

WHATCOM TRANSPORTATION AUTHORITY BUS STOP DESIGN GUIDELINES

AUGUST 2022



WTA

CONTENTS

Document Purpose	2
Service Types	3
Current Situational Overview	4
Bus Stop Program	4
Bus Stop Elements	7
Minimum Standards	7
WTA GO Lines	8
Amenities	9
Shelters	9
Benches	9
Lighting	9
Trash Bins	10
Bicycle Parking	10
Requests From Outside Agencies to Install Bus Stop Amenities	10
Site Selection	10
Landowner	10
Physical Characteristics	11
Bus Zone	11
Ramp Deployment	11
Sight Distance for Transit Operators	12
Sight Distance for Other Road Users	12
Stop Spacing	12
Proximity To Trip Generators and Pedestrian Facilities	12
Placement In Relation to Crosswalks and Intersections	13
Bus Pullouts	14
Bus Stop Islands	15
Paratransit	16
Glossary of Terms and Acronyms	17
References & acknowledgments	18
Appendix	19
Bus Turning Radius	19
Vehicle Dimensions and Height Clearances	19
Duo-Guard Bus Shelter Diagrams – for internal use only	20

DOCUMENT PURPOSE

The purpose of this document is to provide WTA staff, agency partners, and private developers a consistent set of guidelines for designing transit stops in Whatcom County. The guidelines are intended to be used when designing new stops, relocating existing stops or upgrading stops, whether part of ongoing WTA work, a local engineering project or a new development.

WTA recognizes that every location in its network is unique, and that a given transit stop's jurisdictional and physical context may offer opportunities to meet these guidelines in some ways but not in others. As such, this should be viewed as a guiding document, offering templates for desirable bus stop facilities and elements wherever it is possible to provide them. Use of the guidelines will enable high quality and a more consistent design of stops.

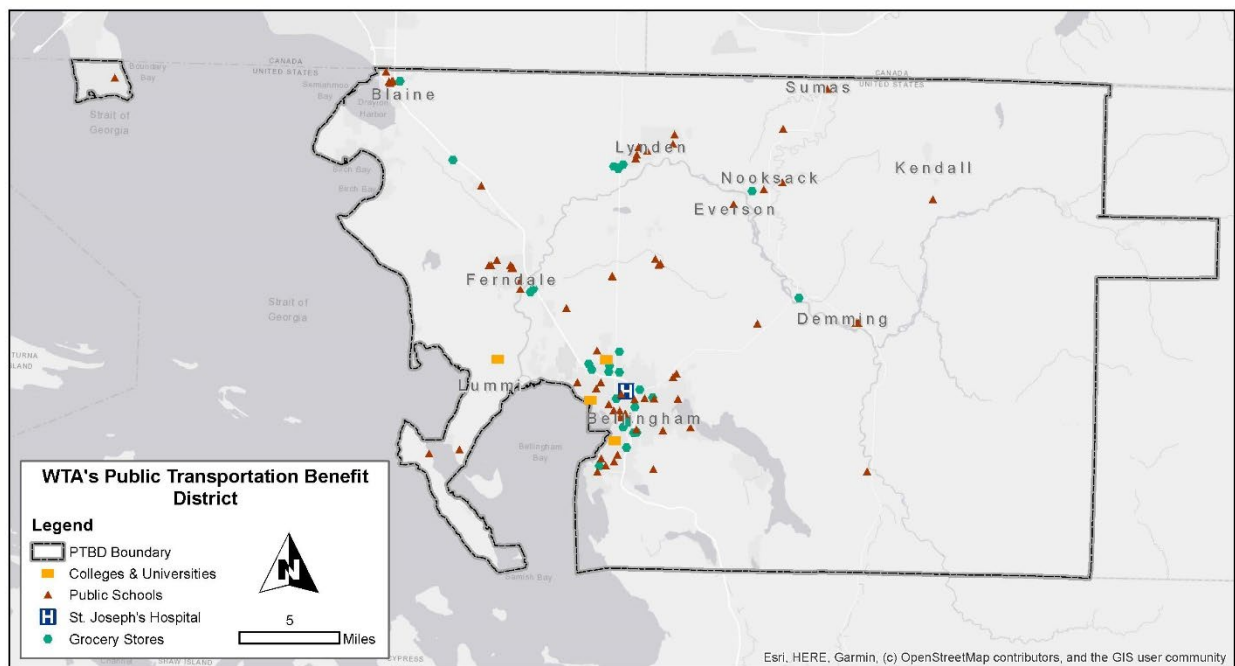
The information in this document is current as of August 2022 and will be updated as needed.

Thank you to Pace Suburban Bus for allowing WTA to use graphics from their document "Transit Supportive Guidelines for the Chicagoland Region" (2013).

This document was prepared by WTA Planning Division Staff. Please contact WTA with any questions at planning@ridewta.com or 360-676-7433.

WTA Background

WTA is the public transportation provider for Whatcom County offering fixed route, paratransit, on-demand, vanpool, and zone service. Each service type is explained in detail below.



SERVICE TYPES

Fixed Route

WTA's fixed routes provide service to designated bus stops using large transit buses. WTA offers 28 fixed routes, including a network of four high-frequency corridors. WTA provides service seven days a week, with more limited service on Saturdays, Sundays, and evenings.

Paratransit

WTA's paratransit service provides curb-to-curb (and if needed, door-to-door) transportation to riders whose disability prevents them from riding our fixed route bus system. Paratransit service is designed to be equal to—not better than—our fixed route service. For this reason, paratransit's service area and hours of operation mirror those of our fixed routes. Everyone who rides paratransit must qualify and be approved before riding.

Vanpool

The vanpool program allows groups of three or more people to "lease" a WTA-owned van for the purpose of commuting to and from a common worksite. The vanpool group pays a fare, based on the number of miles the van travels each month. Fares cover the cost to operate the van, including fuel, maintenance, and insurance.

Lynden Hop

An on-demand service that allows you to hail a ride starts and ends within the Lynden service boundary. Riders can hail a ride by using the WTA Ride mobile app, online or by calling WTA. The Lynden Hop is open to anyone and is wheelchair accessible. The Lynden Hop is considered a curb-to-curb service and does not stop at bus stops.

Zone Service

Zone service provides limited transit service to rural areas of Whatcom County. There are no eligibility requirements for using zone service; anyone within the designated area can request a ride. Service is only available to each zone on certain days of the week and advance reservations are required.

Flex Service

Routes that offer flex service serve bus stops on a regular schedule and can also "flex" off-route within the flex service area. There are no eligibility requirements; flex service is available to everyone. Advance reservations are required. There are some locations that we cannot access with a 40-foot bus, in those instances we ask individuals to meet us at the closest accessible location. The WTA Mobility Team performs access checks when requested to ensure safety and accessibility for both the passenger and the bus.

CURRENT SITUATIONAL OVERVIEW

As of August 2022, WTA has 906 bus stops. A system wide inventory in 2020 identified 168 (19%) having a shelter and 249 (27%) having a bench. 412 (46%) have a 5-foot-wide by 8-foot-deep boarding pad and are considered accessible for a person with a mobility device.

ADA Upgrade Timeline

WTA's goal is to upgrade all bus stops to be ADA compliant by 2040, or sooner, if possible. There are 494 bus stops in our service area that need to be upgraded with a 5-foot-wide by 8-foot-deep boarding pad. The 2021 estimated cost to install a pad is \$4,500 but may be more depending on site preparation and lay of the land. To meet the 2040 goal, WTA and local jurisdictions would need to upgrade 27 stops per year.

Each new bus stop is installed to meet ADA requirements.

BUS STOP PROGRAM

Purpose

The purpose of the bus stop program is to create a uniform and easily identifiable space for passengers to wait, board and alight a WTA fixed route bus.

The Bus Stop Program is governed by WTA Policy POL-ALL-703-01 *Establishing and Maintaining Bus Stops and Their Amenities*.

Function and Responsibilities

Nearly every department in WTA has a role to play in the bus stop program.

Planning: Work with Operations to determine the best location for new bus stops and the relocation and removal of existing bus stops. Regularly review development plans to stay informed of construction projects that may impact operations. Create bus stop flats. The Director or designee is responsible for the decision on determining the location of bus stops, benches and shelters, and authorizes their removal.

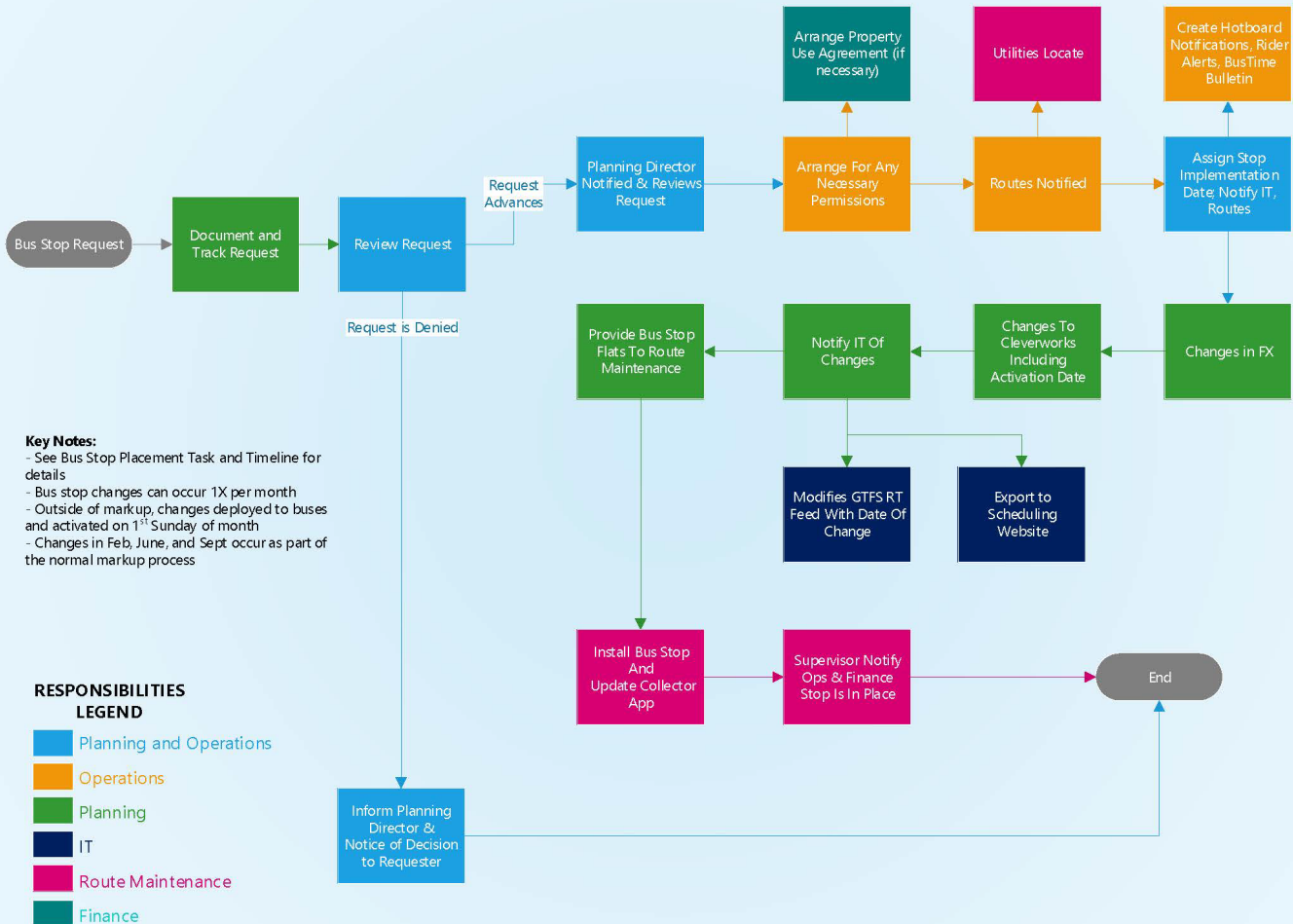
Operations: Analyzes bus stop locations from the perspective of a fixed route transit operator. Determines if the stop can be safely accessed with a transit coach. Files permit applications with local jurisdictions.

Facilities: Installs and maintains bus stops and amenities at the stop.

Finance: Maintains an inventory of shelters and works with landowners on property use agreements.

Bus Stop Change Request Flow-Chart

WTA BUS STOP PLACEMENT PROCESS OVERVIEW



Relocation or Removal Criteria

Requests for the relocation or removal of bus stops are reviewed by both Planning and Operations staff. Bus stops may be relocated or removed if the current location poses a safety hazard to passengers, the landowner or bus operations.

Day-to-Day Operations

Route Maintenance has primary responsibility for the day-to-day upkeep of all WTA bus stops, including emptying trash bins and performing maintenance on benches and shelters.

Construction Considerations

The presence of a bus stop should be considered during a construction project design phase to ensure the stop meets ADA accessibility post construction.

When a construction project takes place in the vicinity of a WTA bus stop that requires the temporary removal of that stop, the following steps should be taken:

1. The jurisdiction or agency responsible for the construction notifies WTA at least 14 days prior to the start of construction.
2. WTA staff will post a Rider Alert at the stop to inform passengers of the upcoming bus stop closure.
3. WTA staff will remove the bus stop sign post.
4. Every effort should be made to ensure non-ADA compliant bus stops are made compliant during construction.
5. The responsible agency will notify WTA once construction is complete.
6. WTA staff will install the bus stop sign post and other amenities as warranted.

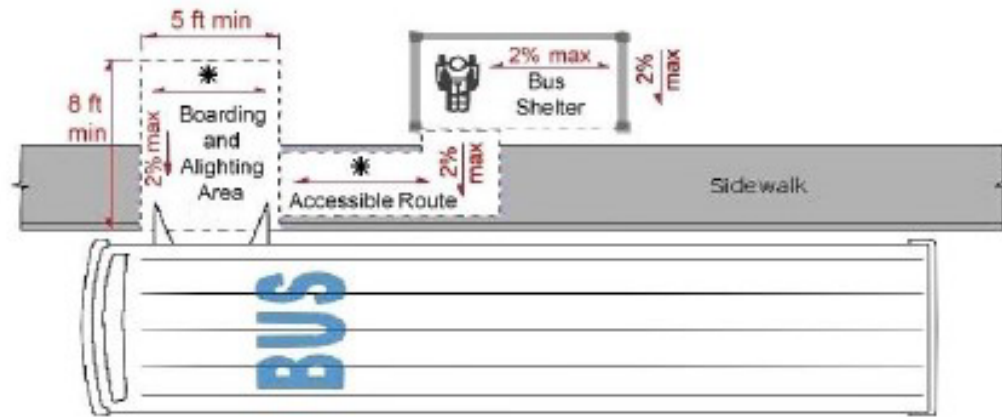
BUS STOP ELEMENTS

MINIMUM STANDARDS

At a minimum, each bus stop should have:

1. **Bus Stop Blade:** Identifies the location as a bus stop. Blades may be rectangular or round and are affixed to the top of a post perpendicular to the road. They contain the WTA logo, a no parking symbol and a bus icon. There must be at least 7 feet 8 inches of clearance from the bottom of the blade to the ground.
 - A standard blade is 30 inches long
 - A round GO Line blade is 27 inches in diameter
2. **Signpost:** a green metal plated post which measures 10 feet from the ground to the top of the post. The post should be installed at the approximate location that people will board at the bus's front door.
3. **Stop Specific Time Schedule**
AKA Flat: Displays the time the bus stops at that specific stop, includes the stop ID, stop name, information about the WTA Bus Tracker App and WTA contact information. A single flat should be mounted with 40 inches from the bottom of the schedule holder to the ground. A post with two schedules should have 50 inches from the ground to the center of the two schedule holders.
4. **Landing Area:** To meet ADA standards, the landing area (or boarding and alighting area) must be 5-feet-wide (parallel to the road) and 8-feet-deep (perpendicular to the road) on a firm ground surface. Due to the amount of precipitation Whatcom County receives, WTA interprets a "firm ground surface" to be concrete or asphalt.





* Slope may be the same as the roadway

Image from WSDOT Design Manual
M 22-01.12 November 2015

Signage

Signage at bus stops may differ, depending on the bus route that serves the stop, the volume of boardings, and the presence of a shelter.

Some stops, especially those with very high boardings at Western Washington University and Whatcom Community College, have large vinyl stop specific schedule signage inside the shelter. This is due to the high volume of people waiting for the bus and their inability to easily read a standard-sized time schedule mounted to the signpost.

WTA GO Lines

Stops and shelters along WTA GO Lines are branded with round 27-inch diameter bus stop blades and the color scheme associated with that route (Blue, Plum, Gold, or Green).



AMENITIES

A bus stop may have additional amenities such as a shelter, bench, lighting, trash receptacle or bicycle parking. Most of the amenities at our bus stops are installed and maintained by the WTA Route Maintenance Crew, there are a few exceptions, like some of the stops located on WWU's campus.

Shelters

WTA has 7 different types of shelters. As of January 2022, WTA has a contract with Duo-Guard to purchase shelters. The shelters are named based on the number of panels in the back, the number of panels on the right side then the number of panels on the left side. For example, a shelter with 3 horizontal panels across the back and one panel on each side would be labeled 3-1-1. A shelter with 4 panels in the back, 1 on the right and 2 on the left would be labeled as 4-1-2.



Example of 4-2-2 shelter

A stop that has at least 25 boardings per weekday is a good candidate for a shelter. Stops with fewer boardings with trip generators like housing for older adults or people with disabilities, schools, medical facilities, or other social services may also be recommended for a shelter.

Benches

In areas that WTA is unable to install a shelter due to space constraints or low ridership, WTA may install a bench.

There are two standard bench types that WTA installs:

- Metal benches
- Ironwood seat with concrete legs

Lighting

There are two types of lighting to consider at a bus stop. One type is a flashing beacon located on top of the bus stop to alert the driver that someone is waiting. This is typically installed in rural areas or other areas without street lighting. This lighting does not project downward to the passenger. The other type of lighting will light up the area around the bus stop and may help the passenger feel safer while waiting and will alert the driver that someone is waiting.

Trash Bins

55-gallon trash receptacles are placed at stops based on need. WTA route maintenance staff empties the bins once or twice a week, depending on use.

Bicycle Parking

All WTA transit stations have bicycle parking. Some transit agencies install bike racks at bus stops, especially those located in rural areas where people may need to travel a relatively long distance to get to the stop. As of 2021, WTA does not have bike racks located at bus stops. Bicycle racks may be necessary to improve bus-bike connections, particular in locations where there is heavy bicycle traffic and bus bike racks are often full.

Requests From Outside Agencies to Install Bus Stop Amenities

To provide consistent maintenance and cleaning, all new shelters and other amenities should meet WTA specifications outlined above. WTA may accept amenities funded by other entities if those amenities meet WTA requirements. However, WTA cannot guarantee timing or location of installation.

WTA will not maintain amenities procured and installed by others that do not meet these specifications. In addition, WTA would require an agreement describing the maintenance and cleaning responsibilities by others. Non-WTA shelters should offer the same or better level of protection from the elements and must not block motorists' or pedestrians' line of sight.

SITE SELECTION

There are many things to consider when deciding where to place a bus stop. This includes who owns the land, the passenger's accessibility to the proposed bus stop and the sites physical characteristics, such as surface type, slope, and presence of lighting. We also must consider the site distance for bus operators and the proximity to trip generators. Each of these considerations is explained in detail below. It is important to remember that the environment at and leading up to each stop is unique, so staff should use their expertise when determining where to locate a stop.

Landowner

Except for our transit stations, WTA does not own the land where our bus stops reside. When possible, we place our stops in a local jurisdictions right-of-way (ROW), or we work with a local landowner on an easement. When that is not possible, we work with private landowners to place a stop in their property. WTA and the landowner sign a property use agreement, allowing us use of the space for our bus stop.

Physical Characteristics

We evaluate the physical characteristics of a proposed bus stop through the lens of the safety and comfort of the person waiting for the bus. We document the ground type, i.e., asphalt, concrete sidewalk, gravel, grass, dirt, and we measure the slope. We note the presence of lighting, proximity to traffic and the space available for someone to wait.

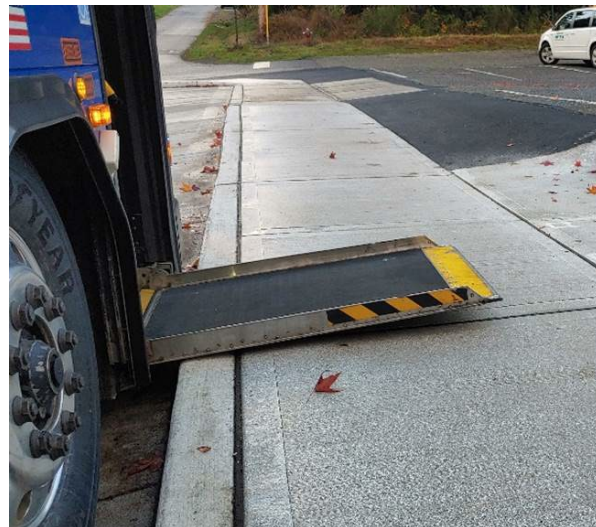
Bus Zone

Bus zones are established to provide an area for buses to stop parallel to the curb, in a designated “no parking” area. Preferably, both the front and rear door will be aligned with suitable landing areas. No obstructions should be within 5’ of the rear of the bus so the tail doesn’t hit anything when the bus pulls away from the curb. Generally, a zone for a 30’ bus is 70’ long, a zone for a 40’ bus is 80’ long and a zone for a 60’ bus is 120’ long. These lengths may need to increase if the bus zone is in between two objects such as a bulb-out or on-street parking.

Ramp Deployment

All WTA revenue vehicles are ADA accessible and either contain a ramp or a lift so that people using a mobility device may board the bus. Ramp deployment must be considered when siting bus stops. The ramp extends 4 feet from the bus.

The photo on the left, below, shows a ramp deployed correctly. The photo on the right is an example where a ramp is unable to be deployed correctly due to the slope of the roadway and the height of the sidewalk.



Sight Distance for Transit Operators

A bus operator must be able to see the passenger waiting at the bus stop. Their view cannot be obscured by vegetation, buildings, vehicles, or other obstacles. An operator also needs adequate visibility to merge back into traffic after stopping.

Sight Distance for Other Road Users

An important safety consideration is the sight distance for other roadway users. We need to ensure other people driving on the roadway will have adequate time to see and react to a bus that is stopped in or off the roadway. For example, siting a bus stop after a bend in the road would be poor placement since other roadway users would not have adequate time to safely stop their vehicle.

Stop Spacing

Deciding how far apart to place bus stops depends upon the presence of pedestrian facilities, trip generators, route frequency and the ability for the bus to safely stop.

Urban: in an urban, or city environment, the ideal spacing between bus stops is one quarter mile (1,320 feet). Distances under a quarter mile result in increased stopping and the inability to accelerate to the speed limit, which results in a longer run-time. Distances over a quarter mile may result in passengers needing to walk further, which makes transit less appealing and convenient. A quarter mile is about a five-minute walk.

Rural: in rural areas, stops may be placed further apart due to the lack of trip generators and the lack of safe places to stop the bus.

Proximity To Trip Generators and Pedestrian Facilities

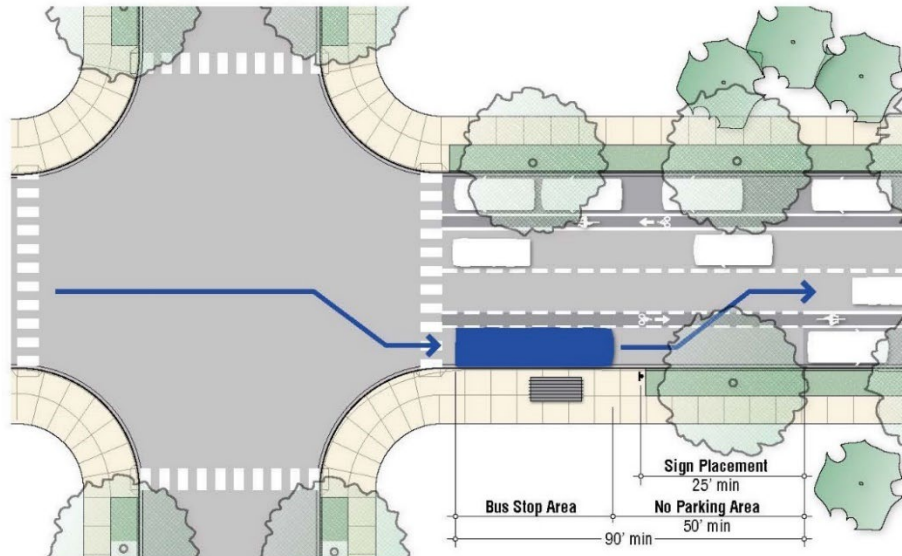
When possible, bus stops should be placed in a high-density area that will generate trips. This includes multi-family housing, educational institutions, grocery stores, social services, and large employers.

The pedestrian facilities that lead to and are at the proposed bus stop should be evaluated. Priority should be given to bus stops that can be located adjacent to a sidewalk or multi-use path.

Placement In Relation to Crosswalks and Intersections

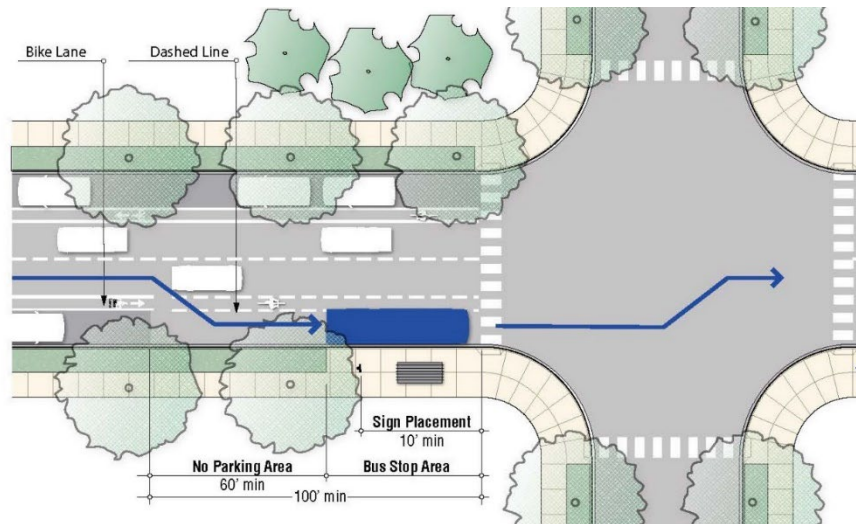
When locating a bus stop near a marked crosswalk or intersection, one must choose to locate it either far-side or near-side. There are safety and operational considerations for both placements.

Far-Side placement would result in the bus stop being located after, or past the crosswalk or intersection. A benefit of far-side placement at intersections is that after stopping for passengers, the bus will not be stopped shortly thereafter at a traffic light. Stops should be placed at least 5 feet from the edge of the crosswalk.



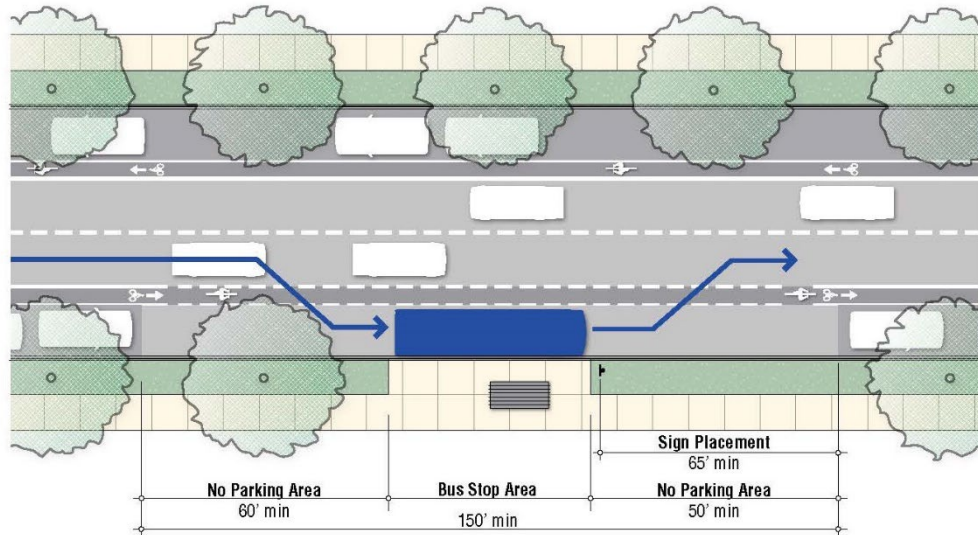
Far-Side Bus Stop Image courtesy of Pace Suburban Bus

Near-Side placement would result in the bus stop being in front of, or before the crosswalk or intersection. A safety consideration when locating near-side of a crosswalk is drivers going around the stopped bus and entering the crosswalk while the passenger is in it. Stops should be placed at least 5 feet from the edge of crosswalk or end of radius, whichever is further from the intersection.



Near-Side Bus Stop Image courtesy of Pace Suburban Bus

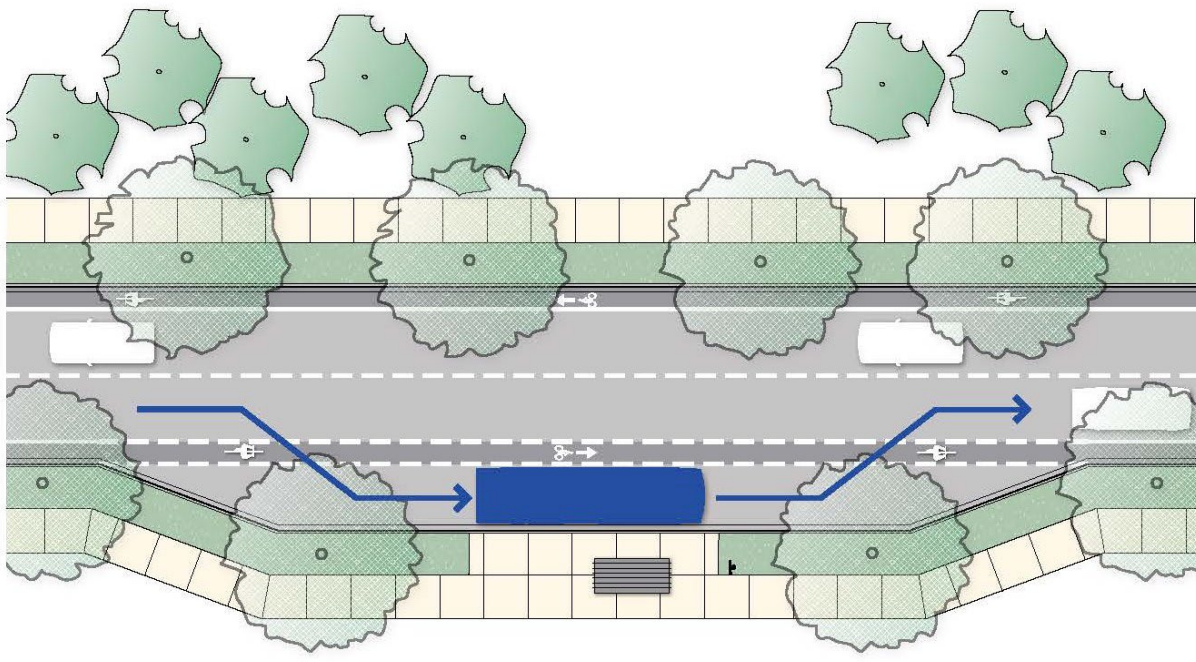
Mid-Block placement would result in the bus stop being placed between intersections. While generally less congested than intersections, a safety consideration is the location of the nearest crosswalk since mid-block bus stops often increase the distance a person must travel between the bus stop and a protected intersection. The installation of a pedestrian activated or High-Intensity Activated Crosswalk (HAWK signal) near the bus stop allows for a safe crossing where a lighted intersection is not warranted.



Mid-Block Bus Stop Image courtesy of Pace Suburban Bus

Bus Pullouts

A bus pullout is a dedicated stopping area with deceleration/acceleration tapers, where buses pull completely out of the lane of travel.



Bus Pullout Image courtesy of Pace Suburban Bus

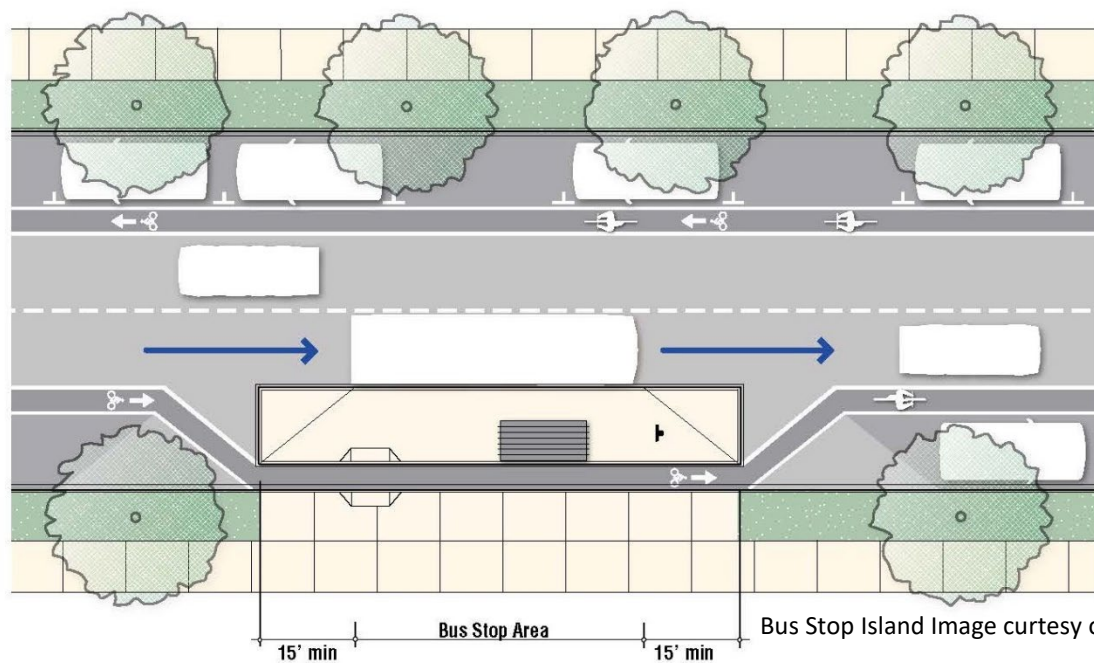
Pullouts may be undesirable because they cause delays and increase the chance of collisions as buses re-enter the roadway.

However, there are some circumstances where pullouts are needed:

- Washington State law recommends that any bus stop on a State Route, outside City limits be completely off the road. Exceptions may be made if the speed limit is under 45 mph and if it is a multiple lane road.
- On non-state roadways with a speed limit over 40 mph, every effort will be made to pull off the roadway. This is based on Transit Cooperative Research Program (TCRP) recommendations, which are lower than the WSDOT requirement of 45 mph.
- At heavily used stops, those where two buses are likely to be serving the stop simultaneously, at stops with longer than average bus dwell times, such as those serving disabled or elderly populations and where otherwise required.
- Layover points where the Operator takes a break or must wait for a connecting bus.
- At a location where an in-road stop may result in increased rear-end collision risk due to roadway geometry.

Bus Stop Islands

A bus stop island is an in-street boarding island that is placed either between general travel lanes or between a general travel land and a bike lane, which allows people on bikes to continue in the bike lane instead of merging into general traffic to pass the stopped bus.



Bus Stop Island Image courtesy of Pace Suburban Bus

PARATRANSIT

While Paratransit does not use traditional bus stops, there are some safety considerations with regards to the pick-up and drop-off locations. For new commercial construction where pick up will be at the street, a parking space of at least 45 feet long with the curb painted yellow is needed for ease of access.

The sidewalk adjacent to the parking spot should be free from obstructions such as trees, bushes and light poles. A boarding area at the minimum, should have an all-weather hard surface with good traction, and be 5 feet wide by 8 feet long. The boarding area should not have a slope of more than 2% and have accessible access to the adjoining sidewalk.



GLOSSARY OF TERMS AND ACRONYMS

ADA – Americans with Disabilities Act

Blade – a physical sign affixed to a pole that identifies an area as a bus stop

Bus Pullout – a bus stop zone that is fully separated from the vehicle travel lane

Bus Zone – the area parallel to the roadway at a marked bus stop where a transit vehicle stops and passengers load and unload.

Density – how many people live or work in a defined geographic area

Far Side – after or past an intersection or crosswalk

Fixed Route – vehicles that travel on a predetermined route with a predetermined schedule

Flat – signage at a bus stop that displays stop specific time information

GO Line – A WTA bus route with 15-minute frequency

Landing Area – the area outside the bus where the ramp lands after being deployed

Large Employer – An employer with at least 100 employees

Near Side – before or in front of an intersection or crosswalk

On-Demand – curb to curb transit service that operates within a defined area and timeframe without predetermined routes or schedules, the service is open to everyone and passengers may request a pick-up in real time.

Paratransit – ADA compliant transit service which provides door to door transportation for people who are unable to ride fixed route and whose trip begins or ends within a $\frac{3}{4}$ mile corridor of the fixed route service. People must qualify to use this service and book their trips a day ahead.

PTBA – Public Transportation Benefit Area

Ramp – a sloped surface that connects the passenger boarding area outside the bus to the inside of a bus allowing people who use a mobility device to board the bus

Range – the total number of miles a bus can drive on a full charge (electric) or full tank (diesel)

ROW – Right of Way

TCRP – Transit Cooperative Research Program

Trip Generator – an origin or destination at which people may ride the bus to or from

WSDOT – Washington State Department of Transportation

WTA – Whatcom Transportation Authority

REFERENCES & ACKNOWLEDGMENTS

The following manuals and documents were referenced in the creation of this document:

- Transit Cooperative Research Program Report 19 Guidelines for the Location and Design of Bus Stops (1996)
- Washington State Department of Transportation Design Manual Chapter 1430 Transit Facilities (2015)
- National Aging and Disability Transportation Center Toolkit for the Assessment of Bus Stop Accessibility and Safety
- King County Metro Transit Facilities Guidelines (2018)
- Pierce Transit 2016 Bus Stop Manual (2016)
- Rouge Valley Transportation District Bus Stop Design & Planning Guide (2011)
- Sunline Transit Agency 2006 Transit Facilities Design Manual (2006)

APPENDIX

BUS TURNING RADIUS

Bus Length (approximate)	Maximum Turning Radius (see Figure 3)
30 ft	31 ft (TR0)
35 ft	39 ft (TR0)
40 ft	44 ft (TR0)
45 ft	49 ft (TR0)
60 ft	44.5ft (outside front axle, TR0) 17 ft (inside rearmost axle, TR4)

VEHICLE DIMENSIONS AND HEIGHT CLEARANCES

Type of Vehicle	Length	Width	Height Clearance
Ford Transit On-Demand Van	19.6'	97.4"	108"
24-foot Paratransit Bus	24'	96"	115"
26-foot Paratransit Bus	26'	96"	115"
35-foot Fixed Route Bus diesel	35'	102"	129"
40-foot Fixed Route Bus diesel	40'	102"	129"
40-foot Fixed Route Bus hybrid	40'	102"	131.5"
40-foot Fixed Route Bus electric	40'	102"	134"

