MBTA

Bus Stop Design Guide

Better Bus Project

February 2025

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Chapter 1:

Introduction

Introduction

Bus stops are a critical part of the Massachusetts Bay Transportation Authority (MBTA) transit system. Bus stops serve as the first point of access to the broader MBTA network of bus, subway, commuter rail, ferry, and paratransit service for thousands of daily riders. Thoughtful bus stop spacing, placement, design, accessibility, amenities, and signage are essential to improving the rider experience and delivering more reliable bus service.

Across the region, the MBTA provides bus service to approximately 7,000[1] bus stops, connecting hundreds of thousands of daily riders to key destinations and economic opportunities across the region. The MBTA strives to deliver exceptional service to all riders, no matter their travel or accessibility needs, and to provide safe, accessible, comfortable, and convenient bus stops along all bus routes.

Overview

This document provides guidance to key stakeholders who are looking to plan, design, build, or improve new or existing bus stops. The guidance in this document summarizes bus stop planning processes, planning and implementation considerations, bus stop design and layout, accessibility requirements, amenity placement, and branding guidelines.

The primary goals of the Bus Stop Design Guide are to:

- Define preferred standards and requirements for bus stop safety, accessibility, and operations.
- Promote consistency in bus stop placement and design.
- Support transit priority and other operational and capital investments to improve the rider experience.
- Provide expectations to local jurisdictions, developers, and designers to design bus stops that are serviceable by the MBTA and meet federal and state requirements.
- Foster greater use of transit through the provision of accessible, comfortable, and safe transit facilities.

1 MassGIS Data: MBTA Bus Routes and Stops Accessed 01 March 2024. < https://www.mass.gov/info-details/massgis-data-mbta-bus-routes-and-stops>

How to use the guide

The MBTA Bus Stop Design Guide supports decision-making and coordination among the MBTA, local governments and agencies, consultants, developers, and other stakeholders who are planning, siting, and designing bus stops. Advocacy organizations and transit riders will also find this guide useful in understanding MBTA goals, standards, and preferred practices.

The MBTA Bus Stop Design Guide outlines guidance for bus stop spacing, placement, configuration, accessibility, amenities, and signage. The guidance covers key planning factors and common design and implementation considerations to support decision-making across different bus routing and stop conditions. Bus stop planning and design involves multiple stakeholder groups because most bus stops are on municipal or state right-of-way (ROW) as opposed to MBTA property.

This guide helps streamline coordination and promotes more consistent planning and design practices. The audience and users of this document must consider the legal requirements for accessible and safe bus stops as outlined in Chapter 5: Accessibility and Pedestrian Environment, in addition to municipal and state ordinances and design requirements. All plans and final designs must comply with state and federal requirements for safe and accessible bus stops.

See it in action: Engaging with the MBTA

Engagement among stakeholder groups is essential to planning and designing bus stops. **Developers, municipal and state agencies must coordinate with MBTA staff, if there are potential impacts to a bus stop**, including temporary construction impacts or longer-term changes to the roadway. MBTA Service Planning serves as the primary point of contact at the agency triaging communications to the appropriate MBTA staff. Service Planning staff can be reached by email at serviceplanning@mbta.com. Riders can also share feedback on the conditions of their bus stop or an MBTA bus project with Service Planning using the same email address.

Table 1. How to Use the Guide

	Description	MBTA Roles
Chapter 1: Introduction	Orients readers to the purpose, contents, and audience types of the guide.	Relevant to all teams.
Chapter 2: Bus Stop Balancing	MBTA bus stop guidelines for spacing, safety and accessibility, network connectivity, and other factors.	MBTA Service Planning triages with other MBTA staff and municipal planners to determine the appropriate stop spacing for new or existing routes.
Chapter 3: Bus Stop Placement	Siting considerations for ideal stop placement.	MBTA Service Planning coordinates with roadway owners to identify preferred stop locations.
Chapter 4: Bus Stop Layout and Configuration	The design, layout, configuration, and requirements of different bus stop types.	MBTA Service Planning, the Department of System-Wide Accessibility (SWA), and the Capital and Engineering Divisions approve bus stop plans in coordination with roadway owners and developers.
Chapter 5: Accessibility and Pedestrian Environment	Standards for building universally accessible bus stops and mitigating conflicts with other roadway users.	Accessibility guidelines are set by SWA, and the MBTA Capital and Engineering Divisions.
Chapter 6: Passenger Amenities	A framework outlining what amenities go at what bus stop types, site suitability, and details on amenity placement and implementation considerations.	Passenger amenity selection and placement is a part of bus stop planning and design coordinated among the roadway owner, MBTA Service Planning, Street Furniture, and Capital and Engineering Divisions.
Chapter 7: Signage and Customer Information	Printed and digital signage placement, planning, and implementation considerations.	MBTA Service Planning specifies appropriate printed signage and coordinates with the Technology Innovation Department on digital signage such as count down clocks.

Relevant Programs

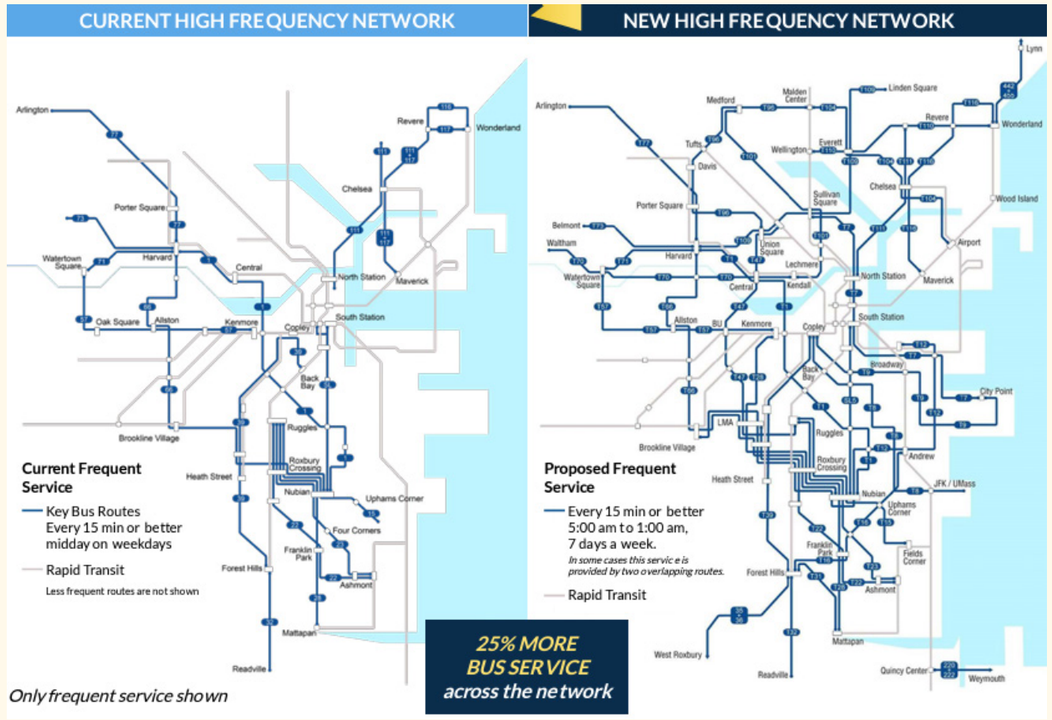
MBTA Better Bus Project

The Better Bus Project includes a portfolio of service changes, operational efforts, and capital projects designed to make the bus an easier first choice for more people. The program includes redesigning bus routes, increasing bus frequencies, improving bus travel times and reliability, addressing safety and accessibility, and enhancing the rider experience. The projects outlined below are all part of the Better Bus Project Program.

Better Bus Project
Making transit better together

MBTA Bus Network Redesign (BNR)

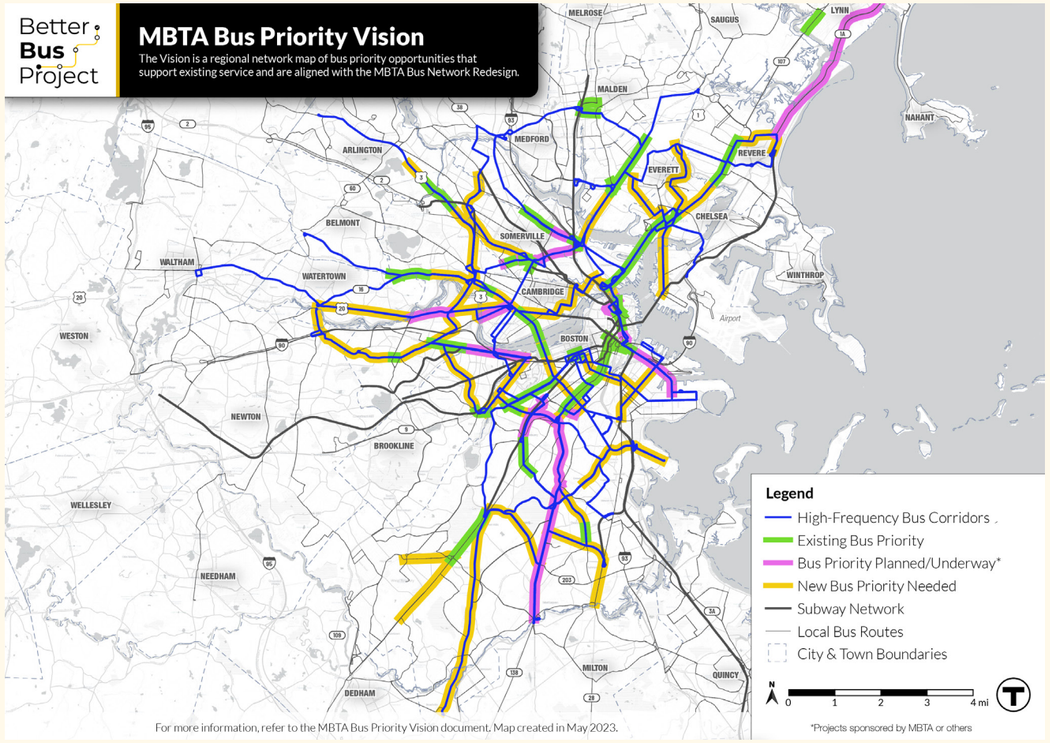
Adopted in late 2022, BNR will implement a new bus network that serves the shifting needs of communities across Greater Boston and includes updated routes and new high-frequency service. BNR is focused on providing more frequent service along key corridors, delivering equitable service, increasing service spans, enabling new connections to more places, and making service easier to understand and navigate, requiring changes to new or changes to stops across the network. BNR is aligned with accessibility, transit priority, and bus facility modernization efforts to ensure new and redesigned routes are implemented with supportive infrastructure (e.g., priority lanes, visible crosswalks, accessible and comfortable boarding areas). The development of new signage is included in the rollout of BNR and is referenced in this guide.



Current and Planned MBTA High-Frequency Bus Network Redesign Maps

MBTA Bus Transit Priority

Transit Priority treatments reduce travel times and improve reliability along routes with frequent delays, and unreliable service. Treatments include dedicated bus lanes, bus stops improvements, and transit signal priority along key corridors. Dedicated bus lanes and in-lane bus stop treatments reduce conflicts and travel times improving safety for people, walking, biking, and driving. As the MBTA and partner agencies continue to invest in these treatments, it's important to account for emerging practices and recommendations for spacing, placement, and configuration outlined throughout this document.



The MBTA Bus Priority Vision is a regional network of bus priority opportunities aligned with the Bus Network Redesign

MBTA Bus Stop Accessibility Improvements

Building off of the Americans with Disabilities (ADA) and Massachusetts Architectural Access Board (MAAB) requirements, as well as rider feedback, the MBTA developed specific accessibility criteria related to the placement and design of bus stops in order to ensure the service is safe and accessible for all riders within the service area. This criteria is fully integrated into this guidance. For new, altered, or relocated stops, planners and engineers must apply these guidelines to address any existing accessibility barriers. Upgrades will vary by stop but may include the reconstruction of front door landing areas, rebuilding sidewalks and crosswalks, and other improvements to enhance rider visibility.

Bus ramp deployed for rider at stop

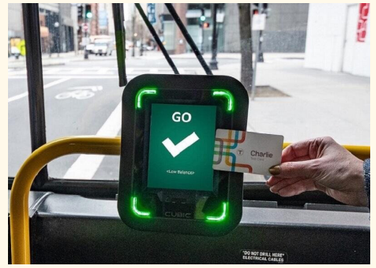
MBTA Fleet and Facilities Modernization Program

As part of the MBTA's environmental sustainability and resiliency plans, the MBTA is working to modernize its bus fleet. This includes replacing and upgrading bus maintenance facilities to accommodate battery electric buses (BEBs) and/or hydrogen fuel-cell buses, expanding existing bus maintenance facilities, and procuring new vehicles as facilities are ready to take on additional capacity. Since 2020, the MBTA initiated several projects to work towards a zero-emissions fleet (e.g., Silver Line BEB Pilot, Quincy Bus Facility Expansion). This phased approach allows the MBTA to assess additional infrastructure needs, including in-route charging, power supply/storage, and bus stop reconfiguration to enable a zero-emissions fleet to operate efficiently and reliably.

Silver Line Pantograph Charger

MBTA Fare Transformation

The MBTA is striving to make fare payments equitable for all riders across the system with a tap to pay system that allows for seamless transfers between all MBTA services, providing customers with more easy-to-use, fast, payment options that will streamline boarding and is compatible with all-door boarding.



Chapter 2:

Bus Stop Balancing

Introduction

Bus stop balancing is a critical part of route planning and service enhancements. It involves the removal, addition, or relocation of bus stops along a corridor. Planners determine the ideal stop location by evaluating the appropriate stop spacing for that route type in the context of the roadway network, key destinations, safety, accessibility and other factors such as planned investments and topography. These guidelines support route planning for new and existing routes and other corridor projects where planners and engineers may want to rebalance bus stops to better align stop locations to route speed and reliability goals and the context and characteristics of different route segments.

Transit agencies have adopted the term “balancing” instead of “consolidation” when relocating and removing bus stops to increase bus stop spacing because it is a more accurate descriptor of the multiple factors affecting stop changes. By better balancing bus stop locations, the MBTA can reduce travel time, improve the rider experience and effectively target amenity installations and bus stop maintenance. **Stop removal** refers to the elimination of a stop and all of the amenities and infrastructure associated with it so that the stop is no longer in service. **Stop relocation** refers to moving a stop to a nearby location. Stop removals may accompany stop relocations. **Stop addition** refers to creating a new bus stop that is not a relocation.

The main reasons the MBTA would change stop locations are:

- The MBTA evaluated bus stop spacing and identified new stop locations.
- A roadway owner plans a future project and wants to improve stop spacing or manage curb uses.
- There is a safety, accessibility, or operational concern with the stop.
- A stop does not meet the MBTA’s accessibility standards.
- A route changed and no longer serves that stop or needs a new stop added.
- The stop may be temporarily removed or relocated as part of construction mitigation.
- A stop has experienced increased demand and warrants additional amenities that would require the stop to be relocated.

Legacy bus stop spacing practices has led to closer stop spacing along some routes than current guidelines. Closely spaced stops reduce travel distances but can require more travel time overall from a riders origin to destination because of slower and less reliable bus service. The following graphic illustrates some of the factors planners consider when making stop changes.

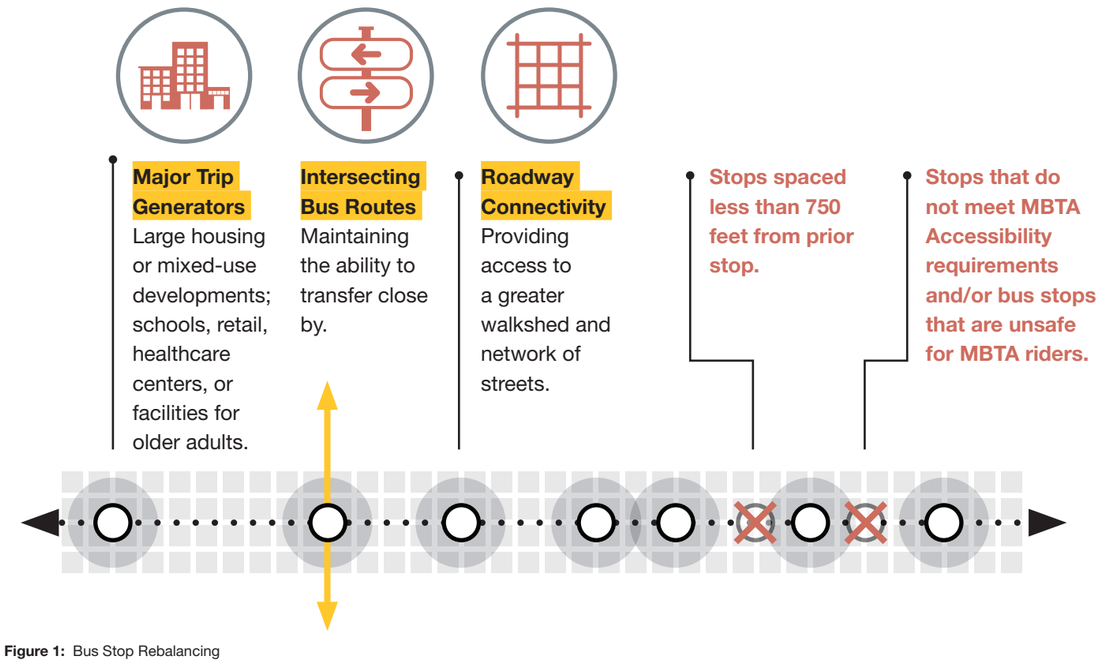


Figure 1: Bus Stop Rebalancing

Bus stop balancing optimizes stop spacing to improve bus speed and reliability with only marginal changes to travel distances. Bus stop balancing prioritizes changes where there is less activity and overlapping coverage, as shown above, to reduce tradeoffs and maintain access. By carefully optimizing stop spacing, planners can decrease bus travel times and improve reliability with only marginal changes to travel distances. The following pages outline updated bus stop balancing guidelines.

Bus Stop Balancing Guidelines

The purpose of the bus stop balancing guidelines is to clearly outline the different planning factors and how they influence bus stop spacing and location decisions. This helps key stakeholders better understand the benefits and tradeoffs of relocating and removing stops and new stop locations.

Identifying Bus Stop Balancing Opportunities

Bus stop balancing can happen as part of other roadway, safety, or transit priority projects, as part of route and service changes, or to address accessibility and operational issues with one or more stops. To identify routes and corridors for bus stop balancing, planners and engineers evaluate key performance indicators (KPI's) to better understand corridor segments where there is speed, reliability, and other challenges. KPI's are also important for measuring the success of bus stop balancing and other efforts to improve bus stop conditions. The below table highlights both quantitative and qualitative metrics for bus stop planning and design.

Table 2. Data and Tools Used to Identify Bus Stop Balancing Opportunities

Types of Data or Tool	Qualitative	Quantitative
Transit data and key performance indicators	▶ Customer satisfaction ▶ Direct rider feedback (not through a survey) ▶ Other stakeholder feedback (e.g. local agency, developer)	▶ Ridership (e.g. by trip, route, or stops) ▶ Run times (stop or timepoint level) ▶ Dwell times (time at stop) ▶ On-time performance ▶ Travel speeds ▶ Bus frequency/ headways
New data collection (e.g., surveys)	▶ On-board survey ▶ Community survey	

Planning Considerations

- Bus stop balancing is most effective at the route- or corridor-level. However, isolated stop changes can also benefit riders and improve transit operations.
- Routes with reliability issues are some of the best candidates for bus stop balancing, especially routes that experience bus bunching[2] or signal delay.
- Bus stop balancing as part of corridor improvement projects maximizes rider benefits. Roadway owners should coordinate with the MBTA to better balance bus stops and align infrastructure investments with bus stop improvements.

2 Bus bunching is a cascading impact of late service caused by additional riders queuing and boarding. One bus become increasingly late at each stop with a bus behind it that is emptier than it would be if bus service was on-time and evenly spaced.

Bus Stop Balancing Criteria

The following criteria summarize the MBTA's bus stop balancing guidelines. Planners should use this criteria to evaluate bus stops along a route or corridor and identify potential stops for relocation, removal, addition, or other improvements.

This criteria applies to:

- New or altered routes, such as any route promoted to the high-frequency network.
- Existing routes with stop spacing inconsistent with spacing guidelines.
- Corridor improvement projects (repaving, bike lane additions, street redesigns, transit priority investments).
- Individual bus stop change requests.

Table 3. Bus Stop Balancing Criteria

Key Factors	Criteria	Guidance
Bus Stop Spacing	High-frequency service and bus priority corridors	Stop spacing range: 1,320 feet (1/4 mile) to 2,640 feet (1/2 mile).
	Local and coverage routes	Stop spacing range: 1,000 to 1,320 feet (1/4 mile), or 750 to 1,000 feet if justified by Service Planning.
Safety & Accessibility	Accessibility requirements	▶ New and altered stops must meet accessibility requirements. ▶ When closing stops, alternate locations must provide equal to or better accessibility.
	Rider safety	▶ Stops should be located where there are connected, unobstructed, level sidewalks and riders are visible. ▶ Stops should be located near a crosswalk and lighting wherever possible.
	Operational safety	▶ Stopped buses should not block a crosswalk or obstruct pedestrian visibility of oncoming, passing traffic. ▶ Bus stops should not create a turning issue, such as a left turn immediately after a near-side stop. ▶ Motorists should have good visibility of stopped or merging buses not blocked by horizontal or vertical curves.
	Steep grades	May justify closer stop spacing.

(Continues on next page)

Table 3. Bus Stop Balancing Criteria (Continued)

Key Factors	Criteria	Guidance
Bus Stop Activity	Rider demand	▶ Stops should be located where they serve activity centers like large residential developments, retail centers, education centers, and office buildings. ▶ Provide transfer stops near other transit services. ▶ Bus stops with very high ridership levels may warrant closer stop spacing to provide sufficient passenger queueing space.
	Critical locations for riders with mobility needs	Place stops near public housing and housing for older adults, as well as community and healthcare centers, and other critical locations for riders with mobility needs.
Network Connectivity	Pedestrian walk/travel shed	Stops should be located where they provide access to a greater walk/travel shed, e.g. near major connecting streets. This maximizes the number of potential riders who can access a stop conveniently.
	Local, discontinuous, and disconnected streets	Stop spacing may be closer in this situation given the generally less-connected pedestrian network.
Infrastructure Investments	Transit priority	Transit priority investments may justify greater stop spacing to improve travel times and reliability along priority corridors.
	Bus stop/corridor Improvements	Consider increasing stop spacing to maximize investments and rider benefits.
Bus Stop Configuration	Intersection location	If adjusting stops, first consider options to relocate far-side to improve visibility of pedestrians in unsignalized crossings or minimize parking impacts.
Bus Stop Amenities	Bus stop has a shelter	▶ Stops should be located where sidewalk space can accommodate amenities such as a shelter, bench, or real-time signage, if the stop meets the boarding criteria or previously had that amenity. ▶ Existing amenities should be relocated or removed with any stop change; amenities should not be abandoned, as their presence will indicate the presence of a bus stop where there is none.

Key Planning Factors

Bus Stop Spacing

The below guidelines support more balanced stop spacing along routes and corridors to reduce travel times and improve reliability. These ranges allow the MBTA to deliver more efficient service, and maintain coverage and access where it matters most.

Table 4. Stop Spacing Guidelines

	Preferred	Range
Local and coverage routes	1,000 – 1,320 feet (1/4 mile)	750 – 1,320 feet (1/4 mile)
High-frequency service and bus priority corridors	1,320 feet (1/4 mile) – 2,640 feet (1/2 mile)	

Benefits of increasing stop spacing:

- **Improves travel times** by reducing the number of instances where the bus slows down, serves a stop, and accelerates back into traffic. Each instance costs riders on the bus up to 20 seconds per stop. By increasing stop spacing by 100 feet along a route the MBTA can reduce travel time by over 6%.[3]
- **Improves bus operations and safety** by reducing friction with other modes and limiting instances of merging in and out of the bus stop zone.
- **Improves bus stop accessibility** by removing, relocating, and improving bus stops, the MBTA and its partners can increase the percentage of accessible bus stops.
- **Reduces parking impacts** by restoring parking at relocated or removed stops where appropriate.

Challenges of increasing stop spacing:

- **Changes to travel distances** for some riders who may need to travel further to access their bus stop. which can have adverse impacts on vulnerable riders, such as older adults and people with limited mobility.
- **May reduce coverage** by making a stop just out of reach for some residences or destinations, depending on the roadway network.

3 Effects of Bus Stop Consolidation on Passenger Activity and Transit Operations

Bus Stop Spacing Along Different Routes

- **On local and coverage routes** with less frequent service, lower ridership, and less-connected street networks, the MBTA would consider closer stop spacing to make it more convenient to access transit and to maximize coverage. Operators often do not need to stop at lower ridership stops which mitigates the potential travel time impacts of them being spaced closely.
- **On high-frequency routes** with high ridership, closer spacing can slow down service because riders are typically boarding or alighting at every stop. This can cause service delays from bus bunching, where buses fail to maintain even spacing between trips. The MBTA recommends stop spacing up to ½ mile to reduce delays and improve reliability.
- **On bus priority corridors** the MBTA recommends stop spacing to up to ½ mile to maximize the speed and reliability benefits of investments like bus lanes, queue jumps, and transit signal priority.

Safety & Accessibility

All bus stops should be located at safe and accessible locations for riders and bus operations. Optimizing for safe and accessible operations may lead to stop spacing outside the recommended range to minimize potential conflicts, ensure rider safety, and ADA compliance. For more details and other accessibility guidelines see Chapter 5: Accessibility and Pedestrian Environment.

- **Accessible bus stops:** must have a firm, stable, smooth, and level, unobstructed front door landing area and path of travel through the stop zone, connecting to accessible curb ramps and crosswalks[4]. Buses must be able to pull parallel to the curb leaving less than a 12-inch gap.
- **Rider safety:** requires that the stop is at and connected to a sidewalk, located near a crosswalk, free of tripping hazards, and there is adequate lighting and visibility of people waiting.
- **Safety for bus operations:** includes traffic speeds that permit safe merging into and out of traffic, turning movements that allow for variability in operator behavior, visibility around the stop, understandable and well-functioning intersection operations, and the absence of obstructions in the bus stop zone that could strike bus mirrors.
- **Steep Grades:** can make pathways and boarding areas inaccessible. Steep grades can also impact how far riders are willing and able to travel and can make it difficult for operators to safely operate a bus. Roadway owners should work closely with MBTA Service Planning and SWA to account for steep grades which may justify closer stop spacing.
- **Closed stops:** when a bus stop is closed and no new stops are added, alternate stop locations must provide equal to or better accessibillity. If the alternate locations are not accessible, planners should preserve the bus stop.

4 In 2006, the MBTA entered into a settlement agreement with the Boston Center for Independent Living (BCIL) that requires the MBTA to provide accessible bus service and to work closely with municipalities to ensure that access to bus stops is reliable.

See it in action

Downtown Boston bus stop with a paved, level, unobstructed path of travel and a fully deployed mechanical access ramp

Route 236 on Elm St, between Commercial St and Middle St in Braintree coming down a hill

Bus Stop Activity

Bus stops should be located at activity centers such as residences, offices, commercial shopping areas, older adult housing, healthcare centers, and schools where there may be higher ridership demand or riders with additional mobility needs. Some bus stop activity may justify closer stop spacing (less than ¼ mile for high-frequency routes or 750 feet for local routes) to provide riders a more seamless and convenient connection. Key considerations include:

- Proximity to key or anchor destinations like employment and neighborhood centers.
- Transfer opportunities
- Ridership levels
- Rider needs – including older adults, young children and families, and people with limited mobility.

Network Connectivity

Stop spacing may vary by street type to ensure rider and operational safety and adequate transit access. Local streets in a less-connected street network, with side streets with dead-ends, may justify closer stop spacing to reduce the distance riders may need to travel to access the bus stop. Streets that are part of a grid or other more connected street networks may have stop spacing further apart because there is greater access and a larger walkshed.

Infrastructure Investments

Investments in transit priority treatments (TSP, bus lanes) and bus stop infrastructure such as bus bulbs, floating bus stops, median bus platforms, or dedicated busway stations justify greater stop spacing to maximize rider benefits and reduce costs. If a municipality or other agency is repaving or investing in other corridor improvements, such as bike lanes, they should also coordinate with the MBTA to evaluate if current stop spacing is consistent with updated guidelines.

Bus Stop Configuration

The location and configuration of a bus stop plays a role in stop spacing because some intersections are better suited for bus stops than others due to crossing conditions, traffic signs or signals, intersection geometry, and network connectivity. For example, mid-block bus stops without nearby crosswalks can lead to riders crossing where there is no legal or safe crosswalk. Bus stops should be located at or nearby safe and accessible crosswalks whenever possible.

Bus Stop Amenities

Amenities like a shelter, bench, or real-time information enhance rider comfort and improve the experience waiting for the bus. Shelters require wider sidewalks to ensure there is an accessible path of travel - but may make stop relocation or removal difficult due to costs or contract terms. The presence of abandoned shelters can be confusing--so unless there is an opportunity to relocate or remove shelters, bus stops with shelters are not good candidates for stop removal.

See it in action

As part of the Columbus Avenue Bus Rapid Transit project the MBTA and the city of Boston rebalanced bus stops on Columbus Ave.

Bus Stop Balancing Example

The following example shows the process of balancing bus stops on a route segment. When evaluating routes, planners should:

1. Determine stop spacing and preferred locations.
2. Evaluate bus stop activity, including ridership and anchor destinations.
3. Identify stops with amenities.
4. Identify any stops that do not meet accessibility requirements.
5. Evaluate network connections – what provides the greatest walking access with safe crossing opportunities.

Below is a bus stop balancing example that outlines the results of these five steps for a theoretical MBTA route on Trisland Avenue (a theoretical street). This does not evaluate all bus stop balancing criteria but does cover those most important to decision-making.

- **Existing Stop Spacing:** The average bus stop spacing on Trisland Avenue shown in Figure 2 is approximately 600 feet. The average bus stop spacing on this route does not meet the MBTA's bus stop spacing guidelines for local routes. Along this corridor, the MBTA recommends removing or relocating roughly eight stops to set spacing within the acceptable range of 750-1,300 feet, or the preferred range of 1,000-1,300 feet. For example, the inbound and outbound stops directly south of North Street are spaced between 240 and 400 feet apart. The MBTA could remove one of these stop pairs to improve bus stop spacing.
- **Bus stop activity:** The bus route on Trisland Avenue serves a low-to-medium density corridor in a primarily residential neighborhood. Most of the street has no commercial uses, but the route serves key destinations north of Main Avenue including a grocery store and housing serving older adults. Another route operates along Main Avenue (east-west) with more demand going west. The MBTA could relocate the stops south of Main Avenue to north of Main Avenue for better transfers between the two intersecting routes and access to the grocery store.
- **Amenities:** There are five shelters on Trisland Avenue. Most of the sheltered stops have higher ridership except for the inbound stop located on Cross Street. This stop does not meet the MBTA's preferred boarding criteria for shelters but is located near housing serving older adults. The MBTA recommends preserving the stop and shelter to maintain convenient access for the adjacent community who may have additional mobility needs and prefer traveling shorter distances.

Figure 2: Bus Stop Balancing Example Map

- **Safety & Accessibility:** Most stops along Trisland Avenue meet the MBTA's Safety and Accessibility guidelines, but two stops directly south of Main Avenue are located on a heavy travel corridor, across from a grocery store, where there is no lighting for riders crossing the street. Therefore, the MBTA recommends relocating the stops south of Main Avenue to the north of Main Avenue for better transfers between the two intersecting routes and access to the grocery store.
- **Safety and Accessibility – Steep Grades:** South of North Street at Foundation Park there is a steep hill. The distance between the inbound stop and prior stop is 690 feet. This spacing does not meet the MBTA's preferred spacing guidelines but the MBTA recommends preserving stops because of potential challenges reaching the stop.
- **Network Connectivity:** Along Trisland Avenue, there are some stops at intersections that connect to the broader street and pedestrian network, and others that are mid-block, or connect to cul-de-sacs or dead ends. Consider relocating stops that are mid-block or near dead-end streets to cross streets that provide greater access to communities east and west. The MBTA recommends relocating the stop pair furthest south of Trisland Avenue closer to South Street to improve connectivity and stop spacing.

See it in action

This signage is placed at bus stops and along bus routes where the MBTA is balancing bus stops. This signage includes the route(s) affected, a description of the service change taking place, alternate bus stop locations, service change date, and MBTA contact information. This signage gives riders ample notice of upcoming stop changes.

Chapter 3:

Bus Stop Placement

Introduction

Bus stop placement is a fundamental component of route and service planning that informs bus stop configuration, accessibility, and amenity placement. Planner and engineers follow the stop spacing guidelines outlined in the prior chapter and evaluate routing, intersection conditions, transit operations, and other planning considerations to site bus stops. Bus stop placement initiates bus stop design and engagement with the MBTA Capital, Engineering Division and SWA.

Huntington Ave near-side sheltered bus stop

Bus Stop Locations

The location of a bus stop in relation to the intersection is described as near-side, far-side, or mid-block. **A far-side bus stop** is located after the bus passes through an intersection and just after the crosswalk if there is a marked crossing. **A near-side bus stop** is positioned before the bus passes through an intersection and just ahead of the crosswalk if there is a marked crossing. **A mid-block bus stop** is positioned between two intersections. The MBTA generally prefers far-side bus stops because they mitigate conflicts, provide safer conditions for riders and operators, improve travel times and reliability, support transit priority treatments, and have the least impact on parking.

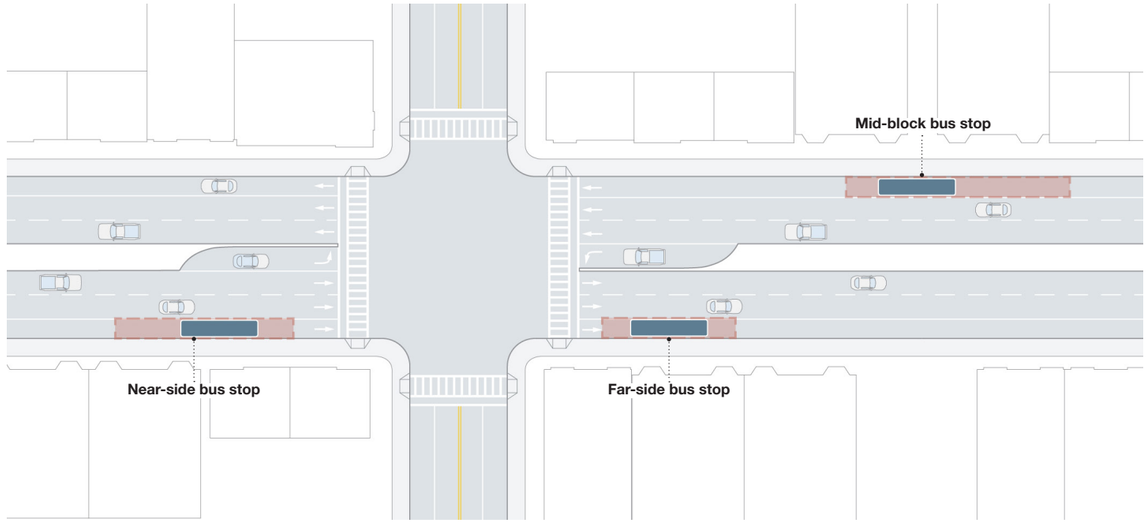


Figure 3: Diagram showing bus stop locations

Advantages and Disadvantages of Stop Locations

The table on the next page describes key factors to consider when siting bus stops and summarizes the advantages and disadvantages of each bus stop location.

Table 5. Advantage and Disadvantages of Stop Locations

	Where Recommended	Advantages	Disadvantages
Far-Side Stop	▶ **Safety:** Avoids potential vehicle turning and pedestrian crossing conflicts. ▶ **Travel Time:** Allows the bus to progress through intersections without stopping, and take advantage of queue jumps/ transit signal priority (TSP). ▶ **Bus Operations:** Reduces congestion at intersections with heavy right turns near-side. ▶ **Parking:** Requires less curb space.	▶ Encourages riders to cross behind the bus. ▶ Minimizes conflicts with turning vehicles. ▶ Keeps the turn lane clear of bus traffic. ▶ Buses merge into the bus stop zone through the intersection, making it easier to access the bus stop and reducing the stop length. ▶ Buses can take advantage of the signal cycle and gaps in traffic to re-enter the travel lane.	▶ Stopped buses may block the crosswalk if the stop is not long enough. ▶ Buses may stop twice - at a red signal and then at the far-side stop. ▶ If the stop is in-lane or not parallel to the curb buses may cause queuing through the intersection.
Near-Side Stop	▶ **Bus Stop Configuration:** Where there are other curb uses or insufficient space for a bus stop far-side.	▶ Riders board near the crosswalk. ▶ Buses can use the intersection to merge back into traffic. ▶ Allows riders to board/alight while the bus is stopped at a red signal phase.	▶ Longer stop length and a greater parking impact than for far-side stops. ▶ Merging back into the travel lane is more difficult if traffic queues at the signal. ▶ Bus may miss multiple green signal phases. ▶ A stopped bus obscures sight lines between pedestrians in a crosswalk and vehicles passing the bus. ▶ Stopped buses block right-turning traffic. ▶ On a green signal phase, drivers may turn in front of the bus from the through lane.
Mid-Block Stop	▶ **Safety:** Avoids conflicts at the intersection and enhances safety when supported by high-visibility mid-block crosswalks and flashing beacons. ▶ **Activity Centers:** Long blocks with destinations and ridership generators mid-block. ▶ **Bus Operations:** A queue jump or turning movement eliminates the ability for buses to stop at the intersection. ▶ **Bus Stop Configuration:** Where there are other curb uses or in- sufficient space for a bus stop far-side.	▶ Avoids congestion and turning conflicts at the intersection. ▶ Closer proximity to mid-block destinations. ▶ Opportunity to improve mid-block crossing safety.	▶ Longer stop length and a greater parking impact than for both far-side and near-side stops. ▶ Encourages unsafe crossings mid-block if there is no crosswalk. ▶ Longer travel distances to intersections to cross the street if there is no mid-block crosswalk.

Other Placement Considerations

Safety & Accessibility

Bus stops should be located where there are accessible sidewalks, curb ramps, and crosswalks to facilitate safe and accessible boarding and alighting. Bus stops should be long enough to ensure the bus can pull parallel to the curb within 12 inches, and the bus does not block the crosswalk or the cross street at an intersection. If a bus stop is a candidate for a bus shelter or bench, the sidewalk needs to be wide enough for the amenity and a clear path of travel.

Intersection Operations

The bus stop location should account for high-turning volumes, bus turning movements, bike lanes, three- or five-leg intersections, and other unique conditions like turn restrictions. Bus stop locations should reduce friction with vehicles, pedestrians, and bicyclists as much as possible. The MBTA and partner agencies should avoid siting stops in rotaries because the curved roadway geometry doesn't allow for safe and accessible boarding and alighting.

Bus Turning Movements

Stop locations should also ensure bus stops are long enough to accommodate the turning radius of buses, buses pulling parallel within parallel to and within 12 inches of the curb, and to minimize friction with other vehicles. Avoid near-side bus stops before left turns unless there is only one travel lane. If a bus is turning right after a near-side bus stop, NACTO guidance specifies there should a 20 to 30-foot curb radius to accommodate buses turning[5]; stop bars may need to be moved back.

Bus Stop Pairs

Where possible, a bus stop should be paired with the companion stop serving in the opposite direction located nearby to make taking a round trip convenient and intuitive.

Transfer Activity

Bus stops in areas with high transfer activity should be as close to each other as possible to facilitate quick and easy transfers between routes.

See it in action

Before the MBTA installed center-running bus lanes on Columbus Ave in 2021, some bus stops along the corridor had operational and accessibility challenges, as pictured here, where a bus is unable to pull parallel to the curb. The median bus platforms have improved safety, access, travel times, and reliability on the corridor.

5 The minimum turning radius of a 40' bus is 21'-6"according to the NACTO Transit Street Design Guide.

Sightlines

Sightlines are important for both operator and rider visibility. Sightlines are especially important in high-speed conditions. The MBTA should avoid placing bus stops in low-visibility, high-speed conditions, or in locations where there are major visible obstructions. Examples of locations with poor sightlines include over the crest of a hill and immediately after a right curve. If the bus is stopped in these conditions in the travel lane, drivers may not be able to see it. If these conditions are unavoidable, consider permanent reflective signage or variable messaging signs. Below is a table and graphic showing sight distances at different speeds.

Table 6. Speed Limit and Visibility

Speed Limit (mph)	Sight Distance (ft)
15	85
20	115
25	155
30	200
35	250
40	305
45	425
50	495

*Adapted from AASHTO 2011 and AASHTO 2016[6]

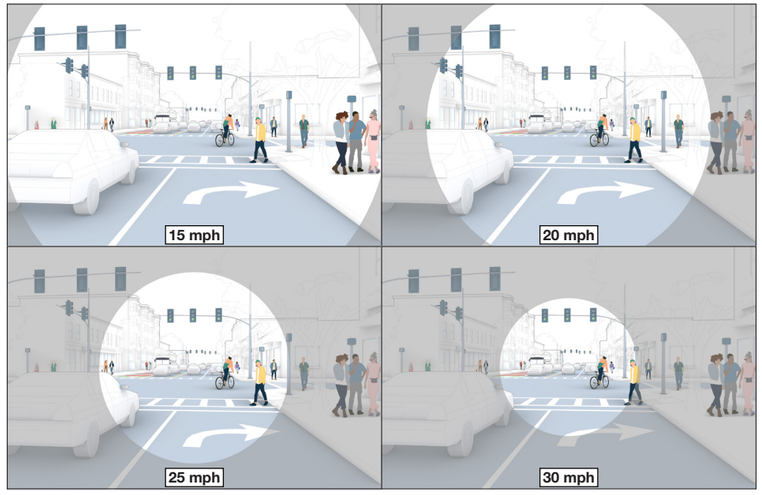


Figure 4: Bus Sightlines Graphic

6 Assumes buses need a 9-second time gap to re-enter traffic without undue interference to traffic flow. Calculations are based on time gaps provided in AASHTO 2016, adjusted for right turn movements that AASHTO 2011 considers to be equivalent to pulling into traffic from a bus stop, and intersection sight distance also provided in AASHTO 2011.

Lighting

Adequate lighting is important to illuminate the stop and for rider comfort and security. Bus stops should be located near streetlights or other overhead/ residential lights that illuminate the bus stop zone, path of travel, curb ramp, and crosswalk. In poor lighting conditions consider lit shelters or stand-alone pedestrian-scale lighting. For more details on lighting, see the MBTA Design Directive on Lighting Levels.

Compatibility with Adjacent Properties

In addition to minimizing friction with roadway users, bus stops should also aim to minimize friction with businesses and other land uses where demand for the curb is high. The MBTA and its municipal partners should coordinate with property owners to reduce impacts to loading and unloading. Transit is an important community asset and some impacts to loading and unloading are unavoidable on busy streets. Far-side stops or treatments like curb extensions can preserve more parking and provide more space for rider and customer amenities. Dedicated loading zones may be required near bus stops that are regularly blocked by delivery vehicles. The MBTA generally prefers to place bus stops at commercial, multi-use, or multi-family properties to avoid driveway conflicts and provide a more comfortable waiting area.

Driveways

Buses should generally not overhang onto side streets or obstruct driveways. At some low-volume residential or smaller commercial properties blocking the driveway for short periods may be permitted. It is possible for a bus stop to have an accessible landing area and only block a driveway with the back of the bus or the rear doors of a 60-foot bus.

Bus Priority

Bus stop placement may affect whether and what types of transit priority the MBTA and partner local agencies can implement. Transit signal priority is most compatible with far-side stops because it can extend the green or change the signal cycle to give the bus a green light at the intersection. If near-side, the bus may not be able to take advantage of these technology upgrades. Far-side stops also help maximize rider benefits for bus stop improvements like bus bulbs and floating bus stops, ensuring buses are not stopped at red lights after they're done boarding and alighting.

See it in action

Along commercial corridors with frequent driveways and long blocks like this segment of Brighton Ave, the MBTA may place a bus stop adjacent to a driveway. The driveway can function as part of the required merge zone without requiring as much dedicated curb space.

Chapter 4:

Bus Stop Layout and Configuration

Introduction

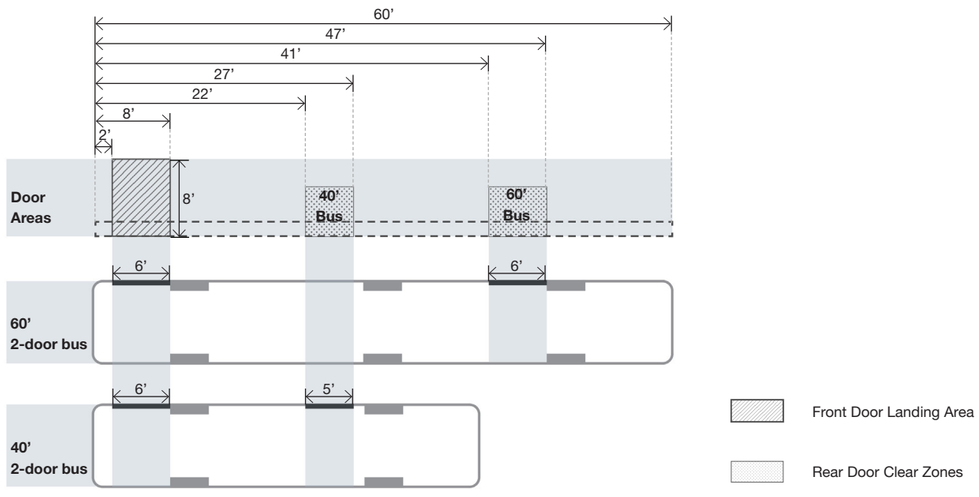
This chapter provides guidance on the layout and design of new, altered, and relocated bus stops in different bus stop conditions and contexts. Bus stop layout and configuration depend on the location of a stop at the intersection, configuration of parking, bus and bike lanes, and other features like curb extensions. Some bus stops may need more curb space to allow the bus to align with the curb, and others may require more sidewalk space/public ROW to separate the bike lane and boarding areas.

This chapter outlines planning, design, and implementation considerations, in addition to, preferred standards and minimum requirements for common bus stop types and layouts. Updated guidance aims to clarify MBTA designs objectives and promote consistent, accessible, and safe bus stops. If a local agency is adding, altering, relocating a bus stop, they should coordinate with MBTA Service Planning on the application of this guidance as it does not represent all bus stop conditions and operating environments.

MBTA Bus Fleet Characteristics

The MBTA fleet consists of both 40’ and 60’ buses. The entire fleet has low-floor accessible buses equipped with a deployable front door ramp. Many buses also carry a bike rack with capacity for two bicycles at the front of the bus. The position of the bus doors for different bus stop lengths is outlined below. For design purposes, assume the following bus parameters:

- Bus width: 102” / 8’ 6” (126” / 10’ 6” including mirrors)
- Bus height: 10’ 3” – 11’ 1”
- Bus length: 40’ or 60’



*There are 40’ buses with left-side doors.

Figure 5: Bus Door Positions

Common Bus Stop Configurations

Bus stops are described as in the **parking lane, pull-out, or in-lane** depending on traffic and transit operations, and the configuration of the bus stop. For bus stops in the **parking lane** the bus leaves the travel lane and merges into the bus stop zone in the parking lane. **Pull-out** stops describe other configurations where there is not a parking lane such as a bus bay where the sidewalk tapers and narrows to allow cars to pass the bus.

In-lane bus stops allow buses to pick-up and drop off passengers without leaving the travel lane and include:

- **Curb Extensions:** Extend the curb to the travel lane along the length of the bus boarding area.
  - **Bus Bulbs:** The bus stop zone is connected to (continuous with) the sidewalk.
  - **Floating Islands:** The boarding area is separated from the sidewalk by a bike lane with crosswalks to designate potential conflict zones.
- **Median Bus Platform:** Relocates the boarding area and amenities to new boarding platforms along the median accessed by crosswalks across the bus and travel lanes.
- **Dedicated Busway Station:** All bus operations are fully separated from traffic. Stations can be at-grade or grade-separated[7].

7 Additional details on MBTA’s preferred approach and requirements are in the Busway Design Criteria Design Directive.

Bus Stop Length and Configuration

Bus stops must be long enough for the bus to safely reach the curb and pull in and out of traffic without blocking the crosswalk or intersection. Insufficient bus stop lengths and clearances can have significant safety, accessibility, and traffic-related impacts on riders and other street users. For example, if the bus is unable to get close enough to the curb, riders must board at the street-level, which is not accessible for people using wheeled mobility devices and requires a large step to board or alight the bus. It can also cause the bus to angle into the curb, blocking traffic, the crosswalk, and bike lanes, all of which lead to potential conflicts and safety hazards.

Bus Stop Length Guidelines

Planner and engineers should use the one of the following three methods to ensure bus stops are long enough for safe and accessible operations:

1. Generalized Bus Stop Length Guidance is provided for a variety of different operational and roadway configurations.
2. Simplified stop lengths are provided for the most common bus stop designs but may not apply to all scenarios.
3. For complex designs, dedicated swept path turning analysis may supplement or replace these calculations.

Generalized Bus Stop Length Guidance

The length of a bus stop depends on the length of the bus, bus and traffic operations, roadway design, and the location and configuration of the stop. To calculate the length of a bus stop there are four key elements/calculations.

1. **Dwell zone:** In most cases, this is the length of one bus (40 or 60 feet). If additional space is required for bus layovers or for frequent service, add the length of additional buses plus a 10-foot buffer per additional bus.
2. **Merge zone:** The space required to pull-in and out of the bus stop zone, which must be kept free of obstacles such as parked vehicles, curb extensions, flex-posts, etc. This is calculated based on the lateral distance the bus travels to the curb. This applies to bus stops in the parking lane, bike lane, or sidewalk area. In-lane bus stops do not require a merge zone because the bus does not leave the travel lane.
    a. **Pull-in length:** equals 5 times the lateral distance the bus must travel to the curb.
    b. **Pull-out length:** equals 2.5 times the lateral distance the bus must travel to the curb.
    c. **In-lane bus stops:** do not require a merge zone, since they are a simplified case with no lateral distance to the curb.
    d. **Bike Lanes:** To calculate the no parking area[8] at bus stops where the bus travels through the bike lane before entering the parking lane, use the width of the parking lane to calculate the minimum no parking pull-in distance. Use the distance the bus travels to the curb to calculate the full merge zone that must be clear of all vertical elements, including posts (For more details see Appendix 3: Autoturn Analysis). If the bike lane is parking protected the entire merge zone must be designated as no parking[9].
3. **Setback:** the distance from the front or rear of the bus to the intersection or crosswalk, stop or yield bar.
    a. **Far-side/mid-block:** the rear of the bus should be at least 5 feet from the crosswalk/intersection to ensure the crosswalk is not blocked and for visibility to opposing traffic.
    b. **Near-side/mid-block:** the front sign should be at least 8 feet away from the crosswalk/intersection to ensure motorists passing the bus can have full visibility of people crossing.
4. **Turn zone:** add 30 feet to the bus stop length at bus stops after a right or left turn.

8 The bus can merge through intersections, painted bike lanes, crosswalks, driveways, gored areas and other painted roadway markings clear of vertical elements.

9 The lead entity should coordinate with the MBTA to lengthen the bus stop consistent with MBTA guidance if a bike lane is installed on a bus route.

Simplified Bus Stop Lengths for Common Stop Configurations

The table below outlines bus stop lengths for different common bus stop types depending on the following factors:

1. **Dwell Zone** depends on the bus length: 40’ for a standard bus; 60’ for an articulated bus.
2. **Merge Zone** depends on the lateral distance the bus travels between the travel lane and the curb. A typical parking lane has an 8-foot distance between the travel lane and the curb. Curb extensions assume buses are stopping in the travel lane, so there is no merge zone.
3. **Setback** depends on whether the intersection or crosswalk is before or after the bus stop zone.

The following lengths assume that the stop would serve a single bus and that there would be no layovers.

Table 7. Parking Lane Bus Stop Lengths

8-foot Parking Lane: Stop Types	Dwell Zone/ Bus Length	Pull-in/ Pull-out Merge Zone	Minimum Setback	Minimum Total Stop Length
Far-side	40’/60’	0'+20'=20’	5’	65’/85’
Near-side	40’/60’	40’+0'=40'	8’	88’/108’
Mid-block, no crosswalk	40’/60’	40'+20'=60’	0'	100’/120’
Mid-block, before crosswalk	40’/60’	40'+10=50’	8’	98’/118’
Mid-block, after crosswalk[10]	40’/60’	30'+20'=50’	5’	95’/115’

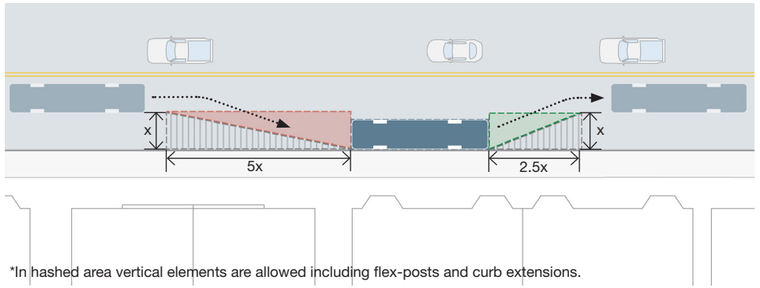


Figure 6: In-lane Bus Stop Length Calculations

10 The no parking merge area for a mid-block bus stop adjacent to a crosswalk is less than a no crosswalk stop because the bus can merge through the crosswalk and the setback from the crosswalk is only 5’-8’. A typical hi-visibility crosswalk is 10’, the total no parking area will vary based on the width of the crosswalk. Mid-block stops should be located proximate to another nearby crosswalk.

Table 8. In-lane Bus Stop Lengths

In-Lane: Stop Types	Dwell Zone/ Bus Length	Merge Zone	Setback	Total Stop Length
Far-side	40’/60’	0’	5’	45’/65’
Near-side, two or more lanes	40’/60’	0’	8’	48’/68’
Near-side, one lane	40’/60’	0’	5’	45’/65’
Mid-block, before crosswalk, two or more lanes[11]	40’/60’	0’	8’	48’/68’
Mid-block, before crosswalk, one lane	40’/60’	0’	5’	45’/65’
Mid-block, after crosswalk	40’/60’	0’	5’	45’/65’

Parking Conflicts

Buses often compete for curbside space with on-street parking. Bus stop locations should account for heavy potential curbside activity and aim to reduce friction with parking and loading to avoid blocked bus stop zones. Obstructed bus stops impact bus operations, traffic movement, safe sightlines, and rider accessibility.

Roadway owners should consider different tools to keep the bus stop zone clear:

- Bus box and bus stop pavement markings, supplementing MBTA bus stop signs.
- Curb management, such as short-term loading zones in areas near convenience stores, cafés, and restaurants with high volume pick-up orders.
- Bus stop signs and/or “No Parking” signage to regulate the curb. In these cases, the recommended stop lengths represent the distance between the front and the rear stop signs. Rear signs are not required for in-lane bus stops.

11 If drivers are not passing the bus because there is only one lane of traffic the minimum crosswalk setback is only 5’.

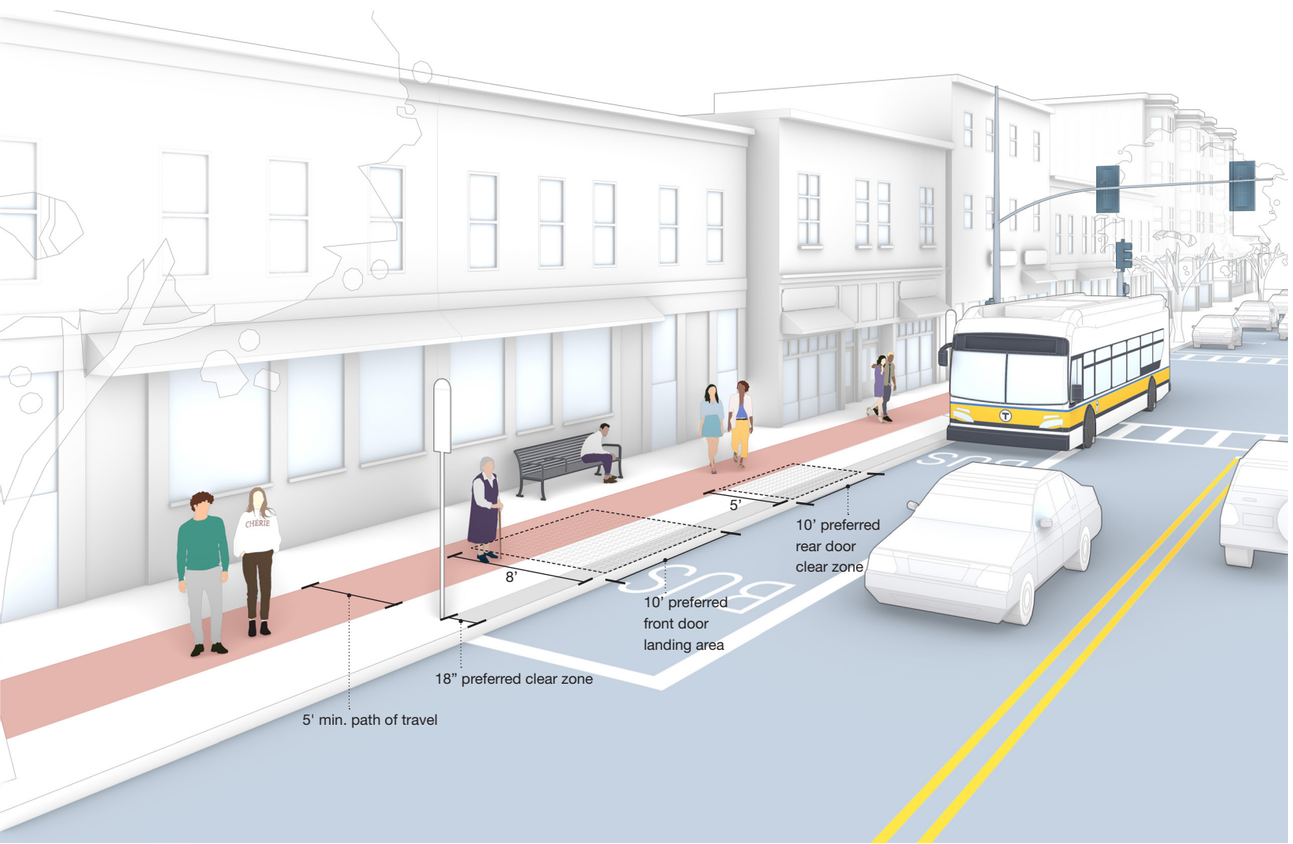
See it in action

Cars parked in bus stop zones block buses from fully pulling into a stop, affecting bus stop accessibility because the bus is not able to pull parallel to the curb. This photo shows a stop on route 39 where a parked car blocking the bus stop zone is forcing passengers to step into the street to board.

Bus Stop Zone

The bus stop zone is the area where riders wait for, board, and alight the bus. The bus stop zone is the length of the bus stop and includes the following components:

- **Front door landing area:** an accessible 8-foot (depth) by 10-foot (length) boarding area aligned with the front door of the bus.
- **Rear door clear zone:** an accessible 5-foot (depth) by 10-foot (length) alighting area aligned with the rear door(s) of the bus.
- **Path of travel:** an accessible 5-foot pathway from the adjacent intersection to the front door landing area and shelter if present.
- **Amenity zone:** the space, outside of the front door landing area, rear door clear zone, and path of travel where there are passenger amenities including benches and shelters.
- **Clear zone:** along the entire length of the bus stop zone there should be no vertical elements within 18 inches of the face of the curb, to maintain accessibility and mitigate potential mirror conflicts.



New or relocated bus stops are required to provide adequate space for the above components consistent with MBTA accessibility guidelines and federal and state accessibility regulations. Stops should be located and constructed to make use of existing or new sidewalks and crosswalks that cross the intersecting street and the street the bus is traveling on.

The locations of the landing areas and rear door clear zones are dependent on bus length, bus stop location, and stop configuration (see Figure 7).

The front and rear bus stop signs indicate the beginning and end of the bus stop zone, demarcating the no-parking area. The front bus stop sign also signals to riders where they should wait for the bus and where operators should pick them up to align with the front door landing area.

- **At near-side bus stops** the bus should be within 7 feet of the front sign, so that the bus is approximately 15 feet away from the crosswalk, giving passing motorists full visibility of people crossing.
- **At far-side bus stops** in the parking lane, bus operators position the bus 20 feet away from the sign to have sufficient space to pull out of the bus stop zone and avoid parked vehicles. Variations in site conditions will require operator judgment and discretion. For example if there are no parked cars in front of the bus the operator may pull up closer to where riders are waiting.

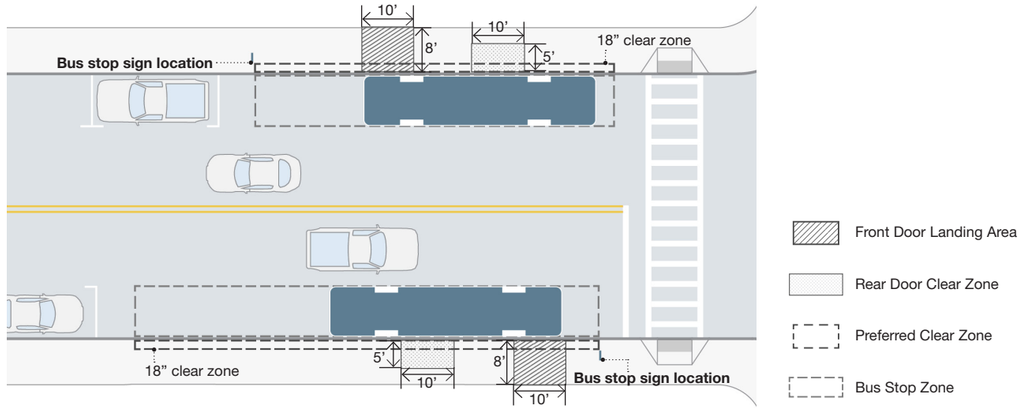


Figure 7: Required Clear Zones

Far-Side Bus Stop

Far-side bus stops are the MBTA's preferred stop location because they minimize pedestrian and merge conflicts, require the least amount of curb space, and reduce instances of double stopping. The following examples are based on a typical 8-foot parking lane. If the distance from the curb is not 8 feet, then the stop length will vary (see Bus Stop Length Guidelines, on page 36).

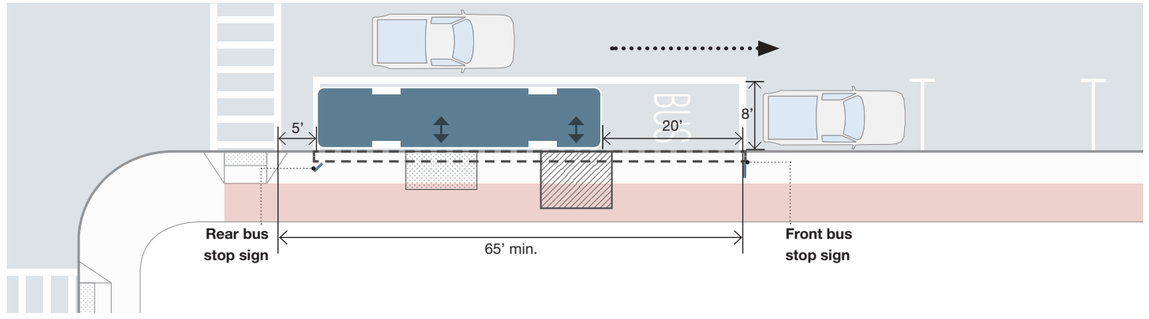
Layout Guidance

- The distance from the front of the bus to the front sign should be 20 feet.
- To avoid buses stopping in the crosswalk provide a minimum 5-foot setback behind the bus.
- If a far-side bus stop is after a left or right turn, add 30 feet to the pull-in merge zone to account for the turn and align the bus with the curb.
- Consider pavement markings to keep the bus stop zone clear.
- Consider painted parking stalls to demarcate parking spaces.
- Consider loading zones or enforcement options if bus stop zones are chronically blocked.

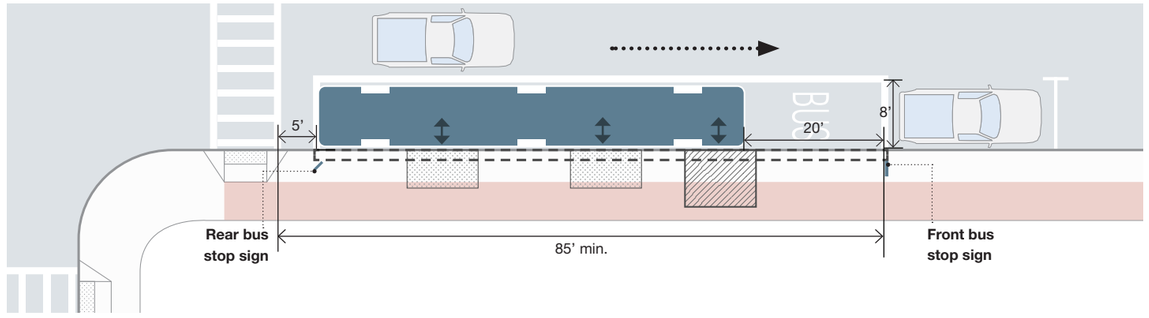
See it in action

Far-side bus stop on Huntington Ave after the intersection at Fenwood Rd serves the 39 and 66.

Far-Side Bus Stop - 40' Bus



Far-Side Bus Stop - 60' Bus



Front Door Landing Area (10' X 8' preferred, 5' X 8' min.)

Rear Door Clear Zone (10' X 5' preferred)

Preferred Clear Zone (18" deep)

Path of Travel (5' deep min.)

Near-Side Bus Stop

Near-side bus stops are not the preferred MBTA stop placement in most conditions but are still very common throughout the service area. Avoid near-side stops at high-volume and complex intersections and before bus turning movements. The following examples are based on a typical 8-foot parking lane. If the distance from the curb is not 8 feet, then the stop length will vary.

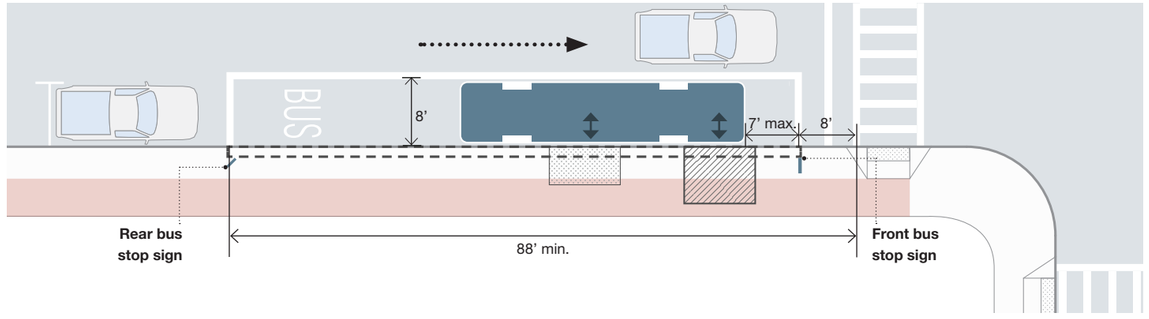
Layout Guidance

- The front of the bus must be a minimum of 15 feet away from the crosswalk to give passing drivers full visibility of people crossing.
- To achieve 15 feet of visibility the front bus stop sign must be at least 8 feet away from the crosswalk. A rear sign is required to keep the merge zone clear.
- Consider pavement markings to keep the merge zone clear.
- Consider painted parking stalls to demarcate parking spaces.
- Consider loading zones or enforcement options if bus stop zones are chronically blocked.

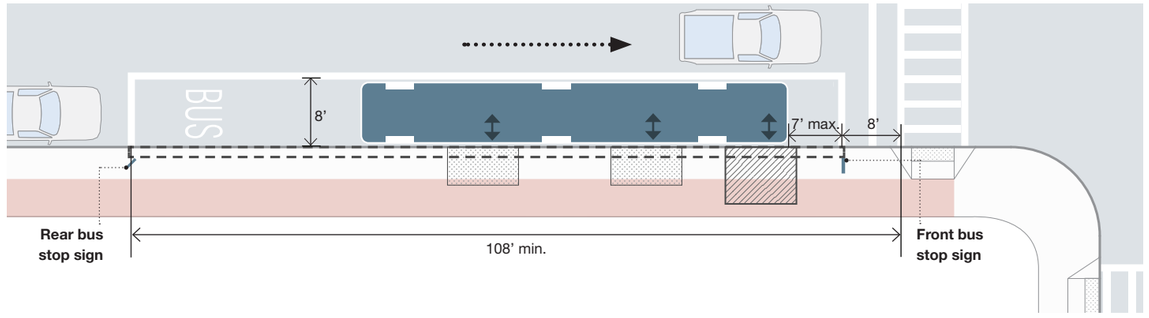
See it in action

Near-side bus stop on Otis Street in Downtown Boston.

Near-Side Bus Stop - 40' Bus



Near-Side Bus Stop - 60' Bus



Front Door Landing Area (10' X 8' preferred, 5' X 8' min.)

Rear Door Clear Zone (10' X 5' preferred)

Preferred Clear Zone (18" deep)

Path of Travel (5' deep min.)

Mid-Block Bus Stop

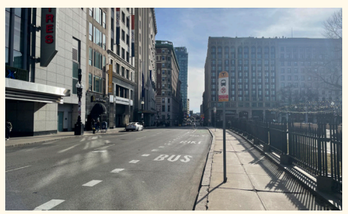
Mid-block bus stops are typically only placed along long blocks or at major activity centers. The following examples are based on a typical 8-foot parking lane. If the distance from the curb is not 8 feet, then the stop length will vary.

Layout Guidance

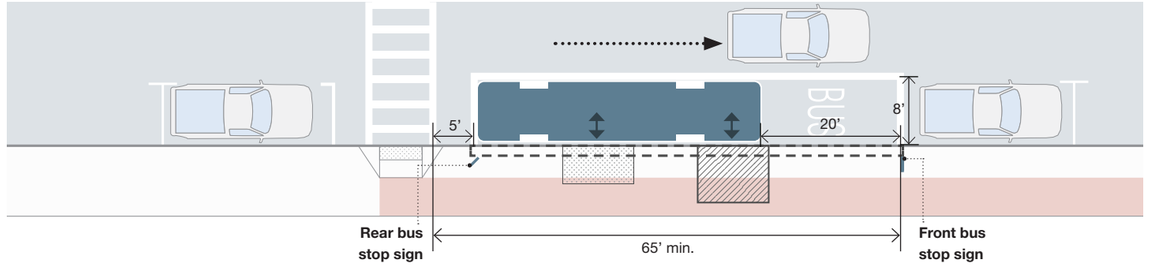
- The distance from the front of the bus to the front sign should be 20 feet if there is parking in front of the bus stop.
- To improve safety and connectivity to destinations and reciprocal bus stops, mid-block stops should be co-located with mid-block crosswalks and enhanced crossing treatments like rapid flashing beacons.
- Avoid mid-block bus stops where riders may be tempted to illegally cross the street to reach the bus stop.
- Painted marked stalls and/or additional no parking signage is recommended to ensure entire bus stop zone is clear.

See it in action

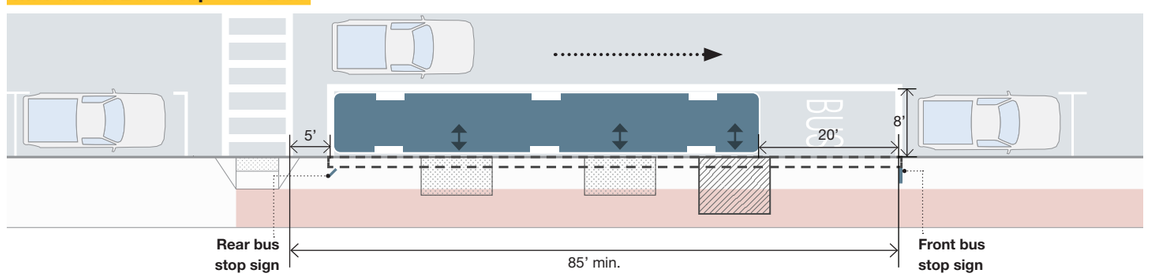
This mid-block stop in Downtown Boston serves the 43 and SL5 along the eastern edge of Boston Common.



Mid-block Bus Stop - 40’ Bus



Mid-block Bus Stop - 60’ Bus



Front Door Landing Area
(10’ X 8’ preferred, 5’ X 8’ min.)

Rear Door Clear Zone
(10’ X 5’ preferred)

Preferred Clear Zone
(18” deep)

Path of Travel
(5’ deep min.)

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Bus Bulbs

Bus bulbs extend the curb of a bus stop to be in line with the bus travel lane, rather than the parking lane, which allows buses to stop in-lane to serve riders. This treatment saves time and increases transit reliability because buses do not have to pull out of and back into the traffic lane when serving a bus stop.

Benefits

- Compatible with both general traffic and dedicated bus lanes.
- Reduces dwell time at bus stops and reduces conflict between buses and other motorists.
- Provides more room for waiting passengers and amenities without taking away sidewalk space.
- Preserves more parking due to shorter bus stop length.
- Preferred option from accessibility point of view as it increases depth of landing pad, and, when combined with a crosswalk, reduces the crossing distance.

Challenges

- Requires moderate capital investments and potentially drainage modifications due to curb relocation.
- Can cause traffic buildup behind buses if there is only a single travel lane.

Complementary Treatments

- Parking Offset Bus Lanes (p. 68, Bus Priority Toolkit)

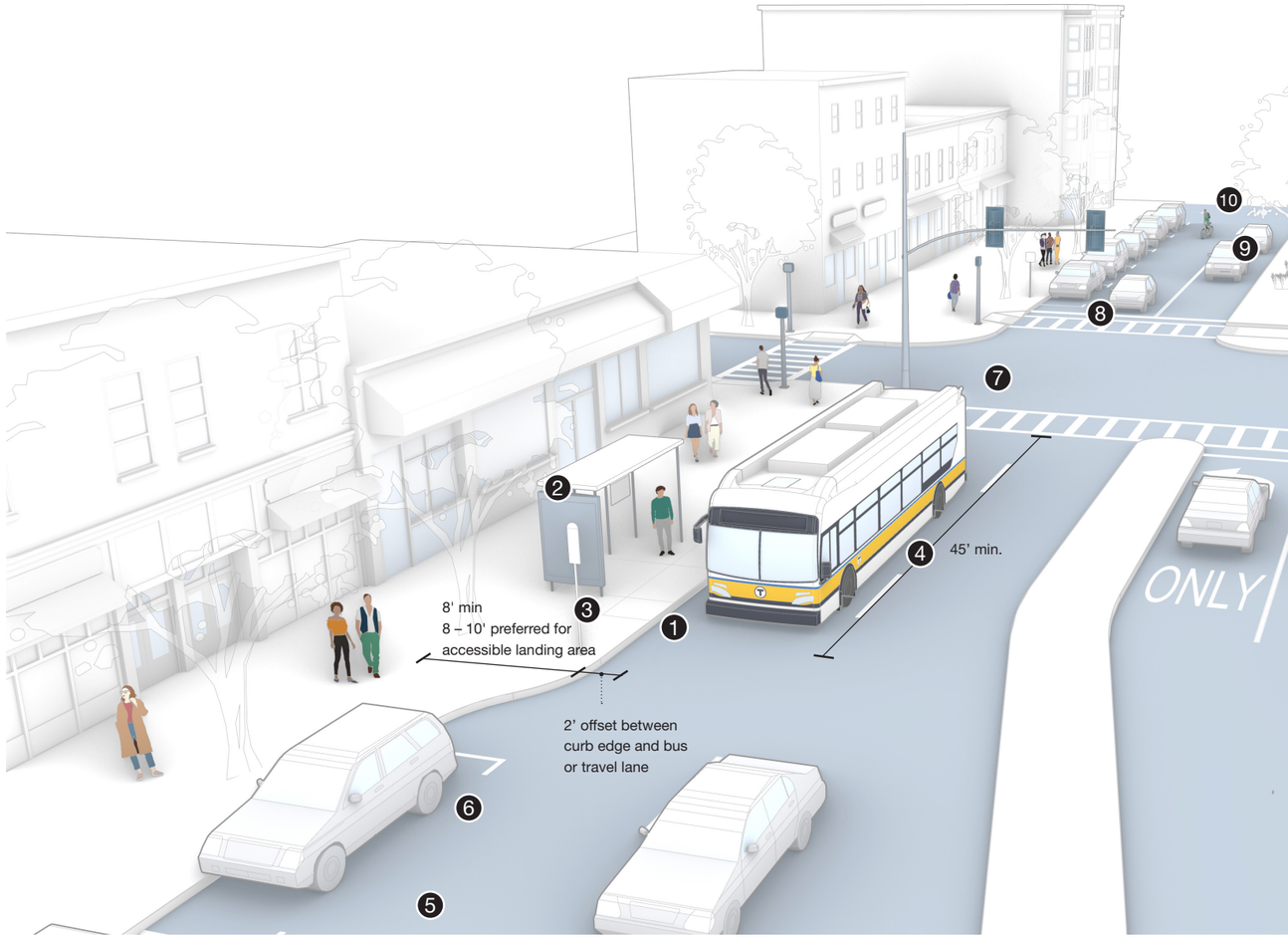

Before


After

See it in action

As part of the MassDOT Shared Winter Streets and Spaces Program, the MBTA and the City of Boston installed two bus bulb stops to complement the bus lanes in Roslindale Square.

1. **Curb Access** A typical 40-50’ bus bulb replaces 2–3 standard parking spaces, retaining more parking than a curbside bus stop, which occupies 3–6 spaces depending on placement.
2. **Passenger Amenities** Provides additional space for waiting riders and bus stop amenities, particularly shelters, without encroaching on the original sidewalk area.
3. **Signs and Markings** Municipalities do not need to stripe the roadway because buses are stopping in-lane.
4. **Stop Length** Bus bulbs must be long enough for all doors to open onto the curb and for any appropriate setbacks from crosswalks. See the Bus Stop Length Guidelines, on page 36, for details.
5. **Enforcement** Likely unnecessary as buses will stop in the travel lane.
6. **Bus Lane Compatibility** Incompatible with a part-time bus lane that replaces parking during off-peak hours.
7. **Intersections** Bus bulbs typically include the adjacent pedestrian curb ramp. This reduces the intersection crossing distance for pedestrians.
8. **Right Turn Volumes** Near-side bus bulbs may require right-turn restrictions if there is a tight corner radius. The American Association of State Highway Transportation Officials (AASHTO) specifies a 20-30’ curb radius to accommodate urban transit and intercity buses.
9. **Traffic Volumes + Queuing** Consider traffic and queuing impacts with far-side bus bulbs, as traffic may back up behind the bus and into the intersection. Also consider traffic volumes and the number of travel lanes in relation to vehicles being able to pass stopped buses.



10. **Bus-Bike Interactions** With no dedicated bike lane, people biking will likely use the same travel lane as buses When a bus is stopped people biking may be unable to use the travel lane and will need to wait until the bus moves or pass the bus in the adjacent travel lane. In addition, the MBTA will not serve constrained bus stops, where there is a shared condition at the front and rear door boarding area between riders and people biking (see the MBTA Bus Stop Design Directive for more details).

Floating Bus Stop

Floating bus stops are curb extensions separated from the sidewalk by bike lanes. This treatment reduces conflicts between buses and cyclists while allowing buses to stop in-lane to pick up and drop off passengers, saving time and further increasing transit speed, reliability, and accessibility.

Benefits

- Enhances overall safety by reducing conflicts between buses, bikes, pedestrians, and other motorists.
- Creates more room for passengers and amenities without using existing sidewalk space.
- Preserves more parking due to shorter bus stop length.
- When combined with a crosswalk, reduces the crossing distance.
- Improves bus speeds by making stops in-lane.
- Buses do not have to pull into or out of the stop.
- Compatible with both mixed traffic and dedicated bus lanes
- Best layout option for accessibility; providing a dedicated boarding area separate from the bike lane, and additional depth for waiting passengers and ramp deployment.

Challenges

- Requires moderate capital investments and may require drainage modifications due to curb relocation.
- Uses more roadway space than a bus bulb because it requires space for the sidewalk, the bike lane, and the bus stop.
- Potential conflicts between cyclists and people crossing to/from the bus stop—but these are generally lower risk than the conflicts between cyclists and motorists that are replaced with this treatment.

See it in action

Floating bus stops were installed along Commonwealth Ave in Boston's Allston neighborhood between the Commonwealth Ave Bridge and Packard's Corner.

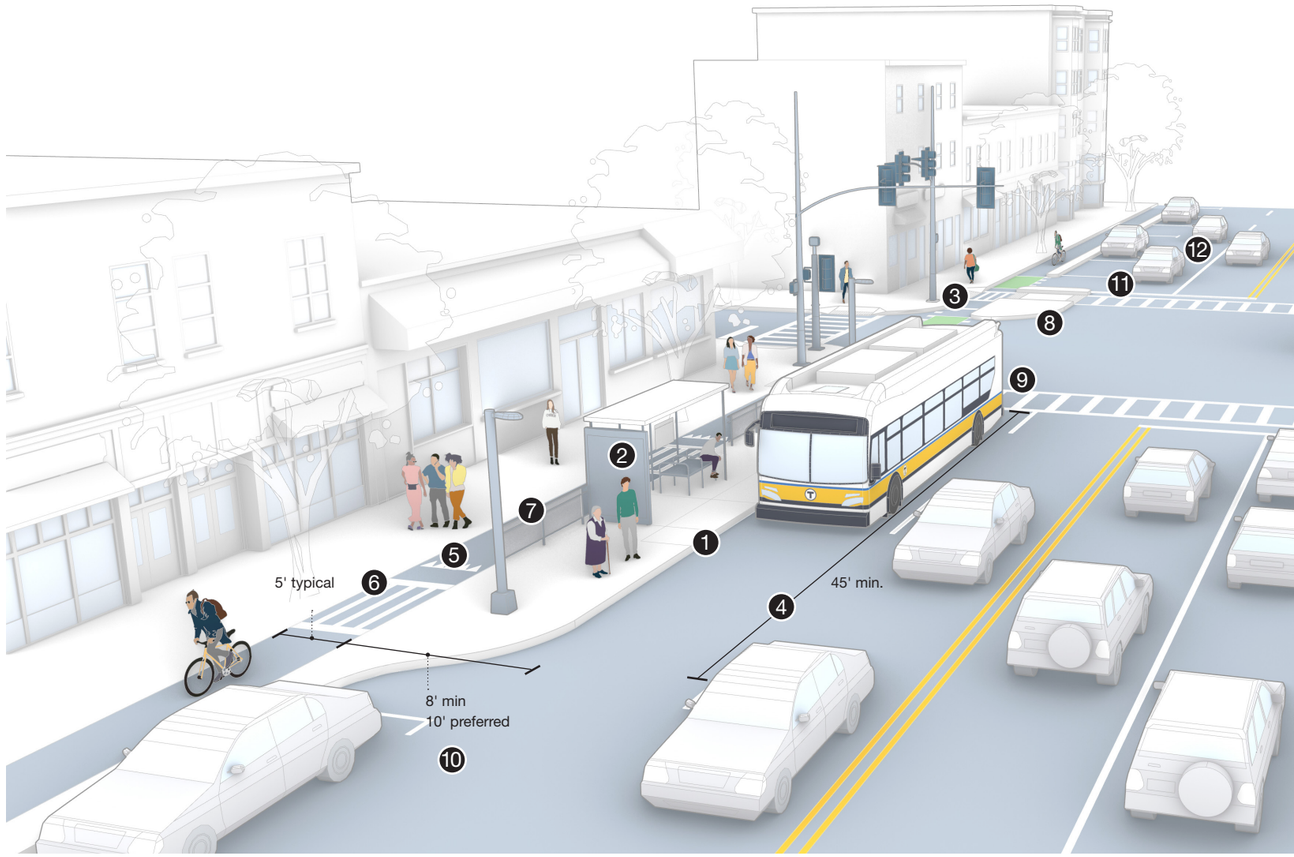
- Can cause traffic buildup behind buses if there is only a single travel lane. Constrained bus stops where the bike lane travels through the front and rear door boarding areas at the sidewalk/bus stop level are strictly prohibited by the MBTA.

Complementary Treatments

- Parking Offset Bus Lanes (p. 68, Bus Priority Toolkit)
- MassDOT Chapter 5, Curbside Activity, Exhibits 5H-5L (**5M, Constrained Bus Stop is Prohibited**[12])

1. **Curb Access** A typical 40-50' floating bus stop replaces 2-3 parking spaces, retaining more parking than a curbside bus stop, which occupies 3-6 spaces.
2. **Passenger Amenities** Provides additional space for waiting passengers and bus stop amenities, particularly shelters.
3. **Signs and Markings** Requires effective signage to slow bicyclists and indicate pedestrians crossing the bike lane/cycle track. Does not require roadway pavement marking because buses are stopping in-lane.
4. **Stop Length** Floating bus stops must be long enough for all doors to open onto the curb and for any appropriate setbacks from crosswalks. See the Bus Stop Length Guidelines, on page 36, for details.
5. **Bus-Bike Interactions** Floating bus stops integrate bike lanes between the passenger waiting area and the sidewalk preventing conflicts between buses, bicyclists, and boarding or alighting passengers. They should be implemented on any street where bike lanes and bus stops co-exist, such as one- or two-way.
6. **Bike-Ped Interactions** The design of the bike lane behind the bus stop should slow bicyclists, and fencing should channelize riders into two crossing areas.

12 MBTA Bus Stop Design Directive



7. **Accessibility** MBTA requires crosswalks at the front and rear door boarding areas on floating islands to designate potential conflict zones in addition to a continuous barrier to channelize and direct riders to crosswalks. Barriers include fences or leaning rails with cane detection. If the fence is behind the shelter include 1' clearance for maintenance and snow removal. Barriers cannot obstruct the front or rear door landing areas. Depending on the configuration of the barrier some islands may need to be 9 feet wide or greater.
8. **Intersections** Floating bus stops at intersections must extend to include the adjacent pedestrian curb ramp — near-side stops will connect to the ramp at the front of the stop, while far-side stops will connect at the rear, reducing the pedestrian crossing distance.
9. **Enforcement** Likely unnecessary as buses will stop in the travel lane.
10. **Bus Lane Compatibility** Incompatible with curbside part-time bus lanes during off-peak hours.
11. **Right Turn Volumes** Near-side floating bus stops may require right turn restrictions for general purpose traffic. If a bus serving a near-side floating bus stop must turn immediately after serving the stop, AASHTO specifies a 20 to 30-foot curb radius to accommodate urban transit and intercity buses turning radii.
12. **Traffic Volumes + Queuing** Consider traffic and queuing impacts at far-side floating bus stops, as traffic may back up behind the bus and into the intersection. Also consider traffic volumes and the number of travel lanes if vehicles need to be able to pass the bus.accommodate urban transit and intercity buses turning radii.

Median Bus Platforms

Median bus platforms are bus stops located in the middle of the roadway, separate from the existing sidewalk. They provide dedicated space for riders to wait for, board, and alight buses operating in a center-running bus lane, or adjacent to a curbside bus lane where the platform physically separates the bus lane and general-purpose traffic lanes, such as a right turn lane. Often, they provide near level boarding and enhanced amenities, such as more substantial shelters, wind screens, or other elements. They are typically implemented along corridors that have a wider cross-section, frequent curb-cuts, and/or where there is support for bus rapid transit.

Benefits

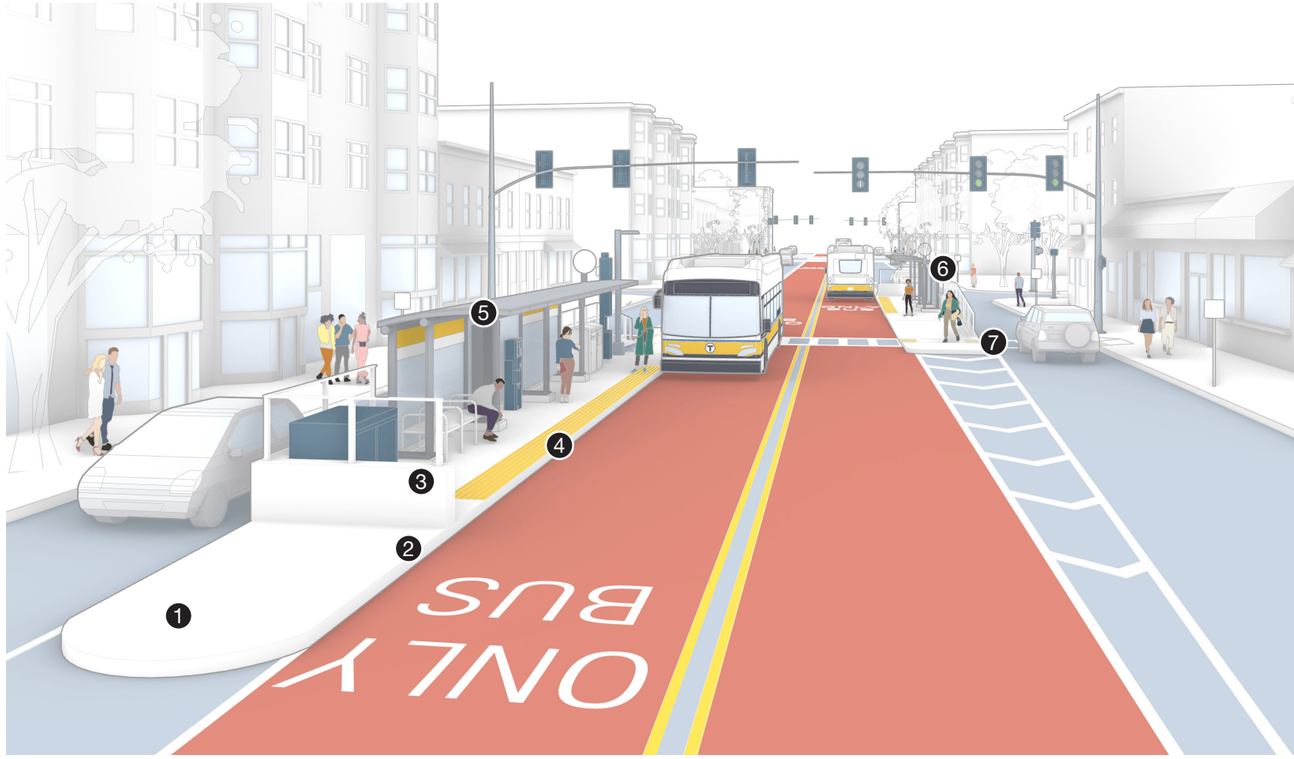
- Eliminates the need to encroach on private property, coordinate with abutting property owners, or occupy curbside sidewalk space for a bus stop, leaving existing sidewalk available for other uses.
- Creates a refuge space for pedestrians crossing major roadways at bus stops, improving visibility and safety and reducing the time and distance spent crossing general purpose traffic lanes.
- Can provide at or near level boarding, improve accessibility, make boarding and alighting more efficient, and create pedestrian connections and crossings for emergency egress at each end of the platform.
- Can provide an overall “traffic calming” effect for the corridor by redirecting general purpose traffic around the median platform; vertical elements placed at the back of the platform create a perceived narrowing of the roadway, elevating the traffic calming effect.
- Provides more space for waiting passengers that is not crowded with other streetscape features or pedestrians using the sidewalk.
- Median bus platforms are less likely to be blocked by delivery vehicles or motorists than bus stops located in the parking lane.

Challenges

- Requires a wide roadway cross-section. With a two-way bus facility, one platform in each direction is required to accommodate fleet with right-side-only door access; left-side doors can permit single center platforms.
- Requires wider platforms to accommodate projected ridership; desired elements and amenities may be challenging within the roadway to facilitate the preferred number of buses and width of travel lanes.
- Requires longer platforms to accommodate higher frequency service, multiple routes serving the corridor, or articulated buses; it may be difficult to establish crosswalks at either end of the platform.
- More complex to design and more costly to build than curbside bus stops, due to location in center of roadway.
- Riders must cross traffic to reach bus stops, which may be unfamiliar and/or unconventional when compared to typical curbside stops.
- Installation will likely require tapered travel lane shifts or removal of existing turn lanes.
- Construction may involve extensive utility relocations and drainage improvements to facilitate platforms and any existing median modifications.
- Requires maintenance agreements with the roadway owner and snow removal from the busway and platform.

Complementary Treatments

- Center Running Bus Lane (p. 74, Bus Priority Toolkit)
- Bus Stop Relocation and Consolidation (p. 88, Bus Priority Toolkit)



1. **Platform Location** Determine where in a roadway’s cross-section right-side boarding buses can accommodate a median bus platform. Platforms must be located at signalized intersections and can be offset immediately before or after the traffic signal. If a corridor with center-running bus lanes cannot accommodate median bus platforms, consider roadway expansion or altering the configuration of the bus lanes. If platforms are located mid-block, designers should evaluate signalized crossings connecting the platform.
2. **Platform Configuration** Determine the length and frequency of buses serving the stop, as this will affect the design requirements. Median platform stops need to be at least 100’ in length for both doors to open onto the platform.
3. **Safety** Provide crosswalks at each end of longer or double berth platforms, as well as crash protection such as bollards, attenuators, walls or other barriers at the back of the platform to protect passengers from vehicles, and wrap around the tip of the platform if there is no access in that direction. Supplement low profile barriers at the tip of the platform with a fence or railing to further discourage access. Consider a railing or barrier between the busway and sidewalk connecting the platform and pedestrian refuge area. Railings are required on both sides of the walkway if the sloped walkway or ramp has a grade steeper than 5%. Include a two-foot-deep yellow detectable warning panel (Federal Yellow) along the length of the platform behind the curb on the bus lane side of the platform.
4. **Platform Design** Pave the bus lane adjacent to the platform, where buses are accelerating/decelerating, with a heavy duty hot mix asphalt (airport mix) to extend the longevity of the roadway pavement. Platform widths should accommodate projected peak passenger volumes, especially when platforms have a single access point. The platform surface, including the landing area of the first bus berth to the end of and including the clear zone serving the last bus berth, should be heated to prevent ice and snow accumulation.

5. **Passenger Amenities** Platforms may lack the weather protection offered by buildings and trees at curbside stops and therefore should include shelters with wind screens. Designers should consider more substantial shelters than those typically found at curbside stops, such as large-scale, custom-designed and/or canopy-style shelters with integrated or standalone pedestrian scale lighting. Other amenities to consider include benches and/or perches, digital signage for real-time displays, maps and other information, T-logo lollipop signs, station ID signage with platform bus route direction and destination direction and/or wayfinding, emergency call boxes, security cameras, fare vending machines, single standing bike racks, trash cans, bus stop signs etc. Additional platform space may be needed for mechanical/electrical/communications cabinets related to lighting, digital signage, transit signals, etc. These shall be placed as far from the passenger waiting space as possible and not interfere with pedestrian paths of travel and passenger-bus operator visibility. The placement of amenities cannot interfere with the ability of a bus to fully deploy its access ramp in the landing area.
6. **Bus Stop Balancing** Consider whether to consolidate stops when implementing platforms, particularly when used on frequent, transit-priority corridors that typically have longer stop spacing, and especially when platforms are designed to accommodate articulated buses, higher frequency service, or multiple routes. Consider the passenger boarding/alighting capacity of the median platform to avoid overcrowding.
7. **Accessibility** Roadway owners must coordinate with the MBTA to upgrade intersections sidewalks, curb ramps, and crossings to be signalized and fully accessible. Pedestrian refuges must have detectable warnings for people with low-vision or mobility impairments crossing the street. Platforms must have an accessible landing area, clear of amenities, for passengers getting on and off the bus with mobility devices or strollers. Pedestrian signals should allow enough time for people to cross in one trip even if refuges are present.

See it in action

Boston's center-running bus lanes on Columbus Ave include eight median bus platforms with near-level boarding and enhanced amenities.

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Dedicated Busway Station

Dedicated busway stations are located along dedicated busways that maximize the efficiency of bus operations by fully separating the busway and station from the local street network. Dedicated busway stations can be built at-grade, elevated, below grade, or tunnels, and work for high transit volumes that have limited stops over longer distances. Some dedicated busway stations are implemented along rail ROW and may require additional passenger wayfinding and pedestrian facilities. For more details, see the MBTA Busway Design Criteria.

Benefits

- Maximizes bus travel times and reliability for riders due to limited intersections and conflict points with other modes.
- New walkways and bikeways can be added along the corridor to increase connectivity and improve safety and comfort for pedestrians and bicyclists.
- Expands the transit network to provide faster and often more direct connections to downtown and other neighborhoods centers along the alignment.

Challenges

- May require significant capital investment and space to build dedicated guideway and stations.
- Requires investments in pedestrian and bike connections to the stations.
- Bridges and tunnels may be subject to additional rules and regulations requiring more intense coordination across
- stakeholder groups, including other jurisdictions, MassDOT, and the Federal Railroad Administration

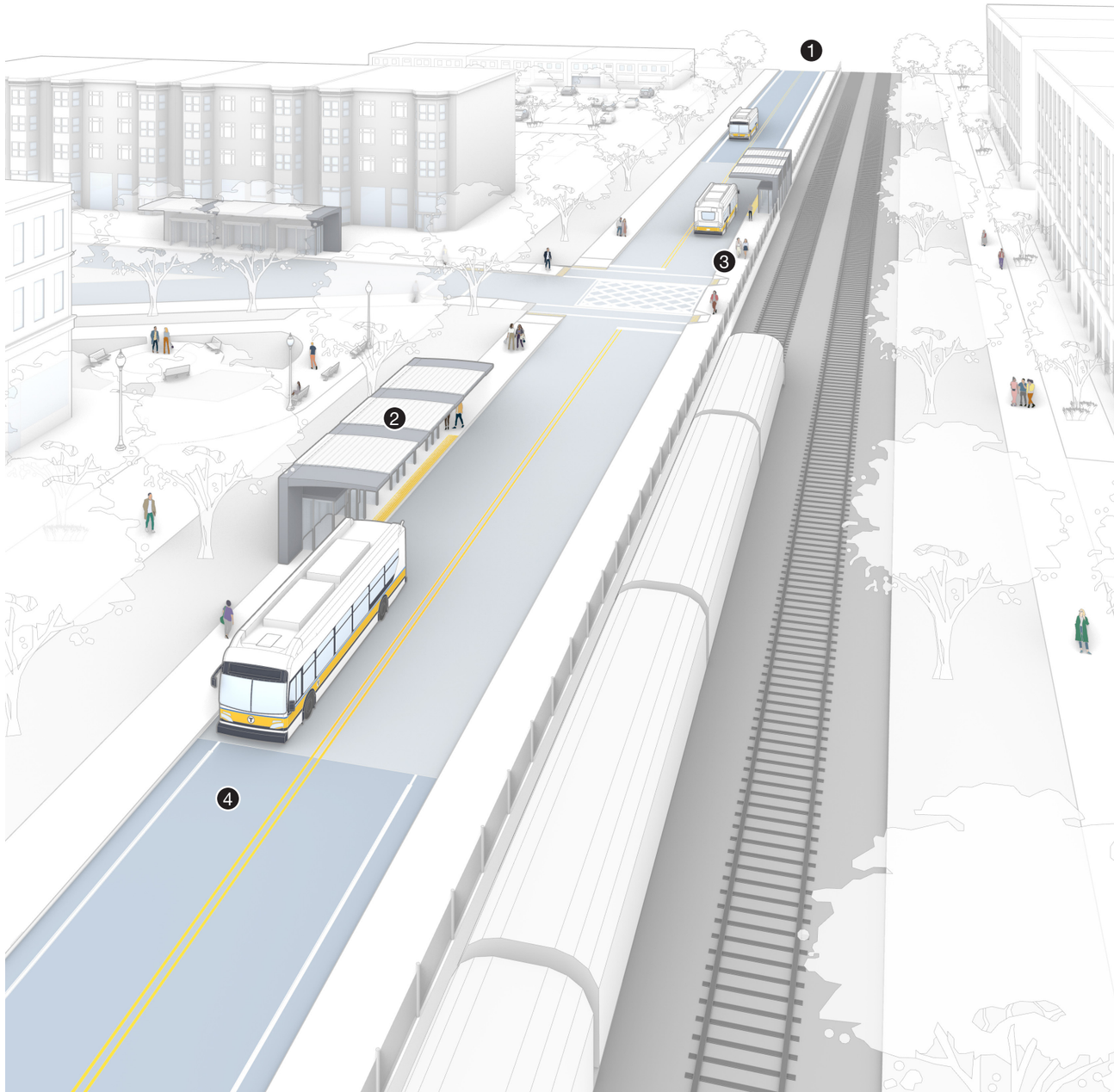
See It in Action

In Boston, through Chelsea, Route SL3 operates in a dedicated busway adjacent to a rail corridor.

Complementary Treatments

- Transit Signal Priority (p. 31, Bus Priority Toolkit)

1. **Signage** Signage prohibiting general purpose traffic, bicyclists, and parking should be posted at both ends of the station.
2. **Station Locations** Consider building station stops at key destinations with a limited-stop service to optimize bus speeds. If there is local service, consider bypass lanes to allow rapid/express buses to pass local stops.
3. **Station Access** A dedicated guideway is separate from the street network. Provide convenient ADA, pedestrian, and bike access to stations, including pedestrian and bike bridges, or elevators if the guideway is not at street-level.
4. **Long-Term Operations** MBTA or MassDOT offices with experience in dedicated guideway and highway operations may be better suited to manage fixed guideways than MBTA Operations or municipalities.



Chapter 5:

Accessibility and Pedestrian Environment

Introduction

All MBTA bus stops must be functional, safe, and accessible for all users, including older adults and people with disabilities. As the majority of MBTA routes serve bus stops located on or adjacent to sidewalks, attention to the pedestrian environment is crucial for rider safety, comfort, and universal accessibility. A bus stop has several interfacing physical elements – this chapter focuses on the accessibility considerations for the sidewalk and pedestrian environment at and around bus stops. Bus stop owners are responsible for making accessibility improvements. The majority of bus stops are located on municipal and state ROW. Bus stop land owners are responsible for providing compliant bus stops, making accessibility improvements, and ensuring bus stops are clear from snow.

For more on bus stop placement and length, see Chapter 3: Bus Stop Placement and Chapter 4: Bus Stop Layout and Configuration. For more on bus stop amenities, see Chapter 6: Passenger Amenities.

Accessibility Requirements & Regulations

There are a number of state and federal regulations applicable to the design and engineering of bus stops in public ROW. To deliver high-quality and universally accessible service the MBTA has adopted additional standards and guidelines based on its priorities, experience, and the unique characteristics of its bus service, outlined in the table on the next page. The MBTA's accessibility guidelines must be followed by the MBTA and partner agencies at all bus stops. If there are bus stop conditions that pose challenges to meeting the below accessibility requirements, the lead entity must coordinate with SWA.

A full list of federal and state accessibility requirements can be found in Appendix 2: Accessibility Requirements.

MBTA Accessibility Guidelines

Table 9. Summary of Accessibility Guidelines

Bus Stop Element	MBTA Guidelines
Front Sign	Signposts must be installed at the front end of the stop a minimum of 18" away from face of curb. Signposts cannot obstruct the path of travel or create a pinch point that is less than 5'-0" from the back of the sidewalk.
	The front of the bus should be a minimum of 7'-0" away from the sign at near-side stops. At far-side stops in the parking lane operators need 20'-0" of pull-out space.
Length of Stop: length of bus stop zone	Stop length must adhere to the minimums in Chapter 4.
Front Door Landing Area[13]: accessible front door boarding area	▶ Firm, stable, and level[14] surface that is smooth[15] and continuous. ▶ 8'-0" minimum depth, measured perpendicular to the curb, from the back of the curb to the back of the sidewalk. ▶ 10'-0" preferred, 5'-0" minimum, width measured parallel to curb. ▶ Front door landing area running slope, which is perpendicular to the roadway, cannot exceed 2.0% (and must be designed to 1.5%). ▶ Every effort should be made to ensure the front door landing area cross slope, which is parallel to the roadway, does not **exceed 2.0%** (and should be designed to 1.5%). In steep conditions, the cross slope must not exceed the slope of the roadway. ▶ Curb reveal must be between 5" and 7".
Rear Door Clear Zone: accessible rear door boarding area	▶ 10'-0" width along the curb by 5'-0" depth from the face of the curb[16] toward the back of the sidewalk. ▶ A minimum of 18" from face of curb for the full length of, the bus stop zone to avoid bus mirror collisions with vertical elements.
Sidewalk/Path of Travel: pathway through and within the stop zone, from the shelter to front door landing area, and path to the nearest crossing	▶ 5'-0" clear path of travel. ▶ Firm, stable, and level surface that is smooth and continuous[17]. ▶ Sidewalk running slope must never exceed that of the roadway. ▶ Sidewalk cross slope must never exceed 2.0% (and must be designed to 1.5%). ▶ There may be situations in which existing fixed infrastructure, such as fire hydrants, utility poles, and lamp posts, reduce the path of travel to less than 5'-0" for 24" or less[18]. Exceptions for these may be granted, but not below the 4'-0" minimum.

(Continues on next page)

13 The front door landing area running slope is perpendicular to the roadway. The front door landing area cross slope is parallel to the roadway. The sidewalk running slope is parallel to the roadway. The sidewalk cross slope is perpendicular to the roadway.
14 Level is defined as a slope of 2% or less.
15 The MBTA prefers asphalt or concrete; granite or wire-cut brick is also acceptable. Irregular or rough brick such as City Hall brick, chamfered pavers, and cobble are not permitted.
16 The curb face is the vertical or sloping surface on the roadway side of the curb.
17 The MBTA prefers asphalt or concrete; wire-cut brick is also acceptable. Irregular or rough brick such as City Hall brick, chamfered pavers, and cobble are not permitted.
18 Fixed infrastructure is defined as any infrastructure that would require subsurface alterations to remove or relocate.

Table 9. Summary of Accessibility Guidelines (Continued)

Bus Stop Element	MBTA Guidelines
Curb Ramp	▶ Ramp width must be a minimum of 3’-0” clear. ▶ Ramp running slope must never exceed 8.3% and must be designed to 7.5%. ▶ Ramp cross slope must not exceed 2.0% and must be designed to 1.5%. ▶ A clear area at top of ramp run must be 4’-0” x 4’-0”. ▶ Level landing area of ramp run must be designed not to exceed 1.5% in all directions. ▶ Detectable Warning Panels should be Federal Yellow in color unless a municipality has a local ordinance for a different contrasting color. Detectable warning panel must be aligned and within crosswalk markings. ▶ Vertical change at ramp connection to roadway must be less than ¼”. ▶ Grade breaks at the top and bottom of a curb ramp run must be perpendicular to the direction of the curb ramp run. Grade breaks are not permitted on the surfaces of curb ramp runs and level landings. Surface slopes that meet at grade breaks must be flush. When a change of grade occurs, it must not exceed 13.3% or transitional space must be provided[19].

19 Finalized in 2023 PROWAG Guidelines.

New Construction and Alterations

When changes are made to a bus stop, local agencies and their partners must adhere to the latest MBTA accessibility guidelines and Federal and State accessibility regulations. Different accessibility requirements are triggered depending on the type of bus stop changes. The construction of new bus stops must fully comply with all applicable accessibility regulations. If a new stop is unable to meet all MBTA accessibility guidelines, agencies should coordinate with SWA.

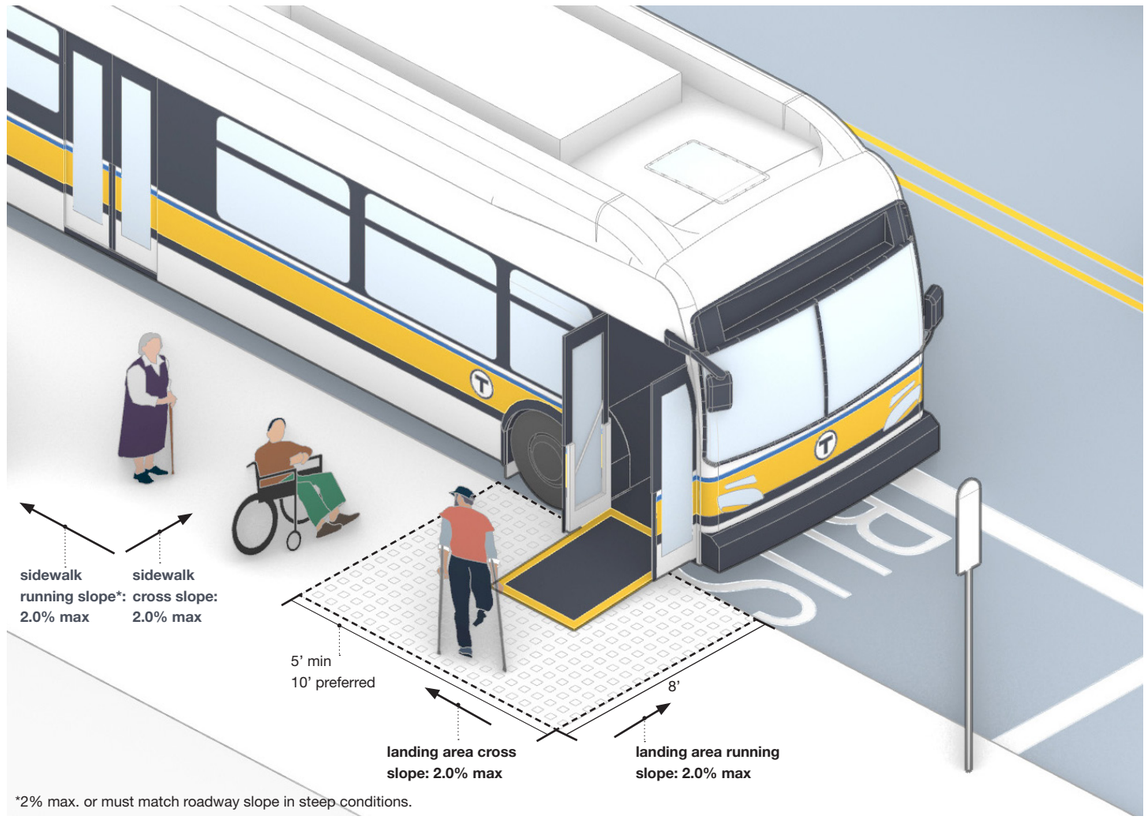
For other bus stop changes, planners should follow the below guidance:

- **New or relocated bus stops** must fully comply with all applicable accessibility regulations, including adequate bus stop length, an accessible front door landing area, accessible path of travel to the sidewalk, and an accessible path of travel to and across the adjacent crossing or crossings, if present.
- **The installation of a shelter** requires that the stop must fully comply with all applicable accessibility requirements, including adequate bus stop length, an accessible front door landing area, accessible path of travel to the sidewalk, and an accessible path of travel to and across the adjacent crossing or crossings, if present.
- **Installation of a bench at existing stops** requires that the stop must be located on/connected to a 5-foot accessible, path of travel with concrete, granite, asphalt, or wire-cut brick sidewalk. Benches should face the street where possible and cannot obstruct the path of travel. Installing a bench does not trigger other accessibility upgrades.
- **Lengthening of an existing stop** by relocating the front or rear signs does not require accessibility upgrades to the bus stop.
- **Paired bus stops:** When improvements are made to a bus stop, an accessible path of travel should be provided to the reciprocal stop, i.e., between a pair of stops, if one exists.

Front Door Landing Area

The front door of the bus is the primary location where riders board the bus and the accessible entry point, making adequate space and bus door alignment critical for safe ramp deployment. All MBTA buses have the functionality to lower or kneel at the front door, reducing the size of the step for riders to board or alight the bus, in addition to deploying ramps for riders using wheeled mobility devices. All MBTA buses have a mechanical access ramp that is deployed by the operator. When fully deployed, the ramp extends 47.95 inches from the bus.

The front door landing area consists of an unobstructed zone continuous to the sidewalk and contiguous to the face of curb and street. If there is a grass or landscaping strip adjacent to the curb, at a minimum the front door landing area must be provide a firm, stable, smooth, and level surface. The 8-foot depth provides the space required for deployment of the bus ramp and the requisite turning radius for someone using a wheeled mobility device. The 10-foot width allows the operator to align the bus with the landing area.



*2% max. or must match roadway slope in steep conditions.

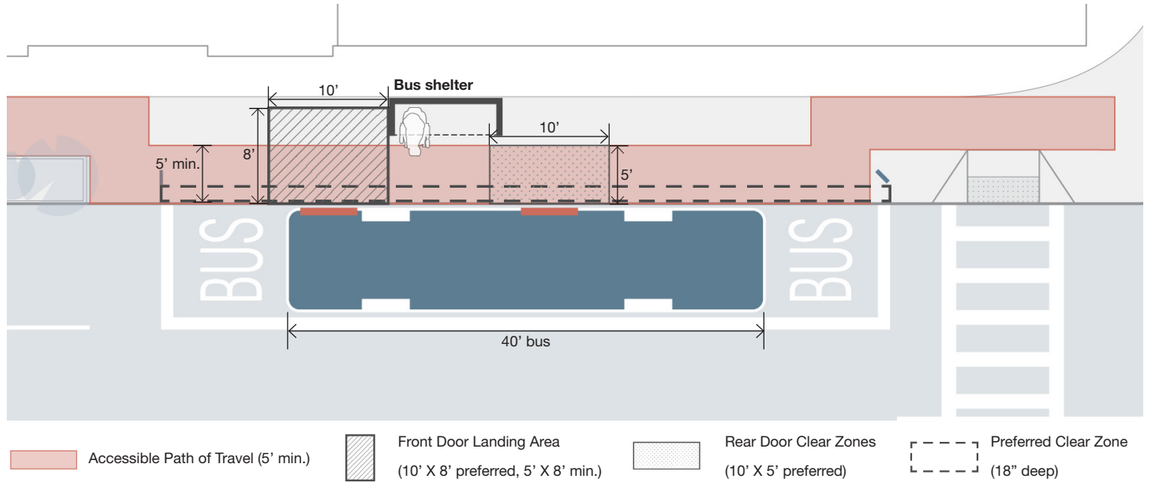


Figure 8: Front Door Landing Area and Path of Travel

Design & Implementation Considerations

- For the bus ramp to be fully accessible, the ramp must be deployed onto a sidewalk with a front door landing area 10 feet wide (5-foot minimum), 8 feet deep and 5 to 7 inches above the roadway surface.
- Avoid locating front door landing areas in front of building entrances, steps, and shelters to avoid conflicts wherever possible between people walking and riders boarding, alighting, or waiting for the bus.
- Avoid locating rear door clear zones in front of shelters to avoid conflicts between customers alighting and those leaving the shelter to board at the front door.
- Bike lanes must be separated from bus stops and should not travel through the front door landing area or any clear zones. The MBTA prohibits shared conditions where the bike lane travels through bus stop boarding areas[20].
- Floating bus stops should have a continuous barrier along the front door landing area and crosswalks to channelize riders (see Chapter 4: Floating Bus Stop). Barriers cannot obstruct the front door landing area.
- The rear door clear zone must be 5 feet deep and 10 feet wide.
- Within 18 inches of the curb, there must be a clear zone throughout the bus stop zone to avoid bus mirror collisions with vertical elements.
- The running slope of the front door landing area, which runs perpendicular to the roadway, cannot exceed 2.0% and should be designed to 1.5%. The landing area cross slope runs parallel to the roadway and cannot exceed the slope of the roadway. Every effort should be made to achieve a landing area cross slope of 2.0% or less to ensure the safe deployment of the bus ramp. If the front door landing area cross slope is above 2.0% consult MBTA SWA.
- The front door landing area must be clear of all amenities and other obstructions, such as trash barrels, newspaper stands, or overgrown plants.
- Design stops considering operations and maintenance, such as snow removal needs.

20 MBTA Bus Stop Design Directive

See it in action

On Charles Street in Boston an accessible front door landing area facilitates accessible boarding and alighting for riders using the mechanical access ramp. The front door landing area is made of concrete and is clear of any obstructions to the path of travel.

Rear Door Clear Zone

At new and relocated bus stops, the MBTA and its local partners should make every effort to provide a rear door clear zone for people getting off the bus at the rear door. This rear door clear zone is in addition to a front door landing area and should have a 10-foot width along the curb line and a 5-foot depth across the sidewalk. The clear zone should be located toward the rear of the bus where the second door opens. The clear zone must be clear of trash containers, vendor boxes, utility/light poles, signposts, hydrants, planters, benches, bike racks, shelters, etc. In addition, no objects should be within 18 inches of the face of curb for the entire length of the bus stop zone to avoid collisions with bus mirrors as buses pull in and out of the bus stop. Both the front door landing area and rear door clear zone(s) must be firm, stable, smooth, level surfaces connected to a sidewalk with a path of travel of 5 feet or more. For 60-foot buses with both a middle and rear door, there must be two rear door clear zones.

See it in action

A 39 pulling up to a bus stop zone with a fully accessible rear door clear zone at least 10 feet wide and 5 feet deep.

Front Signs

Front signs must be installed at the front end of the stop with a minimum 8-foot setback from the crosswalk or intersection. The distance from the crosswalk to the stop bar varies at every intersection; if the stop bar is further than 8 feet from the crosswalk the front sign should be 1-foot behind the stop bar. Bus operators should stop within 7 feet of the front sign at near-side bus stops, as that is where riders, particularly low-to-no-vision riders, know where to wait for the bus. If the bus stop is far-side and in the parking lane operators need additional space to pull out of the bus stop zone; MBTA bus stop length guidance recommends operators stop 20 feet away from the sign. The signpost must be installed 18 inches from the face of curb but cannot create a pinch point of less than 5 feet between the post and the back of the sidewalk.

See it in action

Visually impaired rider boarding bus at JFK/UMass Transit Station.

Sidewalk and Path of Travel

An accessible path of travel within the MBTA's system is defined as a 5-foot wide, firm, stable, smooth, level, and slip-resistant pathway (concrete, asphalt, granite, or wire cut brick), clear of obstructions. The sidewalk cross slope, which is perpendicular to the roadway, cannot exceed 2.0% and should be designed to 1.5%. The sidewalk running slope, which is parallel to the roadway, cannot exceed the slope of the roadway. Every effort should be made to achieve a sidewalk running slope of 2.0%. The lead entity and roadway owner should coordinate with MBTA SWA if the slope of the roadway is greater than 2%.

There must be an accessible path of travel connecting the front door landing area to and through the bus stop zone and the adjacent sidewalk. In most cases, the landing area and bus stop zone are already part of the sidewalk. If there is not a continuous sidewalk, then planners and engineers must make efforts to clear obstructions and provide a firm, stable, smooth, level 5-foot clear path of travel between the sidewalk and the front door landing area/bus stop zone. If elements such as newspaper boxes, tree grates, utility poles, and trash cans obstruct the path of travel, then the stop is not fully accessible. In addition, environmental elements such as encroaching grass, bushes, tree roots, and snow can also make the sidewalk inaccessible. As outlined by the Federal Highway Administration, a public agency must maintain accessible walkways, with only temporary accessibility interruptions. This maintenance obligation includes snow removal.

See it in action

A bus stop in Burlington with a standard shelter setback from the sidewalk to keep the sidewalk/ path of travel clear of obstructions for boarding and alighting.

Obstructions

Maintaining a clear path of travel so riders can get on and off the bus and connect to the sidewalk/ path of travel is essential for bus stop accessibility. Obstructions can block people from safely accessing the bus. Obstructions include fixed elements, such as fire hydrants, utility poles, bike racks, and tree pits[21], or non-fixed elements, such as trash cans, mailboxes, newspaper vending machines, or snow. Snow accumulation is a significant barrier to accessibility in the MBTA region and prohibits riders from using bus service during inclement weather; snow removal is typically the responsibility of the municipality or roadway owner. Obstructions create narrow pinch points that limit the path of travel. There must be an 18 inch clear zone, free of any vertical elements, from the face of the curb throughout the full length of the bus stop zone, to avoid a collisions with bus mirrors as operators pull in and out of the bus stop zone. The clear zone and the accessible path of travel may overlap. By keeping bus stops clear of obstructions, the MBTA enhances accessibility, facilitates operational flexibility, and makes snow removal easier.

21 Fixed infrastructure is defined as any infrastructure that would require subsurface alterations to remove or relocate.

Unique Considerations: Bus Stops at Bike Lanes

Constrained bus stops where bike lanes travel through the front and rear door boarding areas at the sidewalk/ bus stop level are strictly prohibited by the MBTA. The MBTA prefers floating bus stops with two dedicated crossings striped across bike lane and a continuous barrier to channelize riders. Bus islands must be a minimum of 8 feet deep to accommodate front and rear door landing areas (see Chapter 4: Floating Bus Stop).

Curb Ramps

Curb ramps (also referred to as pedestrian ramps) are provided to allow access to the street surface and/or crosswalks. Curb ramps are an integral part of the path of travel leading to and from bus stops. The technical requirements for curb ramps and accessible pedestrian signals can be found in Public Rights-of-Way Accessibility Guidelines (PROWAG) and the MUTCD (Manual on Uniform Traffic Control Devices) Chapter 4E.

Curb ramps must meet State and Federal accessibility standards, including a tactile surface with running slopes no greater than 8.3%. There must also be a path of travel between the bus stop and the closest adjacent crosswalk(s), with a compliant curb ramp at each end of the crossing. Municipalities and state agencies are expected to have up to date 504/ADA Transition Plans to remove non-compliant curbs, curb ramps, signals, and sidewalks, in accordance with the US Department of Justice and Federal Highway Administration.

Pedestrian Street Crossings

The accessible path of travel from the bus stop front door landing area must connect to and across the nearest street crossing to allow for a connection between inbound and outbound service where there is stop pair. Additionally, the MBTA and its partner municipalities should consider the proximity of side street crossings and the access to surrounding destinations. If bus stops are at the intersection, near or far-side, accessible crosswalks are required on the side streets. Accessible street crossings include crosswalk markings and curb ramps at both ends of the crosswalk. These crossing components must comply with State and Federal accessibility regulations[22].

At signalized pedestrian crossings, municipalities or the roadway owner must provide accessible pedestrian signals (APS). APS include push buttons at activated signals, within reach of a level area of the curb ramp. The APS must create an audible sound both when engaged and when the walk signal is activated.

See It in Action

A rapid flashing beacon facilitates safe crossings across Cambridge St.

22 Manual on Uniform Traffic Control Devices Section 4E.11 Accessible Pedestrian Signals and Detectors – Walk Indications

Chapter 6:

Passenger Amenities

Shelter Art by Whitney Burdge

Introduction

Bus stop amenities like shelters, lighting, benches, and real-time information have a big impact on the rider experience. MBTA rider feedback shows that bus stop amenities improve riders' perception of service comfort and safety, which can reduce perceived waiting times and encourage more transit use.

The MBTA has identified four guiding principles for bus stop amenities:

- Implement a human-centered network of amenities that meets rider needs.
- Deliver a consistent experience across municipalities in the service area.
- Enforce clear maintenance standards to sustain a high level of care.
- Use ongoing and dedicated revenue streams to support dignified, well-maintained amenities that benefit riders and communities.

Having a weather-protected and safe place to wait for a bus can be a factor in whether a person uses transit or makes the trip at all. The following sections introduce a framework and guidance for what amenities should be at what bus stops and other considerations for amenity suitability and placement.

Amenities are typically installed on a case-by-case basis based on community needs, outreach, and engagement. The MBTA also does a systemwide evaluation of ridership, facilities, and equity considerations to identify potential stops for shelter improvement.

While bus stops vary widely throughout the region, these guidelines provide a framework to direct municipalities, property owners, developers, and the MBTA in how to best provide physical improvements for riders in varying settings. Context-sensitive design includes consideration of ridership demand, safety, accessibility, community (including equity), environment, and aesthetics. Regional collaboration and partnerships are critical to achieving these goals.

A Route 39 bus picking up passengers at Copley Square where there is a pass-through shelter.

Planning Context

The MBTA mostly operates bus service on streets it does not own or maintain but has a very important stake in how bus stops function for riders. Besides investing its own resources in amenities, the MBTA also encourages public and private partnerships to make improvements that can improve accessibility, reliability, and comfort for all riders. When the MBTA is not the lead entity, coordination with MBTA staff is critical to ensure that the lead entity adheres to accessibility requirements. MBTA staff can help municipal, state, and private partners identify amenities suitable for different space constraints and environments. An accessible path of travel and front door landing area take priority over amenities.

Amenities provide value to riders and the community in different forms. Lighting has uniform value for boarding and alighting and provides an added safety benefit, while bus shelters and benches only support people waiting to board.

Accessibility

People of all abilities rely on MBTA bus service. Amenities and thoughtful amenity placement are critical components to ensuring that all riders can get to where they are going safely and comfortably. The MBTA accessibility guidelines outline clearance requirements within the bus stop zone, including the path of travel, front door landing area, and rear door clear zone. The path of travel must connect to the shelter or bench and be clear of obstructions. Amenities may narrow the path of travel but not to less than 5 feet. Exceptions are granted for fixed infrastructure that would require subsurface alterations to remove or relocate, but never below 4 feet.

Equity

Investments in amenities are reviewed through Federal Title VI guidelines. Areas with higher numbers of disadvantaged indicators, including minorities and zero-vehicle and low-income households, should get equitable distribution of amenities, funded through the MBTA's capital budget. This means distribution at least at the same level as the overall system. Placement decisions are put through an equity lens in conjunction with the MBTA's Title VI plan, regional environmental justice metrics, and related guidance.

To identify new shelter locations, the MBTA Street Furniture team uses a data-driven approach that considers bus stop ridership as well as equity indicators, such as average levels of cash fare payments, average senior fare and Transportation Access Pass (TAP) payments, and race and income. This helps the MBTA prioritize amenity investments based on community needs. Other shelter locations may be identified and funded by municipaliites or developers outside of the MBTA's programs.

Amenities Framework

The following amenities framework introduces updated guidance to inform what amenities should be at different bus stops based on different conditions and space available. Planners and engineers should at a minimum encourage that a stop has all the standard elements outlined in the framework.

There are four bus stop categories in this amenities framework:

- **Busway Station:** a high-activity bus stop with an exclusive busway. May connect to other modes of transportation, such as subway or commuter rail service or bike share. The Silver Line SL1 and SL3 are examples of busway stations, which typically include the full list of amenities.
- **Premium sheltered stop:** typically located on bus priority corridors with investments in bus lanes, and bus stop improvements such as median bus platforms that may include multiple amenities.
- **Standard sheltered stop:** a bus stop with a shelter or multiple shelters that may include other amenities.
- **Standard stop:** a stop without a shelter that may have additional amenities depending on space available, ridership, and community context.

Some of the most common bus stop amenities are:

- Bus shelters
- Benches
- Perches
- Trash and recycling receptacles
- Lighting
- Bicycle racks
- Information kiosks
- Streetscape fare vending machines
- Real-time signage

Some of these amenities are also accompanied by a treatment sheet that describes them in further detail. Static and digital signs are addressed in Chapter 7: Signage and Customer Information.

Amenity Suitability

The amenities framework provides a foundational understanding of what amenities should go at what stop, but designing bus stops requires a more detailed suitability analysis of available ROW and key planning factors. The below criteria applies to all amenities, additional details are outlined on the amenity treatments sheets on the following pages.

Table 10. Amenity Suitability Criteria

Key Planning Factor	Criteria	Guidance
Available ROW	Path of Travel	Must maintain a minimum 5’-0” path of travel. ▶ MBTA standard benches require a minimum 7’-0” sidewalk. ▶ MBTA narrow shelters require a minimum 7’-0” sidewalk[23]. ▶ MBTA standard shelters require a minimum 10’-0” sidewalk. The minimum sidewalk width for shelters and benches varies depending on the shelter dimensions, see Appendix 1: MBTA Shelter Specifications for more details.
	Building and Maintenance Clearance	Maintain a 1-foot clearance between amenities and buildings, walls, or fences for maintenance and snow removal.
Bus Stop Activity	Ridership[24]	MBTA recommends shelters at bus stops with over 70 average weekday boardings a day and benches at stops with over 50 average weekday boardings day.
	Transfers	High transfer activity may justify additional amenities for waiting passengers.
	Bus priority corridors	MBTA recommends premium shelter amenities along bus priority corridors where feasible.
Bus Stop Environment	Adjacent land uses	Bus stops near housing serving older adults, health care centers, or other land uses serving riders with mobility needs may justify amenities like benches or shelters even if the stop does not meet the recommended ridership thresholds above.
	Building canopies/ infrastructure	Bus stops may not require additional amenities if they’re already in the ROW, including benches or building canopies. Building canopies are more space efficient along space constrained sidewalks.
Other Considerations	Streetscape requirements	Some municipalities may have a form-based code requiring street furniture or amenities have a consistent look and feel, posing constraints on what the MBTA can install.
	Rider requests and feedback	Riders or organizations often reach out to the MBTA or the local municipality to request amenities like shelters. Service planning considers these when evaluating amenity suitability. Reach out to serviceplanning@mbta.com for amenity questions.

23 The depth of the landing area must be 8-feet, but narrow shelters can be installed on 7-foot sidewalks if there is a 1’ clearance provided behind the shelter for maintenance and cleaning.

24 See Appendix 4 for additional details on the points system used to support bench suitability.

Station Stops

Standard Elements

1. Shelter(s) with canopy coverage
2. Benches
3. In-shelter lighting
4. Real-time info
5. Trash receptacles
6. Near-level boarding
7. Emergency call box and cameras
8. Bike racks
9. Maps and customer information

Optional Elements

- Full weather protection/ coverages
- Artwork
- Landscaping
- Heating
- Mobile phone charging
- Fare vending machines
- Wi-fi

Premium Sheltered Stops

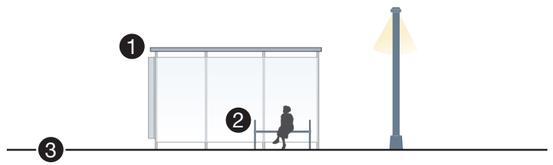
Standard Elements

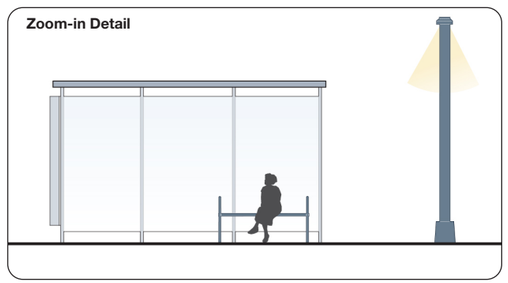
1. Shelter(s) with canopy coverage
2. Benches
3. In-shelter lighting
4. Real-time info
5. Maps and customer information

Optional Elements

- Trash receptacles
- Emergency call box (maybe standard)
- Fare vending machines
- Bike racks
- Heating

Standard Sheltered Stops





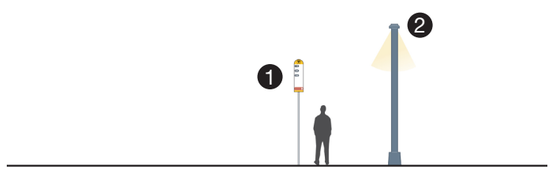
Standard Elements

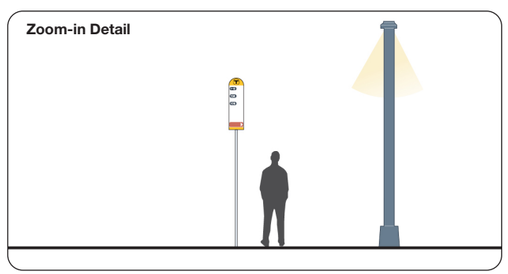
1. Shelter
2. Bench (or other seating)
3. Sidewalk level boarding

Optional Elements

- Trash receptacle
- In-shelter lighting
- Fare vending machines
- Bike racks
- Maps and customer information
- Real-time info

Basic Standard Stops





Standard Elements

1. Route sign
2. Adequate street-level lighting

Optional Elements

- Sidewalk level boarding
- Benches
- Bike racks
- Real-time info

See it in action

Station stop at Box District in Chelsea on the Silver Line

Premium sheltered stop at Walnut Avenue on Columbus Ave in Boston for the 22, 29, and 44

Standard sheltered stop at North Shore Road on Beach St in Revere for the 411

Basic standard stop at Barrows Street on Cambridge St in Allston for the 57 and 501

Bus Shelters

Shelters are one of the most valuable amenities to riders, offering a weather-protected area to wait for the bus. In addition, they may also provide seating, lighting, maps, or real-time information.

The MBTA's Street Furniture team, with support from Service Planning and Capital Delivery, typically lead shelter planning, design, and implementation. Shelters are prioritized at accessible, high ridership stops with **at least 70 average weekday boardings**. Shelters are installed by the MBTA and third parties.

Placement/Orientation Considerations

- Shelter placement cannot obstruct the continuous 5-foot path of travel, which is commonly in front but can also be behind the shelter.
- The MBTA and its local partners are required to maintain an accessible path of travel between the shelter, front door landing area, adjacent sidewalk, nearest curb ramp, and accessible crosswalk is required
- Locate within the bus stop zone, as close as is practical to the front door boarding area to limit time delay from riders leaving the shelter to board.
- Locate where there is adequate street or stop-level lighting. At shelters, consider hard-wired or solar lighting options.
- Where possible, place the shelter more than 10 feet from a curb cut for an intersection or driveway and avoid placing directly in front of building access points, windows, and storefronts used for commercial purposes.
- Maintain accessible boarding and alighting areas at all doors.
- Avoid obstructing building entrances and pathways.
- Avoid locations with obstructions that block the bus operators view of riders waiting at the bus top.
- The MBTA prefers shelter locations between the front door boarding area and rear door clear zone with the shelters oriented towards the street.
- If the shelter is located along the back of sidewalk, maintain a minimum 1-foot clear area for maintenance and snow removal between the back of the shelter and any adjacent buildings, walls, or fences.

Design and Implementation Consideration

- The sidewalk cross slope must be 2.0% or less on the shelter foundation to facilitate drainage.
- Advertising panels shall not block visibility between an approaching bus and waiting riders.
- Maintain a minimum 5-foot clearance between benches inside shelters and the curb.
- For constrained sidewalks, consider a narrow style shelter that has less of an impact to the path of travel.
- Shelter or canopy size should reflect ridership volumes. If there are over 140 average weekday boardings on average on a weekday, consider a double-wide canopy or second shelter. If there are multiple bus berths, distribute shelters throughout the bus stop zone, avoiding any landing areas.
- Install bollards or other protective devices where shelters may be susceptible to damage, such as from other vehicles turning in and out of driveways or parking spaces behind the shelter.
- Installation of a bus shelter may trigger accessibility improvements, such as bus stop lengthening, an accessible front door landing area, and widening the path of travel.
- Standard shelters require a sidewalk depth of 10 feet or more and need a 5-foot path of travel in front of the base of the shelter.

Other Considerations

- Avoid placing directly in front of building access points, windows, and storefronts used for commercial purposes.
- Avoid exposing occupants to splashing water from passing vehicles and runoff from adjacent buildings and landscaping.
- Provide electrical connection to the shelter for lighting and/or digital advertising panels. Utility companies will determine point of connection upon initiation of a work order.
- If a hard-wired electrical connection is not possible, evaluate the feasibility of a solar shelter.
- Shelter manufacturers may have their own installation requirements.

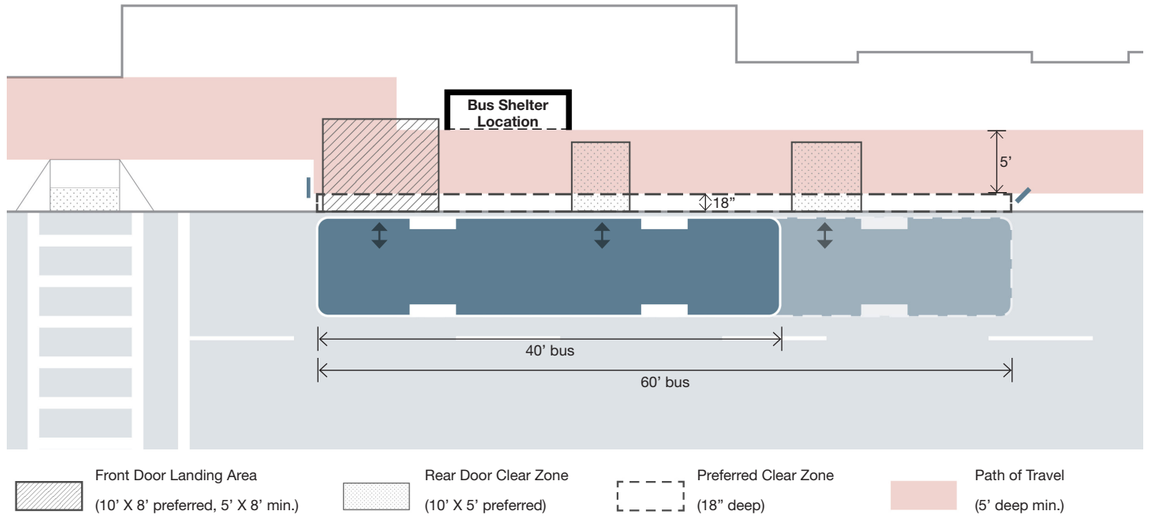


Figure 9: Preferred Shelter Locations for a 10-foot Sidewalk

Permitting

Any entity interested in installing a shelter should ensure that the shelter meets the following site suitability considerations:

- **Ownership:** The property owner, whether the MBTA, the municipality, or a state agency, must grant the lead entity permission to install the shelter. If the sidewalk is too narrow to install a shelter, an easement or license agreement is required.
- **Abutter involvement:** Municipalities may require notification or approval from abutters for an installation in front of a property, depending on the setback from the property line.
- **Municipal approval for advertising:** A municipality may require a license agreement with the shelter company. The applicant should check to see if this requires a Select Board or City Council approval. The State Office of Outdoor Advertising (OOA) may also require a permit.

See it in action

Bus shelters offer weather protected areas for riders to wait for the bus and often can include maps and other rider information.

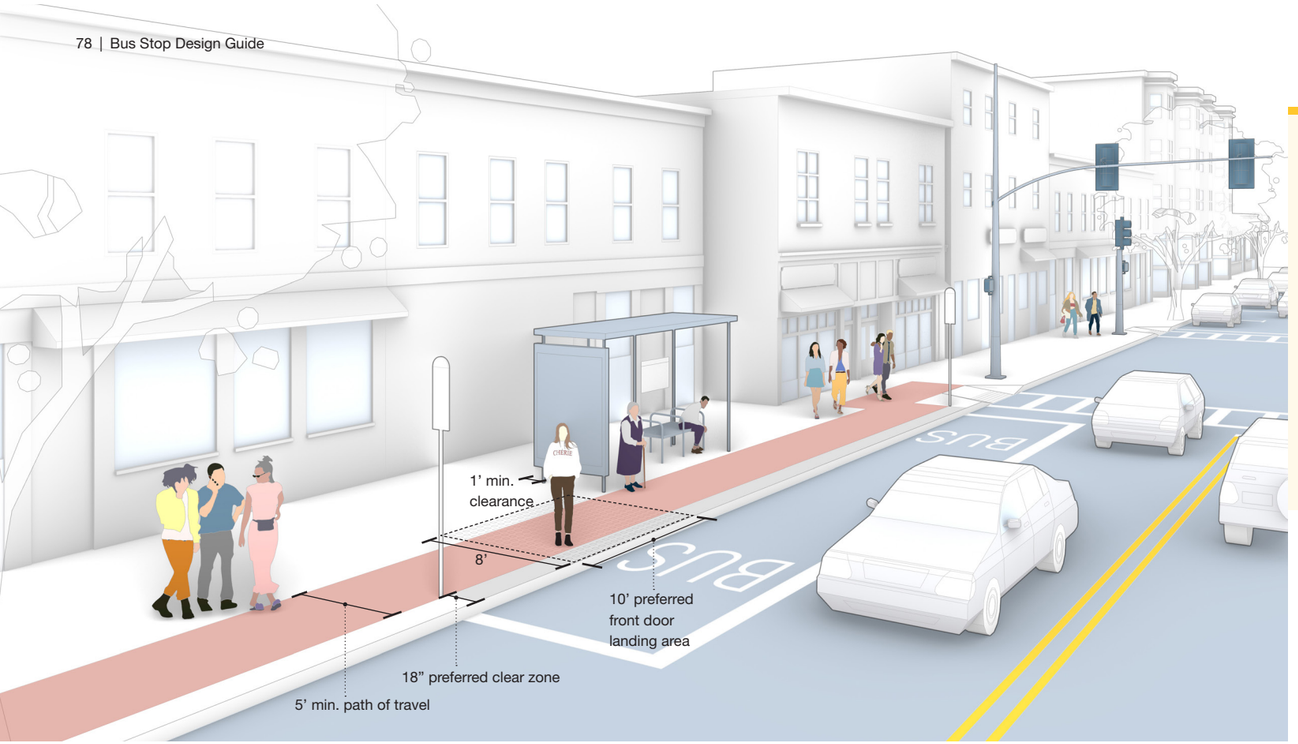


Table 11. Shelter Ownership

Owner	Installer/Maintainer	Provisions
MBTA	Advertising Contractor or MBTA	Through the Street Furniture Program, the MBTA facilitates design, construction, and permitting. Agreements are typically formed between the MBTA and the municipality for advertising revenue to be shared among the parties in the agreement. The direct and indirect lighting of the advertising panel may be solar-powered or hard-wired, requiring connections to adjacent utilities. The MBTA also maintains shelters that have no advertising, including those on the Silver Line and some frequent routes.
Municipalities	Municipalities	The MBTA’s shelter procurement contract permits municipalities to purchase shelters. Municipalities should coordinate with MBTA Service Planning if they are interested in a shelter. The entity purchasing a shelter under this contract owns the shelter and assumes maintenance responsibilities. This includes maintenance plans to keep pathways clear of blockages, including snow and ice, and keeping structures, seating, and customer areas clean.
Abutting private property owner, agency, or municipality	Abutting private property owner, agency, or municipality	These are outside of the MBTA contract, purchased as an amenity. Third parties must coordinate with MBTA Service Planning to confirm shelter placement. Service Planning often will also need to coordinate with other departments prior to a final approval. Maintenance responsibilities of the shelter owner include keeping pathways clear of blockages, such as snow and ice, and keeping structures, seating, and customer areas clean.

See it in action

On Blue Hill Ave an MBTA narrow shelter provides a comfortable, weather protected place to wait. The shelter is at the back of the sidewalk with a 1-foot building clearance for maintenance and snow removal. MBTA narrow shelters are a great option on narrower sidewalks where a standard shelter would obstruct the 5-foot path of travel. Supplemental bench seating provides an additional place to wait at this busy bus stop.

Benches

Benches provide a safe and comfortable place for riders to sit and wait. They can supplement shelter seating or can offer seating if there is not space or ridership does not warrant a shelter. For more details and bench specifications consult the MBTA Benches Design Directive.

MBTA Recommends benches in the following bus stop conditions:

- Bus stops with over 50 average weekday boardings.
- Bus stops near housing serving older adults and healthcare centers, or other areas where there are high concentrations of riders with mobility needs.
- Bus stops with high pedestrian activity.
- Bus stops with long wait times or high transfer activity.
- To supplement shelter seating.
- To prevent riders from sitting on abutting walls or in unsafe areas.

Placement/ Orientation Considerations

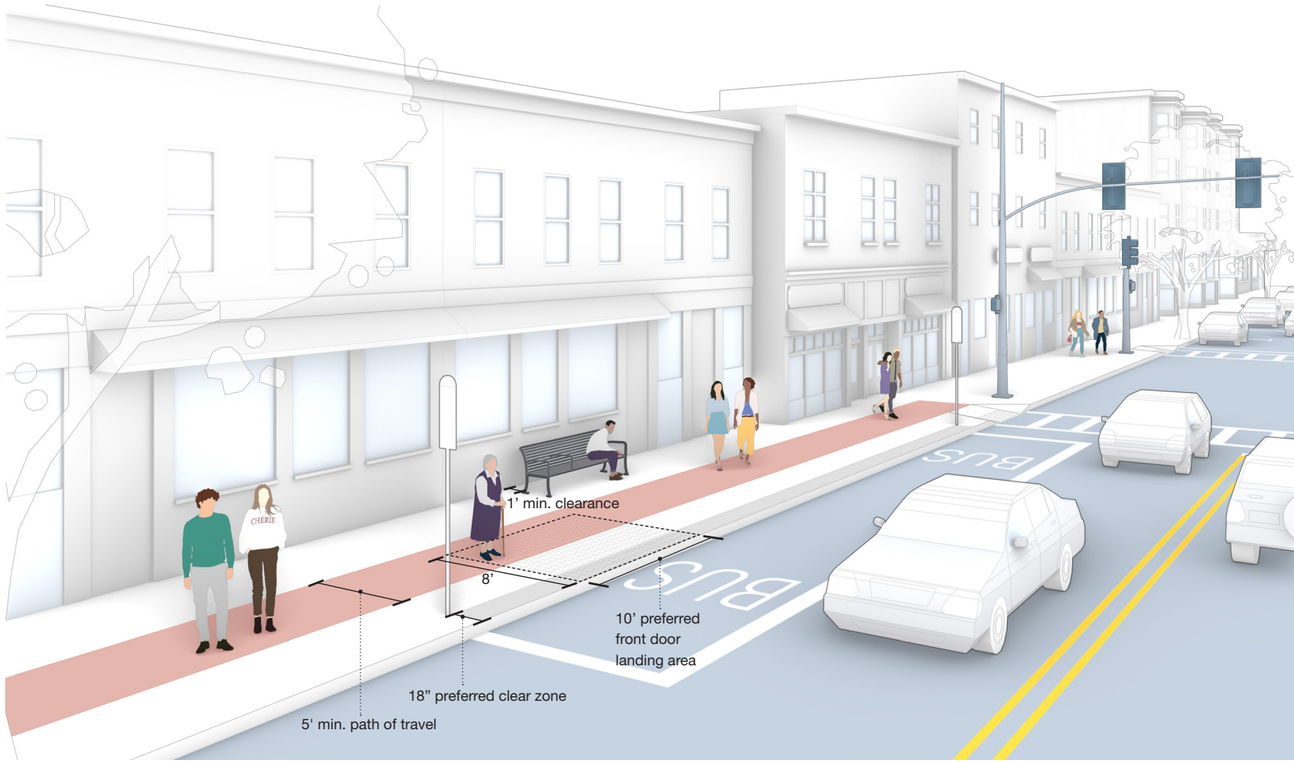
- Benches must avoid obstructing the path of travel. Street-facing benches should be at least 5 feet from the face of the curb. At the bench the minimum sidewalk width is 7 feet.
- Avoid blocking building entrances.
- If the bench is located along the back of sidewalk, maintain a minimum 6-inch clear area for maintenance and snow removal between the back of the bench and any adjacent buildings, walls, or fences.
- Orient benches toward the street so riders can see an approaching bus.
- Avoid placing in front of system maps or wayfinding guides.

Design and Implementation Considerations

- Public Right-of-Way Accessibility Guidelines (PROWAG) requires benches provide back support and armrests to help people to sit down and stand up.
- Mount the bench in at least 4-inch deep concrete.
- Use shot-blasted, galvanized materials to prevent degradation.

See it in action

A bench along Route 87 in Somerville.



Perches

While they do not replace the need for benches, perches (or leaning rails) offer riders a place to take weight off their feet while waiting for the bus. Perches provide riders a place to rest after walking to the bus and can also serve as a barrier to channelize pedestrian flow, such as at floating bus stops. Perches are more space efficient than benches, offering an alternative if the sidewalk is not wide enough for a bench. Perches are installed by the MBTA on a case-by-case basis. Perches are required to be up to 29 inches high and may be 8-15 feet in length.

See it in action

The MBTA uses perches where there is not enough space for a bench, seen here on Massachusetts Avenue at Boylston St in Boston.

Trash and Recycling Receptacles

Trash and recycling receptacles help control litter at bus stops, particularly those with high ridership and those nearby retail and neighborhood centers. Trash receptacles can also deter wind-driven trash from accumulating inside shelters. Maintenance and emptying of receptacles are not the responsibility of the MBTA, unless the receptacle is located on MBTA property. For any installed receptacles, the property owner, whether the municipality, state agency, or private landowner, must agree to maintain and empty the receptacles. Solar-powered compactors can mitigate the need for frequent removal of materials. Wi-fi enabled devices provide notification to the responsible entity when the compactor needs to be emptied.

Receptacles should not be located where they create barriers to accessible bus boarding/alighting or sidewalk usage or next to where people sit or congregate. The minimum sidewalk width required to accommodate a 5-foot path of travel past a receptacle is 7 feet, 6 inches.

Lighting

Adequate lighting supports customer comfort, safety, and security. It also enables bus operators and other drivers to see waiting riders. Ideally, bus stops are co-located near overhead streetlights that illuminate the stop at night. Shadows from adjacent structures may warrant additional lighting. Nearby crosswalks and curb ramps that serve the bus stop should also be illuminated.

Lighting should be at the bus stop through use of pedestrian-scale streetlights or backlighting at shelters with advertising panels. If a shelter is present, the MBTA recommends both interior and area lighting. Placement and maintenance of lighting is typically the responsibility of the municipality, except for lighting inside a shelter that is maintained through the MBTA's shelter contract. Supplemental lighting from nearby businesses improves visibility but does not substitute area lighting.

Bicycle Racks / Parking

Designated bike parking discourages people locking bicycles in areas that interfere with a rider's path of travel or other pedestrians. Municipalities and other MBTA partners should provide "post and ring" or "inverted U"-style racks at bus stops where the sidewalk is at least 8-feet wide. The installing entity should place bike racks away from curbs, outside of the path of travel, and should account for the size of parked bikes. Do not assume bike owners will remove wheels or make other adjustments to reduce their footprint. Also consider the path to enter and leave the bus stop from adjacent bike trails, bike lanes, or roadways.

The MBTA and its partners should consider bike parking facilities, such as bike racks, bike corrals, or Pedal & Park bike cages, at major bus stops.

Placement/ Orientation Considerations

- Avoid bike racks in the 5-foot of path of travel.
- Orient single bicycle racks to be parallel to the curb to maximize the path of travel.
- Locate bike parking away from the front door landing area to reduce friction with people getting on and off the bus.
- Place bike racks in well-lit areas that are not blocked by a bus shelter, landscaping, or other site elements.
- Design and place bicycle racks to complement other bus stop amenities.
- At station and premium sheltered stops, consider covered or weather-protected bicycle racks.

See it in action

Cambridge floating bus stop near Kendall Square with a ring style bike rack.

Streetscape Fare Vending Machines

Through the Fare Transformation program, the MBTA is installing free-standing streetscape fare vending machines (FVMs) at select bus stops across the bus network, including at standard sheltered and standard stops. They dispense new CharlieCards and allow funds to be added to existing cards with cash, as well as credit, debit, and Electronic Benefit Transfer (EBT) cards. Streetscape FVMs are a component of the Fare Transformation Program that intends to reduce boarding times through all-door boarding.

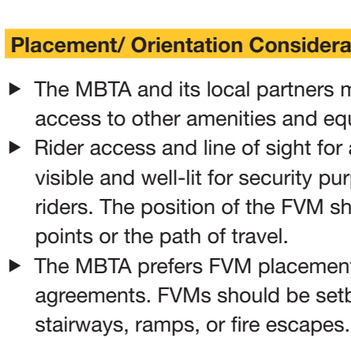
Placement/ Orientation Considerations

- The MBTA and its local partners must maintain a clear path of travel with access to other amenities and equipment.
- Rider access and line of sight for an approaching bus. FVM's should be visible and well-lit for security purposes, maintaining operator visibility of riders. The position of the FVM should prevent queues from blocking access points or the path of travel.
- The MBTA prefers FVM placement in public ROW to avoid license agreements. FVMs should be setback from building access points, stairways, ramps, or fire escapes.
- FVM placement should consider winter weather conditions, snow removal, and maintenance requirements.
- Solar FVMs require adequate sun exposure. Consider hard-wired electrical connections where there is not adequate sunlight.

Design and Implementation Considerations

- FVMs need to be anchored to a sidewalk or solid foundation – avoid granite sidewalks.
- FVMs must be mounted flush to the existing pavement, not on a raised pad.

Streetscape FVMs are maintained by the MBTA's Fare Transformation operations and maintenance contractor. Issues with FVM's should be reported to Service Planning.



See it in action

As part of its Fare Transformation program, the MBTA will be installing new streetscape FVMs at bus stops where riders can get a new Charlie Card, load money, or purchase passes.

Figure 10: Fare Vending Machine dimensions

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Chapter 7:

Signage and Customer Information

Static Signs

Bus stop signs serve multiple functions. For riders, the sign markets the bus service to the public to promote use by new or occasional riders. The front signs include route number(s) and end point destination(s) that affirm to riders that they are at the correct stop for the direction they are headed. Signs should complement printed or digital information and be designed to assist riders with limited vision.

For the bus operator, the front sign identifies where riders are waiting to board the bus and the front door landing area. To other road users, signs indicate the front and rear of the bus stop zone and the designated no parking area.

Sign Content

There are two types of static signs: front signs and generic signs. Front signs include route number(s) and end point destination(s) and come in standard and tall sizes. Generic signs do not contain any route or end point information and, as such, are typically used as rear signs, though they may replace front signs in some situations.

All bus stop signs have the MBTA logo at the top. Route numbers and service endpoints are displayed on the body of the front sign. Telephone and webpage contact information is at the base of both front and generic signs. Front signs provide a unique stop identification number that riders can use to access digital information about MBTA service, including T-alerts (text or email service messages) and real-time arrival predictions. Front and rear signs also identify the “No Stopping Tow Zone” with the penalty fine for the purposes of enforcement. In addition to these components the MBTA is considering other elements to describe high-frequency routes and format changes to improve legibility and accessibility.

Short front signs permit up to three routes and tall front signs permit up to five routes. Where the amount of service at a stop does not allow for all route numbers and endpoints to fit onto a single tall front sign, the MBTA will review options to collapse or consolidate information.

For particularly long bus stops, the MBTA may install additional signage with an arrow in both directions to signal to drivers the full tow zone area. The MBTA may also choose to install auxiliary signs to provide additional customer information.

See it in action

Bus stop sign at Maverick Station serving multiple routes

At some premium sheltered and busway station stops, the MBTA has rectangular signs with the same color schemes but without the parking restriction information. Multiple berths are labeled with separate berth numbers or letters. In some cases, signs may be suspended from the station structure rather than projected on a post. Route and endpoint information are displayed similar to front signs.

Sign Placement and Installation

- Place front bus stop signs at the beginning of the bus stop zone (see bus stop length guidelines in Chapter 4 on page 36). Generic signs are used to mark the rear of the bus stop zone when there is on-street parking, or the presence of a bus stop that is only served by non-regular service. The bus driver uses the signs as a guide to position the vehicle parallel and within 18” to the curb.
- Signs should be easily visible to bus operators and riders.
- The MBTA and its local partners must install signposts 18 inches from the face of the curb to avoid potential collisions with bus mirrors and other vehicles.
- Sign placement cannot obstruct the 5-foot accessible path of travel. In locations with narrow sidewalks or other constraints, the sign can be placed at the back of sidewalk to maintain an accessible path of travel. To confirm sign placement in space-constrained conditions, planners and engineers should contact MBTA Service Planning. Set back signs at least 3 feet from any intersection or driveway to avoid potential vehicle collisions.
- The front sign face shall be set at 90° angle (perpendicular) to the curb, facing oncoming traffic. Rear signs, where applicable, shall be set at a 60° angle to the curb.
- The bus stop sign must be set at least 6 feet, 8 inches (80 inches) above grade but less than 10 feet, consistent with the figure below, and ADA regulations.

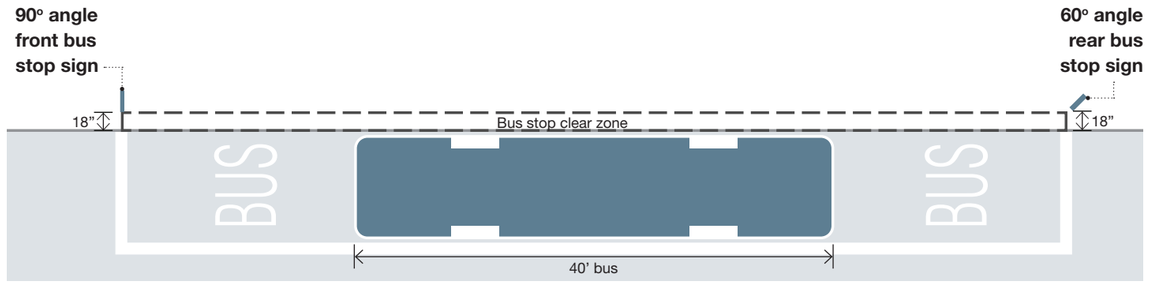


Figure 11: Sign Position and Profile

- New bus stops signs should be on “P-5” 2-inch by 2-inch square tube steel post perforated by mounting holes at 1 inch spacing. This post type also facilitates the installation of signs on both sides of the post. A sleeve type “breakaway” base facilitates easy post replacement in the event of damage or a vehicle strike.
- The MBTA prefers to install a separate post for bus stop signs so that are distinguishable from other street signs. In some cases, signs are installed on an existing post, lamp, utility pole, or other fixed item in lieu of a new post to minimize pinch points and potential obstructions in the path of travel.
- Signposts should not be used to secure bicycles or other devices.

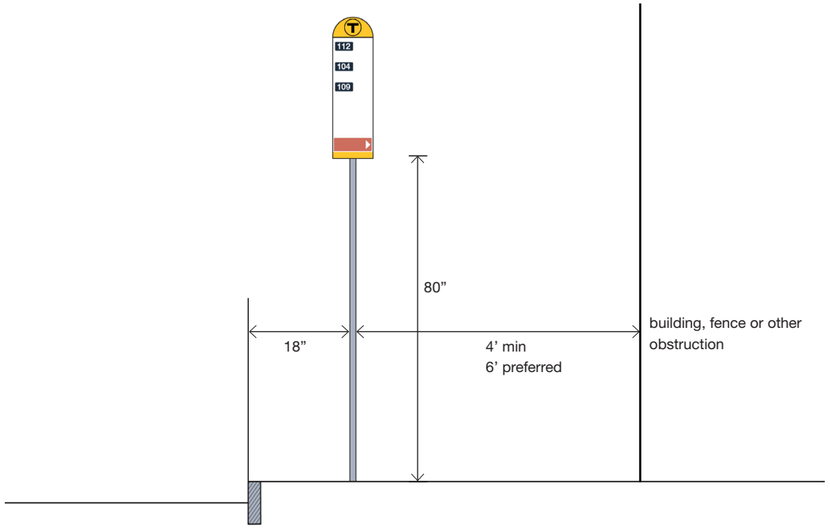


Figure 12: Sign Installation Detail

See it in action

Ahead of the first phase of service changes associated with the Bus Network Redesign, the MBTA piloted new larger signage with a frequency icon and larger more accessible and legible fonts. The bus stop sign in the photo is on Centre St at Seaverns Ave.

Sign Fabrication

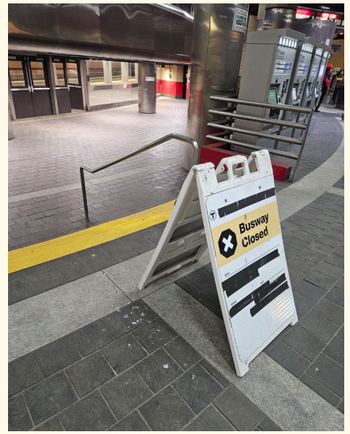
For new sign installations, the MBTA uses 14-inch-wide signs to allow for larger fonts. The MBTA Sign Shop fabricates signs from aluminum with a reflective background for nighttime visibility. The MBTA Sign Shop must provide all sign graphics. Service Planning typically provides and approves exact sign content.

Sign Installation and Maintenance

Bus stop signs must meet the current MBTA sign design standards. Either the MBTA, a municipality or an outside vendor may install bus stop signs. For roadway improvement projects, some municipalities may handle the installation of signs on their own; in these cases they should coordinate with Service Planning on exact sign locations.

See it in action

The MBTA utilizes temporary signage to indicate if stations or stops are temporarily closed.



Digital Signage

Digital, dynamic signage improves the waiting experience by giving riders updated, accurate bus arrival times. Digital signage on screens displays real-time information, which generally includes bus arrival estimates and service alerts.

The MBTA's Technology Innovation Department (TID) is responsible for the operation and maintenance of the digital signage that the MBTA installs at its bus stops. Municipalities interested in installing digital signage at transit stops should reach out to Technology Innovation (customertech@mbta.com) to discuss a specific project.

The MBTA started its digital signage program because riders voiced a desire for an expansion of real-time information offerings. Bus riders have said this is the bus stop amenity that would make them most likely to ride the bus more often.

For bus stops, the MBTA supports three screen types:

- **LCD Displays:** are the MBTA's preferred screen technology. These are available as floor-mounted standalone displays or incorporated into shelter structures.
- **E-ink Displays:** this low-power screen technology is available as an alternative at stops where hard-wired electrical connection is infeasible. These are available as standalone screens with solar panel kits that include backup batteries or incorporation into shelters with built-in solar kits.
- **Overhead Countdown Screens:** these horizontal screens are currently installed at busway stations and provide up to two lines of departures in large type; typically mounted perpendicular to the length of a stop.

The selection of a particular screen type is primarily driven by the following site conditions at any given stop:

- Availability of electrical connection
- Space at the stop for a foundation
- Solar exposure analysis

Screens System Design

Regardless of screen type, all screens are driven by software built and maintained by TID on a design system that shows riders consistent information based on their given context. For more details visit the MBTA's Digital Signage webpage and the MBTA Screens System Design Guide.

All screens include the following:

- Header with the stop name and current time
- Chronological listing of upcoming trips with route number, trip destination, and estimated time to departure in minutes
- Paginating section that shows subway status, service alerts, and public service announcements
- Footer with a link to the dedicated page for the stop on mbta.com

Audible read-out of visual content on screens is provided for blind and low-vision riders and driven dynamically by the screen software.

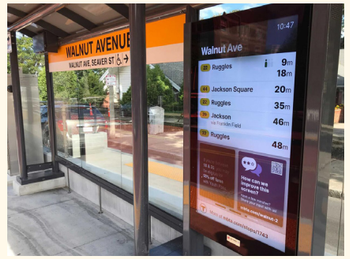
Digital Signage Planning & Implementation Considerations

The selection of a particular screen type is primarily driven by the conditions at the bus stop. The MBTA prefers LCD displays because they're more reliable and provide more information to riders at-a-glance. Solar-powered E-ink displays are available as an alternative option when a hard-wired, electrical connection is not feasible. E-ink have significant limitations in terms of accessibility, functionality, and maintenance, and the lead entity should consider them secondary to an LCD display. For more information see the MBTA E-ink webpage.

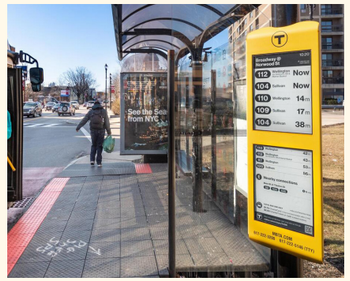
Key planning and implementation considerations for digital signage are outlined below:

- **Power availability:** electrical utilities should be made available at the stop to accommodate the installation of an LCD display. The lead entity should verify the location of electrical conduit and feasibility of hard-wired LCD Displays.
- **Solar availability:** Where electrical utilities are infeasible to build out, a solar exposure analysis is required to determine if solar power is available as an alternative to power an E-ink display. The installation location should get approximately 1-2 hours of sunlight in late December, with no tree cover, building canopies, or other building shade that blocking the sun.

See it in action



Portrait-oriented LCD screens on Columbus Ave at Walnut Ave



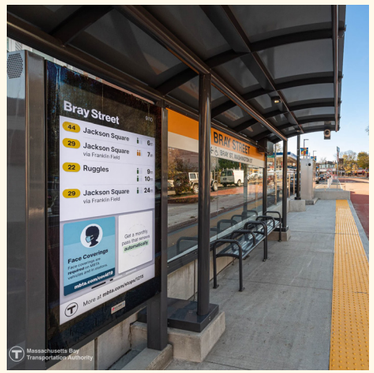
E-ink screen at Broadway and Norwood in Everett

- **Stop sequence:** Next arrival predictions are challenging at the beginning of routes because they're subject to change based on the operator's previous trip.
- **Bus Stop Layout:** Any form of digital signage (including an information kiosk) cannot interfere with the 5-foot accessible path of travel. Similarly, digital signage should avoid blocking building entrances and other access points.

The advertising agency may also have additional siting requirements, coordinate with Service Planning to confirm.

Real-Time Transit Data

TID publishes transit data, including schedules, arrival estimates, and vehicle positions publicly via the industry-standard General Transit Feed Specification (GTFS) and a public application programming interface (API). The APIs include documentation and guidance for software developers and are considered the single data source of truth for all MBTA screens. Real-time information shown on screens provided by the MBTA are driven by the same data.



See it in action

LCD screen with countdown clocks at the Bray St bus stop on Columbus Ave provide real-time arrival times for riders.

Other Customer Information Sources

Partner Screens

In addition to LCD displays provided by the MBTA, TID makes real-time information available to third parties through its partner screens initiative. Using the same software used to drive MBTA screens, third parties can request a custom screen created for them to show in a browser on screen hardware the third-party partner owns and manages. This allows riders who pass by these third-party screens to benefit from the user research, extensive design, and continuous improvement the MBTA invests in the digital signage system.

Information Kiosks

The MBTA works with a third-party vendor to deploy digital information kiosks at bus stops across the network. The kiosks provide real-time information, service alerts, wayfinding, community information, and advertising. The third-party provider funds the deployment and maintenance of the kiosks with advertising revenue.

The MBTA and its municipal partners should consider information kiosks at bus stops with high ridership or where there are high pedestrian volumes, such as busway stations and premium sheltered stops. Planning and implementation considerations are similar to digital signage. Requests or questions related to information kiosks should be directed to the MBTA's Street Furniture group.

Mobile Access

Mobile applications for transit information are either a first source or supplement to digital signage. Real-time information available through smartphones and tablets have minimal cost to the MBTA and are convenient for most bus riders. These sources, as developed by the MBTA or third parties, are recommended for wide use to provide information throughout the transit system and particularly at locations where digital screen technology is not practical.

See it in action

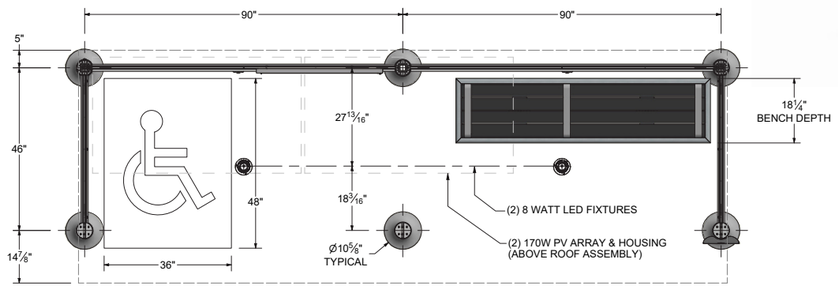
This information kiosk outside Maverick Station displays real-time bus arrival times.

Appendix 1: Bus Stop Shelter Specifications

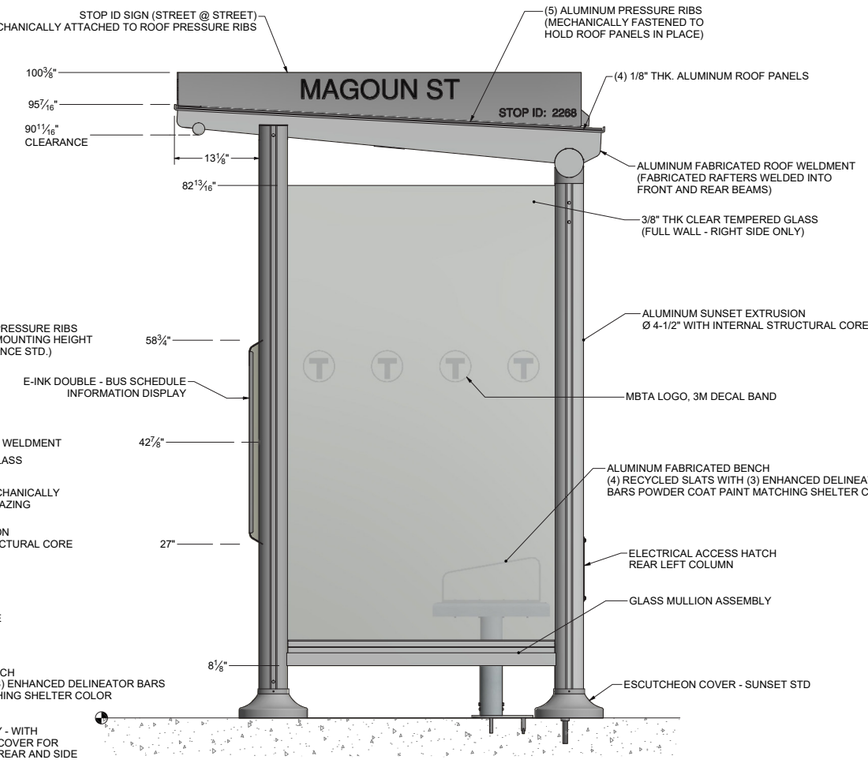
Standard Bus Stop Shelter Specifications

GENERAL NOTES:

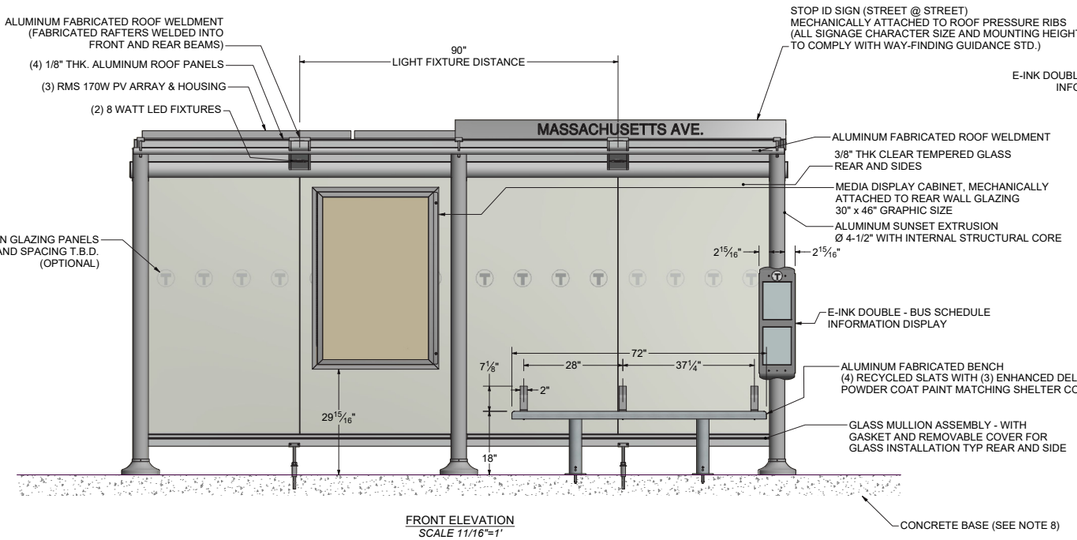
1. ALL STRUCTURAL STEEL, UNLESS OTHERWISE NOTED, SHALL BE ASTM A-36, MINIMUM YIELD STRENGTH 36,000 PSI.
2. ALL STRUCTURAL ALUMINUM MEMBERS, UNLESS OTHERWISE NOTED, SHALL BE OF ALLOY 6063-T5 OR GREATER.
3. ALL HOLES TO BE DRILLED OR PUNCHED.
4. STEEL WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY STANDARD D1. 1-10. ELECTRODES SHALL CONFORM TO AWS 5.1, CLASS E70S-5.
5. ALUMINUM WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY STANDARD D1. 2-08. ELECTRODES SHALL CONFORM TO AWS/SFA 5.10 CLASS ER4043.
6. ALL WELDING TO BE DONE AT TOLAR MANUFACTURING COMPANY, INC. FACILITY.
7. ALL CORPORATE PROCEDURES, INCLUDING FABRICATION, MUST BE IN COMPLIANCE WITH TOLAR MANUFACTURING CO. INC'S QUALITY CONTROL MANUAL.
8. THE CONCRETE PAD SIZES SHOWN ARE STANDARD MINIMUM REQUIREMENTS FOR THE STRUCTURE AND ARE FOR REFERENCE ONLY. THE PAD MAY NEED TO BE REINFORCED OR ENLARGED DEPENDING ON LOCAL CODES AND LOADING CONDITIONS AND DOES NOT INCLUDE ADA CLEAR PATH REQUIREMENTS.



PLAN VIEW
(ROOF ASSEMBLY NOT SHOWN FOR CLARITY)
SCALE 11/16"=1'



RIGHT SIDE ELEVATION
SCALE 1 1/4"=1'



FRONT ELEVATION
SCALE 11/16"=1'

OPTION: SOLAR - NO ADVERTISEMENT PANEL - E-INK DISPLAY - RECYCLED SLATS BENCH WITH SEAT DELINEATORS

TOLAR	**TOLAR MANUFACTURING COMPANY, INC** 258 Mariah Circle, Corona CA. 92879
DESCRIPTION	15'x6' SHELTER - SOLAR
CUSTOMER/VENDOR	INTERSECTION - MBTA
PAGE	1 of 1
SIZE	D
MATL.	MISC
DWG NO.	41866-01S
REV	-
SCALE	NOTED
DATE	5/23/2022
DRAWN BY:	cgarcia

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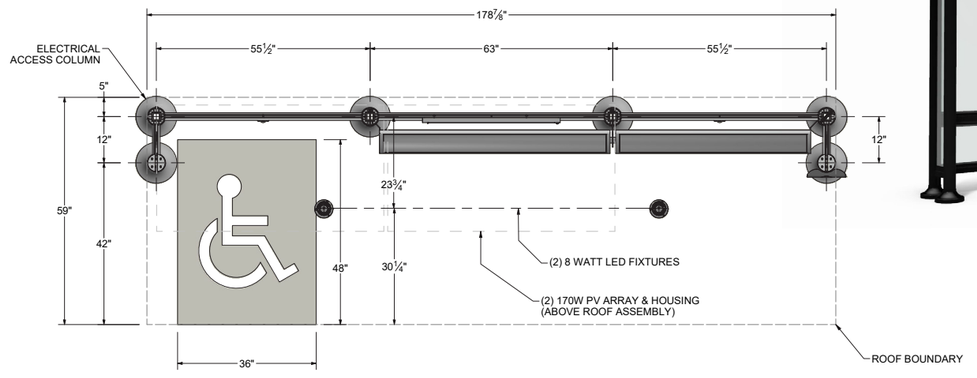
Appendix 1: Bus Stop Shelter Specifications

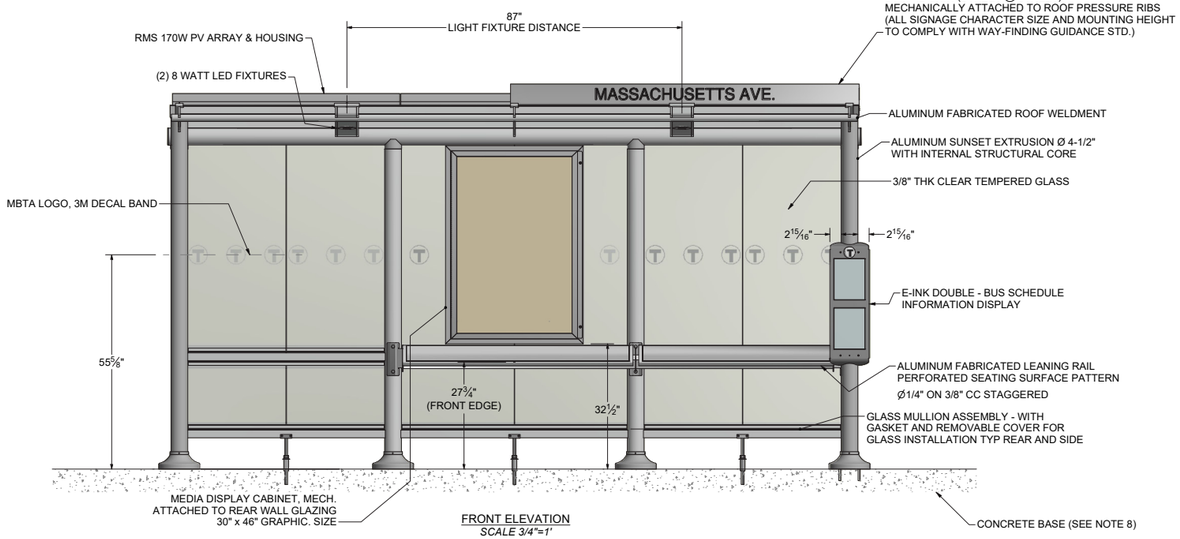
Narrow Bus Stop Shelter Specifications

GENERAL NOTES:

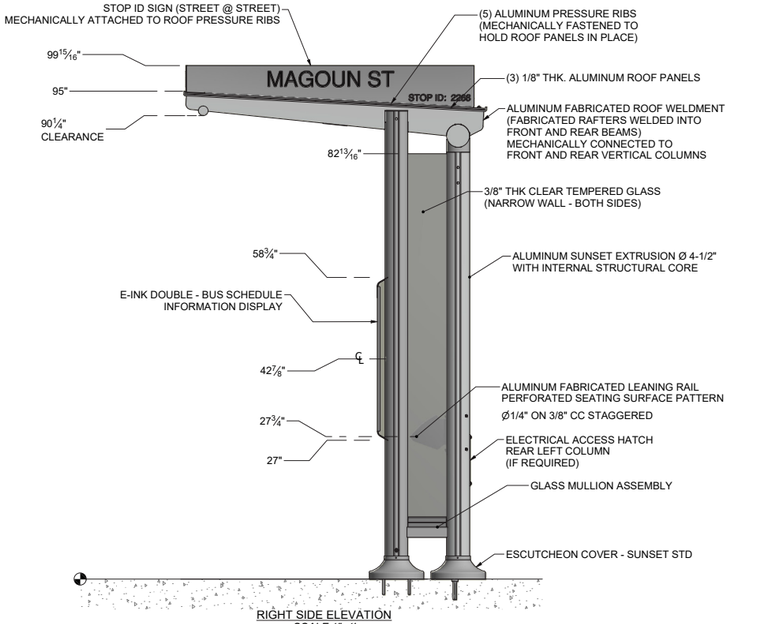
1. ALL STRUCTURAL STEEL, UNLESS OTHERWISE NOTED, SHALL BE ASTM A-36, MINIMUM YIELD STRENGTH 36,000 PSI.
2. ALL STRUCTURAL ALUMINUM MEMBERS, UNLESS OTHERWISE NOTED, SHALL BE OF ALLOY 6063-T5 OR GREATER.
3. ALL HOLES TO BE DRILLED OR PUNCHED.
4. STEEL WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY STANDARD D1, 1-10. ELECTRODES SHALL CONFORM TO AWS 5.1, CLASS E70S-5.
5. ALUMINUM WELDING SHALL CONFORM TO AMERICAN WELDING SOCIETY STANDARD D1. 2-08. ELECTRODES SHALL CONFORM TO AWS/SFA 5.10 CLASS ER4043.
6. ALL WELDING TO BE DONE AT TOLAR MANUFACTURING COMPANY, INC. FACILITY.
7. ALL CORPORATE PROCEDURES, INCLUDING FABRICATION, MUST BE IN COMPLIANCE WITH TOLAR MANUFACTURING CO. INC'S QUALITY CONTROL MANUAL.
8. THE CONCRETE PAD SIZES SHOWN ARE STANDARD MINIMUM REQUIREMENTS FOR THE STRUCTURE AND ARE FOR REFERENCE ONLY. THE PAD MAY NEED TO BE REINFORCED OR ENLARGED DEPENDING ON LOCAL CODES AND LOADING CONDITIONS AND DOES NOT INCLUDE ADA CLEAR PATH REQUIREMENTS.



PLAN VIEW
(ROOF ASSEMBLY NOT SHOWN FOR CLARITY)
SCALE 3/4"=1'



FRONT ELEVATION
SCALE 3/4"=1'



RIGHT SIDE ELEVATION
SCALE 1"=1'

OPTION: SOLAR - E-INK DOUBLE BUS SCHEDULE - LEANING RAIL

TOLAR MANUFACTURING COMPANY, INC
258 Marian Circle, Corona CA. 92879

DESCRIPTION: 15'x4' SHELTER - SOLAR			
CUSTOMER/VENDOR: INTERSECTION - MBTA			PAGE: 1 or 1
SIZE: D	MAT'L: MISC	DWG NO.: 44316-01S	REV: -
SCALE: NOTED	DATE: 7/21/2021	DRAWN BY: cgarcia	

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Appendix 2: Accessibility Requirements

The MBTA accessibility guidelines go beyond State and Federal minimums to allow for a more inclusive rider experience. These guidelines reflect the MBTA's understanding of the service area and accessibility priorities of the riders. When MBTA guidelines are infeasible, every effort must be made to meet the accessibility requirements outlined in this section. These State and Federal accessibility requirements serve as the foundation for the MBTA accessibility guidelines.

Federal Accessibility Requirements

Public Right-of-Way Accessibility Guidelines (PROWAG)

The United States Access Board issued a final rule on accessibility guidelines for pedestrian facilities in the public right-of-way on August 8, 2023. The guidelines provide technical requirements for transit stops to ensure that boarding and alighting areas are sized and situated such that a person with a disability can board and alight buses and rail cars. In addition, pedestrian access routes and continuous and unobstructed paths of travel provided for pedestrians with disabilities within or coinciding with a pedestrian circulation path must connect boarding and alighting areas and boarding platforms to other pedestrian facilities. Transit shelters must also have clear space for use by a person in a wheelchair.

Americans with Disabilities Act of 1990, As Amended

The Americans with Disabilities Act (ADA), originally passed in 1990 and amended in 2008, is a civil rights law that prohibits discrimination against individuals with disabilities in all aspects of public life, including government, employment, education, transportation, and telecommunications. The ADA is divided into five titles, each of which sets out the requirements for a different type of covered entity. In its capacity as a public transportation provider, the MBTA is primarily subject to Title II (State and Local Government) and Title III (Public Accommodations).

49 CFR Part 27 - Nondiscrimination on the Basis of Disability in Programs or Activities Receiving Federal Financial Assistance

The purpose of the Department of Transportation (DOT) regulations in Part 27 is to carry out the intent of Section 504 of the Rehabilitation Act of 1973, as amended, which prohibits discrimination on the basis of disability in Federally funded programs. Recipients of DOT/FTA funds, including all municipalities, the Commonwealth of Massachusetts, and the MBTA, are subject to Part 27 and must comply with all applicable requirements of the ADA.

49 CFR Part 37 – Transportation Services for Individuals with Disabilities

The purpose of the DOT regulations in Part 37 is to implement transportation-related requirements of the ADA. These regulations cover requirements for transportation facilities, operations, vehicle acquisition, and more. Transportation facilities, in particular, are covered by Subpart C and include bus stops, bus stations, and rail stations.

49 CFR Part 38 – Accessibility Specifications for Transportation Vehicles & 49 CFR Part 39 – Transportation for Individuals with Disabilities: Passenger Vessels

The DOT regulations in Parts 38 and 39 are related to accessibility requirements for transportation vehicles and passenger vessels, respectively.

Department of Transportation Americans with Disabilities Act (ADA) Standards for Transportation Facilities (2006)

The 2006 DOT ADA standards will serve as the primary source of Federal requirements for designers and project teams. It contains scoping and technical accessibility requirements for facilities that State and local governments use to provide designated public transportation, including facilities operated by the MBTA. The DOT standards are similar—but not identical—to the Department of Justice ADA Standards for Accessible Design (2010), identified below. Project teams should ensure that they are working from the 2006 DOT standards and that they list these standards when citing applicable codes.

Department of Justice ADA Standards for Accessible Design (2010)

The 2010 Department of Justice (DOJ) ADA standards cover entities categorized either as State and local government agencies or as places of public accommodation. It is important to note that virtually all transportation providers covered under the DOT's rules also belong to one of the two DOJ categories above. As a result, both agencies' standards may be applicable. The DOT and the DOJ, recognizing the potential for conflict, collaborated in the development of their agencies' respective standards. While they appear similar, there are some important individual provisions that differ: for example, under the DOT standards, curb ramps are required to have detectable warnings but under the DOJ standards, they are not. As stated previously, project teams should generally ensure that they are referring to the DOT standards when working on any project related to the MBTA.

Manual on Uniform Traffic Control Devices (MUTCD)
The MUTCD is a Federal Highway Administration publication that sets out national standards governing all traffic control devices on roads owned by public agencies, as well as on privately owned roads open to public travel. It includes standards dedicated to maintaining a safe and accessible path of travel for pedestrians with disabilities during roadwork/construction, particularly the use of channelizing devices that are detectable by pedestrians with low or no vision.

State Accessibility Requirements

521 CMR Rules and Regulations of the Massachusetts Architectural Access Board
The purpose of the Massachusetts Architectural Access Board (MAAB) regulations is to make Massachusetts public buildings and facilities accessible to, functional for, and safe for use by people with disabilities.

Massachusetts State Building Code, Latest Edition
The Massachusetts State Building Code consists of a series of international model codes (including IBC) and any State-specific amendments adopted by the Board of Building Regulation and Standards (BBRS). Chapter 11 of the State code—the accessibility chapter—refers to 521 CMR (identified above).

Internal Requirements

Overseen by the MBTA's Engineering Division of the Chief Engineer's Office, the Engineering web page serves as a clearinghouse for MBTA-specific design directives, guidelines, and maintenance standards.

Appendix 3: Autoturn Analysis

Across the Boston region municipal and state agencies have made significant investments in biking infrastructure to improve connectivity, safety, and encourage more biking. Where bike lanes or cycletracks overlap with bus routes, the lead entity must collaborate with the MBTA to reduce friction between people biking and buses and to ensure the MBTA is able to maintain safe and accessible bus stops and transit operations. The MBTA prefers floating bus stops fully separating bikes lanes from vehicle and bus traffic with a dedicated and separate bus boarding area (see Chapter 4: Floating Bus Stop). The MBTA prohibits constrained bus stops where there is a shared condition at the bus boarding area.

Many bike lanes in the Boston region are on-street (not raised) with buses pulling through them to serve and leave the bus stop. One of the main ways an on-street bike lane impacts bus stops is it changes the distance the bus is traveling to the curb, requiring a longer merge zone (see Chapter 3: Stop Length Guidelines). The merge zone should be free of all vertical elements, but the entire length of the merge zone may not need to be designated no parking depending on the configuration of the bike lane. To determine what the no parking area should be Nelson\Nygaard validated the MBTA Stop Length Guidelines with Autoturn.

To calculate merge zone MBTA guidelines state:

- **Pull-in length:** equals 5 times the lateral distance the bus must travel to the curb.
- **Pull-out length:** equals 2.5 times the lateral distance the bus must travel to the curb.

In addition, every stop has a set-back from the crosswalk/intersection to ensure proper visibility and safe crossings. For crosswalks behind the bus the minimum setback is 5 feet; for crosswalks in front of the bus the minimum setback is 8 feet.

The example stop Nelson\Nygaard is using to validate the guidelines is a mid-block bus stop in Somerville at Union Square with crosswalks on either side of the bus. We are assuming the travel lane the bus is using is 12 feet extra space away from the curb.

For this example we calculated pull-in length in two parts based on the bus movement .1) through the bike lane, 2.) through the parking lane. There are two crossings, one in front and behind the bus. Because of the pedestrian bulb, the primary set-back to consider is the for the crosswalk behind the bus.

The results of the Autoturn analysis are summarized below.

Key Findings

- A 60-foot pull-in distance allows the bus to align parallel to the curb without sweeping into the adjacent travel lane.
- The bus leaves the bike lane and enters the parking lane after traveling 22-foot. The no parking pull-in distance must be greater than 60’ minus 22’ or 38’. This is similar to the guidance outlined in Chapter 4: Bus Stop Length Guidelines and the 5:1 pull-in ratio.
- A 30-foot pull-out distance provides just enough space for the bus to pull out of the bus stop zone without encroaching on the other travel lane, validating the 5:2 ratio for calculating the pull-out distance.

If the bike lane is parking protected the entire merge zone, or pull-in and pull-out distance must be designated as no parking because the bus enters the parking lane before the bike lane. This type of configuration has the biggest parking impact.

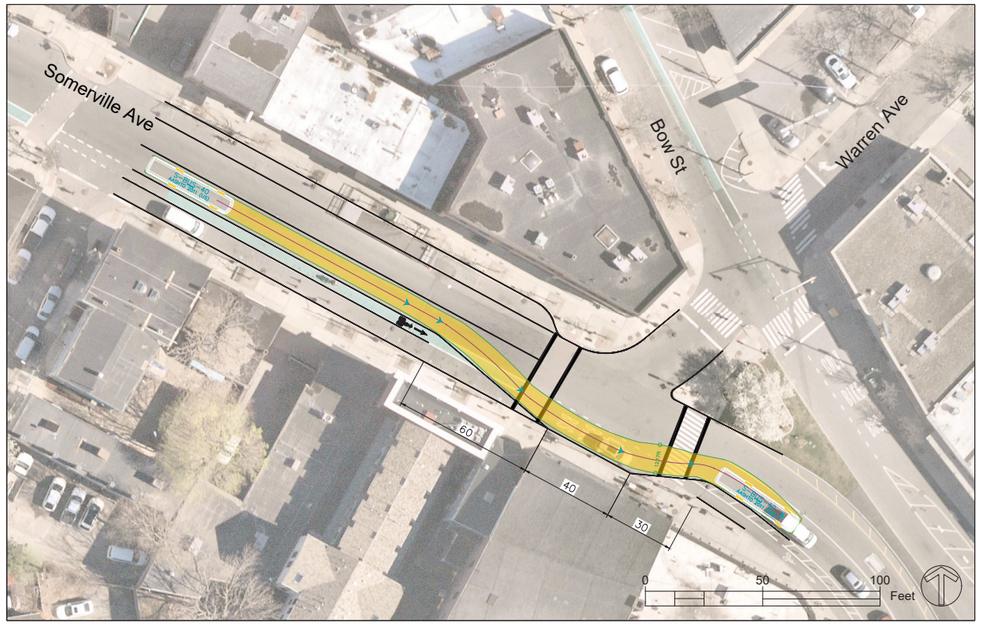

Figure 13: Autoturn Analysis Results

Appendix 4: Shelter and Bench Points System

Evaluation Procedure

The first step in the evaluation process is to determine if the bus stop has enough available ROW for a shelter or bench. To determine eligibility the MBTA has a point system that evaluates ridership, and other forms of bus stop activity including route type, transfers, land uses and key destinations, similar to the bus stop activity criteria in Chapter 2: Bus Stop Balancing All bus stops that meet the required number of boardings are eligible for a shelter or bench, other criteria help the MBTA determine if a stop with lower ridership warrants a shelter or bench. A bus stop must receive a total of 70 points to be considered eligible under this policy for a shelter or bench, the criteria for each are outlined below. If eligible, the location of the shelter and bench must be approved by the MBTA, ROW owner, and in some cases abutting properties. For more details see the Chapter 6: Shelters and Benches.

Table 12. Shelter Eligibility Criteria

Eligibility Criteria	Points
70+ Average weekday boardings	70
25-69 Average weekday boardings	50
MBTA initiative to strengthen route or stop identity	10
Facilities for seniors, disabled, medical or social services nearby	20
Minority and/or low income area	15
Bus route transfer/connection point	5
Infrequent bus service (no more than every 30/60 minutes peak/ off peak)	10
Poor site conditions at bus stop (weather exposure etc.)	10

Passing Score: 70

Table 13. Bench Eligibility Criteria

Eligibility Criteria	Points
50+ Average weekday boardings (ADB)- all routes*	70
26-49 Average weekday boardings	50
5-25 Average weekday boardings	35
MBTA initiative to strengthen route or stop identity	20
Facilities for seniors, disabled, medical or social services in close proximity to stop	20

Passing Score: 70

*At stops with 150+ average weekday boardings, two benches should be provided where feasible (includes the bench in the shelter if applicable).

Acknowledgments

This update to the Bus Stop Design Guide would not be possible without the support and cooperation of our partners. And to our riders, it is an honor to serve you and we look forward to improving your experience both waiting for and on the bus with better, more accessible bus stops throughout the system.

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