

Transit Shelter Design Guide



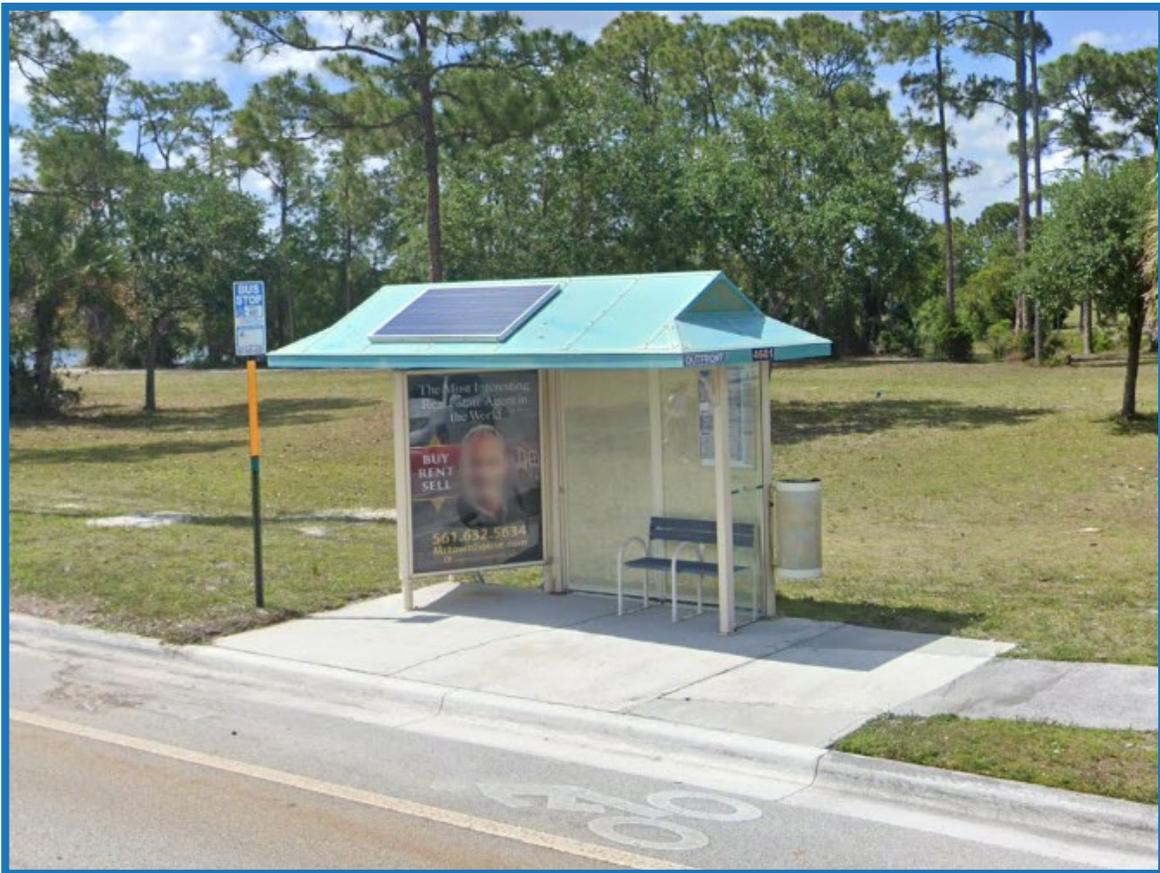
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Introduction

The public's first impression of a transit agency and its service is the transit stop. It is important that transit stops are easily identifiable, safe, comfortable, and accessible. This document aims to provide a framework for well-designed bus stops in Palm Beach County.

The Palm Beach Transportation Planning Agency (TPA) created this Transit Shelter Design Guide as a resource for Palm Tran, the local transit agency, and its municipalities. The Guide presents an inventory of existing conditions and compiles national best practices to reference when designing and placing accessible and comfortable transit shelters that safely accommodate users of all ages and abilities.



Stop 4681: Forest Hill Blvd. and Pinehurst Drive, Greenacres

Through its Local Initiatives (LI) Program, the TPA has prioritized \$1.45 million for a total of 70 Palm Tran bus shelters as well as \$571K for City of West Palm Beach Trolley shelters. The TPA looks forward to continue working with Palm Tran and local municipalities to improve transit facilities in Palm Beach County and hopes this Guide will serve as a reference for new and improved transit shelters.

Palm Tran Service



Palm Beach County's Transit Service
 Provider since **1971**
 (Formerly CoTran)

Approx. **9 Million** Boardings per Year

Provides **33,364** Weekday Trips

Services **2,987** Bus Stops

1893 (63%) are Poles

524 (18%) are Benches Only

54 (2%) are Shelters without a Bench

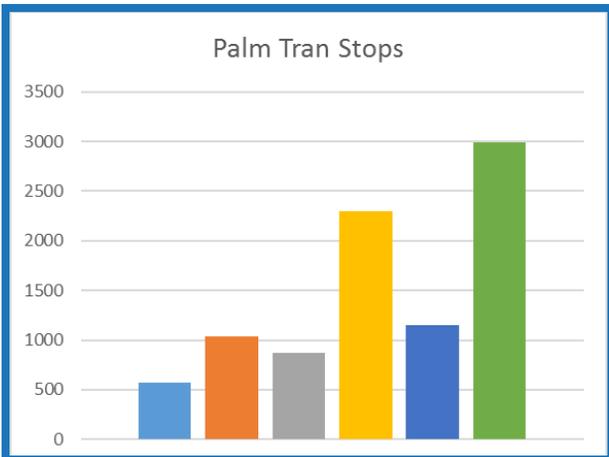
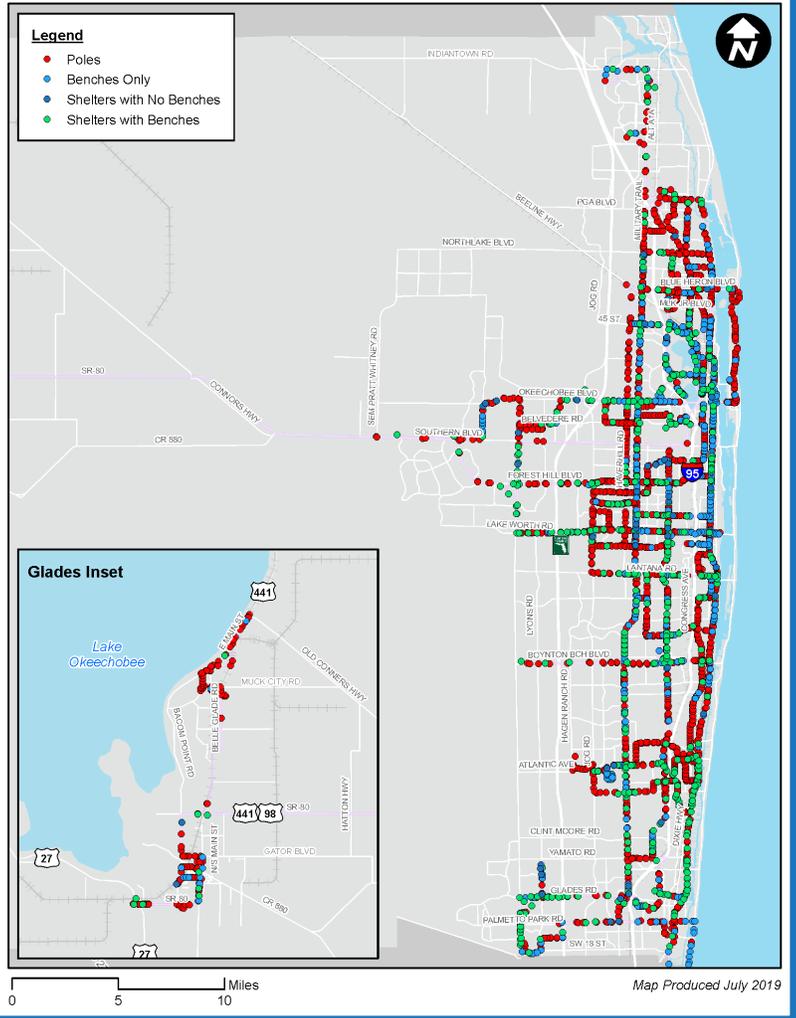
516 (17%) have Shelters with a Bench

2301 (77%) have Lighting

869 (29%) have Garbage Receptacles

48 (2%) have Bicycle Parking

Palm Tran Bus Stops by Type



- Shelters
- Lighting
- Benches
- ADA
- Trash Receptacles
- Total

Out of the **570** shelters in the county,
 Palm Tran directly oversees **328** in
 unincorporated areas.

The remaining **42%** are under the
 jurisdiction of local municipalities.

Existing Conditions

Shelters

Since the bus stop is typically the first interaction new customers have with the system, the condition of shelters and benches play an important role in communicating to the passengers that the transit provider cares about their safety, comfort and convenience.

A majority of Palm Tran's current bus shelters were installed between 2001 and 2003. As a result, most of the inventory has reached the end of its useful life. In 2015, Palm Tran staff performed a comprehensive assessment of their existing bus shelter conditions and found the deficiencies noted below.

Shelter Deficiencies

- Metal shelter panels have corrosion in the base of the pole structure
- 2/3 of inventory has non-functional solar panels & outdated technology
- Limited route and fare information
- Lack of Americans with Disabilities Act (ADA) accessible stop connections



Stop 292: SE 6th Ave and SE 2nd St., Delray Beach



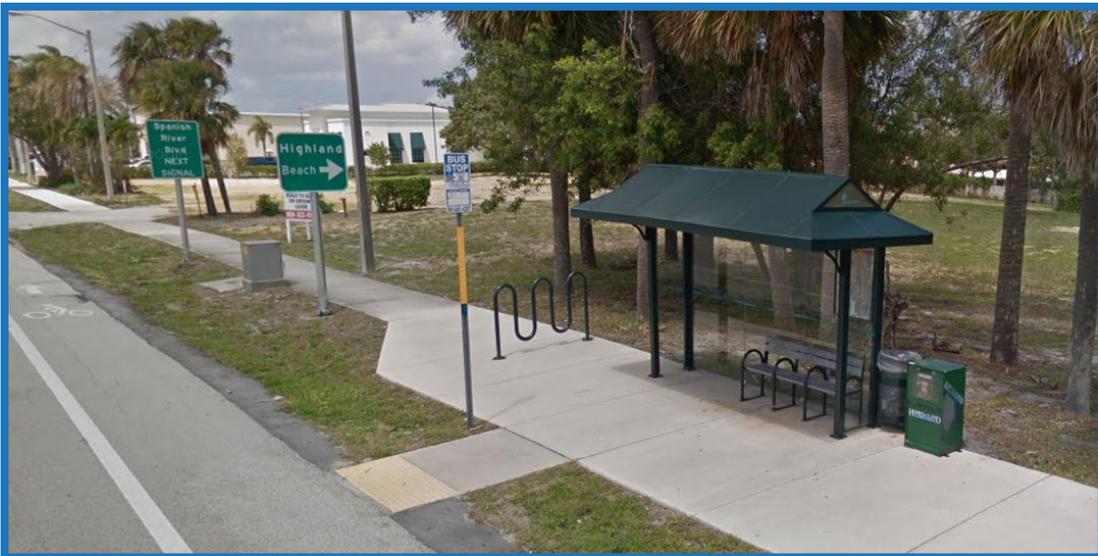
Stop 60212: Intermodal Center, West Palm Beach

Access

Transit stops must provide safe access for users of all ages and abilities to board and alight the bus. Many stops in Palm Beach County lack connectivity for pedestrians and bicyclists to safely access transit, which can create a barrier to transportation for individuals that have to walk, bicycle, or use a mobility device. Below is an example of a bus stop that lacks connectivity and a bus stop that provides connectivity for all users.



Stop 690: Congress Avenue and Ocean Drive, Boynton Beach



Stop 262: Federal Highway and NE 37th Street, Boca Raton

In order to provide better access for all users, Palm Tran has plans to retrofit a significant amount of their bus stops over the next 3 years to be ADA compliant. The retrofitting entails providing a connection between the bus stop and the back of the curb. These connections are typically constructed out of concrete or similar materials.

Bus Stop Facilities

The following section describes the various types of bus stops found in Palm Beach County and their ridership thresholds:

Type 1: “Pole-in-Ground”

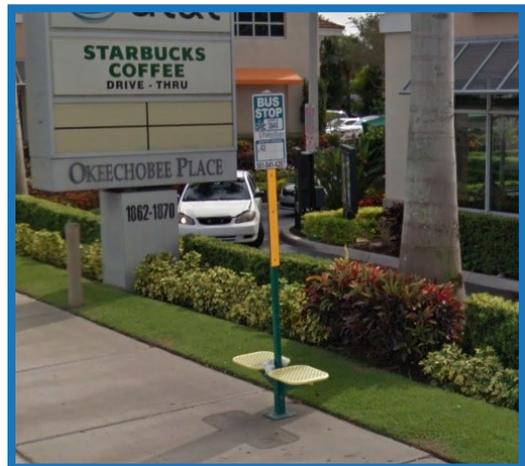
Stops like these utilize a bus stop sign in the ground. These are often found in the grassy areas within the right-of-way and do not always include a landing pad, offering little, if any ADA compliance or comfort without seating or shade. This stop type is typically for bus stops that have less than 5 riders per day, however some stops with higher ridership have this level of amenity.



Stop 7630: Atlantic Ave and Market Place SW, Delray Beach

Type 2: Simme-Seat Stop

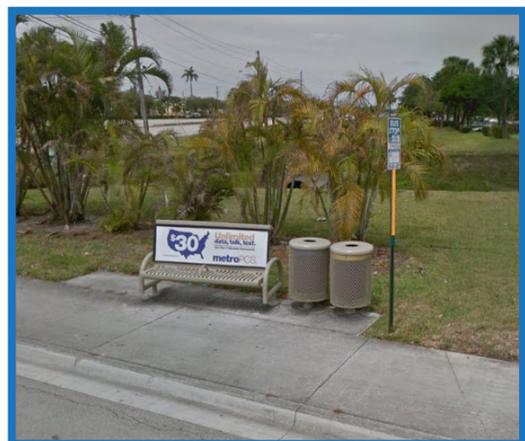
This type of stop has a 2-seat design that attaches directly onto the bus stop pole and is durable, safe, and cost-effective. These innovative transit stops provide comfortable seating and allow for ADA compliance, providing enough room to navigate around the stop area with a mobility device and allowing for easy transitions from a mobility device to the seat. Simme-seats are placed at stops with a minimum of 5 boardings, daily. Palm Tran is in the process of expanding the simme-seat program, with at least 250 planned for implementation in the next 5 years.



Stop 3848: Okeechobee Blvd. and BLD 1880, West Palm Beach

Type 3: Bench Stop

These stops often include level, solid landing pads for ADA compliance. Some “bench only” bus stops include other amenities such as trash receptacles and pedestrian lighting. These stops require 3-5 feet of right of way, have a lower capital expense and a lower maintenance cost. Benches are generally placed at stops with a minimum of 10 boardings per day.



Stop 3735: Benoist Farms and Belvedere Road, West Palm Beach

Type 4: Shelter Stop

Shelters must be ADA compliant with room for individuals with mobility devices to navigate around the shelter and wait within. Shelters aim at providing protection from the elements, such as the sun, wind and rain, as riders wait for the bus to arrive. Amenities that are commonly found near or within a shelter include trash receptacles, seating, lighting and bicycle racks. Shelters are placed at stops with a minimum of 25 daily boardings.



Stop 3852: Jog Rd. and PBC Vista Center Entrance, West Palm Beach

Type 5: Specialty Stop

These are custom stops that are designed to aesthetically fit the local destination.



Stop 1017: Ballpark South Entrance, West Palm Beach

Palm Tran has:

1,893 "Pole-in-Ground" Stops

524 "Bench Only" Stops

570 Sheltered Stops



Municipalities and Shelters

Palm Beach County is home to 39 Municipalities. Nine (9) of these municipalities have interlocal agreements with Palm Tran allowing the placement of advertisements on bus shelters. These municipalities are known as “Agreement Cities,” and rely on the shelter vendor to construct, install, maintain, clean and place advertisements on their shelters. These shelters utilize the same shelter design as those that are singularly under Palm Tran’s jurisdiction. The “Agreement Cities” include the following:

- City of Belle Glade
- Town of Lake Park
- Town of Mangonia Park
- City of Pahokee
- Village of Palm Springs
- City of Riviera Beach
- City of South Bay
- Village of Wellington
- City of West Palm Beach



Stop 110: Dixie Hwy and Acacia Road, West Palm Beach

Other Shelter Programs

In addition to the “Agreement Cities,” there are ten (10) municipalities in Palm Beach County that have their own shelter programs. Each municipality has their own design that closely resembles Palm Tran’s shelter design. Bus shelters under these programs are owned, managed, and maintained by each of the municipalities. Palm Tran staff collaborates with these municipalities for new shelter locations through site plan reviews. The Village of Palm Springs and Village of Wellington are both “Agreement Cities”, in addition to having their own shelter programs.



City of Boca Raton



City of Boynton Beach



City of Delray Beach



City of Greenacres



Town of Jupiter



Town of Lantana



**City of Palm
Beach Gardens**



**Village of Palm
Springs**



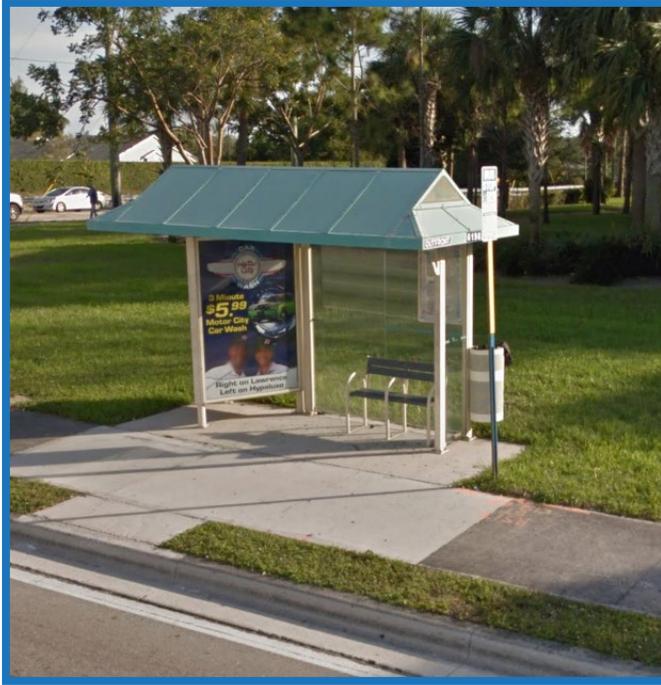
**Village of Royal
Palm Beach**



Village of Wellington

Municipalities with Limited to No Control over Shelters

Palm Tran shelters in the remaining twenty-two (22) municipalities are overseen directly by Palm Tran.

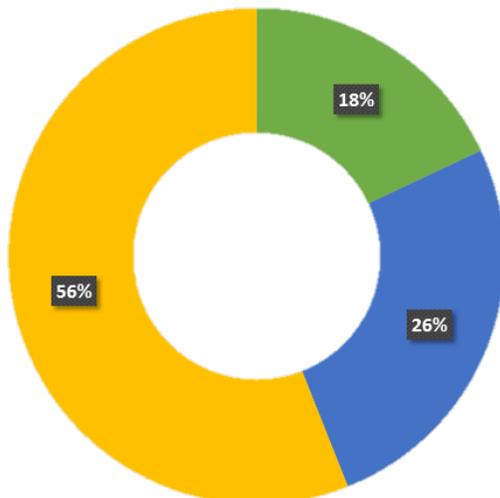


Stop 6198: Lantana Rd and Lawrence Rd. Atlantis

Municipalities Include:

- City of Atlantis
- Town of Briny Breezes
- Town of Cloud Lake
- Town of Glen Ridge
- Village of Golf
- Town of Gulf Stream
- Town of Haverhill
- Town of Highland Beach
- Town of Hypoluxo
- Town of Juno Beach
- Town of Jupiter Inlet Colony
- Town of Lake Clarke Shores
- City of Lake Worth Beach
- Town of Manalapan
- Town of Loxahatchee Groves
- Village of North Palm Beach
- Town of Ocean Ridge
- Town of Palm Beach
- Town of Palm Beach Shores
- Town of South Palm Beach
- Village of Tequesta
- City of Westlake

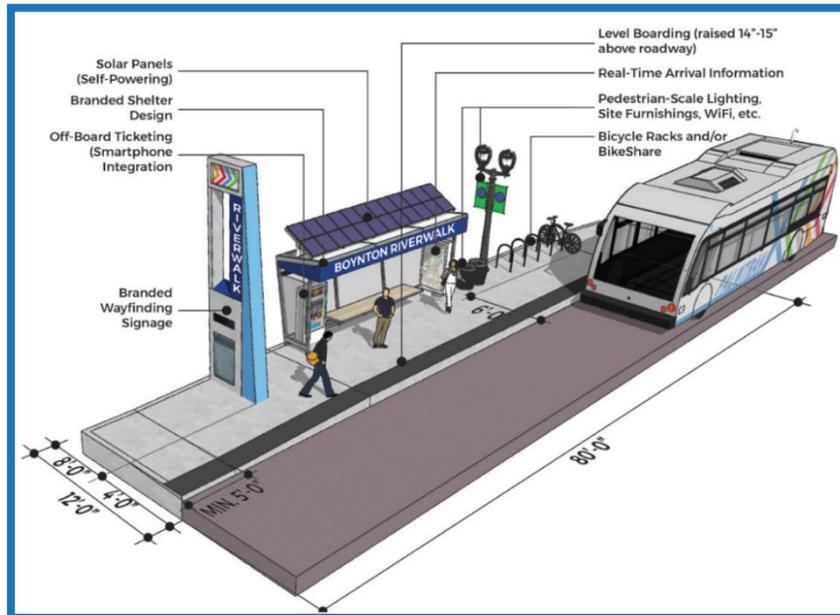
Palm Beach County Shelter Inventory



- "Agreement Cities"
- Other Shelter Programs
- No Shelter Programs

Best Practices

Transit stops should be accessible and accommodate the needs of all users, regardless of age or ability. To support this, key accommodations to help riders feel safe and comfortable include connected and maintained sidewalks, crosswalks, bicycle facilities, secure bicycle parking, pedestrian scale lighting, visible wayfinding, branding and signage. This section covers industry best practices for transit shelters.



Source: Palm Beach TPA's US-1 Multimodal Corridor Study, 2017

Location

The first step to designing a transit stop is selecting the optimal location. Bus stop locations should be easy to find and clearly marked to call attention to both the bus operator and the rider. It is ideal to place stops in convenient locations near popular destinations and in close proximity to crosswalks to promote safe pedestrian behavior.



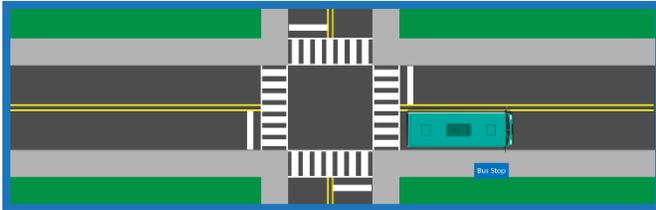
Busy Bus Shelter; Source: EUtouring.com

Popular Destinations:

- Schools
- Universities
- Shopping Centers
- Medical Centers
- Grocery Stores
- Transit Hubs
- Parks
- Senior Centers

Where the bus stop is placed depends heavily on the most critical factors in stop placement: the safety and avoidance of conflicts that would otherwise impede bus, car, pedestrian, or bicycle flows.

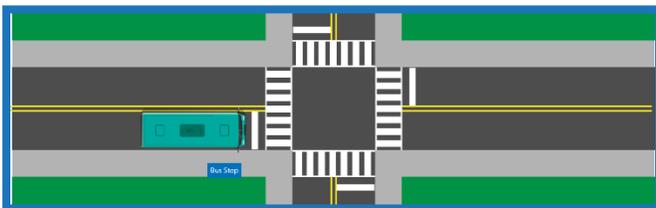
Far-Side Stops – Preferred Option



Source: Palm Beach TPA

Bus stops are placed immediately after passing through an intersection. This minimizes conflicts between right-turning vehicles and buses, and encourages pedestrians to cross behind the bus. This is the preferred practice in the transit industry.

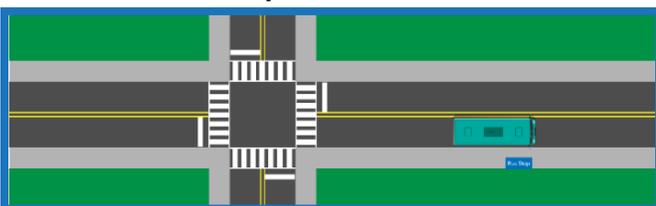
Near-Side Stops – Not Preferred



Source: Palm Beach TPA

Bus stops are placed immediately before an intersection to minimize the interference when traffic is heavy on the far-side of the intersection. This placement allows for passengers to board and alight when the bus is stopped at a red light.

Mid-Block Stops – Not Preferred

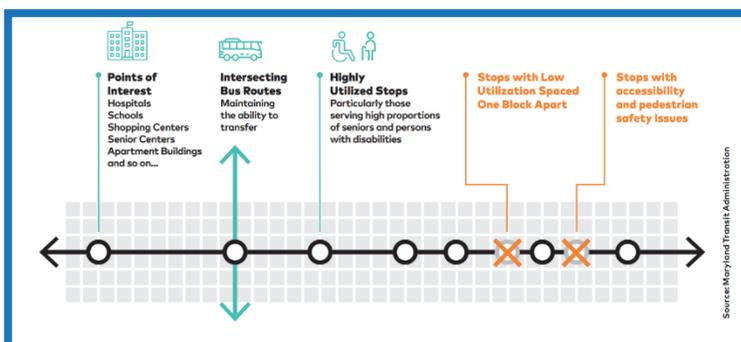


Source: Palm Beach TPA

Bus stops are placed to minimize sight distance problems for pedestrians and vehicles and encouraged less pedestrian congestion at stop waiting areas, however these stops can encourage jay-walking.

Stop Spacing

Bus stop spacing has a major impact on transit performance as it can alter the timing of the stops and create longer headway times, causing delays to all transportation users. There is usually a tradeoff between closely spaced frequent bus stops with shorter walking distances and overall longer travel time vs. stops spaced further apart with longer walking distances, but less overall travel time. The spacing of stops depends on the goals of the service provider and the type of service provided.



Source: Guide to Balanced Bus Stop Spacing: From Sorry to Superb

Recommended stop spacing is typically at least ¼ mile, however this can vary from 1000 feet to 1 mile based on the land use context, density, and proximity to trip generators.

Safety and Visibility

Planning for transit shelters is about creating a space for the transit rider to wait, while feeling safe and secure, before taking on the next leg of their journey. Ensuring the safety of the system's users encompasses having ADA compliant stops, adequate connections to adjacent pedestrian and bicycle facilities, street and shelter lighting and visibility.

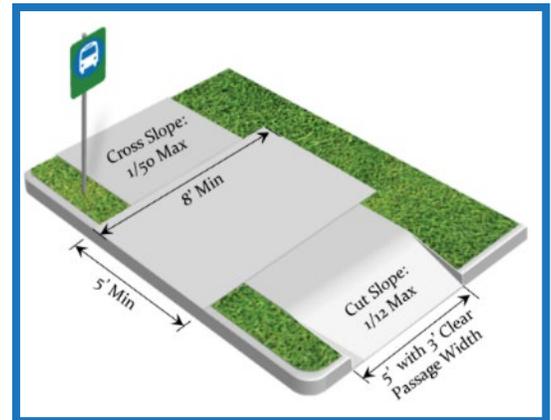
Shelter visibility allows riders and bus drivers to see if anyone is inside of the shelter and decreases the chance for vandalism. Vandalism acts as a visible sign of anti-social behavior and civil disorder, which in turn creates an urban environment that does not feel safe. Introducing technologies such as graffiti shields can reduce the likelihood and overall ability to vandalize a transit facility, creating a clean space that feels safe and encourages ridership.

Safety

- Connected pedestrian and bicycle facilities
- Access for people with disabilities
- Lighting and visibility

ADA Requirements

- ✓ Well-drained, non-slippery, firm and stable surface
- ✓ 5' x 8' slab parallel to the roadway
- ✓ ADA Compliant cross-slope (<2%)
- ✓ Connections to sidewalk; at least 4' pedestrian pathway
- ✓ Free from obstructions (light poles, drainage, signs, etc.)



ADA Bus Stop Requirements; Source: Nctr.usf.edu



Bus Stop with Visibility, Boston, MA

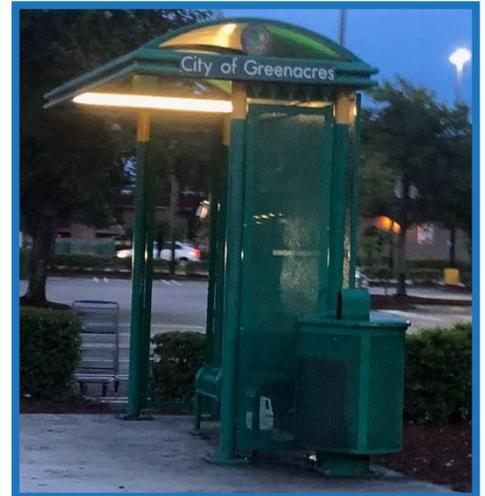


Glass Shield; Graffiti-Shield.com

Lighting

When designing transit stops, it is also important to incorporate adequate lighting. The visibility created by lighting in low light conditions promotes safety, security and encourages safe movement in and around the stop. In addition to transit riders, bus operators benefit from having lighting and visibility into the shelter at stops, allowing them to see if there are any riders waiting to be picked up. Lighting can be placed inside or outside shelters, as long as it illuminates the shelter area.

LED lighting is preferred, being up to 80% more efficient than traditional lighting, such as fluorescent and incandescent lights, and can be used with solar panel lighting. Utilizing solar panel technology decreases the cost of lighting at bus stops and results in savings during the construction phase, as it does not require installation of traditional electrical wiring at stops.



Stop 4660: Greenacres, Florida



LED Solar Lighting; Source: Handi-hut.com



LED Solar Lighting; Source: Handi-hut.com



LED Lighting; Source: Prlog.org



LED Lighting; Source: l.pining.com

Shelter Design

A shelter's design should provide a feeling of safety and ensure protection from natural elements, such as the sun, wind and rain, when waiting for the bus. Shelters should also have a common and consistent look across the entire transit system, with the allowance of shelters to harmonize with the local urban fabric, so long as it doesn't block the visibility of the stop. This could include art or a local landmark that reflects the neighborhood identity, while still being recognizable as being part of the overall transit system. This can be done by incorporating public art into the design or adjacent to the stop. Doing this enables the stop to be a part of a more complete transit network and ties it in to the community.



Public Art in Shelter Design; Source: Tallahasseearts.org

Level Boarding

Level and near-level platforms can increase bus route efficiency by encouraging a faster and smoother boarding and alighting process.

Level Boarding is often used for premium transit services like Bus Rapid Transit (BRT) or Light Rail Transit (LRT). For level boarding the platform height must match the floor height of the transit vehicle, so ramps do not deploy and vehicles do not kneel. Vehicles must be able to pull in very close to the curb to eliminate the gap. Detectable warning strips must be installed along the edge of the platform. Level boarding eliminates the need for lifts or ramps for wheelchairs and individuals with disabilities, or those traveling with strollers or carts. Level boarding enables a faster passenger flow both on and off the vehicles, which minimizes dwell times and decreases journey times, improving overall transit system productivity.

Where level boarding is not possible, near-level boarding is an alternative. Near-level boarding also allows for faster boarding and alighting due to the reduction in gap distance; however this method requires the operator to either kneel the bus or deploy a short bridge to the ramp.



BRT Level Boarding, Snohomish County, WA; Source: Goforwardnc.org



Near-level Boarding; Source: Intelligenttransport.com

Off-Board Fare Payment

In order to streamline boarding and fare payment, an increasing number of transit agencies are implementing off-board fare payment on busy lines, or in some cases, system wide. Off-board fare payments enable passengers to purchase their fare before they board by allowing them to enter through multiple doors and sparing the driver the distraction of making change. With conventional front-door-only boarding, the more riders, the longer it takes for the bus to leave, as riders must individually pay their bus fare one at a time resulting in system delays. Off-board fare payment mitigates this issue by moving more people in less time.



34th Street, New York City, NY; Source: 1.nyc.gov/

Branding

Transit system branding helps increase awareness of the transit service, increasing visibility of stops and encouraging ridership. Clear branding and route legibility are critical features of an easy-to-use transit system. A strong unified brand makes a transit system look user-friendly and dependable. Predictable wayfinding and brand identification helps guide riders through their entire transit trip.



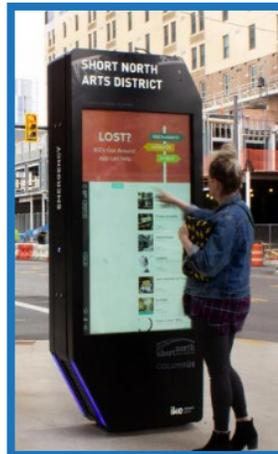
Auroro Village BRT Stop, Snohomish County, WA;
Source: Snohomishtimes.com

Signage

Proper signage at transit stops is an element of good transit service. It provides information to both riders and operators and assists them with locating the stop. Stop signage can serve as a tool to market public transit and provides an opportunity to support wayfinding methods. Stop sign visibility should be visible from every direction and not be obstructed by trees, buildings, or other structures. Lighting should illuminate the stop sign so it can be seen at night and in low light conditions.



Interactive Shelter with Signage and Wayfinding; Source: Dexigner.com



SmartCities; Source: Columbus, OH Twitter



Transit Wayfinding Signage; Source: ChkAmerica.com



A shelter branded for rapid service, with system map, San Francisco;
Source: SFMTA

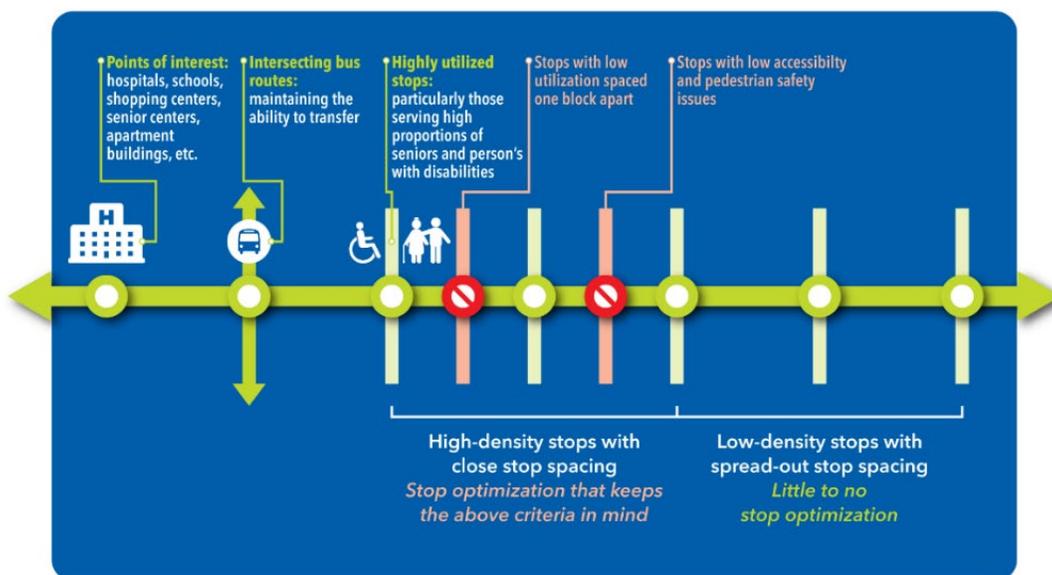


Transit Kiosk; Source: Ravepubs.com

Other Design Considerations

Accessibility

Safe and easy access for transit riders of all ages and abilities is integral when planning for transit stops, thus placing an emphasis on the need for connected and maintained sidewalks, bicycle facilities, pedestrian scale lighting, and crosswalks. Stops should be easily accessible, meet ADA requirements and be integrated well with their location. The most effective way to integrate bus stops for access is by installing them near locations with high pedestrian activity, intersecting bus routes, and highly utilized stops, especially those serving high populations of seniors or individuals with disabilities.



Source: Go-metro.com/fastops

Bicycle Interactions

A key issue for public transportation is bicycle facilities along roadways with curbside bus stops. On most streets, bicycles have to navigate with buses either in a designated bicycle lane or on a roadway with no designated facilities. In either case, cyclists often have to move out into vehicle traffic to avoid the loading bus, and buses have to pass cyclists as they accelerate away from the stop.



Bike Bus Only Lane, Boston, MA

Bus Islands

A bus island allows for bicyclists to continue riding without interruption while buses pull in and out of stop areas. Bus islands require ample right-of-way. While this erases the majority of the bicycle-transit conflicts, pedestrian-bicycle conflicts can arise, when bus passengers must cross the bicycle lane to reach the bus island and may not be expecting bicyclists. This issue can be addressed by incorporating a specific crossing area for pedestrians and requiring bicyclists to yield to crossing pedestrians. Additional safety reinforcements include speed tables and bicycle lights.



Bus Island, San Francisco, CA; Source: SFMTA



Bus Island; Source: Thesource.metro.net



Two-way cycle track and bus island in St. Petersburg, Florida



Bicycle Ramp and Transit Platform; Source: Altaplanning.com



Side Boarding Island Stop; Source: NACTO.org

Bicycle Ramps and Transit Platforms

Bicycle ramps and transit platforms serve as an innovative design for roadways with limited right-of-way, to safely accommodate bicycle facilities and transit stops, these platforms allow transit riders to walk across the raised bicycle lane, and board at sidewalk level. Cyclists continue straight ahead by riding up and down the short ramps at each end of the platform, while yielding to crossing pedestrians. This design is best for when there is either a spatial or physical barrier between vehicle through lanes and the bicycle lanes.



Bicycle and Transit Platform; Source: LA.Streetsblog.org

First/Last Mile

Connected pedestrian and bicycle networks are necessary when it comes to accessing transit service. First/last mile is the concept that transit riders have to use another mode of transportation to get from home to the transit stop and their final stop to their destination. This can be done by carpooling, using Transportation Network Companies (TNC's), riding local trolleys and shuttles, or more commonly, through walking or bicycling. To help address the first/last mile issue, bus stops should include bicycle racks. If a stop has 3 or more lines stopping there, it is considered a transit hub, and can have a designated parking area for personal vehicles or TNC's waiting for their riders.

INCREASING TRANSIT ACCESSIBILITY

Source: Palm Beach TPA



Source: Palm Beach TPA

NACTO's Principles for a Great Bus Stop

1. Treat Bus Stops as Gateways to Your System

Bus stops should be treated as gateways to the transportation system, as accessing them acts as a first stop to navigating to the rider's final destination. Because of this, bus stops should welcome its riders and ignite a sense of safety and comfort.



Netherlands' Bee-Stop; Source: Ecowatch.com

2. Facilitate Movement, Ease Interactions

Bus stops should be designed to make movement and interactions easy for the riders that are waiting at them. Stops that are designed to meet the criteria defined in these guidelines (i.e. stop amenities, signage, access, ADA Compliance, etc.) enhance the experience of the riders. Thus bringing them back to the transit service for future trips.



Wayfinding helps Facilitate Movement; Source: behance.net/



Source: Ridethepinkline.blogspot.com



Source: Forum.urbanohio.com



Source: Marketingmap.ca

3. In-Lane Stops Save Time

While bus pull-outs allow for the bus to stop without causing congestion to the through lanes, in-lane stops save time. When buses use designated bus pull-outs, it allows them to pull off the roadway and into a bus bay with ease and no rush to the boarding riders, however they often have difficulty making their way back into the through lanes, as the oncoming vehicles do not want to let the bus in, thus causing a delay to the scheduled headway times. In-lane stops do not have a time deficit, as they do not need to fight their way back into the through lane to continue on their routes. This is a national best practice to save time and Palm Tran’s preference.



Source: Disseturban.com

4. Universal Design is Equitable Design

Equitable use is design that is useful and marketable to people of all ages and abilities. Following guidelines that are set as the “Standard Design” helps to promote connectivity and equity across all stops. Stops need to be easily accessible for all users. Riders also want to see a sort of connectivity throughout the stops, as it helps to tie the system together uniformly and promotes a safe and easy connection to the next leg of their trip.



Source: ValleyMetro.org



Source: Therivareport.com

5. Design for Safety

Bus stops should always prioritize safety, for the riders (waiting, boarding or alighting), pedestrians walking on the adjacent sidewalk, and bicyclists in the bicycle lanes. In Palm Beach County there is a preference for far-side stops, as they encourage pedestrian safety by encouraging them to cross at the crosswalk behind the stopped bus. This enhances safety by discouraging jay-walking and encouraging the usage of the crosswalks. In areas where there are no near-by crosswalks, a mid-block crossing may be introduced to provide a safe crossing for pedestrians.



Transit Stop Designed for Safety of Users of all Modes of Transportation; Source: Publications.wri.org

6. Integrate Vehicle Design and Platform Design

The conformity and integration of the vehicle and platform design helps to enhance the rider's experience, as it makes the transportation service seem more comprehensively designed. Designing the platform to meet the bus for a level landing will ensure that all riders, regardless of age or ability, have easy access on and off of the vehicle.



Level Landing, to Integrate Vehicle and Platform Design; Source: Brtplan.com

References

The following list of resources were reviewed to identify Federal Requirements and National Best Practices that could be reasonably implemented in Palm Beach County.

- *American Census Survey, 2017 Societal Economic and Population Data.*
- *Atlanta Regional Commission's Bike to Ride: An Idea Book of Regional Strategies for Improving Bicycling Access to Transit.*
- *BART's Multimodal Access Design Guidelines, 2017.*
- *FDOT District 4's Transit Facilities Guidelines Version III, 2007.*
- *FDOT's Accessing Transit: Design Handbook for Florida Bus Passenger Facilities, 2017.*
- *FTA's TCRP report 19: Guidelines for the Location and Design of Bus Stops, 1996.*
- *Metro Transit's Better Bus Stops: Shelter Placement Guidelines, 2018.*
- *NACTO's Better Boarding, Better Buses: Streamlining Boarding & Fares, 2017.*
- *Palm Tran's Transit Development Plan, Annual Update (FY2019-2028)*
- *RTA's Bus Stop Design Guidelines, 2015.*
- *Transit Center's From Sorry to Superb; Everything You Need to Know about Great Bus Stops, 2018.*
- *TRI MET's Bus Stop Guidelines, 2010.*