

BCDCOG

Transit and Bus Stop Design Guidelines



October 2021

3 BUS STOP CONFIGURATIONS

This chapter provides technical guidance on bus stop configurations in different operating environments.

The position of a bus stop relative to the travel lane affects how easily buses can reenter traffic flow and continue on their route.

It includes seven categories of configurations: (1) pull-out stops, (2) in-lane stops, (3) boarding bulb stops, (4) shared bus-bike lanes, (5) side boarding island stops, (6) shared cycle track stops, and (7) transfer centers.

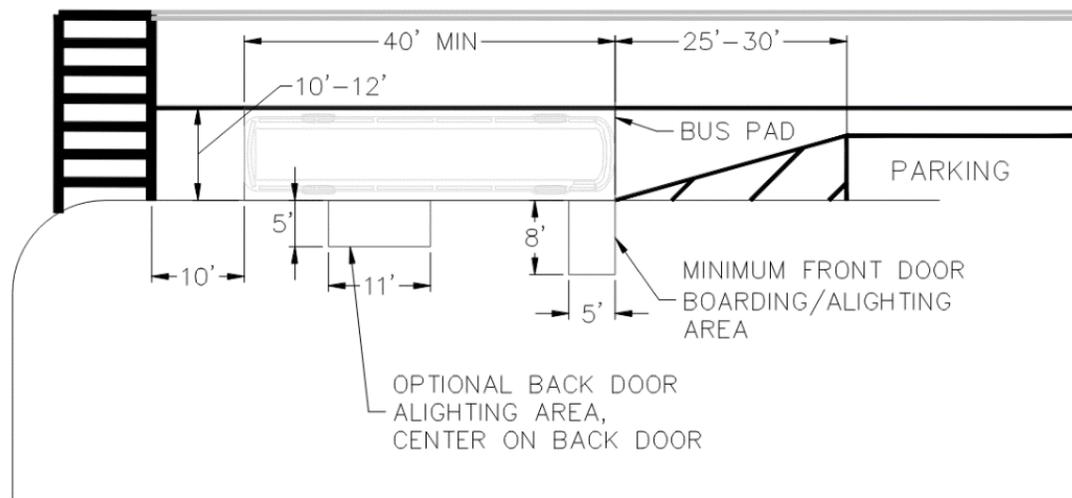
For pull-out, in-lane, and boarding bulb stops, placement specific guidance is also provided. As described in Chapter 2 – Bus Stop Spacing and Placement, bus stop position is the location of the bus stop relative to the intersection or within a block. Types of bus stop positions include far-side (just after an intersection), near-side (just prior to an intersection), mid-block (at least 200' away from any intersection).

The majority of CARTA buses are between 35' and 40'. As such, the dimensions shown below are designed for 40' buses. These dimensions are technical recommendations and their feasibility are subject to available right of way. Refer to Appendix D for more detail on ADA standards relevant to bus stop accessibility.

PULL-OUT STOPS

A pull-out bus stop is located in a curbside lane requiring the bus to merge out of and back into the travel lane in order to serve the stop. Pull-out stops are a low-cost option for bus stops on streets with curbside parking. Pull-out stops prioritize through-traffic, including through-moving transit and are most useful where flow is a priority or where in-lane stops would be problematic. Pull outs are designed to be long enough to accommodate 40' vehicles.

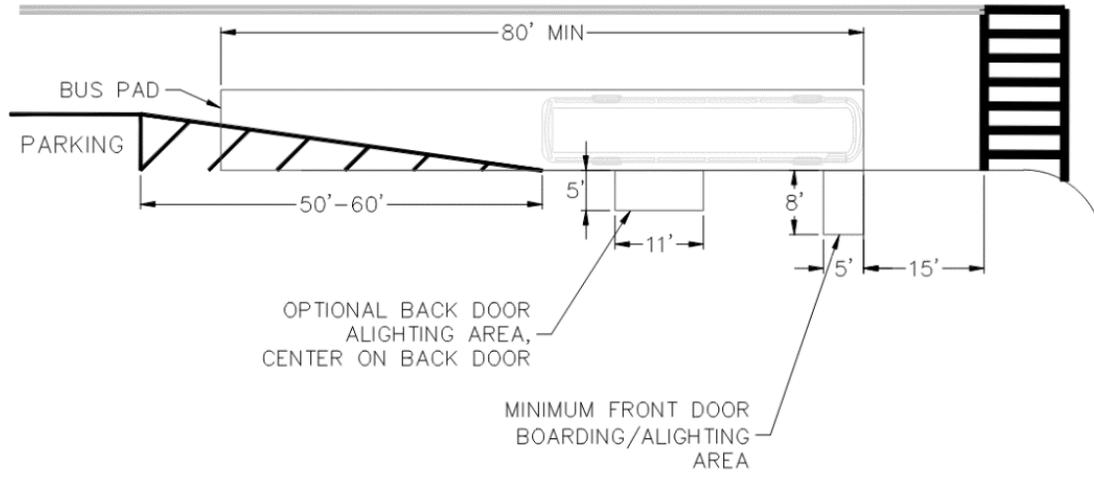
Far-Side Pull-out Stop



GENERAL GUIDELINES

- Maintain a minimum of 10' clear distance from crosswalk to bus dwelling location at all times.
- Bus pads shall be a minimum of 8.5' wide.
- Bus pads shall end before the crosswalk. If the bus pad must extend into the crosswalk, the bus pad shall extend across the full width of the crosswalk.

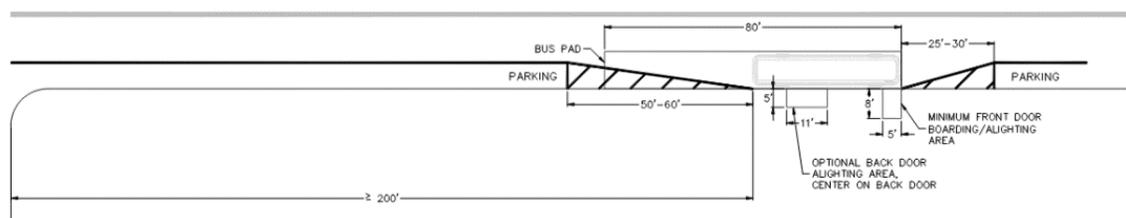
Near-Side Pull-Out Stop



GENERAL GUIDELINES

- Maintain a minimum of 10' clear distance from crosswalk to bus dwelling location at all times.
- Bus pads shall be a minimum of 8.5' wide.
- Bus pads shall end before the crosswalk. If the bus pad must extend into the crosswalk, the bus pad shall extend across the full width of the crosswalk.

Mid-Block Pull-Out Stop



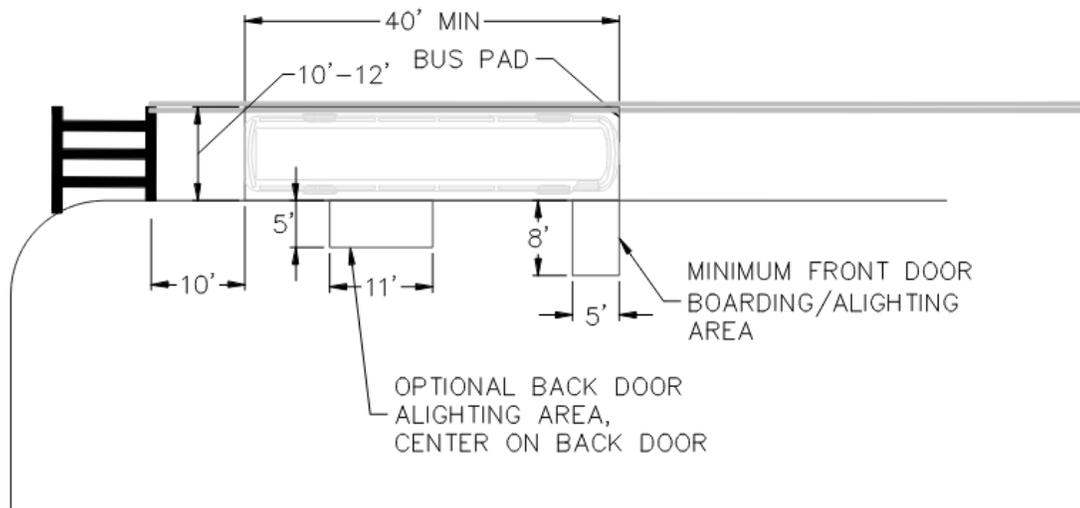
GENERAL GUIDELINES

- Bus pads shall be a minimum of 8.5' wide.
- Bus pads shall end before the crosswalk. If the bus pad must extend into the crosswalk, the bus pad shall extend across the full width of the crosswalk.

IN-LANE STOPS

In-lane bus stops are located in a travel lane, allowing the bus to serve the stop and continue the route without having to merge out and then back into the travel lane. In-lane stops are a low-cost option, requiring a minimum of a sign and ADA boarding area, while saving the bus time since it does not have to pull out into traffic. In-lane stops also result in a more compact bus stop zone as compared to pull-out stops, preserving parking and other curbside uses.

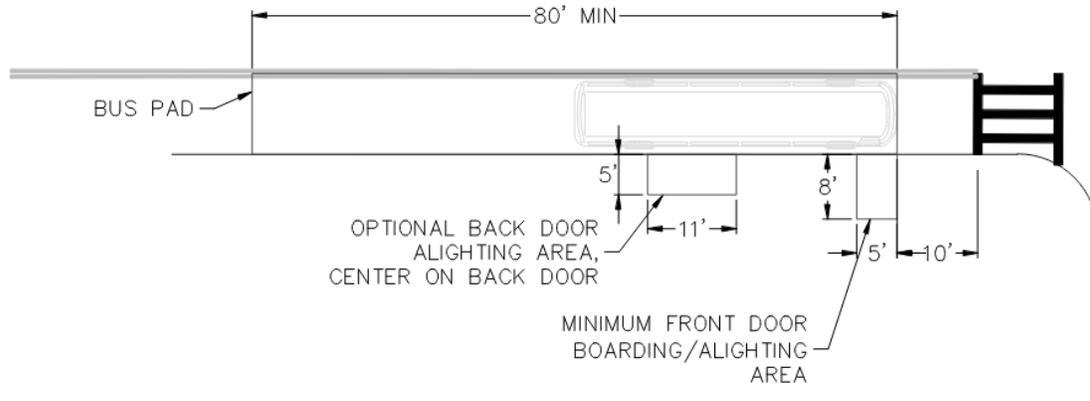
Far-Side In-Lane Stop



GENERAL GUIDELINES

- Maintain a minimum of 10' clear distance from crosswalk to bus dwelling location at all times.
- Bus pads at in lane stops shall extend the full width of the lane.
- Bus pads shall end before the crosswalk. If the bus pad must extend into the crosswalk, the bus pad shall extend across the full width of the crosswalk.

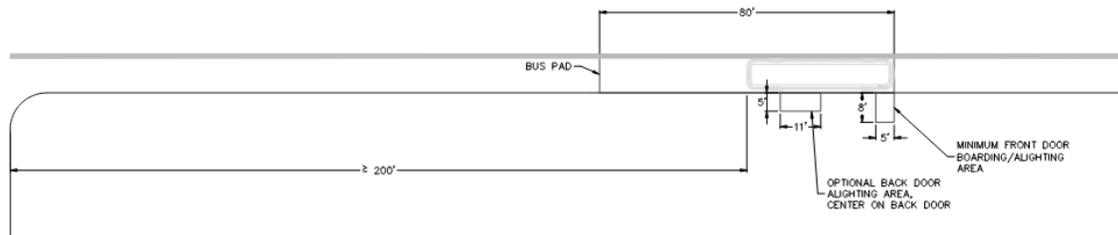
Near-Side In-Lane Stop



GENERAL GUIDELINES

- Maintain a minimum of 10' clear distance from crosswalk to bus dwelling location at all times.
- Bus pads at in lane stops shall extend the full width of the lane.
- Bus pads shall end before the crosswalk. If the bus pad must extend into the crosswalk, the bus pad shall extend across the full width of the crosswalk.

Mid-Block In-Lane Stop



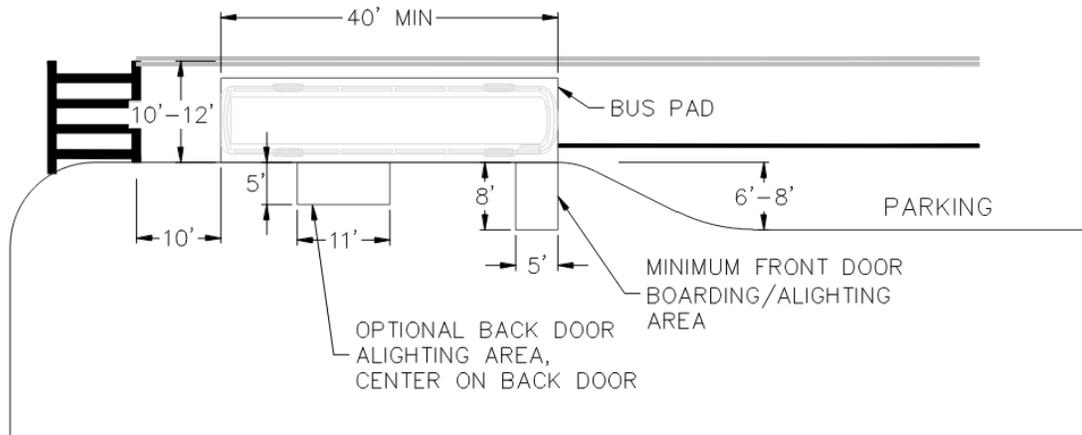
GENERAL GUIDELINES

- Bus pads at in lane stops shall extend the full width of the lane.
- Bus pads shall end before the crosswalk. If the bus pad must extend into the crosswalk, the bus pad shall extend across the full width of the crosswalk.

BOARDING BULB STOPS

Boarding bulb stops use curb extensions to align the transit stop with the parking lane, creating an in-lane stop. Boarding bulbs improve speed and reliability, provide more space for transit passenger amenities, and maintain clear pedestrian paths on the sidewalk. Curb extensions are most effective in dense urban environments with high pedestrian activity or areas where the sidewalk is too narrow to accommodate a bus stop. Boarding bulb stops also reduce the need to displace parking spaces since a bus serving a stop on a curb extension will stop in the traffic lane instead of traveling into the parking lane as they do at pull-out bus stops. Finally, boarding bulb stops work well in conjunction with crosswalks by reducing the crossing distance for pedestrians.

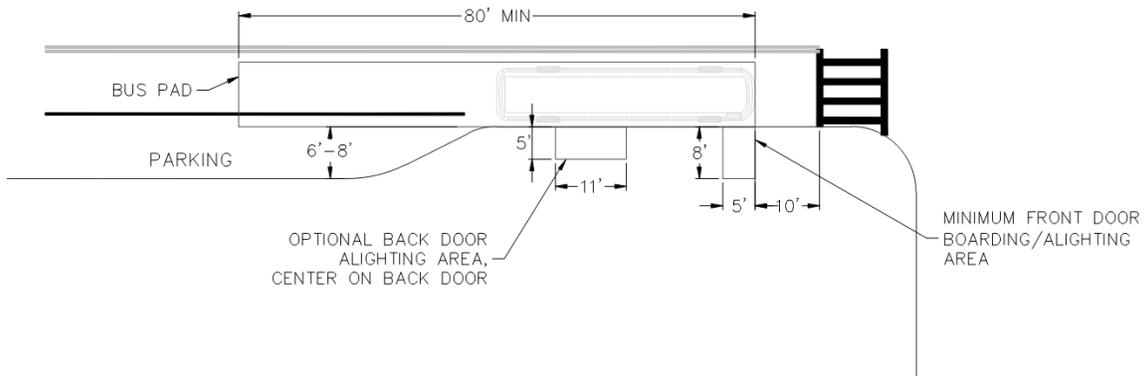
Far-Side Boarding Bulb Stop



GENERAL GUIDELINES

- Maintain a minimum of 10' clear distance from crosswalk to bus dwelling location at all times.
- Bus pads at boarding bulb stops shall extend the full width of the lane.
- Bus pads shall end before the crosswalk. If the bus pad must extend into the crosswalk, the bus pad shall extend across the full width of the crosswalk.
- Bus bulbs shall be long enough to serve all doors of at least one design vehicle.
- Bus bulbs shall extend up to 2' from the edge of the travel lane. Bus bulbs typically extend out 6-8' from the curb.

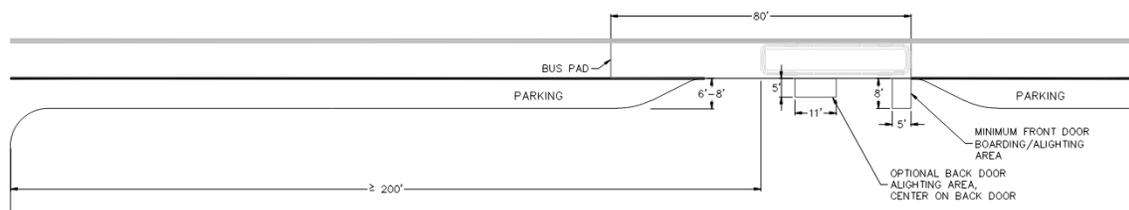
Near-Side Boarding Bulb Stop



GENERAL GUIDELINES

- Maintain a minimum of 10' clear distance from crosswalk to bus dwelling location at all times.
- Bus pads at boarding bulb stops shall extend the full width of the lane.
- Bus pads shall end before the crosswalk. If the bus pad must extend into the crosswalk, the bus pad shall extend across the full width of the crosswalk.
- Bus bulbs shall be long enough to serve all doors of at least one design vehicle.
- Bus bulbs shall extend up to 2' from the edge of the travel lane. Bus bulbs typically extend out 6-8' from the curb.

Mid-Block Boarding Bulb Stop

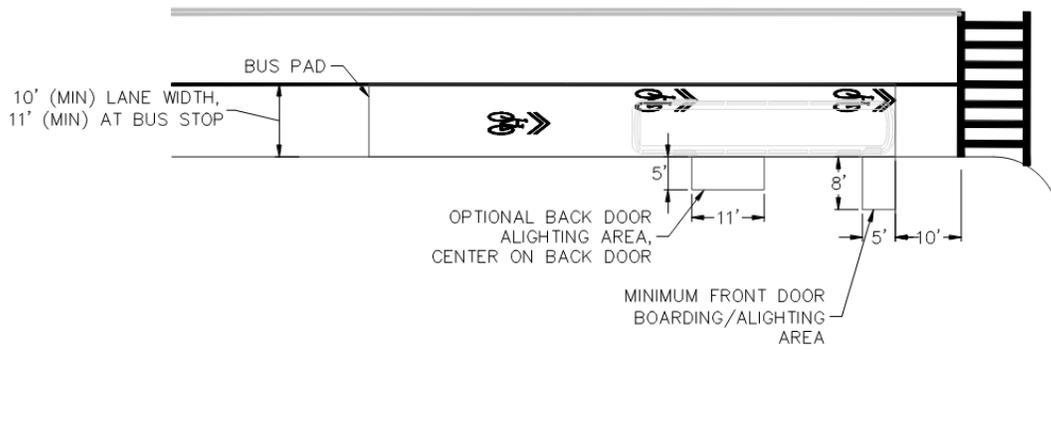


GENERAL GUIDELINES

- Bus pads at boarding bulb stops shall extend the full width of the lane.
- Bus pads shall end before the crosswalk. If the bus pad must extend into the crosswalk, the bus pad shall extend across the full width of the crosswalk.
- Bus bulbs shall be long enough to serve all doors of at least one design vehicle.
- Bus bulbs shall extend up to 2' from the edge of the travel lane. Bus bulbs typically extend out 6-8' from the curb.

SHARED BUS-BIKE LANES

Shared bus-bike lanes improve the speed, reliability, and efficiency of bus service and enhance safety for cyclists. Stops adjacent to a bus lane may have high passenger volumes, since typically bus lanes are used for corridors with heavy transit usage. Shared bus-bike lanes are applicable on curbside or offset bus lanes with no existing or planned dedicated bicycle facility.



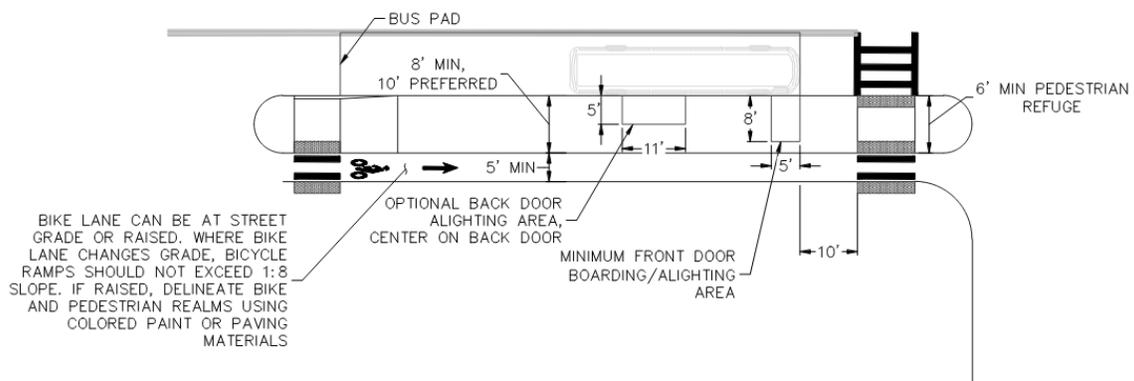
GENERAL GUIDELINES

- Maintain a minimum of 10' clear distance from crosswalk to bus dwelling location at all times.
- In shared bus-bike lanes, bus pads shall extend the full width of the lane to provide a level surface to both buses and bikes.
- Bus pad lengths shall be 80' at near-side and mid-block stops and 40' at far-side stops.
- Bus pads shall end before the crosswalk. If the bus pad must extend into the crosswalk, the bus pad shall extend across the full width of the crosswalk.
- In shared bike-bus lanes, shared lane markings shall be placed in the center or left side of the lane. At bike/bus stops, shared lane markings shall be placed at the left side of the lane.

SIDE BOARDING ISLAND STOPS

Side boarding island stops, also referred to as floating stops, are designed to channelize a bike lane between the sidewalk and the bus stop boarding zone itself. Boarding islands eliminate the interaction between buses and bicycles at the curb, and allow the bus to stop in-lane while maintaining physical bike lane protection and providing separation to more users. Pedestrians crossing the bicycle lane should be channeled into clearly-marked crossings to reduce conflicts between bicycles and pedestrians.

While there are currently no examples of floating bus stops in the BCDCOG region, this type of bus stop facility is an emerging design.



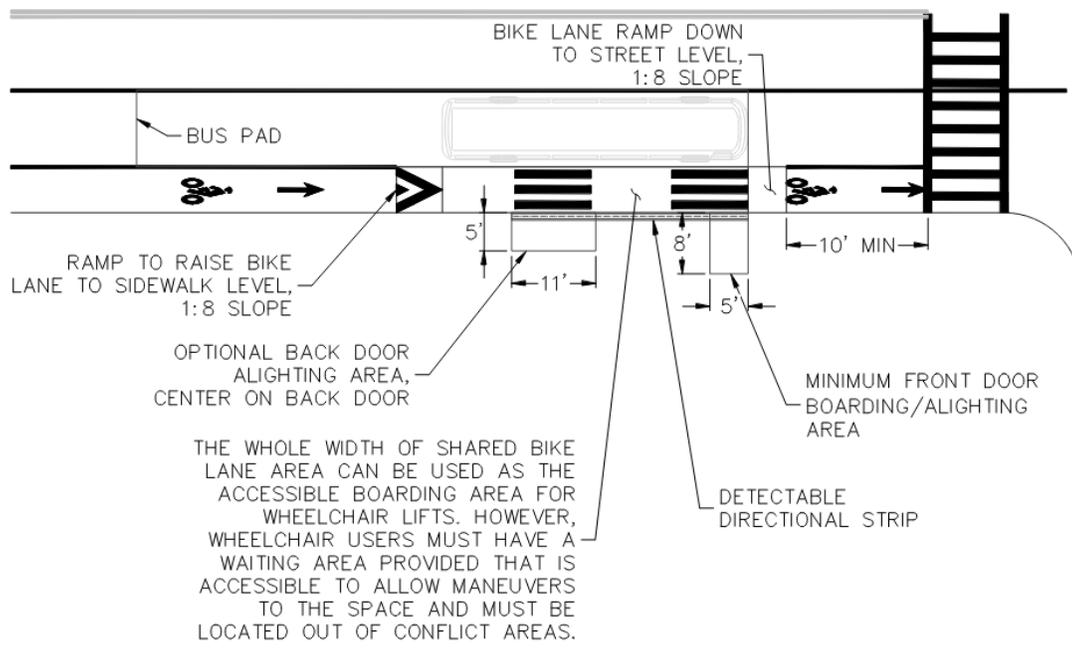
GENERAL GUIDELINES

- Maintain a minimum of 10' clear distance from crosswalk to bus dwelling location at all times.
- Bus pads shall be a minimum of 8.5' wide.
- Bus pad lengths shall be 80' at near-side and mid-block stops and 40' at far-side stops.
- Bus pads shall end before the crosswalk. If the bus pad must extend into the crosswalk, the bus pad shall extend across the full width of the crosswalk.
- Bus island shall be long enough to serve all doors of at least one design vehicle.

SHARED CYCLE TRACK STOPS

Shared Cycle Track stops are used when limited right-of-way precludes boarding islands on streets with standard bicycle lanes. In this configuration, a bike lane or protected bike lane rises and runs along the boarding area, along the curb, rather than wrapping behind the boarding area. Bicyclists can ride through the boarding area when no transit vehicles are present, but must yield the space to boarding and alighting passengers when a bus stops.

While there are currently no examples of shared cycle track stops in the BCDCOG region, this type of bus stop facility is an emerging design.



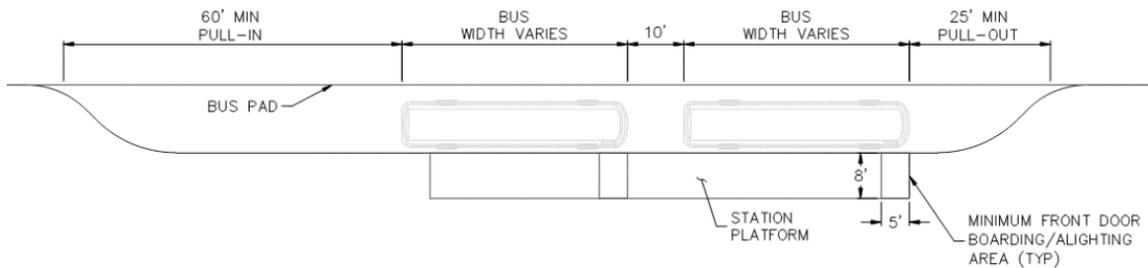
GENERAL GUIDELINES

- Maintain a minimum of 10' clear distance from crosswalk to bus dwelling location at all times.
- Bus pads shall be a minimum of 8.5' wide.
- Bus pad lengths shall be 80' at near-side and mid-block stops and 40' at far-side stops.
- Bus pads shall end before the crosswalk. If the bus pad must extend into the crosswalk, the bus pad shall extend across the full width of the crosswalk.
- Ensure bicyclists are in view of traffic at intersections.
- Maintain a 10' distance between the bike ramp exiting the boarding platform and crosswalk.

TRANSFER CENTERS

Several of CARTA’s stops that experience high ridership as well as a high volume of transfers are designated as Transfer Centers. Transfer Centers are often installed along the systems most frequent transit routes and should have design footprints that accommodate multiple buses at a time.

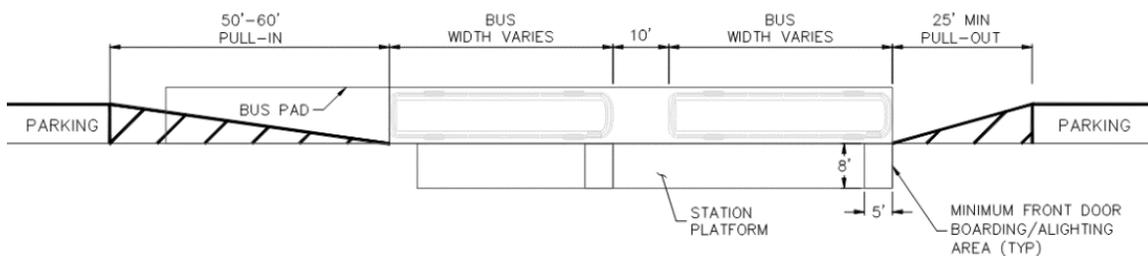
Pull-Out Transfer Center



GENERAL GUIDELINES

- All bus stops and transfer centers shall be long enough to accommodate the number and types of buses using it.
 - For each additional bus, add the length of bus plus 10’ of clearance between the consecutive buses.
- Accommodations such as emergency call boxes, area maps, real-time information displays, shelters, benches, lighting, bicycle racks, and trash receptacles are preferred at transfer centers.

In-Lane Transfer Center

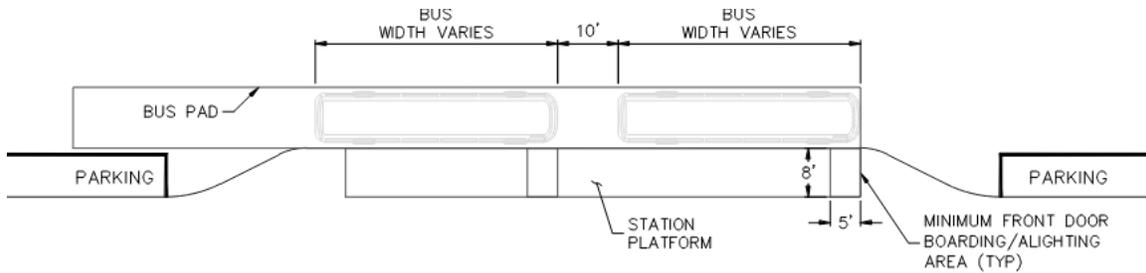


GENERAL GUIDELINES

- All bus stops and transfer centers shall be long enough to accommodate the number and types of buses using it.
 - For each additional bus, add the length of bus plus 10’ of clearance between the consecutive buses.

- In-lane transfer centers should not be used as dwelling centers at the end of route lines.
- Accommodations such as emergency call boxes, area maps, real-time information displays, shelters, benches, lighting, bicycle racks, and trash receptacles are preferred at transfer centers.

Bulb-Out Transfer Center



GENERAL GUIDELINES

- All bus stops and transfer centers shall be long enough to accommodate the number and types of buses using it.
 - For each additional bus, add the length of bus plus 10' of clearance between the consecutive buses.
- Bulb out transfer centers should not be used as dwelling centers at end of route lines.
- Accommodations such as emergency call boxes, area maps, real-time information displays, shelters, benches, lighting, bicycle racks, and trash receptacles are preferred at transfer centers.