



Bus Stop Safety Toolbox



NJTPA

**NORTH JERSEY
TRANSPORTATION
PLANNING AUTHORITY**

About the NJTPA

THE NORTH JERSEY TRANSPORTATION PLANNING AUTHORITY (NJTPA)

is the federally authorized Metropolitan Planning Organization (MPO) for the 13-county northern New Jersey region. Each urbanized region of the country is required to establish an MPO in order to qualify for the receipt of federal transportation funding. The NJTPA serves a region of 6.6 million people, one of the largest MPO regions in the country. The NJTPA evaluates and approves proposed transportation improvement projects. It also provides a forum for cooperative transportation planning efforts, sponsors transportation and planning studies, assists county and city planning agencies and monitors the region's compliance with national air quality goals.

The 20-member NJTPA Board of Trustees is composed of local elected officials from each of the region's 13 counties and from the region's two largest cities, Newark and Jersey City. It also includes representatives of state agencies and the Governor's office (see inside back cover). NJTPA's host agency is the New Jersey Institute of Technology. More information about the NJTPA is available at www.njtpa.org.

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Prepared in collaboration with:
New Jersey Department of Transportation
NJ TRANSIT
New Jersey Department of Highway Traffic Safety



Introduction: Making Your Bus Stop Safe

This Bus Stop Safety Toolbox was one of the products of a year-long Pedestrian Safety At and Near Bus Stops Study by the North Jersey Transportation Planning Authority to promote transit, livability, and complete streets.

Bus ridership accounts for two-thirds of all transit riders, with approximately 600,000 trips per day boarding at over 20,000 marked bus stops in New Jersey. Many bus passengers board and alight from buses along busy highways and often must cross these roadways after dark or during inclement weather.

The Pedestrian Safety At and Near Bus Stops Study identified approaches to reduce the severity and frequency of pedestrian crashes at and near bus stops in the 13-county NJTPA region and to improve safe pedestrian access to transit facilities. The Toolbox provides guidance for creating a new bus stop or improving an existing bus stop. A full final report of the Pedestrian Safety At and Near Bus Stops Study is available at www.njtpa.org.

Benefits of a Marked Bus Stop

Providing a marked bus stop with signage, bus shelter, benches, and design compliant with the Americans with Disabilities Act (ADA) is a great safety enhancement for all roadway users. It cues motorists that pedestrians may be crossing the street to access the bus stop and provides a safe place for bus riders to wait off street. Additionally, it helps bus operators to identify a waiting bus rider in advance rather than having to slow down to confirm a potential passenger.

Popular Questions about NJ TRANSIT's Bus Stops and Shelter Program

How do I request a bus stop?

Under New Jersey law, N.J.S.A. 39:4, the power to designate bus stops first rests with the municipality, not with NJ TRANSIT. NJ TRANSIT does work closely with each municipality to provide recommendations for safe and convenient bus stop locations, which the municipal governing body may accept or reject.



- ▶ *If the bus stop request is for a county or local road:* First, a local municipality must pass a resolution or ordinance approving the site of the bus stop. If it is a county road, both the municipality and the county must pass a resolution or ordinance approving the site of the bus stop.
- ▶ *If the bus stop request is for a state road:* The municipality must send the location of the proposed bus stop to the New Jersey Department of Transportation (NJDOT) for approval.

How do I move an existing bus stop?

To request a stop be relocated or eliminated, contact NJ TRANSIT or your town administrator/official. NJ TRANSIT and your town administrator/official will work together to address the issue. For more information, contact NJ TRANSIT's Bus Stops and Shelters program at (973) 275-5555.

How do I go about getting a bus shelter?

NJ TRANSIT's bus shelter program will arrange for, and bear the cost of installing bus shelters, including concrete pads, at legal bus stops provided that a local sponsor, public or private, will agree to accept responsibility for maintenance and liability.

How do I report a bus stop sign and or bus stop shelter maintenance issue?

If the location is listed as a bus stop, NJ TRANSIT will replace the bus stop sign. This will alert operators that the location is an official stop. Once a bus shelter is installed, maintenance, repairs and replacement are the responsibility of the shelter sponsor, usually the local government. In some communities, local governments have entered into agreements with advertisers to install and maintain shelters. Many shelters have the name of the party responsible for maintenance printed on the shelter.

What makes for a good bus stop location?

Safety, comfort, convenience, and accessibility are key factors in deciding on the location of a bus stop. When making a decision on bus stop location, consider the following:

- ▶ *Surrounding bus stops*—Where is the closest bus stop?
- ▶ *Transfer Potential*—How many routes serve this stop?
- ▶ *Site Suitability*—Are there clear view corridors, where the bus rider can see and be seen, as a bus approaches?
- ▶ *Physical*—Are there sidewalks and crosswalks that provide safe accessibility to the bus stop?
- ▶ *Lighting*—Is the lighting during the evening and early morning adequate for bus rider and bus driver visibility?

What are suggested bus stop design and location techniques to ensure safety for the bus passenger and pedestrians?

The following provides information on bus stop spacing, placement, configuration, signage, accessibility, signals, lighting, shelters, benches, and communication.

Bus Stop Spacing

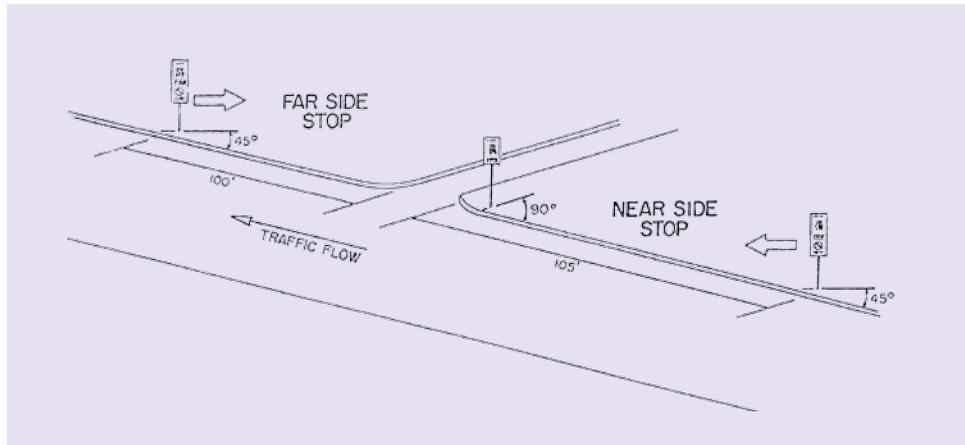
Bus stop spacing depends on land use. In dense areas, more frequent stops are needed.

ENVIRONMENT	SPACE RANGE	TYPICAL SPACING
Central Core Areas of CBDs	300 to 1000 feet	600 feet
Urban Areas	500 to 1200 feet	750 feet
Suburban Areas	600 to 2500 feet	1000 feet
Rural Areas	650 to 2640 feet	1250 feet

Source: TCRP 19, p. 18

Bus Stop Placement

A bus stop can be located in three places: the near-side of an intersection, the far-side, or midblock. NJ TRANSIT recommends dimensions for each of the three placement types. Two are shown below. The dimensions include no parking zones for the bus to pull in and out of the stop. For stops with articulated buses that bend in the middle, 20 feet should be added.



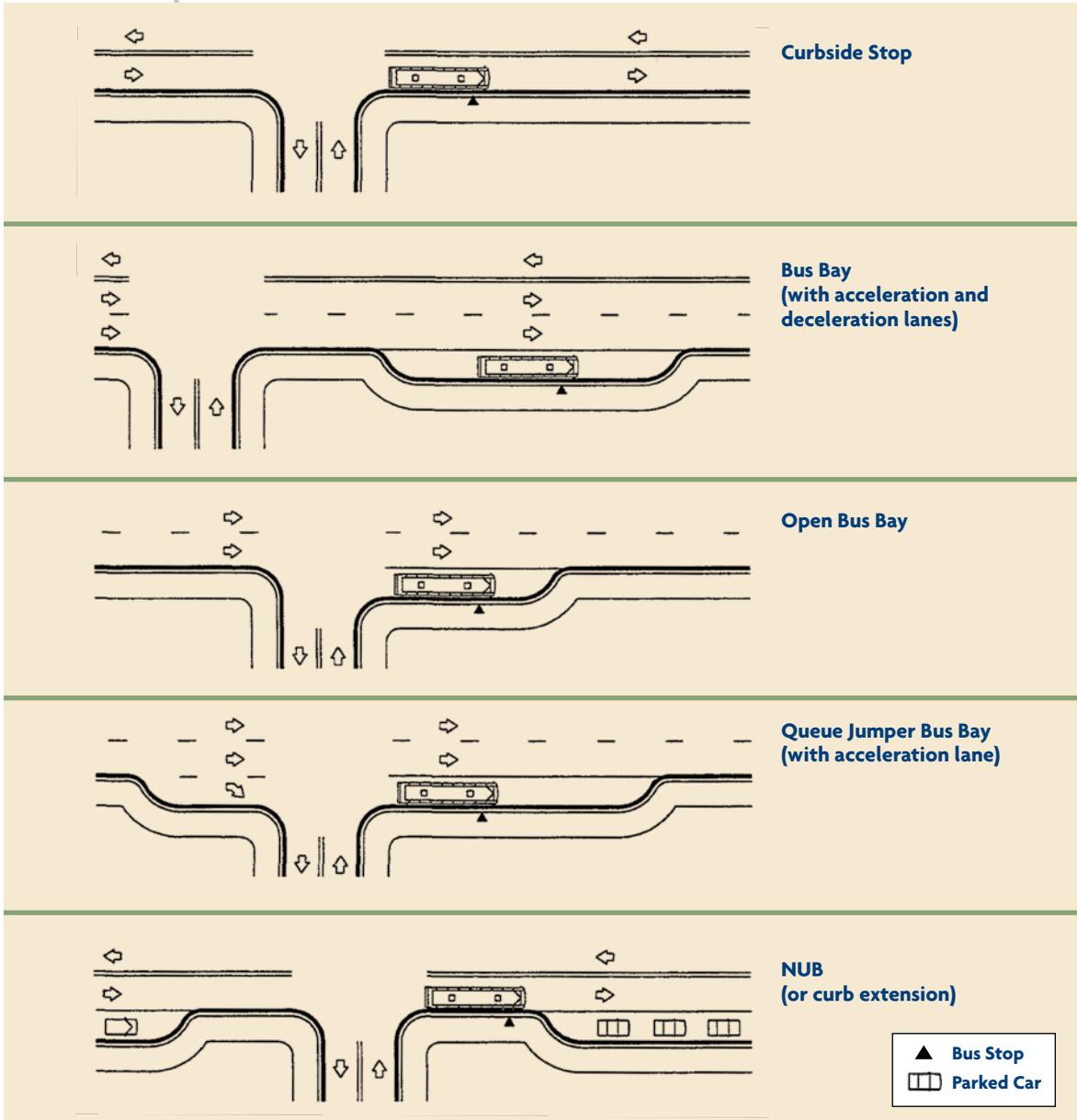
There are several advantages and disadvantages (see below) of each placement type. Municipalities must carefully consider the location that best serves the bus passengers.

	ADVANTAGES	DISADVANTAGES
Far-Side Stop	<ul style="list-style-type: none"> • Minimizes conflicts between right turning vehicles and buses • Provides additional right turn capacity by making curb lane available for traffic • Minimizes sight distance problems on approaches to intersection • Encourages pedestrians to cross behind the bus • Creates shorter deceleration distances for buses since the bus can use the intersection to decelerate • Results in bus drivers being able to take advantage of the gaps in traffic flow that are created at signalized intersections 	<ul style="list-style-type: none"> • May result in the intersections being blocked during peak periods by stopping buses • May obscure sight distance for crossing vehicles • Bus stops at the far-side stop after stopping for a red light, which interferes with traffic flow • May increase number of rear-end accidents since drivers do not expect buses to stop again after stopping at the red light • Could result in traffic queued into intersection when a bus is stopped in travel lane
Near-Side Stop	<ul style="list-style-type: none"> • Minimizes interferences when traffic is heavy on the far side of the intersection • Allows passengers to access buses closest to crosswalk • Results in the width of the intersection being available for the driver to pull away from curb • Eliminates the potential of double stopping • Allows passengers to board and alight while the bus is stopped at a red light • Provides driver with the opportunity to look for oncoming traffic, including other buses with potential passengers 	<ul style="list-style-type: none"> • Increases conflicts with right-turning vehicles • May result in stopped buses obscuring curbside traffic control devices and crossing pedestrians • May cause sight distance to be obscured for vehicles stopped to the right of the bus • May block the through lane during peak period with queuing buses • Increases sight distance problems for crossing pedestrians
Mid-block Stop	<ul style="list-style-type: none"> • Minimizes sight distance problems for vehicles and pedestrians • May result in passenger waiting areas experiencing less pedestrian congestion 	<ul style="list-style-type: none"> • Requires additional distance for no-parking restrictions • Encourages patrons to cross street at midblock (jaywalking) • Increases walking distance for patrons crossing at intersections

Source: TERP 19, Guidelines for the Location and Design of Bus Stops, 1996

Bus Stop Configuration

Bus stops can stop in the travel lane, on the shoulder, or in a bus bay (see below).



Source: TCRP 19

NJDOT Signage



R7-107a
12" x 30"

Source: MUTCD



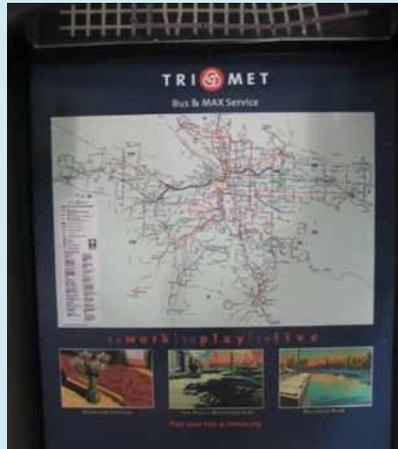
R7-107
12" x 18"



Wayfinding Signage



Source: www.commuterpage.com

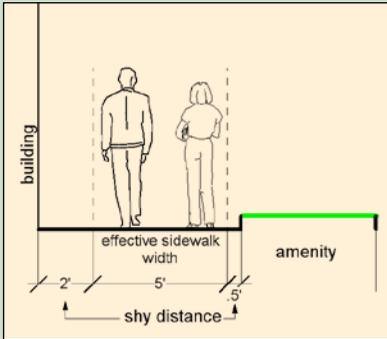


Source: Jason McHuff

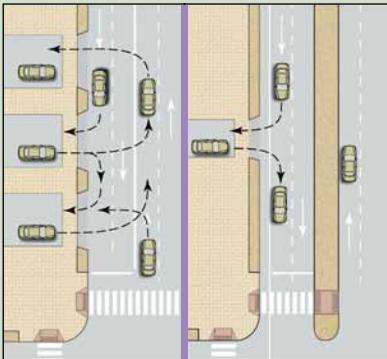
Signage

New Jersey state law requires motorists to stop for pedestrians in the crosswalk. This signage is a low cost safety strategy that can be installed to educate drivers and remind them of the law. The sign images shown above are currently being used by NJDOT.

In addition, the municipality might consider adding wayfinding signage or maps at or near the bus stop sign to guide passengers, such as those shown above from Virginia and Oregon.



Sidewalks



Driveways

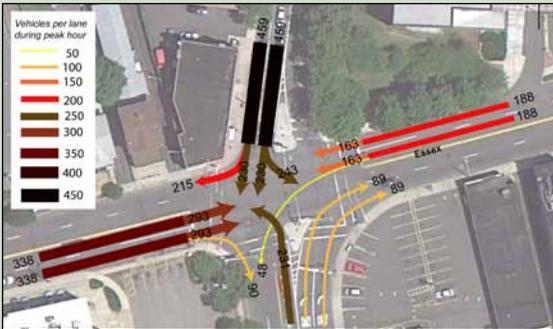


Traffic Calming

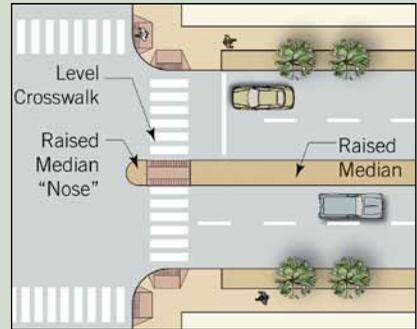
Safe Accessibility to the Bus Stop

- ▶ **Sidewalks:** Provide sidewalks leading up to the bus stop. The Federal Highway Administration recommends at least 5' sidewalks in width with no obstructions such as trees or sign posts. If there is enough room, a buffer between pedestrians and vehicles, in the form of landscaping or trees, is suggested.
- ▶ **Driveways:** Consolidate driveways through an Access Management approach to reduce potential pedestrian and motorist crashes. The image on the left shows complex vehicle movements, with many driveways and conflict points between pedestrian and motorist. The image on the right consolidates the driveways to reduce the number of conflict points. Note that the sidewalk should continue across the driveway. Also, avoid driveways near intersections with bus stops to ensure bus passengers are not waiting for the bus as motorists are going in and out of an active commercial driveway. The New Jersey Department of Transportation recommends driveways no closer than 100 feet from the signalized intersection curb cut.¹
- ▶ **Traffic Calming:** The volume and speed of traffic affects a pedestrian's feeling of safety and comfort. People walking along a high-volume road experience a "fence effect," where the street is an impenetrable barrier. Traffic speed is more critical to pedestrian safety because at higher speeds, motorists are less likely to see a pedestrian or stop in time. When collisions do occur, they are more likely to result in major injury or death. A municipality interested in pursuing traffic calming measures can start by identifying high pedestrian crash locations at and near bus stops in an effort to reduce these crashes.

¹ NJ State Highway Access Management Code, Title 16, Chapter 47, Page 26



Vehicles per lane during peak hour



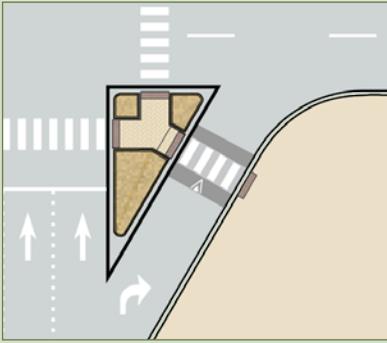
Ladder Crosswalks

The following are traffic calming measures that can be used to reduce speeding and improve pedestrian access to bus stops:

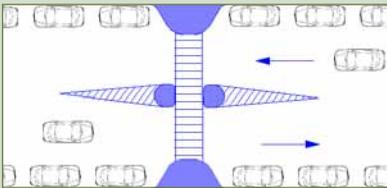
- Bicycle lanes buffer pedestrians from vehicles and lowers speeds by narrowing the road.
- Reducing car lane widths to 10 feet decreases traveling speeds. (Note that 12 feet is needed for the right lane that is used by buses and trucks.) The road can be narrowed by extending the sidewalk or adding on-street parking.
- Removing a lane can reduce speeding if the Level of Service (LOS) per lane warrants it. In addition, turn pockets can be used at intersections if intersection LOS permits it.
- One-Way/Two-Way Conversions improves circulation for motorists and cyclists.

Vehicles per lane, as shown above, provides an accurate representation of roadway use and is useful in determining potential for removing travel lanes.

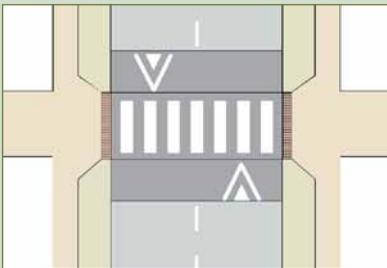
- ▶ **Ladder Crosswalks** create a high-visibility path. Where medians are used, extend the median beyond the crosswalk, which provides protection from turning drivers who make tight turns.



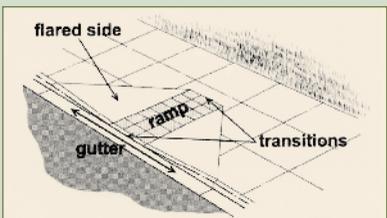
Slip Lane Pedestrian Islands



Pedestrian Refuge Island



Midblock Crosswalks



Curb Ramps

- ▶ **Slip Lane Pedestrian Islands** at intersections with channelized right turns, when designed at a proper angle, can provide the driver with greater visibility of pedestrians and slows the motorist's speed.
- ▶ **Pedestrian Refuge Island** can be sited in locations where midblock crossings are observed. The midblock crosswalk is protected by a median with curb extensions extending through the parking lane.
- ▶ **Midblock Crosswalks** can alert the motorist to a pedestrian walking across the street midblock and improves their visibility to the driver. Raised crosswalks can enhance visibility of the pedestrian further.
- ▶ **Curb Ramps:** When an intersection undergoes renovation or reconstruction, federal law requires the corners to be upgraded to Americans with Disabilities Act (ADA) standards.² This includes ramps to allow people with wheelchairs, strollers, or luggage to get from sidewalk to street level, and truncated domes to alert pedestrians with visual impairments that they are about to leave the curb.
- ▶ **Curb Extensions** can be used when on-street parking is present. The curb extensions shorten the crossing distance, reduce vehicle turning speeds, and make pedestrians more visible to drivers. Generally parking lanes should be 8 feet wide and curb extensions 6 feet wide.
- ▶ **Corner Curb Radii:** Pedestrians accessing a nearby bus stop can be struck by right-turning vehicles while they are crossing in the marked crosswalk. Extending the intersection curb to provide for a tighter turn, can help decrease the number of these crash conflicts by reducing the speed of the turning vehicles and allowing for the pedestrian to see and be seen. It also shortens

² Full guidelines can be read at <http://www.access-board.gov/adaag/html/adaag.htm>

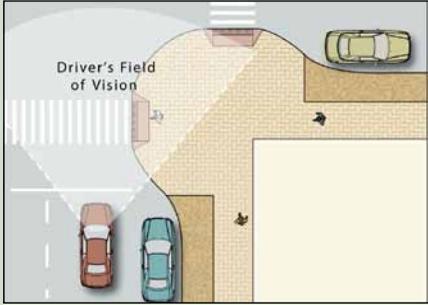
the crosswalk where the pedestrian spends less time in the street with less exposure to being hit by a vehicle.

Nearby land uses and types of road users should be considered when designing an intersection so that curb radii are sized appropriately.

Where there is an on-street parking and/or bicycle lane, curb radii can be even tighter, because the vehicles will have more room to negotiate the turn. Additionally, curb radii can, in fact, be tighter than any modern guide would allow: older and some neo-traditional cities frequently have radii of 3 to 4.6 m (10 to 15 ft).³

More typically, in new construction, the appropriate turning radius is about 4.6 m (15 ft) for residential streets. For arterial streets, the turning radius increases to about 7.6 m (25 ft) to accommodate the substantial volume of turning buses and/or trucks which require a wider turning movement than a car.⁴ See AASHTO for additional information on turning templates for various vehicles.

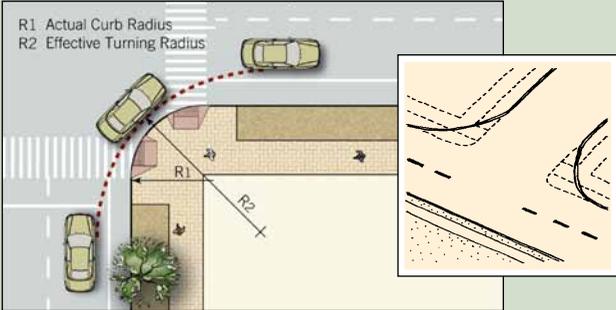
3, 4 *Pedestrian and Bicycle Information Center, University of North Carolina Highway Research Center; <http://www.walkinginfo.org/engineering/crossings-curb.cfm>*



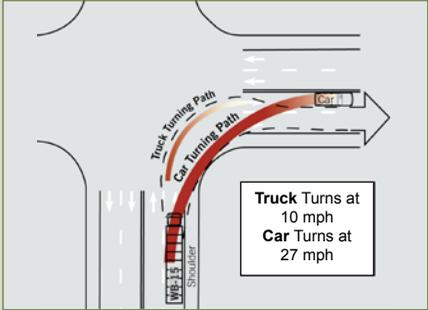
Curb Extensions



Curb Extensions



Curb Radius Reduction



Car vs. Truck Turning Movement

Sources: *Designing Sidewalks and Trails for Access, FHWA*; inset: *Making Streets That Work, Seattle, 1996*;

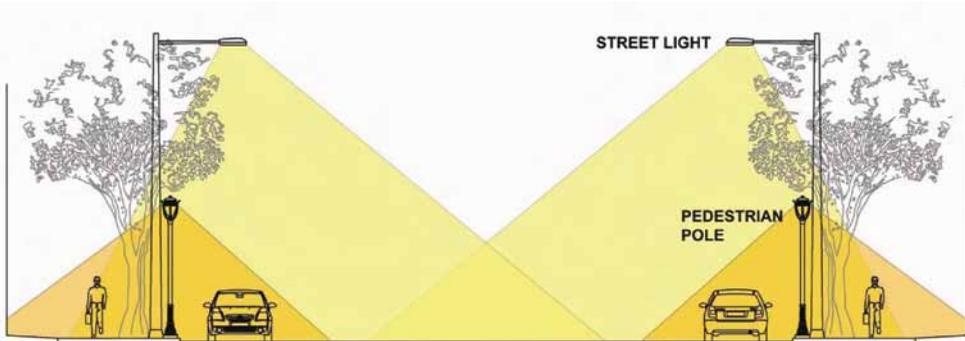
Signals

- ▶ Provide adequate time for pedestrians to cross the roadway. The Manual on Uniform Traffic Control Devices (MUTCD) suggests that one second of pedestrian walk signal time should be given for every 3.5 feet of crosswalk length.
- ▶ Recommend countdown fixed (as opposed to actuated) pedestrian signal heads at bus stop intersections. Fixed pedestrian signal heads are preferred because push buttons may break, do not tell the pedestrian if the signal box has received the request, and the automatic appearance of the WALK phase signal, regardless if the push button was pressed, alerts drivers that pedestrians might be present. If push buttons must be used, install the type that flashes or beeps to confirm that it has been pressed.

In a Lead Pedestrian Interval the WALK comes on 3 to 5 seconds prior to the vehicular green. This means pedestrians are already 10-15 feet into the crosswalk when the vehicle starts their turn and enables drivers to see the pedestrian.



- ▶ Provide a Leading Pedestrian Interval (LPI) for intersections that have pedestrian conflicts with turning vehicles. Pedestrians are given a three- to five-second “head start” over drivers, allowing them to establish themselves in the crosswalk. The above photographs show how a LPI works. In the photo on the left, the pedestrian WALK sign is on, but the vehicle signal remains red giving the pedestrian a four second head start in crossing. In the right image, the pedestrian is able to cross part of the intersection before the vehicle receives the green and begins turning. Once pedestrians clear the crosswalk, turning drivers are clear to go.



Source: University City Lighting Master Plan. University City District. March 2007

Lighting

Install lighting at the pedestrian level for bus shelters and stops to improve safety and security. Roadway lighting for motorists is placed at 15-20 feet, which does not illuminate the sidewalk. Pedestrian-scale lighting is 9-12 feet above the sidewalk. Use LED if possible as it casts off a warmer light. An initial step in assessing whether lighting changes are needed at a bus stop involves conducting a lighting inventory.



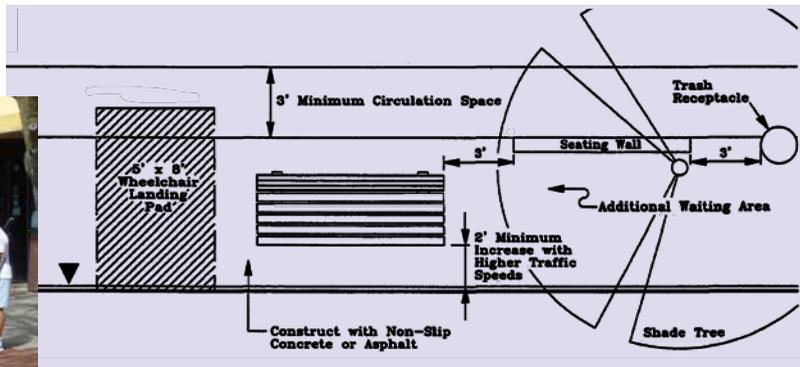
Source: Peoria Multi-Modal Transportation Plan. Bus Stop Design Considerations and Options. March 2010

Bus Shelter

NJ TRANSIT will, upon request, install a bus shelter, including the concrete pad. The requesting agency, be they public or private, must assume responsibility for maintenance and liability. Many transit agencies sponsor an Adopt-a-Shelter program in which those who pledge to clean and maintain a bus shelter receive community acknowledgement or transit passes. This type of community activism can be at the local level. Some transit agencies adopt ridership thresholds for installation of shelters. These thresholds can indicate to municipalities where they may consider requesting a shelter.

- Rural Locations: 10 boardings per day
- Suburban Locations: 25 boardings per day
- Urban Locations: 50 boardings per day

If a bus shelter is appropriate, it is important to work with local leaders or businesses next to the shelter to establish responsibility for maintenance, especially for snow removal.



Source: TCRP 19

Benches

A bench provides convenience for waiting transit customers, as shown above at a bus stop in the City of Orange, NJ. To provide bus stop facilities such as benches, a municipality can list seating and street furniture as a general element of their municipal or county streetscape plan. Benches can be installed without bus shelters.

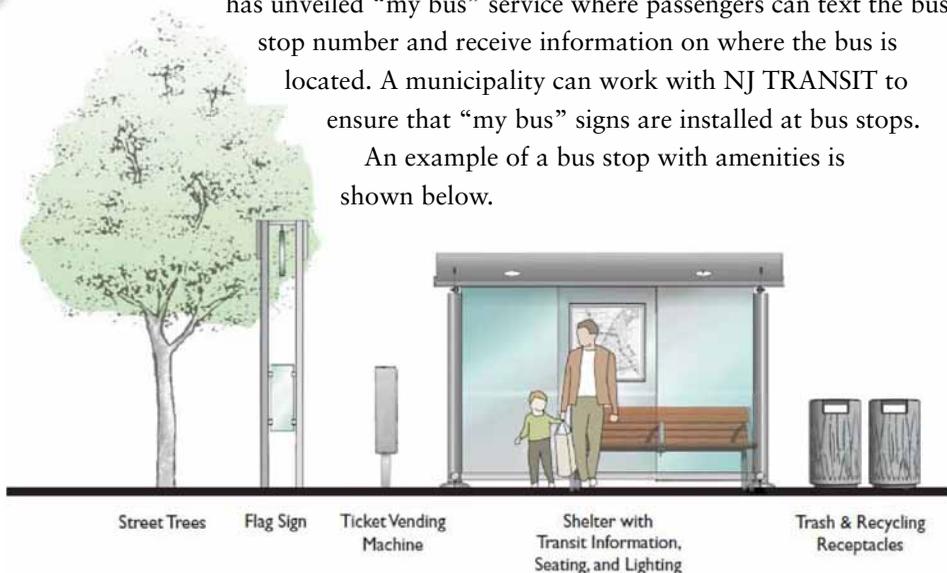
Communication

Giving passengers the most information possible allows them to plan their trips and improves bus reliability. NextBus information has become popular at some public and private systems; for example, Rutgers University uses NextBus. The system works via satellite tracking to a smartphone or computer. NJ TRANSIT has unveiled “my bus” service where passengers can text the bus stop number and receive information on where the bus is located. A municipality can work with NJ TRANSIT to ensure that “my bus” signs are installed at bus stops.

An example of a bus stop with amenities is shown below.



Source: www.NJTRANSIT.com



Source: CD+A for San Benito, CA

Americans with Disabilities Act (ADA) Compliance

Federally-funded transportation facilities for pedestrians must meet the requirements of ADA to ensure that transit users of all ages and abilities have equal access to transportation. In recent years the principles of ADA have been espoused into the movement called “universal design.” Instead of focusing on designing for people with disabilities, universal design says that design for ADA compliance means a design for all—including parents with strollers, a person rolling luggage, cyclists walking bikes, and children. Transportation facilities designed to ADA standards benefit everyone. Review the street network and identify barriers to ADA compliance.

Implementation of Bus Stop Design & Location Techniques

A key initiative in leading up to the implementation of bus stop design and location is to incorporate pedestrian features into standard plans and designs for bus stops with cost estimates included. Land use and **pedestrian crash data analysis** can help inform the prioritization for bus stop needs and safety improvements. One option for implementation is to include priority locations for pedestrian improvements at and near bus stops into a long-term time frame for funding during master plan or comprehensive plan updates. Another option is a bus stop review program and checklist or **safety audit** assessing ADA compliance, crosswalks leading up to the bus stops, bus stop shelters, and surrounding pedestrian facilities for maintenance needs. Additionally, the NJTPA offers assistance through its half-day walkable community workshops in identifying barriers to walking and developing a report of pedestrian recommendations that can inform future investment in bus stop and pedestrian facilities. For more information on the NJTPA’s workshops, visit <http://www.njtpa.org/Plan/Element/BikePed/walkable.aspx>

Safety Audits

Adopting a plan for evaluating bus stops on a rolling basis is recommended to ensure maintenance and ADA compliance is met for bus rider comfort and safety. Bus stop checklists are commonly used to inventory bus stops and roadway characteristics in the area immediately surrounding a stop. They can be used by transit agencies to evaluate their own facilities or by local residents to assess conditions at bus stops.

These checklists typically document:

- Sidewalk presence and condition near the bus stop.
- Roadway crossing treatments near the bus stop (crosswalks, pedestrian signals, pedestrian push-buttons, pedestrian signal timing, audible warning signals).
- Path of access between the sidewalk and bus stop boarding area.
- Readability of bus stop signs.
- Obstructions at bus stop.
- Bus stop shelters and seating.

At right is an example of a bus stop checklist from the Federal Highway Administration's Pedestrian Safety Guide for Transit Agencies. For additional information on these checklists, please visit, http://safety.fhwa.dot.gov/ped_bike/ped_transit/ped_transguide/ch1.cfm

Pedestrian Crash Data Analysis

Crashes can inform municipalities where roadway design or aggressive pedestrian and/or motorist behavior exists. New Jersey has an excellent resource for statewide crash data through the Transportation Safety Resource Center at Rutgers University's Plan4Safety decision support tool. The support tool maintains a database of the state's TR1 crash report since 2003 and analyzes the crash data in geospatial and tabular forms for municipalities and police departments to use and receive training free of charge. This can be a valuable tool for municipalities to understand crash trends over time and pick out hot spot crash locations. *See the Federal Highway Administration's Pedestrian Facility User Guide for a detailed list of countermeasures for each type of pedestrian-vehicle crash.*

Physical changes to a bus stop should be paired with education and enforcement

Enforcement: Enforcement is a crucial element to road safety when coupled with good roadway design. New Jersey has a Pedestrian Decoy Safety Program that involves a decoy or undercover police officer in bright plain clothes at site specific crosswalk locations. The decoy attempts to cross at the crosswalk. Motorists who do not stop for the decoy in the crosswalk are flagged by an enforcement officer

QUICK BUS STOP CHECKLIST

Route Name:

Weather Conditions:

Location:

Stop No.:

PART B: Landing Area Assessment

B1 Is there a landing area at least 5 feet wide and 8 feet deep adjacent to the curb/street? Yes No

B2 Where is the landing area positioned in relation to the curb/street?

Below street level (low ground or shoulder) Shoulder

Adjacent Sidewalk Bus Bulb

Off-Road/No sidewalk Other (specify)

B3 What is the material of the landing area?

Asphalt Dirt Gravel

Concrete Grass Pavers

Other (specify)

B4 Are there problems with the landing area surface? Yes No

If YES, rank resulting accessibility potential

	NOT ACCESSIBLE	MINIMALLY ACCESSIBLE	ACCESSIBLE
Uneven	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slopes up from the street	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Slopes down from the street	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Requires stepping over drain inlet	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Other (specify)

B5 Are there any obstacles that would limit the mobility of a wheelchair (trash receptacle, newspaper boxes, landscaping, other)? Yes No

If YES, describe obstruction

who educates the driver by providing a warning of crosswalk law infraction. If this infraction happens again by the driver, they receive a citation. The program is funded by the New Jersey Division of Highway Traffic Safety.

Education

The use of media outlets and creation of a public messaging campaign can support pedestrian safety.

Transit Supportive Policies

Transit-friendly development policies and zoning create communities with connected streets, mixed land uses, and walkability that encourage bus use. Partnerships with governmental agencies, organizations, community groups, and business improvement districts can develop collaborations to provide pedestrian benefits for all ages and abilities. In downtown districts, consider Tax Increment Financing to fund streetscape improvements that make bus travel more attractive. In addition, municipalities should work closely with developers to ensure that new development is pedestrian and transit-friendly.



Resources

The following list of web sites and reports are resources for further design and policy guidance.

Transit Cooperative Research Board (TCRB) Resources

TCRP Report 19. *Guidelines for the Location and Design of Bus Stops*, 1996.

TCRP Report 125. *Guidebook for Mitigating Fixed-Route Bus-and-Pedestrian Collisions*. 2008.

Funding & Costs

Pedestrian and Bicycle Information Center: <http://www.walkinginfo.org/engineering/>

List of federal grants from the Federal Transit Administration: http://www.fta.dot.gov/funding/grants_financing_263.html

Engineering Guidance

Easter Seals Project Action. *Toolkit for the assessment of bus stop accessibility and safety*. Available at projectaction.easterseals.com/site/PageServer?pagename=ESPA_BusStopToolkit

U.S. Department of Transportation Federal Highway Administration. *Pedestrian Facilities Users Guide*. 2000.

U.S. Department of Transportation Federal Highway Administration. *Designing Sidewalks and Trails for Access, Part II*. 2001.

U.S. Department of Transportation Federal Highway Administration. *Pedestrian Road Safety Guidance and Prompt Lists*. 2007.

Enforcement & Education Guidance

Moudon, Anne and Lin Lin. 2007. *Managing pedestrian safety I: Injury severity*. Seattle: Washington State Transportation Center.

National Highway Traffic Safety Administration. 2010. *Analyzing the first years of the ticket or click it mobilization*. DOT HS 811 232. U.S. Department of Transportation.

Wundersitz, LN, TP Hutchinson and JE Woolley. 2010. *Best Practice in road safety mass media campaigns: a literature review*. Adelaide: Center for Automotive Safety Research, the University of Adelaide.



New Jersey Resources

Public Transit in the NJTPA Region: <http://www.njtpa.org/Plan/Element/Transit/default.aspx>

Bicycle-Pedestrian Planning at NJTPA: <http://www.njtpa.org/Plan/Element/BikePed/default.aspx>

NJDOT Complete Streets Policy: <http://www.state.nj.us/transportation/commuter/pedsafety/complete.shtm>

NJ Bicycle & Pedestrian Resource Center: <http://policy.rutgers.edu/vtc/bikeped/index.php>

NJ Transit Oriented Development: <http://policy.rutgers.edu/vtc/tod/index.php>

New Jersey Division of Highway Traffic Safety: <http://www.nj.gov/oag/hts/index.html>

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Mayor, Newark

Hon. John W. Bartlett

Freeholder, Passaic County

Hon. Richard A. Vohden

Freeholder, Sussex County

Hon. Angel Estrada

Freeholder, Union County

Hon. Jason Sarnoski

Freeholder, Warren County

Regina M. Egea

Governor’s Representative

James S. Simpson

Commissioner, NJDOT

James Weinstein

Executive Director, NJ Transit

Bill Baroni

Deputy Executive Director,
Port Authority of NY and NJ

January 2013





August 2011

**NORTH JERSEY TRANSPORTATION
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