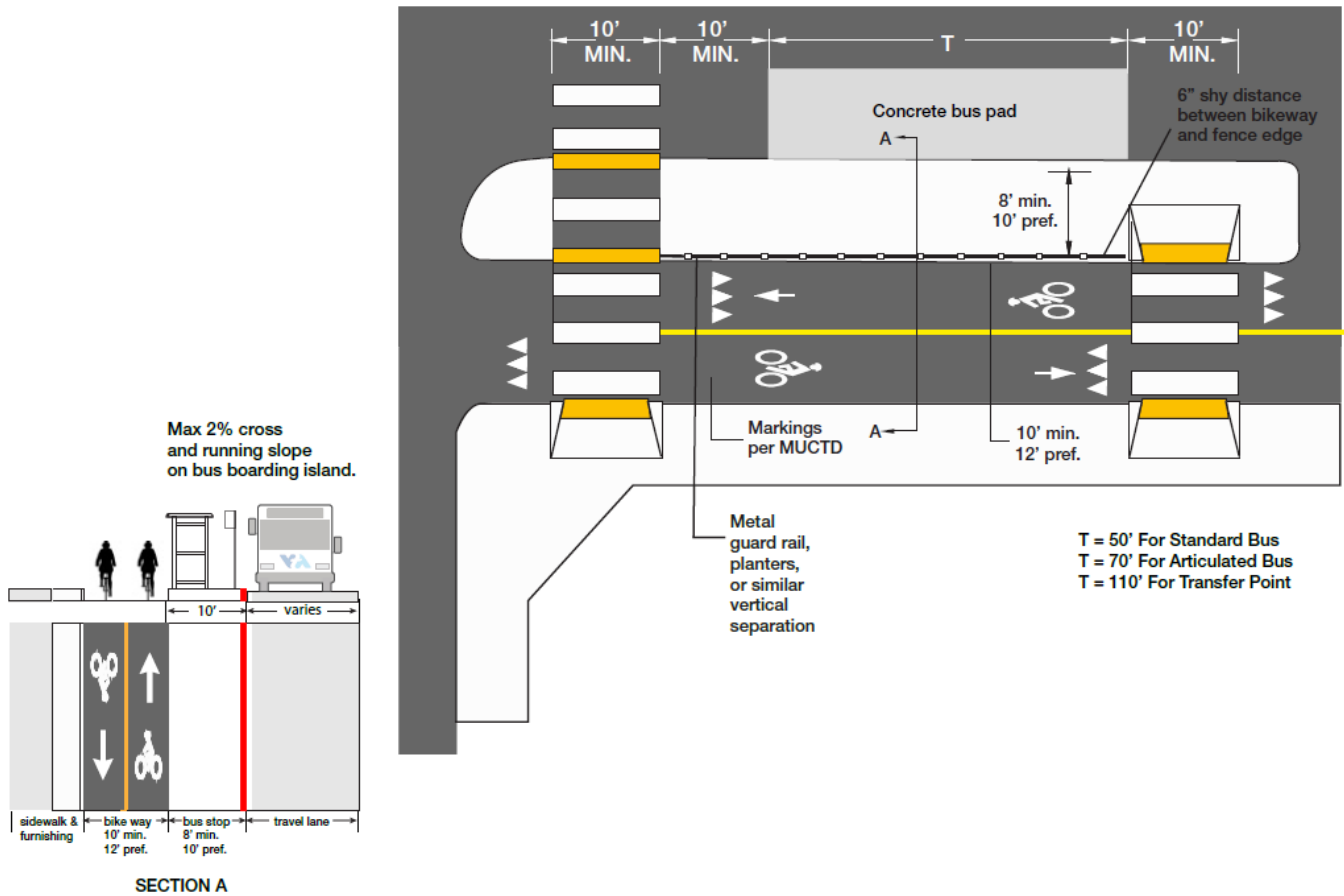


Figure 9: Bus stop where two-way bikeway is at the same level as roadway

Where the bikeway is raised to the level of the sidewalk and the bus boarding island, treat as for a one-way cycletrack but provide a guardrail or other vertical separation on the bus boarding island (Figure 10).

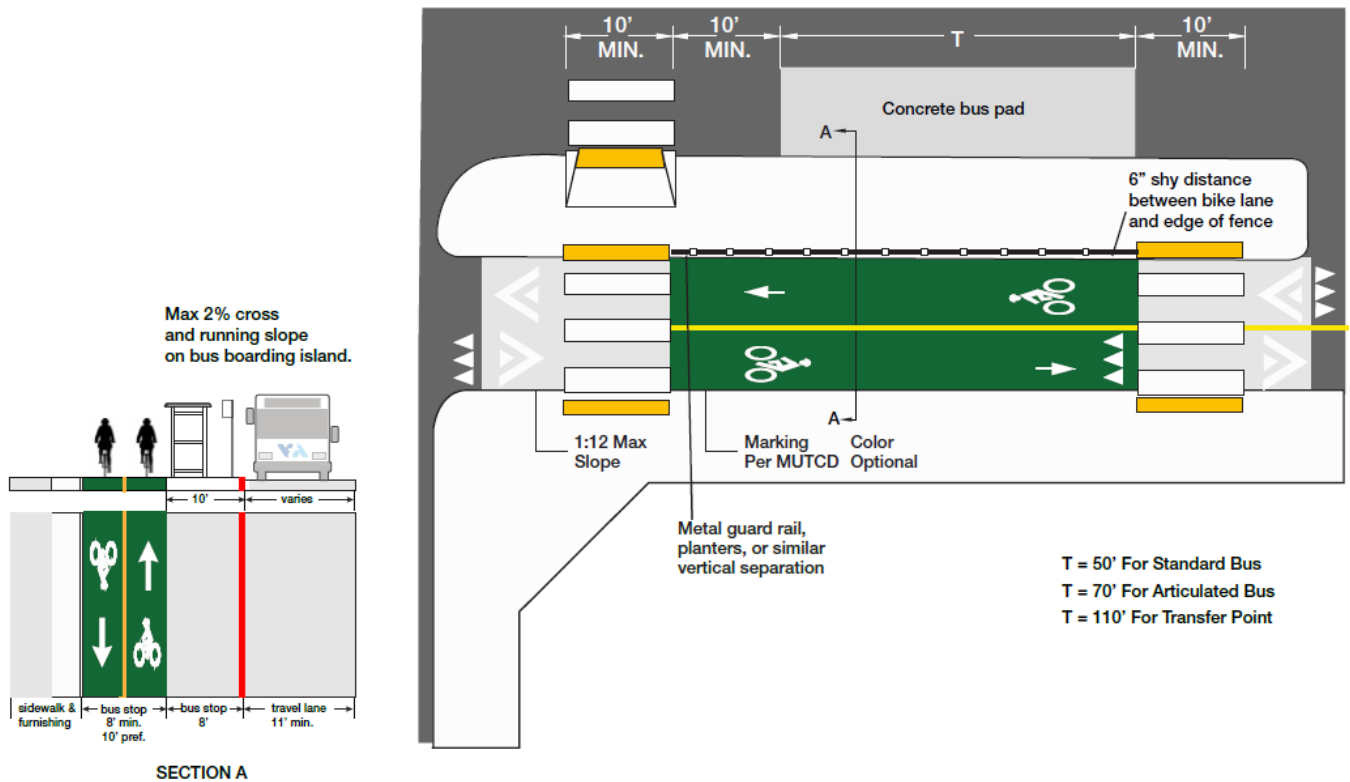


Figure 10: Bus stop where two-way bikeway is at the same level as the bus boarding island and the sidewalk

Bus Boarding Island Treatments Not Accepted by VTA

VTA requires a dedicated boarding area five feet wide by eight feet deep. This area must not be shared by bicyclists. Other jurisdictions in California have experimented with shared bikeway/boarding areas in constrained conditions. VTA does not permit this treatment. Customers getting off the bus may not expect or see approaching bicyclists, and bicyclists approaching a stopped bus may not expect the wheelchair ramp to deploy in their path.