

LOCATE SITES FOR BUS SHELTER INSTALLATION STUDY

EXECUTIVE SUMMARY



OVERVIEW

The Miami-Dade County Metropolitan Planning Organization (MPO) undertook the “Locate Sites for Bus Shelter Installation Study”. This study is a follow-up to the work of the Bus Shelter Sub-Committee appointed by the Transportation Planning Council. The sub-committee met several times and identified that jurisdictions had a difficult time finding locations for new bus shelters. This effort identifies sites suitable for the immediate installation of bus shelters.

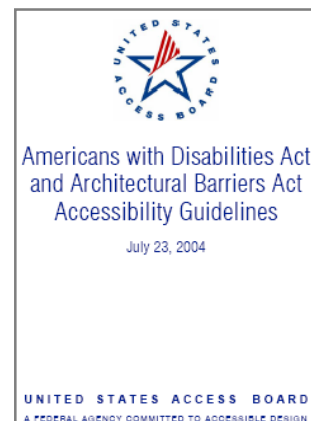
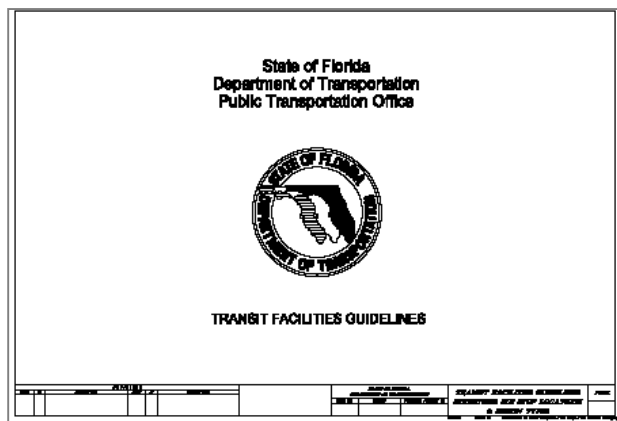
The purpose of this study is to provide an on-site visual survey of active bus stop locations throughout the Miami-Dade County Transit (MDT) system, identify suitable sites for the immediate installation of bus shelters and provide lists of feasible bus stop locations by jurisdiction.

In coordination with the MPO, a notice was sent to various Miami-Dade County agencies and municipalities requesting information and inviting them to attend a kick-off meeting for the project. The request was for existing information regarding bus stops and shelters pertaining to the respective jurisdiction and included:

- Recommendations for potential bus shelter location(s)
- Existing bus shelters - location & shelter type
- Shelters scheduled for installation - location & shelter type
- Previously considered sites where shelter was not installed (reason for no installation)
- Public ordinance amendment - determine if necessary in order to facilitate rapid installation of bus shelter(s)

REGULATIONS

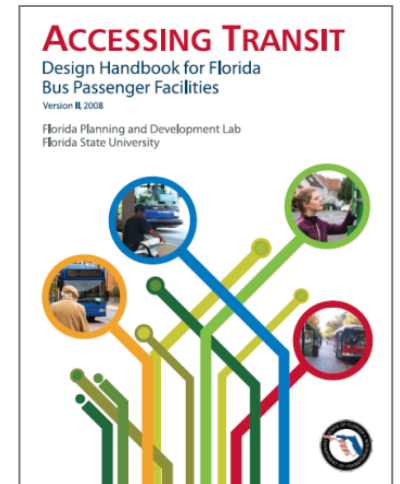
This effort consists of identifying Florida Department of Transportation (FDOT) and Miami-Dade Transit (MDT) requirements for the installation of Bus Shelters as well as identifying all Americans with Disabilities Act (ADA) regulations adopted by the Federal Transit Administration (FTA).



BUS SHELTER FOOTPRINTS

Site selection for a bus shelter includes various factors. Importance should be given to both boardings at the bus stop under consideration, as well as, the physical aspects of the area adjacent to and surrounding the bus stop. The factors described are based on the following sources:

- The *Department of Justice Code of Federal Regulations 28 CFR Part 36* (ADA Handbook);
- *Americans with Disabilities Act and Architectural Barriers Act Accessibility Guidelines*;
- TCRP Report 19, *Guidelines for the Location and Design of Bus Stops*;
- *Accessing Transit: Design Handbook for Florida Bus Passenger Facilities*, (FDOT);
- *FDOT Transit Facilities Guidelines*;
- *FDOT Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways* (Florida Green Book) and
- *FDOT Roadway and Traffic Design Standards*



Operation Factors - Bus shelters should be provided at any stop with at least 25 boardings a day. Bus shelters should also be provided at stops that are major generators of peak hour transit ridership or are major transfer points between routes. Stops that attract large concentrations of young, elderly, or temporarily or permanently disabled patrons, as well as, stops located at universities, recreation centers, senior citizen housing facilities, or hospitals should be sheltered.

Right-of-Way Factors - The open side of a shelter should be placed toward oncoming traffic and should be grade-separated from the travel lane. Shelters should be located upstream of the bus zone without interfering with passengers boarding and alighting in order to maximize the visibility for approaching buses, passing traffic and waiting passengers. The location of bus shelters should minimize walking distances for waiting passengers. Bus shelters shall be located a minimum of 12 feet from an intersection. Also, bus shelters should be located at least five feet from the front door of the bus along the direction of travel in order to provide adequate circulating space for persons in wheelchairs.

General Design Factors - A shelter that is accessible to people in wheelchairs must have a minimum clear floor or ground space area 30 inches wide and 48 inches deep entirely within the shelter. Access entry points should not have less than a 36-inch wide clearance. There should be no steps between the sidewalk or bus pad and the shelter. Unless otherwise specified, the clear floor or ground space shall be positioned for either forward or parallel approach to an element.

The bus shelter shall be connected by an accessible route to a boarding and alighting area all of which must comply with the ADA-ABA Accessibility Guidelines. Shelters should incorporate seating whenever possible and include route maps and schedules. Shelters can also be designed to incorporate benches and/or leaning rails.

DETERMINE POTENTIAL SITES

There are approximately 9,300 bus stops countywide. In order to maintain a reasonable list for field data investigation, filters for site selection were established. Various agencies provided database files containing information regarding all aspects of the Metrobus facilities. The guidelines and factors previously mentioned were used to establish the filters to determine potential sites for bus shelter installation. These filters are relevant to bus stop selection for shelter installation, such as existing bus shelters, available right-of-way, ADA compliance and accessibility.

Data was provided by departments within Miami-Dade Transit (MDT), Miami-Dade County and several municipalities. This information was categorized and reviewed for content and format compatibility. From this data, the filters were established for potential site determination. The following explains how the filters were applied to determine the list of potential bus stop locations.

Miami-Dade Transit Data

Various Divisions/Sections within MDT provided data relevant to this study. This data consisted of a bus stop inventory database; MDT Ridership Technical Reports provide data to determine the high ridership routes; and Metrobus ridership data that includes boardings per bus stop, by route, by run. Cross-referencing these databases established a preliminary list of high activity bus stops along high ridership routes. The process is described in the following sections.

Bus Stop Inventory Database - MDT provided an inventory database assembled in 2002 for all Metrobus stop locations. The inventory includes location information such as bus stop name, main street, cross street, direction of bus travel; whether or not a route sign, bench, shelter or trash can exists; and if the bus stop is ADA accessible or compliant. From this inventory, a filter was applied to eliminate from consideration bus stops with an existing shelter. A second filter was applied to eliminate bus stops that are not ADA accessible and compliant. This filter was applied in order to streamline the conditions required at potentially suitable sites and expedite completion of the bus shelter installation process.

High Ridership Bus Routes - MDT Metrobus route ridership information was obtained from their website. Several months of data were reviewed to determine the highest routes based on average weekday ridership. The top twenty routes, based on highest average weekday boardings, were determined; they are summarized in the following table.

**Top 20 Highest Ridership
MDT Routes**

ROUTE	Average Weekday Boardings
S	13,256
L	11,362
K	4,653
J	5,861
H	5,125
51-FLAGLER MAX	4,978
38/500-BWMX/MIDN	6,589
123	5,987
83	4,125
77	11,307
62	4,906
32	4,225
27	9,480
22	4,964
17	4,984
16	4,219
11	14,057
9	6,525
8	7,877
7	4,357
3	8,094

Source: MDT Ridership Report: March-08

High Activity Bus Stops - MDT has a database assembled by CUTR in 2004 that includes boarding and alighting data for each bus stop. The data was collected from January to December, the number of occasions each bus stop was surveyed varied. The survey included location information such as bus stop name, main street, cross street, direction of bus travel; bus stop id, route, bus number, bus size, district, stop number, corner location, ons (boardings), offs(alightings), load, date, day of week, weather, arrival time, departure time, scheduled time. Bus stops on the top 20 routes were extracted and ranked by highest boardings. Since the number of times data was collected at a particular bus stop varied greatly, a weighted average of boardings (AVG ONS) was calculated for each bus stop. All bus stops with an 'AVG ONS' less than zero were eliminated. The resulting list included over 1,600 sites.

Miami-Dade County Data

Miami-Dade Transit provided a database of field data collected from 2004 through 2008. The records include bus stops in several municipalities and unincorporated Miami-Dade County. For bus stops with no existing shelter, the data included whether sufficient right-of-way was available to install a bus shelter, site plans have been submitted for installation of a shelter, or a bus stop is already included on a shelter vendor's installation list. From this data the next three filters were set and bus stops with insufficient right-of-way, submitted shelter installation plans or on a shelter vendor's list, were eliminated.

Bus stops in districts that fell within municipalities that were not considered in the study for any reason were also eliminated. Some of the municipalities that are not included in the Miami-Dade County database and were not considered in the study, provided bus stop information on existing, planned or pending installation of a bus shelter, these stops were also eliminated from the list. All of the filters applied to the Metrobus stops are summarized in the following table.

Potential Bus Shelter Installation Locations Determination

FILTER	POTENTIAL SITES
All bus stop locations	9,279
exclude bus stops w/ shelters	8,433
exclude bus stops that are not ADA accessible and ADA compliant	3,603
exclude bus stops not on top 20 ridership routes & MDT ON/OFF survey data shows "ONS"<0	1,661
exclude stops within BCO,CGB, MBC, MIA	814
exclude bus stops where a site plan has been submitted 2007+ or on vendor shelter list	772
exclude bus stops listed with inadequate ROW (various reasons)	376
exclude bus stops if municipality provided where shelters are existing/planned/pending	369
add bus stops on high ridership list with no ROW or existing shelter data	388
apply threshold based on boardings at bus stops MDT ON/OFF survey data results in AVG ONS >1.55	171
add sites requested by ADA office not already on list	175
NUMBER OF BUS STOPS FOR FUTHER INVESTIGATION (FIELD DATA COLLECTION)	175

Source: David Plummer & Associates

Determination of Potential Sites

A threshold applied to the boardings was set in order to maintain a reasonable list for the field investigation effort that matches the scope of this study. Therefore those stops with a weighted

average boarding (AVG ONS) of 1.55 or less were eliminated in order to obtain the bus stops with the highest activity. The resulting list is of 175 bus stops to be investigated for bus shelter installation.

FINAL DETERMINATION OF SITES

The 175 bus stops determined from the preceding efforts were visually surveyed for suitability of bus shelter installation. In order to consider a bus stop for shelter installation, as noted in previous sections of this report, several conditions must be established. These conditions were used as a basis for the site data collection and field review.

Site Data Collection & Field Review

The list of criteria established for the field review included verification and/or satisfaction of the following: no existing bus shelter; minimum clear distance from back of curb, closest intersection, fire hydrant, parking space for the disabled or utility pole; available space to maintain minimum pedestrian pathway width on three sides of a proposed shelter; and minimum vertical clearance. Consideration was also given to the proximity of the site to major generators.

Data Consolidation for Site Suitability

Bus stops fulfilling the requirements established for shelter installation and locations that would meet these requirements with minimal adjustments (categorized as potentially suitable for shelter installation) are summarized in the following tables. Sample maps and photographs of these locations are also included.

Sites Suitable for Shelter Installation

BUS STOP ID	MUNICIPALITY	SUITABILITY	MAIN ST	CROSS ST
AVT-0007.0100	AVENTURA	Y	BISCAYNE BD	# 19000
AVT-0040.0000	AVENTURA	Y	W COUNTRY CLUB DR	AVENTURA BD
AVT-0065.0000	AVENTURA	Y	AVENTURA BD	# 2900(FIRE STATION)
AVT-0069.0500	AVENTURA	Y	AVENTURA BD	BISCAYNE BD
MGD-0090.0000	MIAMI GARDENS	Y	NW 7 AV	NW 179 TE
MGD-0130.0000	MIAMI GARDENS	Y	NW 12 AV	NW 191 ST
MGD-0252.0000	MIAMI GARDENS	Y	NW 22 AV	NW 151 ST
MGD-0336.0000	MIAMI GARDENS	Y	NW 27 AV	NW 159 ST
MGD-0401.0000	MIAMI GARDENS	Y	NW 37 AV	NW 191 ST
MGD-0403.0000	MIAMI GARDENS	Y	NW 37 AV	NW 194 ST
MGD-0993.0000	MIAMI GARDENS	Y	NW 183 ST	NW 37 AV
MGD-1058.0000	MIAMI GARDENS	Y	NW 199 ST	NW 3 PL
MLK-0136.0000	MIAMI LAKES	Y	BISCAYNE BD	NE 87 ST
MSH-0021.0000	MIAMI SHORES	Y	NE 6 AV	NE 92 ST
MSH-0037.0000	MIAMI SHORES	Y	NW 36 ST	FORREST DR
NMB-0013.0000	NORTH MIAMI BEACH	Y	BISCAYNE BD	NE 140 ST
NMB-0023.0000	NORTH MIAMI BEACH	Y	BISCAYNE BD	NE 146 ST
NMB-0032.0000	NORTH MIAMI BEACH	Y	NE 19 AV	NE 171 ST
NMB-0095.0100	NORTH MIAMI BEACH	Y	NE 163 ST	NE 20 AV
NMB-0515.0100	NORTH MIAMI BEACH	Y	NE 163 ST	NE 16 AV
NMB-0516.0100	NORTH MIAMI BEACH	Y	NE 163 ST	NE 12 AV
OPL-0029.0100	OPA LOCKA	Y	PERVIZ AV	SHARAZAD BD
OPL-0123.0300	OPA LOCKA	Y	SHARAZAD BD	PERVIZ AV
OPL-0124.0600	OPA LOCKA	Y	ALI BABA AV	PERVIZ AV
SIB-0010.0000	SUNNY ISLES BEACH	Y	COLLINS AV	OP # 16830

Source: David Plummer & Associates

Sites Potentially Suitable for Shelter Installation

BUS STOP ID	MUNICIPALITY	SUITABILITY	MAIN ST	CROSS ST
AVT-0067.0000	AVENTURA	P	AVENTURA BD	199st
AVT-0069.0000	AVENTURA	P	AVENTURA BD	# 2845
FLC-0003.0000	FLORIDA CITY	P	NW 6 AV	NW 11 ST
HIA-0118.0000	HIALEAH	P	E 1 AV	E 8 ST
HIA-0530.0000	HIALEAH	P	E 9 ST	E 4 AV
HIA-0572.0000	HIALEAH	P	E 25 ST	E 10 AV
HOM-0025.0000	HOMESTEAD	P	SW 6 AV	SW 6 ST
HOM-0027.0000	HOMESTEAD	P	SW 6 AV	SW 4 ST
HOM-0028.0100	HOMESTEAD	P	BUSWAY	SW 112 AV
MD4-0710.0650	UNINC. MDC	P	NW 183 ST	NW 67 AV
MGD-0236.0000	MIAMI GARDENS	P	NW 22 AV	NW 191 ST
MGD-0306.0000	MIAMI GARDENS	P	NW 27 AV	NW 165 ST
MGD-0451.0000	MIAMI GARDENS	P	NW 42 AV	NW 159 ST
MLK-0041.0000	MIAMI LAKES	P	NW 67 AV	WINDMILL GATE RD
MLK-0135.0000	MIAMI LAKES	P	MIAMI LAKES DR E	NW 60 AV
MSH-0004.0800	MIAMI SHORES	P	BISCAYNE BD	NE 87 ST
NMB-0047.0000	NORTH MIAMI BEACH	P	NE 19 AV	NE 181 ST
NMB-0051.0000	NORTH MIAMI BEACH	P	NE 18 AV	NE 185 ST
NMB-0510.0100	NORTH MIAMI BEACH	P	NE 163 ST	NE 23 AV
NMB-0534.0000	NORTH MIAMI BEACH	P	NE 167 ST	NE 2 AV
NOM-0087.0000	NORTH MIAMI	P	NE 6 AV	NE 141 ST
NOM-0093.0000	NORTH MIAMI	P	NE 6 AV	NE 147 ST
NOM-0098.0000	NORTH MIAMI	P	NE 6 AV	NE 137 ST
NOM-0103.0000	NORTH MIAMI	P	NE 6 AV	NE 128 ST
OPL-0026.0000	OPA LOCKA	P	NW 27 AV	NW 127 ST
OPL-0036.0000	OPA LOCKA	P	OPA LOCKA BD	CALIPH AV
SIB-0006.0000	SUNNY ISLES BEACH	P	COLLINS AV	159 ST-KINGS PT DR
SIB-0011.0000	SUNNY ISLES BEACH	P	COLLINS AV	170 ST
SIB-0013.0000	SUNNY ISLES BEACH	P	COLLINS AV	174 ST
SIB-0039.0000	SUNNY ISLES BEACH	P	COLLINS AV	# 16830
SWT-0014.0200	SWEETWATER	P	W FLAGLER ST	NW 112 AV
WMI-0011.0000	WEST MIAMI	P	SW 8 ST	SW 58 AV

Source: David Plummer & Associates

City of North Miami Beach



Bus Stop Suitability for Shelter Installation

Bus Shelter Installation Site

-  Suitable
-  Potentially Suitable
-  Unsuitable
-  Existing Shelter

BUS STOPS SUITABLE FOR SHELTERS



NMB-0013.0000.JPG

SE CORNER OF BISCAYNE BLVD @ NE 139 ST



NMB-0023.0000.JPG

SW QUADRANT OF BISCAYNE BLVD @ NE 163 ST



NMB-0032.0000.JPG

SW CORNER OF NE 19 AVE @ NE 181 ST



NMB-0095.0100.JPG

SE CORNER OF NE 10 AVE @ NE 179 TERR

BUS STOPS POTENTIALLY SUITABLE FOR SHELTERS



NMB-0047.0000.JPG

NE CORNER OF NE 19 AVE @ NE 173 ST



NMB-0051.0000.JPG

NE CORNER OF NE 19 AVE @ NE 181 ST



NMB-0510.0100.JPG

NW QUADRANT OF NE 163 ST @ INTERAMA BLVD



NMB-0534.0000.JPG

NW CORNER OF NE 167 ST @ NE 6 AVE



David Plummer & Associates
TRANSPORTATION • CIVIL • STRUCTURAL • ENVIRONMENTAL