



MIAMI-DADE  
COUNTY

# Bicycle Boulevard

Planning Study:  
Model City/Brownsville

*December 2009*



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*The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.*



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EBS Engineering, Inc. assisted with the existing conditions analysis and field inventory for this study.



*Valuable feedback was gathered at a public workshop and a public open house for the Bicycle Boulevard Planning Study.*





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## List of Acronyms

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AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
AV	Avenue
BLVD	Boulevard
BPAC	Bicycle Pedestrian Advisory Committee
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
GIS	Geographic Information Systems
GOB	General Obligation Bond
KHA	Kimley-Horn and Associates, Inc.
MDPR	Miami-Dade County Park and Recreation Department
MDPWD	Miami-Dade County Public Works Department
MDT	Miami-Dade Transit
MPH	Miles per Hour
MPO	Metropolitan Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices
NE	Northeast
NW	Northwest
ROW	Right-of-way
SE	Southeast
ST	Street
SW	Southwest
UPWP	Unified Planning Work Program



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## Introduction

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The Miami-Dade County Park and Recreation Department (MDPR), in partnership with Miami-Dade County Public Works Department (MDPWD), and the Miami-Dade Metropolitan Planning Organization (MPO) has initiated a comprehensive planning study to develop a Miami-Dade County Bicycle Boulevard Planning Study: Model City/Brownsville.

The objectives of the study are to:

- Incorporate bicycle safety features near community resources
- Establish design and development criteria consistent with the Florida Department of Transportation (FDOT) and MDPWD
- Minimize additional right-of-way and pavement needed for bicycle improvements
- Develop cost effective strategies
- Facilitate signage and pavement marking improvements into the bicycle route network
- Develop bicycle boulevard and traffic calming strategies that minimize impacts on emergency vehicles
- Minimize non-local motorized traffic on bicycle boulevards
- Create distinctive look and ambiance

The Model City/Brownsville area has been selected for this study because of the opportunities created by the extensive grid network of streets, lack of short-term opportunities for the development of traditional off-road shared-use paths or multi-use trails in the area, and need for establishing ways to improve bicycle safety and circulation. The study is being funded by the Unified Planning Work Program (UPWP) through the Miami-Dade MPO. The study area for this project is defined by Little River Drive in the north; the Airport Expressway in the south; NW 7 Avenue in the east; and NW 32 Avenue in the west. The results of this study are to be transferrable to other parts of the County.

Community assets within the study area include several parks, community centers, schools and Metrorail stations as follows: Marva Y. Bannerman Park and Pool, Olinda Park, Joseph Caleb Community Center, Partners park, African Heritage Cultural Arts Center, Gwen Cherry Park, Arcola Park, Arcola Lakes Park, Hadley Park, Martin Luther King Memorial Park, Drew Park, Marva Y. Bannerman Elementary, Corporate Academy South, Olinda Elementary, Charles R. Drew Elementary, and the Earlington Heights, Brownsville, and Dr. Martin Luther King, Jr. Metrorail stations.



## Bicycle Boulevard - Definition

A Bicycle Boulevard can be defined as “A hybrid facility that uses various methods and forms to improve bicycle safety, convenience and connectivity to make bicycling a preferred option through a variety of improvements”.

Bicycle Boulevard strategies attempt to create a bicycle arterial while calming traffic and helping to remove non-local vehicles from the street.

Bicycle Boulevards enhance bicycle travel through various engineering and regulatory tools:

- Pavement markings
- Traffic calming
- Motor vehicle diversion
- Signage
- Other methods of improving the safety, comfort and efficiency of bicycling



*Pavement Marking requires adoption by FHWA*

During the course of this Study, the Bicycle Boulevard Planning & Design Guidebook, Initiative for Bicycle and Pedestrian Innovation was published by Alta Planning + Design in July 2009. This guidebook was used by the study team for planning assistance and perspective during the latter stages of the project. According to the Bicycle Boulevard Planning & Design Guidebook, bicycle boulevards take the shared roadway bike facility to a new level, creating an attractive, convenient, and comfortable cycling environment that is welcoming to cyclists of all ages and skill levels. Research indicates that there is a strong preference by cyclists for bicycle boulevards, and suggests that they may be a key tool for attracting new cyclists who typically are less comfortable riding in traffic. In addition, these low-speed and low-volume facilities are also pleasant places for pedestrians and other non-motorized users. Bicycle boulevards are also attractive to local agencies for their ability to serve cyclists on existing road networks, including cyclists who may not feel comfortable riding on busy streets, even when bike lanes are provided.

### *General Criteria for a Bicycle Boulevard*

The general criteria for a bicycle boulevard are to have or create one or more of the following conditions:

- Low traffic volume road
- Low motor speeds
- Significant east-west and north-south connectivity
- Free-flow bicycle travel
- Access to major destinations
- Comfortable bicycling conditions
- Minimize conflict with motorists and pedestrians
- Intersection crossing safety treatments



*Discussing the study with a local*



## *Goals and Objectives*

The Bicycle Boulevard Planning Study Advisory Committee developed the following goals and objectives to guide the design process for the bicycle boulevards:

### Goals

1. To improve the safety and connectivity of bicycling.
2. To expand the potential bicycle route network beyond bicycle lanes and separated multi-use trails.
3. To create livable communities through calming traffic and more efficient bicycle routes in local communities.
4. To increase the awareness of bikeways for both cyclists and motorists.

### Objectives

1. Incorporate bicycle safety features near community resources such as parks, cultural centers, schools, and transit stations.
2. Establish design and development criteria that are consistent with permitted public use of FDOT and MDPWD road right-of-way.
3. Minimize the amount of additional right-of-way needed for bicycle improvements.
4. Minimize the amount of additional pavement needed for bicycle improvements.
5. Develop cost effective strategies for bicycle boulevards.
6. Facilitate signage and pavement marking improvements into the bicycle route network.
7. Develop bicycle boulevard and traffic calming strategies that minimize impacts on emergency vehicles.
8. Minimize non-local motorized traffic on bicycle boulevards.
9. Create distinctive look and ambiance so that cyclists become aware of the existence of bicycle boulevard and motorists are alerted.

## *Selection of Streets for Bicycle Boulevards*

Bicycle boulevards tend to work well in grid pattern road networks, which are often found in urban centers and in traditional neighborhoods such as the Model City/Brownsville area. The interconnected layout of traditional street networks are generally easy to navigate, tend to be continuous over long distances, and provide numerous route options to destinations. If one street is selected as the bicycle boulevard and treated to reduce through motor vehicle trips, several parallel streets remain available to motorists as alternates. The selection process for identifying bicycle boulevard alignments also accounts for the operational characteristics of the street including what may be achieved through typical bicycle boulevard implementation strategies.



As part of the planning process, potential bicycle boulevard corridors were identified for this study. The following criteria were used to select the roadways that make up the bicycle boulevard network for this study:

1. Local street or low-volume collector
2. Not a truck route
3. Preference to streets with a low percentage of commercial frontage
4. Spaced between  $\frac{1}{2}$  and  $1 \frac{1}{2}$  miles from a parallel bicycle boulevard
5. Continuous segments of at least  $\frac{1}{2}$  mile in length
6. Traffic signals at major intersections
7. Access to at least two community facilities such as parks, cultural centers, schools, transit stations, shopping centers, and employment centers
8. Connections to at least two bike lanes or bicycle boulevards
9. Few stop signs along the corridor

## Existing Conditions / Data Collection

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In the support of the defined study area, pertinent base data were collected to define the existing conditions. In accordance with task of data collection and analysis, the following information has been gathered from existing available data. This task consisted largely of gathering pertinent planning, environmental, land use, transportation and engineering information necessary to assess the study area corridors. The information gathered included data necessary to perform adequate evaluations of the environmental, transportation, and recreation aspects of the study area facilities. To the extent possible, the existing conditions data were collected as geospatial data compatible with ArcGIS.

It is important to note the following observations that were derived from the data collection efforts:

- There are many existing neighborhood parks, schools, cultural and recreational facilities, and Metrorail stations that represent potential connection opportunities for the bicycle boulevard network. These include Marva Y. Bannerman Park and Pool, Olinda Park, Joseph Caleb Community Center, Partners Park, African Heritage Cultural Arts Center, Gwen Cherry Park, Arcola Park, Arcola Lakes Park, Hadley Park, Martin Luther King Memorial Park, Drew Park, Marva Y. Bannerman Elementary, Corporate Academy South, Olinda Elementary, Charles R. Drew Elementary, and the Brownsville, Earlington Heights and Dr. Martin Luther King, Jr Metrorail stations
- There is an existing Model Cities Bike Path from NW 48 St to NW 87 St primarily along NW 21 Av, NW 22 Av, and NW 19 Av
- The Hadley Park Trail has an existing small loop trail along the perimeter of the park



## Transportation System Overview

As part of the field review observations, details regarding roadway inventory which includes the location of stop signs, traffic lights, number of lanes, roadway width and width of sidewalk were also collected. Several arterial roadways are within the study area including:

- NW 54th Street – Four Lanes Undivided
- NW 62nd Street – Four Lanes Divided
- NW 79th Street – Six Lanes Divided
- NW 27th Avenue – Four Lanes Divided
- NW 22nd Avenue – Six Lanes Divided
- NW 17th Avenue – Four Lanes Undivided
- NW 12th Avenue – Four Lanes Undivided
- NW 7th Avenue – Four Lanes Undivided

Appendix B presents the base data collection maps.



*Crossing arterials such as NW 54th Street requires safety improvements*

## Field Review Observations

A field review was conducted by KHA staff and Miami-Dade County staff on April 10, 2009, to review potential bicycle boulevards with proper connectivity within the study area. Additional field work was conducted by consultant staff over the next two months to supplement the data. The following information was documented during the field review:

- Existing condition of streets
- Inventory of existing intersection control devices and traffic calming devices
- Inventory of roadway characteristics including width of travel lane and existence and conditions of sidewalks
- Pavement condition
- Location of existing parks, neighborhood areas, and recreational and cultural facilities for bicycle boulevard improvements
- The following are the list of issues and problems with possible solutions that were identified during the field review:
  - Unsignalized crossings at major road intersections
    - Provide traffic circles
    - New traffic signal
    - New pedestrian/bicycle signal



*NW 14th Avenue is a typical street identified as a potential bicycle boulevard*



Installation of raised medians along major arterials

Unsignalized crossing features including crosswalks and median refuges

Route bicycle boulevard path to the closest signalized intersection

- Crossing Little River (C-7) Canal
  - New trail bridge along theoretical NW 12 Av.
- FEC Railroad crossing north of NW 71 St.
  - Route bicycle boulevards along existing bridge at NW 12 Av.

Detailed field observations of the corridors identified as possible Bicycle Boulevards were conducted to determine existing conditions of the study corridors, width of travel lanes, sidewalk width, posted speed limits, inventory of traffic control devices at all intersections (includes stop signs and traffic signals) including direction of two-way stop signs, intersection diagram of signalized intersections including the medians of the cross street, presence of on-street parking and identify which roads have striping. Photographs were taken at several locations along the study corridors to help depict the existing conditions and are located in a separate Field Review Report prepared by EBS Engineering. The following are the list of study corridors that were included in the field review:

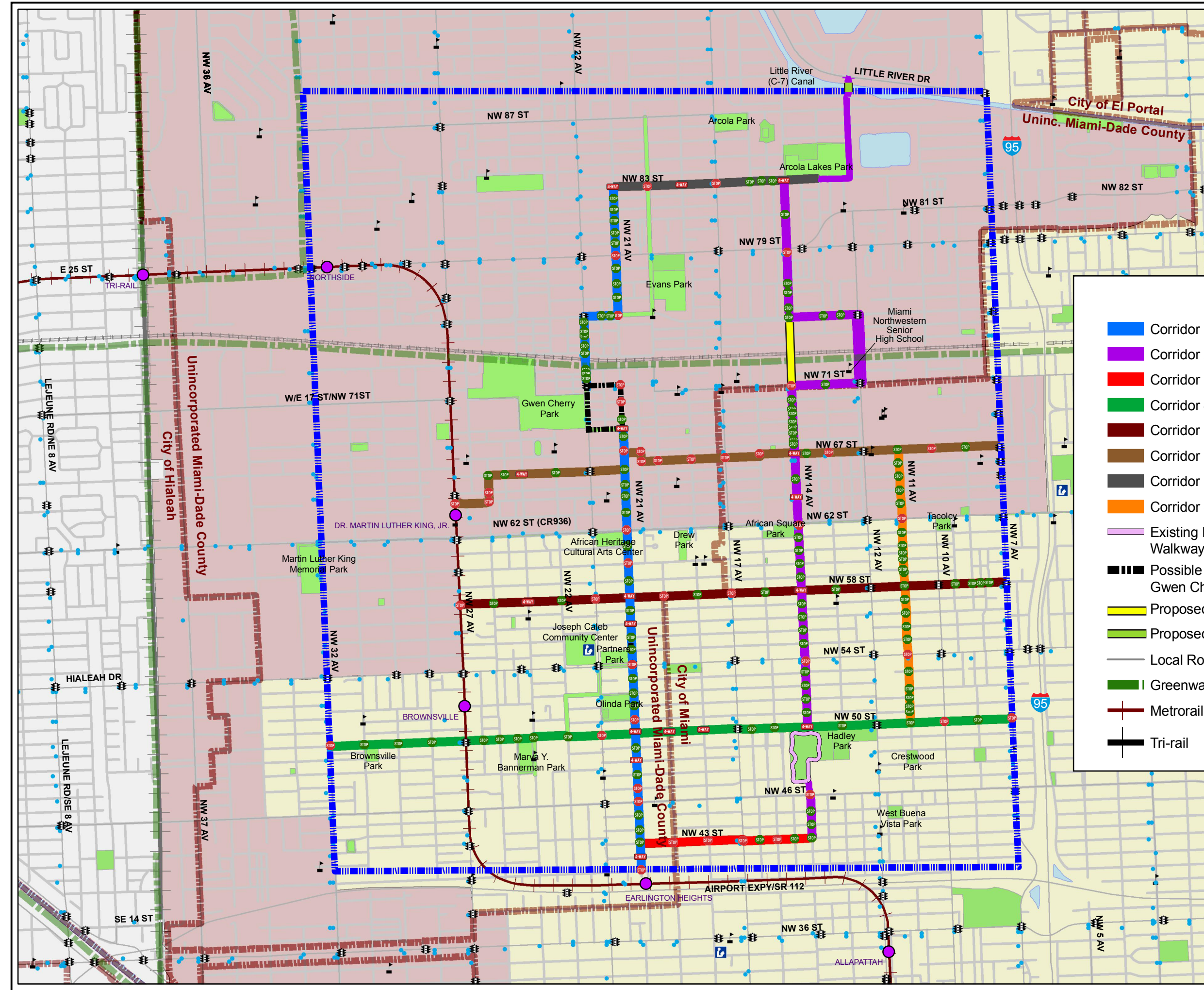
1. NW 21st Avenue from NW 41<sup>st</sup> Street to NW 83<sup>rd</sup> Street
2. NW 14th Avenue from NW 43<sup>rd</sup> Street to NW 83<sup>rd</sup> Street
3. NW 43rd Street from NW 14<sup>th</sup> Avenue to NW 21<sup>st</sup> Avenue
4. NW 50th Street from NW 7<sup>th</sup> Avenue to NW 32<sup>nd</sup> Avenue
5. NW 58th Street from NW 7<sup>th</sup> Avenue to NW 27<sup>th</sup> Avenue
6. NW 67th Street from NW 7<sup>th</sup> Avenue to NW 27<sup>th</sup> Avenue
7. NW 83rd Street from NW 12<sup>th</sup> Avenue to NW 21<sup>st</sup> Avenue
8. NW 11th Avenue from NW 50<sup>th</sup> Street to NW 67<sup>th</sup> Street

The following are some of the common observations on the study corridors:

- Two-lane roads with 11-12 feet travel lanes
- Swale on both sides of the roads and the width of the swale varied from 8 to 12 feet
- Side walk on both sides and the width of the side walk varied 5 to 6 feet
- Nine (9) feet parking lane on NW 50th Street and NW 58th Street
- The posted speed limit is 30 MPH
- The location of the stop signs and traffic signals on the study corridors were also identified and are shown in Figure 1

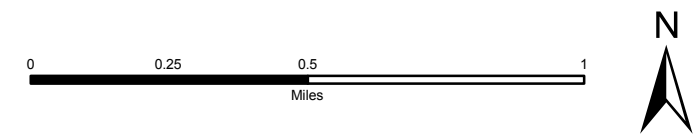
# MIAMI-DADE COUNTY BICYCLE BOULEVARD PLANNING STUDY: MODEL CITY/ BROWNSVILLE

Figure 1  
Study Area Map with  
Proposed Bicycle Boulevard  
Corridors



### Legend

	Corridor 1 - NW 21 AVE		FEC Railroad
	Corridor 2 - NW 14 AVE		Signalized Intersection
	Corridor 3 - NW 43 ST		Fourway-stop
	Corridor 4 - NW 50 ST		Two-Way Stop on Side Street
	Corridor 5 - NW 58 ST		Two-Way Stop on Bicycle Boulevard
	Corridor 6 - NW 67 ST		Bus Stop
	Corridor 7 - NW 83 ST		Library
	Corridor 8 - NW 11 AVE		Hospital
	Existing Hadley Park Walkway/Trail		Schools
	Possible Connection to Gwen Cherry Park		Metrail Station
	Proposed Bike-Ped Bridge 1		StudyArea
	Proposed Bike-Ped Bridge 2		City Boundary
	Local Road		Parks
	Greenway Network		Water
	Metrail		Commission District 2
	Tri-rail		Commission District 3





### *Traffic Counts*

Twenty-Four hour bi-directional tube traffic counts were collected on July 21, 2009 (Tuesday) at the following 10 locations within the study area:

1. NW 43<sup>rd</sup> Street between NW 17<sup>th</sup> Avenue and NW 21<sup>st</sup> Avenue
2. NW 50<sup>th</sup> Street between NW 12<sup>th</sup> Avenue and NW 14<sup>th</sup> Avenue
3. NW 58<sup>th</sup> Street between NW 17<sup>th</sup> Avenue and NW 21<sup>st</sup> Avenue
4. NW 67<sup>th</sup> Street between NW 17<sup>th</sup> Avenue and NW 21<sup>st</sup> Avenue
5. NW 83<sup>rd</sup> Street between NW 17<sup>th</sup> Avenue and NW 14<sup>th</sup> Avenue
6. NW 21<sup>st</sup> Avenue between NW 79<sup>th</sup> Street and NW 83<sup>rd</sup> Street
7. NW 21<sup>st</sup> Avenue south of NW 62<sup>nd</sup> Street
8. NW 14<sup>th</sup> Avenue between NW 79<sup>th</sup> Street and NW 83<sup>rd</sup> Street
9. NW 14<sup>th</sup> Avenue south of NW 62<sup>nd</sup> Street
10. NW 11<sup>th</sup> Avenue south of NW 62<sup>nd</sup> Street

Figure 2 shows a map with tube count locations along with seasonally-adjusted Annual Average Daily Traffic (AADT) at that location. It was observed that the roadways selected/identified for the tube count locations have low traffic volumes and the selected roadways can be possible candidates to implement a bicycle boulevard.





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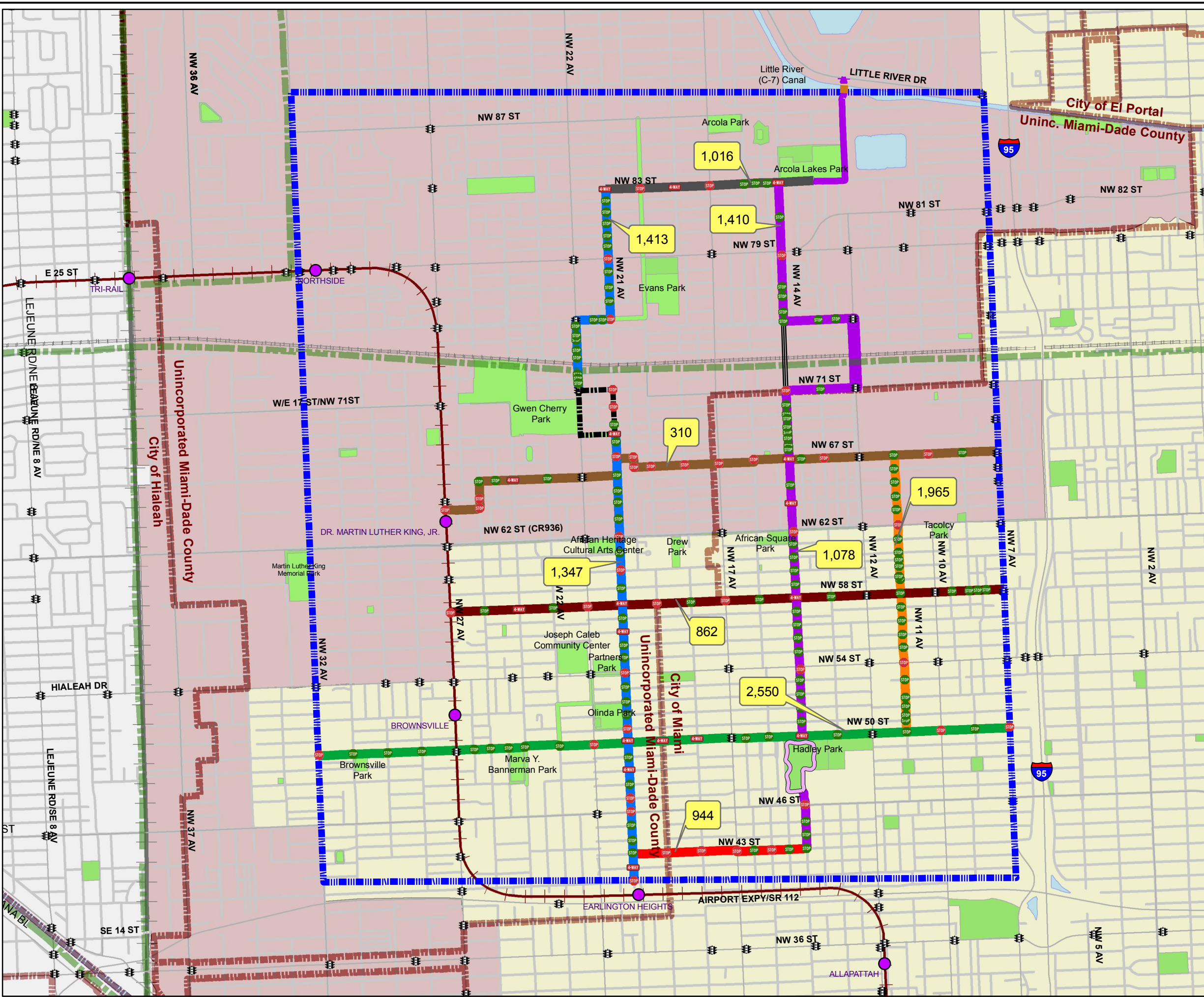
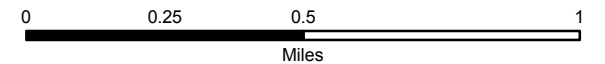
# MIAMI-DADE COUNTY BICYCLE BOULEVARD PLANNING STUDY: MODEL CITY/ BROWNSVILLE

Figure 2  
Annual Average Daily Traffic (AADT)  
on Proposed Bicycle Boulevard  
Corridors

### Legend

- █ Corridor 1 - NW 21 AVE
- █ Corridor 2 - NW 14 AVE
- █ Corridor 3 - NW 43 ST
- █ Corridor 4 - NW 50 ST
- █ Corridor 5 - NW 58 ST
- █ Corridor 6 - NW 67 ST
- █ Corridor 7 - NW 83 ST
- █ Corridor 8 - NW 11 AVE
- █ Existing Hadley Park Walkway/Trail
- ▬▬▬ Possible Connection to Gwen Cherry Park
- ▬▬▬ Proposed Bike-Ped Bridge 1
- ▬▬▬ Proposed Bike-Ped Bridge 2
- ▬ Local Road
- ▬ Greenway Network
- + Metrorail
- + Tri-rail
- ▬▬▬ FEC Railroad
- ⊕ Signalized Intersection
- ⊕ Fourway-stop
- ⊕ Two-Way Stop on Side Street
- ⊕ Two-Way Stop on Bicycle Boulevard
- Metrorail Station
- ▭ Study Area
- ▭ City Boundary
- ▭ Parks
- ▭ Water
- ▭ Commission District 2
- ▭ Commission District 3

▭ 310 Traffic Count Location





# TOOL BOX STRATEGIES

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## Tool Box and Bicycle Boulevard Layout

This chapter describes the tool box developed for the Miami-Dade County Bicycle Boulevard Planning Study: Model City/Brownsville. The toolbox lists a set of strategies that were developed to make the bicycle boulevards safer and more efficient. The strategies listed in the toolbox are flexible and will help to design a bicycle boulevard to meet the requirements and issues at specific locations.

The strategies are grouped into two categories based on the applicability and requirements of the bicycle boulevard. The first category is called **Basic Tools**. These strategies are applicable to all bicycle boulevards. These include:

- Signage
- Pavement Markings
- Landscaping/Aesthetics

The second category is called **Site Specific Tools**. These strategies will be applicable to address issues specific to a particular site and would be determined in collaboration with the local residents. These include:

- Neighborhood Traffic Management Tools
- Crossing Major Streets

It is anticipated that the strategies in the toolbox may need to be modified as detailed designs for each bicycle boulevard are developed in collaboration with neighboring residents and cyclists. New strategies may also need to be added, and some strategies in the toolbox may not be used at all. This toolbox therefore should be viewed as a guideline, not a rule, for developing bicycle boulevards. The specific elements needed to create a bicycle boulevard must be tailored to the unique conditions of each corridor.

A summary of the toolbox is presented in Table 1. The strategies listed in the toolbox will be combined accordingly so that the cumulative effect will create a look and feel that will tell both motorists and cyclists that the street is special – it is not a speedway but rather a special place where people live and where many people ride their bikes. The combined impact of the tool box strategies is far greater than any single strategy alone. A sample layout of the NW 14th Avenue study corridor, presented on pages 31 through 37, illustrates conceptually how the various tool box strategies can be combined to create a bicycle boulevard. Figure 3 on page 38 illustrates a typical section view and plan view of a bicycle boulevard.

**TOOL BOX SUMMARY**

BASIC TOOLS	
<b>A. Signage</b>	
	1. Bicycle Boulevard Designation Signs
	2. Street Name Sign
	3. Advance Warning Sign
	4. Wayfinding Sign with Distances
	5. Other signs to be used as needed for site-specific applications
<b>B. Pavement Markings</b>	
	1. Bicycle Boulevard Pavement Markings
	2. Bike Lane Striping and Marking
<b>C. Landscaping / Aesthetics</b>	
	1. Planter Strip Landscaping
	2. Street Trees
SITE SPECIFIC TOOLS	
<b>D. Neighborhood Traffic Management Tools</b>	
	1. Traffic Circles
	2. Landscape Curb Extensions Bulb-Out
	3. High Emphasis Crosswalks
	4. Chicane
	5. Partial Street Closure
	6. Speed Cushions
<b>E. Crossing Major Streets</b>	
	1. Traffic Signal
	2. Traffic Signal with Bike Detection Loops
	3. Bike Boxes
	4. Traffic Signal (Bicycles Only) with Turn Restrictions for Motor Vehicles
	5. All-Way Stop Sign
	6. Crosswalk with Median Refuge (with Optional Turn Restrictions)

*Table 1: Tool Box Summary*



## STRATEGY A-1: BICYCLE BOULEVARD DESIGNATION SIGNS

- Basic Tool - Signage
- Informs all roadway users that the current street is a bicycle boulevard
- Enhances the look and feel of the street for a bicycle boulevard
- \$300 approximately for sign and sign structure



R4-11



M3-2(b)

M1-8(7)



W11-1



W16-1P



Note: The Bicycle Boulevard signage must be integrated within the County's Wayfinding signage program and bicycle route numbering system. The Bicycle Boulevard signage must also be compliant with FHWA standards found in the Manual on Uniform Traffic Control Devices (MUTCD).



## STRATEGY A-2: STREET NAME SIGN

- Basic Tool - Signage
- Add-on to typical intersection street signs to indicate bicycle boulevard status
- Can be applied to intersections along bicycle boulevard
- Enhances the look and feel of the street for a bicycle boulevard
- \$200 approximately for sign and sign structure



D3-1



Requires adoption  
by FHWA



### STRATEGY A-3: ADVANCE WARNING SIGNS

- Basic Tool - Signage
- Provides advance warning to motorists approaching a bicycle crossing
- Can be applied at all major intersections along a bicycle boulevard
- Enhances the safety on a bicycle boulevard
- \$300 approximately for sign and sign structure



W11-1



W16-9P



### STRATEGY A-4: WAYFINDING SIGNS WITH DISTANCE

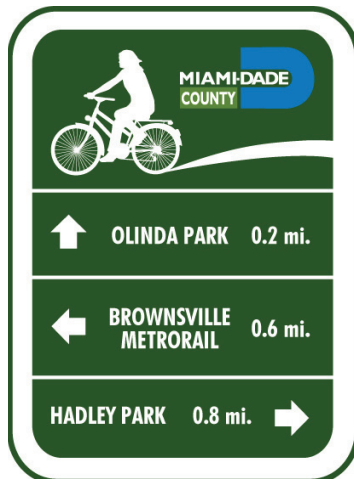
- Basic Tool - Signage
- Provides wayfinding and distance information for cyclists
- Larger signs could also improve an area-wide map
- \$300 approximately for sign and sign structure



Oakland, CA



Portland, OR



Requires adoption by FHWA



E1 Facility Directional Sign



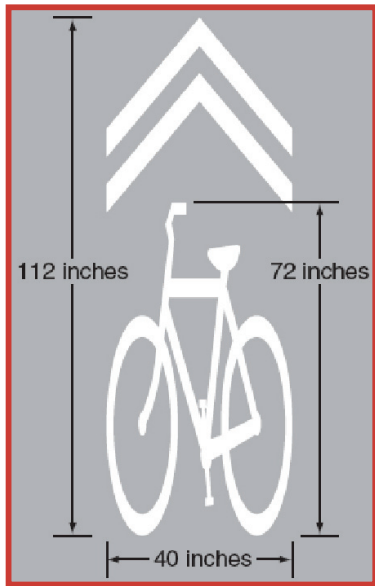
D1-2c



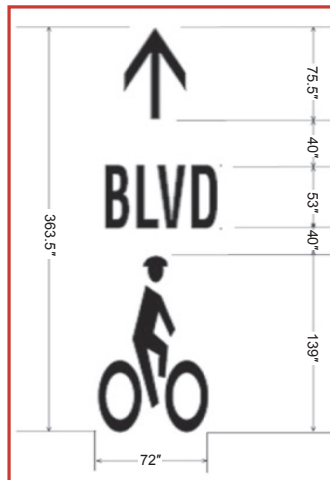


## STRATEGY B-1: BICYCLE BOULEVARD PAVEMENT MARKINGS

- Basic Tool - Pavement Markings
- Unique pavement marking provides strong emphasis on bicycle boulevards
- Defines the anticipated lateral positioning of cyclists
- Typically applied on bicycle boulevard sections without bike lanes
- Enhances the look and feel of the bicycle boulevard
- Alerts motorists of the potential presence of cyclists and the lateral location they are likely to occupy
- Shared Lane Marking (MUTCD Figure 9C-9) is the current preferred pavement marking for bicycle boulevards
- \$400 per pavement marking



Shared Lane Marking (Sharrow)



Example marking plan from Berkeley, CA of an alternative pavement marking.



Nashville, TN

Note: The Bicycle Boulevard pavement marking must be compliant with FHWA standards found in the *Manual on Uniform Traffic Control Devices (MUTCD)*.



## STRATEGY B-2: BIKE LANE STRIPING AND MARKING

- Basic Tool - Pavement Markings
- Bike lanes are one-way facilities that carry bicycle traffic in the same direction as adjacent motor vehicle traffic
- Typically applied to arterial and collector roadways
- Minimum width of a bike lane is 4 feet, 5 feet preferred; 5 feet required when adjacent to parking or between travel lanes
- Cost varies widely depending on design and street type

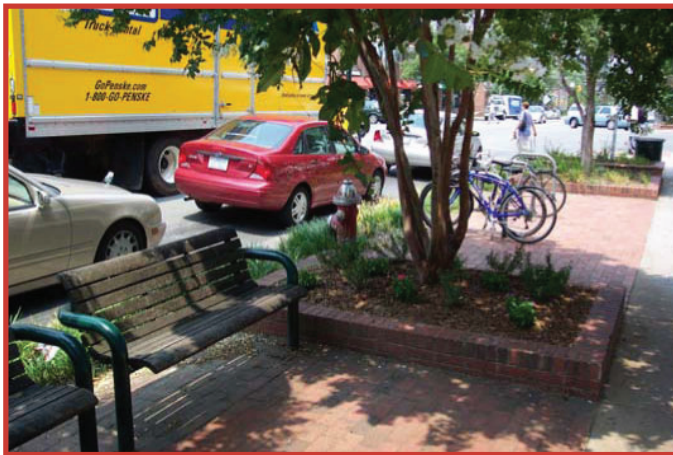


Note: Colored pavement marking on bike lane requires request for experimentation from FHWA.



## STRATEGY C-1: PLANTER STRIP LANDSCAPING

- Basic Tool – Landscaping/Aesthetics
- Enhances look and feel for bicycle boulevard
- Adds green space
- Cost varies depending on design and street type
- Ideally, plants used for landscaping are native or low maintenance
- Adds safety between bicycles and pedestrians



Miami, FL



## STRATEGY C-2: STREET TREES

- Basic Tool – Landscaping/Aesthetics
- Beautifies the streetscape and provides traffic calming benefits
- Provides shade
- Adds new green space
- Low maintenance
- Cost varies depending on design and street type
- Vertical elements slow vehicle speeds



Coral Gables, FL



## STRATEGY D-1: TRAFFIC CIRCLES

- Site Specific Tool - Neighborhood Traffic Management Tool
- Typically applied on bicycle boulevards where intersection traffic calming is desired and where bicycle boulevard traffic has stop sign
- Helpful at intersection of two bicycle boulevards
- Enhances the look and feel of the bicycle boulevard
- Helps for traffic calming and pedestrian safety
- Additional opportunity for neighborhood beautification through landscaping
- Cost may vary depending on design (approximately \$50,000 - \$250,000 for the landscaped neighborhood traffic circle)



Coral Gables, FL

Note: Roundabout design on bicycle boulevards must incorporate bicycle and pedestrian treatments.



## STRATEGY D-2: LANDSCAPED CURB EXTENSIONS BULB-OUT

- Site Specific Tool - Neighborhood Traffic Management Tool
- Bulb-out is a curb extension or a traffic calming measure intended to prevent driving through parking spaces and to reduce crosswalk distance
- Helps for traffic calming and increases pedestrian safety at intersections
- Helps reduce sight distance concerns associated with vehicles parking too close to an intersection
- Additional opportunity for neighborhood beautification through landscaping
- Cost may vary depending on design (\$2,000 - \$50,000)





### STRATEGY D-3: HIGH EMPHASIS CROSSWALKS

- Site Specific Tool - Neighborhood Traffic Management Tool
- Helps to reduce approaching motor vehicle speeds and to create a visible prominent crossing location for cyclists and pedestrians
- Helps for traffic calming and increases pedestrian safety at midblock locations and intersections
- \$30,000 approximately



Berkeley, CA

Note: This combination of a pedestrian and bicyclist crossing is not currently approved in the MUTCD.



Coral Gables, FL



## STRATEGY D-4: CHICANE

- Site Specific Tool - Neighborhood Traffic Management Tool
- Raised curbs that create a serpentine, horizontal shifting of the travel lanes along the roadway
- The shifting lanes reduce speeds by eliminating long stretches of straight roadway where motorists can pick up speed and by forcing motor vehicles to shift laterally
- Additional opportunity for neighborhood beautification through landscaping
- Cost may vary depending on design (\$3,000 - \$15,000)



Vancouver, BC



Berkeley, CA





## STRATEGY D-5: PARTIAL STREET CLOSURE

- Site Specific Tool - Neighborhood Traffic Management Tool
- Partial street closures at intersections eliminate certain motor vehicle movements while allowing the remainder of the street to function as two-way
- Restricts access to motor vehicles while allowing cyclists to access the street
- Partial non-motorized crossings include constructed barriers and signed restrictions that eliminate a motor vehicle turn movement
- Additional opportunity for neighborhood beautification through landscaping
- Cost may vary widely depending on design and existing conditions



Portland, OR



Coral Gables, FL



## STRATEGY D-6: SPEED CUSHIONS

- Site Specific Tool - Neighborhood Traffic Management Tool
- Normally designed as two or three small speed humps
- Effectively slows cars, but still allows for emergency vehicles and school buses to pass them without slowing
- Speed cushions are more affordable than speed humps
- Helps for traffic calming in neighborhood while allowing cyclists unimpeded access
- \$3,000 approximately for rubberized speed cushions



Miami, FL



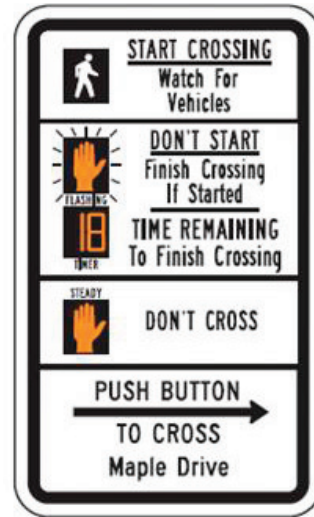


## STRATEGY E-1: TRAFFIC SIGNAL

- Site Specific Tool - Crossing Major Streets
- Assists cyclists and pedestrians to cross major streets
- Helps for crossing and pedestrian safety
- Typically applied at intersection of Bicycle Boulevard with Major Street where existing traffic control is Two-Way STOP controlled for bike boulevard
- \$300,000 - \$400,000 approximately depending on design and existing conditions



Miami, FL



R10-3i

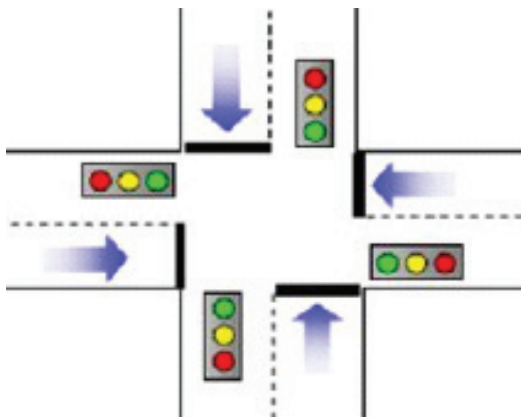
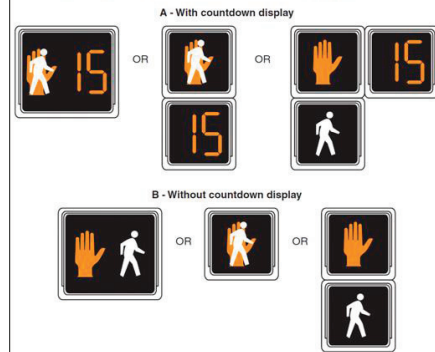


Figure 4E-1. Typical Pedestrian Signal Indications





## STRATEGY E-2: TRAFFIC SIGNAL WITH BIKE DETECTION LOOPS

- Site Specific Tool - Crossing Major Streets
- Assists cyclists crossing signalized intersections by allowing a cyclist to call a green signal phase through the use of loop detectors
- Helps for crossing safety
- Can be applied at any signalized intersection, particularly useful at intersections with low to moderate side street traffic volumes
- Can also be applied at bicycle only traffic signals
- \$2,000 - \$4,000 approximately for loop detector installation, signage, and pavement markings



R10-22



Portland, OR

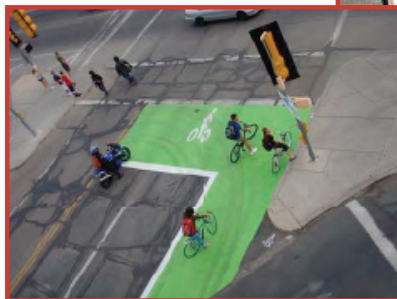


### STRATEGY E-3: BIKE BOXES

- Site Specific Tool - Crossing Major Streets
- Cyclists pass through the intersection first during a green signal phase rather than queuing behind motor vehicles
- May reduce right-turn conflicts between cyclists and motorists at intersections by increasing cyclist visibility to drivers and providing a space for cyclists to wait at signalized intersections
- The motorists will be alerted by the bike box at the intersection
- For use at signalized intersections with a high volume of cyclists
- The bike box is an experimental intersection treatment and is still being evaluated by FHWA
- Cost may vary depending on design and existing conditions (\$5,000 - \$10,000)



Requires adoption by FHWA



Tucson, AZ



**STRATEGY E-4:  
TRAFFIC SIGNAL (BICYCLES ONLY) WITH TURN  
RESTRICTIONS FOR MOTOR VEHICLES**

- Site Specific Tool - Crossing Major Streets
- Typically applied at the intersection of Bicycle Boulevard with Major Street where existing traffic control is Two-way STOP for the bike boulevard
- Helps for crossing and pedestrian safety
- A traffic signal would be installed, but in conjunction with a turn-restriction for motor vehicles
- Bicycles may proceed straight and autos must turn right
- Installing a median across the major street will help force motorists to turn right but would also prevent left-turns from entering (see Strategy E-7)
- Turn restrictions do not necessarily require signalization. Turn restrictions can also be placed at non-signalized intersections
- Cost may vary depending on design and existing conditions (\$100,000 - \$200,000)





## STRATEGY E-5: ALL-WAY STOP SIGN

- Site Specific Tool - Crossing Major Streets
- Helps Bicycle Boulevard crossing at non-signalized intersections
- Traffic circle is preferable to an all-way stop intersection if right-of-way allows
- Two-way stop intersection is also preferable if traffic conditions warrant (eliminating stops in the direction of the Bicycle Boulevard)
- Manual on Uniform Traffic Control Devices (MUTCD) provides warrants for all-way stop controls
- Should not be used as a traffic calming or speed control technique
- Care should be exercised in using all-way stops since they also make cyclists stop
- \$2,000 approximately per intersection



Miami, FL



R1-3P

NOTE: This plaque shall be installed under each stop sign

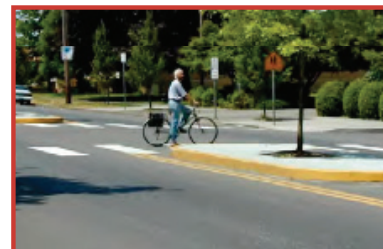


### STRATEGY E-6: CROSSWALK WITH MEDIAN REFUGE (WITH OPTIONAL TURN RESTRICTIONS)

- Site Specific Tool - Crossing Major Streets
- Constructing on undivided roads or using on multiple lanes and/or high volume arterials facilitates crossings by providing a space in the center of the roadway for cyclists or pedestrians to wait for gaps in traffic
- Allows cyclists and pedestrians to cross while focusing on one direction of traffic at a time
- Effective when located midblock between intersections
- Large refuge areas allow groups of cyclists or pedestrians to cross simultaneously
- Medians can be extended along major street across bike boulevard street forcing right turn movements by motor vehicles consequently reducing the number of potential conflict points between motor vehicles and cyclists
- Cost may vary depending on design (\$20,000 - \$40,000)



Miami, FL



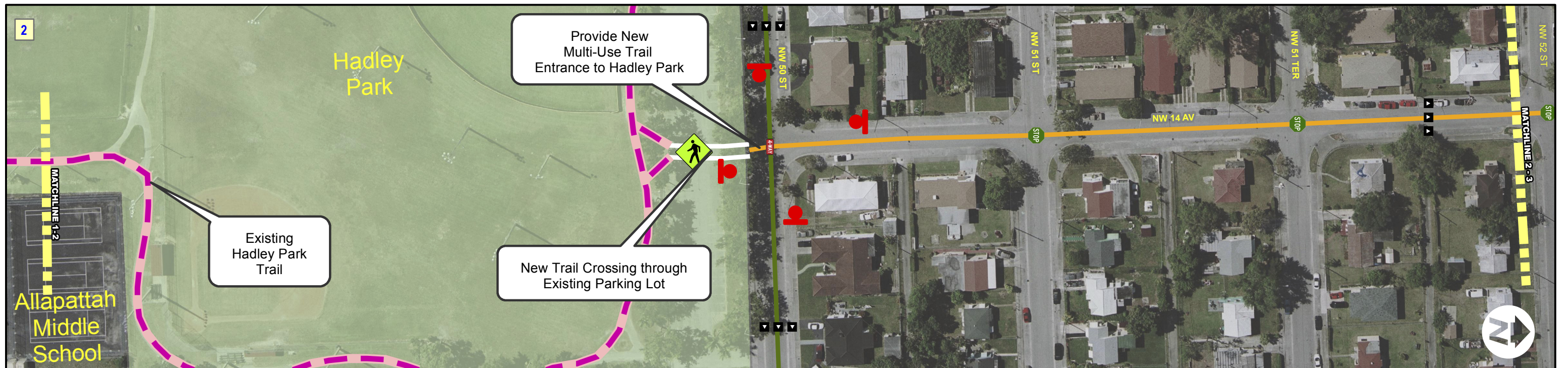
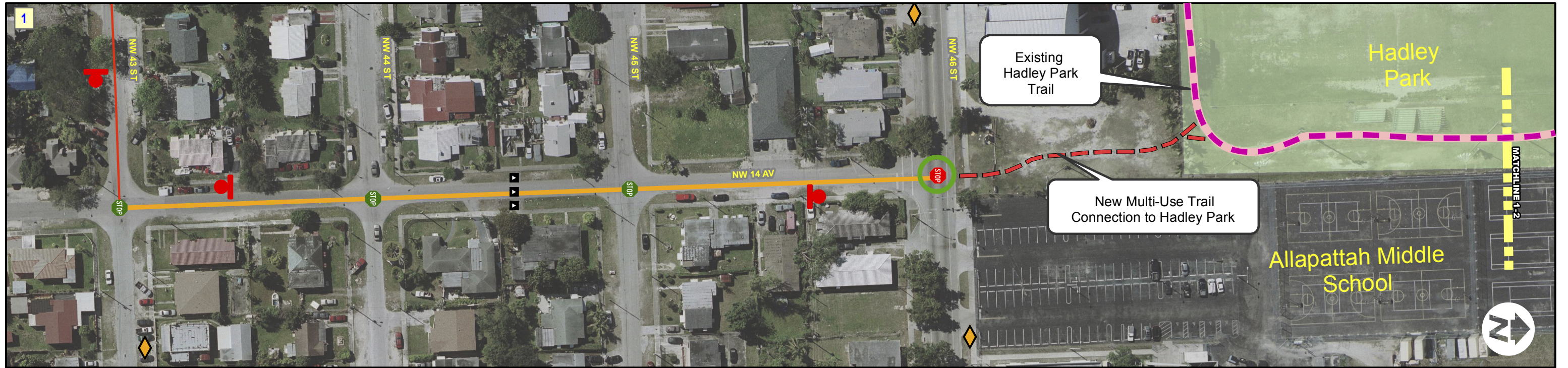
Portland, OR





# EXAMPLE CORRIDOR

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**LEGEND**

0 100 200 Feet

Corridor 1 - NW 21 AVE	Corridor 5 - NW 58 ST
Corridor 2 - NW 14 AVE	Corridor 6 - NW 67 ST
Corridor 3 - NW 43 ST	Corridor 7 - NW 83 ST
Corridor 4 - NW 50 ST	Corridor 8 - NW 11 AVE
Study Area	City Boundary

MIAMI-DADE COUNTY MPO Kimley-Horn and Associates, Inc.

**Tool Box**

Roundabout	Advance Warning Sign
Trail Crossing	Wayfinding Sign
Speed Cushion	Right Turn Restriction for Motor Vehicles
Median	Bike/Ped Signal
	Median Refuge

**Map Features**

Signalized Intersection
Fourway-stop
Two-Way Stop on Side Street
Two-Way Stop on Bicycle Boulevard
Library
Hospital
Schools
Matchlines
Panel Number

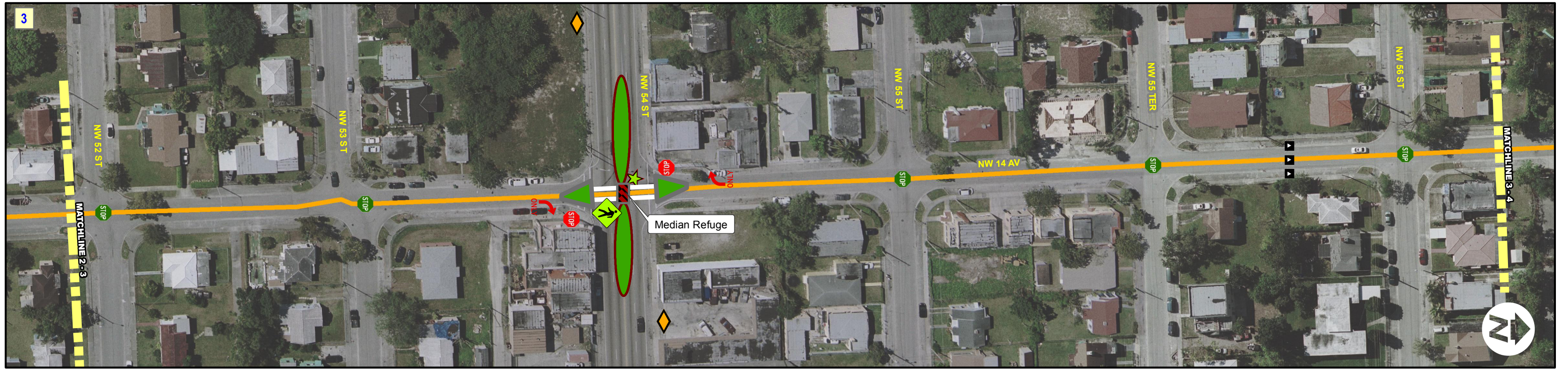


**Miami-Dade County  
Bicycle Boulevard  
Planning Study:  
Model City / Brownsville**

Corridor 2 (Example) - NW 14 AVE

SHEET 1 OF 7

34



**LEGEND**

0 100 200 Feet

Corridor 1 - NW 21 AVE	Corridor 5 - NW 58 ST
Corridor 2 - NW 14 AVE	Corridor 6 - NW 67 ST
Corridor 3 - NW 43 ST	Corridor 7 - NW 83 ST
Corridor 4 - NW 50 ST	Corridor 8 - NW 11 AVE
Study Area	City Boundary

**Tool Box**

Roundabout	Advance Warning Sign
Pedestrian Crosswalk	Wayfinding Sign
Speed Cushion	Right Turn Restriction for Motor Vehicles ONLY
Median	Bike/Ped Signal
	Median Refuge

**Map Features**

- Signalized Intersection
- Fourway-stop
- Two-Way Stop on Side Street
- Two-Way Stop on Bicycle Boulevard
- Library
- Hospital
- Schools
- Matchlines
- Panel Number

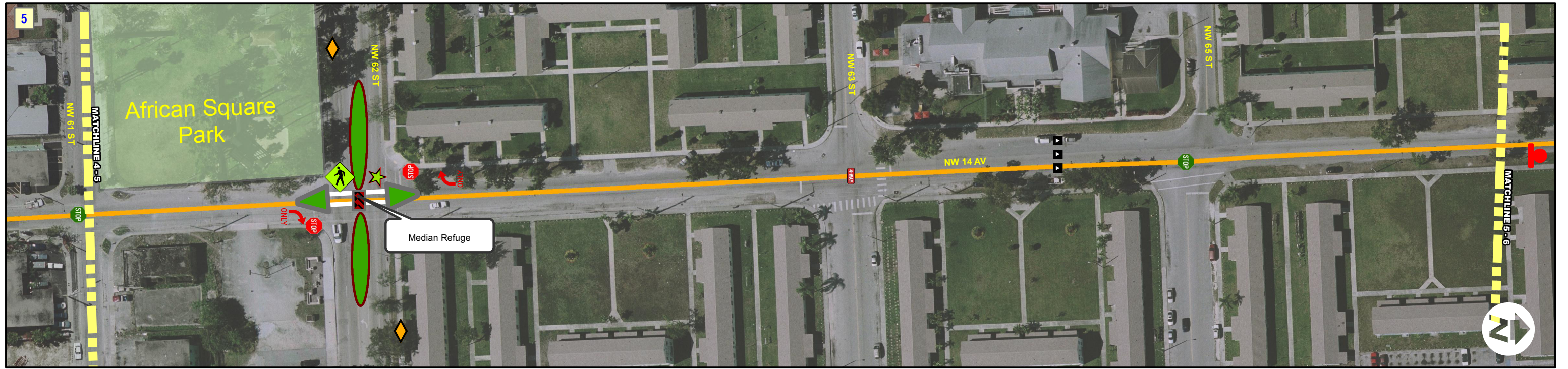


**Miami-Dade County  
Bicycle Boulevard  
Planning Study:  
Model City / Brownsville**

Corridor 2 (Example) - NW 14 AVE

SHEET 2 OF 7

35



**LEGEND**

0 100 200 Feet

- Corridor 1 - NW 21 AVE
- Corridor 2 - NW 14 AVE
- Corridor 3 - NW 43 ST
- Corridor 4 - NW 50 ST
- Study Area
- Corridor 5 - NW 58 ST
- Corridor 6 - NW 67 ST
- Corridor 7 - NW 83 ST
- Corridor 8 - NW 11 AVE
- City Boundary

MIAMI-DADE COUNTY  
 MPO  
 Kimley-Horn and Associates, Inc.

**Tool Box**

- Roundabout
- Pedestrian Crosswalk
- Speed Cushion
- Median
- Advance Warning Sign
- Wayfinding Sign
- Right Turn Restriction for Motor Vehicles ONLY
- Bike/Ped Signal
- Median Refuge

**Map Features**

- Signalized Intersection
- Fourway-stop
- Two-Way Stop on Side Street
- Two-Way Stop on Bicycle Boulevard
- Library
- Hospital
- Schools
- Matchlines
- Panel Number

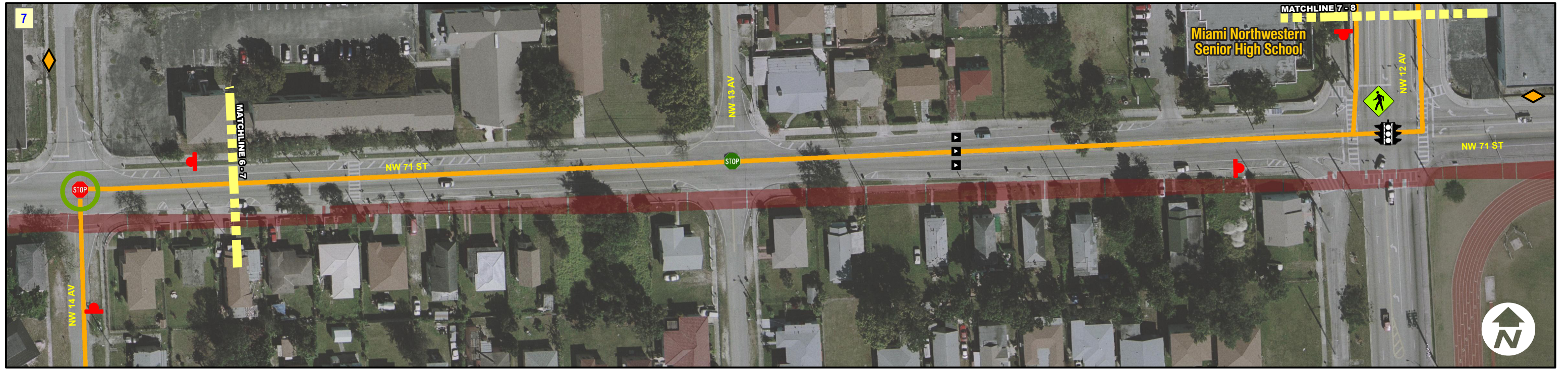


**Miami-Dade County  
 Bicycle Boulevard  
 Planning Study:  
 Model City / Brownsville**

Corridor 2 (Example) - NW 14 AVE

SHEET 3 OF 7

36



**LEGEND**

0 100 200 Feet

Corridor 1 - NW 21 AVE	Corridor 5 - NW 58 ST
Corridor 2 - NW 14 AVE	Corridor 6 - NW 67 ST
Corridor 3 - NW 43 ST	Corridor 7 - NW 83 ST
Corridor 4 - NW 50 ST	Corridor 8 - NW 11 AVE
Study Area	City Boundary

**Tool Box**

Roundabout	Advance Warning Sign
Pedestrian Crosswalk	Wayfinding Sign
Speed Cushion	Right Turn Restriction for Motor Vehicles
Median	Bike/Ped Signal
	Median Refuge

**Map Features**

Signalized Intersection
Fourway-stop
Two-Way Stop on Side Street
Two-Way Stop on Bicycle Boulevard
Library
Hospital
Schools
Matchlines
Panel Number

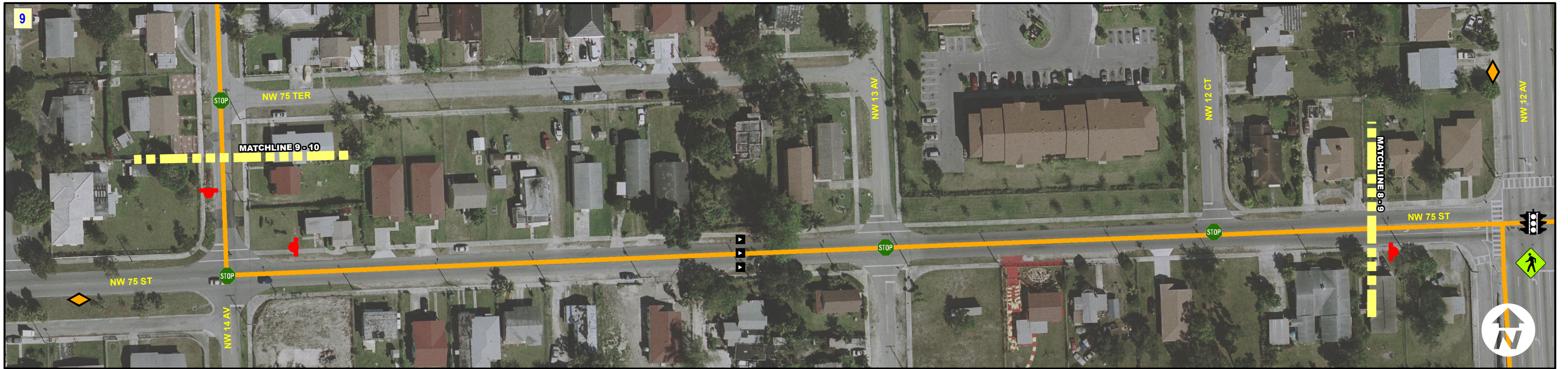


**Miami-Dade County  
Bicycle Boulevard  
Planning Study:  
Model City / Brownsville**

Corridor 2 (Example) - NW 14 AVE

SHEET 4 OF 7

37



**LEGEND**

0 100 200 Feet

- Corridor 1 - NW 21 AVE
- Corridor 2 - NW 14 AVE
- Corridor 3 - NW 43 ST
- Corridor 4 - NW 50 ST
- Study Area
- Corridor 5 - NW 58 ST
- Corridor 6 - NW 67 ST
- Corridor 7 - NW 83 ST
- Corridor 8 - NW 11 AVE
- City Boundary

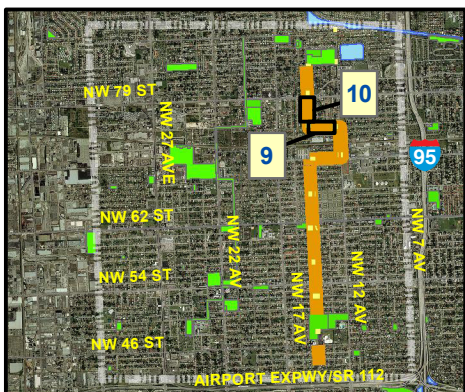
MIAMI-DADE COUNTY MPO Kimley-Horn and Associates, Inc.

**Tool Box**

- Roundabout
- Pedestrian Crosswalk
- Speed Cushion
- Median
- Advance Warning Sign
- Wayfinding Sign
- Right Turn Restriction for Motor Vehicles
- Bike/Ped Signal
- Median Refuge

**Map Features**

- Signalized Intersection
- Fourway-stop
- Two-Way Stop on Side Street
- Two-Way Stop on Bicycle Boulevard
- Library
- Hospital
- Schools
- Matchlines
- Panel Number



**Miami-Dade County  
Bicycle Boulevard  
Planning Study:  
Model City / Brownsville**

Corridor 2 (Example) - NW 14 AVE

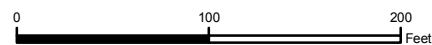
SHEET 5 OF 7

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**LEGEND**

- █ Corridor 1 - NW 21 AVE
- █ Corridor 2 - NW 14 AVE
- █ Corridor 3 - NW 43 ST
- █ Corridor 4 - NW 50 ST
- Study Area
- █ Corridor 5 - NW 58 ST
- █ Corridor 6 - NW 67 ST
- █ Corridor 7 - NW 83 ST
- █ Corridor 8 - NW 11 AVE
- City Boundary



**Tool Box**

- Roundabout
- Pedestrian Crosswalk
- Speed Cushion
- Median
- ◇ Advance Warning Sign
- Wayfinding Sign
- ↶ Right Turn Restriction for Motor Vehicles ONLY
- ★ Bike/Ped Signal
- Median Refuge

**Map Features**

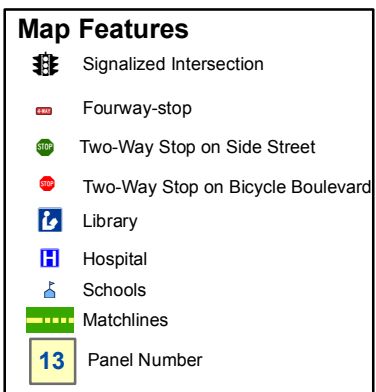
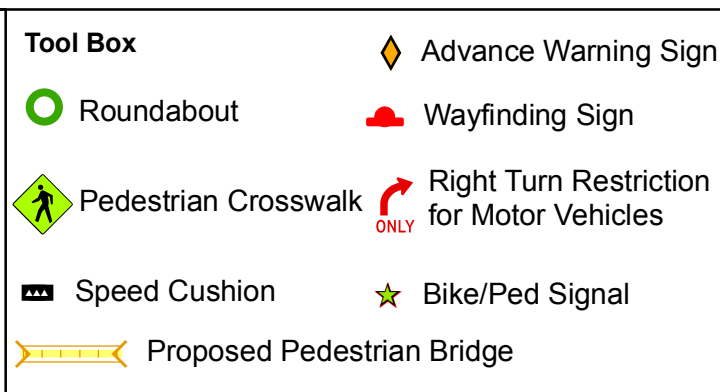
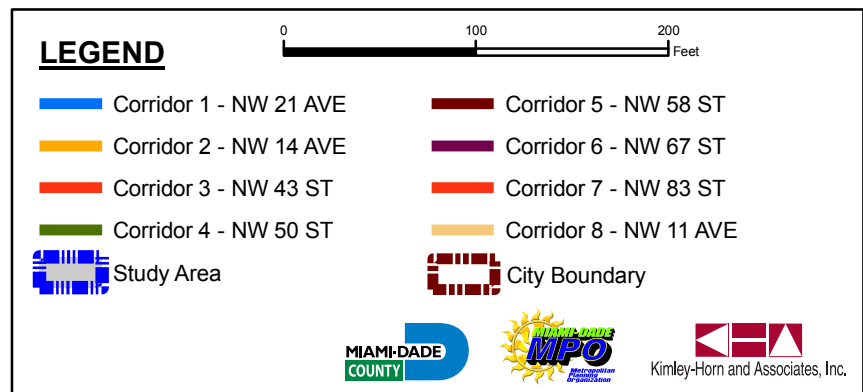
- Signalized Intersection
- Fourway-stop
- Two-Way Stop on Side Street
- Two-Way Stop on Bicycle Boulevard
- Library
- Hospital
- Schools
- Matchlines
- Panel Number



**Miami-Dade County  
Bicycle Boulevard  
Planning Study:  
Model City / Brownsville**

Corridor 2 (Example) - NW 14 AVE

SHEET 6 OF 7



**Miami-Dade County  
Bicycle Boulevard  
Planning Study:  
Model City / Brownsville**

Corridor 2 (Example) - NW 14 AVE

SHEET 7 OF 7

40



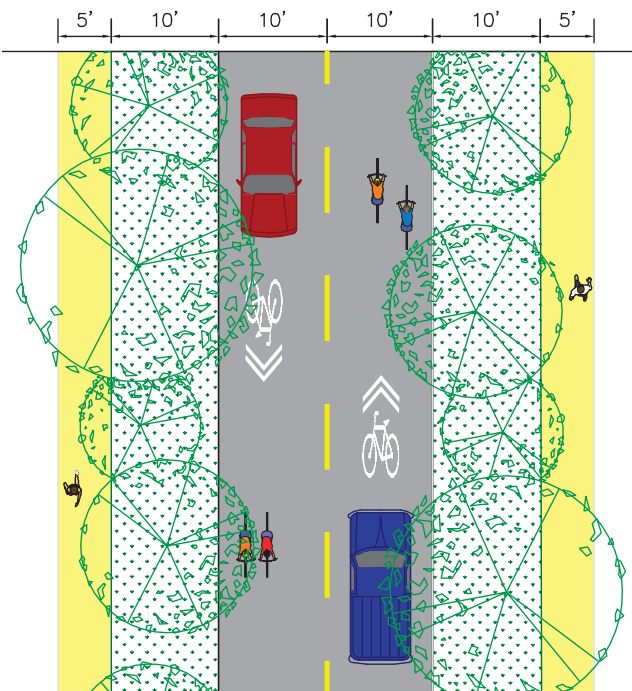
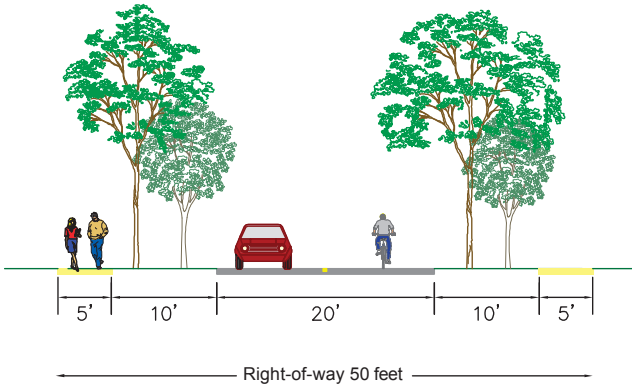


Figure 3a: Typical Section and Plan View of Bicycle Boulevard without Parking

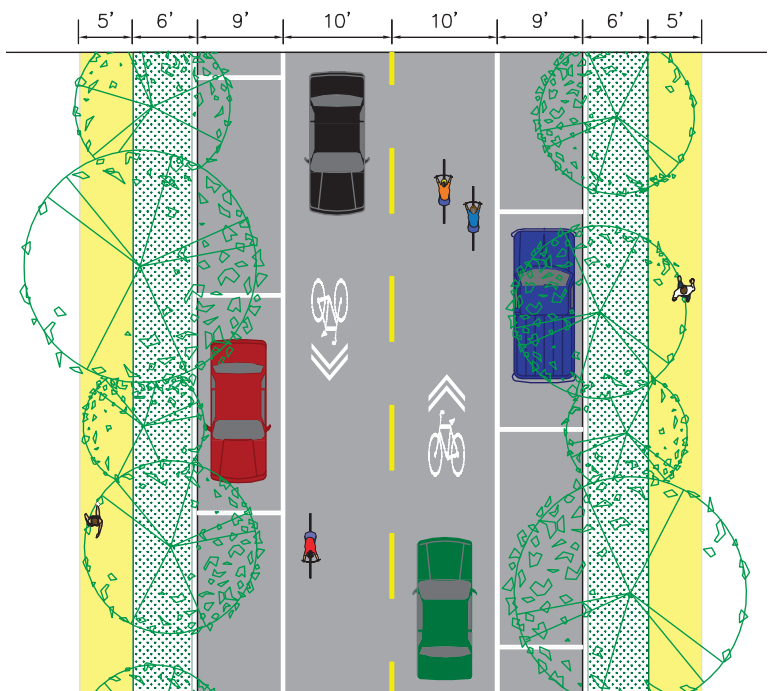
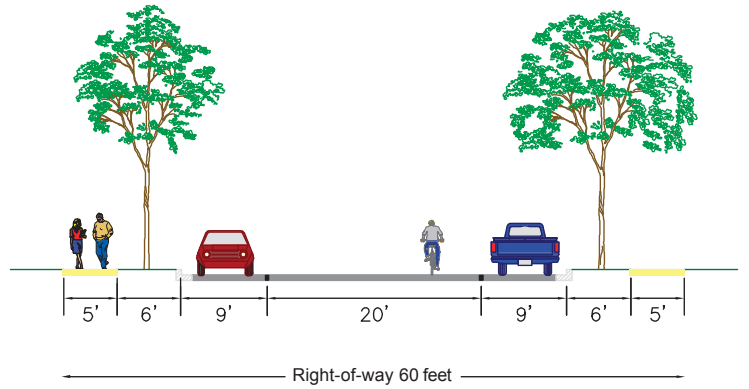


Figure 3b: Typical Section and Plan View of Bicycle Boulevard with Parking



# IMPLEMENTATION PLAN

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## Implementation Plan

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This section describes the implementation phase and detailed phasing plan for the Miami-Dade County Bicycle Boulevard Planning Study. This phase will involve developing specific designs for the boulevards in conjunction with neighborhoods and cyclists. Possible funding options to pay for the planned improvements will have to be identified simultaneously. Approval from the Miami-Dade County Public Works Department will be needed for specific design changes that will be proposed for some of the streets in the study area. As the current planning study moves forward, changes to this approach may be required.

Each bicycle boulevard will have different design elements to meet the unique conditions on each corridor. All of the tool box strategies or a subset of the strategies may be used on a single corridor based on how favorable the existing conditions are for bicycle mobility. It should be noted that design elements described in this document have been used effectively on bicycle boulevards and similar roadway designs in the United States according to the background research conducted for this study. However, certain design elements may not yet be approved in local and national guidelines. According to *Bicycle Boulevard Planning & Design Guidebook*, local agencies may use these design features based on engineering judgment and the success of the design in other communities, or can request permission for an experimental design from the Federal Highway Administration (FHWA).

### Implementation Approach

Two strategies were proposed for implementing the bicycle boulevard system. The first is a corridor based approach and the second is a neighborhood based approach.

#### Corridor Based

- Install signs and pavement markings along initially selected corridor NW 14th Avenue from NW 43rd Street to NW 83rd Street
- Provide traffic calming devices
- Install devices to cross major streets (NW 54th Street, NW 62nd Street, and NW 79th Street) along the corridor
- Implement the NW 43rd Street corridor along with the NW 14th Avenue corridor to provide access to the Earlington Heights Metrorail Station
- Provide intersection traffic studies at key locations

#### Neighborhood Based

- Work with the study area neighborhood by looking at all of the bicycle boulevard segments. Address the elements and issues along the bicycle boulevards in the neighborhood.
- Install signage and pavement legends on all bicycle boulevards
- Install devices to help bicycles and pedestrians cross all major streets
- Remove selected stop signs and replace with suggested traffic calming devices



### Suggested Approach

Based on the public meetings and the input from the project Study Advisory Committee, it is recommended to follow elements from both approaches. First, a corridor based signing and awareness program is recommended. This program would consist primarily of signing and pavement legends and provide for various techniques listed in the Bicycle Boulevard Tool Box. This process should involve local residents and businesses to prioritize remaining corridors and to select appropriate tools from the tool box. Finally, it is recommended to implement the remaining elements on one boulevard at a time by working closely with the local residents and businesses to create a bicycle boulevard tailored to the unique conditions for each corridor in each neighborhood.

### Priority Recommendations

- Install signing and pavement markings and legends on all bicycle boulevards
- Secure funding through sources:
  - General Roadway Resurfacing or Maintenance
  - FDOT Safety Funds
  - Transportation Enhancements
  - Safe Routes to School
  - Transportation Sustainability and Social Equity Grants
- Conduct intersection traffic studies
- Install devices to help cross major streets
- Remove unwarranted STOP signs and replace as needed with traffic calming devices
- Provide school area safety improvements and improved awareness



### Implementation Costs

The total cost of implementation for the bicycle boulevards depends on the strategies that would be selected from the tool box. These costs are site specific and a detailed opinion of probable cost should be developed for each corridor when the final selection of strategies has been made for that corridor. However, the cost of implementation for basic signage, which includes street names, wayfinding signs and pavement markings/treatment, can be estimated. The cost of traffic calming devices at specified locations was also estimated.

The cost per mile for a Bicycle Boulevard that includes signing and pavement markings and legends, crossing major streets, and traffic calming devices are shown in Table 2 below. The implementation cost per mile of a bicycle boulevard is approximately \$372,600 and the total cost for 15.5 miles (total length of all proposed bicycle boulevard corridors in the Model City/Brownsville study area) is approximately \$5,775,300. The implementation costs do not include the cost for the proposed bicycle and pedestrian bridges across the FEC railroad and Little River (C-7) Canal.

Funding for bicycle boulevards can come from a variety of sources including federal, state, regional, and local programs. Although the cost of construction will vary depending on the specific traffic calming and intersection treatments that are chosen, bicycle boulevards can be relatively inexpensive compared to separate bicycle facilities in exclusive rights-of-way. Building upon existing traffic calming features and paying for traffic calming devices and intersection crossing devices from general traffic improvement funds and/or roadway safety funds can also help implement bicycle boulevards in a cost-effective manner.

	Signage and Pavement Markings (Basic Elements)					Crossing Major Streets		Traffic Calming	
	Designation Signs	Street Name Signs	Advance Warning Signs	Wayfinding signs	Pavement Markings	Median Island	Bicycle Signal Crossing	Traffic Circles	Speed Cushions
No. of items/mile	4	4	4	8	20	1	1	2	3
Cost per item (\$)	\$300	\$200	\$300	\$300	\$400	\$30,000	\$120,000	\$100,000	\$3,000
Cost per mile of Bicycle Boulevard	\$1,200	\$800	\$1,200	\$2,400	\$8,000	\$30,000	\$120,000	\$200,000	\$9,000

Cost Source: FDOT and Fundamentals of Bicycle Boulevard Planning and Design, Alta Planning + Design (July 2009)  
Table does not include the cost for proposed Bicycle/Pedestrian bridges across the FEC Railroad and Little River Canal.

Total Cost/mile of Bicycle Boulevard (Basic Elements)	\$13,600	Total Cost/mile of Bicycle Boulevard (Crossing Major Streets)	\$150,000	Total Cost/mile of Bicycle Boulevard (Traffic Calming)	\$209,000
Total Length of Bicycle Boulevards	15.5 miles	Total Length of Bicycle Boulevards	15.5 miles	Total Length of Bicycle Boulevards	15.5 miles
Total Cost for Basic Elements	\$210,800	Total Cost for Crossing Major Streets	\$2,325,000	Total Cost for Traffic Calming	\$3,239,500
<b>Total Cost/mile of Bicycle Boulevard</b>					
<b>\$372,600</b>					
<b>Total Cost for 15.5 miles of Bicycle Boulevards</b>					
<b>\$5,775,300</b>					

Table 2: Potential Implementation Costs



### Lessons Learned from Other Communities

According to the *Bicycle Boulevard Planning & Design Guidebook*, the following is a summary of lessons learned from other communities with successful bicycle boulevard corridors.

- Public involvement in the planning and design of the bicycle boulevard is key. Neighborhood forums and further community outreach meetings are highly recommended
- Residents along proposed bicycle boulevards, as well as those on nearby streets, are frequently concerned about changes to traffic along their streets and access to their homes. Particularly in locations where no bicycle boulevard exists, the proposed function of bicycle boulevards needs to be communicated to the public
- Consult with local emergency services regarding traffic calming and reduction designs
- Continually evaluate the performance of the bicycle boulevard as well as traffic impacts on nearby streets
- Bicycle maps are the most common method of disseminating information about the bicycle boulevards. Organized community bicycle rides and other creative methods are also frequently mentioned
- Use what resources are available. Capitalize on existing features that reduce speed and volume of motor vehicle traffic non-motorized bridges and one-way streets, but remember that the boulevard still needs to connect to key destinations
- Schedule improvements in coordination with repaving and other major projects

### Monitoring Phase

After the installation of the bicycle boulevard strategies, an evaluation of the impacts will need to be made. Especially when stops signs are removed, traffic volumes and speeds should be monitored to ensure that the street has not become significantly more attractive as a through route for motorists. The following strategies could be used if desired by the neighborhood after the evaluation phase to address any potential impacts, including to prevent diversion if necessary:

- Turn restrictions from major streets
- Diagonal diverters (bikes exempted)
- Force right-turns (bikes exempted)



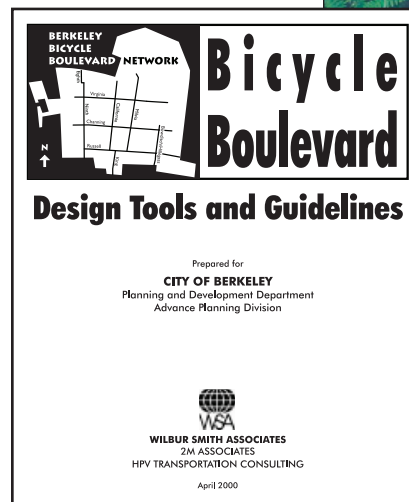
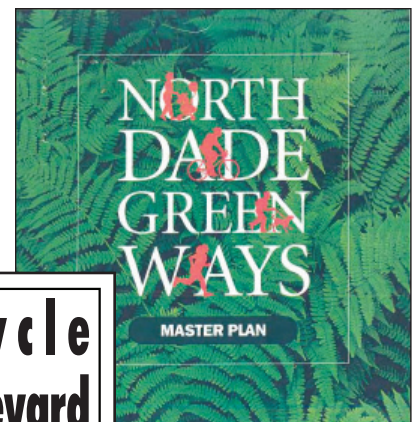
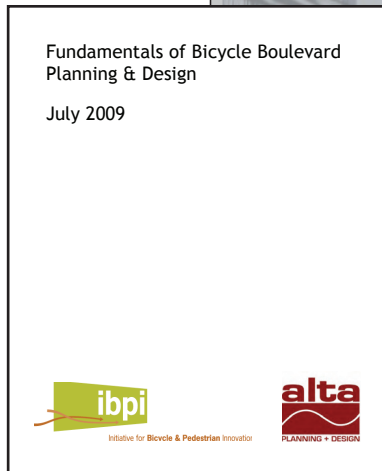
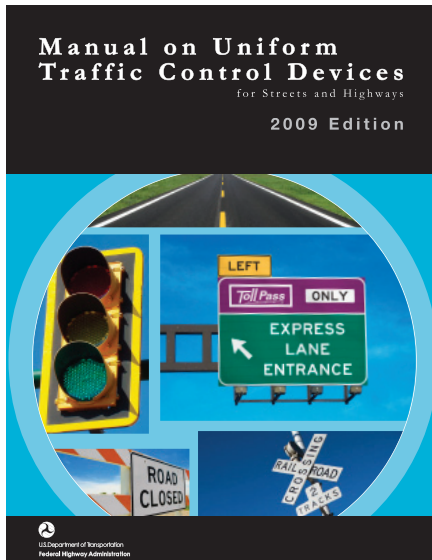
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# Appendix A: Sources



1. North Dade Greenways Master Plan

Prepared by FIU School of Architecture Graduate Program in Landscape Architecture for Miami-Dade County Metropolitan Planning Organization  
December, 1997

2. 2009 MUTCD Manual

3. Miami-Dade County Aesthetics Master Plan for Miami-Dade County Gateways, Corridors, and Facilities

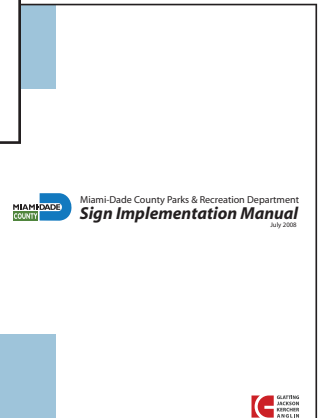
Prepared by EDAW / AECOM for the Community Image Advisory Board  
January, 2009

4. Sign Implementation Manual for Miami-Dade County Park and Recreation Department

Prepared by Glatting Jackson Kercher Anglin for Miami-Dade County Park and Recreation Department  
December, 2007

5. Fundamentals of a Bicycle Boulevard Planning & Design

6. Berkeley Bicycle Boulevard Network Design Tools and Guidelines







## Appendix B: Base Data Collection Maps

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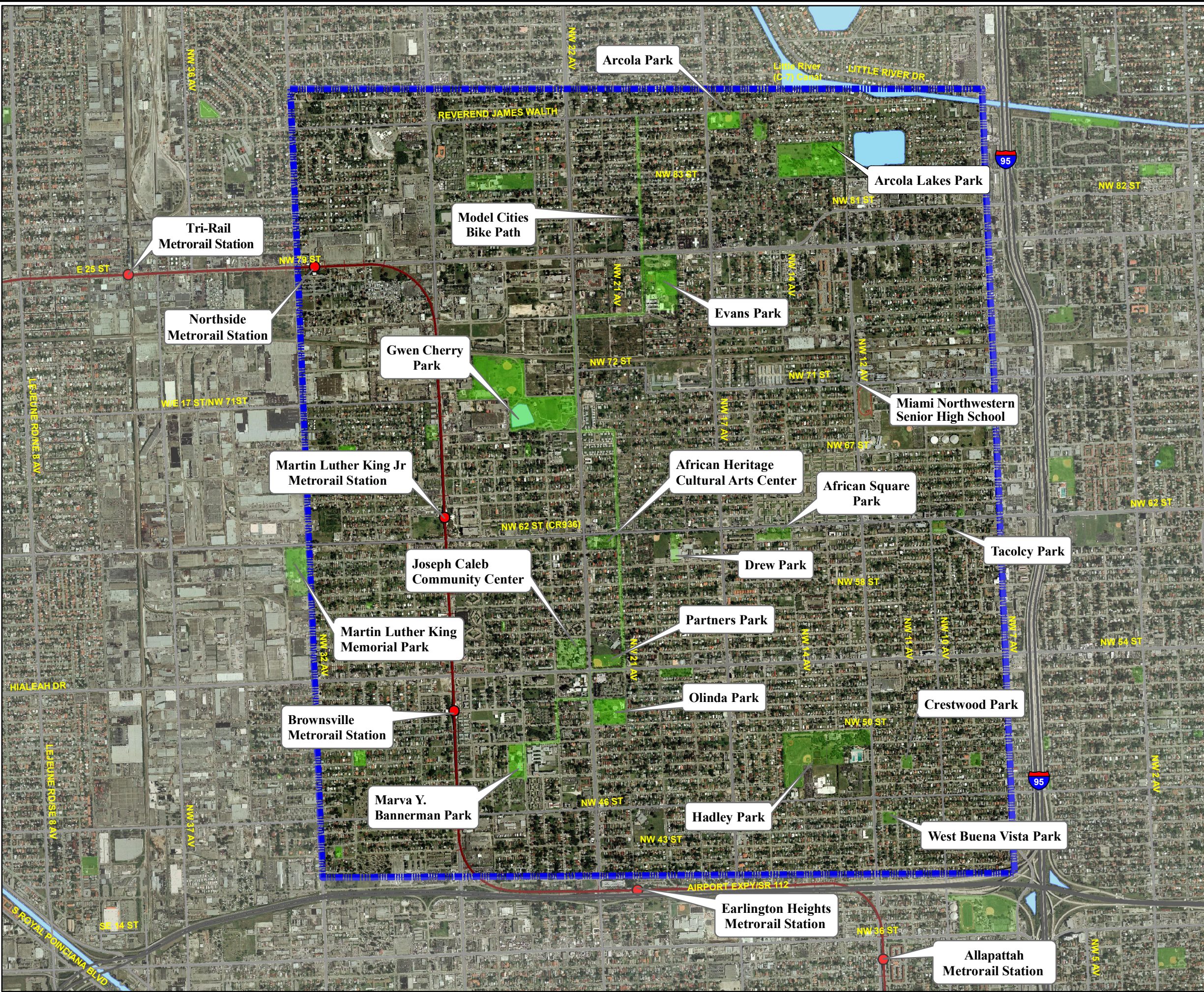
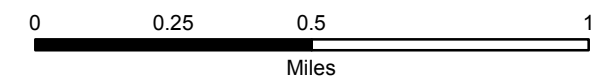
MIAMI-DADE COUNTY  
 BICYCLE BOULEVARD  
 PLANNING STUDY:  
 MODEL CITY/ BROWNSVILLE



Figure 1  
 Study Area Aerial

**Legend**

- Metrorail Station
- +— Metrorail
- Local Road
- Study Area
- Parks
- Water

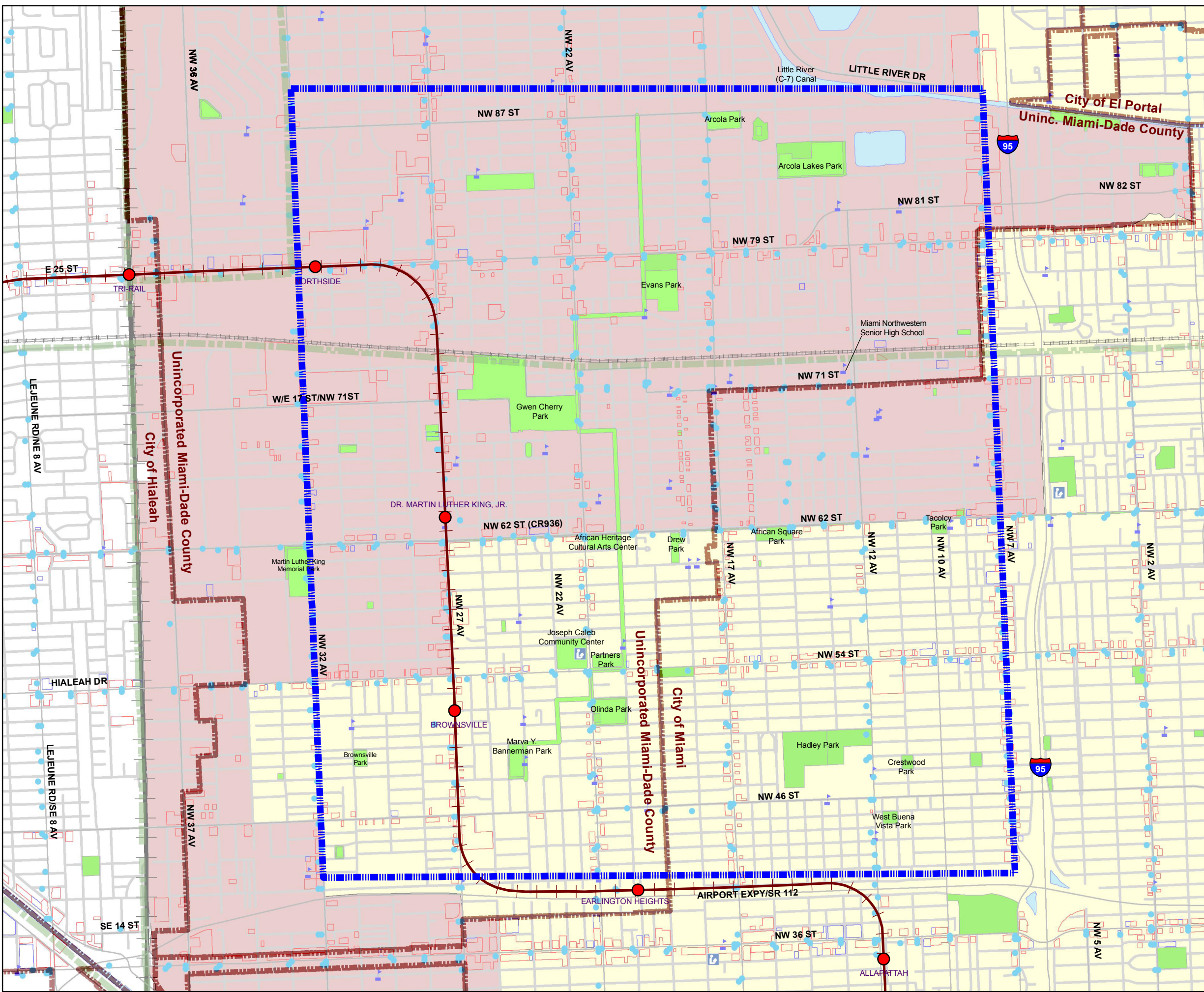
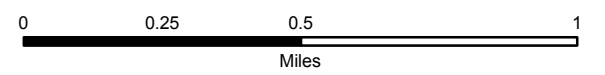


# MIAMI-DADE COUNTY BICYCLE BOULEVARD PLANNING STUDY: MODEL CITY/ BROWNSVILLE

## Figure 2 Neighborhood Characteristics Map

### Legend

- Bus Stop
- Library
- Hospital
- Schools
- Metrorail Station
- Metrorail
- Local Road
- Tri-Rail
- FEC Railroad
- Greenway Network
- Study Area
- City Boundary
- Commercial Parcel
- Office
- Parks
- Water
- Commission District 2
- Commission District 3



# MIAMI-DADE COUNTY BICYCLE BOULEVARD PLANNING STUDY: MODEL CITY/ BROWNSVILLE



Figure 3A  
Existing Land Use Map

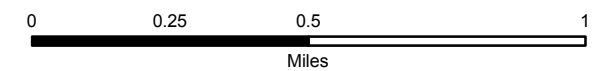
## Legend



Study Area  
City Boundary

### Landuse

- Residential
- Hotels/Motels
- Commercial
- Industrial
- Office
- Institutional
- Parks
- Agriculture
- Right-of-Way
- Other
- Vacant Undeveloped
- Water









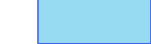


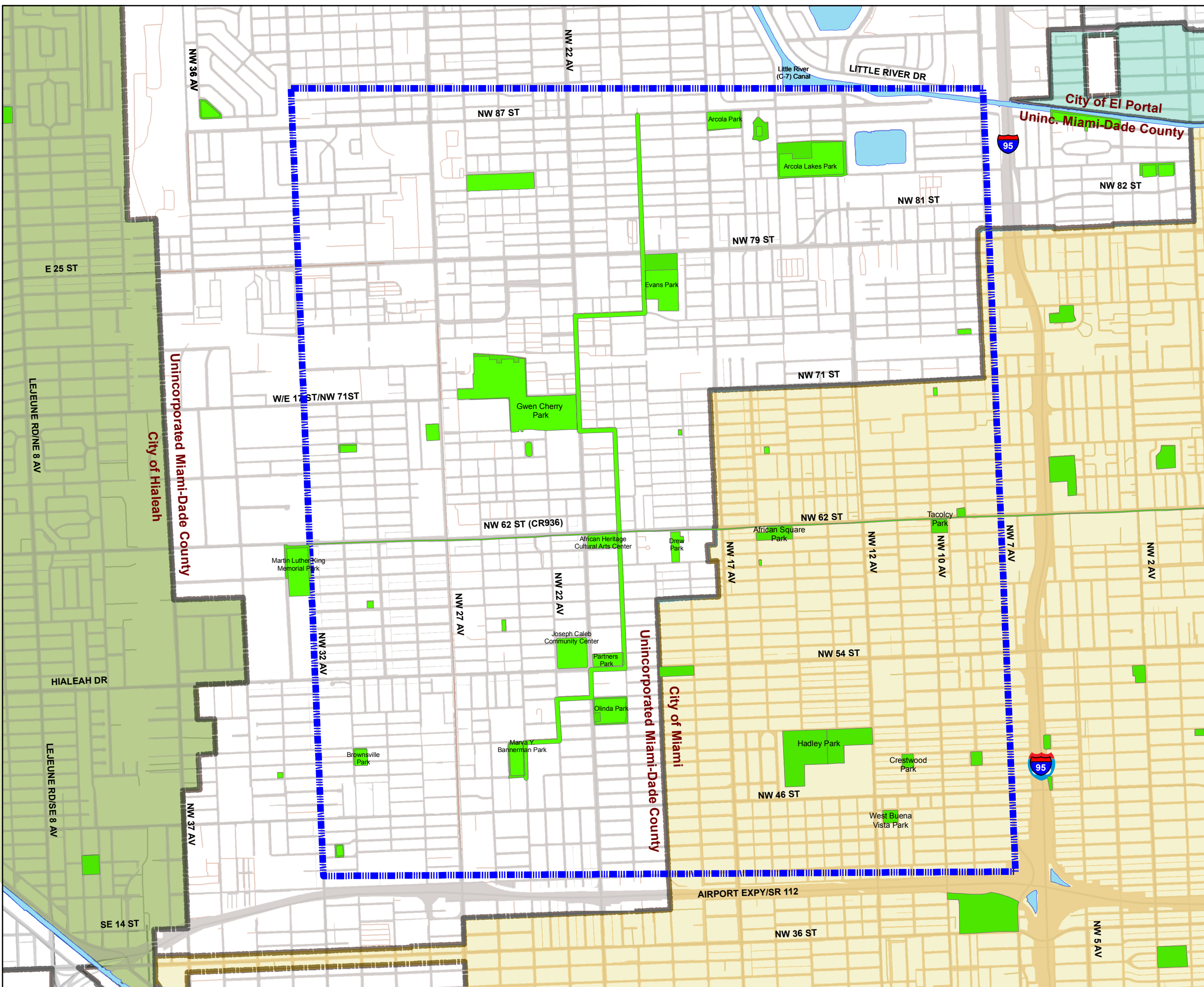
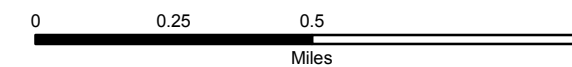
# MIAMI-DADE COUNTY BICYCLE BOULEVARD PLANNING STUDY: MODEL CITY/ BROWNSVILLE



Figure 3B  
Right-of-Way Map

## Legend

-  Study Area
-  City Boundary
-  Right-of-Way
-  City of El Portal
-  City of Hialeah
-  City of Miami
-  Unincorporated
-  Parks
-  Water



# MIAMI-DADE COUNTY BICYCLE BOULEVARD PLANNING STUDY: MODEL CITY/ BROWNSVILLE

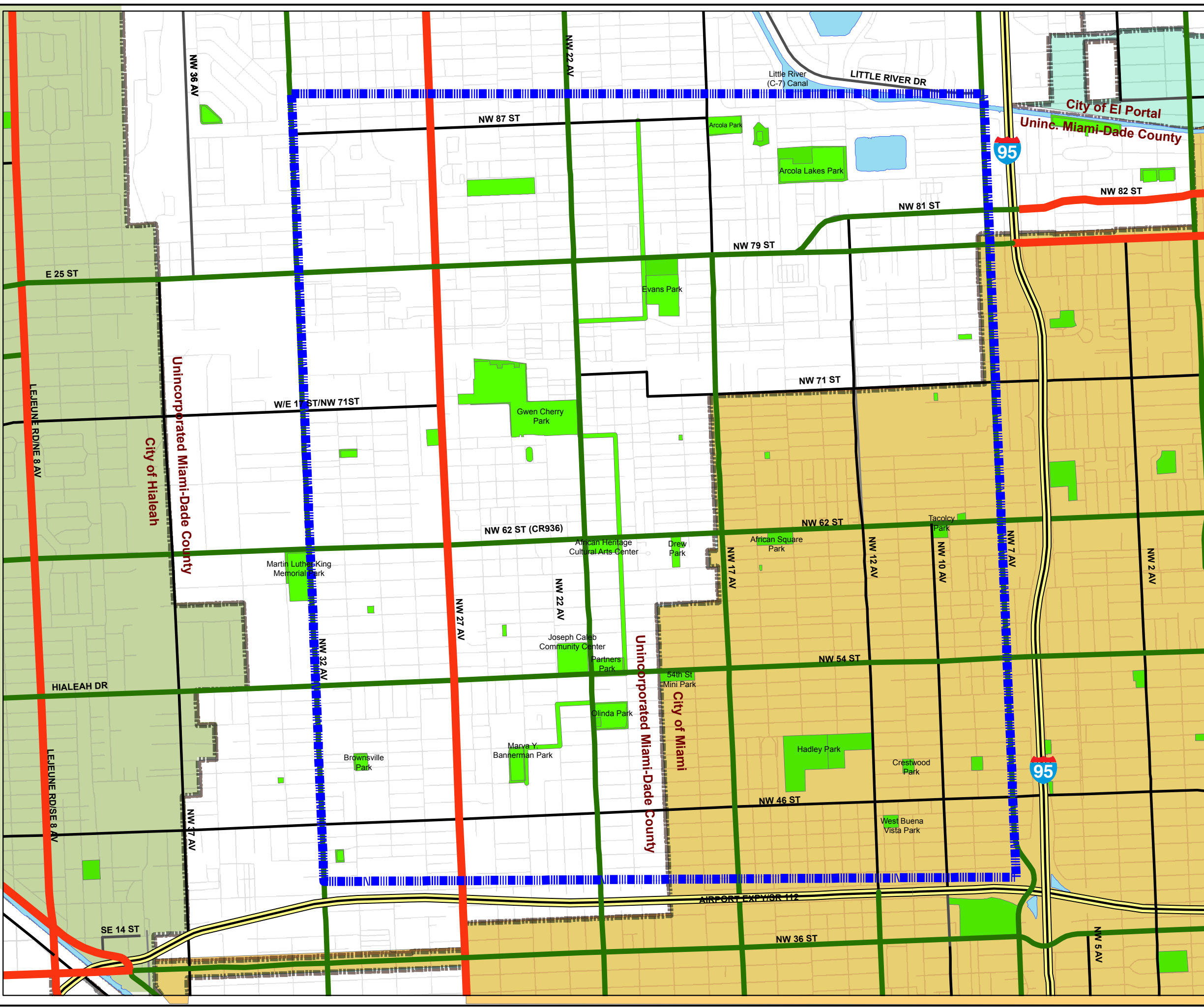
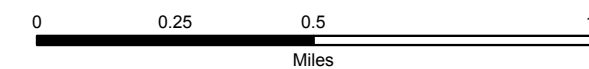


Figure 4  
Roadway Classification Map

## Legend



## Roadway Classification





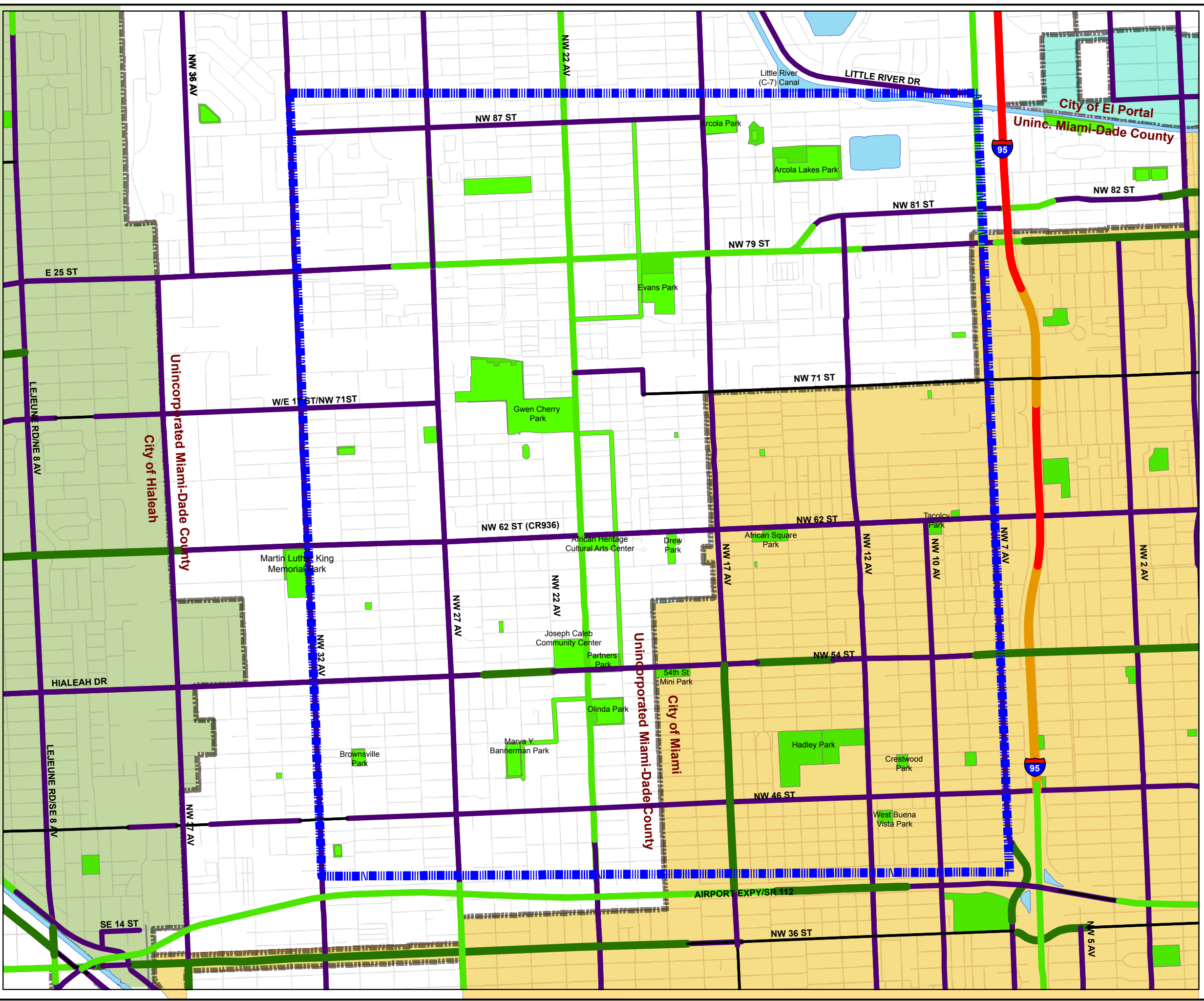
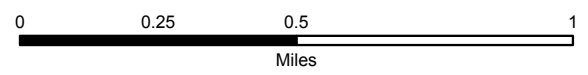
# MIAMI-DADE COUNTY BICYCLE BOULEVARD PLANNING STUDY: MODEL CITY/ BROWNSVILLE



Figure 5  
Roadway Number of Lanes  
(Each Direction)

### Legend

-  Study Area
- Number of Lanes**
-  1
-  2
-  3
-  4
-  5
-  6
-  Local Road
-  Parks
-  Water
-  City Boundary
-  City of El Portal
-  City of Hialeah
-  City of Miami
-  Unincorporated





# Appendix C: Miami-Herald Meeting Ads

Client Name: METRO-DADE COUNTY  
 Advertiser: METRO-DADE COUNTY  
 Section/Page/Zone: NBR5 Grove/GR11/Dade  
 Description:  
 Ad Number: 833270401  
 Insertion Number: 833270401  
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The Miami Herald

Publication Date: 04/30/2009

**MIAMI-DADE COUNTY PUBLIC WORKSHOP**

As a part of Miami-Dade County's continuing commitment to public participation in local government, the Park and Recreation Department invites area residents to attend a public workshop:

**BICYCLE BOULEVARD PLANNING STUDY**  
 NW 87 St. to NW 41 St. / NW 11 Av. to NW 32 Av

The meeting is designed for the public to learn about opportunities and constraints to improve bicycle safety and circulation within the study area and share ideas and discussion on potential improvements. As part of the meeting, the consultant and County staff will answer questions about the concept of bicycle boulevards and creating a network of low-traffic bicycle routes that are easy to use, safe and healthy for users of all ages, abilities and modes, and have low traffic speeds and volumes. Residents are encouraged to attend and comment on the study. **The meeting will take place at:**

**African Heritage Cultural Arts Center – Music Room**  
 2166 NW 62 St., Miami, FL 33142  
 May 6, 2009 7:00 – 9:00 PM

For further information, requests for foreign language interpreters, or questions prior to the meeting please contact:

**Mark Heinicke, Park Planner**  
 Miami-Dade County Park and Recreation Department  
 305-755-7811

Call 305-755-7848 (V/TDD) for materials in accessible format, information on access for Persons with Disabilities or sign language interpreters (five days in advance).  
**Multiple members of individual community councils may attend.**

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MIAMI-DADE COUNTY  
 Bicycle Boulevard Planning Study:  
 Model City/Brownsville



Appendix C: Miami-Herald Meeting Ads

Client Name: METRO-DADE COUNTY  
 Advertiser: NBR Grove/GR9/Dade  
 Section/Page/Zone:  
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 Ad Number: 839494701  
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**MIAMI-DADE COUNTY OPEN HOUSE**

As a part of Miami-Dade County's continuing commitment to public participation in local government, the Park and Recreation Department invites area residents to attend a public **Open House**:

**BICYCLE BOULEVARD PLANNING STUDY**  
 NW 87 St. to NW 41 St. / NW 11 Av. to NW 32 Av

The **Open House** is designed to showcase proposed bicycle boulevard concepts and provide an opportunity for the public to review related project exhibits and provide input on future bikeway plans. As part of the meeting, County staff and consultants will answer questions about planning, development and operations at various exhibit stations set up throughout the room. Residents are encouraged to attend and comment on the study. The **Open House** will take place at:

**Arcola Lakes Park - Recreation Center**  
 1301 NW 83 St., Miami, FL 33147  
 October 7, 2009 7:00 - 9:00 PM

For more information on this project contact: Mark Heinicke,  
 Park Planner, Miami-Dade County Park and Recreation Department at  
 305-755-7811

To request material in an accessible format, information on access for persons with disabilities, or sign interpreter services (7 days in advance), call 305-365-6706.

Public participation is solicited without regard to race, color, religion, sex, age, national origin, disability or family status.

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# Appendix D: Meeting Summary Notes



Kimley-Horn  
and Associates, Inc.

## MEMORANDUM

**To:** Mark Heinicke, CPRP, CLARB  
Miami-Dade County Park and  
Recreation Department (MDPR)

**Date:** January 15, 2009

**From:** Stewart Robertson, PE  
Naveen Modali  
Poorna Bhattacharya, AICP  
Kimley-Horn and Assoc. (KHA)

**Subject:** **Kick-off Meeting Notes  
– Task 1a**

**Project:** **District No. 2 & 3 Bicycle Boulevard  
Planning Study**      **Job No.:** 040829019

■  
Suite 109  
5200 Northwest 33<sup>rd</sup> Avenue  
Fort Lauderdale, Florida  
33309

The kick-off meeting for the Bicycle Boulevard Planning Study was held on January 15, 2009, in the fourth floor conference room of the Miami-Dade County Park and Recreation Department (MDPR). The meeting was attended by:

- Mark Heinicke, Park Planner III – MDPR
- David Henderson, Bike/Ped Specialist – Miami-Dade County MPO
- Jeff Cohen – Miami-Dade Public Works
- Naveen Modali – KHA
- Poorna Bhattacharya – KHA

The meeting began with introductions by the project team members in attendance. MDPR staff provided the kickoff meeting agenda, which summarized items to be discussed. The following list describes the pertinent discussion topics during the meeting.

### Bicycle Boulevard Planning Study, Kick-Off Meeting Discussion

- Mark Heinicke started off the discussion by reviewing the project objectives. Mr. Heinicke explained that the study can explore the possibilities of having a Bicycle Boulevard on any road within the study area, but not restrict to the three main corridors listed in the scope. Mr. Heinicke and David Henderson stressed to have a connection to the Little River on the north end.
- Mr. Cohen suggested having a possible connection to the Miami River Greenway and the Miami Intermodal Center (MIC) using the proposed

■  
TEL 954 535 5100  
FAX 954 739 2247

Bicycle Boulevard Planning Study – Task 1a  
Page 1 of 3





## Appendix D: Meeting Summary Notes



Kimley-Horn  
and Associates, Inc.

MIC-Earlington Heights Metrorail alignment from NW 41 St to NW 32 Av and NW 32 Av to NW 37 Av.

- Mr. Heinicke discussed various project issues that should be looked into during the study. The FEC spur along NW 72<sup>nd</sup> Street presents a crossing issue. Mr. Heinicke and Mr. Henderson mentioned that NW 12<sup>th</sup> Avenue has a bridge crossing that passes over the FEC railroad track.
- The committee discussed the preliminary development program
  - Mr. Heinicke highlighted some recommendations for selection of streets for Bicycle Boulevard as listed below.
    - Local Street or low-volume collector
    - Not a transit or truck route
    - Very little commercial frontage
    - Within ¼ mile of a major street
    - Reasonably continuous
    - Few jogs with main segments at least 0.5 mile long
    - Traffic signals at major intersections
    - Connections to routes in neighboring cities
  - Mr. Henderson agreed to send KHA the crash data available to him.
  - Mr. Heinicke advised us to look at the crash data and then select the locations for the tube counts.
  - The list of locations to collect the tube counts will be sent to Mr. Heinicke and Mr. Henderson for their review.
- Mr. Heinicke discussed the different deliverables for each task from the scope.
- The committee discussed tentative schedules for Study Advisory Committee Meetings and Public Workshops. The tentative schedules are listed below:
 

• Study Advisory Committee Meeting 1	May 2009
• Public Workshop Meeting 1	May 2009
• Public Workshop Meeting 2	August 2009
• Study Advisory Committee Meeting 2	September 2009
- Mr. Henderson suggested that emergency services, solid waste removal, and school bus routes must be examined for traffic calming. He also suggested having their representatives in the Study Advisory Committee and agreed to provide contact names to KHA.

■  
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Fort Lauderdale, Florida  
33309

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Bicycle Boulevard Planning Study – Task 1a  
Page 2 of 3





## Appendix D: Meeting Summary Notes



Kimley-Horn  
and Associates, Inc.

- It was agreed to get public involved early in the process to help to identify priority streets.
- Mr. Heinicke agreed to provide contact information for Safe Routes to School coordinator Harvey Bernstein to KHA.
- Mr. Henderson mentioned Public Works Department is recommending bike lanes along NW 22 Av.
- Mr. Heinicke will send extra background information (powerpoint, images and reports) that can be used as reference material for the study.
- Mr. Heinicke suggested that the study could identify a small demonstration area for the initial implementation stage of the project.
- Mr. Henderson suggested that it is important to connect the Bicycle Boulevard to transit stops but not to have them on the transit routes.
- Meeting Adjourned.

■  
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5200 Northwest 33<sup>rd</sup> Avenue  
Fort Lauderdale, Florida  
33309

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Bicycle Boulevard Planning Study – Task 1a  
Page 3 of 3





## Appendix D: Meeting Summary Notes



Kimley-Horn  
and Associates, Inc.

### MEMORANDUM

To: Mark Heinicke, CPRP, CLARB      Date: June 29, 2009  
Miami-Dade County Park and  
Recreation Department (MDPR)

From: Stewart Robertson, PE      Subject: **Meeting Notes**  
Naveen Modali      **– Phase 1 Review**  
Kimley-Horn and Assoc. (KHA)

Project: **District No. 2 & 3 Bicycle Boulevard**      Job No.: 040829019  
**Planning Study**

■  
Suite 109  
5200 Northwest 33<sup>rd</sup> Avenue  
Fort Lauderdale, Florida  
33309

The Phase 1 review meeting for the Bicycle Boulevard Planning Study was held on June 29, 2009, in the fifth floor conference room of the Miami-Dade County Park and Recreation Department (MDPR) Hickman Building. The meeting was attended by:

- Mark Heinicke, Park Planner III – MDPR
- David Henderson, Bike/Ped Specialist – Miami-Dade County MPO
- Jeff Cohen – Miami-Dade County Public Works Department
- Alfreda Hodgson – Office of County Commissioner District 3
- Collin Worth – City of Miami
- Jorge Herrera – Miami-Dade Police Department
- Stewart Robertson – Kimley-Horn and Associates, Inc.
- Naveen Modali – Kimley-Horn and Associates, Inc.

The meeting began with introductions by the project team members in attendance. MDPR staff provided the meeting agenda, which summarized items to be discussed. The following list describes the pertinent discussion topics during the meeting.

#### **Bicycle Boulevard Planning Study, Phase 1 Review Meeting Discussion**

- Stewart Robertson started off the discussion by explaining the concept of a bicycle boulevard along with advantages and disadvantages of bicycle boulevards.
- Mr. Robertson gave an overview of the base data inventory and explained the information provided in the maps.
- Mr. Heinicke requested KHA to send a map with the bicycle and pedestrian crash data from the study area.

■  
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Bicycle Boulevard Planning Study – Task 1h  
Page 1 of 3





## Appendix D: Meeting Summary Notes



Kimley-Horn  
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- Mr. Henderson suggested to use the MPO's Community Characteristics Map for neighborhood characteristics data and to contact Elizabeth Rockwell of the MPO for more information.
- Mr. Cohen stated that he liked the functional classification line type for "Urban Principal Arterials – Expressway" and would like to see this same line type used for "Urban Principal Arterial – Interstate."
- Mr. Cohen stated that the highest range in the AADT map should read 100,000, not 1000,000.
- Mr. Cohen noted that the Number of Lanes map should read Number of Lanes Per Direction.
- Lieutenant Herrera stated that MDPD maintains a database of crime statistics and that someone from the study team could contact him about getting crime data within the study area.
- Mr. Robertson discussed the field review observations and also explained the issues and problems along with potential solutions for the problems.
- Mr. Cohen stated that he believes there is a HAWK signal installation near Flagler and 32<sup>nd</sup> Avenue.
- Mr. Robertson addressed the goals and objectives for the study. The committee accepted the goals and objectives that were prepared for this study.
- Mr. Worth suggested continuing to coordinate with City of Miami Parks for improvements within Hadley Park. Mr. Heinicke responded that they had been invited to participate in this meeting.
- Mr. Cohen explained that Public Works is beginning to use a new speed cushion design where emergency vehicles can straddle through the trowel, but standard vehicles cannot. This design would be useful for bicyclists as well because they could also pass through one of the trowels. Mr. Cohen stated that there is an example installed on SW 68<sup>th</sup> Avenue north of Miller Drive.
- Mr. Robertson explained the selection criteria for the streets selected as bicycle boulevards.
- Mr. Cohen suggested a few changes to the selection criteria, which were generally accepted by the meeting attendees.
  - Remove the requirement "not a transit route."
  - Modify the less than 10% commercial frontage requirement to be not a precise rule.
  - Expand the list of community facilities accessed to include shopping malls and employment centers.
  - Modify connection to bicycle facilities criterion from two facilities to one, and add language for "planned or proposed" greenway facilities.
- Mr. Robertson presented an overview of the May 6, 2009, public workshop, along with the suggestions from the public.

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## Appendix D: Meeting Summary Notes



Kimley-Horn  
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- The committee agreed to include NW 11 Av from NW 50 St to NW 67 St as a possible bicycle boulevard based on the comments from the public.
- Mr. Robertson presented some of the tool box ideas that were prepared for this study.
- Mr. Worth suggested to consider street lighting along the corridors for night-time bicycling.
- Mr. Cohen advised KHA to review the new draft Manual on Uniform Traffic Control Devices (MUTCD) available online and footnote the reference to the new MUTCD.
- Mr. Cohen stated that bicyclists who are uncomfortable riding in a roundabout can utilize diagonal ramps to access a wide sidewalk for riding through the intersection.

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The study team agreed that the next public workshop should be in September.

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## Appendix D: Meeting Summary Notes



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### MEMORANDUM

To: Mark Heinicke, CPRP, CLARB Date: June 18, 2009  
Miami-Dade County Park and  
Recreation Department (MDPR)

■ Suite 109  
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From: Stewart Robertson, PE Subject: **Workshop Meeting Notes**  
Naveen Modali – **Task 2a**  
Kimley-Horn and Assoc. (KHA)

Project: **District No. 2 & 3 Bicycle Boulevard Planning Study** Job No.: 040829019

A public workshop was conducted for the Bicycle Boulevard Planning Study on May 6, 2009, in the conference room of the African Heritage Cultural Arts Center located on NW 62<sup>nd</sup> Street in the City of Miami. The meeting was attended by the following public officials from Commission Districts 2 and 3, general public, and Study Advisory Committee members.

- Mark Heinicke, Park Planner III – MDPR
- David Henderson, Bike/Ped Specialist – Miami-Dade County MPO
- Jeff Cohen – Miami-Dade Public Works
- County Commissioner Dorrin Rolle – Commission District 2
- County Commissioner Audrey Edmonson – Commission District 3
- Gerard Philippeaux – Office of County Commissioner District 3
- Marta Martinez-Aleman – Office of County Commissioner District 3
- Pete Villa – Office of County Commissioner District 3
- Natalia Escobo – Office of County Commissioner District 3
- Junita Roundtree – Office of County Commissioner District 3
- Dr. May Bryant – Office of County Commissioner District 3
- Marie Russell – Office of County Commissioner District 3
- Collin Worth – City of Miami
- Kathryn Moore – City of Miami
- Pernsu Sumner – MDPR
- Rhonda Ham – MDPR
- John O'Brien – City of North Miami
- Mike Lydon – The Street Plans Collaborative
- Dorian Nendez – General Public
- Sandra Stephens – General Public
- Naveen Modali – Kimley-Horn and Associates
- Stewart Robertson – Kimley-Horn and Associates

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## Appendix D: Meeting Summary Notes



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The meeting was started with introductions by the project team members in attendance followed by a detailed presentation by the KHA team presenting the concept of bicycle boulevards and their safety, efficiency, neighborhood benefits and possible strategies that can be used on bicycle boulevards.

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After the presentation break-out sessions were conducted to gather public input on existing problems on bicycle boulevard streets, connectivity issues and possible bicycle boulevards.

The following are the list of issues that were recorded from the public for additional bicycle boulevard concepts:

- Connect to new police sub station
- Connect to day-cares
- Connect to county facilities
- Connect to Roberto Clemente Park

The following are the roadways suggested by the public for consideration by the study team as bicycle boulevards:

- NW 50 St from NW 33 Ave to NW 10 Ave
- NW 66 St/NW 67 St
- NW 18 Ave from NW 41 St to NW 60 St
- NW 14 Ave from NW 50 St to NW 62 St
- NW 11 Ave from NW 46 St to NW 67 St
- NW 6 Ave from NW 54 St to NW 67 St

Meeting Adjourned

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## Appendix D: Meeting Summary Notes

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### MEMORANDUM

To: Mark Heinicke, CPRP, CLARB      Date: October 22, 2009  
Miami-Dade County Park and  
Recreation Department (MDPR)

From: Stewart Robertson, PE      Subject: **Public Open House Meeting**  
Naveen Modali      **– Task 2e**  
Kimley-Horn and Assoc. (KHA)

Project: **District No. 2 & 3 Bicycle Boulevard**      Job No.: 040829019  
**Planning Study**

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A public open house was conducted for the Bicycle Boulevard Planning Study on October 7, 2009, at the Arcola Lakes Park – Recreation Center located on NW 83<sup>rd</sup> Street in the City of Miami. The meeting was attended by the public officials from Commission Districts 2 and 3, general public, and Study Advisory Committee members.

- Mark Heinicke, Park Planner III – MDPR
- David Henderson, Bike/Ped Specialist – Miami-Dade County MPO
- Jeff Cohen – Miami-Dade Public Works
- County Commissioner Dorrin Rolle – Commission District 2
- County Commissioner Audrey Edmonson – Commission District 3
- Marta Martinez–Aleman –Office of County Commissioner District 3
- Brian Gillis – Office of County Commissioner District 3
- Junita Roundtree – Office of County Commissioner District 3
- Marie Russell – Office of County Commissioner District 3
- Jamie Caulkins – Bike Safe
- Naveen Modali – Kimley-Horn and Associates, Inc.
- Stewart Robertson – Kimley-Horn and Associates, Inc.

The list of general public along with the others that were present at the public open house is shown in the attachment.

At the open house, the study team displayed information about the Tool Box strategies for the Bicycle Boulevard concept, the NW 14<sup>th</sup> Avenue example corridor layouts, and implementation costs for the Bicycle Boulevards in the study area.

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## Appendix D: Meeting Summary Notes



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The concepts of bicycle boulevard planning were explained in more detail and public input and opinions about the study and the information presented was collected.

The following are the list of issues that were recorded from the public for additional bicycle boulevard concepts:

- Provide more trees in the area.
- The concept of the bicycle boulevard is a good idea.
- The bicycle boulevard should be provided on the side of the road when possible.

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Meeting Adjourned

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## Appendix D: Meeting Summary Notes

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### MEMORANDUM

To: Mark Heinicke, CPRP, CLARB      Date: September 29, 2009  
Miami-Dade County Park and  
Recreation Department (MDPR)

From: Stewart Robertson, PE      Subject: **Meeting Notes**  
Naveen Modali      **Draft Implementation Plan**  
Kimley-Horn and Assoc. (KHA)

Project: **District No. 2 & 3 Bicycle Boulevard**      Job No.: 040829019  
**Planning Study**

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The Draft Implementation Plan Review Meeting for the Bicycle Boulevard Planning Study was held on September 29, 2009, in the fifth floor conference room of the Miami-Dade County Park and Recreation Department (MDPR) Hickman Building. The meeting was attended by:

- Mark Heinicke, Park Planner III – MDPR
- Joe Webb - MDPR
- David Henderson, Bike/Ped Specialist – Miami-Dade County MPO
- Kimberly Brown – Miami-Dade County Department of Planning and Zoning
- Jeff Cohen – Miami-Dade County Public Works Department
- Stewart Robertson – Kimley-Horn and Associates, Inc.
- Naveen Modali – Kimley-Horn and Associates, Inc.

The meeting began with introductions by the project team members in attendance. MDPR staff provided the meeting agenda, which summarized items to be discussed. The following list describes the pertinent discussion topics during the meeting.

#### **Bicycle Boulevard Planning Study, Draft Implementation Plan Meeting Discussion**

- Stewart Robertson started off the discussion by explaining the concept of a bicycle boulevard.
- Mr. Robertson gave an overview of the project and explained the steps that involved in the selection of the proposed streets for this project followed by the Tool Box that was proposed for the study.
- Joe Webb mentioned about the connection of the 14<sup>th</sup> Avenue Bicycle Boulevard to Hadley Park and commented that the 14<sup>th</sup> Avenue Bicycle

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## Appendix D: Meeting Summary Notes



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Boulevard can be connected to the periphery streets along Hadley Park so that the periphery connection can be used when the park is closed.

- Mr. Webb suggested to keep the wayfinding plan/signs consistent with the Miami-Dade County's Wayfinding plan and also to include a note in the tool box that says "The signs are with respect to the County's wayfinding plan".
- Jeff Cohen has provided the following comments or changes to the Tool Box
  - To add a Bicycle Symbology to the existing street signs/new street signs might require a meeting with Bob Williams and Miami Dade Traffic Control Center.
  - Provide pictures in the tool box that were taken in the United States only to keep them consistent with the MUTCD guidelines.
  - Pavement legend is not yet adopted in the MUTCD.
- Mr. Robertson discussed about the typical section and plan view that were prepared for the Bicycle Boulevard Corridor with and without parking.
- Mr. Webb suggested changing the width of travel lanes from 11 feet to 10 feet, and reducing the width of swale from 14 feet to 10 feet for the typical section and planning view for Bicycle Boulevard without parking.
- Mr. Webb suggested changing the width of travel lanes from 11 feet to 10 feet and increasing the width of parking lane from 8 feet to 9 feet for the typical section and plan view for Bicycle Boulevard with parking.
- Mr. Robertson discussed about the NW 14<sup>th</sup> Avenue Bicycle Boulevard example corridor layout plans.
- Mr. Cohen suggested the following changes:
  - Connect the NW 14<sup>th</sup> Avenue Bicycle Boulevard to the existing sidewalks on NW 12<sup>th</sup> Avenue instead of having them connect to the travel lanes and also proposed a cross-walk on the south side of NW 12<sup>th</sup> Avenue at the intersection of NW 12<sup>th</sup> Avenue and NW 71<sup>st</sup> Street. (Sheet 4 and 5)
  - The median islands proposed at NW 54<sup>th</sup> Street, NW 62<sup>nd</sup> Street and NW 79<sup>th</sup> Street must be provided with a splitter island and pedestrian crossing from the center of the splitter islands.

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## Appendix E: BPAC Resolution of Support

BPAC RESOLUTION #24-2009

A RESOLUTION SUPPORTING THE BICYCLE BOULEVARD PLAN FOR THE MODEL CITY/BROWNSVILLE AREA

WHEREAS, the Miami-Dade Metropolitan Planning Organization Governing Board has established the Bicycle/Pedestrian Advisory Committee (BPAC) to advise it on bicycle/pedestrian issues;

WHEREAS, the Miami-Dade Park and Recreation Department and MPO have developed a Bicycle Boulevard Plan for the Model City/Brownsville area;

WHEREAS, the Bicycle Boulevard Plan for the Model City/Brownsville area identifies a network of local streets and low-cost improvements that will reduce speeding and cut-through traffic and make bicycling to schools, parks, transit stations and other community resources safer and easier;

WHEREAS, the plan was developed with community input and is supported by the City of Miami's Bicycle Master Plan;

NOW, THEREFORE, BE IT RESOLVED BY THE BICYCLE/PEDESTRIAN ADVISORY COMMITTEE OF THE METROPOLITAN PLANNING ORGANIZATION FOR THE MIAMI URBANIZED AREA:

THAT the Bicycle/Pedestrian Advisory Committee supports the recommendations of the Bicycle Boulevard Planning Study for the Model City/Brownsville area.

The foregoing resolution was offered by Eric Tullberg who moved its adoption. The motion was seconded by Paul Yavis, and being put to a vote, the vote was as follows:

Brett Bibeau – aye	Lee Marks – absent
Javier Betancourt – absent	John O'Brien – absent
Anamarie Garces de Marcilla – absent	Bernadette Pardo – aye
Jeremy Gauger – aye	Gabrielle Redfern – absent
Steve Greenberg – aye	Larry Thorson – absent
Ken Groce – aye	Eric Tullberg – aye
Susan Kairalla – absent	Paul Yavis – aye

The Chair thereupon declared the resolution duly passed and adopted this 18th day of November, 2009.

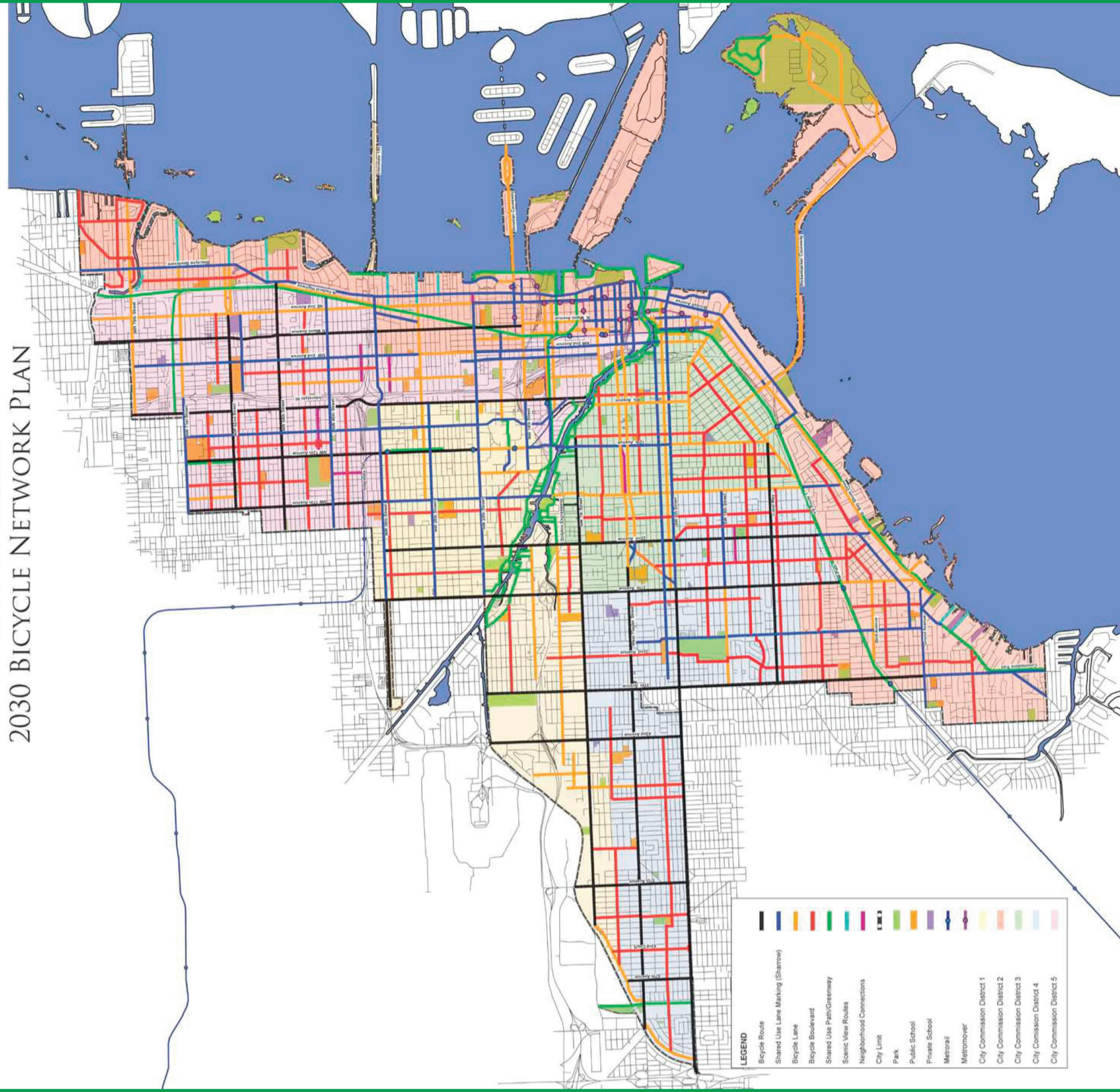
BICYCLE/PEDESTRIAN ADVISORY COMMITTEE (BPAC)

BY   
David Henderson, BPAC Secretariat



## Appendix F: City of Miami Bicycle Master Plan

# CITY OF MIAMI 2030 BICYCLE NETWORK PLAN







*This report for the Miami-Dade County Bicycle Boulevard Planning Study has been reviewed and accepted as presented.*

NAME/TITLE	DEPARTMENT/ DIVISION	SIGNATURE	DATE
Jack Kardys <i>Director</i>	Park and Recreation		
W. Howard Gregg <i>Deputy Director</i>	Park and Recreation Planning and Development		
Frank Faragalli <i>Assistant Director</i>	Park and Recreation Operations		
Carolyn Gibson <i>North Region Manager</i>	Park and Recreation Operations		
Maria Nardi <i>Chief</i>	Park and Recreation Planning and Research		
Joe Webb, RLA, ASLA <i>Section Supervisor</i>	Park and Recreation Park Systems Planning		
Mark Heinicke, CPRP, CLARB <i>Park Planner III</i>	Park and Recreation Park Systems Planning		