

CORAL GABLES

THE CITY BEAUTIFUL

2 ————— 2

Comprehensive Multimodal Transportation Plan

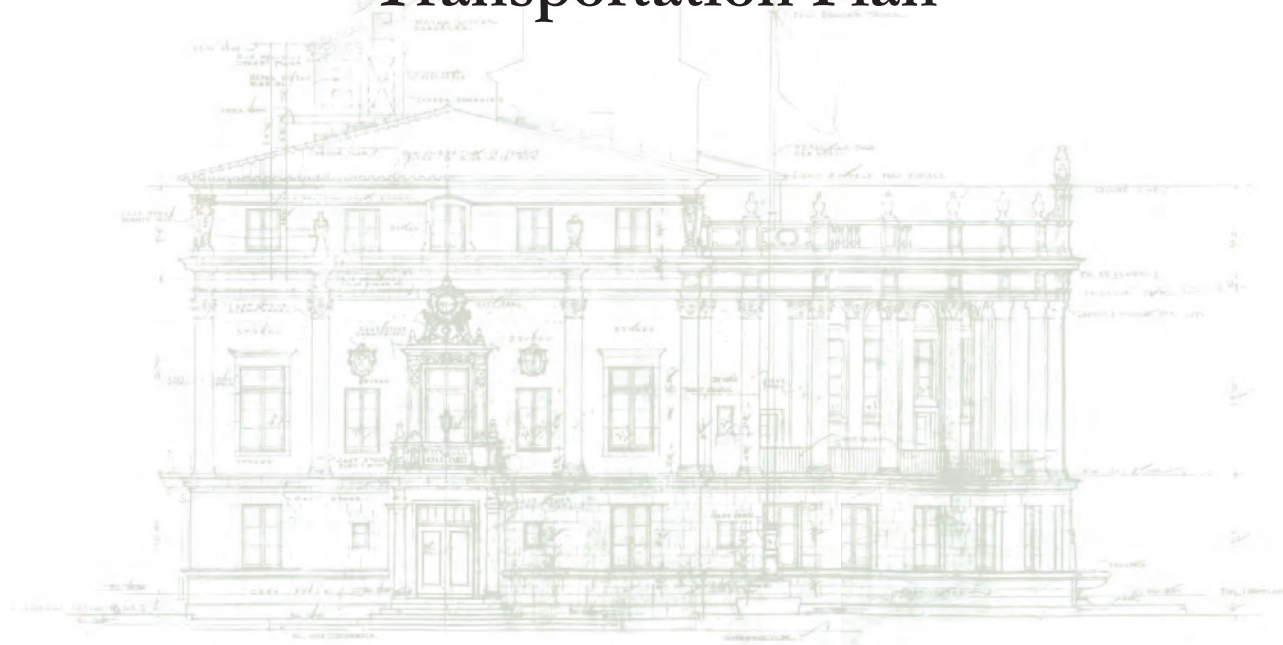
August 2019



City of Coral Gables



Comprehensive Multimodal Transportation Plan



August 2019

ACKNOWLEDGMENTS

Appreciation is extended to the following groups that contributed to the development of the plan:

City of Coral Gables City Commission

Mayor Raúl Valdés-Fauli

Vice Mayor Vince Lago

Commissioner Jorge L. Fors, Jr.

Commissioner Patricia Keon

Commissioner Michael Mena

City Manager Office

Peter Iglesias, PE – City Manager

Eduardo Santamaria, PE, LEED AP - Assistant City Manager

Transportation Advisory Board

Department of Public Works and its Sustainable Public Infrastructure Division

Jessica A. Keller, ENV SP – Assistant Public Works Director

Mark Brown - Senior Multi-Modal Engineer

Consultant Team

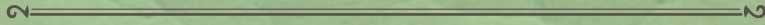
ATKINS

Dover, Kohl & Partners

Caltran Engineering Group

CORAL GABLES[®]

THE CITY BEAUTIFUL



1

INTRODUCTION



TABLE OF CONTENTS

#	Title	Page
1	Introduction	1-1
1.1	Plan Context	1-1
1.2	Plan Framework: Vision, Goals, and Policies.....	1.3
	Summary.....	1-11
1.3	Plan Organization	1-12

1 INTRODUCTION

Transportation networks are the lifeblood of a city. They connect people to jobs, education, recreation and to each other. Mobility networks are critical pieces of infrastructure that can have profound environmental, economic and public health benefits if designed well.

The Comprehensive Multimodal Transportation Plan is an important step in creating a transportation network that meets the needs of residents, employers and tourists in the 21st century. The goals of the Transportation Plan include:

- Maintain and improve linkages between the transportation network and land uses.
- Address long-standing traffic issues.
- Reshape the mobility network to better balance competing needs and complementary solutions.
- Support previously adopted Coral Gables plans and policies in creating a sustainable transportation network which prioritizes active mobility and transit.

Enhancing the efficiency and effectiveness of mobility choices for Coral Gables' residents, business community, and the general public is of paramount importance to preserve economic vitality and quality of life within the City Beautiful.

Development of a Comprehensive Multimodal Transportation Plan requires significant public involvement, an understanding of the City's relationship within the larger fabric of Miami-Dade County, and the application of technical approaches and solutions that meet complementary and competing objectives.

1.1 Plan Context

Miami-Dade County's transportation network is evolving. The County's long-range transportation plan projects that the population of the central part of the county, including Coral Gables, will grow by 28 percent by 2040 while employment will grow by 33 percent in the same time period. This growth means even greater demands on the transportation system.

One of Coral Gables' long-standing challenges is traffic congestion on roadways such as Bird Road and US 1, carrying commuters and other travelers through the City Beautiful and impacting service on its interior roadways. This condition in turn has led to intrusion of traffic into neighborhood streets. These neighborhood traffic "hot spots" are one important focus of the transportation plan.

A variety of other issues and factors may influence the content of the transportation plan. These include:

- The approved countywide 2040 Long Range Transportation Plan.
- County Transit's current 10-Year Transit Development Plan, including implementation of the Strategic Miami Area Rapid Transit (SMART) Plan.
- Florida Department of Transportation (FDOT) corridor planning studies along US 1 and Bird Road.
- Planning for other transit corridors including Douglas Road and Flagler Street.
- Efforts by nearby cities to take a proactive and progressive approach to advancing multimodal transportation initiatives.



In Coral Gables, development activity continues to increase as part of the economic boom of the 2010s. Coral Gables has become an attractive employment and residential center given its proximity to downtown Miami and the airport, as well as its historic Mediterranean residential neighborhoods.

Coral Gables is already making improvements to its transportation system. New initiatives are under way to improve the City trolley system and the Freebee downtown circulator service. The parking system is continuing to deploy new strategies for managing its parking supply and coordinating with commercial district development. A sweeping reinvention of the Miracle Mile street environment has also been completed.

The City's Neighborhood Renaissance Program is delivering a range of improvements to facilities, landscaping, streetscaping, parks, street pavement, roundabouts, sidewalks, and other important amenities.

Due to recent transportation improvements and future demands that will be placed on Coral Gables' transportation system, a strategic plan is necessary to map and analyze the current and future state of transportation in the city. The plan was created through a comprehensive and systematic approach and has incorporated a

robust and meaningful civic engagement process to inform its development.

The Transportation Plan development approach has incorporated the following key features:

- **Comprehensive:** considering all factors affecting the multimodal transportation network.
- **Integrated:** seeking opportunities to interconnect the modes for more seamless travel.
- **Multimodal:** encompassing all transportation modes and uses.
- **Progressive:** incorporating innovative and state-of-the-practice tools and techniques.
- **Proactive:** anticipating needs and issues.
- **Context-sensitive:** considering factors and constraints within and adjacent to Coral Gables.
- **Responsive:** driven by community-generated input and dialogue.
- **Consistent:** linking other key City plans and documents, including the Comprehensive Development Master Plan.
- **Coordinated:** interfacing with City officials and departments and external agencies.
- **Results-oriented:** focusing on developing practical, prioritized, and forward-looking actions to guide the City's future transportation system investments.

The plan represents a consensus blueprint for the City's transportation future - one that is forward-looking, practical, and implementation-oriented. One that will guide meaningful and impactful investments with a strong civic return.

1.2 Plan Framework: Vision, Goals, and Policies

Overview

Transportation policies, programs, and projects in Coral Gables are driven by the City’s Comprehensive Development Master Plan (CDMP). This plan is mandated under Florida State Statute (§163.3177(1)) and the statute provides rules and guidance for the structure, content, and processes related to the plan development and its ongoing management. The CDMP provides a visionary blueprint for the City’s growth, development, and function while preserving its historic and cultural character, in concert with the City of Coral Gables City Commission mission and vision.

The comprehensive plan provides the principles, guidelines, standards, and strategies for the orderly and balanced future economic, social, physical, environmental, and fiscal development of the community that reflects its commitments to implement the plan and its elements.

These principles and strategies will guide future decisions in a consistent manner and must contain programs and activities to ensure comprehensive plans are implemented.

Mobility Element

Within the Coral Gables CDMP, there are 14 individual elements covering the range of required plan strategies, such as land use, housing, public safety, parks and recreation, and mobility. The latter of these is of particular interest as it guides the development and oversight of all things transportation.

The CDMP Vision Statement for the **Mobility Element** is:

Provide progressive direction for the City’s multimodal transportation system in a way that sustains the City’s natural, aesthetic, historic, cultural,

social and economic resources.

This vision is supported by a set of Goals, Objectives, and Policies that express the City’s adopted policies and strategies towards the management of its transportation facilities and services. Collectively, they define the City’s approach to managing mobility to support the quality of life for its citizens and visitors.

► *The following text provides a synopsis of the Mobility Element with its provisions paraphrased to capture their basic content and intent. Where appropriate, notations highlighted by a special bullet and italic font (► The following policies.....) are made on their relevance to the Transportation Plan. The acronym MOB refers to Mobility.*

Goals, Objectives, and Policies:

Goal MOB-1. Provide accessible, attractive, economically viable transportation options that meet the needs of the residents, employers, employees and visitors through a variety of methods.

Objective MOB-1.1. Mitigate the impacts of vehicular traffic on the environment and residential streets, with emphasis on alternatives to travel by the automobile.

► *Several of the below policies recognize the strong linkages between land use policies and travel demand management and reduction.*

- **Policy MOB-1.1.1.** Promote mixed use development to reduce the need to drive.
 - *City land use and concurrency policies are attracting more mixed use projects.*
- **Policy MOB-1.1.2.** Encourage decisions that encourage land use infill and reuse and support non-auto travel.

- ▶ *Similarly, City policies are encouraging infill and redevelopment, near other new projects, facilitating a more walkable environment.*
- **Policy MOB-1.1.3.** Locate higher density development along transit corridors and stations.
 - ▶ *City land use and concurrency policies are successfully steering density to the targeted areas.*
- **Policy MOB-1.1.4.** Support incentives for walking, bicycling and transit travel between local activity centers.
 - ▶ *City reviews of new development land use and concurrency policies are successfully steering density to the targeted areas.*
- **Policy MOB-1.1.5.** Improve the public realm with features like landscaping/streetscaping art, bike/ped paths, and design elements for safety and support of non-auto travel.
 - ▶ *This policy captures the essence of the newly adopted Complete Streets policy discussed in this plan.*
- **Policy MOB-1.1.6.** Work to increase trolley ridership; decrease travel and parking demand downtown.
 - ▶ *Trolley ridership has been stable, but lower than goal. The trolley and the new Freebee golf cart service are reducing travel and parking demand.*
 - ▶ *Trolley ridership targets may need to be refined.*
- **Policy MOB-1.1.7.** Research expansion of the trolley to include extensions to the northside and Univ. of Miami.
 - ▶ *The north extension to Flagler street is implemented.*
 - ▶ *A new Grand Avenue route is also in place.*

▶ *Consider updating this policy*

- **Policy MOB-1.1.8.** Protect residential areas from parking impacts of nearby retail and business areas.
- **Policy MOB-1.1.9.** Undertake a Transportation Plan to identify roadways below adopted standards, as well as short- and long-term multimodal and policy measures.
 - ▶ *This plan fully addresses this policy; consider updating the policy.*

Goal MOB-2. The City will maintain and enhance a safe, convenient, balanced, efficient and interconnected multi-modal system consisting of vehicular, transit, bicycle, and pedestrian transportation options; and will be coordinated with the City’s Comprehensive Plan while maintaining the economic viability of the City’s businesses, and continued enhancement of the quality of life for the City’s neighborhoods.



Objective MOB-2.1. All roads within the City are classified as roads within Existing Urbanized Areas by the State of Florida, and are within the Urban Infill Area (UIA) by Miami-Dade County. The City shall reduce the number of roadways operating at a level of service lower than the Level of Service (LOS) Standards contained in the adopted policies of this element to zero (0) by January 2010. The LOS standards for traffic facilities shall be used in the Concurrency Management Program (CMP) to issue development orders as of the effective date provided in CMP as set forth in the Capital Improvements Element.

► *The following seven policies define how the City monitors traffic impacts of development against a complicated set of LOS rules and standards, which involve the State, County, and City requirements. They are included in near entirety as shortening the narrative is not possible.*

- **Policy MOB-2.1.1.** The minimum or lowest quality acceptable peak-period* LOS standards for State Principal Arterial, Minor Arterial, County Minor Arterial, County and City Collector roads within the City shall be the minimum acceptable peak-period LOS standard:
 - Where public transit does not exist, roadways shall operate at or above LOS E; within the Special Transportation Area (STA), 20% of non-State roads may operate below LOS E. County roads in the STA will meet LOS standards per the County.
 - Where transit with headways of 20-minutes or less is provided within ½-mile distance, roadways shall operate at no more than 120% of capacity;
 - Where commuter rail/express bus public transit service exists, parallel roads within ½-mile shall operate at no more than 150% of capacity.

– Peak period means the average of the two highest consecutive hours of weekday traffic volume.

- **Policy MOB-2.1.2.** Roadways that are physically or environmentally constrained or legislatively prohibited from expansion, will be allowed to operate at a LOS below the minimum LOS standards. These roadways will operate at a level such that significant degradation does not occur based on conditions existing at the time of the CDMP adoption [2010]. Significant degradation means: (1) an increase in average annual daily traffic of 10% above the maximum service volume, or (2) a reduction in operating speed for the peak direction in the 100th highest hour of 10% below the speed of the adopted LOS standard. The following roads are designated Constrained Facilities:
 - U.S. 1 within Coral Gables.
 - SW 40th Street (Bird Road) within Coral Gables.
 - SW 8th Street (Tamiami Trail) within Coral Gables.
 - SW 24th Street (Coral Way) within Coral Gables.
 - Old Cutler Road within Coral Gables.
 - SW 72nd Street (Sunset Dr.) within Coral Gables.
 - S.W. 42nd Avenue (LeJeune Road) from Cartagena Circle to U.S. 1 (S. Dixie Hwy., S.R. 5).
- **Policy MOB-2.1.3.** Any section of any roadway may temporarily operate at a LOS lower than the established minimum if capacity improvements raising the LOS of such roadway to its standard are assured to exist on a timely basis as required by 9J-5.0055 (3) (c) – Concurrency Management System, Minimum Requirements for Concurrency for Transportation Facilities, as amended.

- **Policy MOB-2.1.4.** Issuance of all Developments Orders for new developments or expansions of existing developments shall be contingent upon compliance with the applicable LOS standards contained in the CDMP.
- **Policy MOB-2.1.5.** Maintain and update procedures and requirements for all development, regardless of size, to contribute its proportionate share of transportation facilities, or funds or land, necessary to address its impact.
- **Policy MOB-2.1.6.** The City shall maintain and update as needed its designated Special Transportation Area (STA). The STA reflects and supports special planning and urban management needs related to severe limitations of right-of-way conditions, high land values, urban infill development, highly regarded historic, aesthetic, environmental and unique residential nature of the area, combined with central business district requirements for LOS standards which support more intense road and mass transit utilization for productive and essential human and business interaction are recognized by the City's establishment of a special transportation area (STA). The STA is currently defined as the area bounded by Tamiami Trail (S.W. 8th Street), Flagler Street and the City Limits on the North; Sunset Drive on the South, Red Road (S.W. 57th Avenue) on the West and Cartagena Plaza, LeJeune Road, the City Limits and Douglas Road (S.W. 37th Avenue) on the East; less the area contained within the Gables Redevelopment and Infill District (GRID) as described in Policy 2.2.1 of this Element. All transportation facilities within the STA shall be considered both as individual facilities and as an integrated functional system for balanced transportation services.
- **Policy MOB-2.1.7.** Minimization of traffic via promotion of efficient mass transit and paratransit services is an important goal for the continued development of the City. Therefore, continue to support mass transit by expansion of the trolley system in conjunction with Miami-Dade County mass transit services. Such support shall include the expansion and improvement of the trolley, enforcement of LOS standards, roadway design

standards, and effective transportation mode options that enhance efficient person-trip and vehicular movements and reduces accident potential. Participation in the intergovernmental coordination activities of the Transportation Planning Office (TPO), Florida Department of Transportation, and the Transportation Plan Technical Advisory Committee of Miami-Dade County, South Florida Regional Planning Council forums/committees or other applicable local government forums/committees in the formulation of transportation policy and efforts to maintain adopted City and regional LOS standards.

► *With its population exceeding 50,000, the City now sits on the TPO Governing Board. Since CDMP adoption, the trolley has been extended to the north, the new Grand Avenue route added, and expansion of service hours is being considered.*



Objective MOB-2.2. The City shall maintain and continue to monitor its Transportation Concurrency Exception Area (TCEA) within the City's Concurrency Management Program pursuant to the policies listed below.

► *The following five policies define how the City monitors development traffic impacts within its TCEA. They are included in near entirety as shortening the narrative is not possible.*

- **Policy MOB-2.2.1.** The City shall maintain and continue to monitor its Gables Redevelopment and Infill District (GRID) as adopted pursuant to Ordinance #3148 adopted 08.29.1995 to ensure compliance with its established LOS standards and established boundaries.
- The GRID generally lies between the north City limits, LeJeune Road on the west, NW 37th Avenue to the east, and US 1 on the south, as well as a band one block to either side of US 1 and including the University of



Miami campus. (A map of the GRID is included in Chapter 2)

- **Policy MOB-2.2.2.** A proposed development will not be denied a concurrency approval for transportation facilities if it is consistent with the CDMF and it meets the following criteria pursuant to Section 163.3180 (5) (b), Florida Statutes, as amended:
 - The proposed development is located within GRID.
 - If the project would result in peak-period traffic volume increase on a Florida Intrastate Highway System (FIHS).

– If the traffic on the FIHS roadway that is operating below the adopted LOS standard would increase by more than 2% percent of its capacity at the adopted LOS standard, the City shall require the developer to implement and maintain trip reduction measures to reduce travel by single-occupant vehicles so that the resultant increase in traffic volume does not exceed 2% percent.

- **Policy MOB-2.2.3.** The City will maintain and update, as required in its Concurrency Management Program (CMP) or administrative rules, appropriate criteria and methodologies to implement the exception authorized in this policy consistent with Chapter 163, F.S., as amended.
- **Policy MOB-2.2.4.** A proposed development, that conforms to the criteria enumerated in Section 163.3180(6), F.S., as amended and is located in the GRID where an affected transportation facility is operating below its adopted LOS standard, is deemed to have a de minimis impact that, alone or in combination with other similar or lesser impacts, will not cause unacceptable degradation of the level of service on affected transportation facilities. The City will maintain and update as required in its Concurrency Management Program or administrative rules appropriate methodologies for determining and monitoring de minimis impacts consistent with Section 163.3180(6), F.S., as amended, and Chapter 9J-5, Florida Administrative Code, as amended.
- **Policy MOB-2.2.5.** Continue to promote infill and redevelopment, especially within the City’s GRID:
 - Research expansion of the trolley to include extensions to the northside and Univ. of Miami.
 - *The north extension to Flagler street is implemented.*
 - *A new Grand Avenue route is also in place.*

▶ *Consider updating this policy.*

– Potential development incentives and/or economic incentives to promote trolley ridership.

▶ *The GRID policy could be modified to support trolley capital or operations costs.*

– Maintain the Mediterranean Style Design Standards, which award density/height bonuses allowing pedestrian amenities aiding walkability.

▶ *Arcades, paseos, and other pedestrian features under these standards promote walkability.*

Objective MOB-2.3. Provide for a safe, convenient, efficient and interconnected multi-modal transportation system.

- **Policy MOB-2.3.1.** Maximize utilization of existing roadway capacity and reduce peak period congestion by implementing a range of traffic operations, systems management, and travel demand management actions.

▶ *The Florida DOT is completing studies of US 1 and Bird Road through Coral Gables which will generate significant improvement projects.*

▶ *This transportation plan has proposed other improvements on major streets to address this policy.*

- **Policy MOB-2.3.2.** Manage major streets by proper and safe design, addressing adequate vehicle turning bays; spacing of median openings and driveway curb cuts; and provision of service roads.

▶ *See the note for Policy MOB-2.3.1.*

- **Policy MOB-2.3.3.** Monitor high crash locations and coordinate with County and FDOT to identify counter-measures to benefit motorists, bicyclists, and walkers.

▶ *This is an ongoing priority as most high crash locations are on FDOT and the County jurisdiction streets.*

- **Policy MOB-2.3.4.** Require private/public development projects to adhere to the City’s Citywide Bicycle Lane Master Plan, 2004 and the Bicycle Facilities Map.

▶ *The City routinely implements segments of bicycle plans through development review.*

▶ *This policy should reference the 2014 bicycle plan.*

- **Policy MOB-2.3.5.** As a part of development review, the City shall promote the safe movement of bicycle and pedestrian traffic.

▶ *The City routinely reviews projects to incorporate pedestrian and bicycle improvements.*



Objective MOB-2.4. Coordinate proposed transportation projects and measures with a specific emphasis on traffic circulation with future land uses and capital improvements element as adopted on the Future Land Use Map series and all other pertinent and applicable City adopted documents recognizing fiscal and physical constraints.

- **Policy MOB-2.4.1.** Through the Concurrency Management Program, monitor traffic impacts of land development to achieve integrated management of land use and transportation, particularly outside of the STA and GRID.
 - ▶ *The City requires traffic impact studies for all new developments.*
- **Policy MOB-2.4.2.** The City shall maintain consistency between the adopted Mobility Element policies and other adopted policies of the Comprehensive Plan.
 - ▶ *Review of new development by Planning and Public Works Departments routinely addresses this policy.*
- **Policy MOB-2.4.3.** Use adopted Land Use Plan Maps to guide the proper coordination between transportation planning and future development patterns.
 - ▶ *See comment for Policy MOB-2.4.2.*



Objective MOB-2.5. Per Chapter 380, F.S., as amended, annually coordinate City plans and programs with partner transportation agencies.

- **Policy MOB-2.5.1.** Review proposed plans and projects by outside agencies for compatibility with the CDMP and other City plans.
 - ▶ *The City routinely coordinates with FDOT and the County, as well as adjacent cities, on projects.*

Objective MOB-2.6. Rights-of-way and transportation corridor needs for existing and future transportation facilities shall be designated and reserved.

- ▶ *The following three policies articulate how the City plans for right-of-way needs on projects. Due to costs, impacts, historical status, or constrained conditions, few street projects in the City involve significant right-of-way takings.*
- **Policy MOB-2.6.1.** Maintain minimum right-of-way requirements as balanced against historic, aesthetic, cultural, and residential character per the CDMP.
- **Policy MOB-2.6.2.** Dedicate the appropriate share of right-of-way from new development to maintain vehicular/pedestrian circulation.
- **Policy MOB-2.6.3.** Advanced right-of-way acquisition will be considered for future improvements per the CDMP.

Objective MOB-2.7. The City’s Comprehensive Plan, this element and all applicable plans and programs shall protect and minimize any potential traffic impacts to the community and residential neighborhoods.

- **Policy MOB-2.7.1.** Conserve neighborhood livability by preventing the intrusion of through vehicles on local/ collector streets with diverse traffic calming measures.
 - ▶ *The City continues to pursue a robust Neighborhood Livability program,*

implementing traffic calming measures through its updated policy agreement with the County.

- **Policy MOB-2.7.2.** Avoid arterial street projects that would sever or fragment land suitable as residential neighborhoods.
 - ▶ *This issue seldom arises in the City’s mature street network. However, proximity to major arterials is considered in how to provide a pedestrian-friendly and safe environment for new projects.*
- **Policy MOB-2.7.3.** Roadway with unique historic, aesthetic and residential qualities (Coral Way, Bird Road, Old Cutler Road, Red Road and Douglas Road) shall be maintained at their present designation and capacity.
 - ▶ *The historic context of these corridors typically precludes substantial reworking of streets in the City. The FDOT Bird Road corridor study has identified improvements within the stated constraints.*

Objective MOB-2.8. The City shall plan and ensure development of a transportation system that preserves environmentally sensitive areas, conserves energy and natural resources, and maintains and enhances community aesthetic values.

- ▶ *The following six policies exhibits City sensitivity to the environment and community aesthetics.*
- **Policy MOB-2.8.1.** Continue placing landscaping within street rights-of-way for street canopy, screening views and noises, improving aesthetics and street walkability.
- **Policy MOB-2.8.2.** Promote downtown landscaping to contribute to the attractiveness of the city center.
- **Policy MOB-2.8.3.** Avoid transportation improvements that negatively impact environmentally sensitive areas.

- **Policy MOB-2.8.4.** Employ design techniques to minimize the negative impacts upon the natural systems.
- **Policy MOB-2.8.5.** Design of new roadways shall be undertaken to be context-sensitive, minimize construction impacts, and be aesthetically pleasing.
- **Policy MOB-2.8.6.** Support projects (e.g., rapid transit, express buses, high occupancy vehicles, bikeways, etc.) that improve air quality and conserve energy.
 - ▶ *The City has routinely examined and made upgrades to the City trolley system.*
 - ▶ *The US 1 corridor study now completed has identified over 100 enhancement actions within Coral Gables. These include improved pedestrian and bicycle circulation, better access to Metrorail stations, and incremental upgrades to traffic flow.*
 - ▶ *The Freebee downtown circulator has removed cars from the road, and the City is implementing elements of its bicycle plan.*

Goal MOB-3. Develop strategies and policies to reduce automobile travel demand or to redistribute that demand in space or time that support the general concepts of Transportation Demand Management (TDM) to deliver better environmental outcomes, improve public health, as well as create a stronger and more livable City.

Objective MOB-3.1. Provide efficient use, availability and notification of parking within the City.

- **Policy MOB-3.1.1.** Research various parking strategies and policies for consideration and possible adoption:
 - Using parking signing to “intercept” vehicles and “steer” them to underused lots.

- Wayfinding signage to direct “pedestrian parkers” to their destinations.
- Quality pedestrian circulation network to promote parking once.
- Creation of online real-time access to parking location and occupancy information.
- Market-based parking pricing within high demand areas.
- Support a “park once” effort, so parking patrons become a “pedestrian” or “transit rider” rather than parking more than once.
- Use of shared parking for public and private projects.

► *The City Parking Division routinely explores new parking management strategies and approaches.*

- **Policy MOB-3.1.2.** Management of existing and future public facilities shall be based on a Level of Service (LOS) providing parking for short-term users within 500 feet of their initial destination and beyond 500 feet for long-term users.

► *The City has considered this strategy in managing downtown area parking.*

- **Policy MOB-3.1.3.** Adopt a payment in lieu of parking policy for developers to reduce parking supply where alternative transportation or existing supply is available.

Objective MOB-3.2. Protect single-family neighborhoods from commercial traffic intrusion.

- **Policy MOB-3.2.1.** Continue the use and refinement of the Residential Parking Zone (RPZ) tool to address parking and traffic intrusion, reviewing annually.



SUMMARY

It is clear from a review of the Goals, Objectives, and Policies of the CDMP that there are several key themes in the development and management of the City mobility framework that should be captured in this Transportation Plan:

- Find opportunities to incrementally improve traffic flow on major streets and address safety concerns.
- Address continued traffic intrusion in neighborhood districts.
- Enhance the viability, coverage, and continuity of non-auto travel modes, specifically bicycle, pedestrian and transit travel.
- Look for opportunities to improve connectivity between travel modes within the City.
- Respect the environment, in terms of avoiding undue impacts to it, and in terms of focusing on strategies to reduce vehicle miles of travel and the related emissions.
- Continue to create attractive transportation corridors that complement the City’s quality of life standards through landscaping, streetscaping, public art, and the Complete Streets design strategy.

1.3 Plan Organization

This plan is organized around the individual transportation modes – pedestrian, bicycle, transit, and vehicular. There are also additional individual sections addressing civic engagement, neighborhood livability, and other transportation considerations. Each section is intended to be freestanding, with minimal cross-references between sections. The organization of the report is as follows:

- **Chapter 1 – Introduction**

Basis for the plan, the guiding City policies, and plan structure.

- **Chapter 2 – The Coral Gables Setting**

Background information on the City demographics and its main transportation elements.

- **Chapter 3 – Civic Engagement**

Coverage of how the plan was developed with citizen input over the course of over a dozen public meetings.

- **Chapter 4 – Walking Element**

Focused on the walking mode of travel in terms of existing resources, relevant planning, analysis of needs, and proposed improvement actions.

- **Chapter 5 – Bicycling Element**

Focused on the bicycling mode of travel, with coverage as for the pedestrian element.

- **Chapter 6 – Transit Element**

Focused on the transit mode of travel, with coverage as for the pedestrian element.

- **Chapter 7 – Vehicular Element**

Focused on the vehicular mode of travel, with coverage as for the pedestrian element.

- **Chapter 8 – Traffic Calming Element**

Addresses issues and needs relating to the streets within the residential districts of the City, focusing on traffic intrusion, with traffic calming and other recommendations.

- **Chapter 9 – Policy Element**

Covers additional policy areas that relate to transportation system management and use.

- **Chapter 10 – Implementation**

Summarizes plan recommendations and priorities for implementation.

CORAL
GABLES®
THE CITY BEAUTIFUL



2

THE CORAL GABLES
SETTING



TABLE OF CONTENTS

#	Title	Page
2.0	The Coral Gables Setting.....	2-1
2.1	Overview	2-1
2.2	Regional Context.....	2-1
2.3	Historic Context.....	2-1
2.4	Demographics.....	2-1
	Total Population.....	2-2
	Population Age.....	2-2
	Race and Ethnicity	2-2
	Housing	2-3
	Education	2-3
	Income and Poverty	2-3
2.5	Land Use and Development	2-4
	Land Use and Development	2-4
	Gables Redevelopment Infill District (GRID).....	2-6
2.6	Key Transportation Elements.....	2-6
	Major Streets	2-6
	Transit Service	2-6
	Bicycle and Pedestrian Facilities	2-6
	Local Streets.....	2-6

Figures

#	Title	Page
2.1	Central Miami-Dade County	2-1
2.2	Population Age.....	2-2
2.3	Population Race	2-2
2.4	Population Ethnicity.....	2-3
2.5	Future Land Use Map	2-4-2-5
2.6	GRID Map.....	2-5

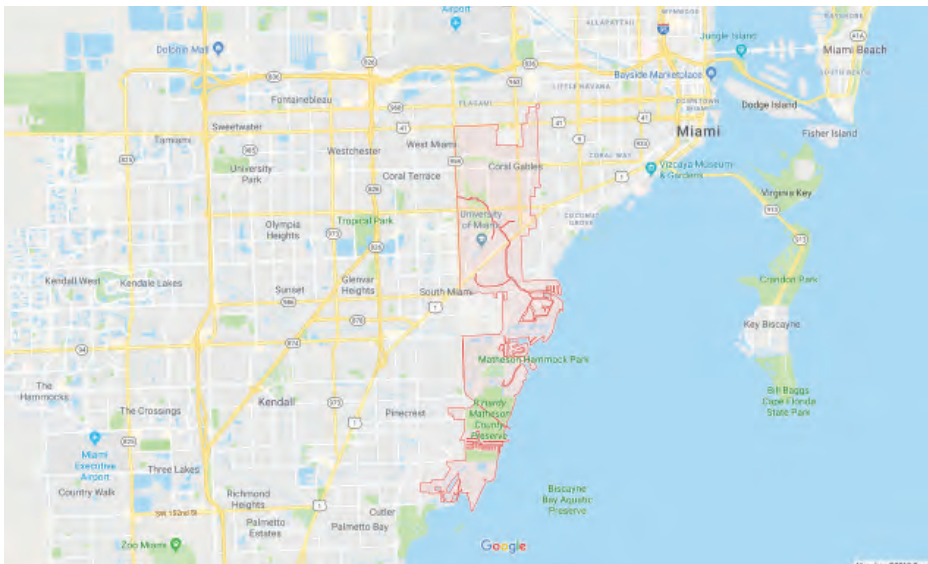
2.0 THE CORAL GABLES SETTING

To develop a comprehensive transportation plan, it is important to assess the context and character of the City of Coral Gables to guide the process. This section provides a general overview of the city, establishes regional and historic context, provides a brief demographics profile, summarizes the land use plan, and presents a high-level overview of the transportation elements.

2.1 Overview

The City of Coral Gables is located approximately in the center of Miami-Dade County. As such, Coral Gables' roadway network provides quick access to the City of Miami, the city of Coconut Grove to the east, and connections to the remainder of the county destinations to the west (Palmetto Bay, South Miami, Pinecrest, West Miami). Coral Gables has a total area of 37.2 square miles. **Figure 2.1** shows the position of Coral Gables within central Miami-Dade County.

Figure 2.1: Central Miami-Dade County



Additionally, Coral Gables is home to the University of Miami, the Biltmore Hotel, the Shops at Merrick Park, various golf courses, and residential developments influencing the travel behaviors and travel patterns of the city.

Coral Gables was founded based on the 'City Beautiful' and 'Garden City' movements, and promotes a Mediterranean architectural aesthetic.

2.2 Regional Context

Coral Gables is the 7th largest city in Miami-Dade County, with an approximate population of 50,000 residents. The City provides a corporate, financial, and educational hub to the region, and is about a mile and a half south of the Miami International Airport. Additionally, the City sits on the regional transportation planning organization (TPO) board.

2.3 Historic Context

The City of Coral Gables was incorporated in 1925 with foundations in the 'City Beautiful' and 'Garden City' movements by George Merrick. These movements were based upon the aesthetic and functional ideals of tree-lined avenues, monumental buildings, green space, plazas, and fountains.

The layout of the city was designed by George Merrick, and included a commercial district, industrial area, the Biltmore Hotel and the surrounding golf course, and seven residential districts.

2.4 Demographics

The following brief demographic profile was developed according to the United States Census Bureau Population Estimates as of July 1, 2017 (V2017) and 2016 American Community Survey (ACS) estimates.

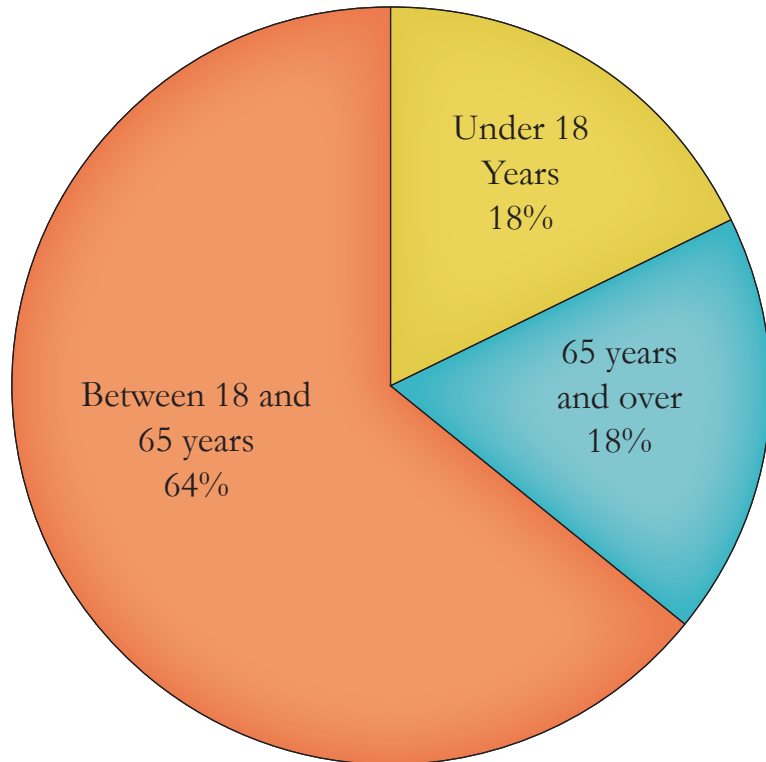
Total Population

The total population within the City in 2017 is estimated to be 51,095 persons, which is an increase of 9.3% from the 2010 Census.

Population Age

As shown in **Figure 2.2**, approximately 18% of the population is under the age of 18, and 18% is aged 65 and older. The remaining 64% of the population is aged between the ages of 18 and 65.

Figure 2.2: Population Age



Race and Ethnicity

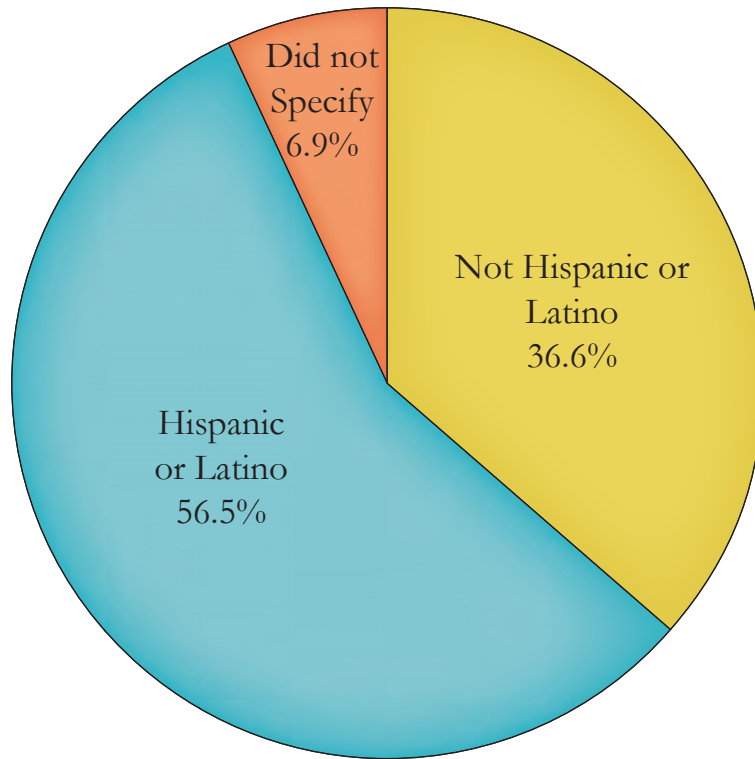
As shown in **Figure 2.3**, approximately 91% of the population identifies as White alone (no other races). Approximately 3% identify as Black or African American Alone, 2% as Asian Alone, and 2% as Two or More Races.

Figure 2.3: Population Race

White Alone	[Bar representing 91.2%]					91.2%
Black or African Am. Alone	3.4%					
Asian Alone	2.4%					
Two or More Races	2.0%					
	0%	20%	40%	60%	80%	100%

In addition to Race, surveyors have the option to select an Ethnicity. As shown in **Figure 2.4**, more than half of the population (56.5%) identified as Hispanic or Latino. Approximately 35% identified as White alone, not Hispanic or Latino. The remaining population did not specify an Ethnicity.

Figure 2.4: Population Ethnicity



Housing

The following data estimates are based on averages from 2012-2016 as provided by the 2016 ACS.

Households

The estimated number of households is 17,980, with approximately 2.55 persons per households.

Value, Owner Occupied

The median value owner-occupied housing units was estimated to be \$696,000.

Median Gross Rent

The median gross rent was estimated to be \$1,412.

Owner-Occupied Housing Unit Rate

The owner-occupied housing unit rate was estimated to be 62.7%.

Education

Approximately 95% of the population aged 25 years and higher graduated high school. Approximately 62% of the population aged 25 years and higher have Bachelor’s degree or higher.

Income and Poverty

Median Household Income

The median household income in 2016 dollars was estimated to be \$91,452.

Per Capita Income

The per capita income in 2016 dollars was estimated to be \$58,309.

Persons in Poverty

It is estimated that 7.5% of the population is in poverty (as defined by the US Census Bureau).

2.5 Land Use and Development

This section summarizes the current land use map from the City of Coral Gables Comprehensive Plan and highlights the Gables Redevelopment Infill District (GRID).

Land Use

The future land use map for the City of Coral Gables is displayed in **Figure 2.5**. As depicted, much of the City is categorized as low density single-family residential (6 units/acre, shown in yellow). The commercial corridors are clustered around US 1, Miracle Mile, and the northeast portion of the City. The industrial uses are mostly concentrated near the east-central portion of the city, near US 1, Le Jeune Road, and Bird Road across from Coral Gables High School.

Figure 2.5: Future Land Use Map

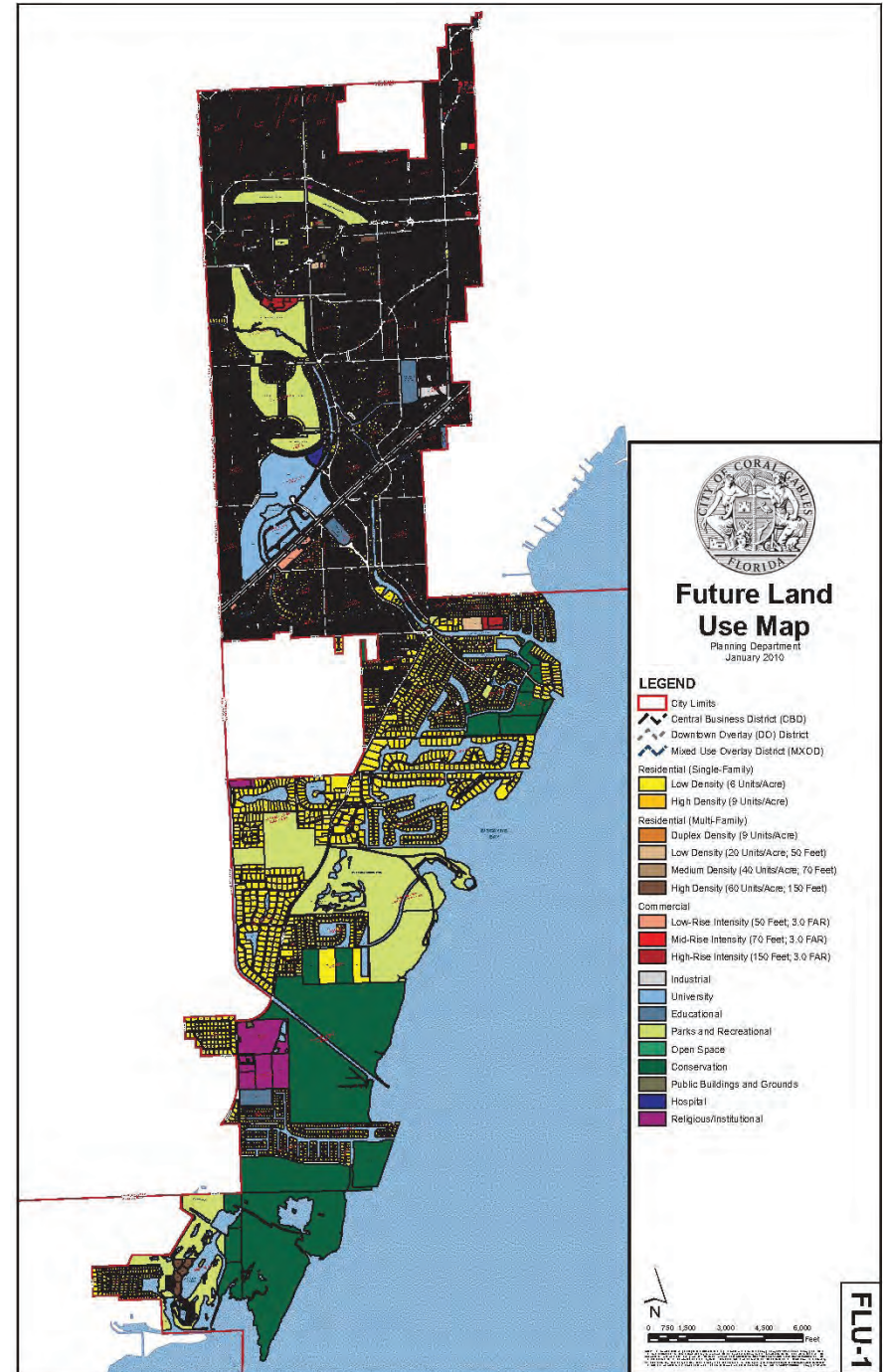


Figure 2.5: Future Land Use Map (continued)

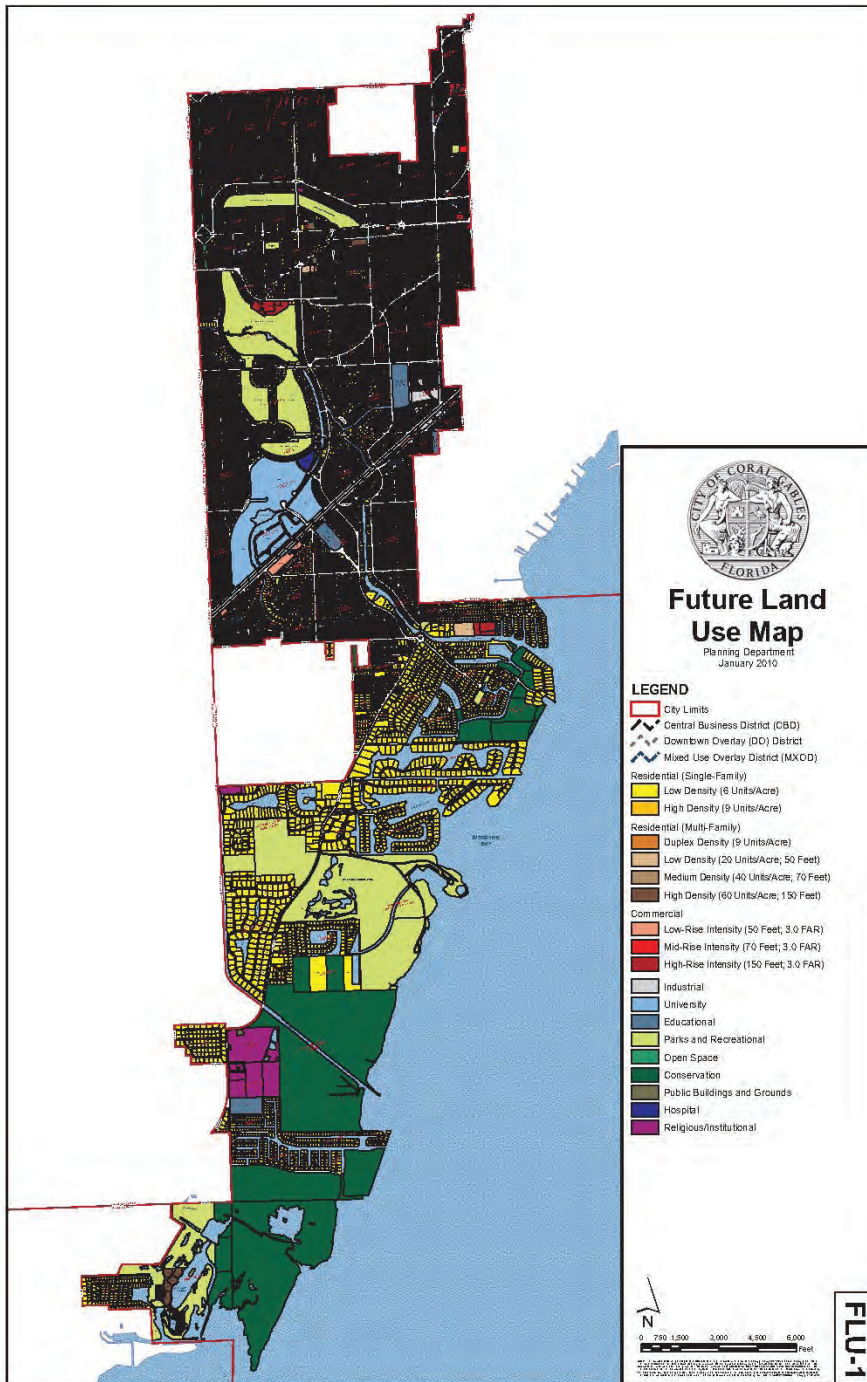
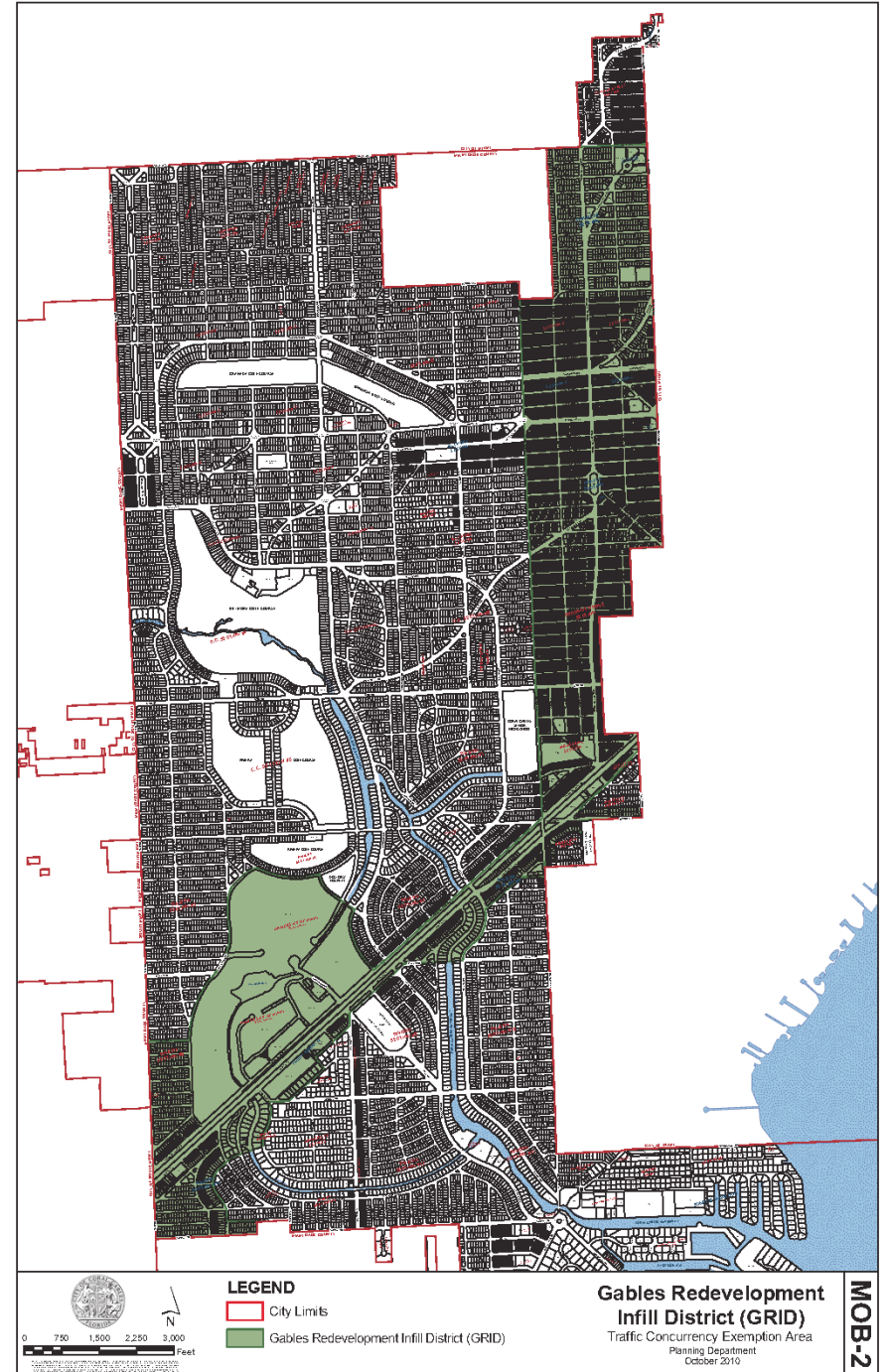


Figure 2.6: GRID Map



Gables Redevelopment Infill District (GRID)

The Gables Redevelopment Infill District (GRID) is identified as a traffic concurrency exemption area by the City of Coral Gables. The map of the GRID is displayed in **Figure 2.6**. The GRID is discussed in more detail in Chapter 9 of the plan.

2.6 Key Transportation Elements

This section provides a high-level overview of the major streets, transit service, and bicycle and pedestrian facilities within the City of Coral Gables.

Major Streets

Major streets in Coral Gables include:

- US 1/South Dixie Hwy.: diagonal east-west route bisecting the city
- SW 40th Street/Bird Rd.: east-west route in the northern half of the city
- SW 57th Ave.: north-south route on the western border of the city
- SW 42nd Ave./Le Jeune Rd.: north-south route
- SW 22nd St./Coral Way: east-west route in the northern half of the city
- Old Cutler Rd.: primarily services the southern half of the city
- Ponce de Leon Blvd./Miracle Mile: north-south route servicing the commercial districts
- US 41/SW 8th St.: east-west route and northern border of the city

Transit Service

Coral Gables is serviced by transit services operated by the Transit Division of the Miami-Dade County Department of Transportation and Public Works (DTPW), including Metrobus, Metrorail, and the special transportation service for the elderly

and handicapped. Metrobus and Metrorail service provides a variety of access options to surrounding Miami-Dade County.

The Coral Gables Trolley is a free service provided by the City. The Trolley program was designed to relieve local traffic congestion, reduce traffic demand, and connect downtown Coral Gables to surrounding areas.

Bicycle and Pedestrian Facilities

The City of Coral Gables has been working to expand its bicycle and pedestrian facilities in recent years. This includes the expansion of sidewalks, bike lanes, and the adoption of a bicycle master plan in 2014. The bicycle master plan proposed 27 miles of new or improved bikeways, sidewalks, and crosswalks.

Local Streets

Local streets in Coral Gables are in a classic grid pattern of rectangularly shaped residential blocks for the most part north of Sunset Drive, with several curvilinear streets tracing through the grid. South of Sunset Drive, the newer part of the City is characterized by a more suburban style of street layout with gated entrances in many instances, and curving streets with cul-de-sacs.

Because arterial streets in central Miami-Dade County are saturated with traffic in peak commuting periods, the City has experienced a growing problem of neighborhood traffic intrusion – rush hour traffic cutting through residential districts often aided by smart phone wayfinding apps. Based on extensive field data, this traffic often exceeds the posted speed, affecting the safety of street conditions on the generally narrow local streets with few sidewalks.

To address these concerns, the City has been actively continuing and advancing its well-established traffic calming program, to manage the speed of traffic in neighborhoods and where possible the volume of traffic as well. This program recently

began implementation of new traffic calming warrants resulting from the City's renegotiation of its traffic calming agreement with the County. The new warrants are better tailored to traffic intrusion conditions in Coral Gables.

To further support speed management in neighborhoods, the City recently studied and won approval from the County a reduction in residential district speed limits from 30 mph to 25 mph, and has posted updated speed limit signing. This reduction will allow police enforcement to issue speeding citations for a lower speed level, thus enhancing safety within the local street environment. Chapter 8 of this plan examines traffic calming efforts in greater detail.

CORAL GABLES[®]

THE CITY BEAUTIFUL



3

CIVIC ENGAGEMENT:
AN INFORMED PLAN

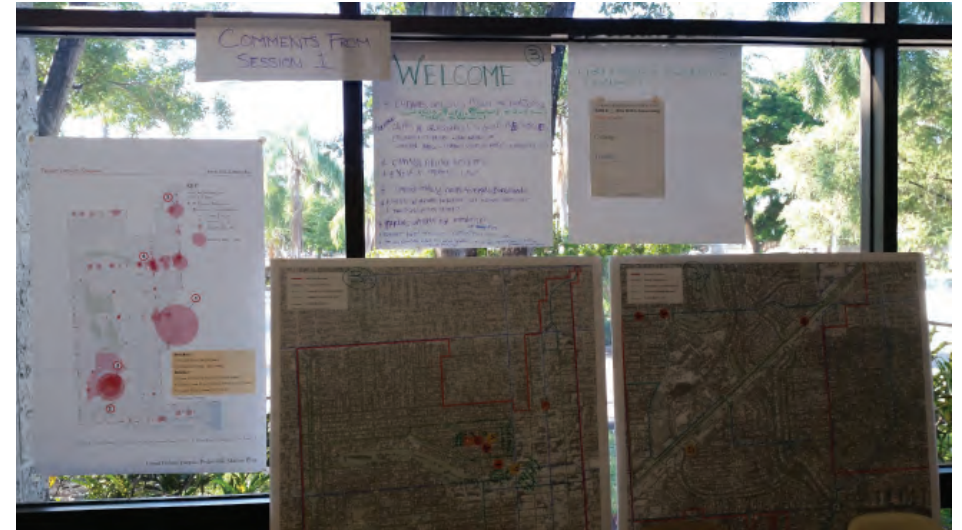


TABLE OF CONTENTS

#	Title	Page
3	Civic Engagement: An Informed Plan	3-1
3.1	Engagement Activities.....	3-1
	First Round of Meetings	3-1
	Second Round of Meetings	3-3
	Third Round of Meetings	3-4
	Other Outreach Efforts	3-5
3.2	What We Heard and Learned.....	3-5
3.3	Summary.....	3-15

Figures

#	Title	Page
3.1	Investment Choice by Mode	3-6
3.2	Speed Limit Reduction.....	3-6
3.3	Visual Preferences - Walking.....	3-7
3.4	Visual Preferences - Biking.....	3-8
3.5	Visual Preferences - Transit.....	3-9
3.6	Visual Preferences - Traffic Calming	3-10
3.7	Visual Preferences - Traffic Flow	3-11
3.8	Synthesis Map - North Downtown.....	3-12
3.9	Synthesis Map - Central	3-12
3.10	Synthesis Map - South.....	3-13
3.11	Transit and Development Priority Areas - North.....	3-14
3.12	Transit and Development Priority Areas - Central.....	3-15



3 CIVIC ENGAGEMENT: AN INFORMED PLAN

The Coral Gables Transportation Plan includes a robust civic engagement component, utilizing several outreach channels to provide a variety of communication opportunities between the City’s citizens and the transportation plan team. This section of the report summarizes the approaches taken to connect with the public and encourage their participation in the planning process.

3.1 Engagement Activities

The multimodal transportation plan was created through an extensive civic engagement process. This effort served as the principal channel for community dialogue, complemented by a variety of other communication channels to share information and ideas.

First Round of Meetings

A pair of kick-off meetings was held on Wednesday, June 22, 2016, from 3:30 pm to 7:30 pm at the Coral Gables Library. The meeting was structured in an open house format so that visitors could come any time during the meeting hours and stay as long as they wished. The intent of the meeting exercises was to provide a “mini-charrette” experience in which the attendees could not only learn the basics about the transportation plan, but could also speak their minds on perceived problems and needs, and interact with the study team. The purposes of the open house were to:

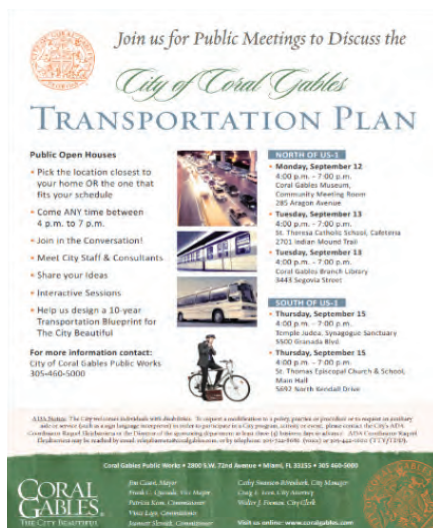
- Publicly launch the Transportation Plan
- Present its approach and components
- Publicize opportunities for public information and comment
- Describe the plan theme: Rebalancing the Transportation Mix
- Obtain initial public input via hands-on activities and comment forms



The open house had an afternoon session from 3:30 to 5:30 pm and a second evening session from 5:30 to 7:30 pm. During each session, there was a presentation about the purpose and process of the transportation plan and several exercises relating to the plan for the visitors. These exercises included:

- Several exhibit boards depicting elements of the City transportation system.
- A comment form on which attendees could provide questions or comments about transportation in Coral Gables.
- During the presentation, attendees used electronic polling devices to respond anonymously to choices posed on the presentation screen, with an instantaneous tabulation of their collective preferences.
- On maps of the City, attendees were able to mark locations with problems and use sticky notes to clarify or offer possible improvements. Some participants worked interactively in small table groups to identify issues and needs.
- On posters with a listing of transportation improvement strategies cutting across all the modes, attendees used color dots to express preferences.

In addition, members of the study team had conversations with the attendees, assisting in exercises and discussing topics of interest.



Second Round of Public Meetings

The second round of public meetings occurred at five locations across the City to provide convenience for attendees to participate on a date and at a location that best suited their schedules. These meetings were also in an open house format wherein the public could visit anytime between 4 pm and 7 pm and stay as long as they wished. The locations and dates of these meetings were:

- Monday, September 12, 2016 - Coral Gables Library
- Tuesday, September 13, 2016 - St. Teresa Catholic School
- Tuesday, September 13, 2016 - Coral Gables Library
- Thursday, September 15, 2016 - Temple Judea
- Thursday, September 15, 2016 - St. Thomas Episcopal Church & School

In addition, meeting information was available Friday of that same week at two PARK(ing) Day sites in Coral Gables:

- Friday, September 16, 2016 - Sunset Drive PARK(ing) Day
- Friday, September 16, 2016 - Miracle Mile PARK(ing) Day

PARK(ing) Day is an annual event that converts on-street parking spaces to parklets which include outdoor seating areas, community activities, educational kiosks and other pedestrian oriented uses.

As was done for the plan kick-off meeting, a variety of exercises and outreach were utilized to encourage input and discussion. These were:

- **Transportation Enhancement Visual Preference Exercise:**
Attendees used dots to express their preferences. Investment categories were: Pedestrian, Bicycle, Transit, Traffic Calming, and Major Streets.
- **Transportation Investment Exercise:**
Attendees were given \$100 in play money to distribute into five boxes labeled with the above investment categories.
- **Transit Priority Area Exercise:**
This exercise comprised a handout describing the exercise, which is to identify on the included maps those areas of the City they see as having potential as walkable development zones with convenient access to mixed use community resources.
- **Transportation Needs and Solutions Exercise:**
On a map of the City, attendees used sticky notes and markers to identify where they see transportation problems or needs as well as possible improvements.
- **Comment form:**
An open-ended comment form was available for attendees to express more specific concerns or ideas for the City's transportation network.

Third Round of Public Meetings

A third round of workshops was held in late summer of 2018 with the specific focus to present and discuss traffic calming recommendations with the interested public. Five meetings were held at locations across the City in an open house format as before, so that the public could attend at any time during the open house and stay as long as they chose. The meeting locations and times were:

- Monday, Sept. 17, 6 - 8 pm: Coral Gables Museum -- 285 Aragon Avenue
- Thursday, Sept. 20, 6 - 8 pm: St. Thomas Episcopal Church -- 5690 N. Kendall Dr.
- Wednesday, Oct. 3, 6:30-8:30 pm: Youth Center -- 405 University Dr.
- Thursday, Oct. 4, 6 - 8 pm: UM Catholic Student Center -- 1400 Miller Rd.
- Saturday, Oct. 6, 10 am – 12 Noon: Coral Gables Library -- 3443 Segovia St.

The open houses provided these resources for members of the public who attended:

- A five-minute narrated video presentation which described the basis for the City traffic calming program, the new warrants for testing traffic calming sites, the supporting traffic engineering analyses, and various types of traffic calming devices.
- Exhibits depicting background information about traffic calming, images of traffic calming devices, a chart showing the relation between pedestrian safety and vehicle speeds, a graph explaining the concept of the 85th-percentile speed, and other transportation-related information.
- Large-size maps placed on tables showing the four different traffic calming analysis areas in the City and proposed traffic calming devices based on the analyses that had been performed.

- Comment forms, pens and markers, and sticky-notes for the public to use for making comments and observations about traffic calming issues and solutions.



City transportation and consultant team staff were available to discuss all aspects of the traffic calming program with the public. Attendance at the five workshops numbered over 90 persons. Over 30 comments forms, most with multiple comments, were received, and over 100 comments were made directly on the table maps. All comments were captured in a traffic calming tracking table that logged public comments made about traffic calming issues over the last 3-4 years as well as the additional comments logged at these workshops.

The information received was used to check proposed traffic calming recommendations, and to identify additional needs in neighborhoods around the City.

Other Outreach Efforts

Several other outreach channels were utilized during the course of the plan development, including the following:

- **Stakeholder interviews**

After the plan initiation, interviews were held with several persons whose positions made them knowledgeable about traffic and transportation issues, needs, and potential solutions. Interviewees included several City department heads (Parking, Planning and Zoning, Public Works, Public Safety, Economic Development), the Chamber of Commerce executive director, the Miracle Mile Business Improvement District director, and others. Their insights were considered as input to the transportation plan.

- **Mayor and City Commissioner briefings**

Near the beginning of the transportation plan work, and again in November 2017, briefings were convened with the Mayor and City Commissioners to discuss the direction of the transportation plan, and to learn about their perceptions as to key transportation issues and opportunities.

- **traffic@coralgables.com email link**

This email link was established early in the process to afford the public an opportunity to directly comment on their views and observations regarding transportation topics of importance to them.

- **Transportation Advisory Board**

The study team attended many evening meetings with this City advisory board, providing status updates and from time to time, presenting various analyses and data being generated by the planning process.

- **Transportation Email Newsletter**

This email newsletter is issued regularly by the Assistant Director of the Public Works Department and contains a variety of news of interest to the

public and transportation stakeholders, including reports on the status of the transportation plan.

- **Citizen input to the Public Works Department**

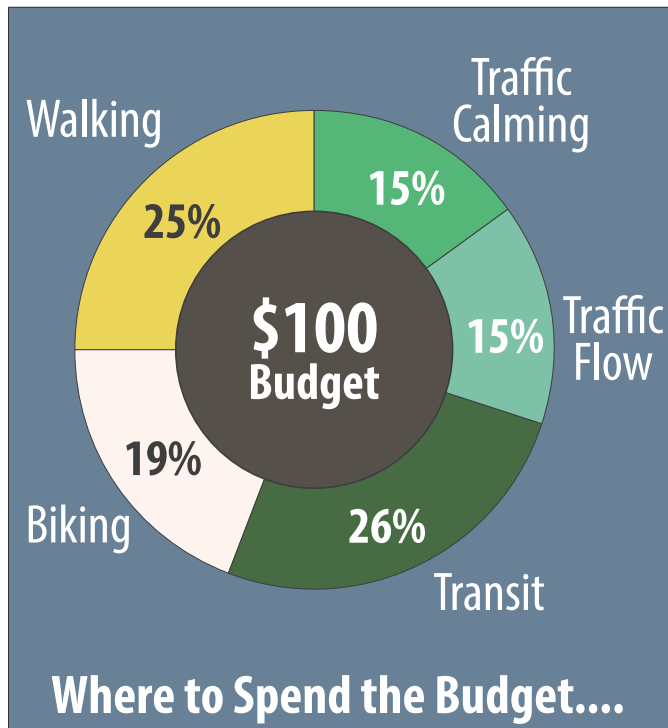
The Public Works Department routinely fields comments, questions, and reports from the general citizenry. Many of these are focused on neighborhood-level traffic issues. Over 150 such emails were compiled into a database and associated mapping to provide insight as to specific concentrations of neighborhood traffic issues, and for use in the development of neighborhood livability recommendations as part of the transportation plan.

3.2 What We Heard and Learned

The public contributed a wealth of insights on a variety of planning aspects, and thoughtful suggestions on changes and improvements. This section of the report provides a mostly graphic summary of the feedback that the study team received from the extensive interaction with interested citizens who participated in the outreach opportunities.

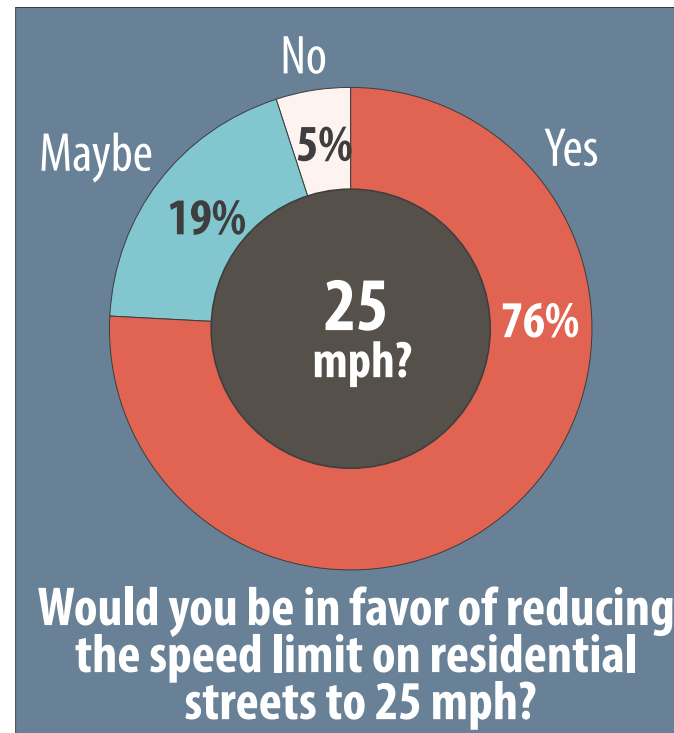
In the transportation investment exercise, attendees were asked to deposit \$100 in play money into one of five boxes to express their priorities on where they thought transportation investments were needed. The result of this exercise is shown in **Figure 3.1**. Transit, walking, and biking investments accounted for 70% of the investment preference, while traffic flow and traffic calming, both at 15%, made up the balance. There was a clear expression of investment in non-auto modes of travel.

Figure 3.1: Investment Choice by Mode



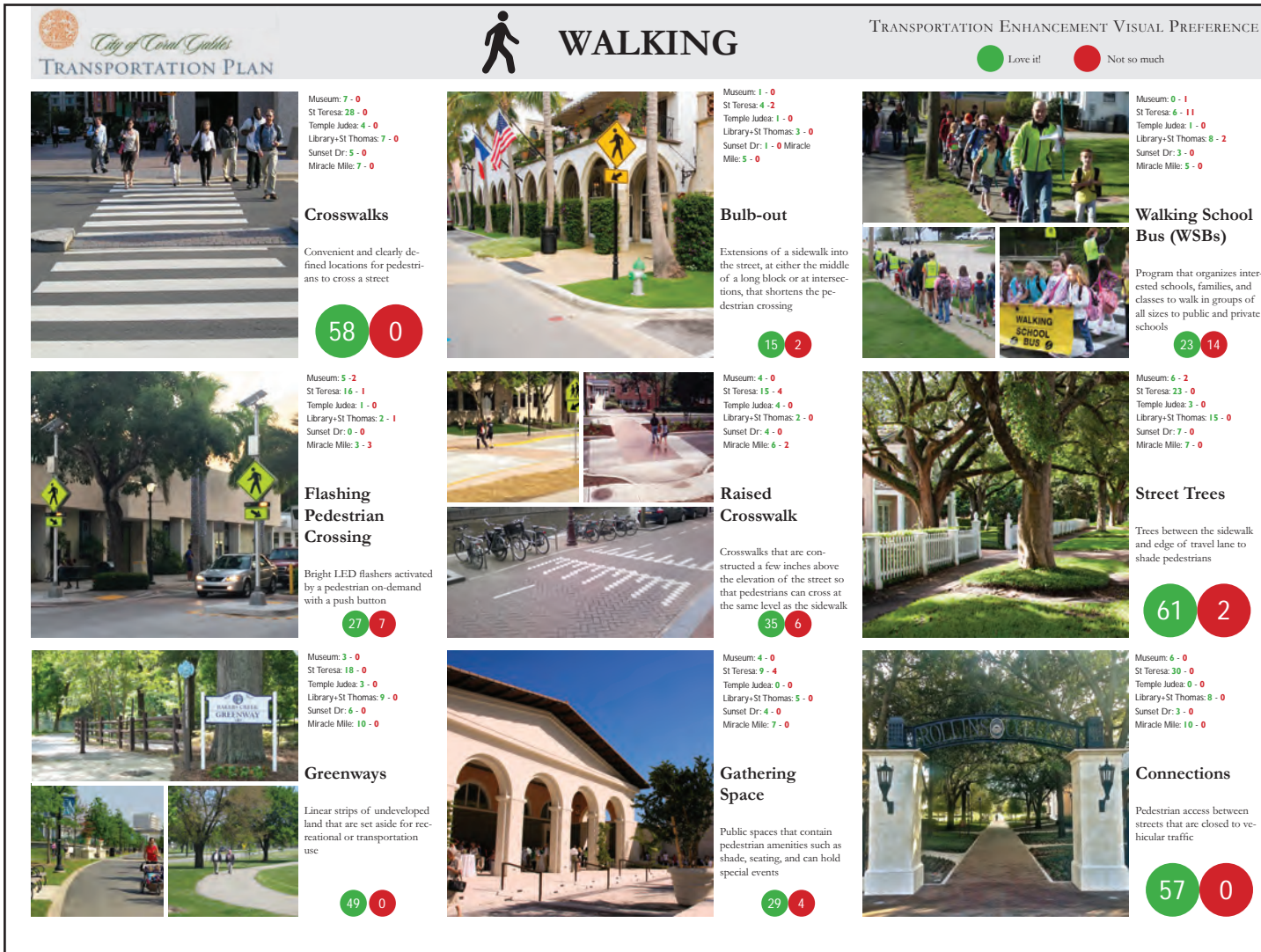
A question posed to attendees at the second round of meetings was the extent of support to reduce the speed limit on residential streets from 30 mph to 25 mph. While not a scientific poll, 76% of the respondents supported the reduced speed limit, 19% were in the “maybe” category, and 5% did not support the speed limit change. (refer to **Figure 3.2**) The City Commission subsequently considered and approved an ordinance lowering the residential speed limit to 25 mph in early 2018.

Figure 3.2: Speed Limit Reduction



Another informative exercise conducted during the first and second round of meetings was a visual preference of likes and dislikes for nine different transportation enhancements to each of five “modal” categories (walking, biking, transit, traffic calming, and traffic flow). This was done by placing green dots (like) and red dots (dislike) on the various enhancements. The results, as depicted in **Figures 3.3 to 3.7**, show the relative degree of likes and dislikes for each of the modes and enhancements

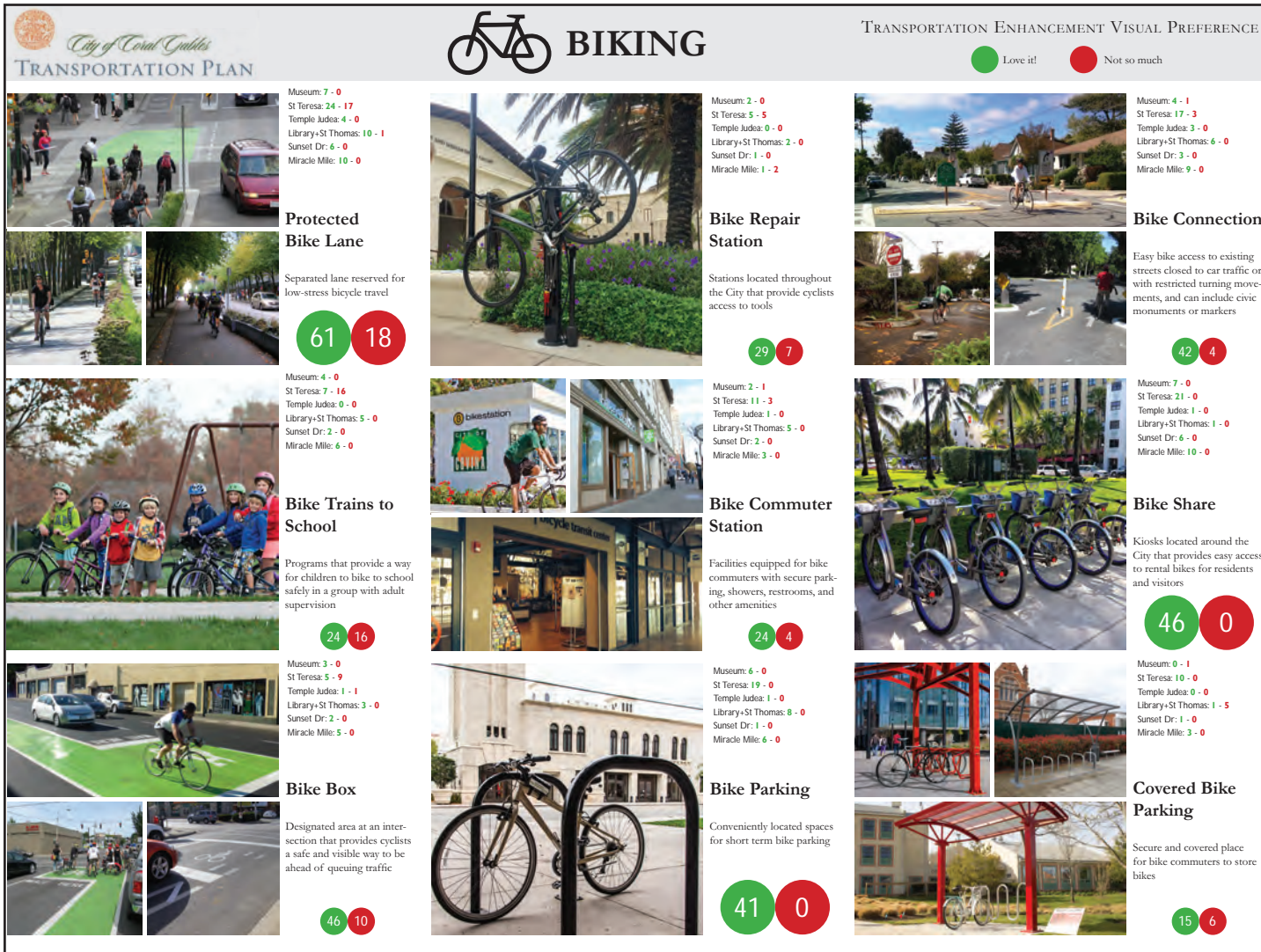
Figure 3.3: Visual Preferences – Walking



From this figure, these observations can be drawn:

- The more popular enhancements for walking were crosswalks, street trees, and connections.
- Lesser support was spread across other options.
- There was relatively little “dislike” of any of the options

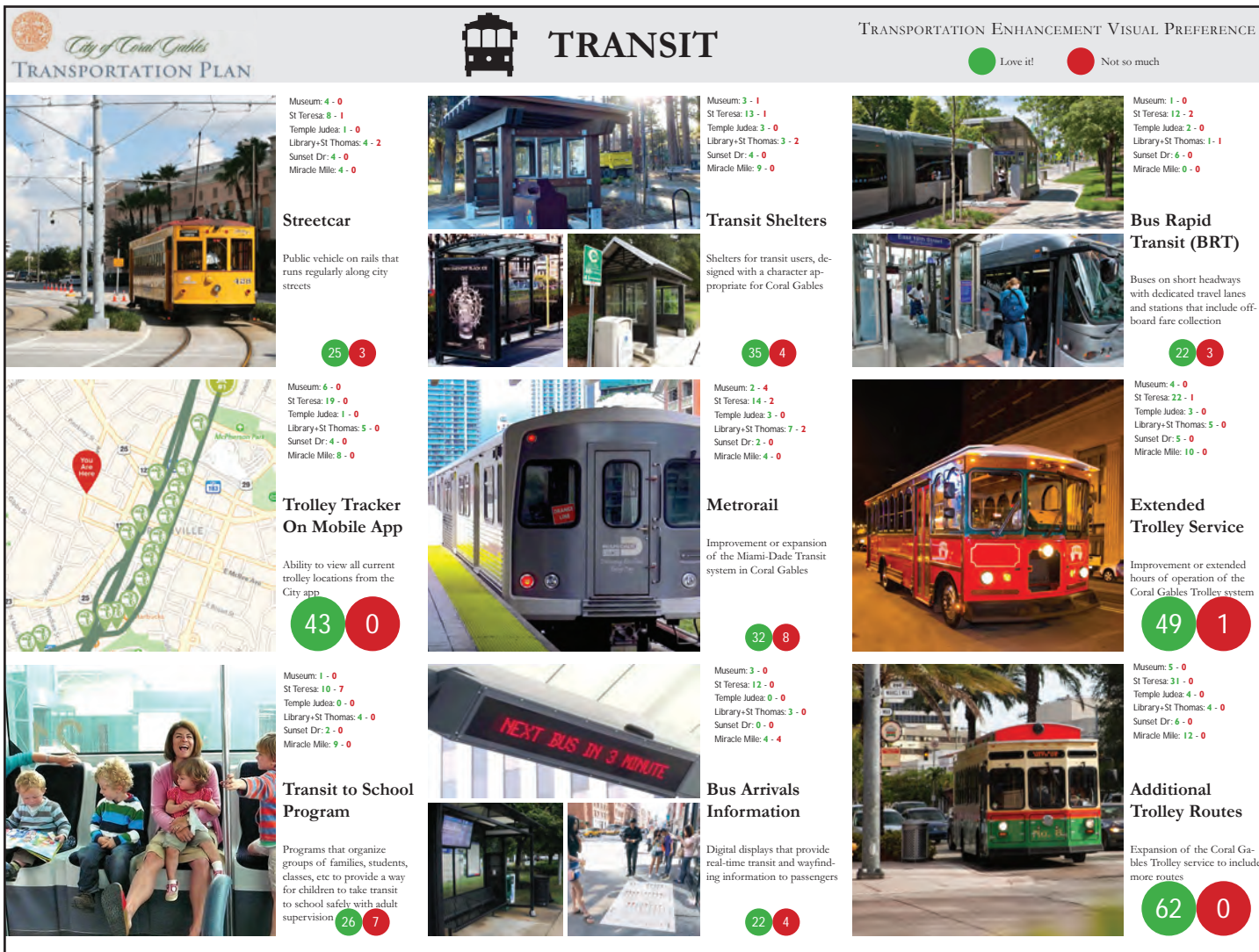
Figure 3.4: Visual Preferences - Biking



From this figure, these observations can be drawn:

- Protected bike lanes and bike share were the most popular options,
- Bike parking and bicycle connections were also very popular with residents.

Figure 3.5: Visual Preferences - Transit



From this figure, these observations can be drawn:

- The more popular enhancements for transit were the trolley tracker, extended trolley service, and additional trolley routes.
- Overall, trolley service is very popular.
- There was relatively little “dislike” of any of the options.

Figure 3.6: Visual Preferences - Traffic Calming



From this figure, these observations can be drawn:

- The more popular traffic calming options were the mini roundabout, tree-lined streets, and reduced speed limit.
- Shared spaces, medians, and traffic diverters were also well-supported.

Figure 3.7: Visual Preferences - Traffic Flow



From this figure, these observations can be drawn:

- Traffic signal optimization was by far the most popular choice.
- Other popular enhancements for traffic flow were roundabouts, and electric car charging stations.
- There was relatively little “dislike” of any of the options, except for high occupancy vehicle lanes.

Another informative exercise was the open-ended identification of transportation issues and needs on large-scale maps using dots coded by mode and topic, sticky notes, and markers. After the meeting, the study team prepared a series of three “synthesis maps” which neatly summarized the range of comments and ideas that were voiced by the meeting attendees. Those maps are presented in **Figures 3.8 to 3.10**.

Figure 3.8: Synthesis Map - North Downtown

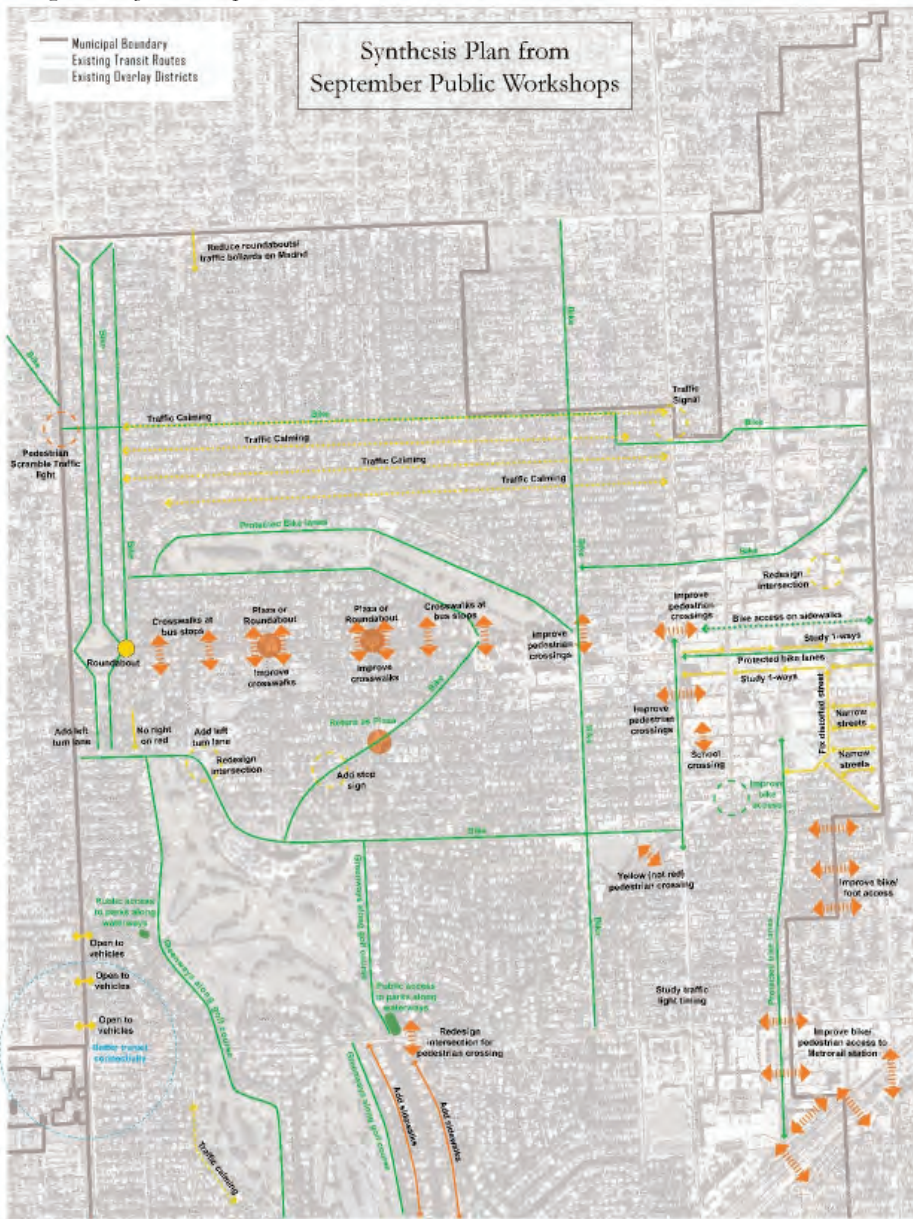
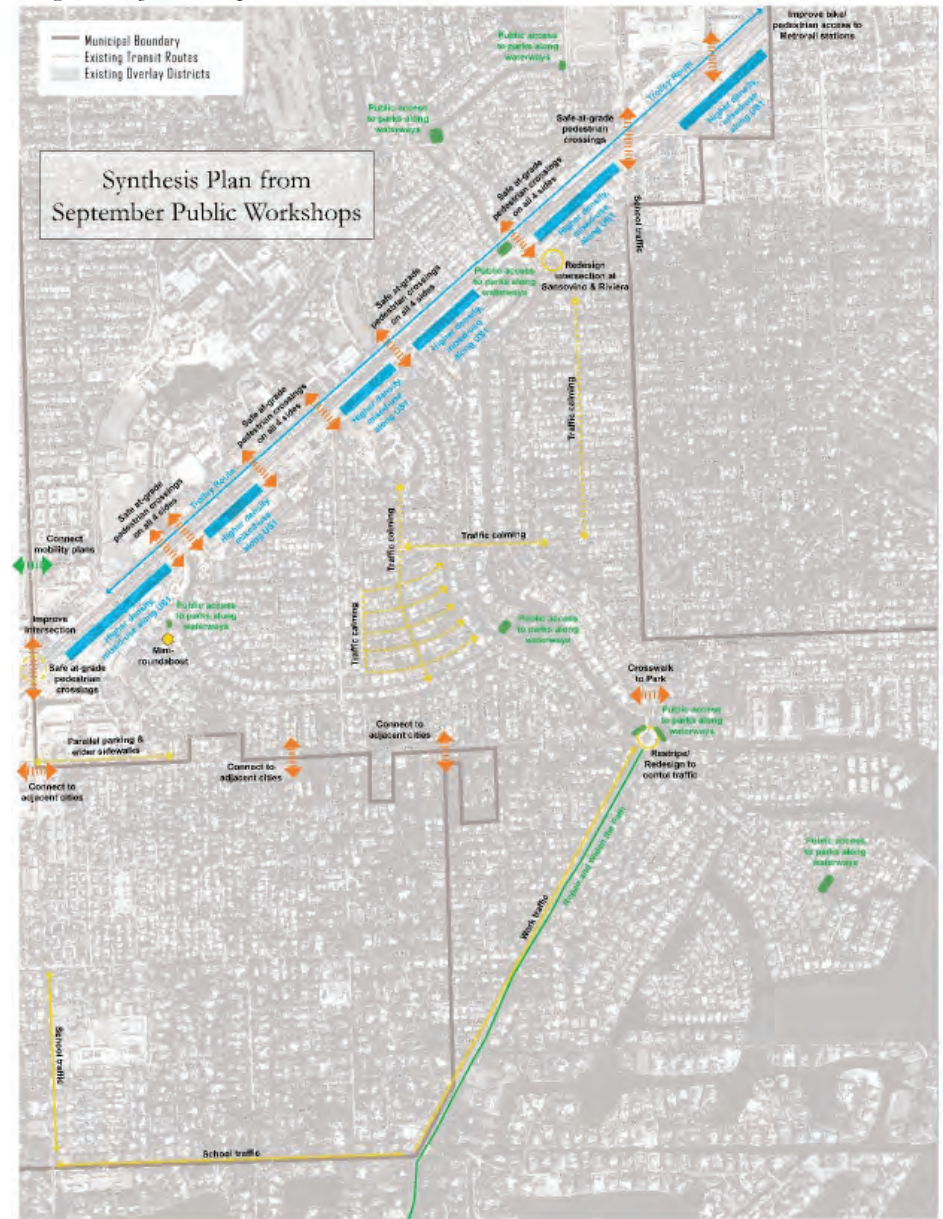


Figure 3.9: Synthesis Map - Central



The synthesis maps capture a broad range of issues and ideas proposed by the public during the table top exercises. The public input is summarized as follows:

Figure 3.10: Synthesis Map - South



North section of the City:

- Traffic calming needs in certain areas
- Crosswalks and roundabouts along Coral Way
- Intersection improvements at select locations
- Bicycle routes in identified corridors and in downtown
- Sidewalks requested on two corridors
- Reverting the downtown one-way pair on Andalusia and Valencia Avenues to two-way streets

Central section of the City:

- Safe pedestrian crossings along and across US 1
- Higher density development is suited for US 1
- Public access to parks on waterways
- Traffic calming needs in certain areas
- Connections to adjacent cities
- Bicycle access to Metrorail
- Intersection improvements at select locations

South section of the City:

- Crosswalk improvements at a number of locations
- Repairs to the bicycle path along Old Cutler Road
- School traffic concerns on SW 88th Street

The maps will provide a useful directory of citizen input as potential plan improvements are screened and incorporated into the final plan findings.

Figures 3.11 and 3.12 provide a graphic recap of an exercise to identify those areas which were best suited for development of additional transit services. The

most often identified areas are shown in darker yellow, while those areas less often referenced are in light yellow. From the figures, these observations can be made:

The most identified areas were:

- The north-south corridor along Ponce de Leon Boulevard west to LeJeune Road and east to SE 37th Avenue/Douglas Road.
- The US 1 corridor across the City.
- The University of Miami Campus
- The above areas are part of the City’s “Gables Redevelopment Infill District” (GRID) in which development is exempt from traffic concurrency,

The east-west corridor lying on either side of Coral Way was identified by a few participants as a suitable area, though this swath is entirely residential in nature with a few parks, schools, and other such features.

With the exception of the Coral Way corridor, the other frequently identified areas have the most transit service and development activity currently.

The third round of public meetings focused on the traffic calming element. Over 100 comments were received, many with multiple remarks. This feedback was tabulated and reviewed as part of the traffic calming analysis process. Chapter 8 of the plan examines traffic calming information in greater detail.



Figure 3.11: Transit and Development Priority Areas - North

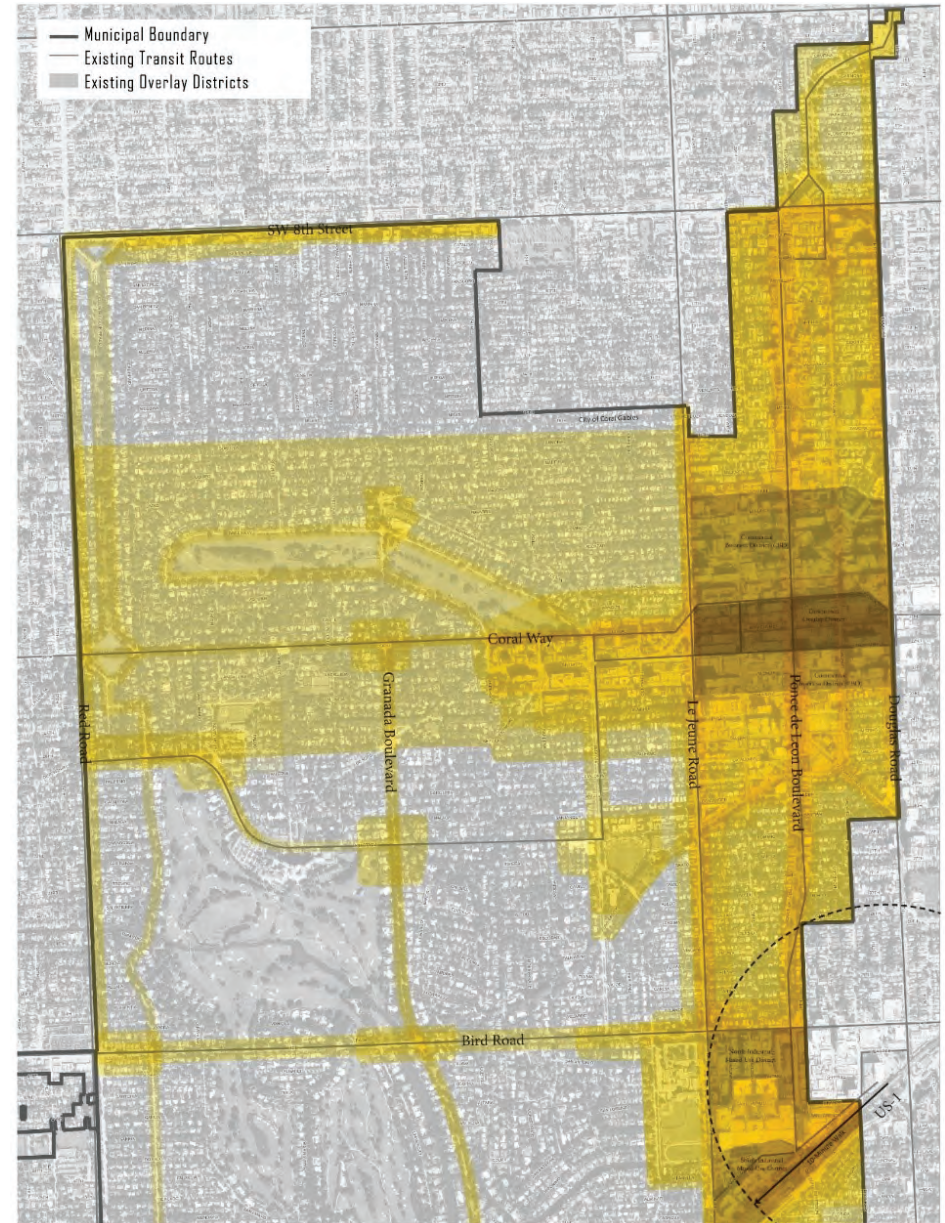
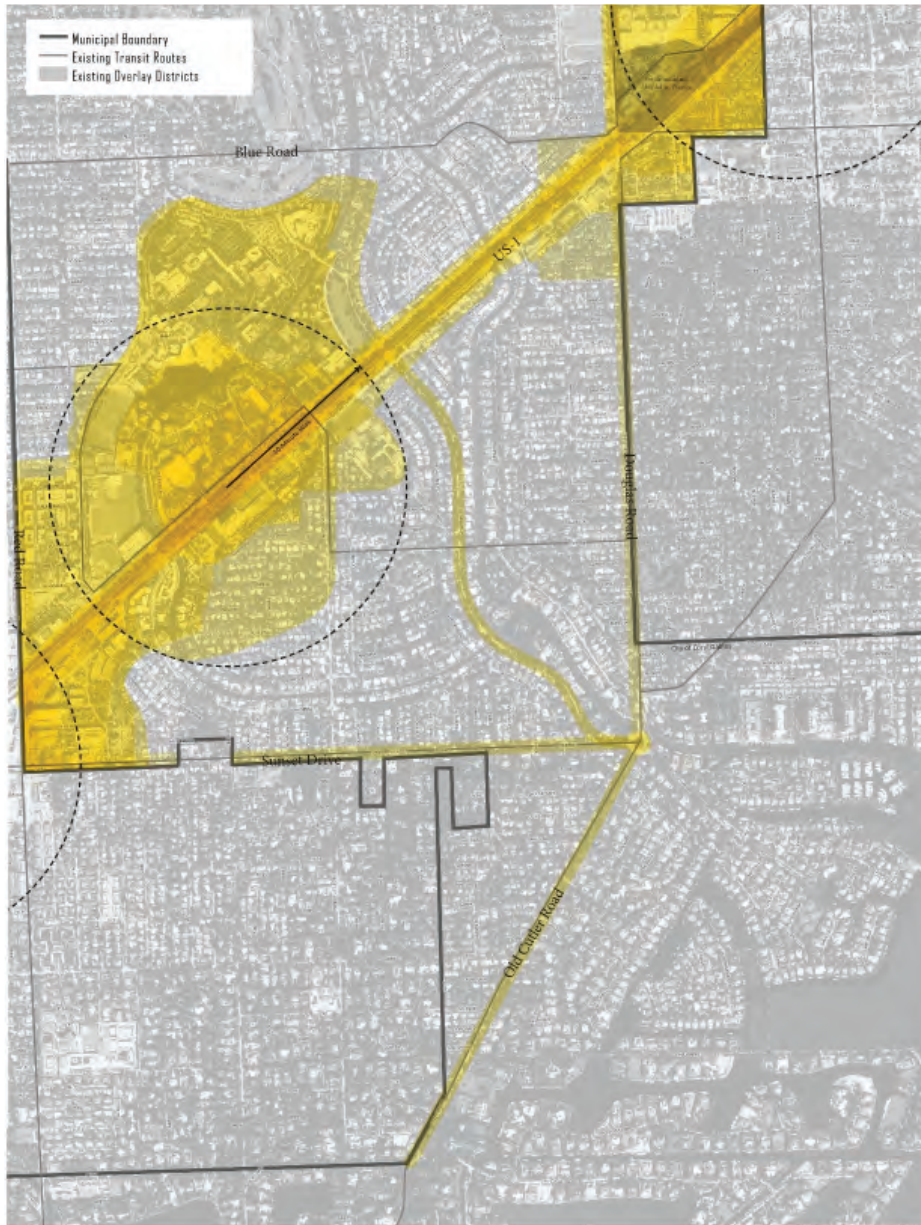


Figure 3.12: Transit and Development Priority Areas - Central



3.3 SUMMARY

The civic engagement process collected valuable feedback from Coral Gables communities that will influence future transportation policy and capital infrastructure projects. Overall, there is strong support for active mobility infrastructure, traffic calming, and improved transit service, indicating a need to balance Coral Gables’ transportation network to accommodate all modes of travel. Communities also noted the need for improved traffic signal timing and better pedestrian connections across arterial roadways.

The community comments also reflect the priorities of the Coral Gables Bicycle/ Pedestrian Plan, which calls for a full network of bike lanes and pedestrian safety improvements throughout the city, as well as the Coral Gables Comprehensive Plan, which states:

- **Policy MOB-2.3.4.** The City shall require private and public development projects to adhere to the City’s Citywide Bicycle Lane Master Plan, 2004 and possible expansion of bicycle and pedestrian ways throughout the City (see MOB-1: Bicycle Facilities Map).
- **Policy MOB-2.3.5.** As a part of development review, the City shall promote the safe movement of bicycle and pedestrian traffic.

Additional analysis will be described in later chapters, but the community comments which came out of the public input process are a critical piece of the final policy and design recommendations of the transportation plan.

CORAL GABLES®

THE CITY BEAUTIFUL



4

WALKING



TABLE OF CONTENTS

#	Title	Page
4	Walking.....	4-1
4-1	Context	4-1
	The City Strategic Plan and Walking.....	4-1
	Performance Indicator Metrics	4-2
	Walk Score	4-2
	Benefits of Sidewalks.....	4-7
	Pedestrian Crash History	4-7
4-2	Analysis	4-11
	What We Heard.....	4-11
	Federal Highway Administration (FHWA) Guidance on Sidewalks	4-14
	National Association of City Transportation Officials (NACTO) Guidance on Sidewalks	4-15
	Dangerous by Design	4-16
	Walk Friendly Communities Program	4-17
	National Community and Transportation Preference Survey.....	4-18
	Potential Improvements.....	4-18
4-3	Recommendations	4-29

Figures

4.1	Walk Score Map	4-3
4.2	Existing Sidewalks.....	4-4
4.3	Left Sidewalk, Assessment.....	4-5
4.4	Right Sidewalk, Assessment	4-5
4.5	Intersection Sidewalk Conditions.....	4-6
4.6	Coral Gables Pedestrian Crashes (2013-2017)	4-8
4.7	Bicycle Crashes 2013-2017	4-8
4.8	Pedestrian Crashes 2013-2017	4-9
4.9	Crash Conditions.....	4-10

#	Title	Page
4.10	Bicycle/Pedestrian Crash Lighting and Crash Severity.....	4-10
4.11	Pedestrian Comment Synopsis	4-11
4.12	Pedestrian Comment Synopsis Map	4-12
4.13	Guideposts for Improved Walkability	4-14
4.14	Most Dangerous Urban Areas for Pedestrians.....	4-17
4.15	Pedestrian Survivability as a Function of Vehicle Speed	4-17
4.16	WALK SMART to School Route Planner.....	4-21
4.17	Location of Vision Zero Cities	4-22
4.18	Leading Pedestrian Interval Phasing.....	4-23
4.19	Pedestrian Refuge Islands Treatments.....	4-24
4.20	Examples of Pedestrian Refuge Islands	4-24
4.21	Angled and Zigzag Median Treatments	4-24
4.22	Existing Pedestrian Refuges in Coral Gables	4-25
4.23	Proposed Shared Use Paths.....	4-27
4.24	Sidewalk and Crosswalk Improvements.....	4-29

Tables

4.1	City Pedestrian Indicator Metrics	4-2
4.2	Bicycle/Pedestrian Fatality Locations.....	4-8
4.3	Citizen Input on the Pedestrian Mode	4-13
4.4	Walking Element Actions	4-30

WALKING

43%

FEWER SICK DAYS

for those walking 100 minutes weekly

www.health.harvard.edu/statinghealthy

30%

REDUCTION in

cardiovascular ailments when walking 20 minutes a day

www.dailyhealthlifestyle.com

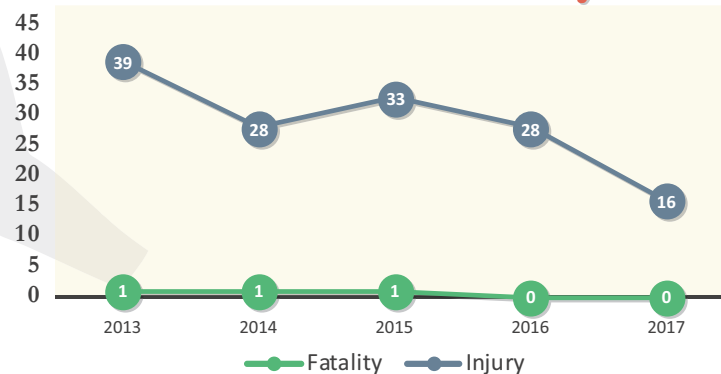
1/3

FEWER DEATHS

from heart disease and Stroke when walking 30 minutes a day

www.sharecare.com/health/benefits-of-walking

Pedestrian Crashes by Year and Severity



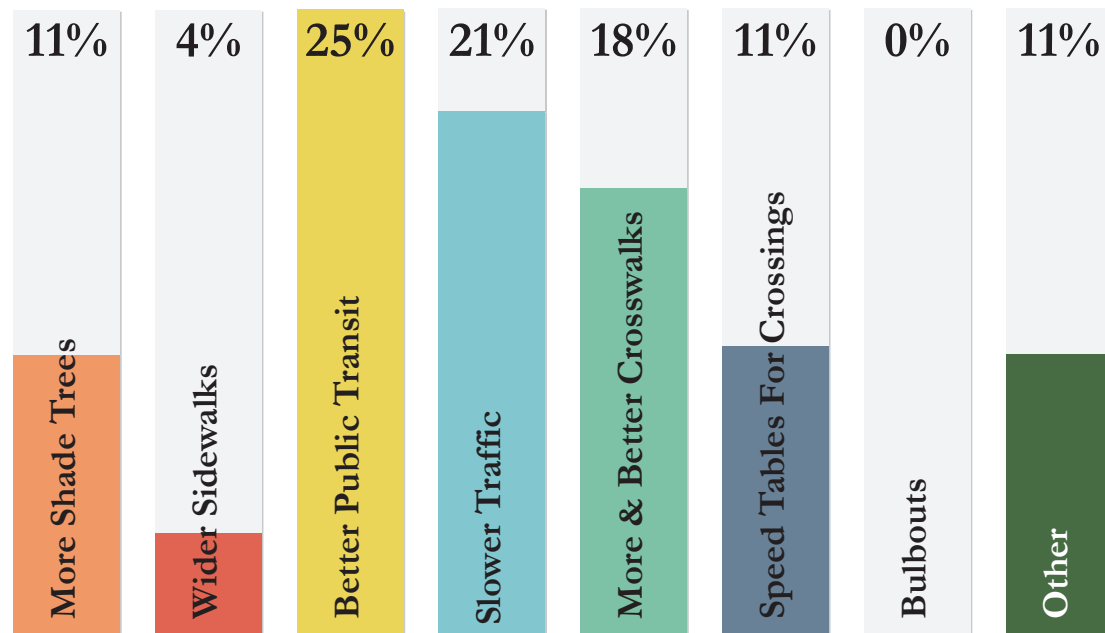
2 Miles

of pedestrian facilities are built by the City annually

1,400

linear feet of new curb ramps installed every year by the City

What would make Coral Gables more Walkable?



Select keytab polling results from Session 1, June 22, 2016

4 WALKING

Walking is a part of every trip. Cyclists, drivers and transit riders begin and end every journey on foot. Neighborhoods which facilitate pedestrian safety and comfort can help support physical activity, human-scaled urban design as well as sustainability goals. Pedestrian-oriented places help create equitable environments that accommodate all ages and abilities.

Pedestrian elements include:

- Sidewalks
- Ramps connecting sidewalks to street level
- Crosswalks at streets
- Shared use paths serving both walkers and runners as well as bicyclists
- Off-street trails and pathways
- Walking access to and within public and private facilities

Pedestrian safety involves quality facility design, enforcement and education. These three components should work together in creating an environment that encourages people to walk more.

Pedestrians – those traveling by foot, wheelchair, walker, stroller or other means – are the most vulnerable users of the streets. Children are at the greatest risk of injury or death from traffic crashes due to their small size, inability to judge distances and speeds, and lack of experience with traffic rules and conditions.

According to the National Center for Health Statistics (NCHS) 2016, motor vehicle traffic crashes rank either first or second among all age groups of the 10 leading causes of unintentional injury deaths by age group.

4-1 CONTEXT

This section provides a summary of the public facilities available to walkers in Coral Gables. This background will provide a description of the next steps in enhancing the role of walking as a compliment to other modes of travel.

The City Strategic Plan and Walking

The 2017-2019 Strategic Plan for Coral Gables sets out six goal areas for City government: Customer-focused Excellence, Workforce-focused Excellence, Financial Excellence, Process Excellence, Community-focused Excellence, and Sustainability-focused Excellence. For each of these, there are a set of specified objectives; those which relate to the pedestrian experience across the City are listed below:

- Attain world-class performance levels in public safety by 2019.
- Improve mobility throughout the City.
- Enhance the pedestrian experience, safety, and connectivity in the City through improved lighting, crosswalks, sidewalks, and wayfinding.
- Increase alternative mobility options to the community by 2019.



These objectives call for a sustained and robust effort by the City to invest in policies, programs, and projects which enhance the walking mode of travel. To this end, the City has adopted a Sustainable Complete Streets Policy which encourages the accommodation of all modes of travel for users of all ages as guided by the function and use of streets. In addition, the City is reviewing its approach to sidewalk network expansion. Further enhancement of the pedestrian environment can be achieved through a variety of further actions, which may include but are not limited to:

- Filling in sidewalk gaps on arterial and collector streets
- Completing sidewalk connectivity at residential intersections where sidewalks are present at intersection edges but do not interconnect across the intersection approaches.
- Include missing sidewalk and crosswalk elements at signalized intersection and roundabout improvements.
- Add crosswalks where missing at signalized intersections.
- Installation of midblock crosswalk installations. On wide streets with 4 or more lanes, these should include rapid rectangular flashing beacons, HAWK signals and pedestrian refuge islands if street width allows.
- Provide pedestrian crossing refuges in street medians where practical.
- Review accommodations for pedestrians at signalized intersections, including pedestrian crosswalk signals and signal timing improvements which protect pedestrians.

Performance Indicator Metrics

For its Public Works Department functions, the City has adopted a set of performance metrics to assess the effectiveness of its collective operational and capital improvements initiatives.

Table 4.1 summarizes pertinent Public Works Department metrics relating to the pedestrian mode. The City has made good progress on infrastructure investments, but the number of crashes has trended above target, though fatalities are still at target.

Table 4.1: City Pedestrian Performance Indicator Metrics

Performance Indicator	FY 17	FY 17	FY 18
	Target	Year-to-date	Target
Total miles of pedestrian facilities provided	2	2.59	2
Total miles of crosswalk and intersection improvements	6	7.52	7
Linear feet of new curb ramps installed along City streets	1,300	1,457	1,400
Number of pedestrian-vehicle and bicycle-vehicle crashes	53	56	47
Number of pedestrian-vehicle and bicycle fatality crashes	0	0	0

These metrics highlight both the installation of pedestrian- infrastructure and the tracking of crash frequencies. While these are high level metrics, there is some linkage between added infrastructure and crash history, though there are other supportive measures such as, enforcement, and education which are not tracked by these metrics. Clearly the City is proceeding to install much-needed pedestrian infrastructure on a continuing basis.

Walk Score

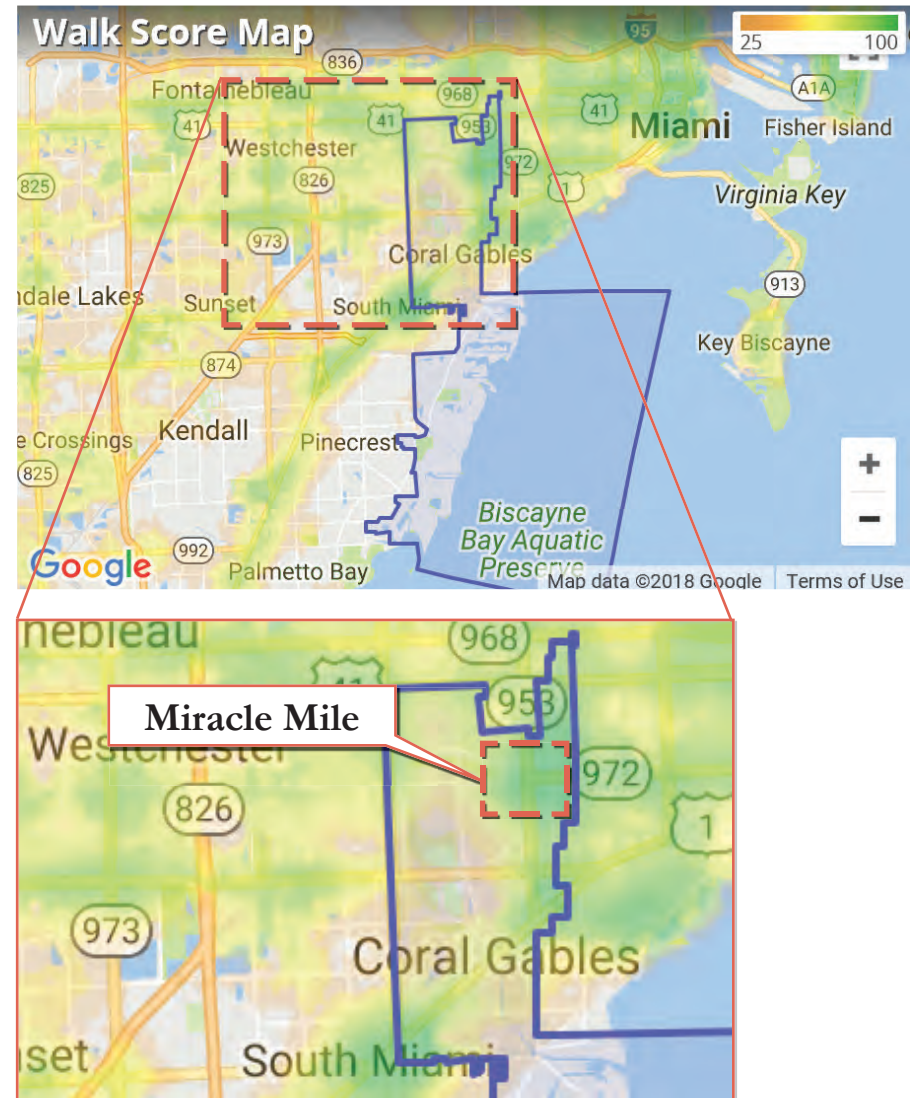
Walk Score (www.walkscore.com) is a web based tool that measures the walkability of any address on a scale of zero (highly car-dependent) to 100 (no car required). The score measures patterns of residences in proximity to shops, jobs, dining, and government resources.

Figure 4.1 presents the Walk Score graphic for Coral Gables city-wide and for the denser northern area as well. From this graphic it is seen that the most walkable areas are the downtown area with its mix of jobs, dining, culture, shops, and other

destinations, intermixed with newer residential developments and surrounded by traditional residential neighborhoods close enough to be walkable. The area of Coral Gables proximate to the University of Miami and South Miami also shows higher walkability. The central and west residential neighborhoods and the southern sector of the City are less walkable by the Walk Score metric since those areas are homogeneous residential areas with few non-residential destinations valued by the metric.

Based on the latest data estimate (2012-2016 5-year average) from the American Community Survey, the commute to work trips pedestrian mode share in the City of Coral Gables is 4.7%. and Miami-Dade County is 2.2%.

Figure 4.1: Walk Score Map

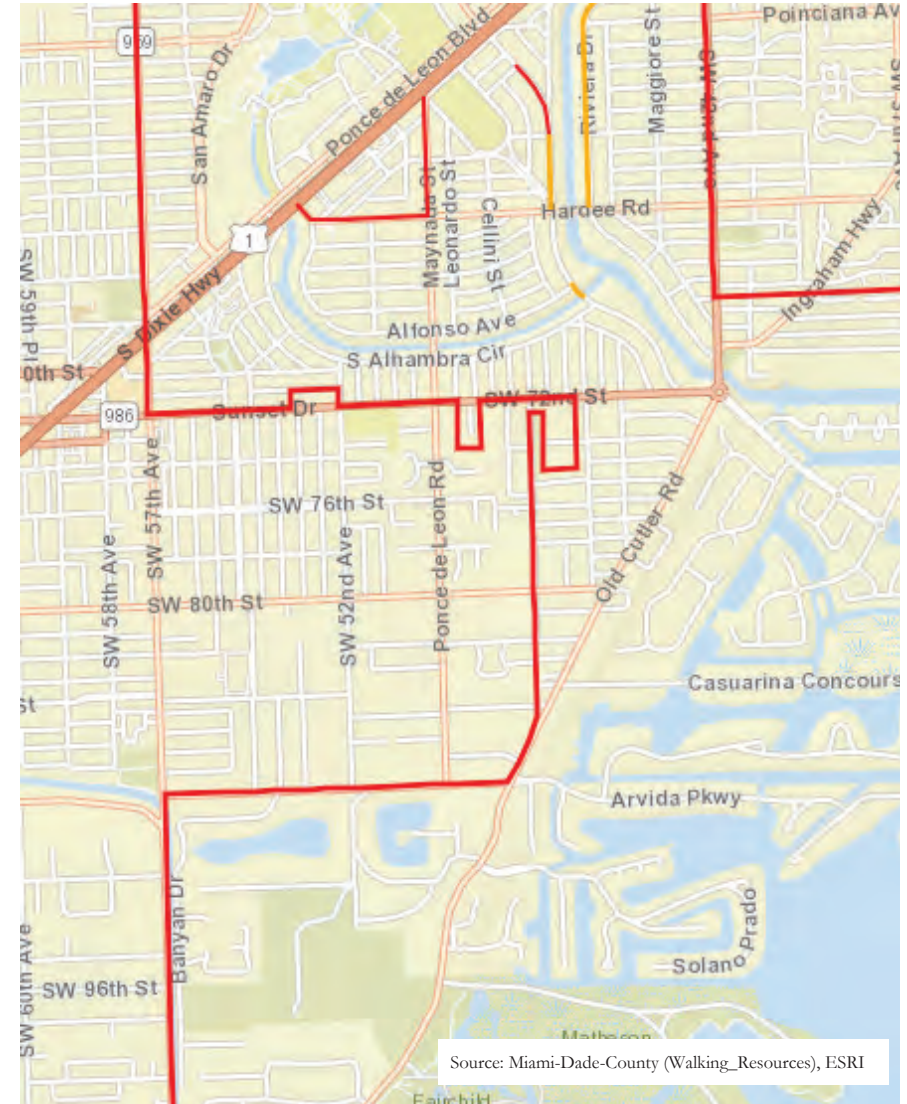


Existing Sidewalks

The existing sidewalk network on major roads in Coral Gables is shown in **Figures 4.2, 4.3, and 4.4**. These figures were developed by community members in 2017, so additional sidewalks completed since then may not be shown. While the City does not have a comprehensive sidewalk inventory database, sidewalks are

present along all roadways under FDOT control, and along some County-maintained roadways. The sidewalk network is essentially complete in the City's downtown core and fringe areas as well as along the US 1 commercial corridor through the City.

Figure 4.2: Existing Sidewalks



Source: Miami-Dade-County (Walking_Resources), ESRI

Figure 4.3: Left Sidewalk Assessment

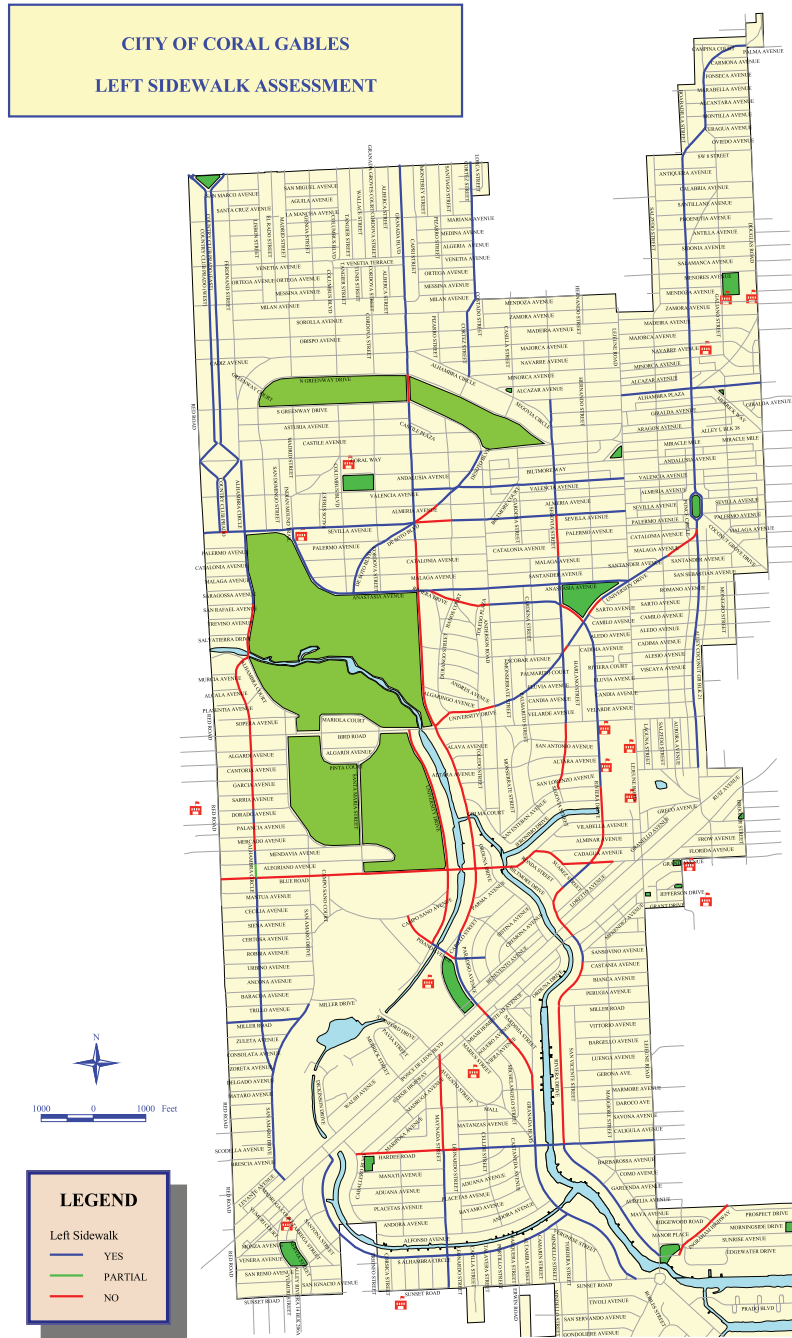
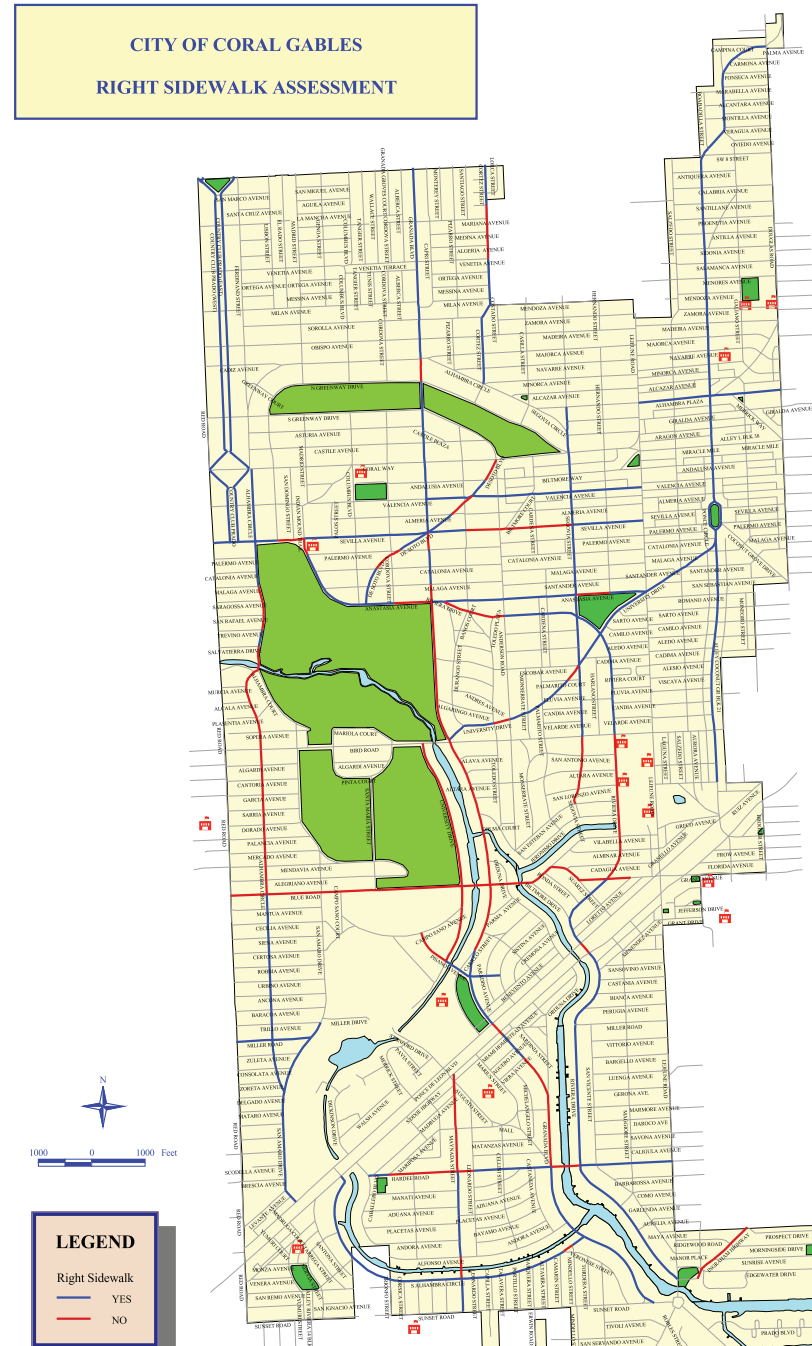


Figure 4.4: Right Sidewalk Assessment



There are residential districts with complete sidewalk networks, but others with only some sidewalks or where sidewalks are largely missing. In the residential neighborhoods, vehicle speeds and volumes are generally lower, but this is highly variable, as some streets are subjected to routine traffic intrusion where vehicle volumes and speeds are often greater due to cut-through traffic arising from recurring congestion along the major arterials in the City. These areas have lower levels of street lighting and many have relatively narrow street paving, such that walking along the edge of the road can be less safe.

Neighborhood streets lacking sidewalks pose a danger to pedestrians as well as drivers. Pedestrians often walk in traffic lanes if sidewalks do not exist, creating unnecessary risk of injury or death. This risk increases during evening hours. Physical activity and mobility opportunities through sidewalks should be provided in all neighborhoods in the interest of public health and safety.

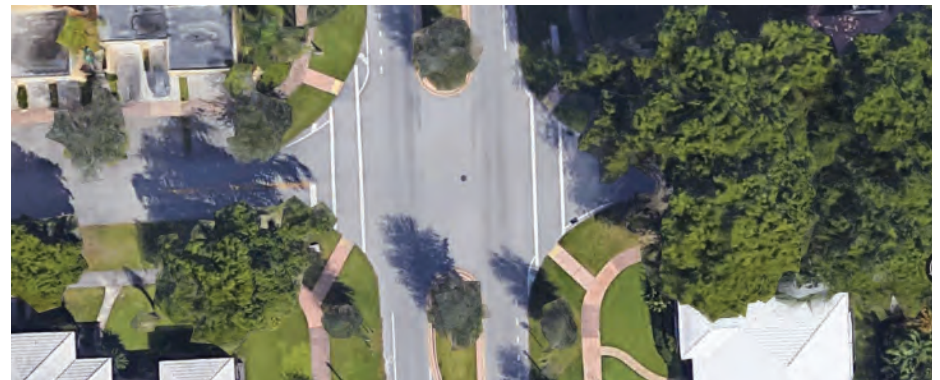
The City has funded a program to build about five miles of sidewalks annually and is refining its policy in this regard as described later. The City has also been constructing sidewalk connections at residential intersections where there are sidewalks at the edge of the street right-of-way, but which do not connect through the intersection (see **Figure 4.5**).

In 2018, sidewalk concurrency requirements for collector roads were eliminated by Coral Gables elected officials. This means resident approval is no longer required to build sidewalks in areas where they're most needed – on faster, wider streets with higher traffic volumes. Given the traffic safety and public health benefits of sidewalks as well as their relatively low costs, completing Coral Gables' sidewalk network on collector roads should be a priority in the coming years.

Figure 4.5: Intersection Sidewalk Conditions



Intersection with missing and unconnected sidewalks



Intersection with complete and connected sidewalks

Benefits of Sidewalks

Sidewalks provide opportunities for walking, and studies have shown that people with access to sidewalks

are more likely to walk and meet the Surgeon General's recommendations for physical activity.

- A study by the Urban Land Institute shows home buyers are willing to pay more for homes in walkable neighborhoods.
- Real Estate Research Corp. analysis shows property values rise fastest in pedestrian friendly areas.
- Sidewalks improve access to business and industry for employees relying on public transportation.
- Sidewalks improve customer traffic for retail businesses.
- Reduced crime risk through increased pedestrian traffic - more eyes on the street.
- Enhanced sense of community through better connections to neighbors and businesses.
- Decreased use of cars for short trips, saving gas and lowering emissions.

Pedestrian Crash History

One basic measure of pedestrian network performance is the crash history over a five-year period of time. Crash database information was retrieved for the most recent five years of crash data for Coral Gables. The data was segregated between automobile and bicycle/pedestrian crashes, for both injury crashes and fatality crashes. This data is shown in **Figures 4.6, 4.7 and 4.8**, and **Table 4.2**. These observations are drawn.

- Most pedestrian crashes are found in downtown Coral Gables, northward along Ponce de Leon Blvd., around the University of Miami campus, and along other collector roads.
- There are few pedestrian accidents in the southern section of the City, which is more auto-oriented.
- There is a subset of crashes on relatively local streets, where they would be considered less likely.

The City's Strategic Plan Goal in 2017 was to have less than 27 pedestrian injuries and less than 26 bicyclist injuries. The first quarter of the 2017 fiscal year saw eleven pedestrian crashes/injuries and seven bicycle crashes/injuries in Coral Gables. Five of the eighteen total injuries occurred on local residential streets, with six more occurring on local streets in the downtown area.

Figure 4.6: Coral Gables Pedestrian Crashes (2013-2017)

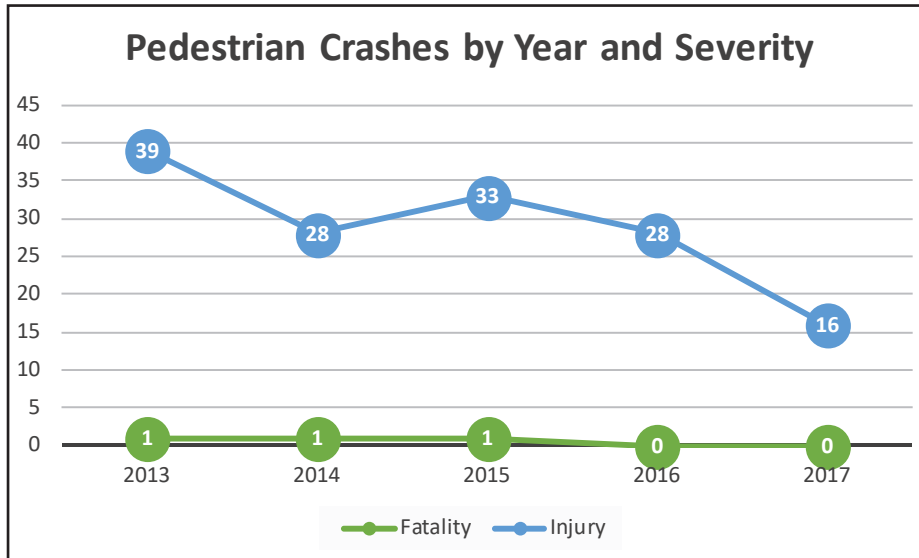


Table 4.2: Bicycle/Pedestrian Fatality Locations (2011-May 2018)

Bicycle/Pedestrian Fatality Locations		
Type	Road 1	Road 2
Bicycle	SR 976 (Bird Road)	Granada Boulevard
Pedestrian	SR 976 (Bird Road)	Palmarito Street
Pedestrian	SR 972 (Miracle Mile)	Douglas Road
Pedestrian	SW 42nd Avenue	Marmore Avenue
Pedestrian	SW 8th Street	SW 37th Avenue

Figure 4.7: Bicycle Crashes 2013-2017

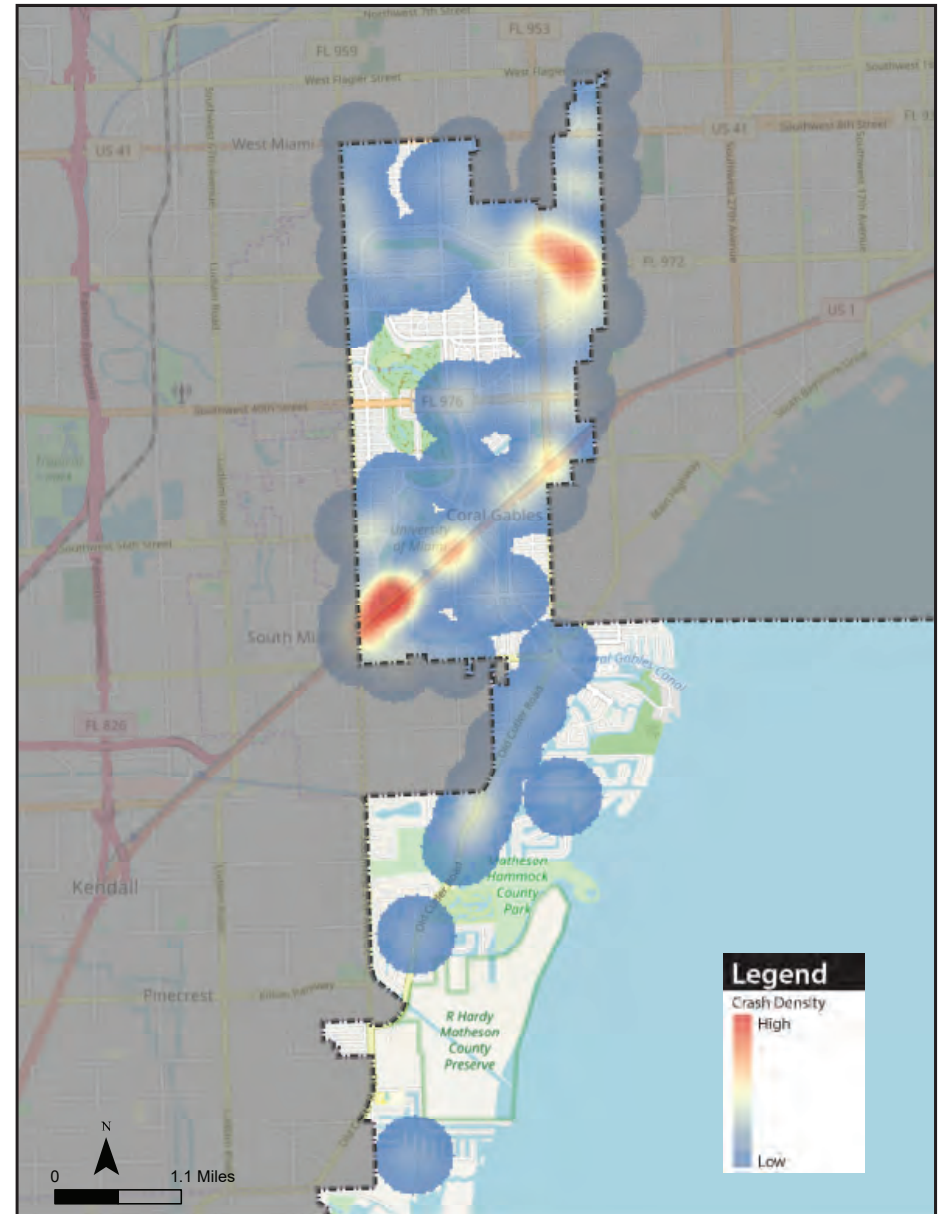
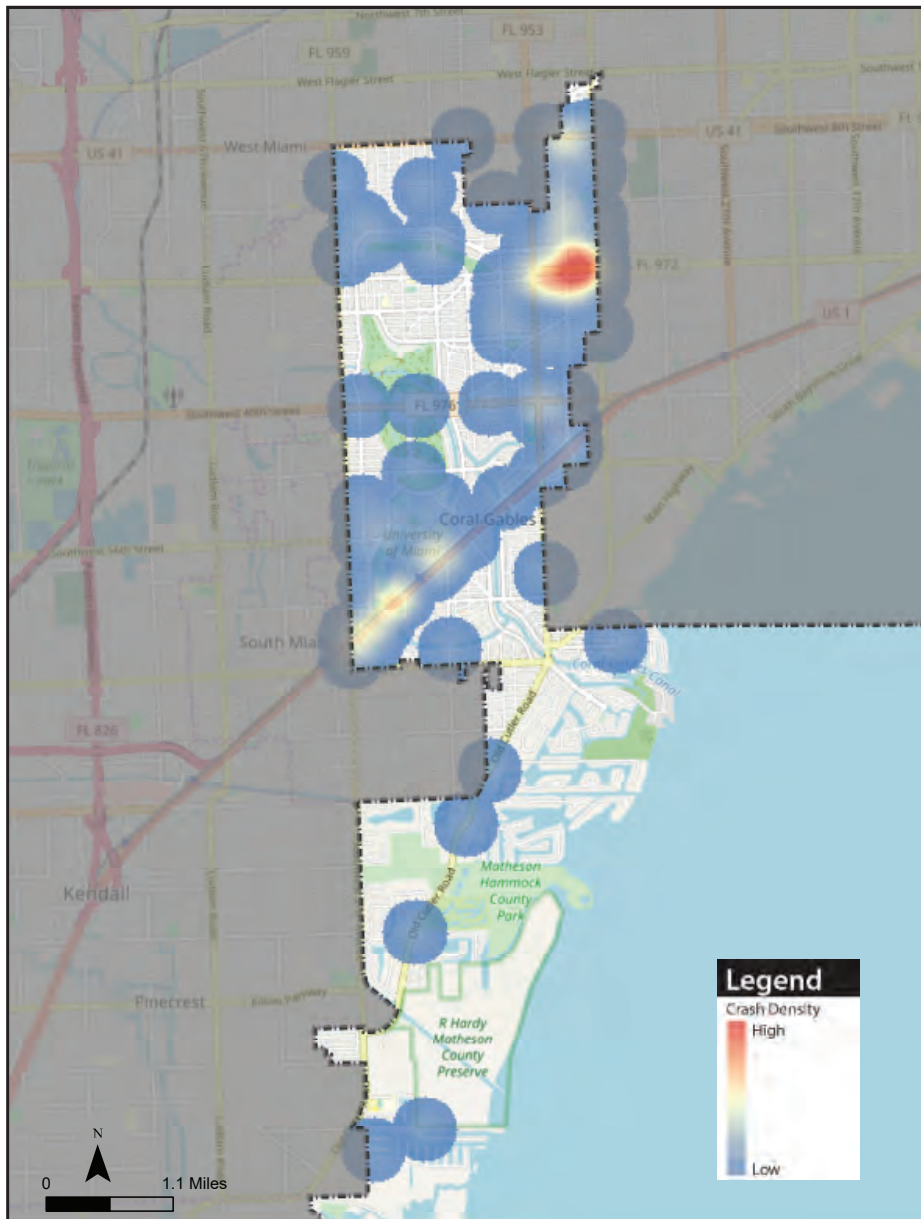


Figure 4.8: Pedestrian Crashes 2013-2017



The 5-year pedestrian crash data was reviewed. There were 157 reported pedestrian crashes for which 95 of the records has crash data available.

Figure 4.9 shows the distribution of crash conditions as reported. Most crashes occurred at intersections followed by locations along roadways, with neither the motorist or pedestrian listed at fault. Off-street, midblock, and other categories accounted for small shares.

There are a variety of other crash elements, but no crash conditions were reported for many of them.

Crashes where motorists were recorded to have not yield right-of-way where 21% of the total, while those for pedestrians were 21%.

From reviewing the crash reports, the completeness of reports was an issue with 62 containing no useful information.

From the data that is available, 39% of crashes were reported to involve failure to yield right-of-way.

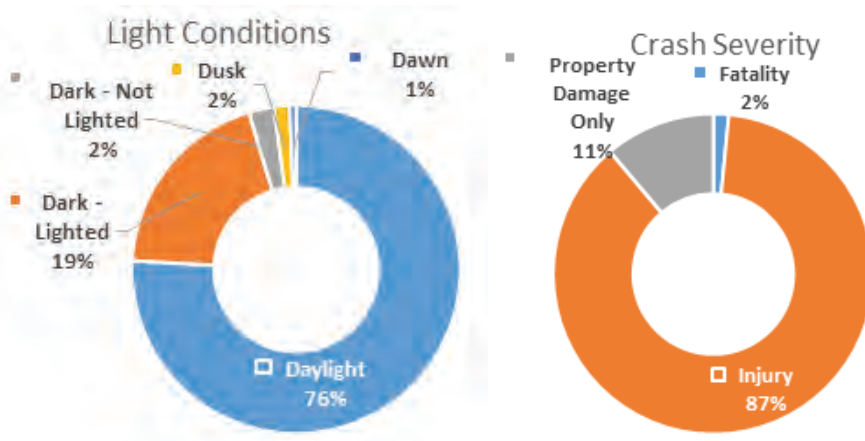
Both pedestrians and motorists need to be very aware of the street environment and of each other to avoid such crashes and reduce the frequency.

Figure 4.9: Crash Conditions

Crash Conditions								
Intersection Turning Vehicle	[Bar chart showing approximately 28%]							
Along Roadway	[Bar chart showing approximately 21%]							
Vehicle Failed to Yield	[Bar chart showing approximately 19%]							
Pedestrian Failed to Yield	[Bar chart showing approximately 14%]							
Offstreet	[Bar chart showing approximately 3%]							
Other	[Bar chart showing approximately 3%]							
Midblock	[Bar chart showing approximately 2%]							
	0%	5%	10%	15%	20%	25%	30%	35%

Between 2011 and 2018, all pedestrian and cyclist fatalities occurred on arterial streets. Including bicycle and pedestrian crashes together, 87% were injuries presumably for the pedestrians, 2% were fatalities, and 11% were property damage only with no pedestrian injury. In terms of lighting conditions, 76% occurred during daylight hours, 19% happened in dark conditions on lighted roads. The other three conditions together accounted for 5% of crashes. (refer to Figure 4.10)

Figure 4.10: presents crash data in relation to severity and lighting conditions.
Bicycle/Pedestrian Crash Lighting and Severity (2011-May 2018)



4-2 ANALYSIS

What We Heard

At the public meetings for the plan, including the kickoff meeting and the subsequent open house sessions, participants expressed strongest preference for walking improvements in the categories of crosswalks, street trees, and more sidewalk/pedestrian connections, followed closely by greenways, and raised crosswalks. Comfortably walking the streets of Coral Gables is important to residents and to business owners whose customers and employees are residents. In the “Money Game” (refer to **Figure 3.1**) exercise, participants invested 25% of the transportation budget for walking, the second largest of the investment options following transit at 26%.

Figure 4.11 summarizes public opinion on what would make Coral Gables more walkable. The top three citations were better transit, slower traffic, and additional /higher-visibility crosswalks. The map exercises at the public meetings captured specific improvement priorities across the city as shown in **Figure 4.12**. Those are further detailed in **Table 4.3**.

Figure 4.11: Pedestrian Comment Synopsis

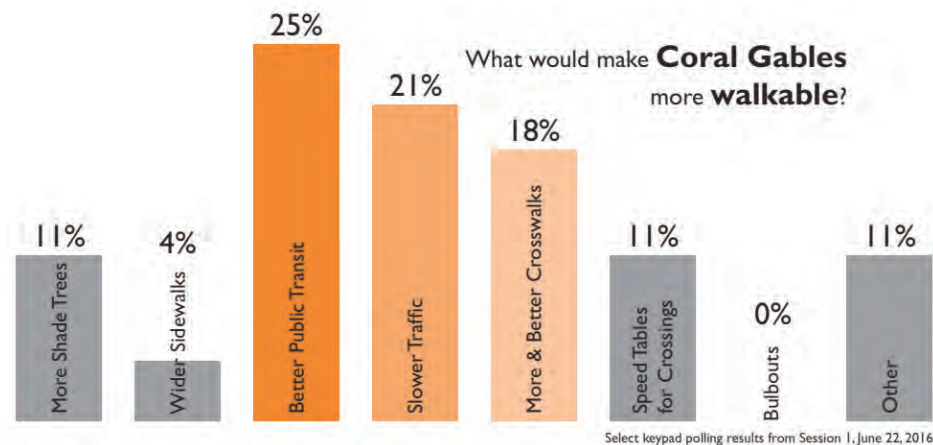


Figure 4.12: Pedestrian Comment Synopsis Map

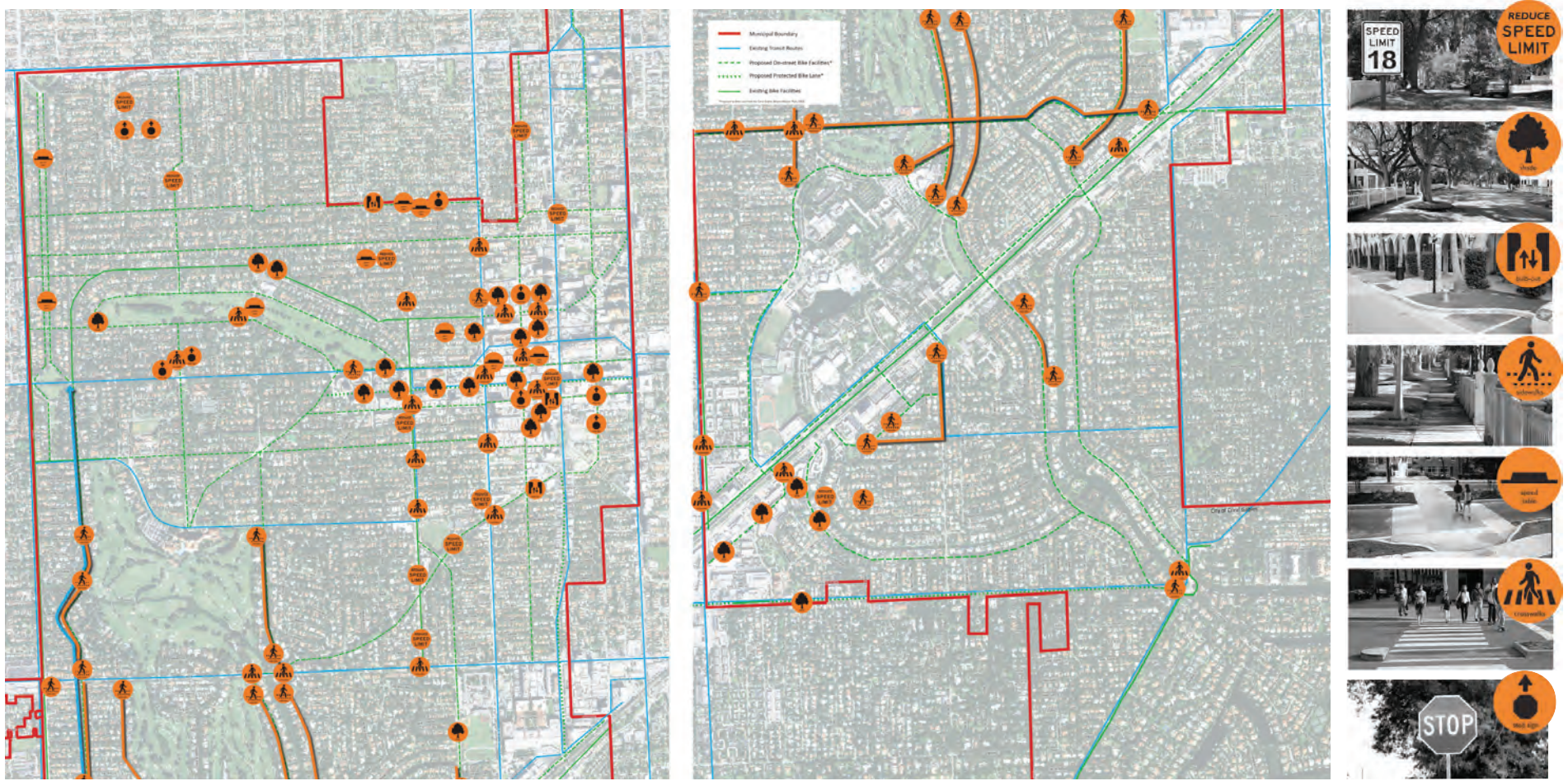


Table 4.3: Citizen Input on the Pedestrian Mode

Location	Reduce Speed Limit	Street Trees	Bulb-outs	Side-walks	Speed Table	Cross-walk	Stop Sign
Madrid St. (SW 8th St. to Venetia Ave.)	✓						
Madrid St. at Venetia Ave.							✓
Geneva St. at Venetia Ave.							✓
Country Club Prado at Venetia Ave.					✓		
Country Club Prado s. of Cadiz Ave.					✓		
N. Greenway Dr. at S. Greenway Dr.		✓					
S. Greenway Dr. at Granada Bl.						✓	
Columbus B. near Milan Ave.	✓						
Granada Bl. n. of N. Greenway Dr.					✓		
N. Greenway Dr. w. of Granada Bl.						✓	
Columbus Bl. at Castile Ave.						✓	✓
Columbus Bl. at Castile Ave.							✓
Columbus Bl. at Asturias Ave.							
Alhambra Cir. at Bird Rd. (north leg)				✓			
Alhambra Cir. at San Rafael Ave.				✓			
Alhambra Cir. at Salvatierra Dr.				✓			
San Amaro Dr. s. of Bird Rd.				✓			
Granada Bl. s. of Anastasia Ave.				✓			
Granada Bl. n. of Bird Rd.				✓			
Granada Bl. s. of Bird Rd.				✓			
University Dr. s. of Bird Rd.				✓			
Bird Rd. at Granada Bl.						✓	
Bird Rd. at University Dr.						✓	
University Dr. s. of Bird Rd.				✓			
Granada Bl. n. of Bird Rd.				✓			
Granada Bl. s. of Bird Rd.				✓			
Segovia St. (Bird Rd. to Andalucia Ave.)	✓						
University Dr. (Segovia St. - LeJeune Rd.)	✓						
Segovia St. at Anastasia Ave.						✓	
Segovia St. at Palermo Ave.						✓	
Blue Rd. at San Amaro Ave.						✓	

Location	Reduce Speed Limit	Street Trees	Bulb-outs	Side-walks	Speed Table	Cross-walk	Stop Sign
Blue Rd. (SW 57th Ave.- US 1)				✓			
San Amaro Dr. (Certosa Ave.–Alegriano Ave.)				✓			
Campo Santo Ave. (Univ. Dr. to Pisano Ave.)				✓			
Ponce de Leon Bl. at Suarez St.						✓	
Riviera Dr. (Biltmore Dr. – San Esteban Ave.)				✓			
Madrugá Ave. (SW 58th Ave. – Madrugá Ct.)							
S. Alhambra Cir. (US 1 - Maynada St.)							
S. Alhambra Cir. (US 1 - Maynada St.)	✓						
Hardee Rd. (US 1 - Maynada St.)				✓			
Maynada St. (Hardee Rd. – Leonardo St.)				✓			
Mariposa Ave. (Hardee Rd. – Leonardo St.)				✓			
Granada Bl. (Viera Ave. – Hardee Rd.)				✓			
Biltmore Way (Anderson Rd. – Andalucia Ave.)							
Andalucia Ave. (Biltmore Way – SW 37th Ave.)							
Segovia Ave. at Almeria Ave.				✓			
Segovia Ave. at Palermo Ave.				✓			
Segovia Ave. at Santander Ave.				✓			
University Dr. (Segovia St. – LeJeune Rd.)	✓						
University Dr. e. of Ponce de Leon Bl.			✓				
Ponce de Leon Bl. near Zamora Ave.	✓						
Salzedo St. near Antilla Ave.	✓						
Sevilla Ave. at Galiano St.							✓
Segovia St. at Alcazar Ave.						✓	
LeJeune Rd. at Majorca Ave.						✓	
Giralda Ave. at Hernando St.					✓		
Alhambra Cir. at Granada Bl.							
Majorca Ave. (Castillo St. – Segovia St.)							
Majorca Ave. (Castillo St. – Segovia St.)					✓		
SW 16th St. (Hernando St. – Segovia St.)					✓		
Hernando St. at SW 16th St.							✓

Federal Highway Administration (FHWA) Guidance on Sidewalks

From the preceding information, five guideposts for improved walkability were identified as shown in **Figure 4.13**. These guideposts echo the public comments which were dominated by the need for more sidewalks.

Figure 4.13: Guideposts for Improved Walkability



The FHWA provides the following guidance for installation of sidewalks:

Annually, around 4,500 pedestrians are killed in traffic crashes with motor vehicles in the United States. Pedestrians killed while “walking along the roadway” account for almost 8 percent of these deaths. Many of these tragedies are preventable. Providing walkways separated from the travel lanes could help to prevent up to 88 percent of these “walking along roadway crashes.”



Walkways can be created either by providing stabilized or paved surfaces separated from the roadway, or by widening paved shoulders. These treatments can not only improve the safety of pedestrians, but also make pedestrian trips more viable.

Sidewalks separated from the roadway are the preferred accommodation for pedestrians. Sidewalks provide many benefits including safety, mobility, and healthier communities. In addition to reducing walking along roadway crashes, sidewalks reduce other pedestrian crashes. Roadways without sidewalks are more than twice as likely to have pedestrian crashes as sites with sidewalks on both sides of the street.

Providing walkways for pedestrians dramatically increases how well pedestrians perceive their needs are being met along roadways. The wider the separation between the pedestrian and the roadway is, the more comfortable the pedestrian facility.

Providing sidewalks, widened paved shoulders, or stabilized shoulders—particularly when providing access to public transit—can increase the transportation options for individuals who may not be able to drive a car. Additionally, by moving

pedestrians off the travel lanes, motorist operations are improved and capacity increased.

By providing facilities that are more comfortable, the number of trips made by walking, particularly in areas with mixed land uses, can be increased. Research indicates that people will walk for recreational purposes if a facility is provided (Florida Department of Transportation, Conserve by Bicycle and Pedestrian Study Phase II. FDOT, Tallahassee, FL, 2009).

Recreational walking is one of the easiest ways for people to get the recommended allotment of physical exercise each day. Moderate exercise, such as walking, contributes to both physical and mental well-being.

Accessible sidewalks or pathways should be provided and maintained along both sides of streets and highways in urban areas, particularly near school zones and transit locations, and where there is frequent pedestrian activity.

*National Association of City Transportation Officials (NACTO)
Guidance on Sidewalks*

Sidewalks are an essential component of the urban environment and serve as key corridors for people, goods, and commerce. In accordance with ADA accessibility guidelines, sidewalks should be provided on all streets in urban areas. NACTO provides useful guidance on sidewalk design as follows:

- Sidewalk design should go beyond the bare minimums in both width and amenities. Pedestrians and businesses thrive where sidewalks have been designed at an appropriate scale, with sufficient lighting, shade, and street-level activity. These considerations are especially important for streets with higher traffic speeds and volumes, where pedestrians may otherwise feel unsafe and avoid walking.

- Sidewalks should be provided on both sides of all streets in all urban areas. On streets where pedestrians share the road with vehicles (shared streets), the street itself serves as the path of travel and should be designed in accordance with accessibility recommendations outlined in the shared street section of these guidelines. In certain instances, such as on more rural or suburban roads connecting urban areas, it may be advantageous to build a shared-use path adjacent to the main roadway as a substitute for a sidewalk. In this case, the shared use path should meet the general criteria to serve adequately as a sidewalk or pathway.
- The use of shoulders as a substitute for sidewalks is never justified in urban areas. Sidewalks should be delineated by a vertical and horizontal separation from moving traffic to provide an adequate buffer space and a sense of safety for pedestrians. Wide low-volume local or residential roads without sidewalks should be upgraded, but in the interim may be regulated as shared spaces or improved through the use of temporary materials where there is a potential danger to pedestrians.
- Sidewalk design may be compromised by roadside design guidance that requires lateral offsets or clear zones forgiving to higher vehicle speeds. Use a lower design speed or widen the sidewalk to mitigate these impacts.
- Delineation of a strict clear zone or minimum offset is not a required feature in urban environments. For the purpose of maintenance, cities should evaluate the impact of street trees, signs, and other elements on the structural integrity of the curb and access needs for parked vehicles or loading/unloading.
- Where transit stops are provided, bus shelters should be placed at the left or right edge of the walkway, but never directly within the path of travel. Where insufficient space exists, consider the application of a bus bulb.
- Ensure that sidewalks are without major gaps or deformities that would

make them non-traversable for wheel- chairs and other mobility devices.

- At driveways, sidewalks should be maintained at-grade through the conflict zone.
- Any construction project that obstructs the sidewalk should be mitigated through the provision of a temporary sidewalk that affords a safe and convenient passage or clearly directs users to an equivalent nearby detour.

Dangerous by Design

Smart Growth America and the National Complete Streets Coalition collaborate annually on the Dangerous by Design report, which ranks the 104 largest metro areas in the country, as well as every state, using a “Pedestrian Danger Index,” or PDI. PDI is a calculation of the share of local commuters who walk to work and the most recent data on pedestrian deaths. The following report excerpts highlight the challenges.



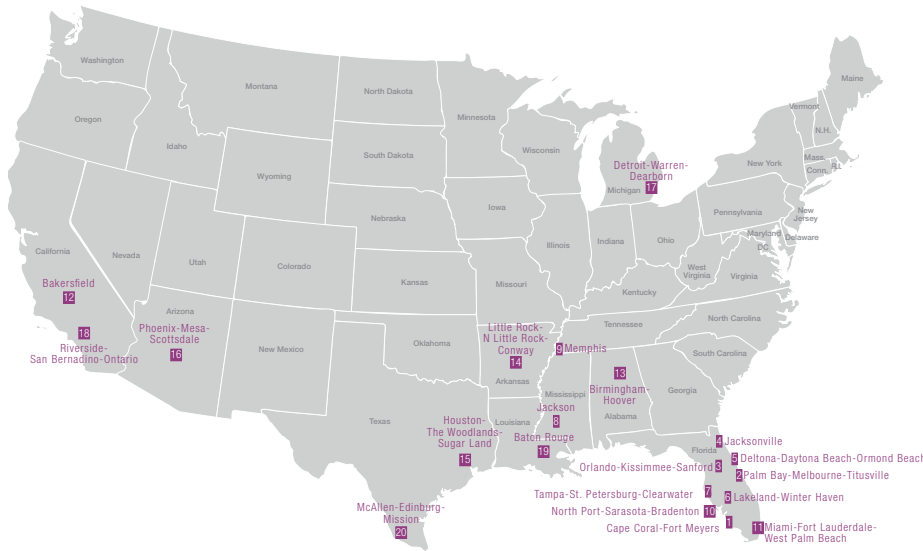
National Complete
Streets Coalition

Between 2005 and 2014, a total of 46,149 people were struck and killed by cars while walking. In 2014, the most recent year for which data are available, 4,884 people were killed by a car while walking, 105 people more than in 2013. On average, 13 people were struck and killed by a car while walking every day in 2014. And between 2005 and 2014, Americans were 7.2 times more likely to die as a pedestrian than from a natural disaster.

Dangerous by Design 2016 takes a closer look at this alarming epidemic. This report once again examines the metro areas that are the most dangerous for people walking. It also ranks states by their danger to pedestrians. **Figure 4.14** shows the most dangerous urban areas for pedestrians. **Florida is rated the most dangerous state for pedestrians, holding 10 of the top 11 rankings. The Miami-Fort Lauderdale-West Palm Beach metro area is ranked the 11th most dangerous for pedestrians.**

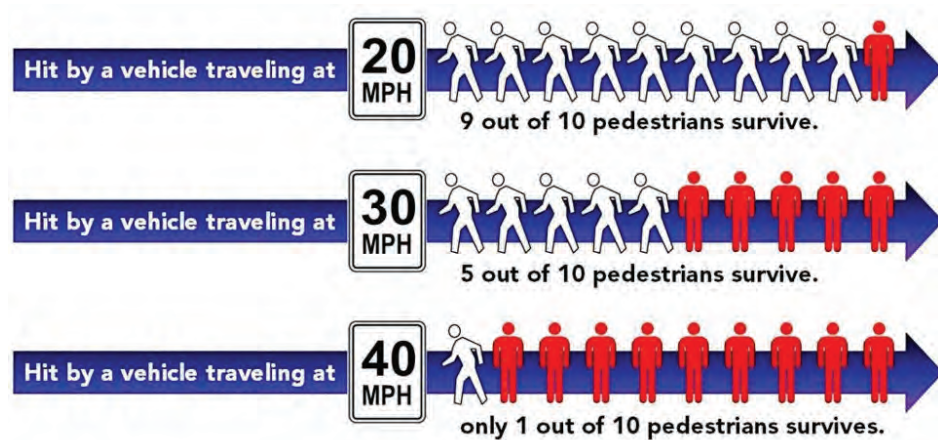
The way streets are designed is a factor in these fatal collisions. Many of these deaths occur on streets with fast-moving cars and poor pedestrian infrastructure. People walk along these roads despite the clear safety risks—a sign that streets are not adequately serving everyone in the community. Everyone involved in the street design process—from federal policymakers to local elected leaders to transportation engineers—must take action to end pedestrian deaths and make roads safer for everyone. So long as streets are built to prioritize high speeds at the cost of pedestrian safety, this will remain a problem. And as the nation’s population grows older on the whole, and as we become more diverse both racially and economically, the need for these safety improvements will only become more dire in years to come.

Figure 4.14: Most Dangerous Urban Areas for Pedestrians



More focus on pedestrian safety is critical to making walkers feel safer and less stressed. The importance of creating safe walking environments for walkers is illustrated in **Figure 4.15**: Pedestrian survivability in crashes with autos is much greater at lower speeds that at higher speeds. This experience was one reason for the City’s recent lowering of neighborhood speed limits from 30 mph to 25 mph.

Figure 4.15: Pedestrian Survivability as a Function of Vehicle Speed



Walk Friendly Communities Program

The Walk Friendly Communities Program (<http://walkfriendly.org/>) is a national program that recognizes communities that have taken leadership in improving walkability. Designations are provided at four levels – platinum, gold, silver, and bronze – based on the level of aspiration, implementation efforts, and results achieved. The designations are determined using the information provided in an on-line evaluation application. The application contains eight assessment areas:

- Community Profile
- Status of Walking
- Planning
- Education and Encouragement
- Engineering
- Enforcement
- Evaluation of Actions Taken
- Additional Questions



Communities use the program to provide a determination of their efforts, identify areas for program improvement, and as a tracker of progress over time. The Community Assessment Tool is a guidebook to the assessment as well as a reference source as to success stories and best practices to advance walkability in communities across the country.

One of the important factors in a higher designation is the extent of sidewalk coverage in a community. The policy of sidewalk implementation varies by city in terms of cost-sharing and the need for property owner concurrence for installation. More progressive communities do not require property owner concurrence in approving sidewalk installations, and are more proactive in underwriting the capital costs.

For example, sidewalk concurrency requirements are not common for the Florida cities and others nationally which participate in the Walk Friendly program:

- Arlington, VA (Gold level):
- Santa Barbara, CA (Gold level): No voting or balloting is required for new sidewalk installation. Priority is given to missing segments, school areas, and identified safety issue locations.
- Ft. Lauderdale, FL (Bronze level): No voting or balloting is required for new sidewalk installation, but neighborhoods are engaged through meetings.
- Tallahassee, FL (Silver level): No voting or balloting is required for new sidewalk installation.
- Naples, FL: New sidewalk installation does not require resident approval or public ballot. The city's pedestrian and bicycle master plan drive the work program.
- Bismark, ND: The city has mandated sidewalk construction on selected streets where there is an identified need, with construction cost being assessed to abutting property owners.

National Community and Transportation Preference Survey

The National Association of Realtors conducted the 2017 National Community and Transportation Preference Survey of 3,000 adults in the 50 largest metropolitan areas to learn about preferences for community style and transportation choices. The survey found that:

- Walkable communities and short commutes were preferred by 62% of millennials and 55% of the pre-1944 generation, even if it meant living in an apartment or townhouse.

- Gen-Xers and baby boomers, at 55%, favored suburban living with a single-family detached home, even if it meant a longer work commute and driving to retail and services.
- Housing with small yards but walkable to nearby amenities was preferred by 53% of all respondents, up from 48% in 2015, as opposed to houses with larger yards that required longer drives.
- Nearly half of young men and women said being within a short commute of work was an important factor in deciding where to live.
- While 60% of adults surveyed live in detached, single family homes, 21% of those said they would prefer an attached home with greater walkability.
- Of those surveyed, 60% said they would be willing to pay a little or a lot more for a home within walking distance of parks, shops, and restaurants.
- Sidewalks were considered a positive factor by 86% of those surveyed and 80% said being within easy walking distance of places and activities was important.

Potential Improvements

This section addresses potential improvements to advance the development of the pedestrian environment through a variety of actions.

Opportunities for Pedestrian Crossing Controls

The City has long stretches of arterials and collectors with no crosswalks. It is recommended that the city work with Miami-Dade County to include pedestrian crossings at appropriate locations on these roadways.

There are multiple treatments for unsignalized crossings. Individual jurisdictions determine which is more suitable. These include Rectangular Rapid Flash Beacons (RRFB), High-Intensity Activated CrossWalks (HAWK), bulbouts, paver crosswalks, refuge islands and speed tables.

Shorten Signal Cycle to Increase Turnover

Short signal cycles reduce overall pedestrian wait times as well as side street delay.

NACTO Recommends the following:

- Short cycle lengths of 60–90 seconds are ideal for urban areas and permit frequent gaps and consistent crossing opportunities, creating a more permeable network.
- The length of a pedestrian crossing should be taken into account when using shorter cycle lengths. In some cases, elderly pedestrians and children may be unable to cross in a single cycle. In these cases, efforts must be made to shorten the crossing via road diets, curb extensions, and other measures.
- While short cycle lengths are desirable, ensure that cycle lengths are long enough for pedestrians to cross wide streets in a single leg without getting stuck in the median, unless the median is a destination in and of itself.
- Adaptive signal control should have limited variation in their cycle length. Operations for adaptive signal control should be limited to suburban settings and event venues where traffic is highly variable. Adaptive signal control can result in a longer cycle length that degrades multi-modal conditions.

High-Intensity Activated CrossWalk (HAWK)

Although several roadway treatments are available to address pedestrian concerns, only a few are appropriate for high-speed or wide roadway crossing conditions. The HAWK beacon was developed to address these conditions. At a HAWK crossing, drivers receive multiple cues emphasizing the potential presence of a pedestrian. These cues include the HAWK beacon (two red lenses over a single yellow lens), high-visibility crosswalk markings (ladder-style markings as opposed to only two transverse white lines), a stop bar approximately 50 ft from the crosswalk,

8-inch solid lane lines between through travel lanes, signs which are in some cases illuminated that read “CROSSWALK,” and school warning signs. When activated, the HAWK provides drivers with a red indication informing them to stop, allowing pedestrians to cross the major roadway.

Pedestrian Accommodations in Work Zones

According to the Federal Highway Association (FHWA), about 15% of fatalities resulting from crashes in work zones in the USA were non-motorists (i.e., pedestrians, workers, and bicyclists). Major pedestrian traffic generators, such as schools, office buildings, and mass transit facilities, near upcoming projects should be identified and taken into consideration during the planning process. Even in the design stage, designers need to consider the route(s) that pedestrians will walk around the work zone.

Improper accommodation of pedestrians in a work zone



Suitable accommodation of pedestrians in a work zone.



While in the field, constructors and designs need to think about separating pedestrians from the work zone along with phasing or materials delivery and how the movement of construction vehicles through the construction area might impact pedestrian mobility and safety. Additionally, pathways need to be maintained by keeping walkways clear of tripping hazards to ensure safety.

When a work site needs access to sidewalk, a separate usable footpath should be provided. When feasible, the footpath provided during temporary traffic control

should also be accessible. Any abrupt changes in grade or terrain that could cause a tripping hazard or may be a barrier to wheelchair use should be avoided. Barriers and channelizing devices should be detectable to pedestrians with visual disabilities.

Construction projects in Coral Gables, especially within the Gables Redevelopment Infill District where street conditions are more constrained, often need to close a sidewalk on one side of the street and reroute pedestrian movements. However, there have also been conditions where development projects have not fully conformed to approved pedestrian accommodations during the term of construction.



the buttons. In addition to many signals being located in a difficult place to reach, this arrangement sends the message that a vulnerable human is secondary to mo-

To address this situation, it is recommended that all public and private projects submit a Temporary Pedestrian & Bicycle Accommodation plan for approval.

Eliminate Pedestrian Pushbuttons

Pedestrian crossing push buttons, often referred to as “beg buttons,” are subtle ways a municipality degrades the urban environment for walking. These buttons exist solely for motorist convenience, not walking convenience. Greater optimizations of green times for the prioritized vehicle travel direction is permitted by the absence of an assumed pedestrian phase. Standard push buttons often result in longer wait times to cross at an intersection, especially if the pedestrian does not push the button or if the button is in disrepair. According to Federal Highway Administration (FHWA) research, only about 50% of pedestrians actually push

torists. For a city wanting to prioritize pedestrian traffic over motorized traffic, this is indeed backward. If the City of Coral Gables is interested in encouraging pedestrian activity, they should discourage or ban “beg buttons” on City-owned streets, especially in Downtown Coral Gables.

According to NACTO, push-button activation shall be located so pedestrians can safely activate the signal. If used, push buttons should have a supplemental sign facing the pedestrian approach to increase visibility.

The recommendation is to work with Miami-Dade County and Florida Department of Transportation (FDOT) in eliminating push buttons on arterials and collectors in the City of Coral Gables.



Safe Routes to School

Fewer children are walking and biking to school, and childhood obesity is becoming more common. In addition, Miami-Dade Public School system limits bus service for children that live more than two miles away from their designated school. This policy requires parents to drive their children to and from school. This situation creates automobile traffic during school drop-off and pick-up hours. A walking school bus (WSB) was mentioned by participants during the public outreach of the Comprehensive Multi-Modal Transportation Plan. In discussions with the

public, the community expressed interest in implementing the idea of a walking school bus in select school areas. A walking school bus is a group of children that walk to school with one or more adults. The size and formality of these groups can differ from simply two families rotating to walk their children to school, to more structured groups with many students and parents.

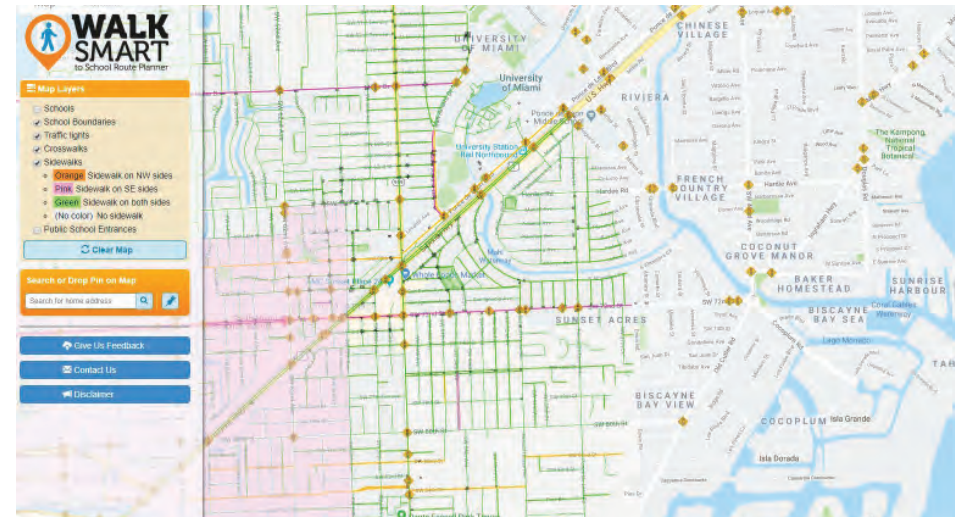
Another tool that is available in Miami-Dade County is the WALK SMART to School Planner, available at: <http://maps.fiu.edu/srts/>. This route planner, funded by the Miami-Dade Transportation Planning Organization (TPO), is a joint effort by the Florida International University GIS Center and the University of Florida Geomatics Program at Fort Lauderdale Research and Education Center. Assistance was also received from The School Board of Miami-Dade County, FL, and the WalkSafe program by University of Miami Miller School of Medicine.

The WalkSafe (and BikeSafe) program is managed through the KiDZ Neuroscience Center at the Miami Project to Cure Paralysis under the University of Miami Miller School of Medicine. The program promotes the 5 E School Assessment Tool among participating schools to measure and reward school efforts in: Education, Engineering, Encouragement, Enforcement, and Evaluation.

The online interactive route planner is designed as an alternative to the static paper maps which designate one route to a public school. The tool contains a database on the locations of traffic signals, marked crosswalks, and sidewalks. By designating a home location and the student's school in the tool, a path from home to school is mapped out utilizing the existing pedestrian infrastructure (see **Figure 4.16**).

Thus far, 63 public K-8 public schools in Miami Dade County have been included in this version of the route planner. Unfortunately, no schools within Coral Gables have been mapped, but FIU could approach if there was interest.

Figure 4.16: WALK SMART to School Route Planner



Vision Zero

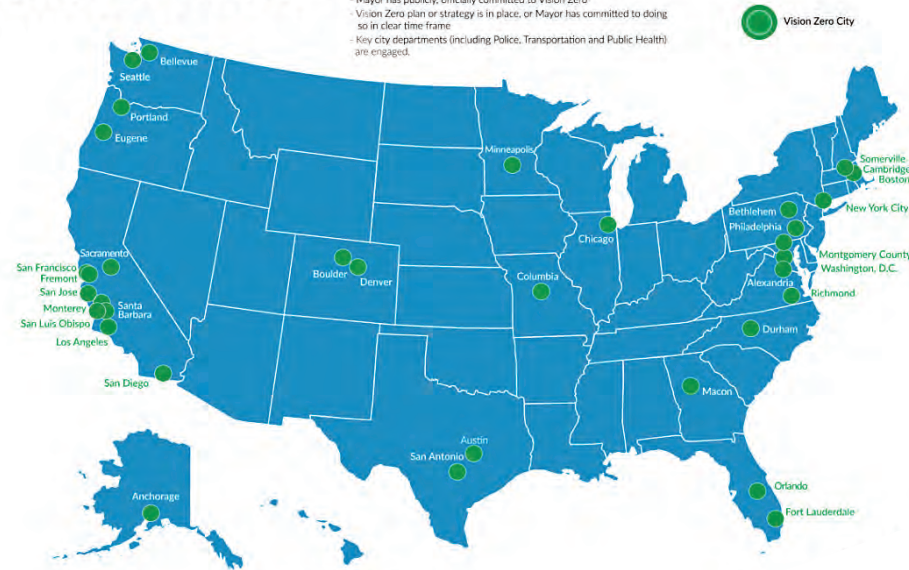
Cities around the country are eagerly embracing the Vision Zero plan for a safety-focused redesign of their streets. According to the National Complete Streets Coalition, more than 47,500 people in the U.S. died while walking on the street, from 2003 and 2012. After enough pressure, politicians have started to take action and begun to rethink the design of their cities to save the lives of their citizens. In the last three years, more than eighteen cities have joined the Vision Zero movement to set goals of stopping all traffic deaths within the next one or two decades (see **Figure 4.17**). Traffic deaths are not accidents, but products of design flaws in the traffic system or how the system is used by drivers. The City of Coral Gables has the opportunity to set goals and fix the system to end all traffic fatalities and serious injuries. While the City may not prevent all crashes due to human error, realizing the goal can prevent the fatal ones. A fundamental shift in how Coral Gables plans and designs their streets would be required under the Vision Zero goal. Safety must be more important than convenience, and design and data has more importance than placing blame for crashes on reckless road users.

Figure 4.17: Location of Vision Zero Cities

Vision Zero Cities

A Vision Zero City meets the following minimum standards:

- Sets clear goal of eliminating traffic fatalities and severe injuries
- Mayor has publicly, officially committed to Vision Zero
- Vision Zero plan or strategy is in place, or Mayor has committed to doing so in clear time frame
- Key city departments (including Police, Transportation and Public Health) are engaged.



assistance in developing mandated conservation programs, they must permit right turns on red lights. All 50 states, the District of Columbia, Guam, and Puerto Rico have allowed right turns on red since 1980, except where prohibited by a sign or where right turns are controlled by dedicated traffic lights. This policy resulted in many fatal crashes.

Implementation of the Vision Zero plan can begin with the restriction of right turns on red (RTOR). Many people enjoy walking the streets of downtown Coral Gables - its healthy, free, and provides views of the City Beautiful that people would never notice by bike, trolley, or car. Unfortunately, walking can almost always be a frustrating experience with inconsiderate drivers at intersections. While a car in the crosswalk is an inconvenience for an able-bodied person, this is a serious impediment for a person in a wheelchair or someone using a walker. When moving slowly and relying on a clear path from curb to curb, a car in the crosswalk can make it impossible to cross the street in the meager time allotted by the walk signal.

According to a 1995 National Highway Traffic Safety Administration study, pedestrians and bicyclists were involved in 22% of RTOR crashes and 93% of those crashes resulted in injury for the walker or bike rider. Luckily, only 1% of RTOR crashes that involved a pedestrian or bicyclist ended with a fatality. The elimination of RTOR could start as a pilot program for up to ten downtown Coral Gables intersections. These intersections should be located where the worst car-on-pedestrian crashes have occurred, which typically involve a turning car hitting a person crossing the street.

The City of Coral Gables adopted a Strategic Plan Objective to attain world class performance levels in public safety. Public Works has already set a goal of 10% reduction in injuries each year. It is recommended that the City adopts the Vision Zero policy to reach a goal of zero fatalities by 2026, the city’s 100th year celebration.

Eliminate Right Turns on Red

Right turns on red are permitted in many regions of North America. While Western states have allowed it for more than 50 years, eastern states amended their traffic laws to allow it in the 1970s as a fuel-saving measure in response to motor fuel shortages in 1973. The Energy Policy and Conservation Act of 1975 required that in order for a state to receive federal



Leading Pedestrian Intervals

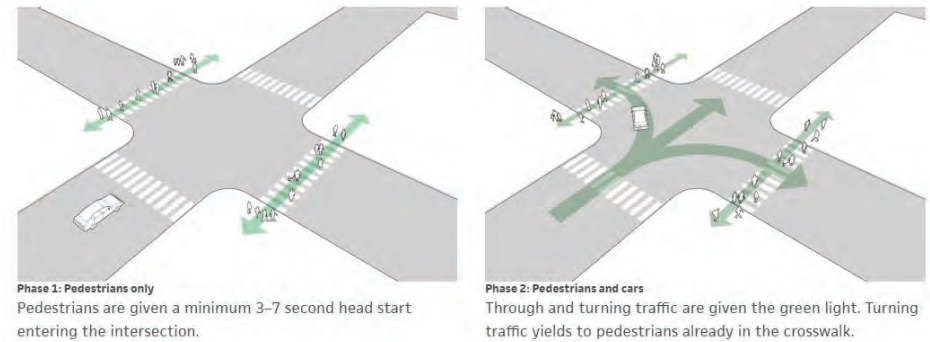
One low-cost technique to separate pedestrians and turning vehicles is the Leading Pedestrian Interval (LPI), a traffic signalization strategy also known as pedestrian head start or delayed vehicle green. LPI, gives pedestrians an advance walk signal before a concurrent green signal is provided to



vehicles, allowing the pedestrians to establish a presence in the crosswalk, thereby increasing their visibility to drivers and potentially reducing conflicts with turning vehicles. As shown in **Figure 4.18**, typical LPI settings provide 3-7 seconds of advance walk time. By giving pedestrians a head start, it is less likely that there will be conflict between pedestrians and turning vehicles. LPIs increase the percentage of motorists who yield the right of way to pedestrians because pedestrians are in the crosswalk by the time the traffic signal turns green for parallel vehicle movements.

LPIs can be very useful in addressing vehicle-pedestrian conflicts at signalized intersections. However, they are not appropriate for every intersection, as they are dependent on the characteristics of the location, traffic conditions, pedestrian activities, number of vehicle and pedestrian conflicts, and signal timing. For example, if there are infrequent pedestrian crossings, implementation of an LPI could delay traffic unnecessarily and cause drivers to complain about signal timing when a pedestrian pushes a pedestrian pushbutton and leaves before the display of LPI. Therefore, there is a need to determine the suitability and effectiveness of LPI implementation at signalized intersections to improve pedestrian safety and a need to develop statewide guidelines for LPI implementation.

Figure 4.18: Leading Pedestrian Interval Phasing



Pedestrian Safety Islands

Per the FHWA, pedestrian crashes account for about 12% of all traffic fatalities annually in the country, and over 75% of these occur at non-intersection locations (http://safety.fhwa.dot.gov/ped_bike/tools_solve/medians_brochure/medians_brochure.pdf). The use of raised medians and pedestrian refuge islands are one way to provide for safer mid-block pedestrian crossings of streets. These features at marked crosswalks have shown a 46% reduction in pedestrian crashes, and at unmarked crossing locations, a 39% reduction. installing pedestrian refuge islands at unsignalized intersections has been the most effective action.

Design treatments of these features vary depending on the median width, mid-block versus intersection location, and other roadway features (see **Figures 4.19 and 4.20**). In many cases especially at intersections with left turn lanes, the median nose is narrow, and the crosswalk is continued straight across the street. For median widths of 6-16 feet, detectable warnings would be added but the walkway would remain flush. For wider medians, curb ramps should be installed. In some cases, raised crosswalks through the median and across the roadways may be appropriate.

Figure 4.19: Pedestrian Refuge Islands Treatments

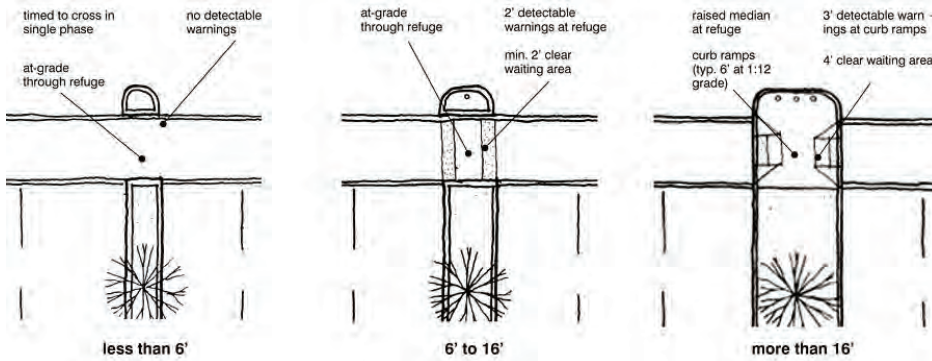


Figure 4.20: Examples of Pedestrian Refuge Islands



Where feasible for wider medians, the pedestrian pathway through the median should be angled or zigzag in pathway. This treatment provides the pedestrian a better view of oncoming traffic for the second part of the crossing (see Figure 4.21).

Figure 4.21: Angled and Zigzag Median Treatments



The FHWA strongly encourages the use of raised medians or refuge areas on urban and suburban roadways with a combination of traffic volume, vehicle speeds, and pedestrian movements. FHWA released new guidance on the siting and design of midblock and uncontrolled crossings in February 2018. The guide can be found at <https://www.ssti.us/2018/02/fhwa-issues-new-guidance-on-pedestrian-crossings/>. The guide is complemented by handouts on the effect of countermeasures, including improved crosswalk visibility, refuge islands, raised crosswalks, signalization, and road diets, in crash reduction.

The National Association of City Transportation Officials (NACTO) also incorporates pedestrian safety islands as a design tool in its urban Street Design Guide. These features reduce pedestrian exposure in the middle of the road when crossing from one side to the other. NACTO recommends that medians at intersections should have the end nose treatment which extends past the crosswalk location to protect pedestrians and slow down turning drivers.

It is noted that inclusion of the pedestrian safety or refuge islands are dependent on several factors including:

- Intersection approach typical sections and whether there is a striped or raised median of sufficient width (a minimum of 6' in width) within the available right-of-way to effectively shelter pedestrians
- Turning geometry for left turns through the intersection
- Location of pedestrian crosswalks (often creating the desired nose may mean that the crosswalk is further upstream from the corner intersection radius to allow the protective pedestrian nose while accommodating the affected left turn movement

There are several County or State roads (US 1, SW 37th Ave., LeJeune Rd., and SW 57th Ave.) within the city, but not all of these streets are wide enough to allow for refuges. There are also a number of City streets where refuges may have a role, and there are actually a number of such treatments along Alhambra Cir. In the downtown area (see **Figure 4.22**).

Segovia St. between Coral Way and Bird Rd. would conceivably lend itself to the pedestrian refuge treatment, but at intersections with crosswalks, those are installed in a closer in configuration. It would be necessary to configure existing and future marked crosswalks a bit further from the intersection to allow the pedestrian refuge treatment to work with intersection vehicle left turning geometry.

Figure 4.22: Existing Pedestrian Refuges in Coral Gables



High-visibility Crosswalks

A crosswalk location indicated as an appropriate place for pedestrians to cross a street or vehicular way by marking the crossing location with high visibility crosswalk pavement markings. The objective is to warn motorists to expect pedestrian crossings and to indicate preferred crossing locations. The advantages of these high-visibility crosswalks are increased visibility of the pedestrian crossing area, warning drivers that pedestrian traffic is to be expected, defining the space for pedestrian crossing, and guiding pedestrians to the appropriate crossing point. There is some concern however that more visible crosswalks may give pedestrians a false sense of security. High-visibility ladder, zebra, and continental crosswalk markings,

as shown in the bottom two images of **Figure 4.22**, are preferable to standard parallel or dashed pavement markings. These are more visible to approaching vehicles and have been shown to improve yielding behavior.

Enhancement/ Buffer Zone

The enhancement/buffer zone is the space immediately next to the sidewalk that may consist of a variety of different elements. These include curb extensions, parklets, storm-water management features, shade trees and landscaping, parking, bike racks, bike share stations, and curbside bike lanes or cycle tracks.

It is recommended to provide buffers along pedestrian facilities, especially on arterials roadways. The development review committee should consider mending buffers in future development reviews.

Pedestrian Lighting

Lighting that is designed for pedestrians is important in areas in which people will walk after dark. Such lighting is important to address actual safety concerns, both personal safety and traffic safety, as well as to increase the perception of safety and encourage use of the area after dark. Pedestrian-scale lighting differs from standard road lighting in a variety of ways. First, it is closer to the ground. In addition, it is spaced together closely to create an even lighting of the sidewalk instead of alternating bright and dark spaces. Pedestrian oriented lighting also usually features a white light, rather than yellow light, which is more inviting to pedestrians, and finally, pedestrians appreciate and enjoy lamps that have interesting or attractive shapes. As a further benefit, human-scale lighting, like other street furniture, alerts drivers to the presence of pedestrians in an area.

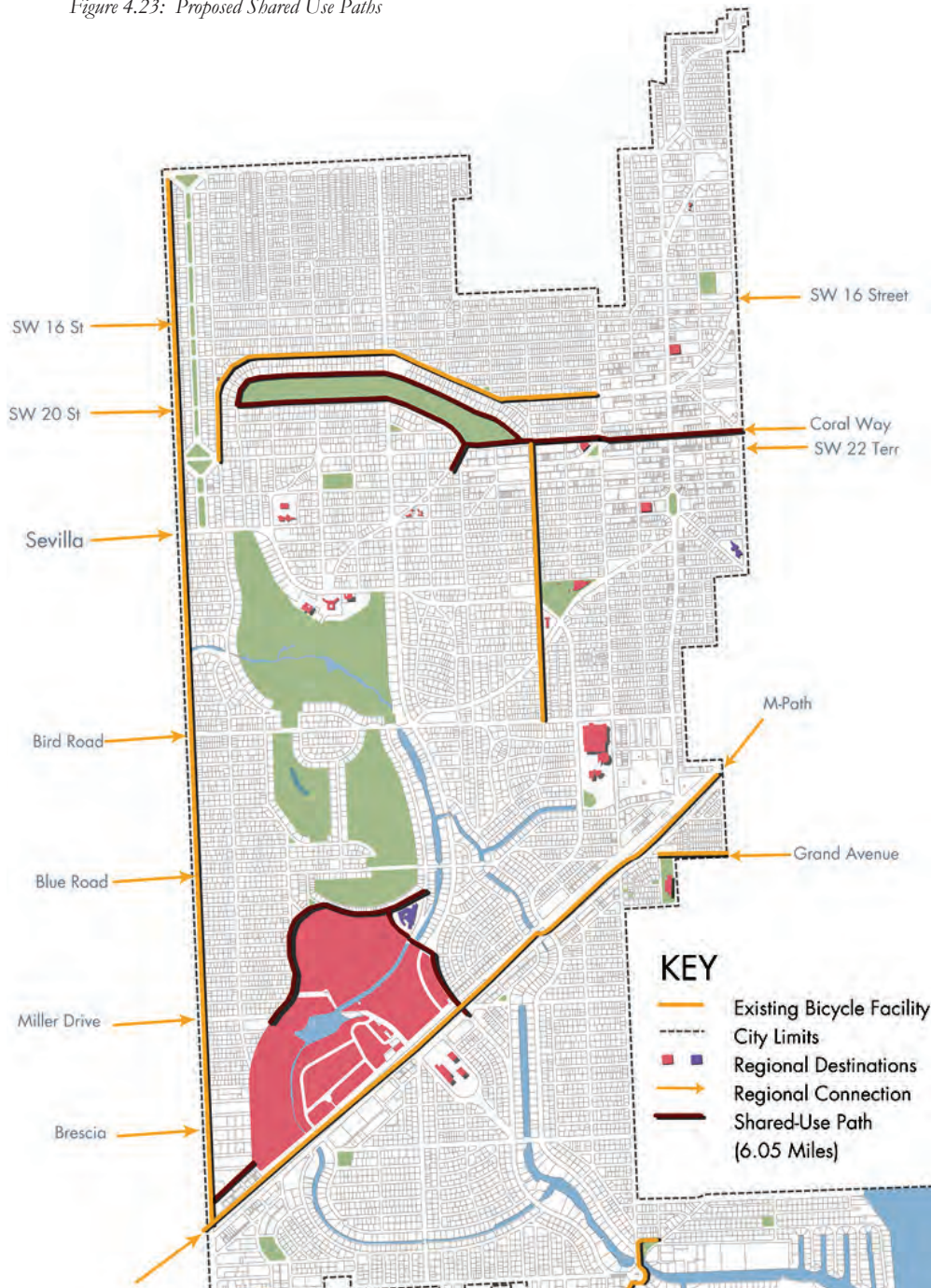
2014 Bicycle Pedestrian Master Plan

The shared use path recommendations from the plan are shown in **Figure 4.23**, with pathways described as follows:

- University of Miami Loop [San Amaro Dr. (Miller Dr. to Campo Sano Dr.)/Campo Sano Dr. (Miller Dr. to Pisano Ave.)/Pisano Ave. (Campo Sano Dr. to Granada Blvd.)/Granada Blvd. (Pisano Dr. to the M-Path)]: There is an existing 10-foot sidewalk on San Amaro Dr. that would be widened. There is room on Campo Sano Dr. and Granada Blvd. for the path as well, but along Pisano Dr., it would be necessary to remove on street parking for student residences and a canal bridge would require widening. The concept has merit and should be pursued further, but will require a solution for the Pisano Dr. segment.



Figure 4.23: Proposed Shared Use Paths



- Greenway Drive (surrounding the Coral Gables Golf Course): This is a popular looping course for walkers and bicyclists, but is unpaved for pedestrians. The plan recommended a 12-foot wide shared use path be built on the golf course side of the street.
- DeSoto Blvd. (Coral Way to Andalucia St.): This one-block long segment would tie the shared use path to other bicycle facilities. The path along DeSoto Blvd. appears unworkable due to a neighborhood entry feature and other space constraints. However, a path straight south along Anderson Rd. appears workable along the east side of the street if the street centerline is offset a few feet and several very generous turning lanes are retrograded to simpler, shorter-radius turns. This segment is recommended if it fits in with the evolution of other bicycle facilities as the plan is interpreted going forward.
- Coral Way (North Greenway Dr. to LeJeune Rd.): The plan called for this segment of Coral Way to have a shared use facility tying into the Miracle Mile segment which was not implemented (see below). The shared use path would have to negotiate the traffic roundabout at Segovia St. There does not appear to be sufficient room along the rest of the segment east to LeJeune Rd. which is one-way westbound. There are sidewalks, and room for a westbound buffered bicycle lane with some street adjustments. It is suggested that this segment be studied further in the context of how it fits in with adjacent planned bicycle facilities.
- Miracle Mile (Coral Way between LeJeune Rd. and SW 37th Ave.): The plan proposed a sidewalk-level bike path adjacent to parked cars as part of the street reconstruction project. Based on further decisions rendered as part of the street design process, it was decided not to include bicycle-specific facilities into the street renovation concept.

- Levante Ave. (San Amaro Dr. to SW 57th Ave.): This section was proposed for a shared use path, but is challenged by angle parking and large street trees. With the M-Path 1-1/2 blocks to the south, it is recommended to drop this segment. The M-Path (being renovated as the Underline) is a nine-mile paved multi-use path that meanders within Miami-Dade Transit right-of-way under the elevated Metrorail guideway from SW 67th Avenue to SW 3rd Street to maximize Metrorail connections. As the Underline, corridor improvements include: improved walking and bicycling pathways, “public rooms” for meeting and resting, in addition to artwork, wayfinding signs, lighting, landscaping among other amenities.

Figure 4.24 presents the sidewalk and crosswalk recommendations of the 2014 Bicycle Pedestrian Master Plan. The figure shows installation of sidewalks on one or both sides of sections of 15 streets between Hardee Rd. on the south and Coral Way on the north. Generally, the plan recommends sidewalks to be installed on a targeted basis at missing locations in the downtown core, in areas of higher transit boardings where missing, along major arterials, around key activity centers (civic, cultural, health care), and missing segments in areas with otherwise good coverage.

The plan also cites crosswalk improvements at 12 locations spread over the north-central portion of the City, listed as follows:

- DeSoto Fountain
- Cocoplum Circle
- LeJeune Rd./Coral Way
- LeJeune Rd./Riviera Dr.
- Anderson Rd./Coral Way/North Greenway Dr.
- Bird Rd./University Dr./Granada Dr.

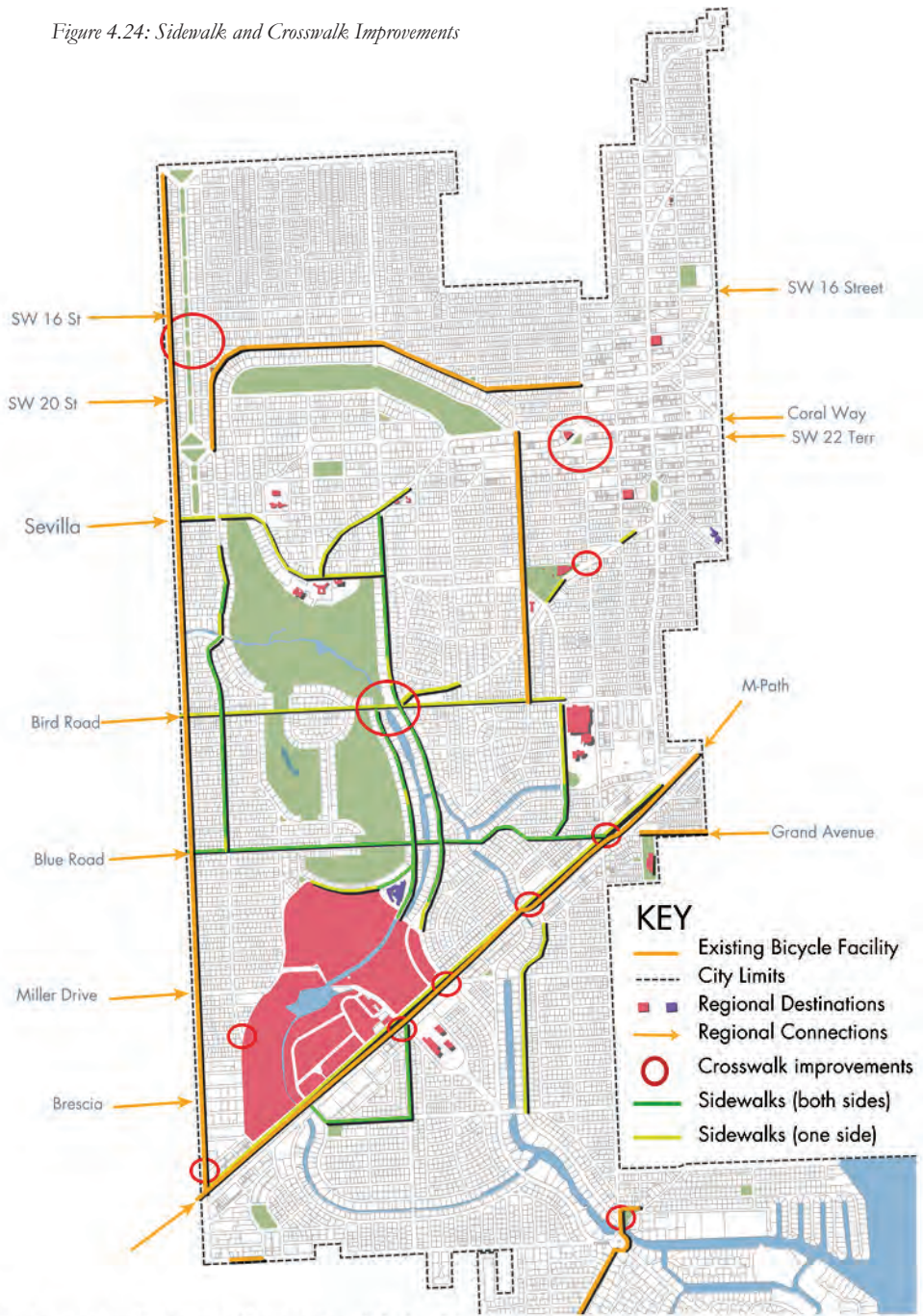
- US 1/Alhambra Cir.
- US 1/Stanford Dr.
- US 1/Riviera Dr.
- US 1/Granada Dr.
- Ponce de Leon Blvd./San Amaro Dr.
- Alhambra Cir./San Amaro Dr.

A new roundabout has been installed at installed Anderson Rd./Coral Way/North Greenway Dr. Elsewhere in this transportation plan document, proposals for improvements are made for DeSoto Fountain, Cocoplum Cir., and the Bird Rd./University Dr./Granada Dr. intersection. A study conducted by FDOT considered the US 1 intersections; recommendations are found in Chapter 7 - Vehicles.

Additional recommendations from the plan include:

- The City will continue to repair sidewalks damaged by tree root in public right of way.
- Recommend traffic calming which encompasses a series of physical treatments that are meant to lower vehicle speeds and volumes by creating the visual impression that certain streets are not intended for highspeed or cut-through traffic. Thus, traffic calming can improve safety for pedestrians and reduce noise and pollution levels. Examples of these measures include bulbouts, speed humps, and traffic circles.
- Recommend NACTO guidelines which states sidewalks have a desired minimum through zone of 6 feet and an absolute minimum of 5 feet. Where a sidewalk is directly adjacent to moving traffic, the desired minimum is 8 feet, providing a minimum 2-foot buffer for street furniture and utilities.

Figure 4.24: Sidewalk and Crosswalk Improvements



*This is not a comprehensive map of locations in need of sidewalk facilities or intersection improvements, but a map identifying critical needs on significant routes and intersection that need greater study for bicyclists and pedestrians.

4-3 RECOMMENDATIONS

Pedestrian infrastructure is an important tool in the alternative travel choices toolbox, capable of providing a real alternative to the auto for short trips while contributing to personal wellness. This section has highlighted opportunities for facilities to enhance walking as way to promote mobility choices in key activity areas, and for recreational activities. **Table 4.4** summarizes the recommendations that were identified in reinforcing the role of walking over the next 10 years.

Table 4.4: Walking Element Actions

Project No.	Policy	Pro-gram	Project	Implementation Phase *			Title	Description	Conceptual Cost Estimate					
				Short Range	Me-dium Range	Long Range			Capital Cost	Planning	Design	Construction, Engineering, Inspection	Soft Cost Subtotal	TOTAL
W-1	✓				✓		Refine sidewalks in construction zones policy.	\$-	\$10,000	\$-	\$-	\$10,000	\$10,000	
W-2			✓	✓	✓	✓	Continue ongoing sidewalk construction and ADA ramp repair. (CIP c-sidewalk)	Per current CIP budget.	\$2,575,000	\$180,250	\$463,500	\$257,500	\$901,250	\$3,476,250
W-3			✓	✓	✓	✓	Continue sidewalk completion at intersections. (CIP c-sidewalk)	See above item.	\$-	\$-	\$-	\$-	\$-	\$-
W-4			✓	✓	✓	✓	Coordinate pedestrian upgrades with planned intersection improvements.		\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
W-5		✓		✓			Update sidewalk and crosswalk inventory.	Map into GIS	\$-	\$10,000	\$-	\$-	\$10,000	\$10,000
W-6			✓	✓			Identify target sites for crosswalk installation. (CIP c-sidewalk)	Map into GIS	\$-	\$10,000	\$-	\$-	\$10,000	\$10,000
W-7		✓		✓			Identify candidate sites for pedestrian nose treatments.		\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
W-8				✓			Prioritize sidewalk improvements.		\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
W-9			✓	✓			Coordinate citizen sidewalk needs with sidewalk priority actions.		\$-	\$2,500	\$-	\$-	\$2,500	\$2,500
W-10			✓	✓			Coordinate citizen pedestrian comments with Traffic Calming actions.		\$-	\$15,000	\$-	\$-	\$15,000	\$15,000
W-11	✓			✓			Recommend buffers as part of city reviews of new development projects.		\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
W-12		✓		✓			Conduct reduced speed limit post-study where there is prior vehicle speed data.		\$-	\$20,000	\$-	\$-	\$20,000	\$20,000
W-13	✓				✓		Implement work zone pedestrian/bicycle plan policy.		\$-	\$20,000	\$-	\$-	\$20,000	\$20,000
W-14		✓			✓		Investigate pedestrian push button removal.		\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
W-15		✓			✓		Consider Safe Routes to School program.		\$-	\$10,000	\$-	\$-	\$10,000	\$10,000
W-16		✓	✓		✓		Coordinate with FIU on Walk Smart data development for Coral Gables schools.		\$-	\$15,000	\$-	\$-	\$15,000	\$15,000
W-17	✓			✓			Investigate a No Right Turn on Red policy.		\$-	\$5,000	\$-	\$-	\$5,000	\$5,000

* NOTE: Short Range 1-2 years | Medium Range 3-5 years | Long Range 6-10 years | FDOT - Florida Dept. of Transportation | DTPW - Miami-Dade Dept. of Transp. & Public Works

Project No.	Policy	Program	Project	Implementation Phase *			Title	Description	Conceptual Cost Estimate					
				Short Range	Medium Range	Long Range			Capital Cost	Planning	Design	Construction, Engineering, Inspection	Soft Cost Subtotal	TOTAL
W-18		✓		✓			Identify locations for pedestrian safety islands.	\$-	\$15,000	\$-	\$-	\$15,000	\$15,000	
W-19	✓			✓			Consider implementing a Vision Zero policy in line with Strategic Plan.	\$-	\$15,000	\$-	\$-	\$15,000	\$15,000	
W-20			✓	✓			Implement shared use path projects per Bicycle Pedestrian Master Plan as refined.	Assumed to be incorporated under Ch. 5 Bicycles recommendations.	\$-	\$-	\$-	\$-	\$-	
W-21			✓		✓		Implement Bicycle Pedestrian Master Plan crosswalk recommendations.	Assumed to be incorporated under Items W-2 and W-3 above.	\$-	\$-	\$-	\$-	\$-	
W-22			✓	✓			Implement Bicycle Pedestrian Master Plan sidewalk recommendations in concert with other recommendations above.	Assumed to be incorporated under Items W-2 and W-3 above.	\$-	\$-	\$-	\$-	\$-	
W-23		✓		✓			Coordinate with FDOT on implementation of US 1 Study recommendations.	Master list included in Chapter 7 Vehicles. Actions should be funded by FDOT.	\$-	\$-	\$-	\$-	\$-	
W-24		✓		✓			Coordinate with FDOT on implementation of Bird Rd. Study recommendations.	Master plan included in Chapter 7 Vehicles. Actions should be funded by FDOT.	\$-	\$-	\$-	\$-	\$-	
W-25		✓		✓			Coordinate with Miami-Dade County transit operation on first mile/last mile pedestrian actions for three Metrorail stations.	Miami-Dade County should be the lead agency responsible for funding implementation.	\$-	\$-	\$-	\$-	\$-	
W-26			✓	✓	✓		Support the implementation of the Underline (M-Path) Implementation.	Phase 5 at \$6 million is funded by developments. Phase 6 at \$26.5 million in Coral Gables unfunded presently. Assume 25% City share or \$6.6 million.	\$6,600,000	\$462,000	1,188,000	\$660,000	\$2,310,000	\$8,910,000
W-27			✓				Coordinate pedestrian improvements at programmed upgrade for Red Road/Old Cutler Rd. intersection (CIP c-oldc-ent)	To be included under project capital cost budget.	\$-	\$-	\$-	\$-	\$-	
W-28			✓		✓		Implement pedestrian improvements as appropriate as part of Neighborhood Livability program. (c-traffic)	To be included under project capital cost budget.	\$-	\$-	\$-	\$-	\$-	
W-29			✓	✓			Implement pedestrian elements as part of DeSoto Fountain improvements. (c-dsotoftn)	To be included under fountain capital cost budget.	\$-	\$-	\$-	\$-	\$-	
W-30			✓	✓			Implement pedestrian elements of the Monegro Crafts street ends projects. C-mon-crof	Amount to be determined. Figure per City CIP budget.	\$213,800	\$14,966	\$38,484	\$21,380	\$74,830	\$288,630

* NOTE: Short Range 1-2 years | Medium Range 3-5 years | Long Range 6-10 years | FDOT - Florida Dept. of Transportation | DTPW - Miami-Dade Dept. of Transp. & Public Works

Project No.	Policy	Pro-gram	Project	Implementation Phase *			Title	Description	Capital Cost	Conceptual Cost Estimate				TOTAL
				Short Range	Me-dium Range	Long Range				Planning	Design	Construction, Engineering, Inspection	Soft Cost Subtotal	
W-31		✓		✓			Identify sidewalk obstructions for remediation, working with FDOT and County as needed.	Budget is an estimated allowance.	\$100,000	\$7,000	\$18,000	\$10,000	\$35,000	\$135,000
W-32		✓		✓			Complete the street “stress level” analysis, and identify key connection points between low level and high level stress areas.	Analysis is underway, funding cost therefore not shown.	\$-	\$-	\$-	\$-	\$-	\$-
SUBTOTAL									\$9,488,800	\$836,716	\$1,707,984	\$948,880	\$3,493,580	
* NOTE: Short Range 1-2 years Medium Range 3-5 years Long Range 6-10 years FDOT - Florida Dept. of Transportation DTPW - Miami-Dade Dept. of Transp. & Public Works														

CORAL
GABLES®
THE CITY BEAUTIFUL



5

BICYCLING



TABLE OF CONTENTS

#	Title	Page
5	Bicycling.....	5-1
5.1	Context	5-1
	The City Strategic Plan and Bicycling	5-2
	Performance Indicator Metrics	5-2
	Existing Bicycle Facilities.....	5-3
	Bicycle Crash History	5-4
	Miami-Dade 2030 Bicycle/Pedestrian Master Plan (2014)...	5-7
5.2	Analysis	5-9
	What We Heard.....	5-9
	The 8-80 Cities Program.....	5-11
	Bike Walk Coral Gables	5-11
	Bike Safe Program.....	5-12
	Transit System Bicycle Master Plan for Miami-Dade County.....	5-13
	First Mile/Last Mile Improvements	5-18
	Miami-Dade 2040 Bicycle/Pedestrian Master Plan	5-18
	DTPW 10-Year Transit Development Plan	5-19
	City of Miami Bicycle Master Plan	5-19
	City of South Miami Intermodal Transportation Plan.....	5-20
	Village of Pinecrest	5-22
	Village of Palmetto Bay.....	5-22
	Recent Coral Gables Bicycle Projects	5-24
	Coral Gables Bicycle Pedestrian Master Plan.....	5-25
	Aragon Avenue - Segovia St. to Salzedo St.....	5-40
	Maggiore Street - Sansovino Ave. to LeJeune Rd.....	5-40
	University Drive - Salzedo St to LeJeune Rd.....	5-41
	The Underline.....	5-41
	Bicycle Commuter Stations	5-42
	Bicycle Parking	5-42
	Bicycle Racks per City Inventory.....	5-43
	Bicycle Racks Per the Bicycle Pedestrian Master Plan	5-43
	Shared Active Transportation	5-44
	Bicycle Corrals	5-44

#	Title	Page
	Bicycle Racks on Trolleys	5-45
	Bicycle Awareness	5-45
	Bicycle Level of Traffic Stress.....	5-45
	Potential Improvements.....	5-47
5.3	Recommendations	5-48

Figures

5.1	Existing Bicycle Facilities.....	5-3
5.2	Bicycle Crashes (2013-2017).....	5-4
5.3	Bicycle/Pedestrian Crashes (2011-May 2018) - North	5-4
5.4	Bicycle/Pedestrian Crashes (2011-May 2018) - South	5-5
5.5	Bicycle/Pedestrian Crash Lighting and Severity	5-5
5.6	Miami-Dade County Bicycle Crash Data	5-6
5.7	New York City Bicycling Risk Analysis.....	5-7
5.8	Miami-Dade County BLOS Map.....	5-8
5.9	Citizen Investment Priorities.....	5-9
5.10	Bicycling Comment Synopsis Map.....	5-9
5.11	Guideposts for Improved Bikeability	5-11
5.12	Bicycle Sales, Repair, and Parking Sites	5-12
5.13	BWCG Bicycle Corridors	5-13
5.14	Douglas Rd. Metrorail Station Bicycle Access Recommendations	5-15
5.15	University Metrorail Station Bicycle Access Recommendations	5-16
5.16	South Miami Metrorail Station Bicycle Access Recommendations	5-17
5.17	Buffered Bicycle Lanes.....	5-18
5.18	2040 Bicycle-Pedestrian Master Plan	5-18
5.19	2040 LRTP Bicycle Projects.....	5-19
5.20	City of Miami Bicycle Network Plan	5-20
5.21	South Miami Intermodal Transportation Plan	5-21
5.22	Village of Pinecrest Bicycle Plan.....	5-22
5.23	Village of Palmetto Bay Bicycle-Related Plans.....	5-22

TABLE OF CONTENTS CONT.

#	Title	Page
5.24	Bicycle Connections	5-23
5.25	Demonstration Project on University Drive	5-24
5.26	Demonstration Project on Salzedo Street.....	5-25
5.27	Sevilla Ave. Bicycle Lanes.....	5-25
5.28	Anastasia Avenue Sharrow	5-25
5.29	Bicycle Master Plan.....	5-26
5.30	Proposed Shared Use paths.....	5-26
5.31	Residential Street Existing Conditions.....	5-28
5.32	Conventional Bicycle Lanes	5-28
5.33	Buffered Bicycle Lanes.....	5-28
5.34	Buffered Bicycle Lanes.....	5-28
5.35	Shared Use Path	5-29
5.36	Examples of Bicycle Boulevards.....	5-30
5.37	Salzedo St. Existing Conditions.....	5-31
5.38	Separated Bicycle Lanes (Short Term).....	5-31
5.39	Separated Bicycle Lanes (Long Term).....	5-31
5.40	Separated Cycle Track (Short Term).....	5-32
5.41	Separated Cycle Track (Short Term).....	5-32
5.42	Conventional Bicycle Lanes (Short Term)	5-32
5.43	Conventional Bicycle Lanes (Long Term)	5-33
5.44	Priority Corridors for Implementation.....	5-33
5.45	Salzedo Street Concepts.....	5-34
5.46	Downtown Priority Connection Concepts	5-35
5.47	University Drive Concepts	5-36
5.48	Maggiore Street and San Vincente Street Concepts	5-37
5.49	Bicycle Facility Toolbox Concepts.....	5-38-5-39
5.50	Concept Details Alhambra Circle - Lejeune Road to Salzedo Street	5-39-5-41
5.51	Angle Parking Bicycle Lane Alternatives.....	5-41
5.52	Images of the Underline.....	5-42
5.53	Bicycle Parking Sites	5-43
5.54	Bicycle Share Stations.....	5-44
5.55	Bicycle Corral.....	5-45

#	Title	Page
5.56	City Bicycling Website.....	5-45
5.57	Example Bicycle Level of Traffic Stress Map.....	5-46
5.58	Levels of Traffic Strees	5-47
5.59	Bicycle Network Analysis Showing Connectivity Changes..	5-47

Tables

5.1	City Pedestrian Performance Indicator Metrics	5-3
5.2	Bicycle/Pedestrian Facility Locations (2011-May 2018).....	5-5
5.3	Miami-Dade BLOS Summary	5-8
5.4	City of Coral Gables BLOS Summary.....	5-8
5.5	Citizen Input on the Bicycling Mode.....	5-10
5.6	Bicycling Element Actions	5-49

BICYCLING

There are

10.5 miles

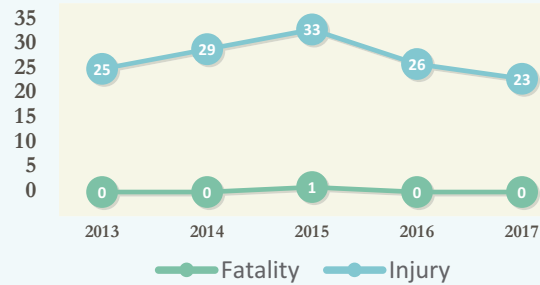
of bicycling facilities in the city



30+ miles

of bicycling facilities planned in Coral Gables Bicycling and Pedestrian Master Plan

Bicycle Crashes by Year and Severity in Coral Gables



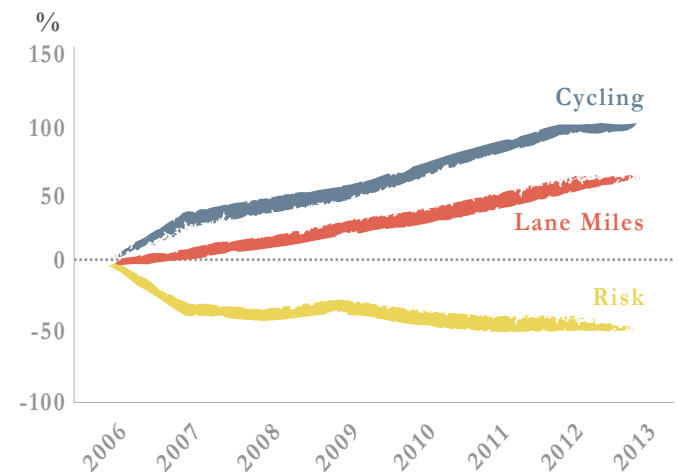
\$1,300

invested in bike lanes created benefits equal to

1 more year of life over the life of all New York City residents

<https://www.reuters.com/article/us-health-costbenefit-bike-lanes-idUSKCN11Z23A>

Bicycling is getting safer as more people ride



<https://nacto.org/2016/07/20/high-quality-bike-facilities-increase-ridership-make-biking-safer/>

<https://nacto.org/2016/07/20/high-quality-bike-facilities-increase-ridership-make-biking-safer/>

50% fewer cycling injuries with bike lanes

90% fewer cycling injuries with protected bike lanes

21%-171% increase in bicycling with bike lanes

0% Greenhouse gas emissions

5 BICYCLING

Meeting the needs of all types of bicyclists is fundamental to increasing bicycle use and improving safety. Bicyclists are a diverse group in terms of age, ability, and riding habits. Some people bicycle to meet their daily needs, commuting to work and running errands, while others bicycle primarily for exercise and recreation. The experience and confidence of bicyclists vary greatly; some cyclists are willing to ride on busy roads while others are uncomfortable riding with traffic. The goal is to improve bicycling for all riders, from age 8 to age 80 and from beginner to expert.

Roadways serve as an important backbone for the bikeway system. The existing roadway system presents the greatest opportunity for improving bicyclists' mobility and access needs. Substandard or lacking facilities on major streets deny access to bicyclists, result in a fragmented bikeway system, and create hazardous conditions for bicyclists, pedestrians, and motorists. Accommodating bicyclists on arterial and collector streets is critical because these roadways:

- Serve mobility needs with direct, continuous routes;
- Provide access to homes and destinations that bicyclists need to reach;
- Provide controlled crossings of other major streets; and
- Cross obstacles such as freeways, railroads, and water bodies.
- These streets often have the highest crash and fatality rates for pedestrians and cyclists which necessitates protected active mobility infrastructure.

Neighborhood streets have low traffic volumes and slow speeds which make them ideal for bicycling, although they are often not continuous and may have frequent stops which make them less convenient for longer trips. Many of these streets have no need for bike lanes but may benefit from traffic calming, wayfinding, and path connections that create direct routes and a navigable grid for cyclists.

Conflicts between roadway users frequently occur at intersections and driveways.

Intersection design should create space and travel paths for bicyclists that are direct, continuous, and logical. Bicycle-sensitive loop detectors, bike boxes, colorized lanes, and separated crossings can make intersections work for bicyclists. Off-street shared-use paths provide the highest level of investment for bicyclists.

Like motorists, cyclists need convenient, secure, well-designed parking. Other support facilities such as showers, lockers, and repair stations should be available to make it easier for people to make trips by bicycle. Bicyclists also rely on a network of bike shops that offer parts, accessories, and service. Connections with other modes, such as public transit and driving, are critical for many people traveling longer distances.

Education and encouragement activities are a must to increase bicycle usage. High quality maps, events, and programs draw attention to new facilities and biking in general, promoting a culture of acceptance and support. Enforcement of traffic laws is needed to keep cyclists and other road users safe.

5.1 CONTEXT

This section provides a summary of the public facilities available for people who ride bikes in Coral Gables. This background will identify the next steps in enhancing the role of bicycling as a compliment and alternative to automobile travel.

The Coral Gables Transportation Plan is part of a larger city goal to increase routine physical activity, improve public health, and reduce the amount of air pollutants emitted in the city. In order to become a more sustainable city, creating safe, convenient alternative transportation networks in Coral Gables is imperative. The goal is to create a comprehensive, protected bike network without impeding important automobile access throughout the city. The policies and goals contained in this chapter reflect the vision of Coral Gables Comprehensive Plan, the Sustainability Plan and the 2014 Pedestrian/Bike Master Plan

To continue the growth of a mainstream culture that supports people that ride bikes in Coral Gables, necessary improvements for personal safety need to be addressed. Riding a bicycle should not require bravery. Yet that is the perception among people that ride bikes and non-cyclists. Separated, buffered bike facilities, improved intersections, and secure bicycle parking are all ways to address these common concerns.

The City Strategic Plan and Bicycling

The 2017-2019 Strategic Plan for Coral Gables sets out six goal areas for City government: Customer-focused Excellence, Workforce-focused Excellence, Financial Excellence, Process Excellence, Community-focused Excellence, and Sustainability-focused Excellence. For each of these, there are a set of specified objectives; those which relate to the pedestrian experience across the City are listed below:

- Attain world-class performance levels in public safety by 2019.
- Improve mobility throughout the City.
- Enhance the pedestrian experience, safety, and connectivity in the City through improved lighting, crosswalks, sidewalks, and wayfinding.
- Increase alternative mobility options to the community by 2019.

The City has adopted a Sustainable Complete Streets Policy encouraging further enhancement of the bicycling environment, which can be achieved through a variety of actions, which may include but are not limited to:

- Expanding the bicycle facility network across the City in ways that serve all types of users of all ages.
- Advancing bicycle network connectivity across the City and linking to facilities in adjacent jurisdictions.
- Integrating bicycle accommodations into intersection and roundabout improvements as appropriate.

- Consider bicycle facilities when developing Neighborhood Livability improvement concepts.
- Integrate bicycle facilities as first mile/last mile links at the three Metro rail stations in or near Coral Gables (Douglas Road, University Station, South Miami) and for other key activity centers.
- Continue providing free bicycle racks for interested businesses.
- Promote additional bicycle fixit stations.
- Work with other City departments in the application of the recently adopted Sustainable Complete Streets Policy.
- Continue to work with partners to promote expanded use of bicycling as a travel alternative and a means to a healthier lifestyle.
- Work with private developers in incorporating bike infrastructure into and adjacent to their development projects.

Performance Indicator Metrics

For its Public Works Department functions, the City has adopted a set of performance indicator metrics to assess the effectiveness of its collective operational and capital improvements initiatives.

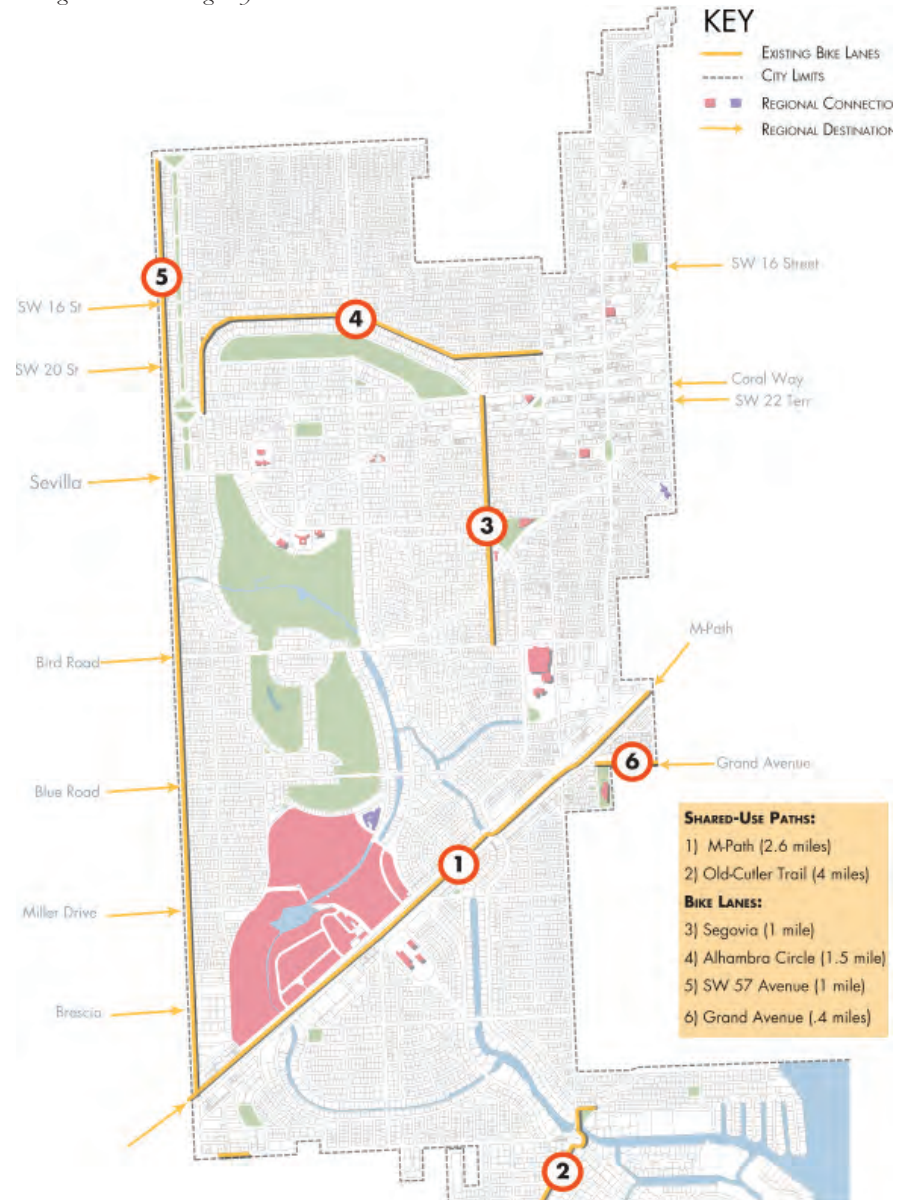
Table 5.1 summarizes pertinent Public Works Department metrics relating to the pedestrian mode. The City has made good progress on infrastructure investments, but the number of crashes has trended above target, though fatalities are still at target.

Table 5.1: City Pedestrian Performance Indicator Metrics

Performance Indicator	FY17 Target	FY17 Year-to-date	FY 18 Target
Total miles of dedicated bicycle facilities provided	1	0	5
Total miles of crosswalk and intersection improvements	6	7.52	7
Linear feet of new curb ramps installed along City streets	1,300	1,457	1,400
Number of pedestrian-vehicle and bicycle-vehicle crashes	53	56	47
Number of pedestrian-vehicle and bicycle fatality crashes	0	0	0

The City developed priority corridors for implementation, interfacing with the public through discussion of alternative design concepts for each individual project. More details on those bicycle facilities projects are provided later in this section of the report.

Figure 5.1: Existing Bicycle Facilities



While these are high level metrics, there is some linkage between added infrastructure and reduced crash history. There are other supportive measures such as enforcement and education which are happening to some extent through the efforts of the City and bicycle advocacy groups, but which are not tracked by these metrics.

Existing Bicycling Facilities

The existing bicycling network in Coral Gables is shown in **Figure 5.1**. There are eight corridors with shared paths, bicycle lanes, and sharrows. There are other corridors without designated bicycle facilities frequented by bicyclists such as downtown Coral Gables and the University of Miami campus area. The existing facilities provide a core set of corridors, albeit not so well connected, upon which future facilities connecting existing facilities, extending coverage into new corridors, and serving key activity centers can be developed.

That is the aim of the Commission Adopted 2014 Bicycle Pedestrian Master Plan that has a set of recommendations for improving Coral Gables streets with bicyclists in mind. Prioritizing the implementation of this plan is key to improving Coral Gables streets and connecting key elements of the bike network.

Bicycle Crash History

One basic measure of bicycle network performance is the crash history over a five-year period of time. Crash database information was retrieved for the most recent five years of crash data for Coral Gables. The data was segregated between automobile and bicycle/pedestrian crashes, for both injury crashes and fatality crashes. This data is shown in **Figures 5.2-5.4** and **Table 5.2**. These observations are drawn.

- Most bicycle crashes are found in downtown Coral Gables, northward along Ponce de Leon Blvd., around the University of Miami campus, and along other collector roads.
- There are few bicycle crashes in the southern section of the City, which is more auto-oriented.
- There is a subset of crashes on relatively local streets, where they would be considered less likely to occur.

Figure 5.2: Bicycle Crashes (2013-2017)

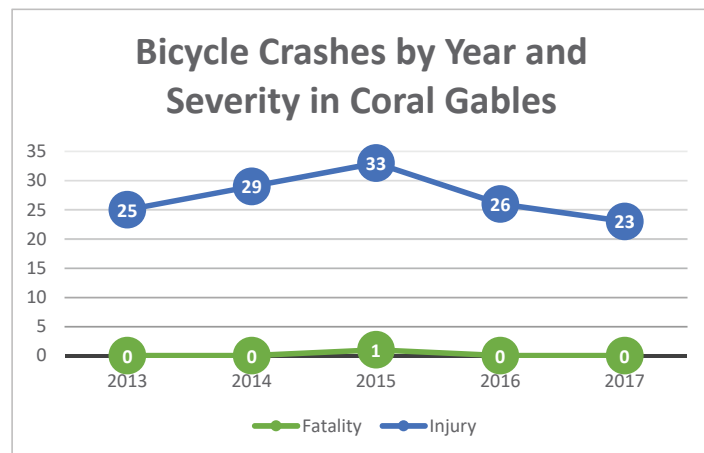


Figure 5.3: Bicycle/Pedestrian Crashes (2011-May 2018) – North

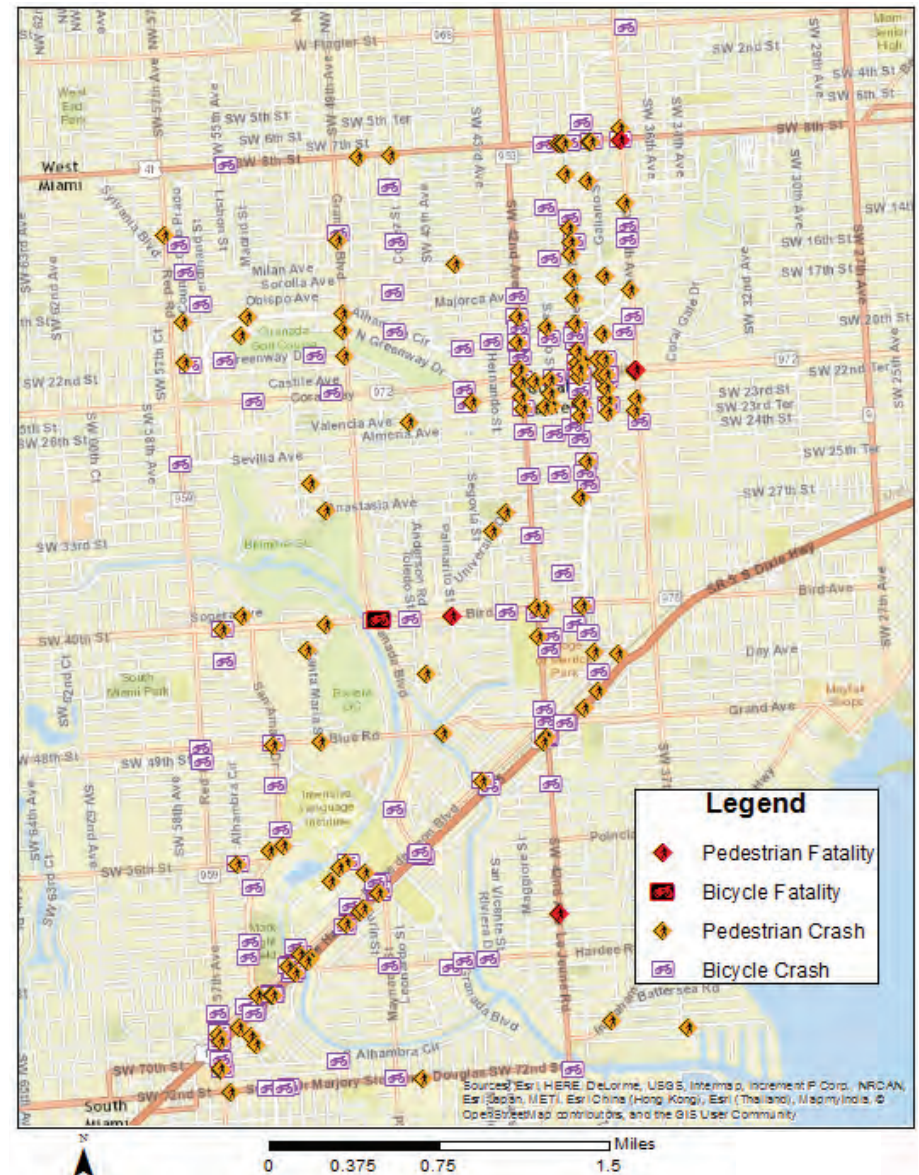


Figure 5.4: Bicycle/Pedestrian Crashes (2011-May 2018) – South

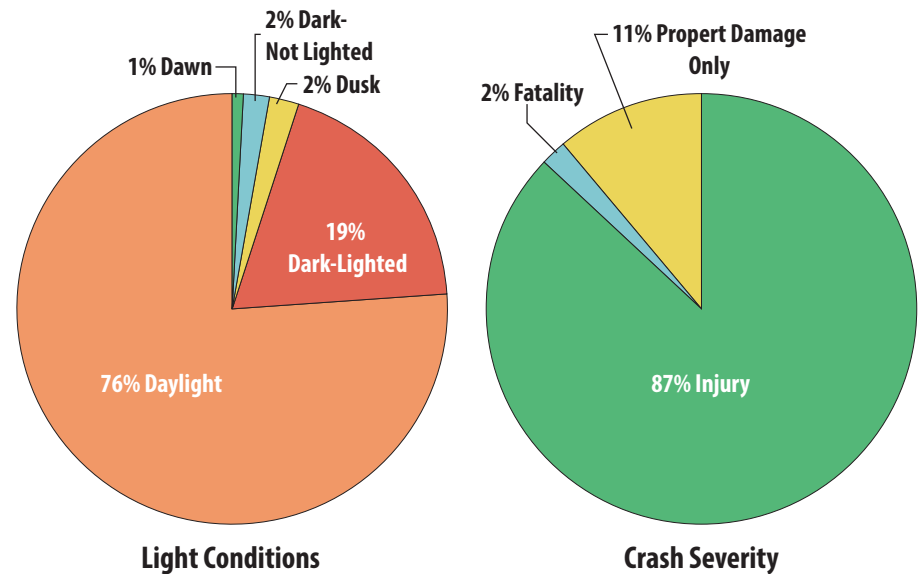


Table 5.2: Bicycle/Pedestrian Fatality Locations (2011-May 2018)

Bicycle/Pedestrian Fatality Locations		
Type	Road 1	Road 2
Bicycle	SR 976 (Bird Road)	Granada Boulevard
Pedestrian	SR 976 (Bird Road)	Palmarito Street
Pedestrian	SR 972 (Miracle Mile)	Douglas Road
Pedestrian	SW 42nd Avenue	Kiaora Street
Pedestrian	SW 8th Street	SW 37th Avenue

Figure 5.5 presents crash data in relation to severity and lighting conditions.

Figure 5.5: Bicycle/Pedestrian Crash Lighting and Severity (2011-May 2018)



Considering bicycle and pedestrian crashes together, 87% were injuries presumably for the pedestrians or bicyclists, 2% were fatalities, and 11% were property damage only with no injury. In terms of lighting conditions, 76% occurred during daylight hours, 19% happened in dark conditions on lighted roads. The other three conditions together accounted for 5% of crashes.

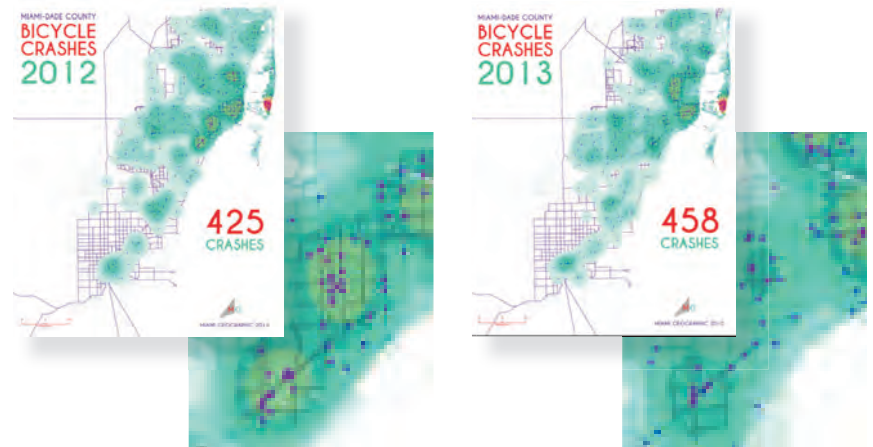
A final perspective on bicycle crashes can be found in the report *Bicycle Crashes in Miami-Dade County, 2005-2013* by Sebastien Lozano and Matthew Toro, available at the website: <https://miamigeographic.com/2015/07/15/bicycle-crashes-in-miami-dade-county-2005-2013/>. Using crash data from FDOT, bicycle crashes are charted by year and based on their distribution, heat maps are developed. Maps from 2012 and 2013 are shown in **Figure 5.6**. Concentrations of accidents are found countywide around major activity centers, such as Florida International University, Dadeland, Miami Beach, central Miami including downtown and the Jackson Hospital district, and of interest here, downtown Coral Gables and the University of Miami/South Miami district.

Concentrations of bicycle crashes are a function of higher levels of bicycle usage as well as increased levels of conflicts between bicyclists and motorists where there are more “opportunities” for poor decisions to be made. The nine years of maps show fluctuations in the density of crashes, but the two areas within Coral Gables are consistent in the concentration of crashes.

It is recommended that these two areas be considered for bicycle facility improvements along with education and awareness campaigns.

It is very important to note, however, that increased bicycle usage that comes with expansion of bicycle facility mileage actually reduces the risk exposure of each user by a significant factor, as shown in **Figure 5.7**.

Figure 5.6: Miami-Dade County Bicycle Crash Data

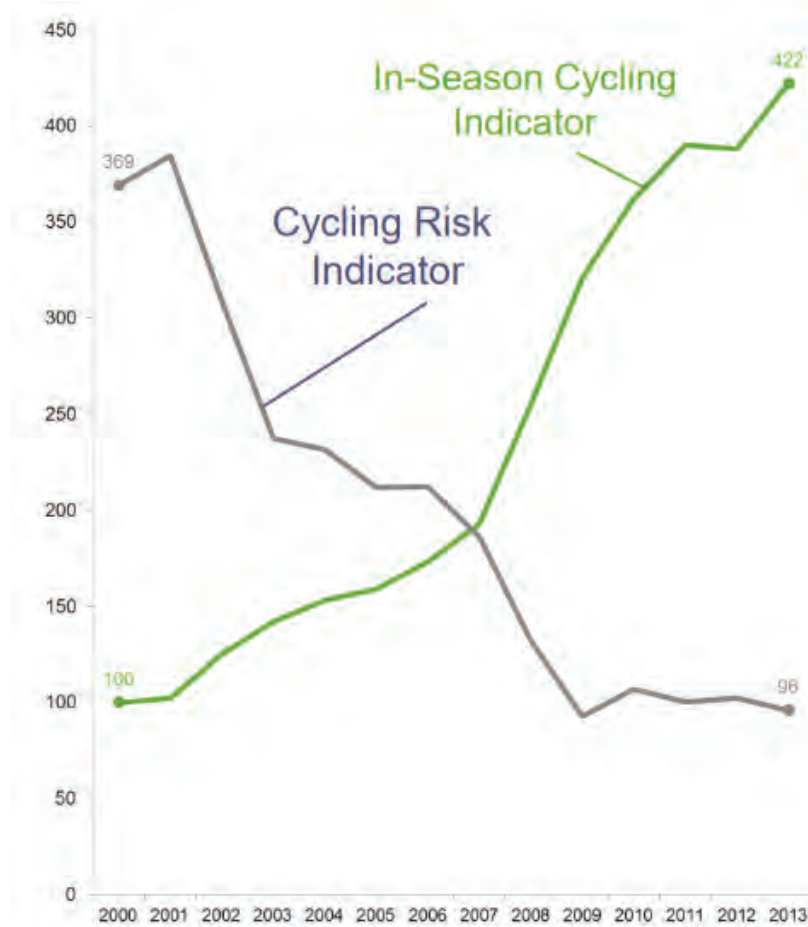


Providing protected bike lanes provides many benefits for cyclists, pedestrians and drivers. According to traffic data collected before and after installation of bike lanes on high-traffic streets in New York City, the following benefits were seen (<https://evogov.s3.amazonaws.com/91/media/146533.pdf>):

- Automobile travel times on project streets have improved while vehicle volumes were maintained.
- Crashes with injuries have been reduced by 17%.
- Pedestrian injuries are down by 22%.
- Total injuries have dropped by 20%.
- 75% decrease in average risk of a serious injury to cyclists from 2001 to 2013.

Cyclist injury risk was generally decreased on protected bicycle lane corridors within this study as cyclist volumes rise and cyclist injuries decrease as shown in **Figure 5.7**. The cycling indicator shows the increase in bicycling activity with the expanded bicycle facility network, and the risk indicator depicts the resulting reduction in risk by nearly 74%.

Figure 5.7: New York City Bicycling Risk Analysis



Miami-Dade 2040 Bicycle/Pedestrian Master Plan (2014)

This chapter updates the Miami-Dade Bicycle/Pedestrian Master Plan which is integrated into the corresponding county-wide Long Range Transportation Plan. The plan maps out at the county level proposed bicycle network improvements and calculates a bicycle level of service (BLOS) value for significant roadway segments using methodology established in the 2009 FDOT Quality/Level of Service (QLOS) Handbook. The BLOS Model is based on the following facility characteristics:

- Average effective width of the outside thru lane
- Number of through lanes
- Motorized vehicle volumes
- Motorized speeds
- Heavy vehicle (truck) volumes
- Pavement conditions

The BLOS scale is a report card style grading system that can be generally characterized as follows:

- BLOS A: Low level of interaction with vehicles, bicycle facilities are separated from traffic, appropriate for all users. The stress tolerance level is very low thus all adults and some children will bicycle on these roadways.
- BLOS B: Low interaction with vehicles, appropriate for all users. The stress tolerance level is low thus most adults will bicycle on these roadways.
- BLOS C: Moderate interaction with vehicles, appropriate for most users. The stress tolerance is moderate thus many adults will bicycle on these roadways.
- BLOS D: Moderate to high interaction with vehicles, appropriate for advanced adult bicyclists. The stress tolerance is moderate high thus some adults will bicycle on these roadways.
- BLOS E: High interaction with vehicles, cautious use by advanced adult bicyclists. The stress tolerance is high thus some adults will bicycle on these roadways.
- BLOS F: Very high interaction with vehicles, generally not safe for bicycle use. The stress tolerance is very high thus very few adults will bicycle on these roadways.

In the BLOS Model, bicycle levels of service are determined by assessing six variables into a tested algorithm to yield segment values, which are then compared to the BLOS thresholds. The results of the BLOS analysis show that nearly 2/3 of the major roadways within Miami-Dade County have a BLOS of E or F. A summary of the BLOS results are presented in **Table 5.3**, **Table 5.4** and **Figure 5.8**.

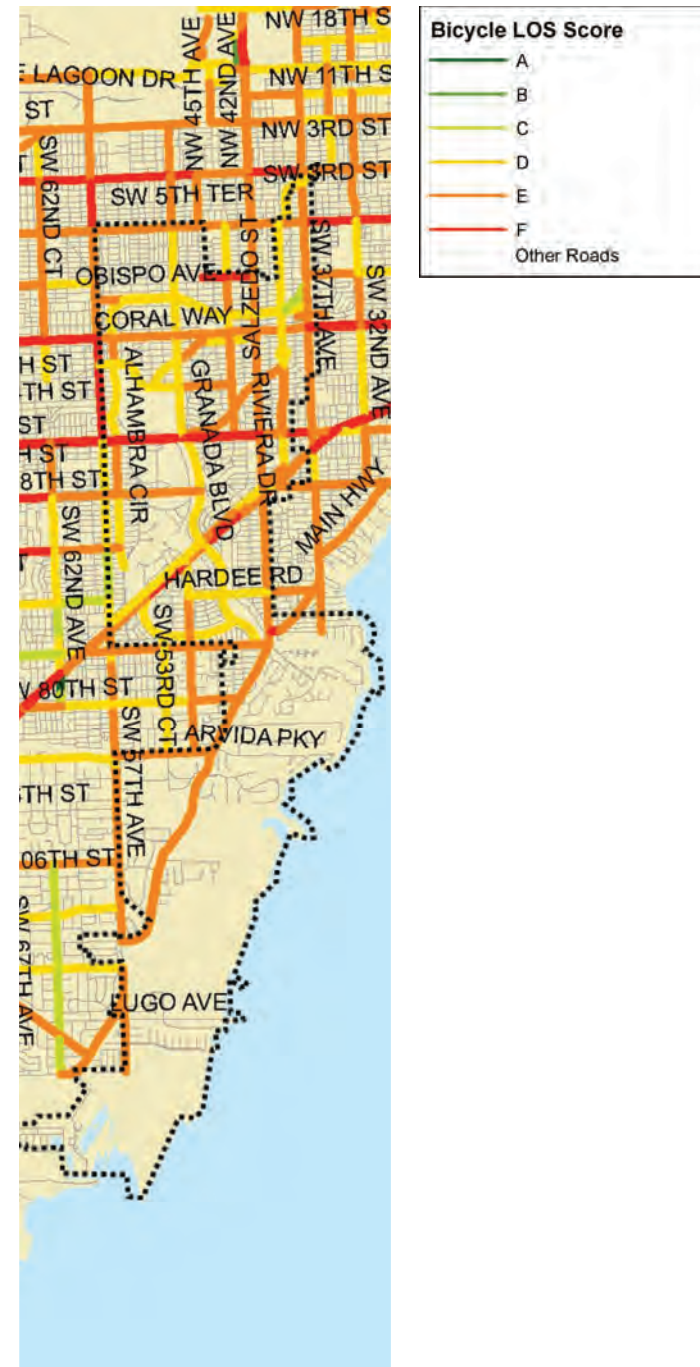
Table 5.3: Miami-Dade BLOS Summary

BLOS	LOS Threshold	Percent Roadways
A	<1.5	0.8%
B	1.5 - 2.5	1.3%
C	2.5 - 3.5	5.7%
D	3.5 - 4.5	25.5%
E	4.5 - 5.5	62.1%
F	>5.5	2.8%

Table 5.4: City of Coral Gables BLOS Summary

Road Name	To/From	BLOS
SW 16th St.	Salzedo St to Cortez St	F
Alhambra Circle	37th Ave. to San Amaro Dr.	D
Coral Way	37th Ave. to Anderson Rd.	E
Blue Rd.	57th Ave. to Granada Blvd.	E
Miller Rd.	57th Ave. to San Amaro Dr.	E
Grand Ave.	Ponce De Leon Blvd. to 37th Ave.	E
Sevilla Ave.	57th Ave. to Anastasia Ave.	D
Ponce De Leon Blvd.	37th Ave. to Alhambra Circle	D
Ponce De Leon Blvd.	Sevilla Ave. to US-1	E
Segovia St.	Alhambra Circle to Bird Rd.	E
University Dr.	Ponce De Leon Boulevard to Bird Rd.	E
Granada Blvd	Sevilla Ave. to 72nd St.	D
South Alhambra Circle	Ponce De Leon Blvd. to Granada Blvd.	D
SW 72nd St.	57th Ave. to 42nd Ave.	E
Old Cutler Rd.	72nd St. to 57 Ave.	E

Figure 5.8: Miami-Dade County BLOS Map



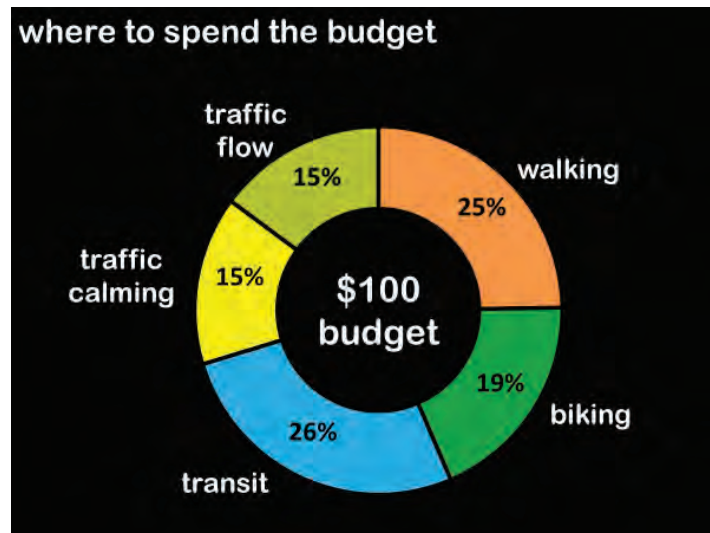
5.2 ANALYSIS

What We Heard

At the public meetings for the plan, participants expressed strongest preference for protected bicycle lanes, followed by bike share stations, bicycle parking, and bicycle network connectivity (Refer to **Figure 3.4**).

Safely biking the streets of Coral Gables is important to residents. The ability to bike safely in Coral Gables is a priority to residents, business owners, and stakeholders. During the open houses, the “Money Game” revealed that participants invested 19% of the City’s transportation budget into bike facility improvements, the third largest of the investment choices following transit (26%) and walking (25%) investments (See **Figure 5.9** and refer to **Figure 3.1**).

Figure 5.9: Citizen Investment Priorities



The map exercises at the public meetings captured specific improvement priorities across the city as shown in **Figure 5.10**. Those are further detailed in **Table 5.5**.

Figure 5.10: Bicycling Comment Synopsis Map



Table 5.5: Citizen Input on the Bicycling Mode

Road Name	Bike Connection	Bike Share Station	Bike Lane	Bike Repair Station	Bike Parking	Bike Blvd.
Segovia St. s. of Coral Way	✓					
Salzedo St. s. of University Dr.	✓					
Galiano St. at Cadima Ave.	✓					
Riviera Dr. at Ponce de Leon Bl.	✓					
University Dr. at Riviera Dr.				✓		
Ponce de Leon Bl. At Donatello St.				✓		
Hardee Rd. at Maynada St.				✓		
Cocoplum Circle				✓		
Cocoplum Circle					✓	
Granada Bl. (Blue Rd. – Bird Rd.)						✓
SW 72nd St.						✓
Cadima St. (LeJeune Rd. – Galiano St.)						✓
Galiano St. (Cadima St. – Ponce de Leon Bl.)						✓
Country Club Prado (Coral Way – SW 8th St.)			✓			
Granada Bl. (SW 8th St. – Alhambra Cir.)			✓			
Granada Bl. (Bird Rd. – Coral Way)			✓			
Salzedo St. (University Dr. – SW 8th St.)			✓			
Alhambra Cir. (Coral Way – Campo Sano Ave.)			✓			
N. Greenway Dr. (all)			✓			
S. Greenway Dr. (all)			✓			
Campo Sano Ave. (Granada Bl. – San Amaro Dr.)			✓			
San Amaro Dr. (Campo Sano Ave. – US 1)			✓			
S. Alhambra Cir. (US 1 – Granada Bl.)			✓			
Valencia Ave. (DeSoto Bl. – SW 37th Ave.)			✓			

Road Name	Bike Connection	Bike Share Station	Bike Lane	Bike Repair Station	Bike Parking	Bike Blvd.
Galiano St./Catalonia Ave. (LeJeune Rd. – SW 8th St.)			✓			
University Dr. (LeJeune Rd. – Ponce de Leon Bl.)			✓			
Old Cutler Rd. at Campana Ave.		✓				
Old Cutler Rd. (Matheson Park Entrance)		✓				
Cocoplum Circle		✓				
San Remo Ave. at Yumuri St.		✓				
San Amaro Dr. at Corniche St.		✓				
Stanford Dr. Circle (Univ. of Miami)		✓				
Stanford Dr. at Ponce de Leon Bl.		✓				
Table 5.5: Citizen Input on the Bicycling Mode (Continued)		✓				
Location		✓				
Ponce de Leon Bl. at S. Alhambra Cir.		✓				
Blue Rd. at Riviera Golf Course		✓				
Ponce de Leon Bl. at Suarez St.		✓				
Ponce de Leon Bl. at Greco Ave.		✓				
DeSoto Bl. at Granada Bl.		✓				
University Dr. at Riviera Dr.		✓				
Granada Bl. at N. Greenway Dr.		✓				
Segovia St. at Coral Way		✓				
Biltmore Way at Andalusia Ave.		✓				
Andalusia Ave. at Salzedo St.		✓				
Andalusia Ave. at Ponce de Leon Bl.		✓				
Andalusia Ave. at SW 37th Ave.		✓				
Ponce de Leon Bl. at Alhambra Cir.		✓				
Miracle Mile at Ponce de Leon Bl.		✓				
Giralda Ave. at Salzedo St. (parking deck)		✓				

The public participation process also revealed a series of basic street design and policy principles to encourage more people to use their bikes as a means of transportation. Developed by residents' feedback during the planning process, the five guideposts embody the vision of the participants for the future of bikeability as shown in **Figure 5.11**.

Figure 5.11: Guideposts for Improved Bikeability



The 8-80 Cities Program

The 8-80 Cities program is a non-profit group that works to improve the quality of life for people in cities by bringing citizens together to enhance mobility and public space to create more vibrant, healthy, and equitable communities. The group's mission is to promote public spaces that meet the needs of anyone from the 8-year old to the 80-year old. They do this by setting up workshops and coordinating with local groups to reimagine their communities in a way that all ages are served.



This concept of age-friendly design for all ages applies to the pedestrian network across the city, and should be a key design consideration for new installations and retrofitting existing installations.

Bike Walk Coral Gables

Bike Walk Coral Gables (BWCG), per their website, is a 501(c)(3) non-profit founded in 2011 dedicated to improving the quality of life through the support of programs and events that promote the accessibility of streets and trails for cyclists and pedestrians in Coral Gables and adjacent communities.



Its purpose is community-based education of cycling and walking as safe and healthy forms of transportation and recreation, and specifically to:

- Increase the community understanding and awareness of safe driving and necessary walking and cycling infrastructure through a coalition of public, private and community groups;
- Coordinate resources, facilitate and sustain the implementation of a comprehensive program for this purpose through work with government, businesses, residents and visitors.
- Establish a funding mechanism which can coordinate the educational, environmental and recreational programs.

One mechanism for advancing these purposes is by coordinating a variety of events put biking and walking into people's daily lives:

- Gables Bike Day: An annual ciclovía that promotes health, physical activity and bike safety in the community
- Bike & BBQ: A police escorted ride to Matheson Hammock Park to enjoy delicious grilled hotdogs and burgers.
- Tour of Kitchens - Bike Option: For the Coral Gables Community Foundation's Tour of Kitchens.
- Bike to Work Day: An annual event that promotes the bike as an option for commuting to work.
- PARK[ing] Day: As part of the annual worldwide event, shops, offices, and

local organizations transform metered speaking spots into temporary public parks.

- Bike tours that educate the community about the City’s unique history and safe bicycling habits.
- Gables Bike Tours: Fun and educational bicycle tours every 3rd Sunday of the month, presented with the Coral Gables Museum, offering a different theme and route.

Planning Organization, the Miami-Dade Bicycle Pedestrian Advisory Committee, and the Florida Department of Transportation.

Figure 5.12: Bicycle Sales, Repair, and Parking Sites

On its website (<https://bikewalkcoralgables.org>) is an inventory of bicycle facilities, as shown in **Figure 5.12**.

The BWCG website also shows a map of bicycle corridors (see **Figure 5.13**). This map includes existing facilities, as well as the group’s suggested “bike friendly” streets and “connection streets” where bikers should use caution. These corridors do not fully correlate with the City’s Bicycle and Pedestrian Master Plan, and are intended as the group’s guidance to the biking community to encourage greater participation.

Bike Safe Program

The BikeSafe program (www.ibikesafe.org) is an evidence-based program that educates middle school students on bicycling safety and health. The program was initiated at the University of Miami Miller School of Medicine in 2009. The program aims to improve bicycle safety, promote the use of bicycles as transportation, and improve overall bicycle environments for children. As part of improving the bicycle environment, BikeSafe works with communities to examine existing sites where incidents have occurred, in order to evaluate and create possible modifications to ensure safe environments in the future. The BikeSafe program collaborates with Miami-Dade Public Schools, the Miami-Dade Transportation

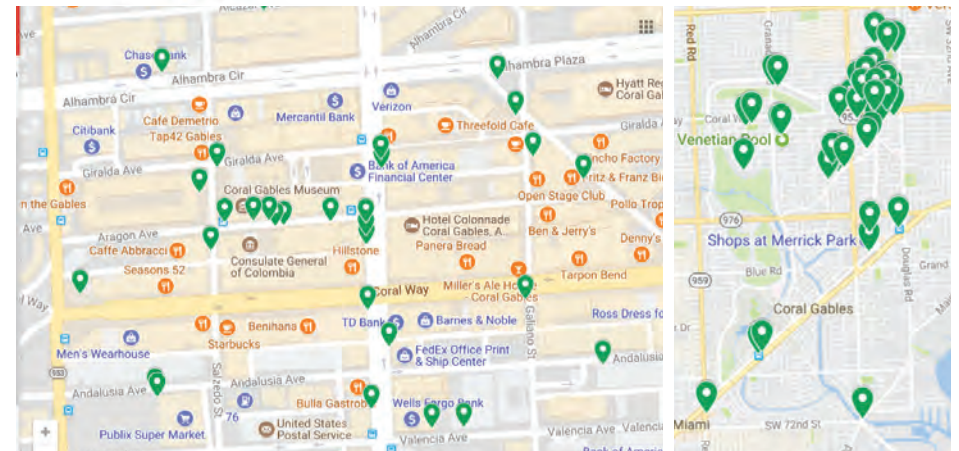
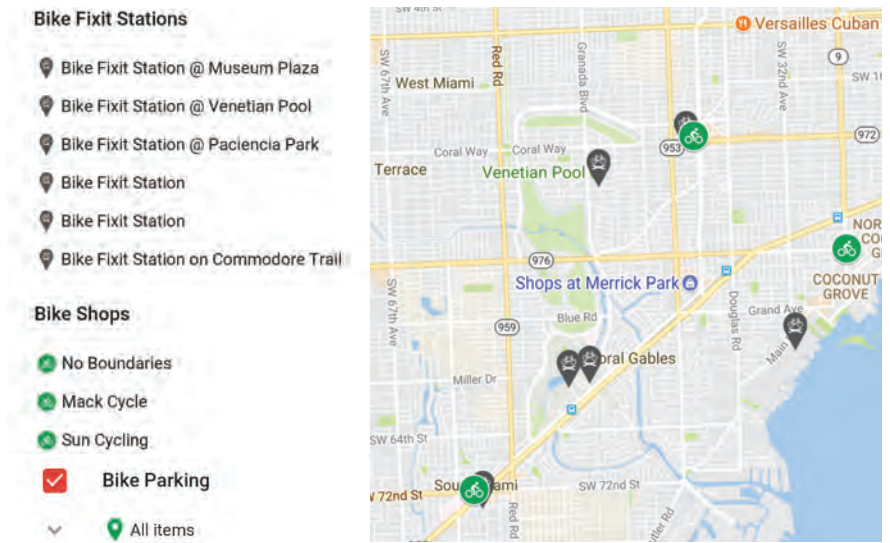
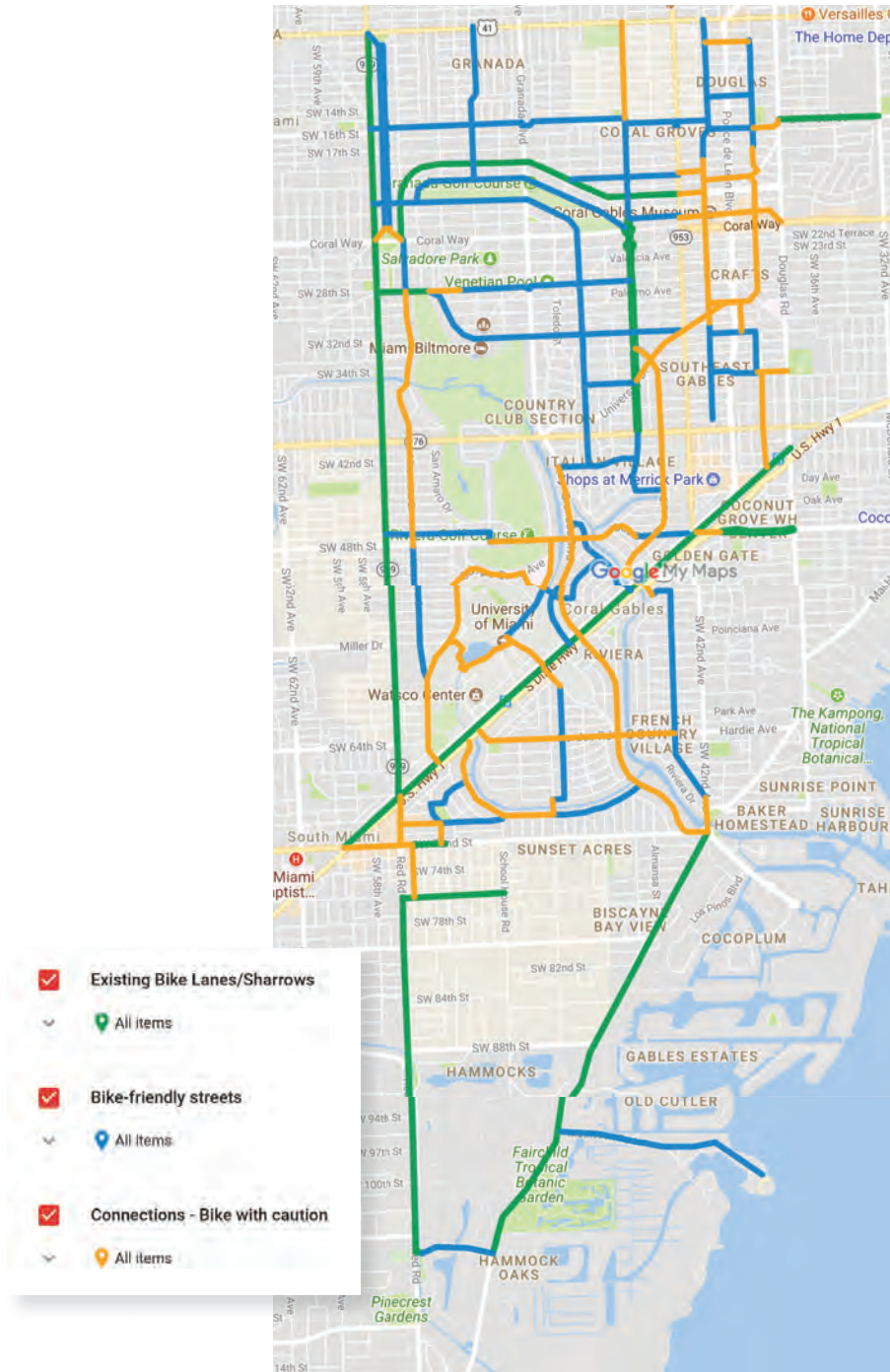


Figure 5.13: BWCG Bicycle Corridors



Transit System Bicycle Master Plan for Miami-Dade County

Prepared by the Miami-Dade TPO in 2014, the purpose of this plan was to evaluate existing bicycle-with-transit conditions within the County, identify applicable best practices for bicycle connections to transit, establish a vision for bicycle access to transit that guides land use and transportation policy decisions, and develop a comprehensive, prioritized, short-term and long-term master plan that recommended improvements for bicycle access to transit, and, support the Transit Development Plan updates and the County Bicycle and Pedestrian Master Plan.

This report sought to address the goal to enable 25,000 daily bicycle access trips to transit by 2023 which is 7.5% of the average daily boarding, through four specific objectives:

- Objective 1: Improve Bicycle Accommodations on Transit Vehicles
- Objective 2: Improve Bicycle Accommodations at Transit Facilities and Properties
- Objective 3: Partner with Other Agencies to Ensure Safe Bicycle Access to Transit Facilities and Services
- Objective 4: Establish Mechanism to Identify Progress and Deficiencies

It then identified policy and capital recommendations, each with specific strategies, to accomplish these objectives:

1. Immediate Implementation – Policy Recommendations
2. Short Term Implementation – Policy Recommendations
3. Mid-Long-Term Implementation – Policy Recommendations
4. Capital Improvement Recommendations

The capital improvement recommendations in the study for the three Metrorail stations in or near Coral Gables are presented in **Figures 5.14** through **5.16**. The focus of the bicycle access recommendations at all three stations are actions to facilitate bicycle movements within the stations. There are also wayfinding recommendations in the form of bicycle corridor signing and striping improvements on station approaches covering about 24 miles of roadway. For these improvements to be implemented, they need to be captured in the DTPW Transit Development Plan or the DTPW capital improvement program. It is recommended that the City advocate for implementation of these actions, working with the Cities of Miami and South Miami as needed.

Figure 5.14: Douglas Rd. Metrorail Station Bicycle Access Recommendations

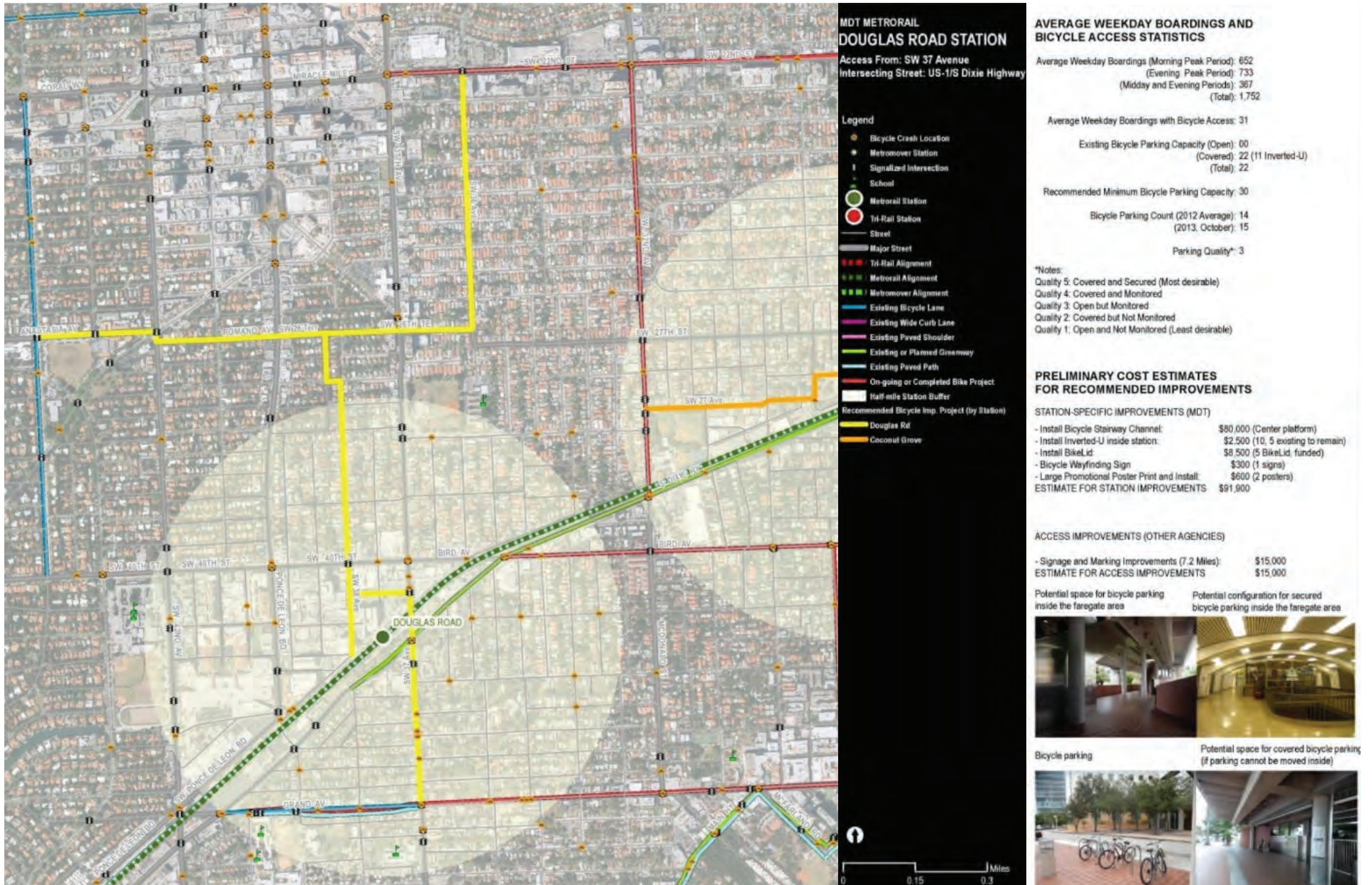
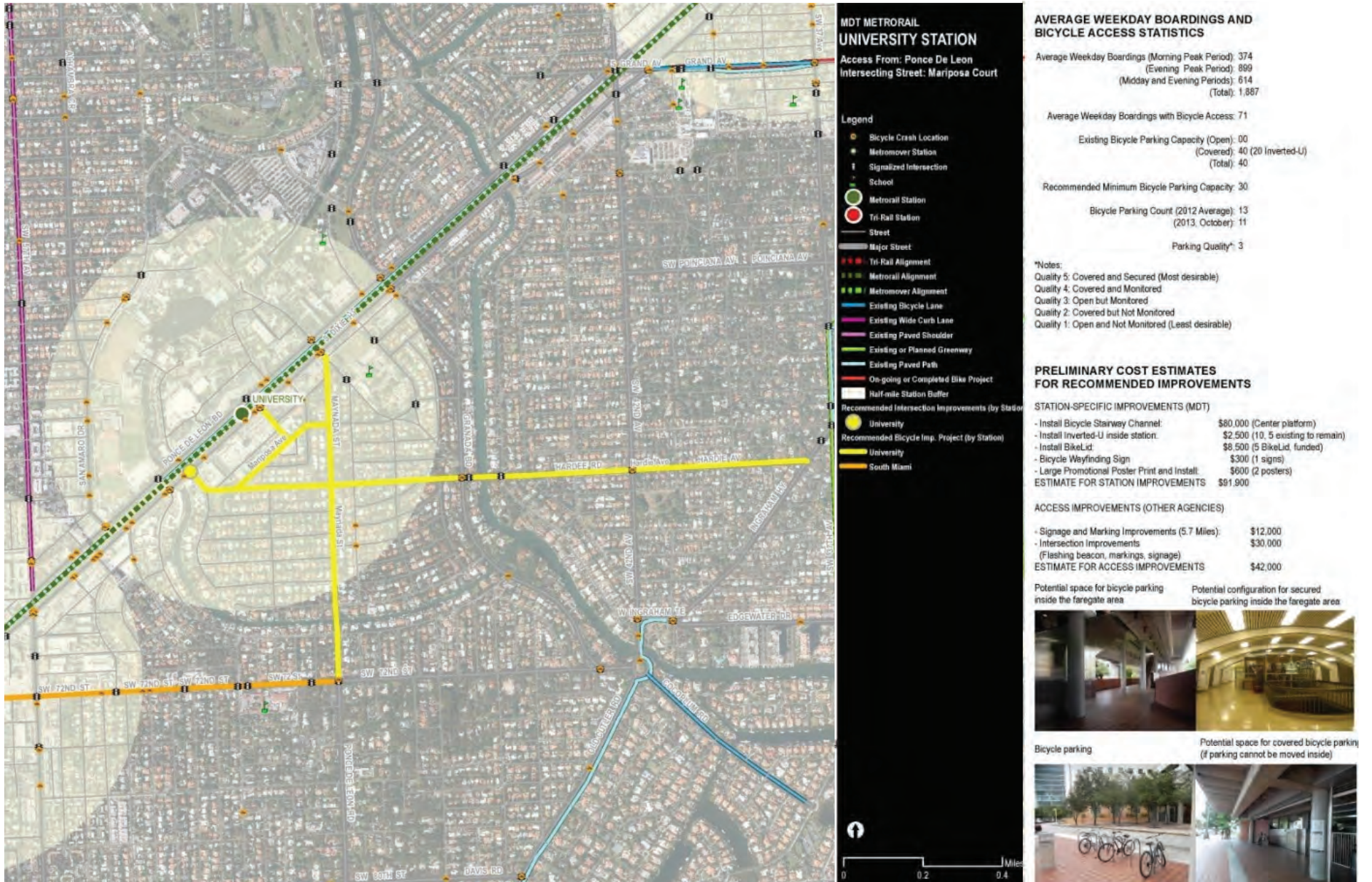


Figure 5.15: University Metrorail Station Bicycle Access Recommendations



AVERAGE WEEKDAY BOARDINGS AND BICYCLE ACCESS STATISTICS

Average Weekday Boardings (Morning Peak Period): 374
 (Evening Peak Period): 899
 (Midday and Evening Periods): 614
 (Total): 1,887

Average Weekday Boardings with Bicycle Access: 71

Existing Bicycle Parking Capacity (Open): 00
 (Covered): 40 (20 Inverted-U)
 (Total): 40

Recommended Minimum Bicycle Parking Capacity: 30

Bicycle Parking Count (2012 Average): 13
 (2013, October): 11

Parking Quality*: 3

*Notes:
 Quality 5: Covered and Secured (Most desirable)
 Quality 4: Covered and Monitored
 Quality 3: Open but Monitored
 Quality 2: Covered but Not Monitored
 Quality 1: Open and Not Monitored (Least desirable)

PRELIMINARY COST ESTIMATES FOR RECOMMENDED IMPROVEMENTS

STATION-SPECIFIC IMPROVEMENTS (MDT)

- Install Bicycle Stairway Channel: \$80,000 (Center platform)
- Install Inverted-U inside station: \$2,500 (10, 5 existing to remain)
- Install BikeLid: \$8,500 (5 BikeLid, funded)
- Bicycle Wayfinding Sign: \$300 (1 signs)
- Large Promotional Poster Print and Install: \$600 (2 posters)

ESTIMATE FOR STATION IMPROVEMENTS: \$91,900

ACCESS IMPROVEMENTS (OTHER AGENCIES)

- Signage and Marking Improvements (5.7 Miles): \$12,000
- Intersection Improvements (Fishing beacon, markings, signage): \$30,000

ESTIMATE FOR ACCESS IMPROVEMENTS: \$42,000

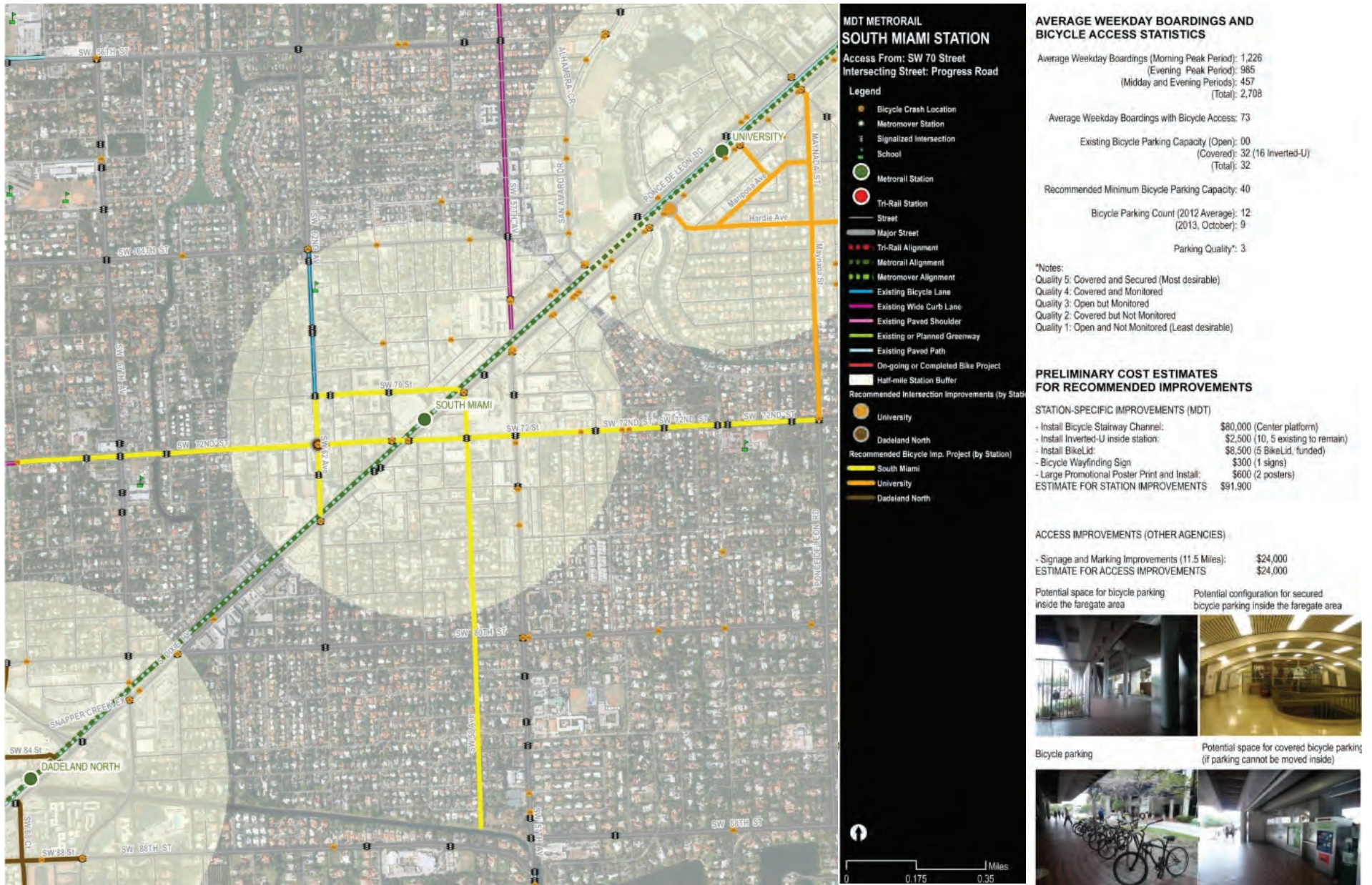
Potential space for bicycle parking inside the faregate area Potential configuration for secured bicycle parking inside the faregate area



Bicycle parking Potential space for covered bicycle parking (if parking cannot be moved inside)



Figure 5.16: South Miami Metrorail Station Bicycle Access Recommendations



First Mile / Last Mile Improvements

First Mile / Last Mile (FMLM) improvements relate to those network connections at key nodes that allow travelers to conveniently connect to major transportation hubs and activity centers. The term is most often used with transit centers like Metrorail stations, but relates to other activity centers such as downtown, schools and universities, shopping centers, and employment/retail/service centers such as Downtown Coral Gables. The term relates to both walking and bicycling access as well as secondary mobility tools such as transit circulators, transportation network companies, and other variations such as kiss-and-ride and park-and-ride.

The Coral Gables Trolley is an excellent example of FMLM connectivity for the Douglas Rd. Metrorail station, with transit routes linking the transit station to areas north and south of US 1. The bicycling network can support the FMLM access function. Another example is by using unnecessarily wide street pavement or by narrowing travel lanes and converting underutilized shoulders into bike lanes which can help complete the bike network, as shown in **Figure 5.17**.

Figure 5.17: Buffered Bicycle Lane



Miami-Dade 2040 Bicycle/Pedestrian Master Plan (2014)

This report updates the Miami-Dade Bicycle/Pedestrian Master Plan which is integrated into the 2040 Long Range Transportation Plan (see **Figure 5.18**). Pedestrian projects are identified for Alhambra Cir., Blue Rd., and Granada Drive. The M-Path shared bicycle/pedestrian path along Metrorail is also identified in the map. No other bicycle facility projects were included.

Figure 5.18: 2040 Bicycle-Pedestrian Master Plan



The adopted Miami-Dade 2040 Long Range Transportation Plan (LRTP), which considers findings from the Miami-Dade Bicycle/Pedestrian Master Plan, shows several projects within the City of Coral Gables, per **Figure 5.19**. The bicycle projects are related to the M-Path (Underline) shared pedestrian-bicycle path running along Metrorail and US 1.

Figure 5.19: 2040 LRTP Bicycle Projects



The identified bicycle projects in Coral Gables include:

- Phase 1 (Through 2020):
 - M-Path Improvements – Short Term.
- Phase 2 (2021-2025):
 - No bicycle projects.
- Phase 3 (2026-2030):
 - M-Path Improvements – Long Term.
- Phase 4 (2031-2040):
 - No bicycle projects.

Other projects shown on the map are pedestrian-oriented improvements.

DTPW 10-Year Transit Development Plan (2018-2027)

DTPW is required under Florida statute to prepare annually a 10-Year Transit Development Plan (TDP). The current TDP was reviewed to identify any bicycle-related projects in the agency work program. It was found that in the cost-feasible component was the replacement of existing bicycle lockers at Metrorail stations. In the unfunded category, further improvements to the M-Path running along US were listed. There were no other bicycle-related improvements found within the listed projects, such as first mile/last mile connection improvements to Metrorail stations.

City of Miami Bicycle Master Plan

The City of Miami Bicycle Master Plan (2009) envisioned a variety of bicycle facility types, including bicycle lanes and bicycle boulevards, or neighborhood greenways. The latter are considered an innovative approach to create bicycle routes on residential streets while addressing traffic calming concerns.

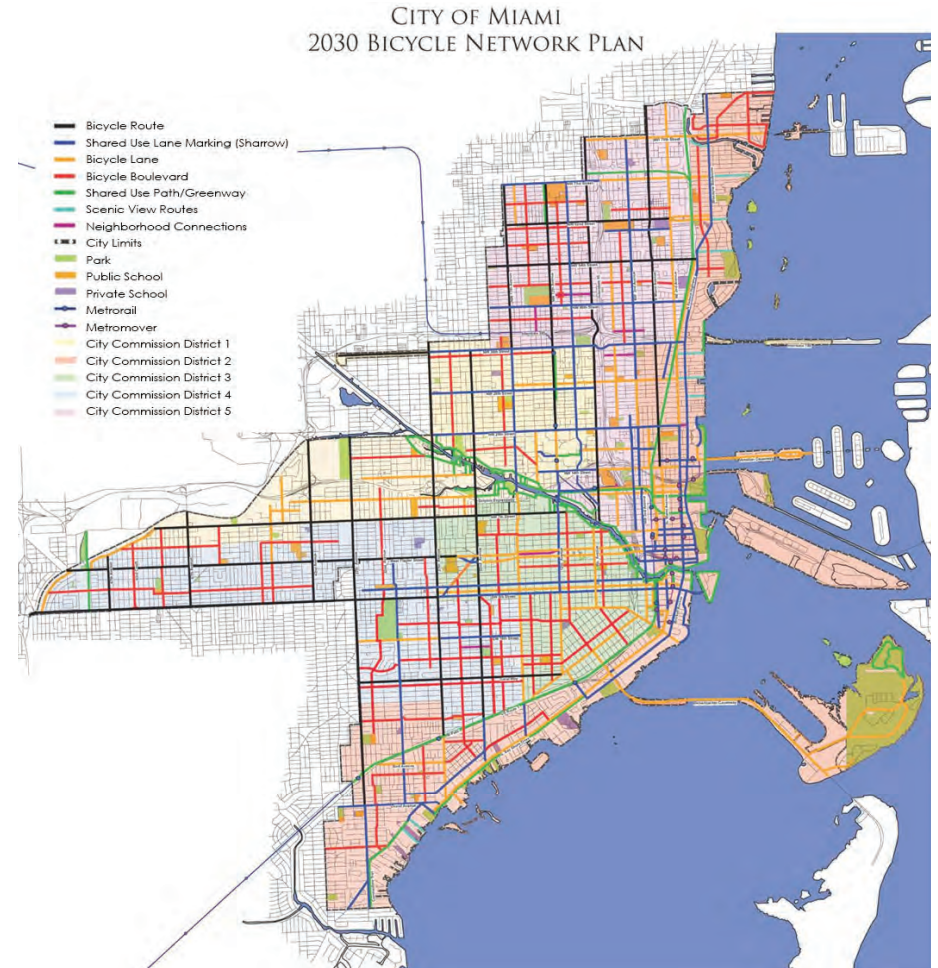


Because of their long shared border along the north and east side of Coral Gables, making connections between City of Miami bicycle facilities and those in Coral Gables is an important consideration. Connections with the planned City of Miami bicycle network are listed below. The City defines a bicycle route as a thoroughfare marked with signs intended to improve destination wayfinding network identification, and safety.

City of Miami Connecting St./ Coral Gables Connecting St. (if different)	City of Miami Facility Type	Status
• SW 47th Ave. Cortez St.	Bicycle Blvd.	Proposed
• W 48th Ave. Pizarro St.	Bicycle Blvd.	Proposed
• Flagler St.	Bicycle Route	Proposed
• SW 8th St.	Bicycle Route	Proposed
• LeJeune Rd.	Bicycle Route	Proposed
• SW 57th Ave.	Bicycle Route	Proposed
• SW 16th St. Between Zamora & Menores Aves.	Bicycle Lane	Existing
• Coral Way	Bicycle Route	Proposed
• SW 20th St. Alhambra Plaza	Bicycle Blvd.	Proposed
• SW 22nd Terr. Andalusia Ave.	Bicycle Blvd.	Proposed
• SW 26th St. Coconut Grove Dr.	Bicycle Blvd.	Proposed
• M Path	Shared Path	Existing
• Grand Ave.	Bicycle Lane	Existing
• Miller Rd.	Bicycle Blvd.	Proposed
• Ingraham Hwy.	Sharrow	Proposed
• Douglas Rd.	Sharrow	Proposed

Figure 5.20 shows the complete City of Miami bicycle network plan.

Figure 5.20: City of Miami Bicycle Network Plan



City of South Miami Intermodal Transportation Plan

This plan completed in 2013 developed a hierarchy of bicycle facilities within South Miami. Along South Miami’s eastern border with Coral Gables, the existing bicycle lanes along SW 57th Ave. south to SW 64th St. are recognized. South Miami has posted a sharrow treatment southbound on its side of SW 57th Ave. from

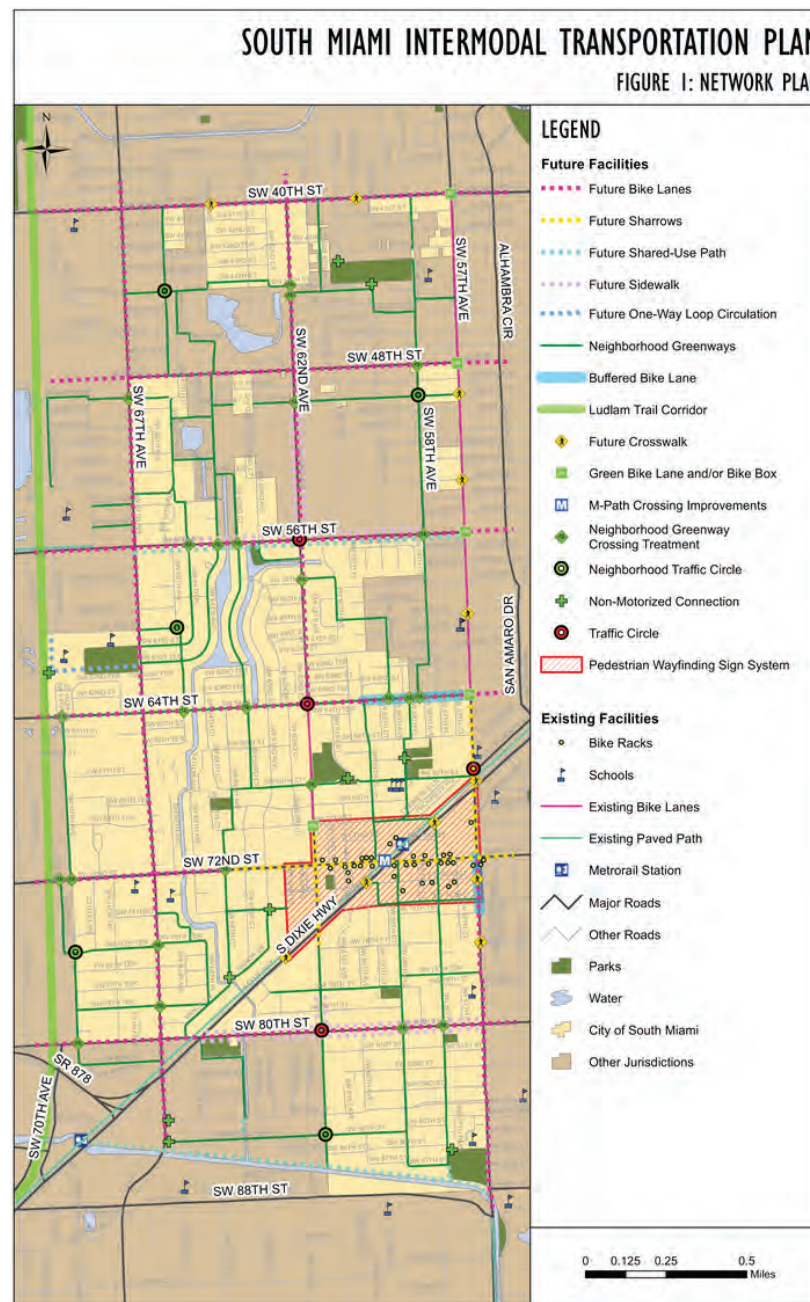
SW 64th St. to SW 68th St. just north of US 1. It proposes the sharrow treatment along SW 57th Ave. from SW 64th Ave./Brescia Ave. (in Coral Gables) across US 1 to SW 72nd Ave. Further south along SW 57th Ave. to SW 88th St., South Miami proposes bicycle lanes. Note that sharrows are shared lane markings with a variety of uses to support a complete bikeway network; it is not a facility type and should not be considered a substitute for bike lanes or other separation treatments where these types of facilities are otherwise warranted or space permits.

In the east-west direction, intersecting SW 57th Ave., South Miami proposed several intersecting facilities as listed below. None of these have existing connecting facilities within Coral Gables.

- SW 40th St./Bird Rd.
 - Bicycle lanes
 - Could continue into Coral Gables along Bird Rd.
- SW 48th St.
 - Bicycle lanes
 - Could continue into Coral Gables along Blue Rd.
- SW 56th St./Miller Dr.
 - Bicycle lanes
 - Could continue into Coral Gables along Miller Dr.
- SW 64th St.
 - Bicycle lanes
 - Could continue into Coral Gables along Brescia Ave.
- SW 72nd St.
 - Bicycle sharrows
 - Could continue into Coral Gables along SW 72nd St.
- SW 80th St.
 - Bicycle lanes
 - Extension eastward through unincorporated area to Coral Gables

These bicycle elements, existing and planned, are shown in **Figure 5.21**.

Figure 5.21: South Miami Intermodal Transportation Plan



Village of Pinecrest

The Village of Pinecrest shares its eastern border mostly along SW 57th Ave. with Coral Gables. Along the northern half of this shared border, Coral Gables is separated from Pinecrest by a canal with no crossing streets, so there is no practical opportunity of interfacing with Pinecrest bicycle facility plans in this area. From SW 117th Terr. to SW 136th St. along the SW 57th Ave. corridor, Pinecrest has three proposed bicycle routes reaching to the Coral Gables boundary and connecting to the existing Old Cutler Rd. shared use path corridor. However, the configuration of residential pockets on the Coral Gables side of the border does not support any bicycle facility designations on the part of Coral Gables. **Figure 5.22** shows the planned bicycle facilities within Pinecrest.

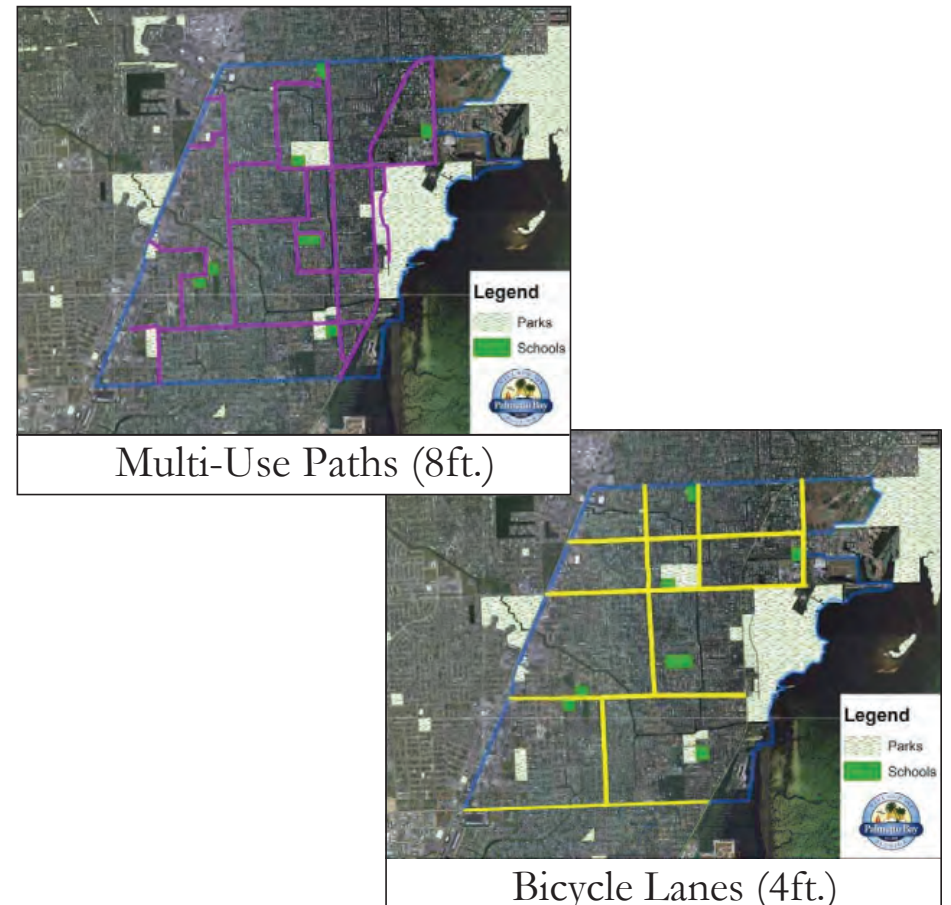
Figure 5.22: Village of Pinecrest Bicycle Plan



Village of Palmetto Bay

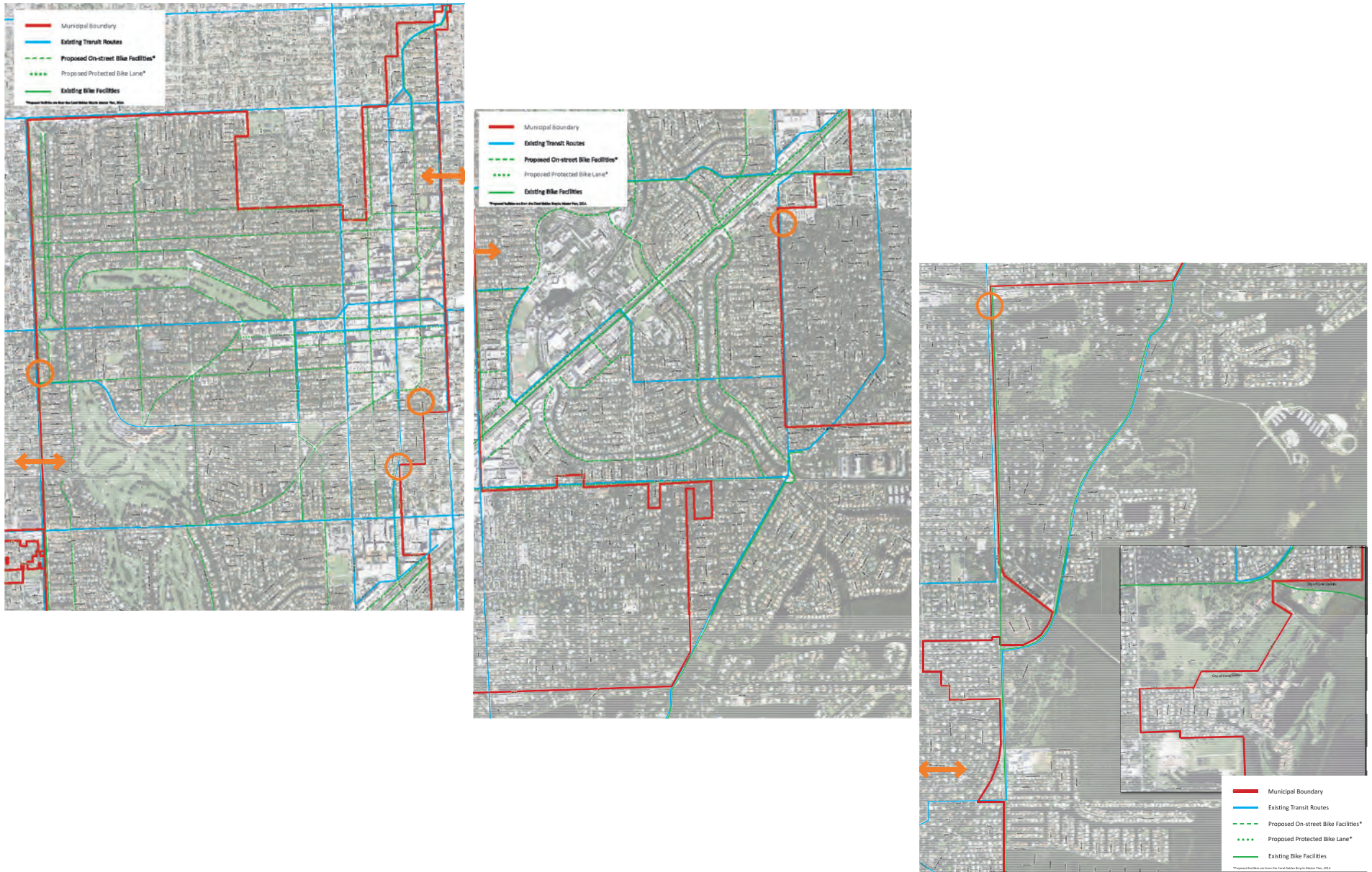
The Village of Palmetto Bay abuts Coral Gables for a short distance along SW 67th Ave. near SW 144th St. The village is planning both multi-use paths and bicycle lanes along SW 67th Ave. There are six residences within Coral Gables which front on SW 67th Ave. which would be affected by these projects. The existing Old Cutler Rd. shared use path connects into Palmetto Bay from Coral Way but passes through a segment of the Town of Pinecrest. **Figure 5.23** shows the Village’s planned bicycle related improvements.

Figure 5.23: Village of Palmetto Bay Bicycle-Related Plans



Through the public process, additional bike connection locations with adjacent jurisdictions were as illustrated in **Figure 5.24**.

Figure 5.24: Bicycle Connections



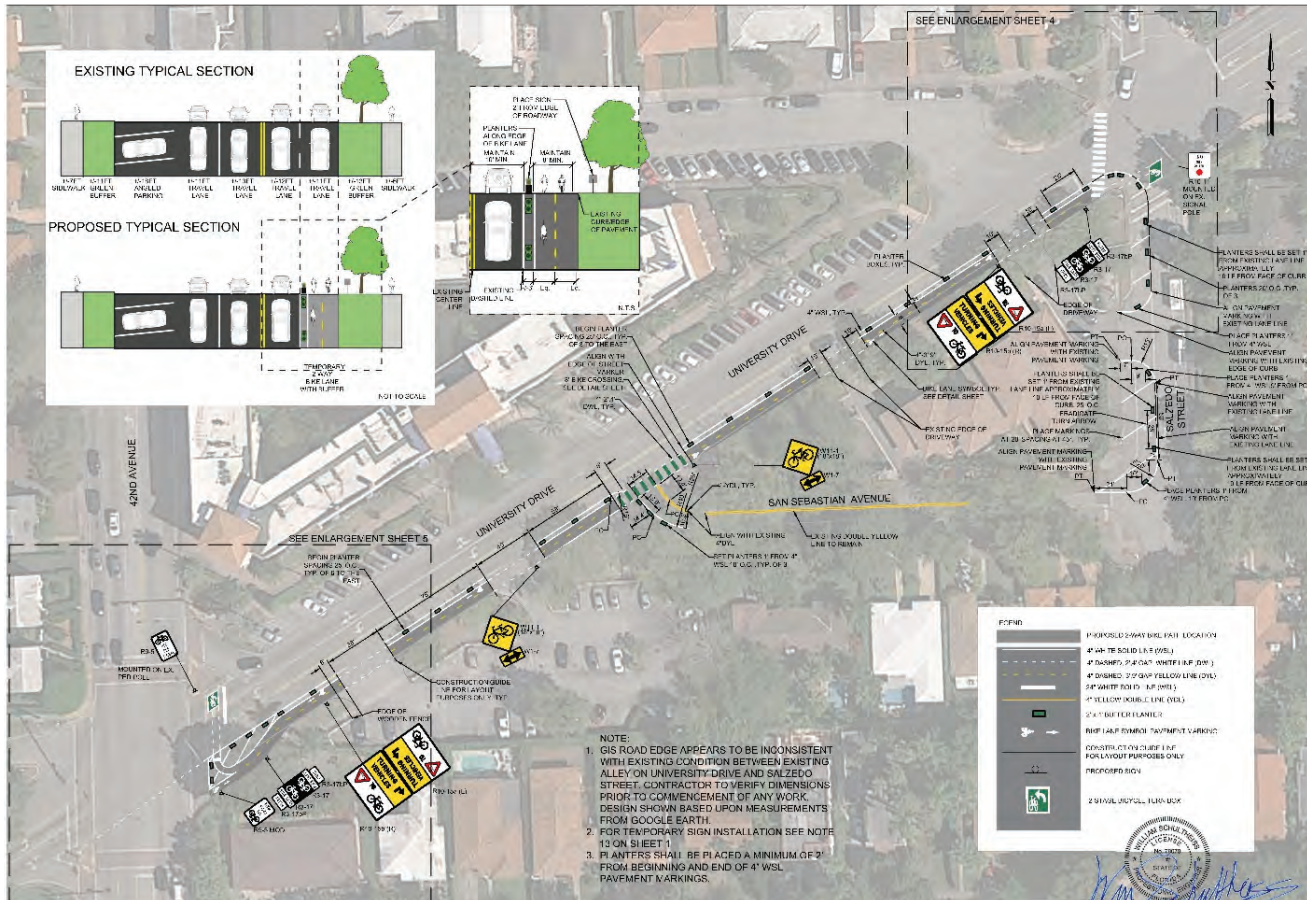
Recent Coral Gables Bicycle Projects

- Bicycle Facility Demonstration Project

In late 2017, the City constructed temporary separated bicycle facilities on Salzedo Street and University Drive for a two-month trial period. These temporary facilities were protected from motorized traffic by 500-pound rectangular decora-

tive concrete pots filled with plantings. This demonstration project was intended to provide the opportunity for bicyclists to experience a two-way protected bicycle facility. At the end of the demonstration period, the streets were returned to their original condition. **Figures 5.25 and 5.26** provide the concept diagrams for the pilot projects. The demo project was popular and many cyclists have asked city staff if the roadway changes could be made permanent.

Figure 5.25: Demonstration Project on University Drive



Source: Jennifer Garcia, Coral Gables Planning Dept.



Source: Jennifer Garcia, Coral Gables Planning Dept.

Figure 5.26: Demonstration Project on Salzedo Street

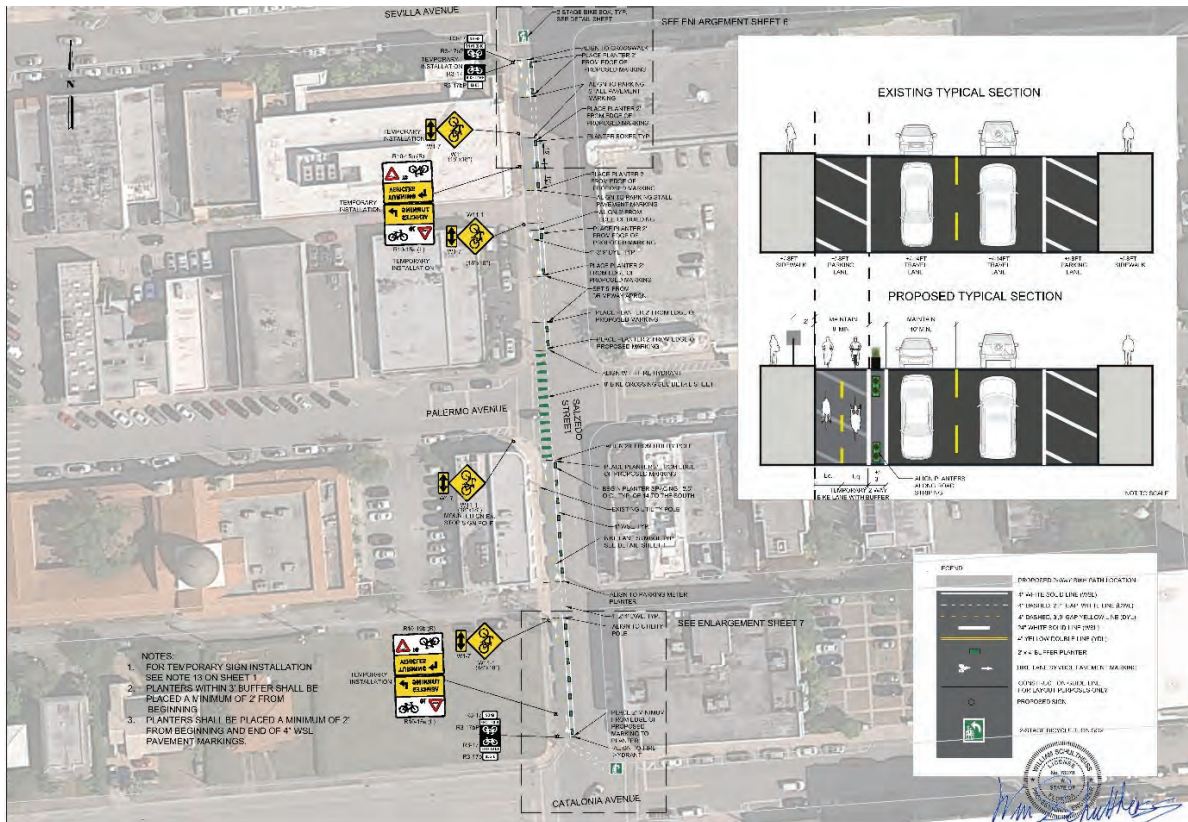


Figure 5.27: Sevilla Ave. Bicycle Lanes



- Sevilla Ave. Bicycle Lanes
- Anastasia Ave. Sharrows

Sharrows were installed on Anastasia Ave. connecting to the bike lanes on Sevilla Ave. west of San Domingo St. Sharrows are designations with pavement markings and supporting signing that reinforce that bicycles may use the travel lane and motorists must respect that designation. **Figure 5.28** shows the field conditions and a graphic of the arrangement. Sharrows should not be used because some confuse them as dedicated bicycle lanes.

Coral Gables Bicycle Pedestrian Master Plan

The Commission Adopted Bicycle Pedestrian Master Plan (2014) laid out a comprehensive network of bicycle facilities to link all the neighborhoods of the City together. The master plan network guides bicycle facility implementation in the

Figure 5.28: Anastasia Ave. Sharrow



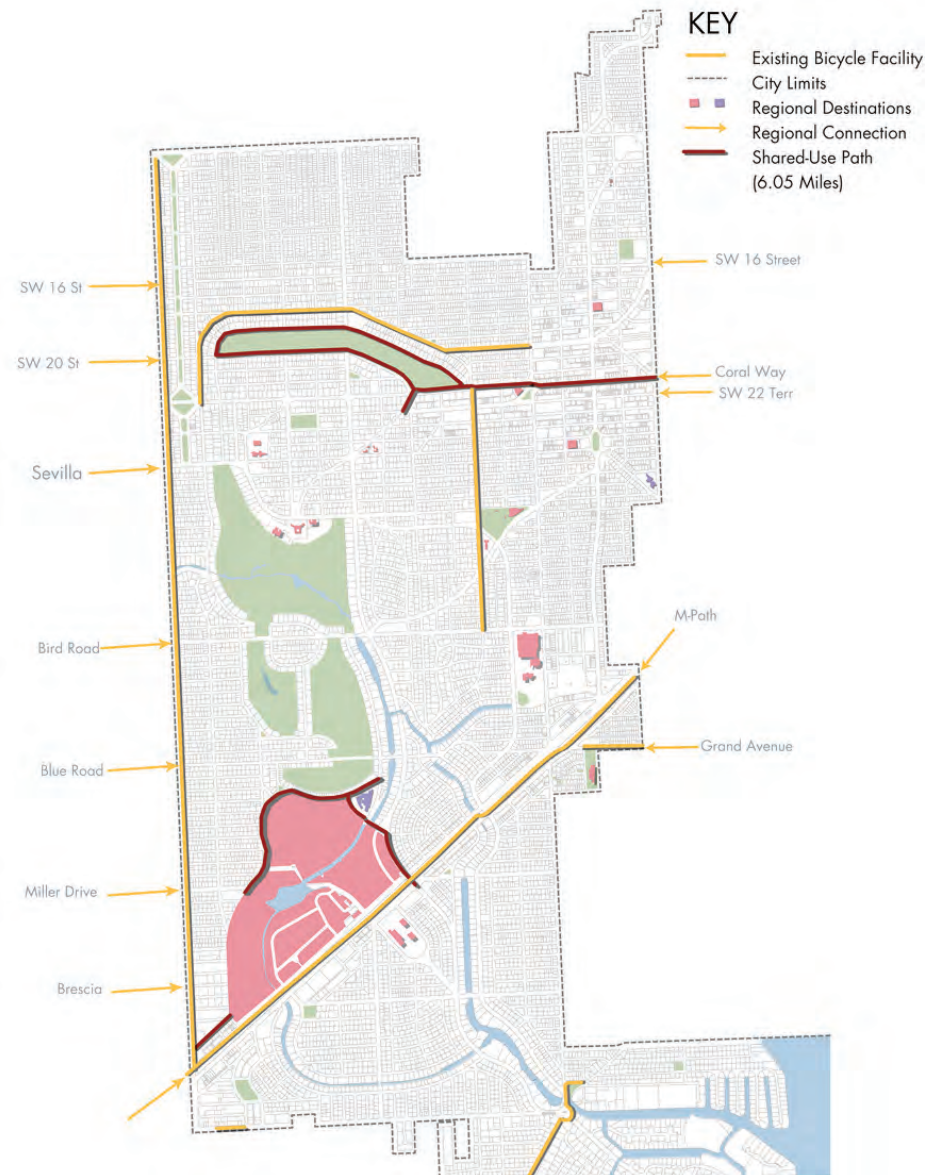
identified corridors. Each bike facility is context sensitive with the goal of minimizing impacts to vehicular traffic flow and on-street parking **Figure 5.29** presents the master plan network. As the plan is implemented, corridor-specific realignments have been made and can be expected going forward. It is also noted that some bicycle facility recommendations in the plan may require minor pavement widening not noted in the plan.

Figure 5.29: Bicycle Master Plan



The shared use path recommendations from the plan are shown in **Figure 5.30**.

Figure 5.30: Proposed Shared Use Paths



The specific shared use paths are discussed further as follows:

- University of Miami Loop [San Amaro Dr. (Miller Dr. to Campo Sano Dr.)/Campo Sano Dr. (Miller Dr. to Pisano Ave.)/Pisano Ave. (Campo Sano Dr. to Granada Blvd.)/Granada Blvd. (Pisano Dr. to the M-Path)]: There is an existing 10-foot sidewalk on San Amaro Dr. that would be widened. There is room on Campo Sano Dr. and Granada Blvd. for the path as well, but along Pisano Dr., it would be necessary to remove on street parking for student residences and a canal bridge would require widening. The concept has merit and should be pursued further, but will require a solution for the Pisano Dr. segment.
- Greenway Drive (surrounding the Coral Gables Golf Course): This is a popular looping course for walkers and bicyclists, but is unpaved for pedestrians. The plan recommended a shared use path 12 feet wide to be built on the golf course side of the street. This proposed path could also be used by golf carts to serve users of the golf course.
- DeSoto Blvd. (Coral Way to Andalucia St.): This one-block long segment would tie the shared use path to other bicycle facilities. The path along DeSoto Blvd. appears unworkable due to a neighborhood entry feature and other space constraints. However, a path straight south along Anderson Rd. appears workable along the east side of the street if the street centerline is offset a few feet and several very generous turning lanes are retrograded to simpler, shorter-radius turns. This segment is recommended if it fits in with the evolution of other bicycle facilities as the plan is interpreted going forward.
- Coral Way (North Greenway Dr. to LeJeune Rd.): The plan called for this segment of Coral Way to have a shared use facility tying into the Miracle Mile segment which was not implemented (see below). The shared use path would have to negotiate the traffic roundabout at Segovia St. There does not appear to be sufficient room along the rest of the segment east to

LeJeune Rd. which is one-way westbound. There are sidewalks, and room for a westbound buffered bicycle lane with some street adjustments. It is suggested that this segment be studied further in the context of how it fits in with adjacent planned bicycle facilities.

- Miracle Mile (Coral Way between LeJeune Rd. and SW 37th Ave.): The plan proposed a sidewalk-level bike path adjacent to parked cars as part of the street reconstruction project. Based on further decisions rendered as part of the street design process, it was decided not to include bicycle-specific facilities into the street renovation concept.
- Levante Ave. (San Amaro Dr. to SW 57th Ave.): This section was proposed for a shared use path, but is challenged by angle parking and large street trees. With the M-Path 1-1/2 blocks to the south, it is recommended to drop this segment. The M-Path to be transformed into the Underline is discussed further on page 42.

Gables Greenways Projects

- Options Being Considered

The following images help to illustrate what different types of bicycle facilities look like in both residential and downtown settings:

Residential Streets - Existing Conditions

Figure 5.31 shows a residential street. It is used to illustrate the residential portions of the Gables Greenways plan. The roadway is typically 24 to 26 feet wide with one travel lane in each direction. Intermittent 4 to 6 feet wide sidewalks exist along both sides of the street, separated by a wide grass buffer lined with trees. Bikes currently either share the road with fast moving traffic, or share a narrow sidewalk with pedestrians. Not all residential streets share this condition, and therefore different parts of the network could have different solutions.

Figure 5.31: Residential Street Existing Conditions



Residential Streets - Conventional Bicycle Lanes

Installing conventional bicycle lanes requires minimal road widening (2 to 3 feet on either side). Conventional bike lanes, however, provide minimal separation from traffic. This concept is shown in **Figure 5.32**:

Figure 5.32: Conventional Bicycle Lanes



Residential Streets - Buffered Bicycle Lanes

Installing buffered bicycle lanes requires some additional road widening (5 to 6 feet on either side). A painted buffer provides separation from traffic as shown in **Figure 5.33**:

Figure 5.33: Buffered Bicycle Lanes



Figure 5.34: Buffered Bicycle Lanes



Figure 5.35: Shared Use Path



Residential Streets - Separated Bicycle Lanes

To install separated bicycle lanes, the roadway is narrowed to 20 feet, while a 3-foot grass buffer separates the bike lane from traffic. Landscaping can be planted in the grass buffer to provide additional comfort for bicyclists (see Figure 5.34).

Residential Streets - Shared-Use Path

Installing a shared use path leaves the roadway in its existing conditions. A 12-foot shared-use path replaces the sidewalk on one side of the road, where bicyclists in both directions share the space with pedestrians away from traffic. This type is shown in Figure 5.35.

Residential Streets – Bicycle Boulevards

The National Association of City Transportation Officials (NACTO) has published a series of guidance reports on multimodal urban transportation treatments, including the Urban Bikeway Design Guide. NACTO defines Bicycle boulevards as streets with low traffic volumes and speeds, designated and designed to give bicycle travel priority. Bicycle Boulevards use signs, pavement markings, and speed and volume management measures to discourage through trips by motor vehicles and create safe, convenient bicycle crossings of busy arterial streets.

Bicycle Boulevards are alternately referred to as Neighborhood Greenways, since their treatments to control vehicle volumes and speeds to comfortable levels for bicyclists and pedestrians to manageable levels create a neighborhood-oriented travel corridor.

Design treatments on these streets can be grouped into measures that provide the following benefits.

- **Route Planning:** Direct access to destinations.
- **Signs and Pavement Markings:** Easy to find and to follow.
- **Speed Management:** Slow vehicle speeds.
- **Volume Management:** Low or reduced motor vehicle volumes.
- **Minor Street Crossings:** Minimal bicyclist delay.
- **Major Street Crossings:** Safe and convenient crossings.
- **Offset Crossings:** Clear and safe navigation.
- **Green Infrastructure:** Enhancing the environments with green swales and drainage elements.

As noted, the bicycle boulevard option is often used in conjunction with traffic calming treatments address excessive traffic speeds and traffic volumes arising from traffic cutting through the neighborhood. In the case of Miami Dade County, bike boulevard are not allowed unless the street meets traffic calming standards.

The recent passage of the 25 mph speed limits in Coral Gables neighborhoods is a strategic contribution, which in tandem with other traffic management measures as needed will create enhanced neighborhood livability,. **Figure 5.36** illustrates various bicycle boulevard treatments in cities around the country.

However, there is currently no mechanism within the City of Coral Gables that allows the construction of a bicycle boulevard. Miami-Dade County does not allow them unless the street meets traffic calming standards.

Downtown Streets - Existing Conditions

Figure 5.37 shows a view of Salzedo St. looking south toward University Dr. It is used to illustrate the downtown portions of the Gables Greenways plan. The roadway through this area is typically 43-foot-wide and has one travel lane in each direction with parallel on-street parking on both sides of the street. Other parts of this corridor have two lanes in each direction and no on-street parking. The lack of street trees creates a hot and barren environment.

Figure 5.36: Examples of Bicycle Boulevards



Sources: 1. www.bikewalkincolnpark.com, 2. www.bicycleallianceblogspot.com
 3. www.ci.berkeley.ca.us, 4. www.bikemore.net, 5. www.stoctioncitylimits.com

Figure 5.37: Salzedo St. Existing Conditions



Downtown Streets - Separated Bicycle Lanes (Short-Term)

To install separated bike lanes, parking is consolidated to one side of the street, and the vehicular travel lanes are narrowed to 10 feet. The bicycle lane on the side where parking has been removed is separated from the vehicular travel lanes by a painted buffer and concrete planters. A parking-protected bike lane is installed on the other side of the street. The parking-protected lane is separated by parked cars and concrete planters. A 3-foot buffer separates the lane from parked vehicles in order to provide enough room for car doors to open outside of the bike lane (see **Figure 5.38**).

In the permanent condition, new curbs replace the painted buffers, and street trees are planted in between parking spaces (see **Figure 5.39**).

Figure 5.38: Separated Bicycle Lanes (Short Term)



Figure 5.39: Separated Bicycle Lanes (Long Term)



Downtown Streets - Separated Cycle Track

To install a separated cycle track, parking is removed on one side of the street and the vehicular travel lanes are narrowed to 10'. The space where the on-street parking is removed, is replaced by an 11-foot-wide two-way cycle track, separated

from traffic by a painted buffer and concrete planters (see **Figure 5.40**).

Figure 5.40: Separated Cycle Track (Short Term)



In the permanent condition, the painted buffer with planters is replaced by a planted median with street trees. On the other side of the street new bulb-outs are installed with street trees planted in between the parking spaces (see **Figure 5.41**).

Figure 5.41: Separated Cycle Track (Short Term)



Downtown Streets - Conventional Bicycle Lanes

Conventional bicycle lanes are installed by narrowing the vehicular travel lanes to 10 feet . This provides just enough room to install a 4.5-foot-wide bicycle lane directly adjacent to the parallel on-street parking lane. This configuration manages to preserve on-street parking on both sides of the street by opting for a design solution that leaves bicyclists sandwiched in between moving traffic and parked cars. Car doors open directly into the bike lane. This concept is shown in **Figure 5.42**.

Figure 5.42: Conventional Bicycle Lanes (Short Term)



In the permanent condition, bulb-outs are installed on both sides of the street with street trees planted in between the parking spaces (see **Figure 5.43**).

- Priority Corridors for Implementation

Portions of four corridors (see **Figure 5.44**) are being evaluated for near-term development of low-stress bicycle facilities under the branding of Gables Greenways projects:

- Salzedo St./University Dr.
- Andalusia Ave./Aragon Ave.
- Alhambra Circle
- Maggiore St.

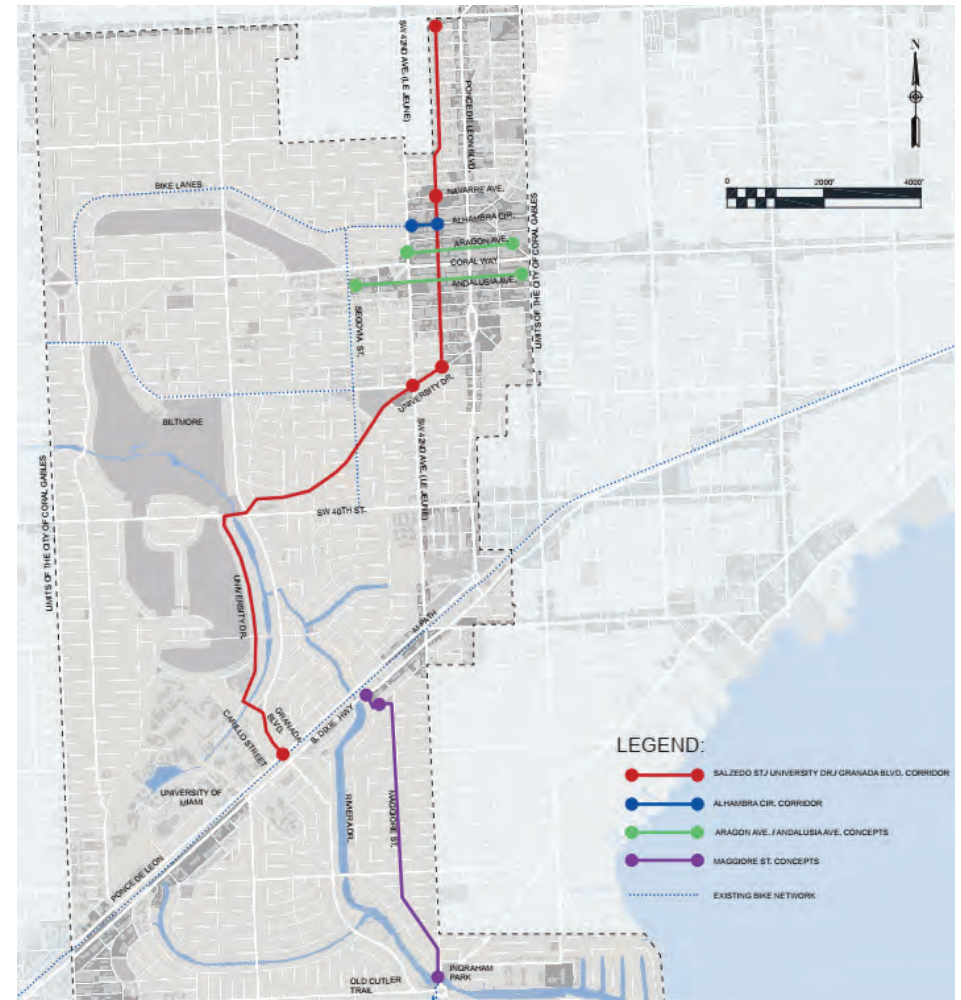
The development of these and related concepts is being conducted with community input as part of the design concept process.

Figure 5.43: Conventional Bicycle Lanes (Long Term)



Figure 5.45 presents the existing conditions and proposed concepts for Salzedo Street from SW 8th St. to University Dr. in two segments, one downtown and the other the residential district north of downtown. The north segment is being considered as a bicycle boulevard wherein vehicles and bicycles would equally share the travel lanes. In the downtown segment, three distinct options have been developed.

Figure 5.44: Priority Corridors for Implementation



In the downtown, there are three downtown east-west connection corridors. On Alhambra Circle which has angle parking, the identified option calls for directional bicycle lanes separated from the travel lanes by a buffer. On Aragon Way, the proposal is for a bicycle boulevard treatment. On Andalusia Ave., an eastbound bicycle lane, between the parked cars and the next travel lane with a buffer treatment is proposed. These concepts are shown in **Figure 5.46**.

Figure 5.45: Salzedo Street Concepts

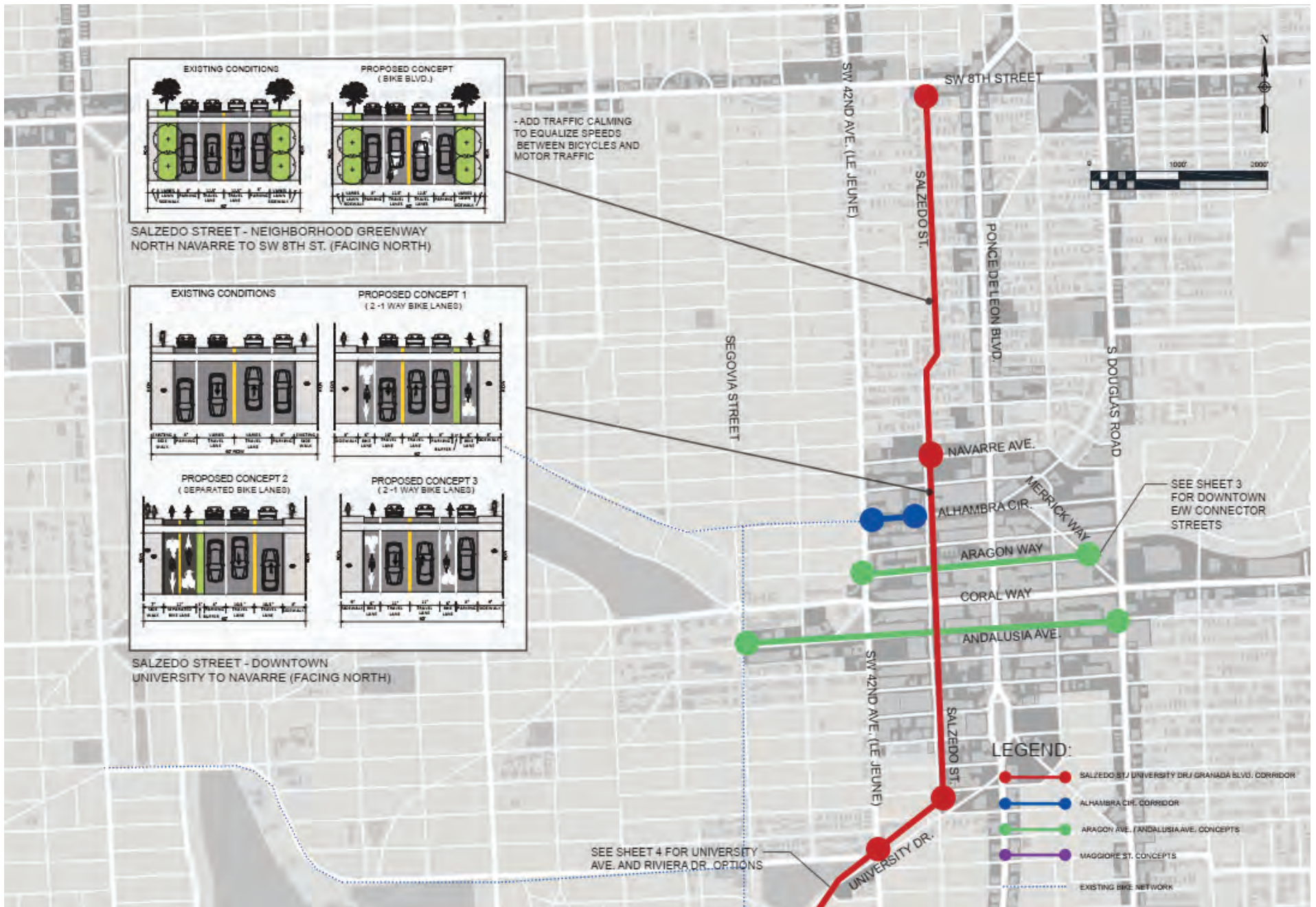


Figure 5.46: Downtown Priority Connection Concepts

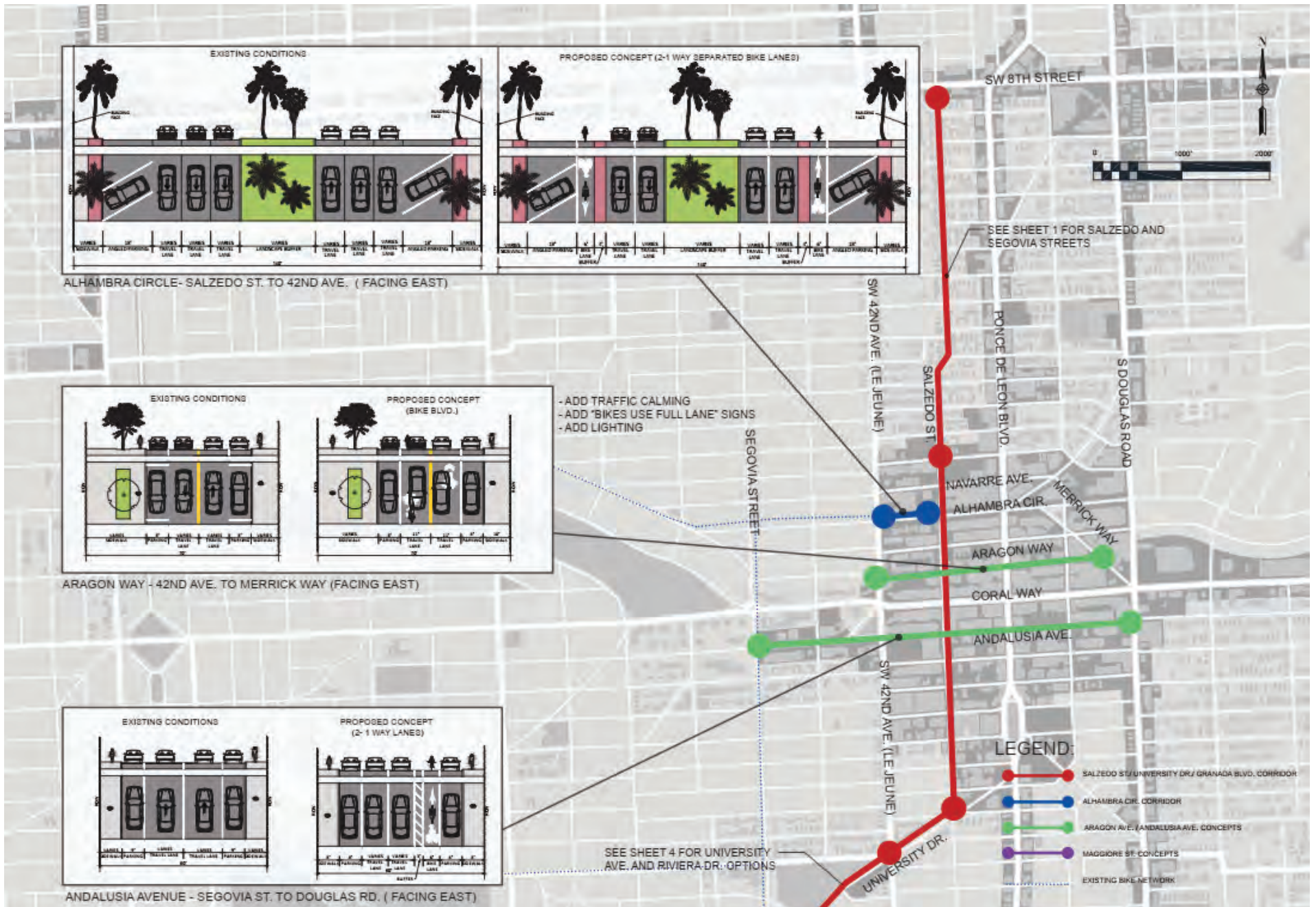


Figure 5.47: University Drive Concepts

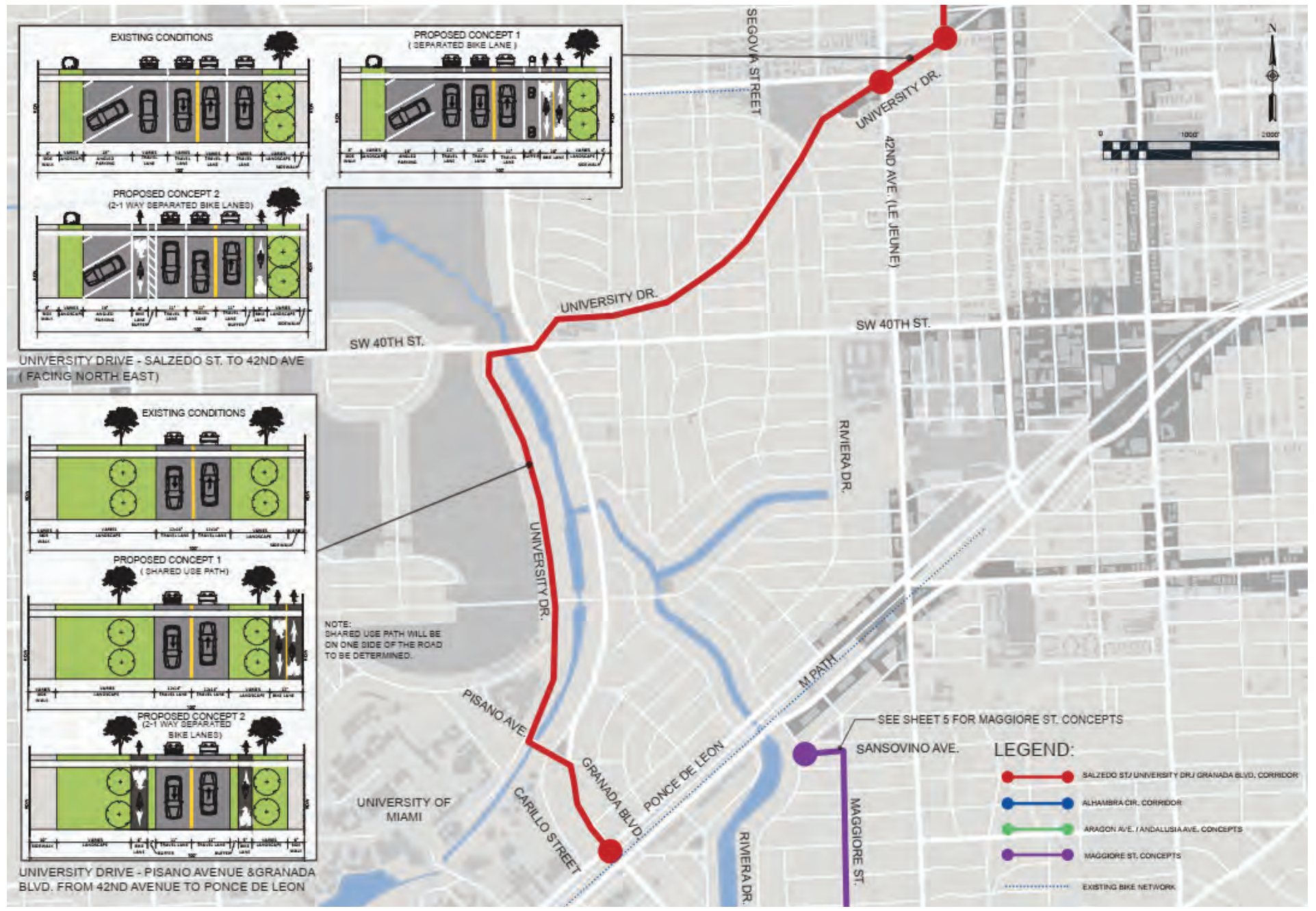


Figure 5.48: Maggiore Street and San Vicente Street Concepts

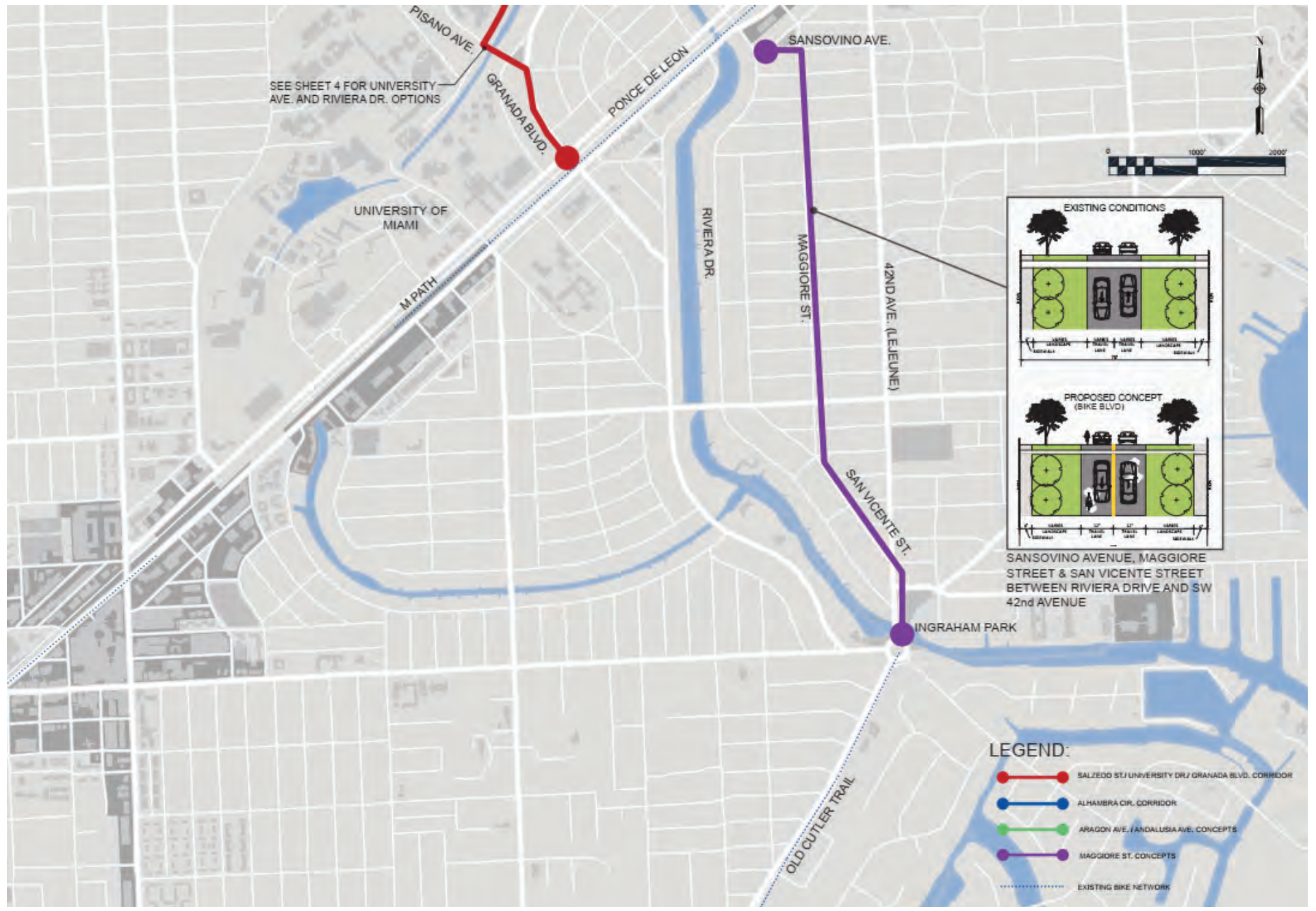


Figure 5.47 shows the various concepts for the University Dr. corridor. For University Dr. between Salzedo St. and LeJeune Rd., options are separated bicycle lanes on either side of the street and a two-way cycle track on the south side of the street. For the balance of University Dr. south to US 1, the options are separated bicycle lanes on either side of the street and a two-way shared use path on the east side of the street.

Figure 5.48 shows the concepts for the South Riviera Drive and the Maggiore St. corridors south of US 1. For South Riviera Dr., options are unbuffered bicycle lanes on either side of the street and a two-way shared use path on east side of the street. For Maggiore St., a bicycle boulevard is proposed. Both these segments connect between US 1 and Ingraham Park near Cocoplum Circle.

Figure 5.49 shows examples of bicycle lane buffer treatments, wayfinding, and companion traffic calming elements.

Figure 5.49: Bicycle Facility Toolbox Concepts

Figure 5.49: Bicycle Facility Toolbox Concepts (Continued)

WAYFINDING OPTIONS



OPTION 1: ADDITIONAL CONCRETE POST TO THE EXISTING HISTORIC ROAD MARKERS



OPTION 2: INSCRIBED SYMBOL TO THE EXISTING HISTORIC ROAD MARKERS



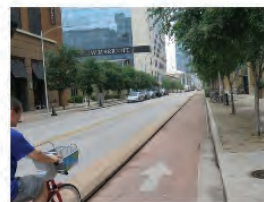
TYPES OF BIKE LANE BUFFER TREATME



ARMADILLO DELINEATORS



PLANTER AND PARKING SEPARATION



PRECAST CONCRETE BUFFER



CONCRETE SEPARATORS



LANDSCAPED BUFFER



CONCRETE PLANTERS

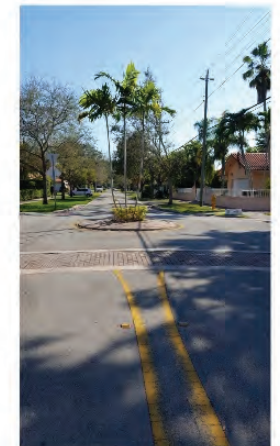
TYPES OF TRAFFIC CALMING



TEXTURED PAVEMENT



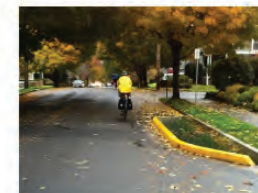
SPEED TABLE



MINI CIRCLES



BIKE BLVD PAVEMENT MARKINGS



NECKDOWN : MIDBLOCK CURB EXTENSION

Figure 5.49: Bicycle Facility Toolbox Concepts (Continued)



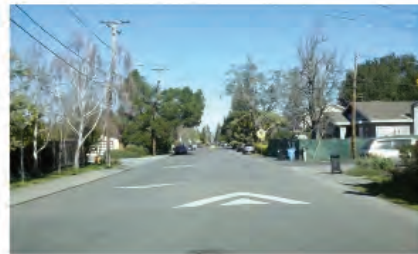
SPEED CUSHIONS



BULBOUTS

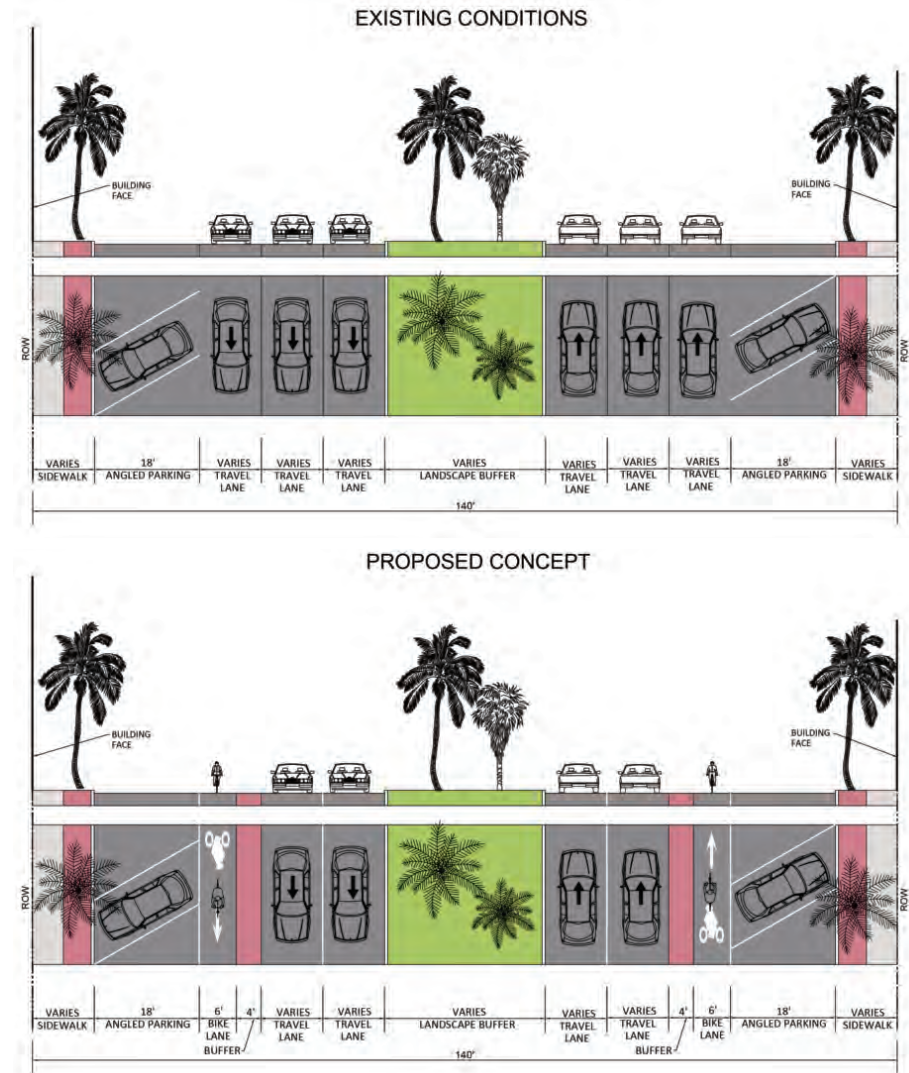


SPEED HUMPS



SPEED HUMPS

Figure 5.50: Concept Details Alhambra Circle – LeJeune Road to Salzedo St.

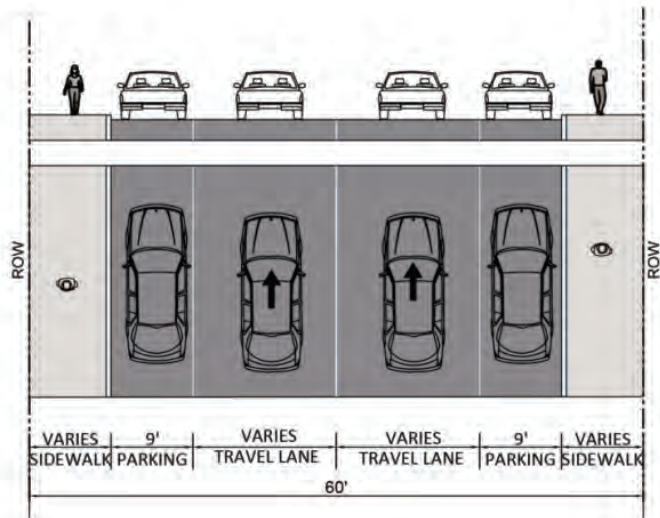


Enlargements of the preceding bicycle network improvement options are shown in Figure 5.50.

Figure 5.50: Concept Details (Continued)

Aragon Avenue – Segovia St. to Salzedo St.

EXISTING CONDITIONS



PROPOSED CONCEPT

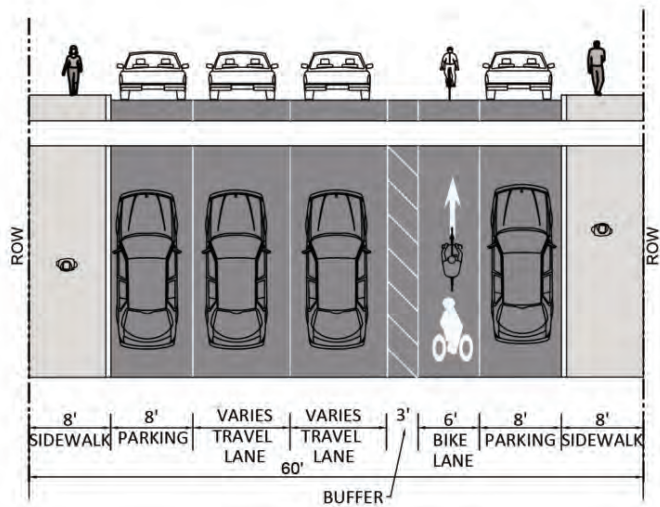
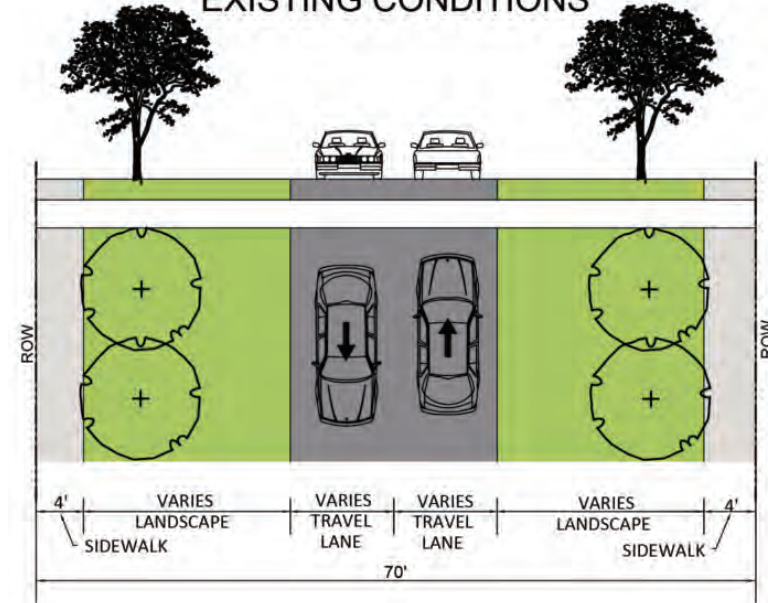


Figure 5.50: Concept Details (Continued)

Maggiore Street - Sansovino Ave. to LeJeune Rd.

EXISTING CONDITIONS



PROPOSED CONCEPT

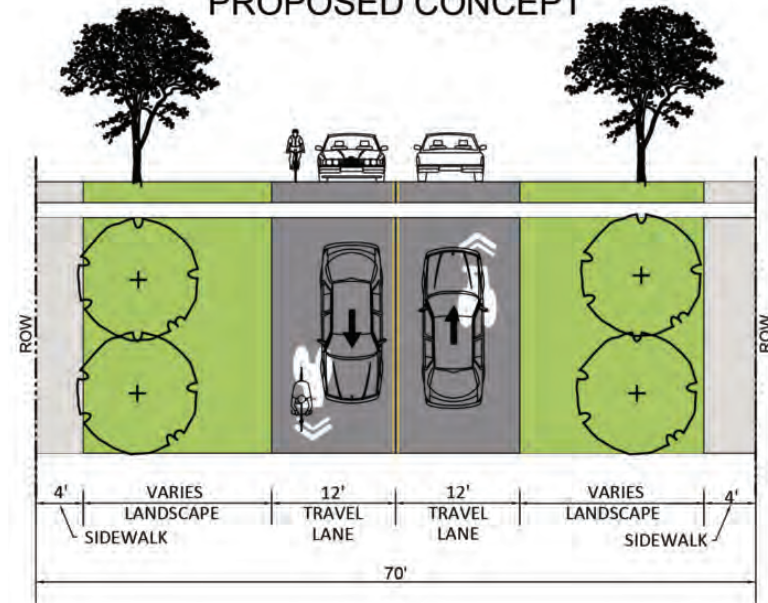
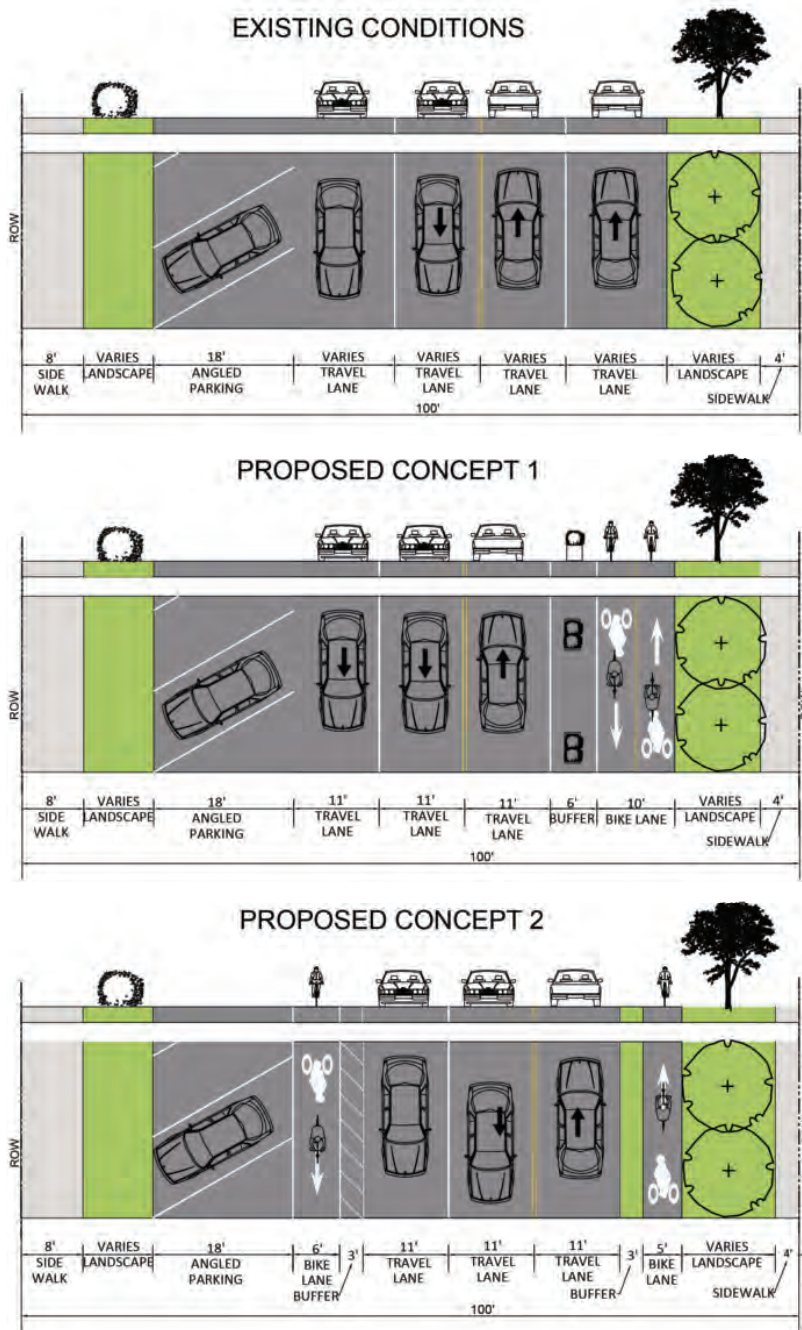


Figure 5.50: Concept Details (Continued)

University Drive - Salzedo St to Le Jeune Rd



It is noted in that in **Figure 5.50** above, for the Alhambra Circle and University Drive concepts depicting bicycle lanes with buffers situated behind the existing pull-in angle parking is not a preferable solution. A more desirable configuration is Option 1: keep the bicycle lane and buffer in the same location, but to reverse the angle parking so it is back-in parking. Even better is Option 2: position the bicycle lane and buffer adjacent to the curb; in this case, it is a separate decision whether to keep the angle parking as pull-in or to reverse it as back-in angle parking. **Figure 5.51** depicts examples of these two options.

Figure 5.51: Angle Parking Bicycle Lane Alternatives



Source: www.sfstreetblog.org

Source: www.sfmta.com

The Underline

The Underline is the proposed renovation of the M-Path shared bicycle-pedestrian path that meanders underneath the Metrorail transit line along US 1 (see **Figure 5.52**). Construction on the first 1/2-mile of this innovative concept has been initiated, and development of additional segments including those through Coral Gables is considered a regional priority. Friends of The Underline is a 501C3 non-profit organization advocating to transform the underutilized land below Miami's Metrorail into a 10-mile neighborhood park, urban trail and canvas for artistic expression to create a safer, healthier, more connected, mobile, and engaged community. Phase 5 in Coral Gables will be constructed as part of three development projects: Douglas Station, The Collection, and Gables Station. Phase 6 in Coral Gables

is unfunded presently. With Metrorail, the Underline will provide a multimodal corridor that will enhance mobility to the train stations and along the corridor for travel and recreation.

Figure 5.52: Images of the Underline



Source: www.theunderline.org

Bicycle Commuter Stations

Adding bike commuter stations at key transit areas can encourage more people to bike to transit. Bike commuter stations can include secure bike racks, bike repair tools, showers and locker rooms. Suggested locations for stations include:

- Mediterranean Village
- Alhambra Circle and Salzedo St.

- Ponce de Leon Blvd. and SW 8th St.
- Sunset Dr. and Red Rd.



Bicycle Parking

The citizen input highlighted bicycle parking as a desired improvement. The City has a program to support businesses that would benefit by providing bicycle parking at their site. The City will furnish and install bike racks, free of charge, to businesses in an effort to become a more bicycle friendly community and encourage residents to choose cycling as a means to a healthy lifestyle and a transportation alternative. Interested parties can pursue a bike rack to be installed in front of your business, on public property, by making an online request at the City website, or by using the available app. There are bicycle parking racks at many public venues across the City, but the City will continue to identify and install racks where needed. The Commission Adopted Bicycle and Pedestrian Master Plan identified a set of key bicycle parking locations for implementation as shown in **Figure 5.53**. This list of sites should also include bicycle parking locations on Miracle Mile and North Ponce del Leon Blvd. as indicated by City staff. Another goal would be to provide a bike rack on every commercial block.

Figure 5.53: Bicycle Parking Sites

Bicycle Racks per City Inventory

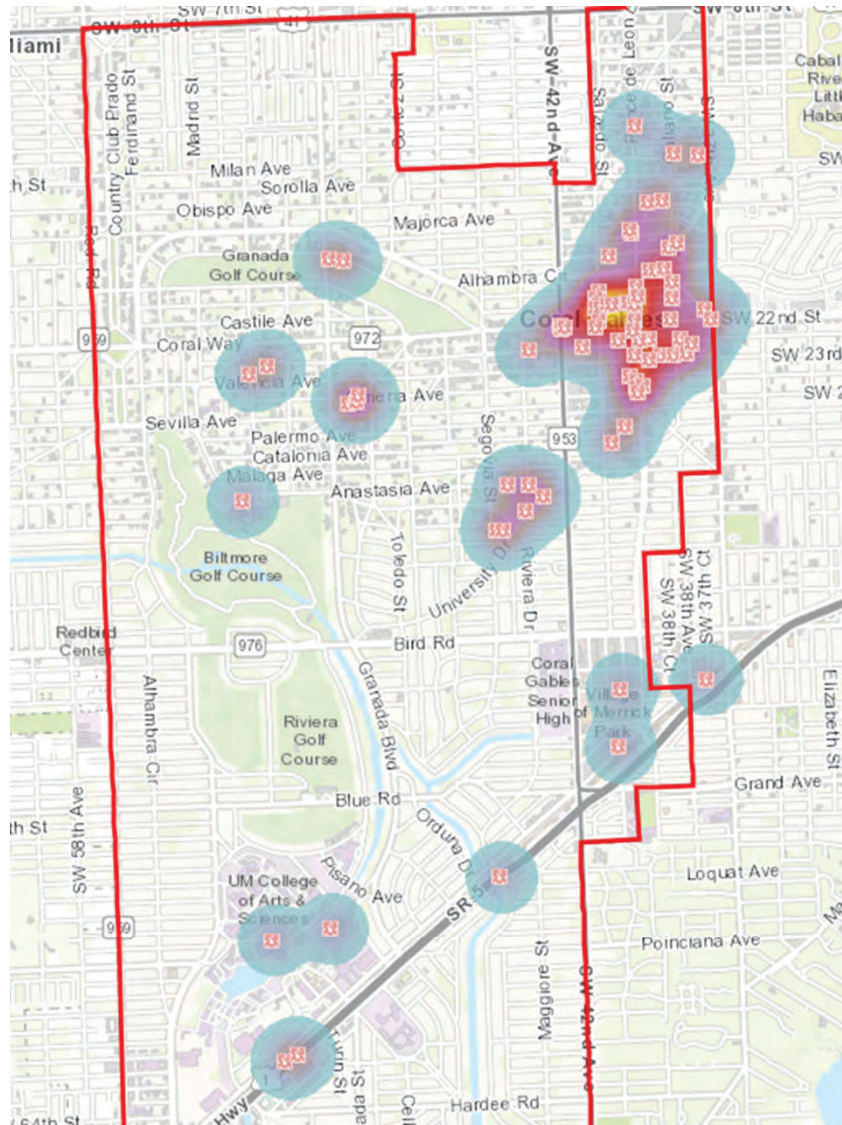
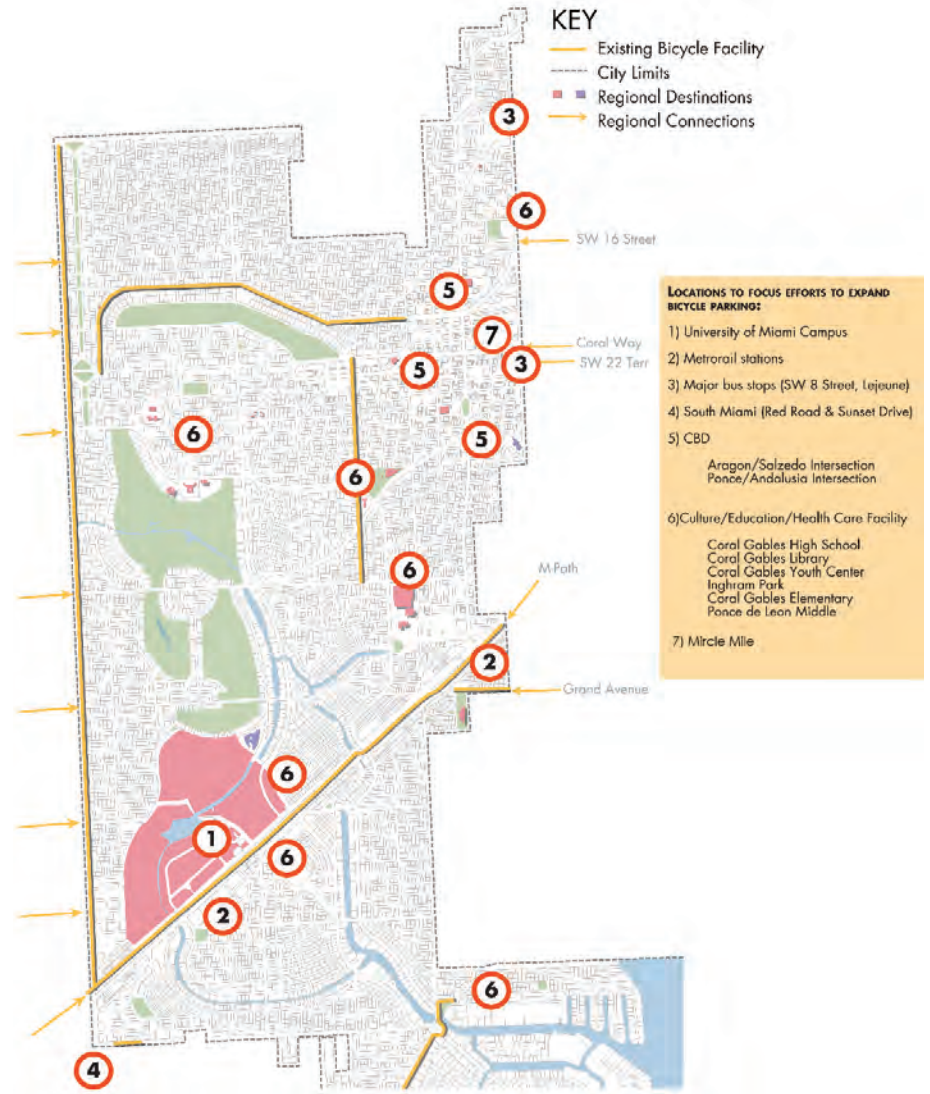


Figure 5.53: Bicycle Parking Sites (Continued)

Per the Bicycle Pedestrian Master Plan (Commission Adopted)



Shared Active Transportation

The National Association of City Transportation Officials (NACTO), developed guidance to help cities regulate and manage new shared active transportation companies, from dockless bike share to electric scooters. The new guidance, shows how cities can effectively manage shared active transportation companies in the public right-of-way, while allowing for flexibility and experimentation to welcome new mobility choices on city streets.

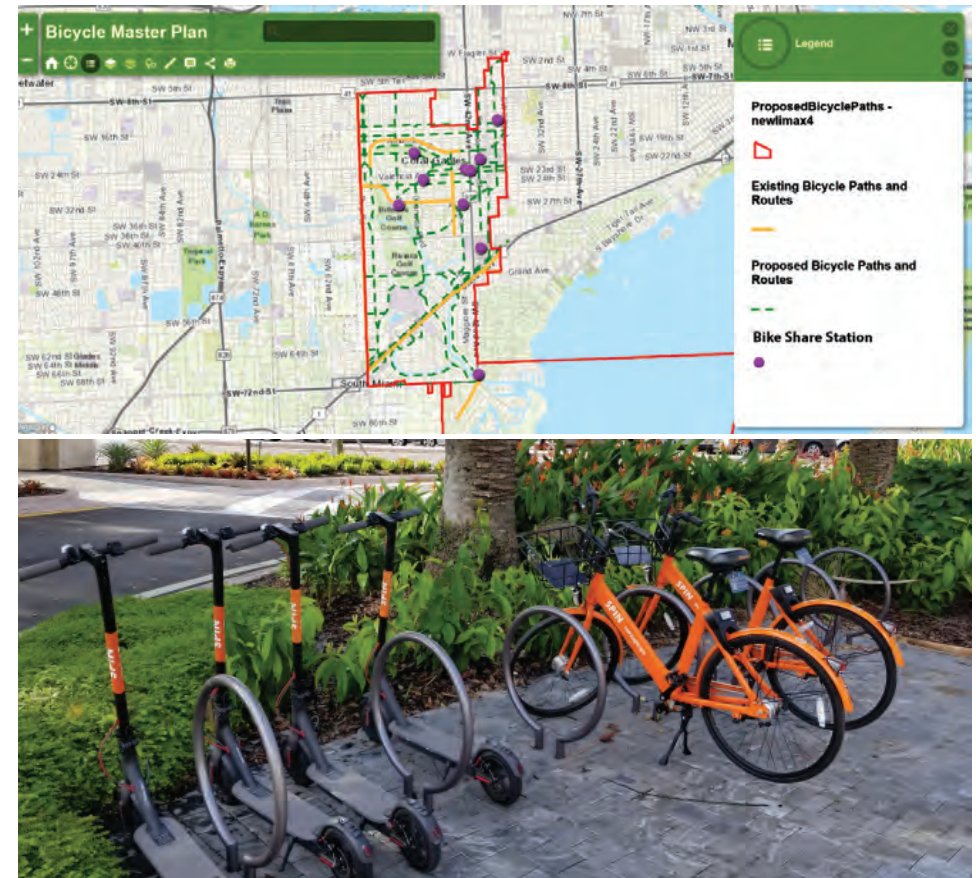
These new guidelines are in response to the increase use of shared active transportation and to reduce and or mitigate concerns with dockless operators/ programs. These new methods of transportation have the potential to further increase demand for bicycling, and in turn, the need for improved and expanded bicycle infrastructure. It also has the potential to help cities raise the profile of bicycling as a key element in transportation.

If the operators share the information they can generate with the cities where they operate, that data can be useful in planning for future bicycle infrastructure. Identifying the popular routes and the frequency of usage by bicyclists will provide relevant information pointing to areas with potential need for bicycle lanes, trails and or other street improvements. New shared mobility and dockless devices add to the need of creating a comprehensive, protected bike lane network that can be used by cyclists, electric scooter riders, and users of any future mobility technology.

The City has initiated the Dockless Bike Share and Scooter Share, also known as the Dockless Mobility Program. This refers to a new type of shared mobility that allows users to unlock, rent, and ride bikes, electric bikes, and electric scooters from virtually anywhere using a smartphone application. Dockless bikes and scooters are stored within the street right-of-way but out of the way of pedestrians, parked cars, or other users, ready to be rented by the next rider. Devices are currently staged on Miracle Mile intersections and nearby streets, near Douglas and UM Metro Sta-

tions, and in other locations around the city. At this time, only the vendors Bird and Spin are permitted to stage their devices in Coral Gables. **Figure 5.54** shows a map of bike share locations and an image of one of the share locations.

Figure 5.54: Bicycle Share Stations



Bicycle Corrals

Possible on-street bike corrals can utilize existing parallel parking spaces to accommodate bike parking. On-street corrals can also be located at intersections where on-street parking is already restricted. **Figure 5.55** shows a typical bicycle corral.

Figure 5.55: Bicycle Corral



Source: Toole Design GroupSource: Toole Design Group

Bicycle Racks on Trolleys

Most County transit buses have bicycle racks mounted above their front bumper for bicycle users. This feature is already provided on the Coral Gables Trolley vehicles, and extends the reach of bicyclists by allowing them to leverage their travel range by connection with local transit like the Trolley, or County bus and Metrorail routes. In effect, the bicycle facilitates the FMLM connectivity which can be very important to individual travelers.

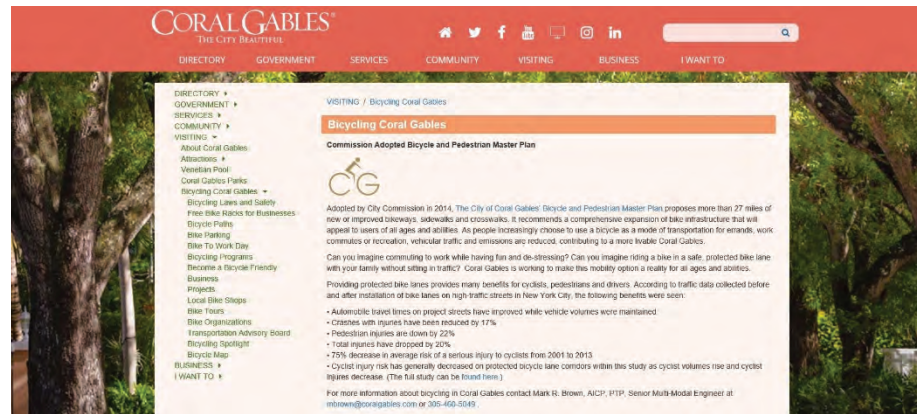


Bicycle Awareness

The City has on its official website a page devoted to all things bicycle (<https://www.coralgables.com/bike>) called Bicycling Coral Gables. This site provides information on the City bicycle improvement plans and projects, information on bicycling laws and safety, a map of existing and planned bicycle corridors, how to become a bicycle friendly business, bicycling programs, bike events, bike tours, bike organiza-

tions, and bike shops (see **Figure 5.56**).

Figure 5.56: City Bicycling Website



The City Bicycle and Pedestrian Master Plan included recommended actions to maintain and enhance bicycle awareness. The City should continue to take the lead in advancing awareness of bicycle facilities, proper and safe usage, and bicycling supportive activities, as well as user-friendly maps of bicycle facilities, parking racks, and service centers.

Bicycle Level of Traffic Stress

Originally developed by researchers at the Mineta Transportation Institute, Bicycle Level of Traffic Stress (LTS) has become an industry best practice for assessing the comfort and connectivity of bicycle networks. Increasingly, state governments, non-profits, and other organizations are looking for ways to adapt this framework to local conditions and available data. A local jurisdiction can utilize its own readily available data to best fit the context of its locality.

Using this objective, data-driven approach to network evaluation, such factors as street configuration, traffic volumes, intersection controls, and posted speeds can be used to assess perceived levels of bicyclist comfort and safety, even within a

GIS-based framework. Creating a less stressful bicycle network through minimizing or eliminating some of these factors can help to make bicycling more appealing to a broader segment of the population. Ultimately, LTS is a tool that can identify deficiencies whose remedy can contribute to increasing the number and diversity of people that may be willing to use a bicycle facility as stress factors are reduced or avoided. One of the proponents of this tool, Alta Planning and Design, employs an LTS scoring scale informed by local data to evaluate network “friendliness” to bicyclists.

LTS scoring is designed to correspond with the “Four Types of Bicyclists” categories, with a range of LTS 1 to LTS 4 representing a spectrum from lowest stress to highest stress facilities. Corridors and intersections are classified into one of four LTS scores—LTS 1, LTS 2, LTS 3, and LTS 4, where 1 represents the lowest stress, and 4 represents highest stress and discomfort. At its core, as motor vehicle traffic volumes increase and the separation between a person bicycling and motor vehicle traffic decreases, the LTS scores show an increase in level of stress. The level of traffic stress scores are mapped to illustrate the low stress connections and gaps throughout a given community. **Figure 5.57** shows an example bicycle level of traffic stress map, **Figure 5.58** graphically depicts LTS levels, and **Figure 5.59** displays a connectivity analysis showing how linking bicycling islands can broaden the network coverage. These exhibits are from the Active Transportation Plan for Gresham, OR (<https://greshamoregon.gov/Active-Transportation-Plan/>).

Figure 5.57: Example Bicycle Level of Traffic Stress Map

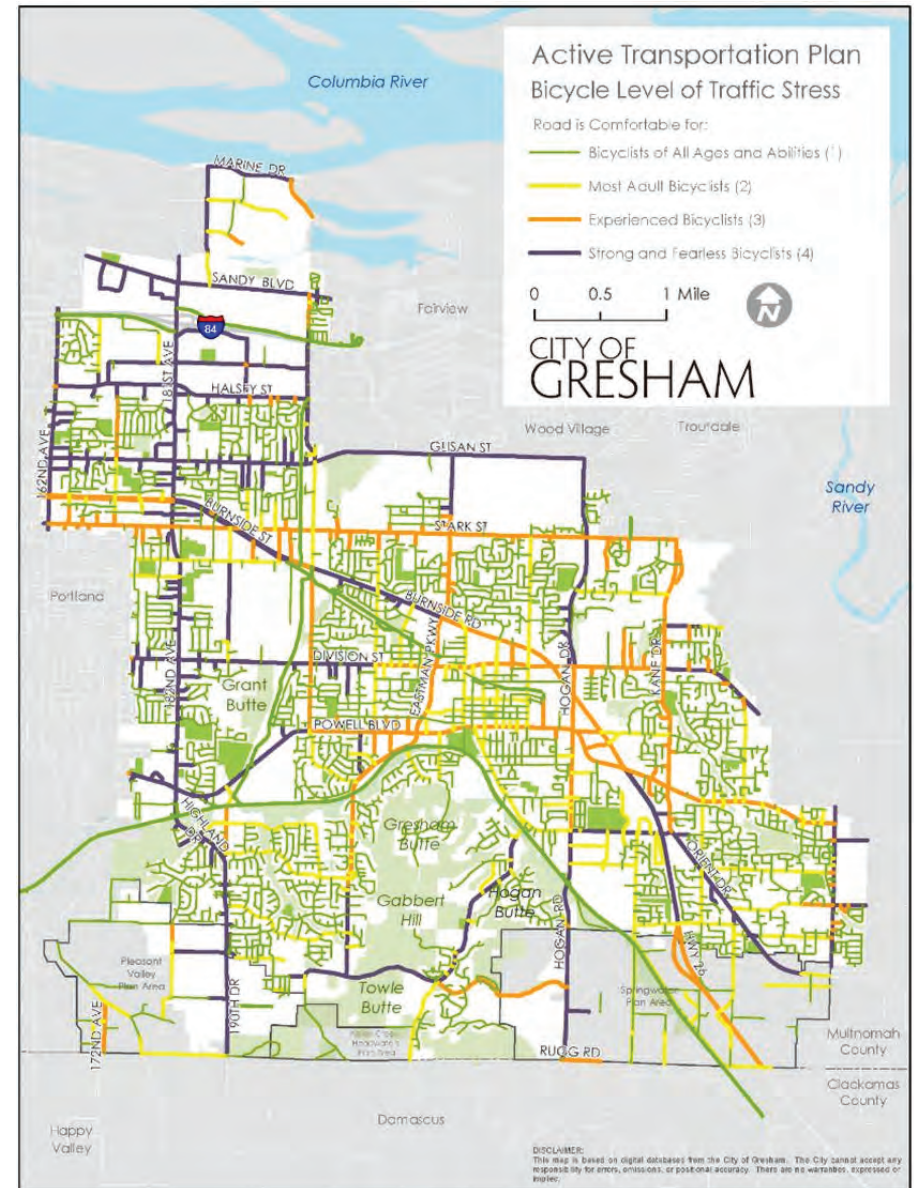
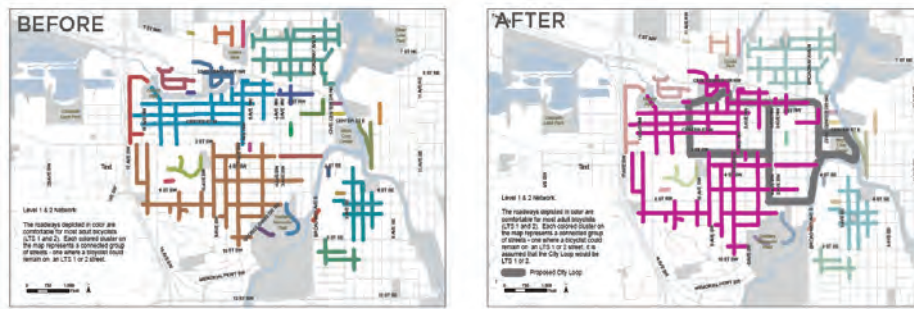


Figure 5.58: Levels of Traffic Stress



Figure 5.59: Bicycle Network Analysis Showing Connectivity Changes



It is recommended that the City continue translating its street network analysis data files to develop a bicycle and pedestrian stress assessment which is expected to highlight the value and priority for various bicycle facilities and their relative importance to enhancing the comfort and connectivity of the bicycle network. This assessment is expected to be completed in 2019.

Potential Improvements

The first quarter of the 2017 fiscal year has already reported eleven pedestrian crashes/injuries and seven bicycle crashes/injuries in Coral Gables. This totals to eighteen injuries in just the first quarter. Five of the eighteen injuries occurred on local residential streets, and increases to eleven when including other local streets

in downtown Coral Gables. The Strategic Plan Goal for the City is to have less than 27 pedestrian and less than 26 bike injuries in 2017. The city has some distance to cover in a short period of time if it is to meet this goal for pedestrian and bicycle safety. Projects like the Segovia St. corridor with its bicycle lanes introduce bicyclists to the notion that a more complete bicycle network will encourage more bicycling, as an alternative mobility strategy and for the health of residents as well.

Interest and participation has been growing, but much more remains to be done in terms of expanding the network and adding amenities such as bicycle parking. The focus in defining projects needs to consider planning for all ages and all capabilities. Improving safety by providing more designated and separated facilities for bicyclists is of critical importance.

As the City and local advocacy groups continue to encourage more bicycling and promote the elements that make bicycling attractive, continued changes need to be made that include policies, enforcement and education, and physical redesigns of the built environment. For example, the city should consider updating its street design regulations in the zoning code as a short-term action, using the recently adopted Complete Streets policy as basis. Only once these elements have been made will citizens of all ages and abilities feel safe when bicycling in Coral Gables.

Planning for an enhanced bicycling environment entails several elements:

1. Developing the type of bicycle infrastructure that addresses the needs of age, safety, and access.
2. Designing and implementing improvement plans that work within the context of each segment in terms of built infrastructure and vehicular operations.
3. Enhancing the bicycling experience with bicycle parking, improved coordination with transit services, and information sources.
4. Reinforce the physical improvements with education, awareness, and enforcement components.

Stated alternatively, as presented in the City Bicycle and Pedestrian Master Plan, the key drivers of a robust bicycling program include the following:

- Education: building motorist and bicyclist understanding of the role and rights of bicycle facilities in the transportation arena
- Encouragement: promoting broader usage of bicycle facilities
- Engineering: properly designing the appropriate bicycle facilities and features
- Enforcement: promoting compliance of rules of the road for both bicyclists and motorists
- Evaluation: monitoring safety and facility usage

Each of these contained specific recommendations for how to maintain and advance the purpose of each for a full and well-rounded bicycling program. These recommendations should continue to be implemented.

5.3 RECOMMENDATIONS

Bicycling infrastructure is an important tool in the alternative travel choices toolbox, capable of providing a real alternative to the auto for short trips, and for personal wellness. This section has highlighted opportunities to enhance bicycling infrastructure as a way to promote sustainable travel choices and public health.

Table 5.6 summarizes the recommendations that were identified in reinforcing the role of bicycling over the next 10 years.

Table 5.6: *Bicycling Element Actions*

Project No.	Policy	Program	Project	Implementation Phase *			Title	Description	Conceptual Cost Estimate					
				Short Range	Medium Range	Long Range			Capital Cost	Planning	Design	Construction, Engineering, Inspection	Soft Cost Subtotal	TOTAL
B-1			✓	✓			Address recommended bicycle parking sites and maintain city policy for free business bicycle parking.	\$-	\$10,000	\$-	\$-	\$10,000	\$10,000	
B-2		✓		✓			Implement planned bicycle sharing franchise.	\$-	\$10,000	\$-	\$-	\$10,000	\$10,000	
B-3		✓		✓			Conduct reduced speed limit post-study where there is prior vehicle speed data.	\$-	\$20,000	\$-	\$-	\$20,000	\$20,000	
B-4	✓			✓			Implement work zone pedestrian/bicycle plan policy.	\$-	\$20,000	\$-	\$-	\$20,000	\$20,000	
B-5		✓		✓			Coordinate with FIU on Bike Smart data development for Coral Gables schools.	\$-	\$10,000	\$-	\$-	\$10,000	\$10,000	
B-6	✓			✓			Consider implementing a Vision Zero policy in line with Strategic Plan.	\$-	\$40,000	\$-	\$-	\$40,000	\$40,000	
B-7		✓		✓			Coordinate with FDOT on implementation of US 1 Study recommendations.	Master list included in Chapter 7 Vehicles. Actions should be funded by FDOT.	\$-	\$-	\$-	\$-	\$-	
B-8		✓		✓			Coordinate with FDOT on implementation of Bird Rd. Study recommendations.	Master plan included in Chapter 7 Vehicles. Actions should be funded by FDOT.	\$-	\$-	\$-	\$-	\$-	
B-9		✓		✓			Complete the street network bicycle level of traffic stress” analysis, and identify key connection points between low level and high level stress areas.	\$-	\$-	\$-	\$-	\$-	\$-	
B-10			✓		✓		Installation of bicycle infrastructure projects. (CIP e-bike-path)	Per City CIP budget.	\$1,782,000	\$124,740	\$320,760	\$178,200	\$623,700	\$2,405,700
B-11			✓		✓		Implement DeSoto Fountain improvements to include bicycle enhancements (CIP c-destofn)	Costs included under the capital project.	\$-	\$-	\$-	\$-	\$-	\$-
B-12			✓		✓		Coordinate citizen comments with Neighborhood Livability actions that may include bicycle elements such as bicycle boulevards.	\$-	\$-	\$-	\$-	\$-	\$-	
B-13			✓		✓		Coordinate with the Underline (M-Path) project implementation.	Develop local enhancements to facility bicycle and parking access to the corridor.	\$-	\$5,000	\$-	\$-	\$5,000	\$5,000

* NOTE: Short Range 1-2 years | Medium Range 3-5 years | Long Range 6-10 years | FDOT - Florida Dept. of Transportation | DTPW - Miami-Dade Dept. of Transp. & Public Works

Project No.	Policy	Program	Implementation Phase *				Title	Description	Conceptual Cost Estimate					
			Project	Short Range	Medium Range	Long Range			Capital Cost	Planning	Design	Construction, Engineering, Inspection	Soft Cost Subtotal	TOTAL
B-14			✓		✓		Implement shared use path projects per Bicycle Pedestrian Master Plan as refined.		\$-	\$-	\$-	\$-	\$-	\$-
B-15			✓			✓	Implement bicycling improvements as appropriate as part of Neighborhood Livability program. (c-trafcalm)	Including in traffic calming improvement budget.	\$-	\$-	\$-	\$-	\$-	\$-
B-16			✓			✓	Implement B/P Master Plan shared path facilities.	Capital investment to be determined.	\$-	\$-	\$-	\$-	\$-	\$-
B-17			✓			✓	Implement priority bicycle facilities per the Gables Greenways Plan.		\$-	\$-	\$-	\$-	\$-	\$-
B-18		✓				✓	Coordinate with Miami-Dade County transit operation on first mile/last mile bicycle actions for three Metrorail stations.		\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
B-19	✓			✓			Consider updating the street design regulations in the Zoning Code, referencing the City Complete Streets policy.		\$-	\$10,000	\$-	\$-	\$10,000	\$10,000
B-20			✓	✓			Alhambra Circle bicycle lanes project. No project code.	Coral Way to San Amaro. Budget is per City CIP.	\$836,500	\$58,555	\$150,570	\$83,650	\$292,775	\$1,129,275
B-21			✓	✓	✓		Underline bike/ped bridge on Ponce de Leon between Riviera and Orduna. No project code.	Budget per City CIP.	\$555,600	\$38,892	\$100,008	\$55,560	\$194,460	\$750,060
SUBTOTAL									3,174,100	\$313,295	\$471,330	\$261,850	1,046,475	\$3,664,975

* NOTE: Short Range 1-2 years | Medium Range 3-5 years | Long Range 6-10 years | FDOT - Florida Dept. of Transportation | DTPW - Miami-Dade Dept. of Transp. & Public Works

CORAL GABLES®

THE CITY BEAUTIFUL



6

TRANSIT



TABLE OF CONTENTS

#	Title	Page
6	Transit.....	6-1
6-1	Context	6-1
	Miami-Dade County Department of Transportation and Public Works Transit Services	6-4
	Coral Gables Trolley.....	6-9
	University of Miami.....	6-11
	Freebee Service in Downtown Coral Gables.....	6-12
	Taxicabs.....	6-12
	“Shared Mobility”	6-12
6-2	Analysis.....	6-13
	What We Heard.....	6-13
	Coral Gables Trolley.....	6-15
	Transit Stop Improvements	6-20
	Summary.....	6-23
	DTPW Transit Improvements.....	6-23
	DTPW 10-Year Transit Development Plan	6-25
	Trolley Maintenance Facility	6-26
6-3	Recommendations	6-28
Figures		
6.1	Rapid Transit Comes to Coral Gables.....	6-1
6.2	Biltmore District and Coral Gables Rapid Transit Line on Biltmore Way and Segovia Street.....	6-2
6.3	Coral Gables Trolley Lines.....	6-2
6.4	Construction of the Trolley Line Underway.....	6-2
6.5	Arrival of the First Trolley Car	6-3
6.6	Coral Gables Trolley Car	6-3
6.7	Coral Gables Trolley on Ponce de Leon Blvd.....	6-3
6.8	Municipal Bus Routes - 1939	6-4
6.9	Miami-Dade County Transit Services.....	6-6

#	Title	Page
6.10	Transit Bus Stop Locations	6-7
6.11	Miami-Dade County Transity Weekday Boardings and Alightings - Coral Gables North.....	6-7
6.12	Miami-Dade County Transity Weekday Boardings and Alightings - Coral Gables North.....	6-8
6.13	Miami-Dade County Transity Level of Service.....	6-8
6.14	Coral Gables Trolley App.....	6-9
6.15	City of Coral Gables Trolley Routes.....	6-10
6.16	City of Coral Gables Trolley Boardings and Alightings.....	6-10
6.17	City of Miami Trolley Routes.....	6-11
6.18	University of Miami Shuttle Routes	6-11
6.19	Citizen Input on Transit.....	6-14 - 6.15
6.20	Transit and Development Priority Areas - North.....	6-16
6.21	Transit and Development Priority Areas - Central.....	6-16
6.22	Downtown Core Alternatives	6-17
6.23	Alternatives Inside the City	6-18
6.24	Alternatives Outside the City	6-18
6.25	Last Mile Transit Stops Improvement Locations	6-21
6.26	Last Mile Transit Stops Improvement Locations	6-22
6.27	Bus Shelter Variations	6-23
6.28	Stategic Miami Area Rapid Transit Plan.....	6-24
6.29	Miami-Dade County Express Bus System Vision.....	6-25
6.30	Partially Funded DTPW Projects	6-26
6.31	Unfunded DTPW Project.....	6-26
6.32	Unfunded - 2028 and Beyond Vision	6-26

Tables

6.1	Bicycle Parking at Metrorail Stations	6-5
6.2	Unfunded - 2028 and Beyond Vision within Coral Gables..	6-27
6.3	Transit Element Actions.....	6-27

TRANSIT

Coral Gables
has access to

3



Metrorail Stations



★ **\$9,600/year** ★

savings from using
transit instead of owning
and operating a car.

APTA June 2018 Transit Savings Report

Coral Gables Trolley
serves

1 Million

riders per year



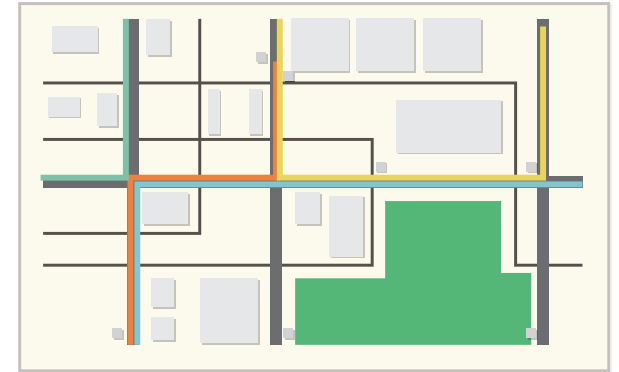
users save **2 million lbs**
of greenhouse gases

150,000 gallons

of gas per year

\$300,000

in car operating costs



10 Miami-Dade County
transit routes serve
Coral Gables



FREEBIE

carts provide **FREE**
rides in downtown



6 TRANSIT

Transit is a critical element in creating healthy, livable cities. A well-planned transit system can provide low-cost transportation options for a broad segment of the population while helping to alleviate traffic congestion. Coral Gables is fortunate to have a broad hierarchy of transit services available, including the Metrorail heavy rail transit running along US 1, the network of fixed route transit operated by Miami-Dade County Department of Transportation and Public Works (DTPW), the city's Coral Gable trolley, the downtown Coral Gables Freebie service, and campus shuttles operated by the University of Miami.

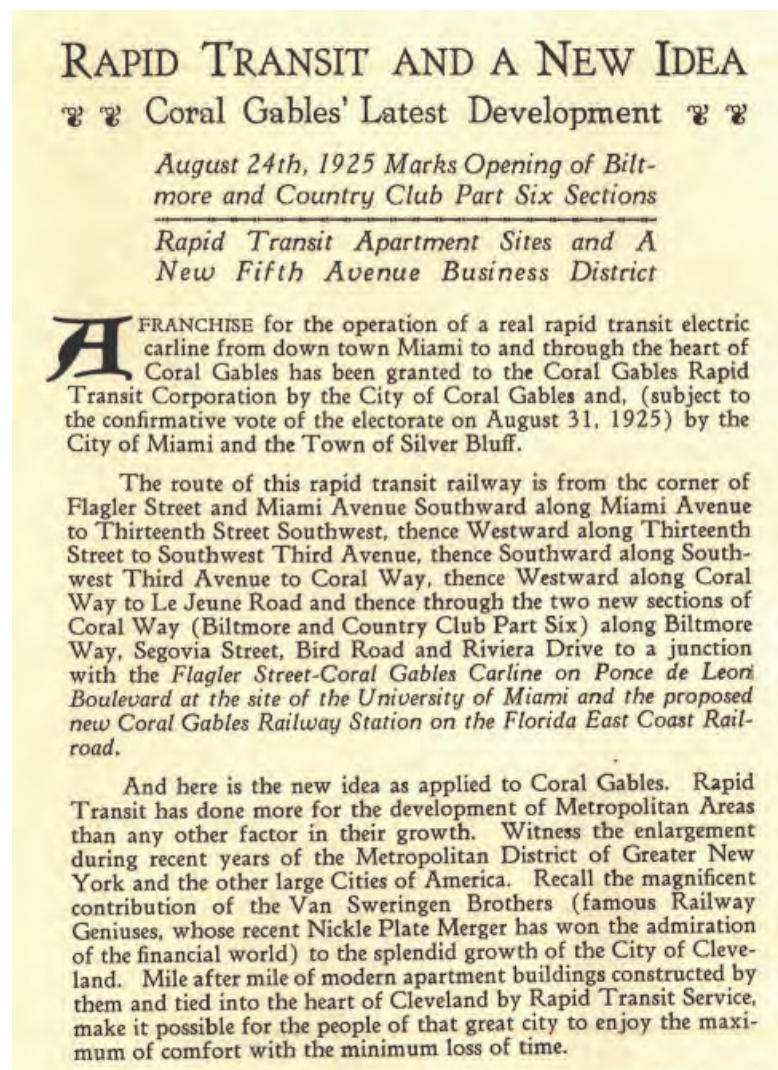
How existing and potential expanded transit services complement the mobility choices available to travelers is an important complement to addressing both traffic congestion and mobility choices. This section of the report provides an overview of existing transit services, discusses community needs and potential improvements, and provides recommendations for implementation.

6-1 CONTEXT

A Short History of Transit in Coral Gables

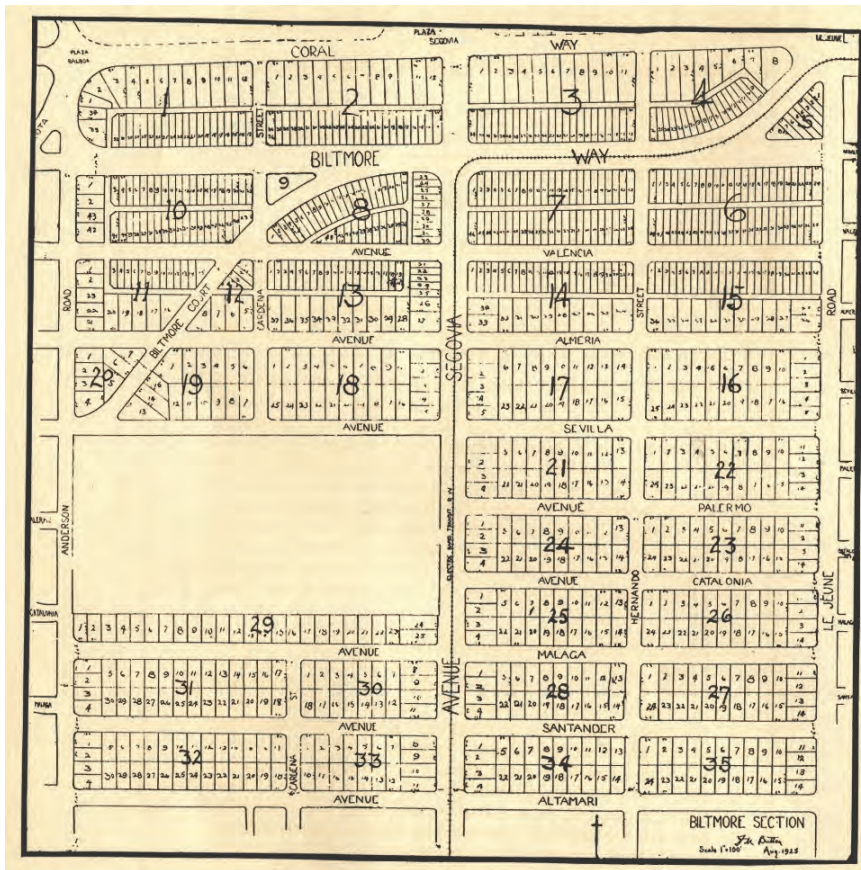
Development of Coral Gables was in full swing in the 1920s. In 1925, the notion of developing a rail trolley service connecting to downtown Miami was conceived. It was in large measure a marketing tool for sales of residences in Coral Gables and was billed as “rapid transit” (see **Figure 6.1**).

Figure 6.1: Rapid Transit Comes to Coral Gables



The development subdivisions near the transit were marketed as “rapid transit apartments” and residential home sites (see **Figure 6.2**). The rapid transit line ran through this sector of development on Biltmore Way and south along Segovia St. as shown in **Figure 6.2**. Apartment sites were located along Biltmore Way and Valencia Ave. one block south, with residential home sites over the rest of the subdivision. The layout also included a business district along Biltmore Way, billed as the “Fifth Avenue Business District”.

Figure 6.2: Biltmore District and Coral Gables Rapid Transit Line on Biltmore Way and Segovia St.



In fact, two rail trolley lines were developed (see **Figure 6.3**). The Coral Gables Rapid Transit line began at the FEC Railroad traversing north on Segovia and Biltmore Way to Coral Way and thence into downtown Miami. The Coral Gables Trolley followed Ponce de Leon Ave. to Ponce de Leon Blvd. northward to Flagler Street into downtown Miami. **Figure 6.4** shows the construction of the in-street trolley.

Figure 6.3: Coral Gables Trolley Lines

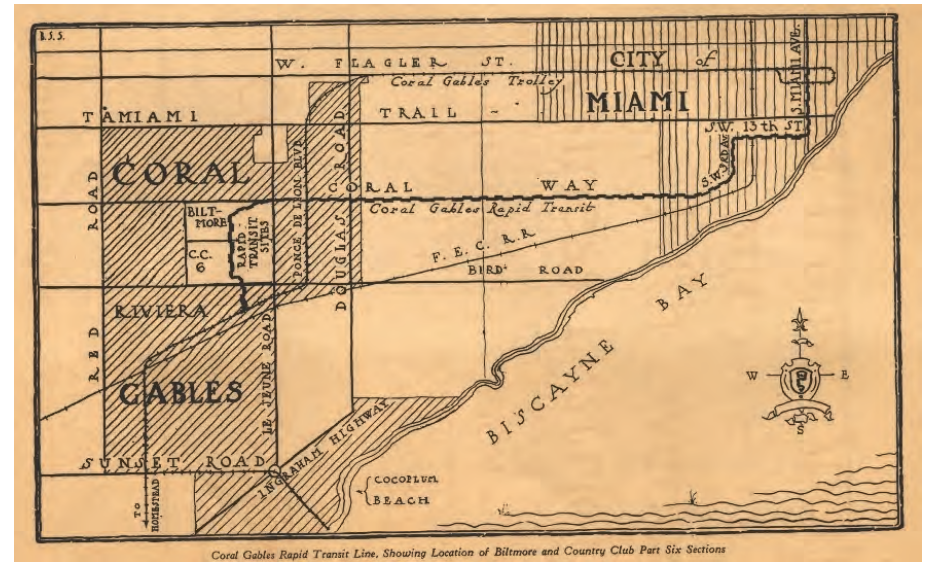


Figure 6.4: Construction of the Trolley Line Underway



Figures 6.5, 6.6 and 6.7 show the arrival of the first trolley cars on May 1, 1925, one of the rapid transit trolley cars built by American Car Company of St. Louis, and a trolley in operation on Ponce de Leon Blvd., respectively.

Figure 6.5: Arrival of the First Trolley Cars



Figure 6.6: Coral Gables Trolley Car



Figure 6.7: Coral Gables Trolley on Ponce de Leon Blvd.



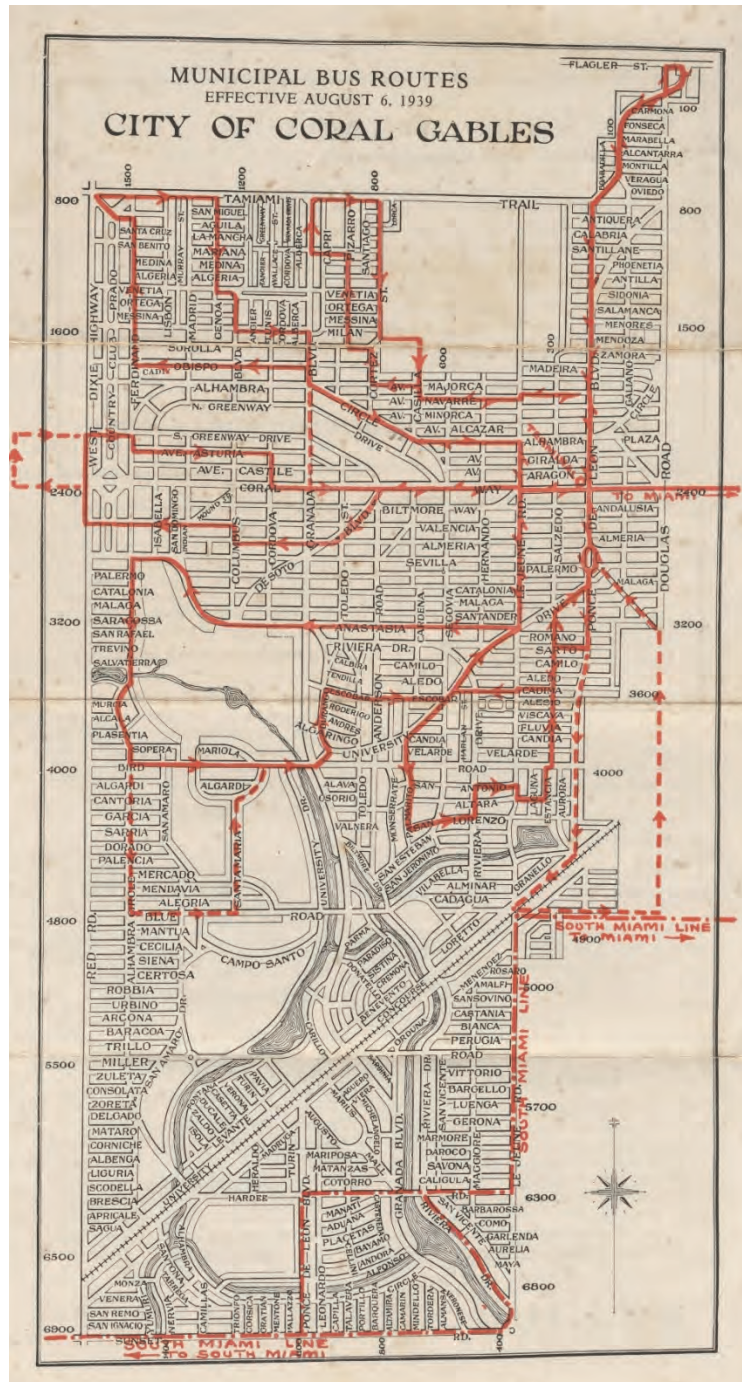
Romer, G. W (Gleason Waite), 1887-1971. Rapid transit on Ponce de Leon Boulevard - Coral Gables, Florida. 19--. Black & white photoprint, 8 x 10 in. State Archives of Florida, Florida Memory. <https://www.floridamemory.com/items/show/31411>, accessed 12 April 2018.

The trolley line was built in 1926 and ceased operation in 1935 due to damage from a storm. The city bus transit system was initiated.

The city's Historical Preservation and Cultural Arts Department provided a 1939 map of municipal bus routes in Coral Gables as shown in **Figure 6.8**. This map provides an interesting historical perspective on the extent of bus service across the original city limits at a time when auto ownership was lower and travel tended to be more local in nature. It is seen that there was good transit coverage across the city.

In the early 1960's the county began development of a unified network of transit routes, taking over various municipal and private operators. In 1975, the Coral Gables Transit System merged with Dade County's Metro Transit Agency.

Figure 6.8: Municipal Bus Routes - 1939



Miami-Dade County Department of Transportation and Public Works Transit Services

Metrorail

Miami-Dade County Department of Transportation Public Works (DTPW) is the primary provider of transit services across Miami-Dade County. Metrorail is the heavy rail transit (HRT) component of the network, and operates on an elevated guideway along the north side of US 1 through the city. There is one station within Coral Gables – University Station – situated at the University of Miami. There are two other stations – Douglas Road and South Miami – located just outside the Coral Gables city limit near SW 37th Ave. and SW 57th Ave., respectively. The weekday boardings and alightings (exits) at these stations for January 2018 are as follows:

Douglas Road Station	7,000
University Station	3,600
South Miami	5,800
TOTAL	16,400

Total weekday system boarding and alighting counts are approximately 160,000 per day. Service is available from 5 am to midnight. Peak headways range from 5-10 minutes, increasing to 12 -15 minutes in the off-peak periods. These three Metrorail stations have automobile and bicycle parking available. A pedestrian overpass was built over US 1 at the University station in response to several pedestrian injuries and fatalities when crossing the street at-grade.

Metrorail provides convenient access from Coral Gables to downtown Miami and the Miami Intermodal Center (MIC) adjacent to Miami International Airport where travelers have access to the Tri-Rail commuter rail service providing connections across the region. Soon similar access to Fort Lauderdale and West Palm



capacity, as summarized in **Table 6.1:**

Metrorail – Vehicle Parking

The three Metrorail stations in or near Coral Gables each have parking for commuters using transit.

The existing parking supply at the three stations is summarized as follows:

Station	Type of Parking	Spaces
Douglas Road	Surface parking	226
University	Surface parking	237
South Miami	Parking garage	1,802

Field review indicates that all three sites currently have surplus parking relative to available capacity.

The Douglas Road station site has been approved for a large joint development project which includes residences, offices, and retail spaces, along with garage parking. The existing surface parking spaces for transit users will be replaced with spaces in the garage parking. Tentative information for the Link at Douglas project is listed below:

- 1,421 apartment units, averaging from 625 SF to 1,000 SF
- Of these, 188 are affordable workforce housing
- 251,000 SF of office space
- 40,000 SF of food preparation outlet
- 21,000 SF of full service restaurant
- 8,700 SF of fast food restaurant
- 3,200 SF of retail

Beach will be available in downtown by way of the new Brightline rail service.

Metrorail – Bicycle Parking

The 2014 Transit System Bicycle Master Plan for Miami-Dade County report reviewed the bus and Metrorail system with a stated goal to increase bicycle capacity on vehicles to 25,000 users daily, nearly triple current levels.

For Metrorail, each station was reviewed for bicycle access and parking facilities, and the needs to accommodate the higher level of bicycle usage.

For the three Metrorail stations in and near Coral Gables (Douglas Road, University and South Miami), it was found that slight improvements in future bicycle parking capacity were needed, though current usage levels were below the available

Table 6.1: Bicycle Parking at Metrorail Stations

Station	Existing Supply	Existing Demand	Recommended Supply
Douglas Road	22	15	30
University	40	13	30
South Miami	32	12	40

- 770 parking spaces in 9-story tower, 300 of which are to be reserved for transit users
- New central public plaza
- \$20 million in transit station upgrades
- \$1 million for Underline construction
- Full buildout: 40-story tower, 22-story tower, 4 midrise buildings

Metrobus

There are 16 DTPW transit routes serving Coral Gables. Most operate at 15- to 30-minute peak headways, with a few less frequent. Off-peak headways range from 12- to 30-minute headways, again with a few less frequent.



Two-thirds operate seven days a week. **Figure 6.9** shows the coverages of these transit routes across Coral Gables.

Figures 6.10 shows the distribution of bus stop locations across the various routings. **Figures 6.11** and **6.12** show the distribution of boardings and alightings. Nearly all significant transit use occurs north of SW 72nd St. and the majority of bus usage happens to the north of US 1. There are concentrations along the major east-west arterial corridors as well as along the north-south SW 37th Avenue corridor along the eastern edge of the city. **Figure 6.13** shows transit level of service in terms of bus frequencies, on a letter scale of A to F where A is excellent and F is poor. It is seen that service quality is high in the Ponce de Leon Blvd. corridor and varies elsewhere across the city. The US 1 corridor does have frequent Metrorail services which is not reflected in the map.

Figure 6.9: Miami-Dade County Transit Services



Figure 6.10: Transit Bus Stop Locations

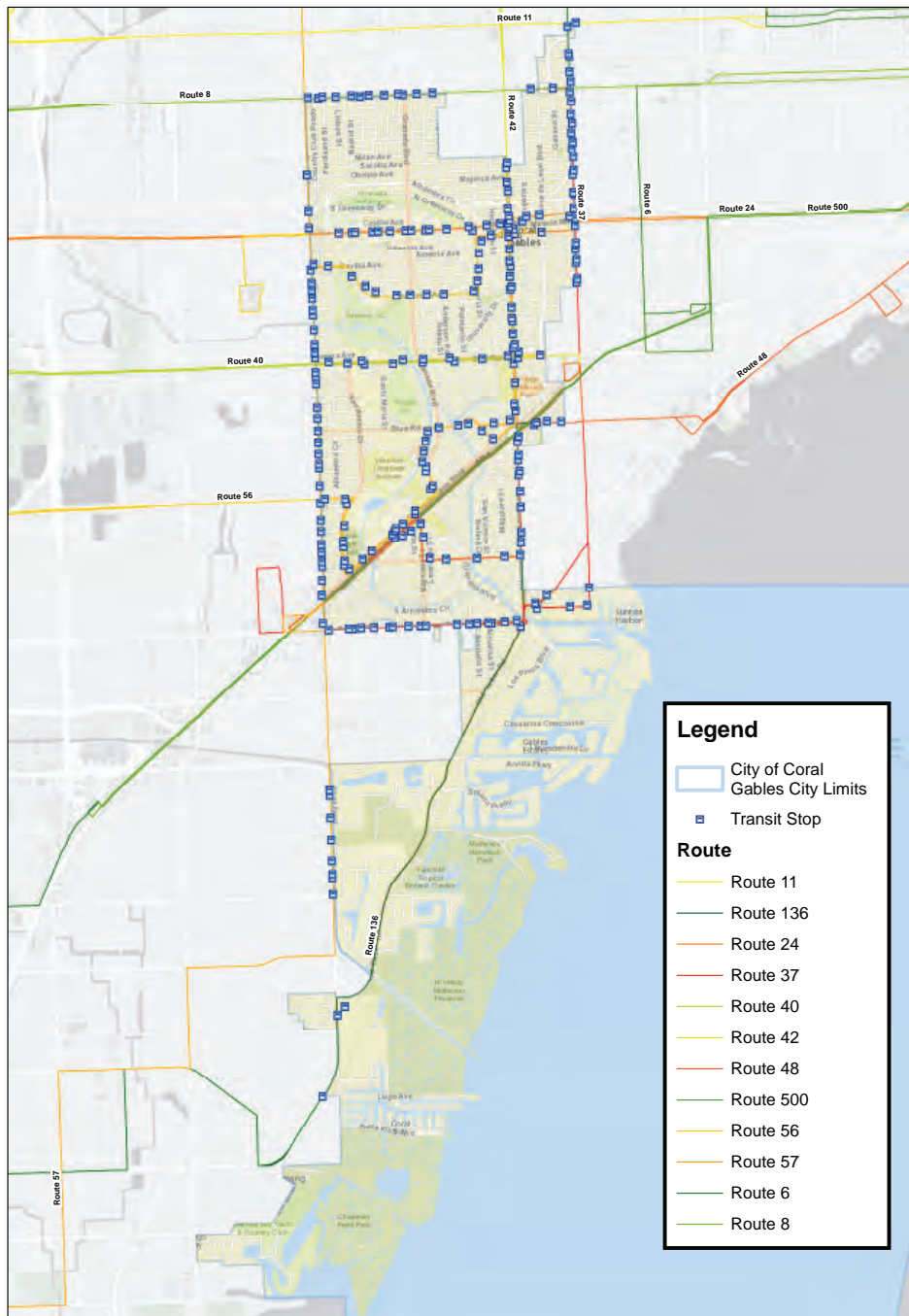


Figure 6.11: Miami-Dade County Transit Weekday Boardings and Alightings – Coral Gables North

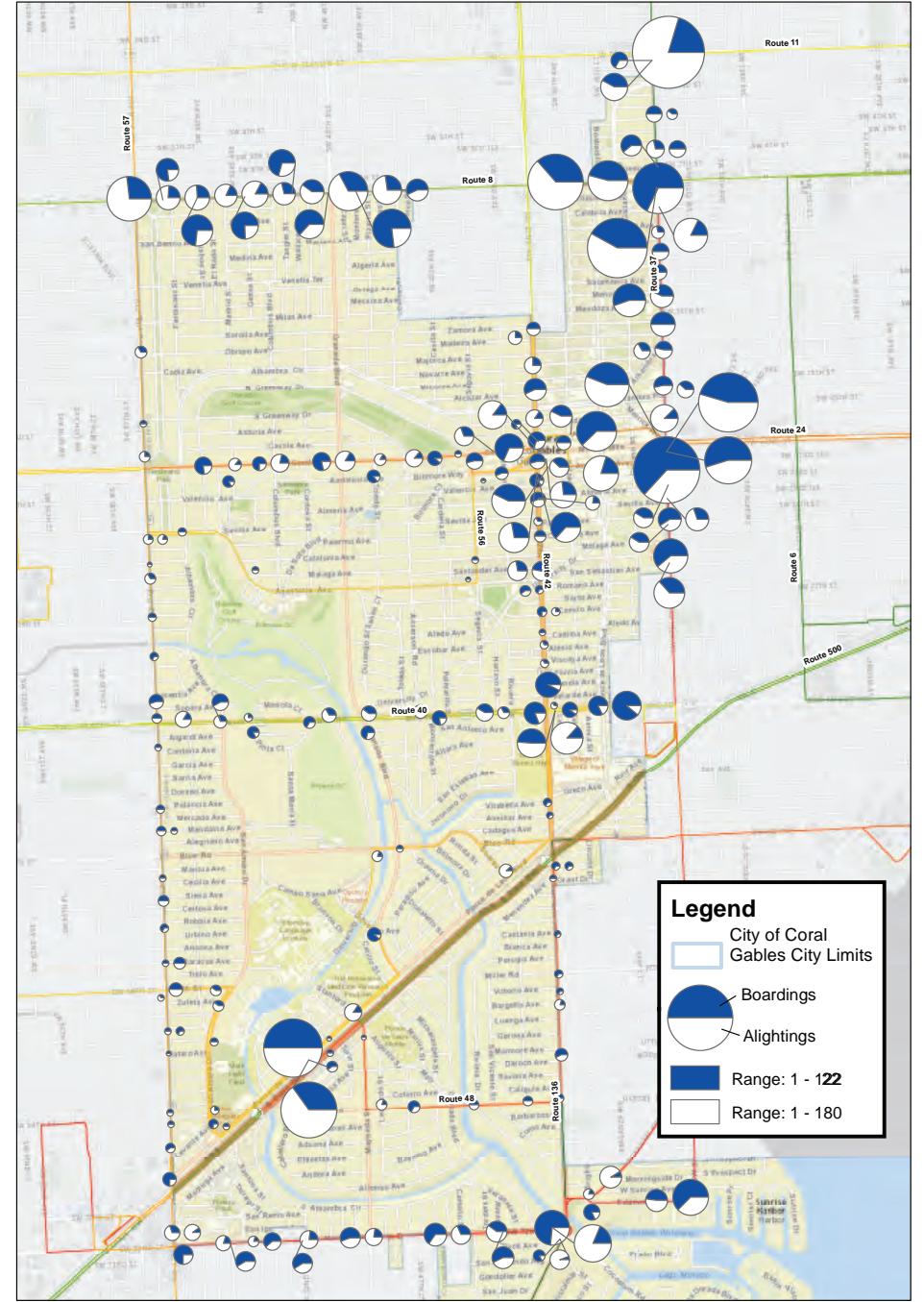


Figure 6.12: Miami-Dade County Transit Weekday Boardings and Alightings – Coral Gables South

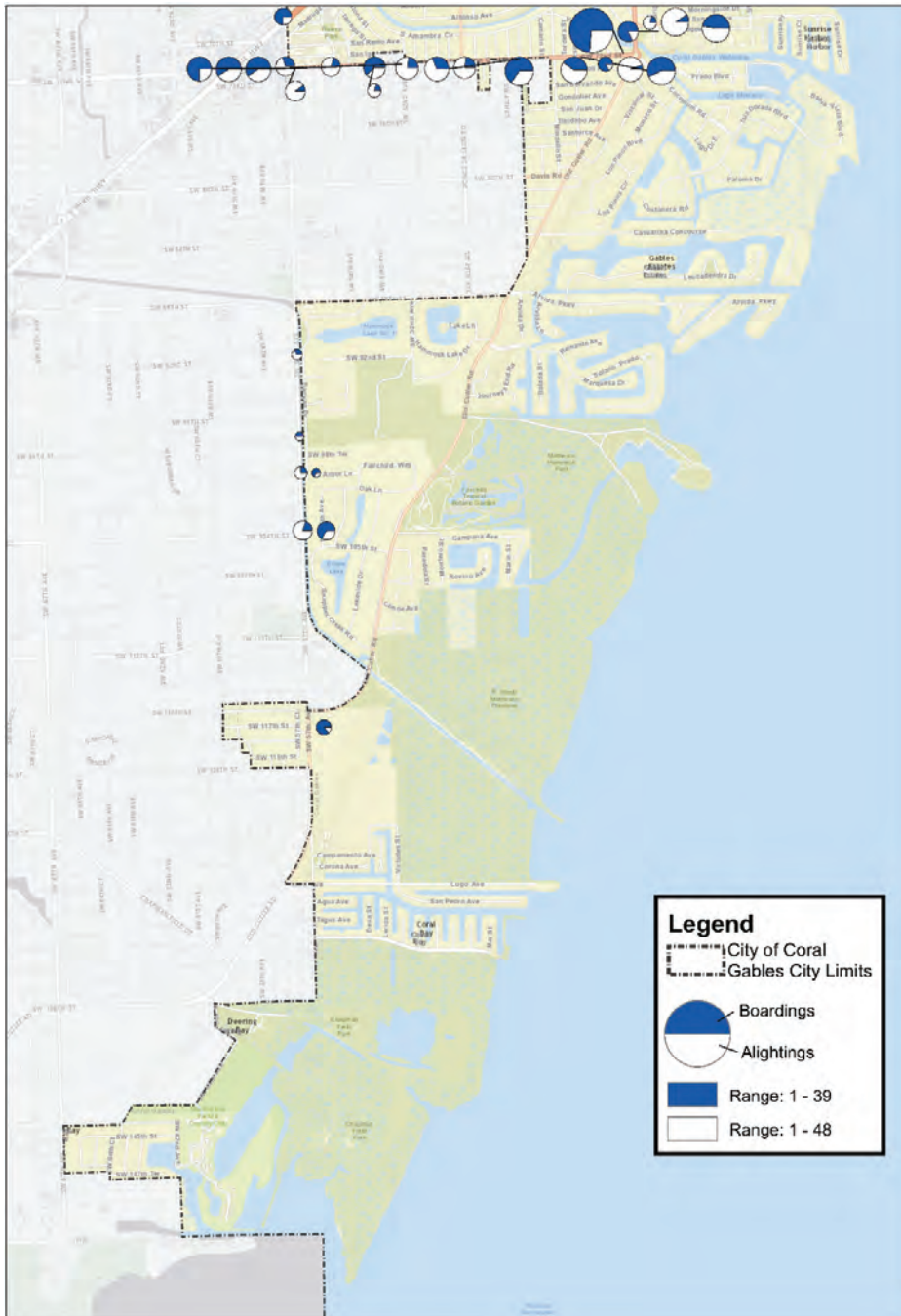
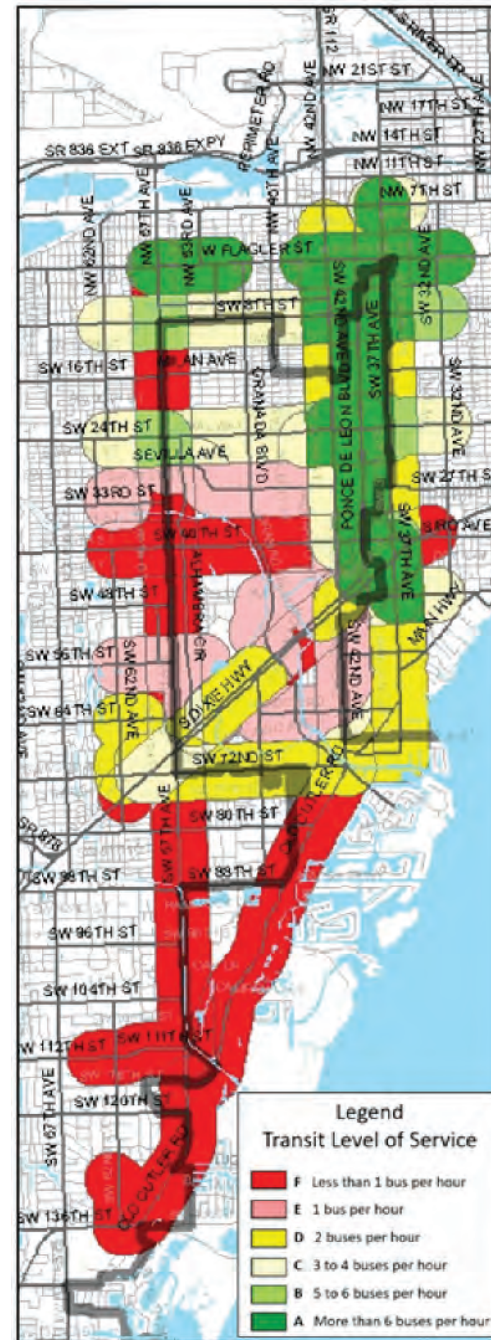


Figure 6.13: Miami-Dade County Transit Level of Service



Coral Gables Trolley

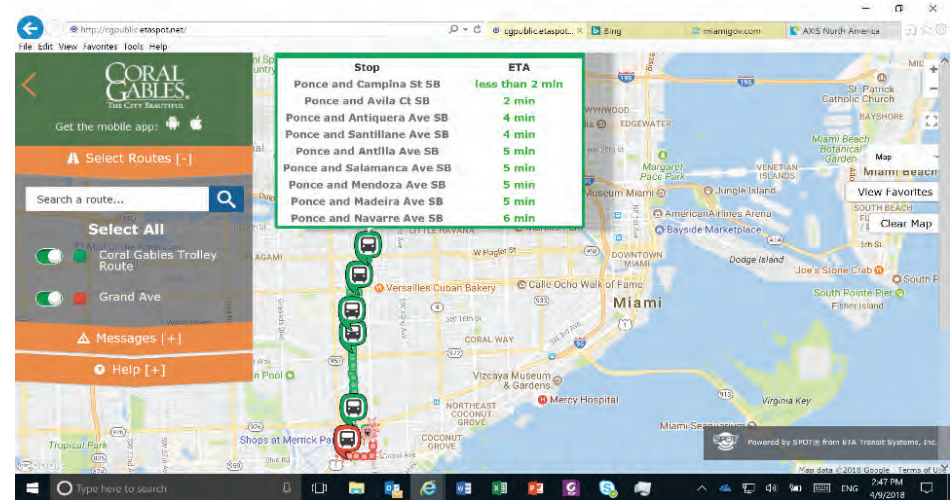
The Coral Gables trolley is a fare-free local circulator service that runs generally along Ponce de Leon Blvd. from the Douglas Rd. Metrorail station northward to the Publix grocery store at Flagler St., a distance of 4.2 miles. A second short route (1.7 miles) runs a loop



from the Douglas Rd. Metrorail station using Granello/Ponce de Leon Ave., Grand Ave., and SW 37th Ave. using a single trolley vehicle. There are 60 designated stops between the two routes. Ridership on the main route is 1.1 million yearly or about 4,400 daily. Ridership on the second route is 42,000 yearly or about 170 daily.

The service day begins at 6:30 am and ends at 8:00 pm Monday to Friday. There is extended service for Gallery Night, a monthly event on the first Friday that showcases the various works from European and Latin American art masters to outstanding contemporary artists. Trolley stops are posted with branded signing, and some have bench seating, but no other basic amenities. Headways average 12 minutes and can range from 10-15 minutes. There is a trolley site that provides real-time trolley locations on a map, with expected wait times for nearby stops as shown in **Figure 6.14**.

Figure 6.14: Coral Gables Trolley App



The service is managed through the city’s Parking Division, the vehicles are owned by the city and maintained through the Department of Public Works, and the drivers are provided through an operating contract with a vendor. As for many Miami-Dade municipalities, the Coral Gables Trolley operations costs are funded through the funds received from the Citizens Independent Transportation Trust (CITT) Transportation Surtax Funds. **Figure 6.15** shows the existing routes and stop locations, **Figure 6.16** shows the boardings and alightings for the original route, with concentrations in downtown and at both route ends.

Figure 6.15: City of Coral Gables Trolley Routes

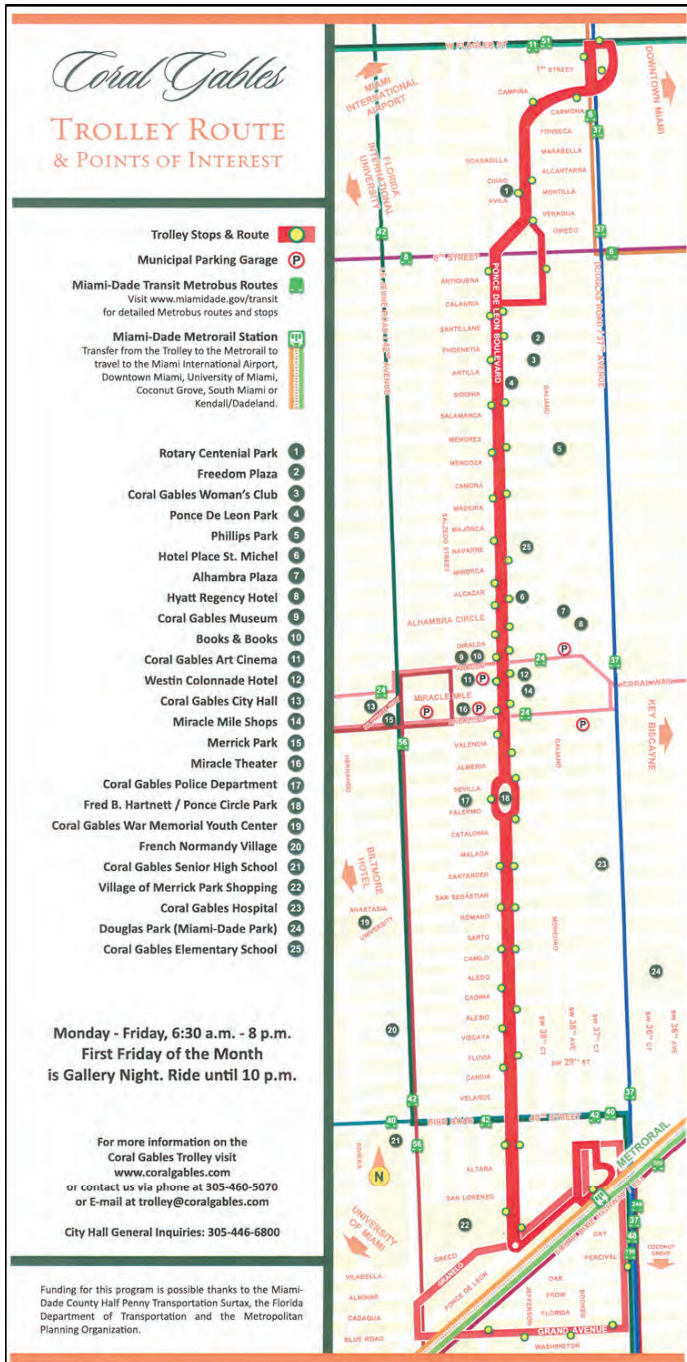


Figure 6.16: City of Coral Gables Trolley Boardings and Alightings



Another dimension of the City trolley service is its connections with other transit services, which expand the travel reach of transit users. Such connections are encouraged by the Miami-Dade Transportation Planning Organization (TPO). The previous **Figure 6.15** and **Figure 6.17** below show the interface points between the Coral Gables trolley and three City of Miami trolley routes:

- Little Havana route which connects at the north near Flagler Street
- Coral Way route which connects in downtown Coral Gables, and
- Coconut Grove route which connects at Douglas Road Metrorail station.

University of Miami

The University of Miami operates the Hurry ‘Cane shuttle service which is free to all users. The two routes carry about 600,000 riders per year. The service connects the campus core to both remote parking areas and the University Metrorail station. The service also provides off-campus connections to Sunset Place and Coconut Grove in the evenings on Thursdays, Fridays, and Saturdays.

Figure 6.18: University of Miami Shuttle Routes

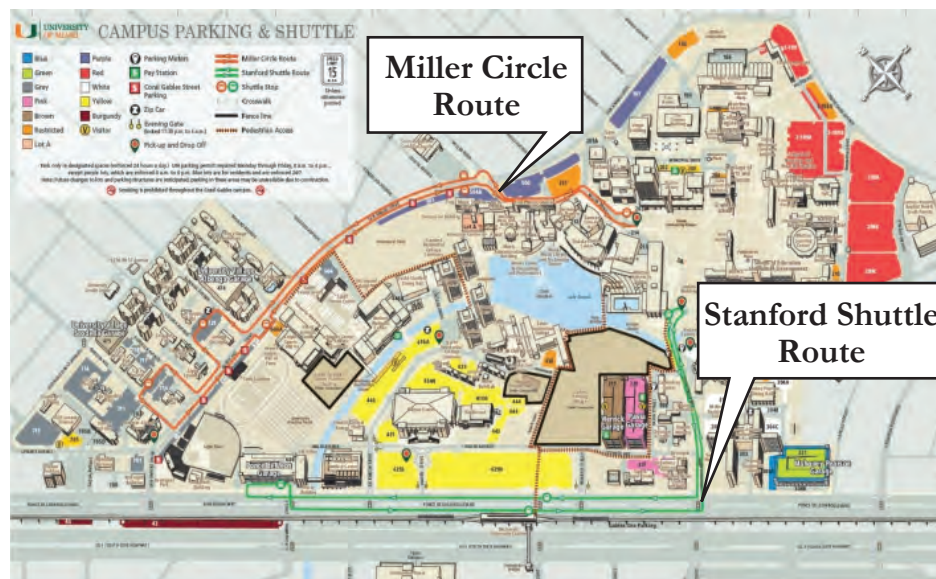
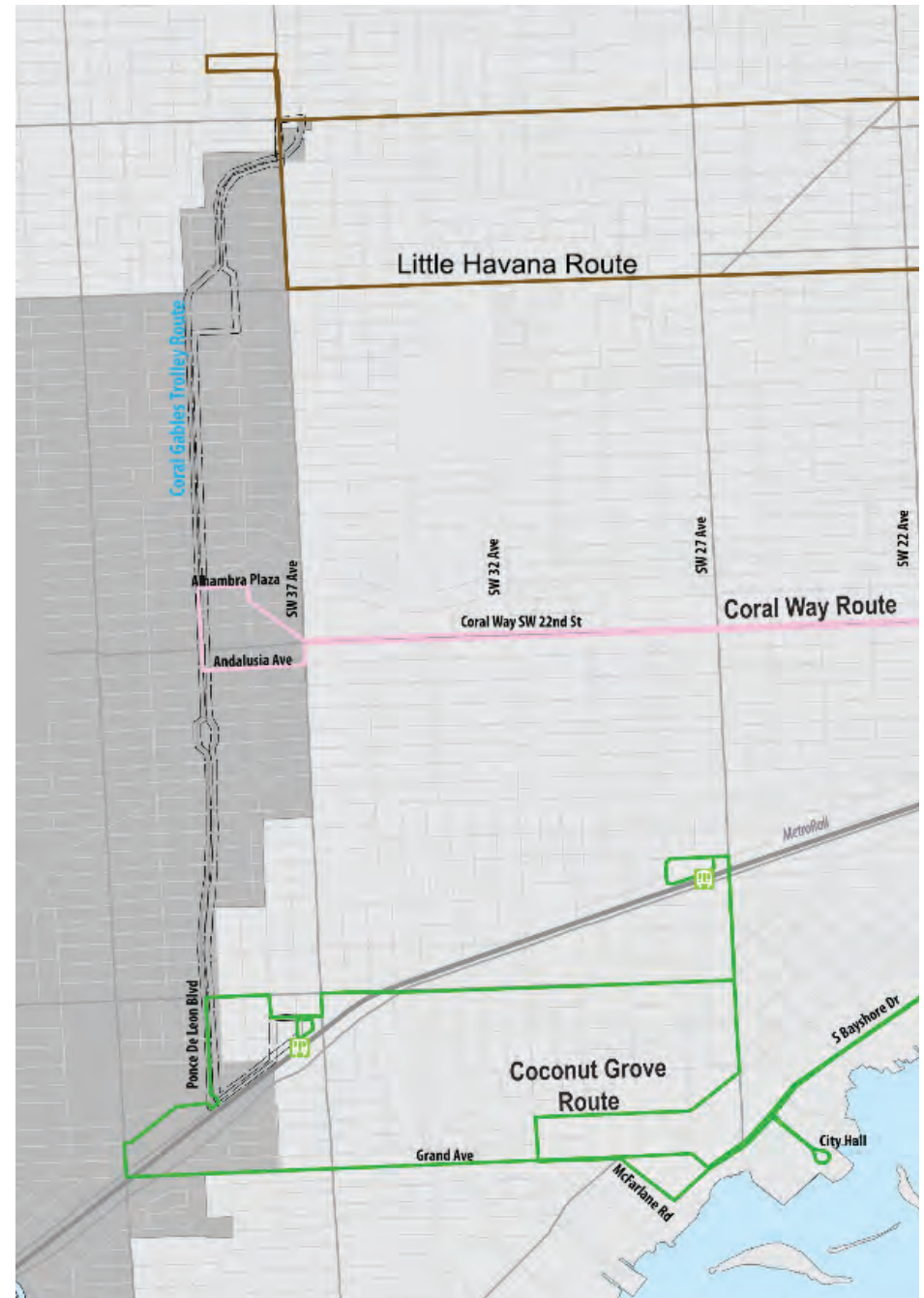


Figure 6.17: City of Miami Trolley Routes



Freebee Service in Downtown Coral Gables

Freebee is a “green” transportation service that offers free door-to-door rides within a defined downtown Coral Gables service area.



The service began in June 2017 and is largely underwritten by the City of Coral Gables. Drivers operate electric vehicles between 11 a.m. and 11 p.m. seven days a week. Service is accessed by smartphone through the Ride Freebee app. Ridership is running 65,000 persons per year. The types of uses for this service include the following:

- From fringe parking to a core area destination
- Downtown residents traveling to a destination not walkable or to permit consumption of “adult beverages”
- Parking once and connecting to multiple destinations
- Assistance for the handicapped or disabled
- Midday office-to-lunch/errand trips

Use of Freebee thus eliminates many short trips by car and negates the related search for parking.

The City of Coral Gables recently applied for and won a SMART Plan Demonstration Project grant to expand the Freebee service area to the north, west, and south, which provides a direct connection to Douglas Metrorail Station.



Freebee Downtown Service Area

The Freebee service has proven to be popular and is expected to continue for the foreseeable future.

Taxicabs

Taxicabs are the legacy short and medium trip service provider for those temporarily without a car and/or no good transit access, also used by those who can no longer drive or choose not to, for errands and services related trips. Traditional taxicabs have been challenged in recent years by the transportation network companies, not necessarily as lower cost, but as more responsive and convenient, with higher quality service. In response, some taxi firms are stepping up their game, offering charge/debit payment by screen, refining their reservations system approach, and improving their driver courtesy and service. There are several firms providing such services in Miami-Dade County.

”Shared Mobility”

A transportation network company (TNC) is the generic name given to the new category of firms offering ridesharing for fee, in nominal competition to taxis. These firms offer multiple service levels for varying fees. Depending on prevailing policies, there can be peak-hour pricing or surcharges for airports and other destinations. The two main providers in Miami are Uber and Lyft.

- Uber provides several service levels as follows:
- UberX - low-cost option that seats up to four riders
- UberPOOL – ridesharing and cost sharing with other riders heading in the same direction
- LUX – vehicle provided is in the luxury category with no more than three other riders
- LUX SUV – vehicle provided is in the luxury category, providing extra space or seating for up to six.

Lyft is similar to Uber but appears to have fewer travel options. There can be a prime time increase and surcharges, but prices are quoted at time of booking.

These services can be used for short trips that may have been made by transit or single occupancy vehicles. Shared mobility services can also provide first mile/last mile connections with transit systems, thereby enhancing the usefulness of Miami-Dade County's transit system. Some transit agencies have struck arrangements for transit stop connections and to support connectivity in lower density areas where fixed route transit is not cost-effective.

6-2 ANALYSIS

What We Heard

During the plan kickoff meeting and the subsequent open house sessions, participants consistently prioritized transit improvements as a mobility option for Coral Gables. In the "Money Game" exercise, attendees were asked to deposit \$100 in play money into one of five boxes to express their priorities on where they thought transportation investments were needed. The participants invested 26% of the transportation budget in transit, the largest of the investment options. The map exercises captured specific improvement priorities across the city as shown in **Figure 6.19**.

The list below summarizes the citizen ideas that were captured from the several meetings:

- New trolley route on the entire length of Alhambra Circle
- Improvements in service hours for the existing trolley
- Bus shelters on Coral Way, SW 42nd Ave., and Segovia St.
- New trolley route along US 1 to the University of Miami and the Riviera district
- Improved transit service and bus shelters on Hardee Rd.
- Trolley service on Old Cutler Rd.

New trolley routes have been the subject of several studies, though the Alhambra Circle and Old Cutler Rd. corridors are new ideas. The City has initiated a Last Mile Transit Stop Improvements Program, focused on bringing each of the one hundred seven (107) bus stops on local Coral Gables streets into compliance with the Americans with Disabilities Act (ADA) in addition to making other beneficial improvement to encourage mass transit ridership. The additional improvements

Figure 6.19: Citizen Input on Transit



Figure 6.19: Citizen Input on Transit – Coral Gables North (continued)

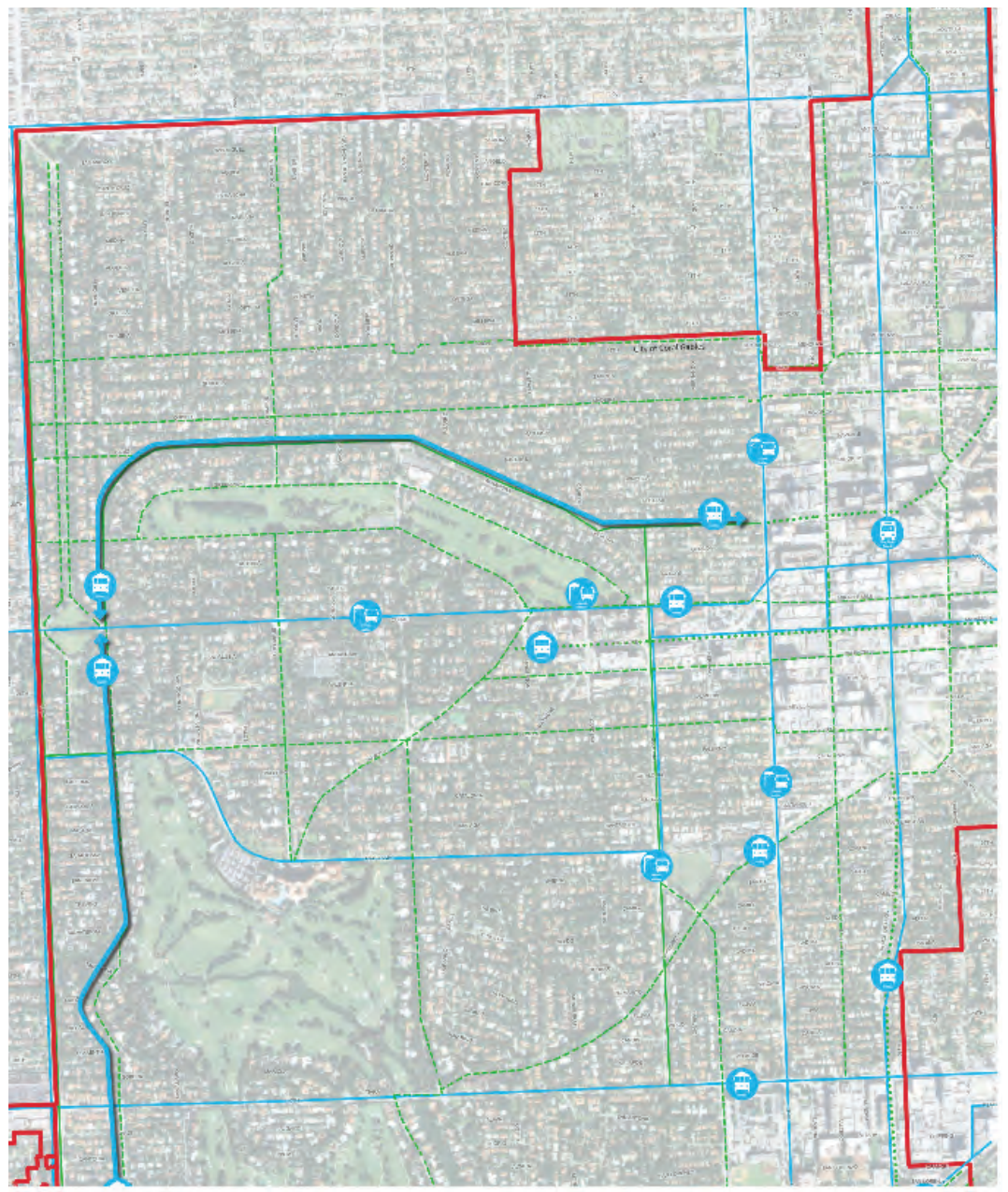
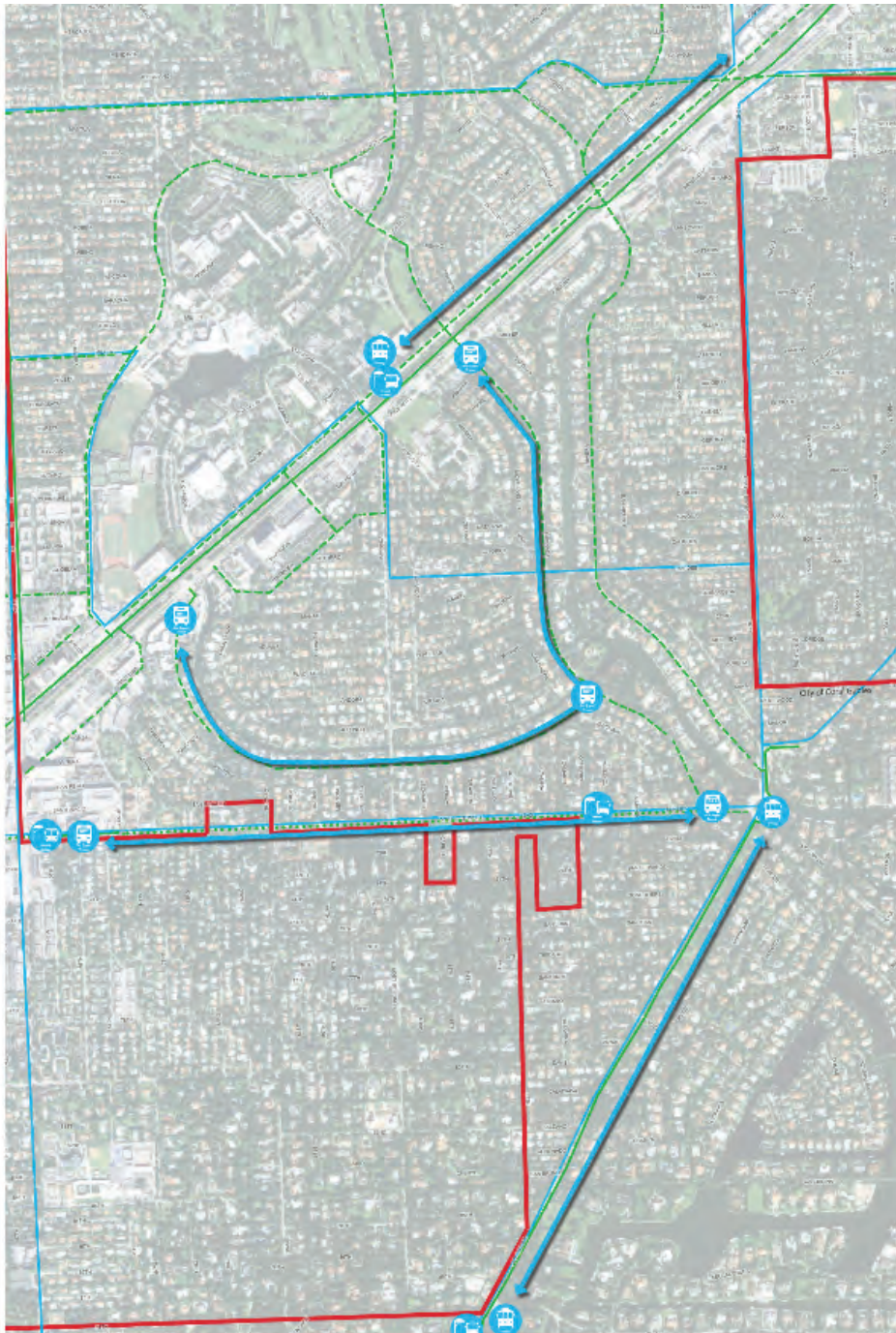


Figure 6.19: Citizen Input on Transit – Coral Gables South (continued)



include connecting bus stops to existing sidewalks, adding waste/recycling receptacles, bike parking, benches and shelters where appropriate. The City is also considering service hour extensions for the existing trolley route.

Figures 6.20 and 6.21 provide a graphic recap of the citizen input exercise. The most often identified areas are shown in darker yellow, while those areas less often referenced are in light yellow. From the figures, these observations can be made:

- The most identified areas were:
 - The north-south corridor along Ponce de Leon Boulevard west to LeJeune Road and east to SE 37th Avenue/Douglas Road.
 - The US 1 corridor across the City.
 - The University of Miami Campus
 - The above areas are part of the City’s “Gables Redevelopment Infill District” (GRID) in which development is exempt from traffic concurrency,
- The east-west corridor lying on either side of Coral Way was identified by a few participants as a suitable area, though this swath is entirely residential in nature with a few parks, schools, and other such features.
- With the exception of the Coral Way corridor, the other frequently identified areas have the most transit service and development activity currently.

Coral Gables Trolley

Route and Service Expansion

A study completed in March 2006 explored the potential expansion of the trolley system and considered extensions to Flagler Street, the MacFarlane Homestead Historic District, the University of Miami, the Red Road corridor, and the Riviera Business District. The preferred action was the extension north to Flagler Street which was implemented.

Figure 6.20: Transit and Development Priority Areas - North

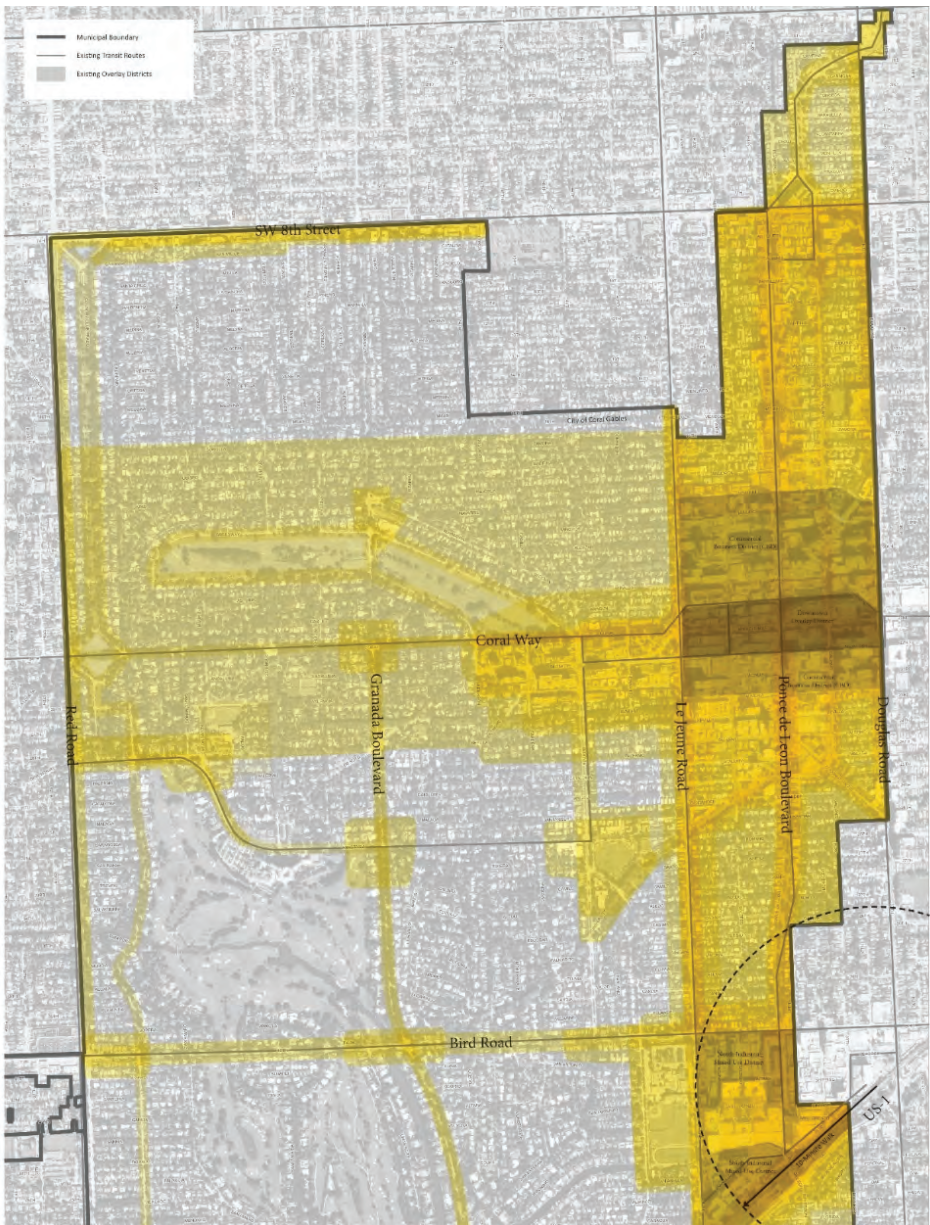
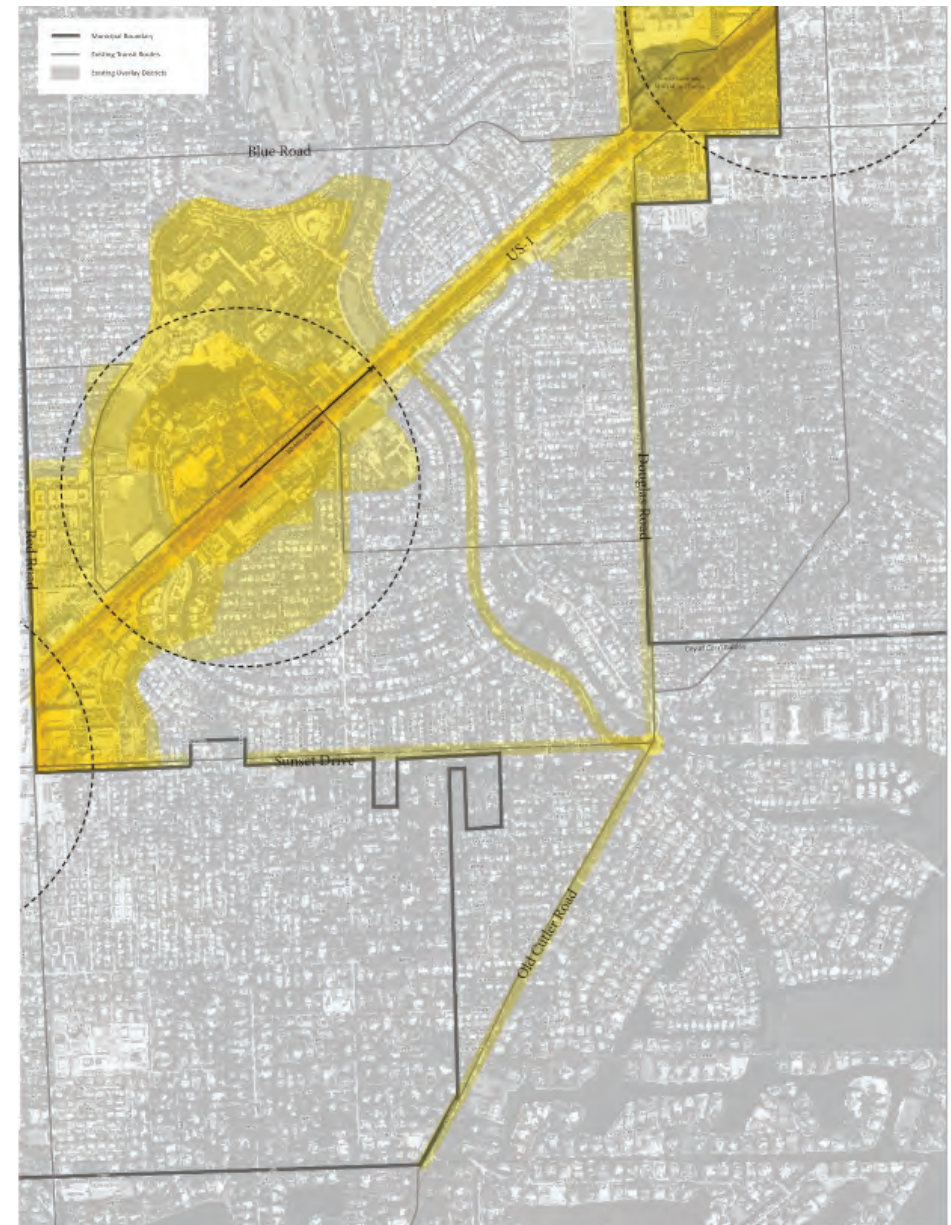


Figure 6.21: Transit and Development Priority Areas - Central



Another trolley study conducted in 2013 further examined possible expansion of the service. It considered several new routes within the city:

- City downtown core routes – four options
- Biltmore Hotel east-west route
- Riviera (South Miami) route
- University of Miami route
- Grand Avenue loop

These are presented in **Figures 6.22** and **6.23**.

In addition, three other routes extending outside the city were also identified (see **Figure 6.24**):

- Coconut Grove route
- Fairchild Tropical Gardens route
- Miami International Airport (MIA) route (to Miami Intermodal Center – (MIC))

In July 2014, a study was completed that examined potential expansion of the trolley into the Macfarlane Homestead area bounded by US 1, SW 37th Ave., and Grand Ave. Four route alternatives were examined and evaluated. Subsequent to the study, the city did implement the Grand Ave. loop route.

In late 2016, city staff proposed a set of possible trolley improvement options as follows:

- Providing regular service on eight municipal holidays when there is no

Figure 6.22: Downtown Core Alternatives

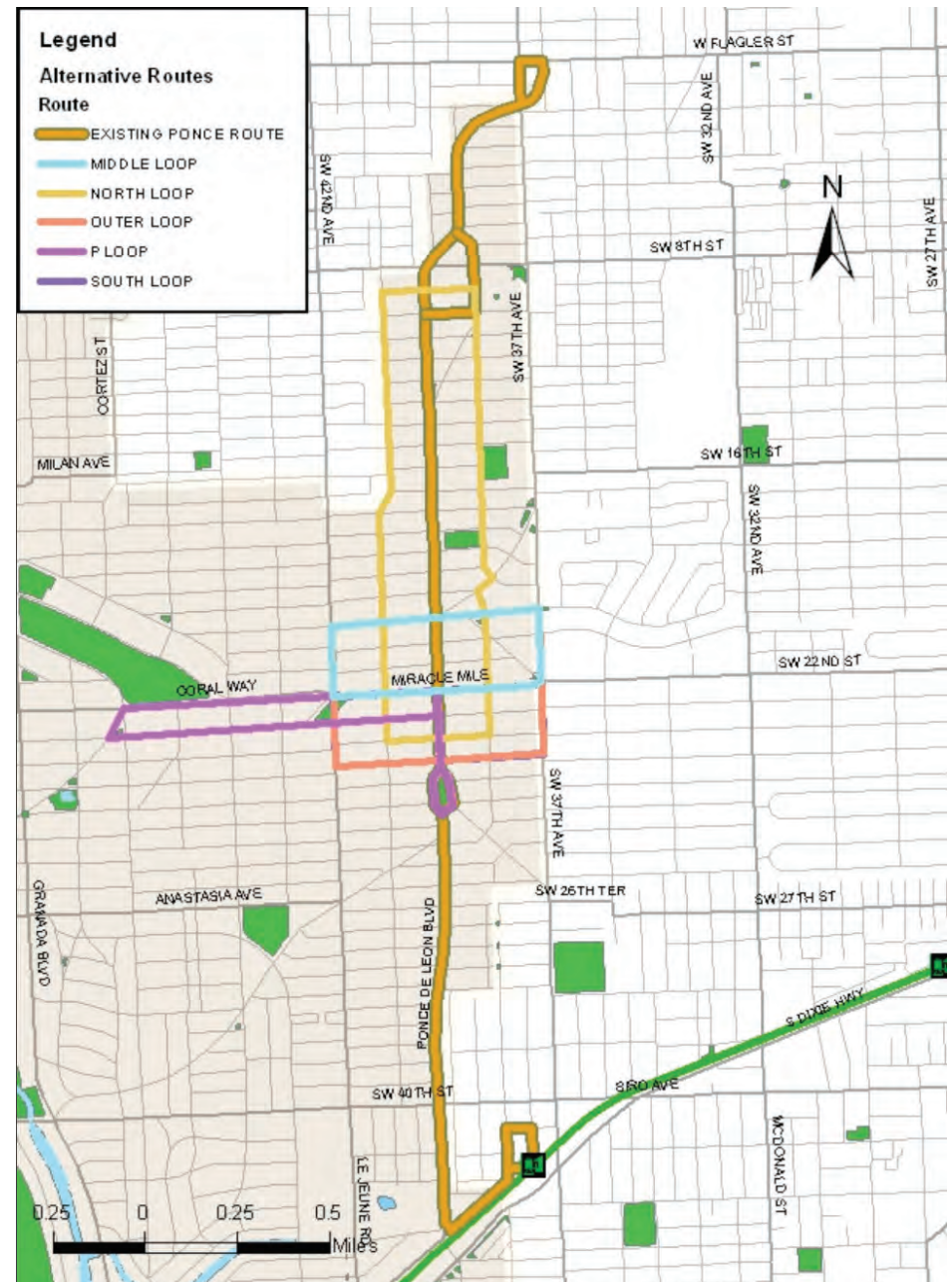


Figure 6.23: Alternatives Inside the City



Figure 6.24: Alternatives Outside the City



service currently.

- Providing regular service on 52 Saturdays when there is no service currently.
- Providing extended service from 8 pm to 10 pm for weekdays and Saturday.
- Providing one additional trolley to the original route to reduce headways below 10 minutes (requires capital cost for additional vehicle).
- Providing a downtown circulator Monday-Friday from 10 am to 4 pm (requires capital cost for additional vehicles).

The recommendation was to increase operational hours, but a final decision by the City Commission is pending.

The city is limited by its Peoples Transportation Plan funding to at least 70% of its transit service being within the city, so external extensions would need to be judiciously determined. The calculation would be based on revenue hours of service. With the high frequency of the existing Trolley service on Ponce de Leon Blvd., a service extension outside the City with a lower frequency of service would be able to be proportionally longer and remain within the external service limit. Should the City desire to run an amount of service outside the City that exceeds the 70% internal service requirement, it could approach the Citizens Independent Transportation Trust (CITI) Board to petition for an exception through a board resolution. Such an external route would still be subject to an evaluation as to competition with any County transit route making a similar connection. As with the existing City trolley route, County transit could choose to eliminate its affected route. Other selling points for an external extension could be that the partly external route connects with other municipal routes at either end, and provides a better link to activity centers along the route than existing connections, if any.

The airport route was mentioned in some stakeholder visits as a potential new

trolley route, one which will extend well outside the City. Relative to this option, it is noted that the three existing County transit routes through the City on SW 57th Ave., SW 42nd Ave., and SW 37th Ave. all traverse northward to the MIC. Some hotels have shuttles, there are taxi and transportation network company options, and it is considered that the likely service hour limitations would be restrictive to air travelers. In addition, as this airport route would terminate in downtown Coral Gables, users would need a first mile/last mile connection to their residential location.

As to the proposed downtown core area route options, the new Freebee service is filling that role successfully. Currently, Coral Gables is utilizing its full surtax allocation for its trolley service. Many municipalities have multiple routes, but the headways are often no more frequent than 30 minutes and sometimes less. In contrast, Coral Gables is operating two routes in a single north-south corridor with high frequency (12-minute average headway) with connections to Metrorail service, and is successful in its ridership level. As noted in the prior studies, service in other sectors of the City, perhaps with the exception of the University of Miami route, would necessarily be lower in frequency and much lower in ridership.

While the City's surtax revenue is trending upward, expansion of service hours or days, along with gradual conversion of the trolley fleet to low-floor vehicles will increase the cost of transit service the city provides.

On the basis of this review, the following recommendations are made regarding trolley service and coverage expansion:

- The priority service hours or days expansion on the existing route should be the priority, based on citizen input and staff analysis.
- The City should consider prioritizing future route expansions. It is anticipated that a route from Douglas Station Metrorail station along Ponce de Leon Blvd. along US 1, stopping at the University and South Miami Metrorail stations, and linking the University of Miami shuttle routes to

the downtown area would be a strong candidate for implementation. This route could be an extension of the Grand Ave. loop route.

- Explore the possibility of contributions from the proposed Mobility Fee to help underwrite expanded trolley coverage.
- Continue identifying opportunities for contributions from new developments inside the Gables Redevelopment Infill District for trolley rolling stock and/or operational funding.

Transit Stop Improvements

Background

High quality transit stops can attract and retain transit users. Some county transit routes in Coral Gables have benches and others have shelters, but the majority have only the pole-mounted transit route sign. Many stops are in constrained locations with narrow sidewalks and tight roadway right-of-way, and there are many others that have no pavement or sidewalk access. All of the trolley stops are on sidewalks but none have benches or shelters. Existing trolley stops also do not have informational kiosks or route maps, leading to some riders being unclear of the trolley's destination or getting on the wrong trolley service.

Transit Stops on Local Streets

The City of Coral Gables applied for and was granted in 2017 an award of \$1 million for its Last Mile Transit Stop Improvements. This grant is funded through the federal Transportation Alternatives Program (TAP), and administered locally by the TPO and FDOT District 6. The purpose of the grant is for improvements to existing transit stops on local Coral Gables streets where county transit or the City trolley operate. There were 54 city trolley stops and 53 county transit stops identified to be located on local city streets. The improvements will include, depending

on the location, these sorts of elements: transit pad, sidewalk access, transit shelter, American with Disabilities Act (ADA) compliance, transit stop amenities (signing, trash receptacle, transit bench), and other related actions.

Figure 6.25 shows the locations of transit stops considered in the grant application. The City is working to move forward on the implementation of this project. This project will provide a substantial upgrade in amenities at bus stops on local city streets, and will make transit service a more usable and comfortable experience for riders. Since higher quality transit stops have been shown to increase ridership (According to the findings of the report; Bus stop amenities and their relationship with riders - A Transit Equity Approach, Mathew R. Talbot, University of North Carolina at Greensboro, May 2011 - <http://libres.uncg.edu/ir/uncg/listing.aspx?id=7532>), bus stop upgrades are an investment in the long term viability of Coral Gables' transit service.

Transit Stops on Non-Local Streets

Figure 6.25: Last Mile Transit Stops Improvement Locations

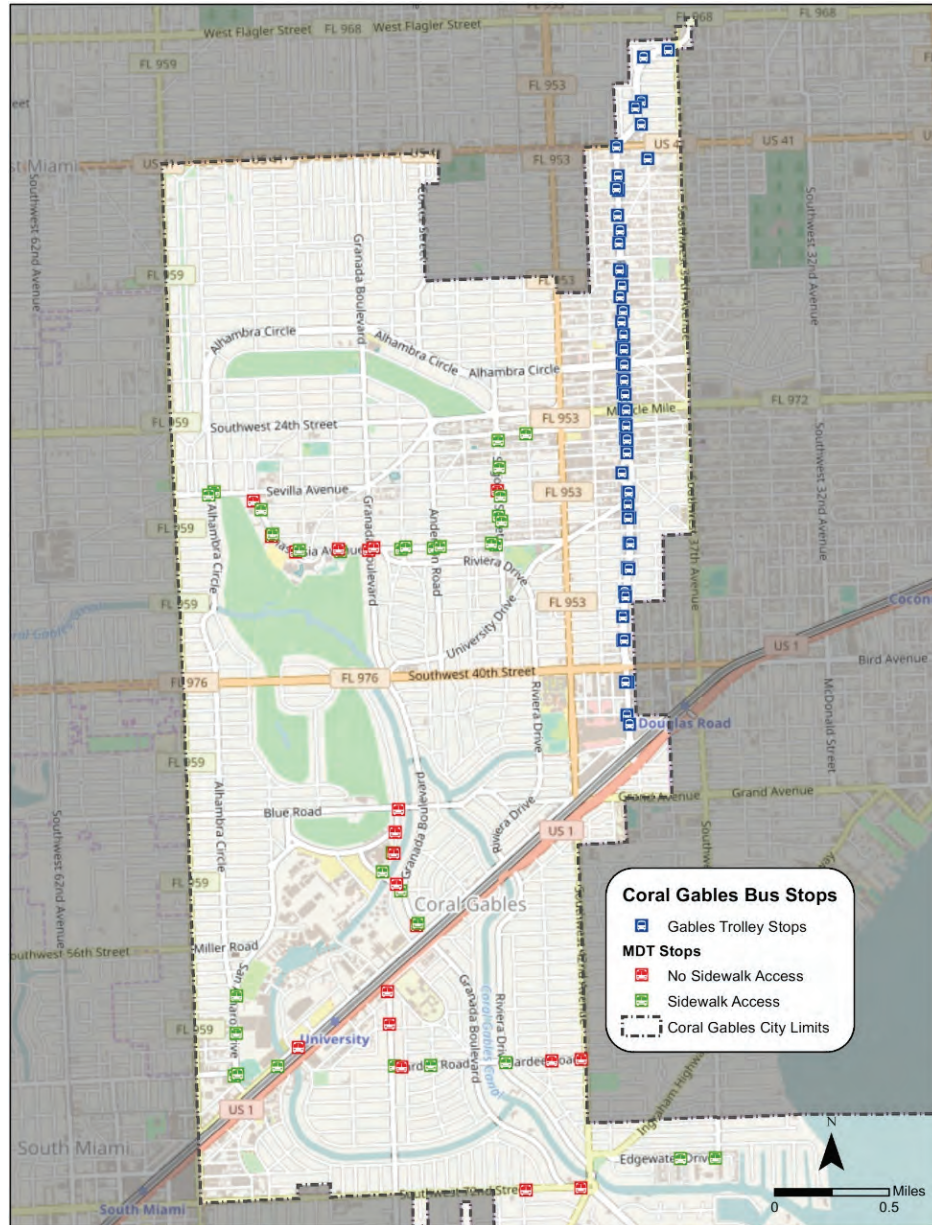
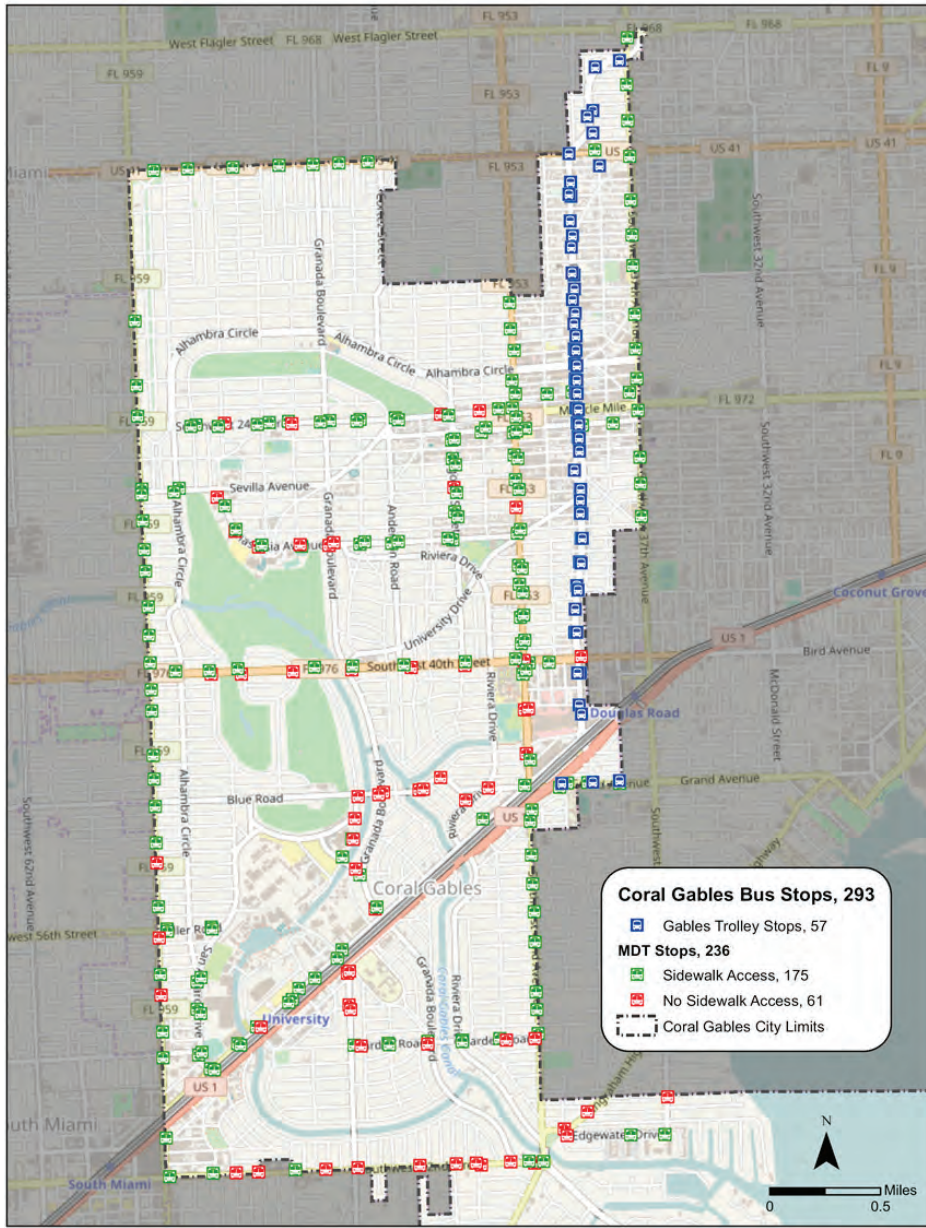


Figure 6.26 shows all transit stops north of SW 72nd Street.

There are 293 total transit stops, of which 107 are on local streets, leaving 186 located on County and FDOT roadways. These stops are situated on mostly arterial streets, such as SW 57th Ave., SW 42nd Ave., SW 37th Ave., Coral Way, Bird Rd., Blue Rd., US 1, Hardee Rd., and Grand Ave. While most have sidewalk access, there are some in every corridor which do not.

There are approximately 8,000 transit stops in Miami-Dade County Department of Transportation and Public Works (DTPW) is directly responsible for transit stops in the unincorporated areas, which total 3,300. The remaining 4,700 involve the municipalities. Florida Administrative Code Chapter 14-20 addressing private use of right-of-way provides the required guidance on State Florida Department of Transportation (FDOT) roads. The code states that a public transit provider as defined in Section 341.031, F.S., may designate a “Bus Stop” within the boundaries of the right of way of a state road. The code continues into further detail on safety and standards.

Figure 6.26: Last Mile Transit Stops Improvement Locations



The DTPW supports the installation of bus shelters which have at least 100 daily boardings. Otherwise, they support the installation of a bench. The issue is that on many streets the sidewalk and right-of-way width behind the street curb is not sufficient to satisfy ADA requirements.

The other issue is that DTPW relies on an agreement with a vendor which installs and maintains the shelters. In return, the vendor places advertising on the shelter and retains all the revenue generated. Since Coral Gables does not endorse advertising in public spaces, the arrangement would not work unless the City reimburses the lost revenue to the vendor. This situation may be cost-prohibitive.

Another option would be for the City to self-fund the installation and maintenance of benches and shelters, in cooperation with DTPW.

The consultant prepared cost estimates (for year 2017) for the improvement of transit stops for the Transportation Alternatives Program (TAP) grant that the City was awarded. These were separately prepared for City Trolley stops and the County transit stops. For the trolley stops, no sidewalk or other access improvements were needed, and an assumption was made that 60% of the stops would have benches only and 40% of the stops would have shelters. The resulting weighted cost per stop was approximately \$10,000. For the County transit stops, it was assumed that shares of stops would need stop pads, sidewalk access, and other work and a similar assumption of 60% benches and 40% shelters was made; the resulting weighted cost per stop was approximately \$20,000. These costs included an allowance for design, permits, field oversight, and contingency. Assuming there is a 50/50 split of existing stop improvement needs between these two cases, an average cost of \$15,000 per stop is obtained.

Applying this estimate to the 186 transit stops inside the City along County and State roads yields a total cost of \$2.8 million. If installation of shelters or benches

is impractical at half the locations due to space limitations or is not needed due to existing amenities, the program cost for transit stop upgrades would be \$1.4 million. Maintenance costs for 93 improved stops at a nominal \$50 per month would be collectively \$55,000 per year.

Summary

Based on this review, the following recommendations are made:

- Implement planned improvements for transit stops on local city streets through the TAP grant. Track project costs to derived cost estimates for differing field and upgrade circumstances. Depending on the cost of the shelter design selected for the grant program, it might be necessary to prioritize stop treatments with shelters, benches, and no treatment, based on the relative boarding volumes at the affected stops.
- Examine the feasibility of a transit stop improvement program on County and State streets, including discussion with DTPW.

Figure 6.27 shows sketches of four variations of enhanced transit shelters which are context sensitive to the architectural motifs of Coral Gables.

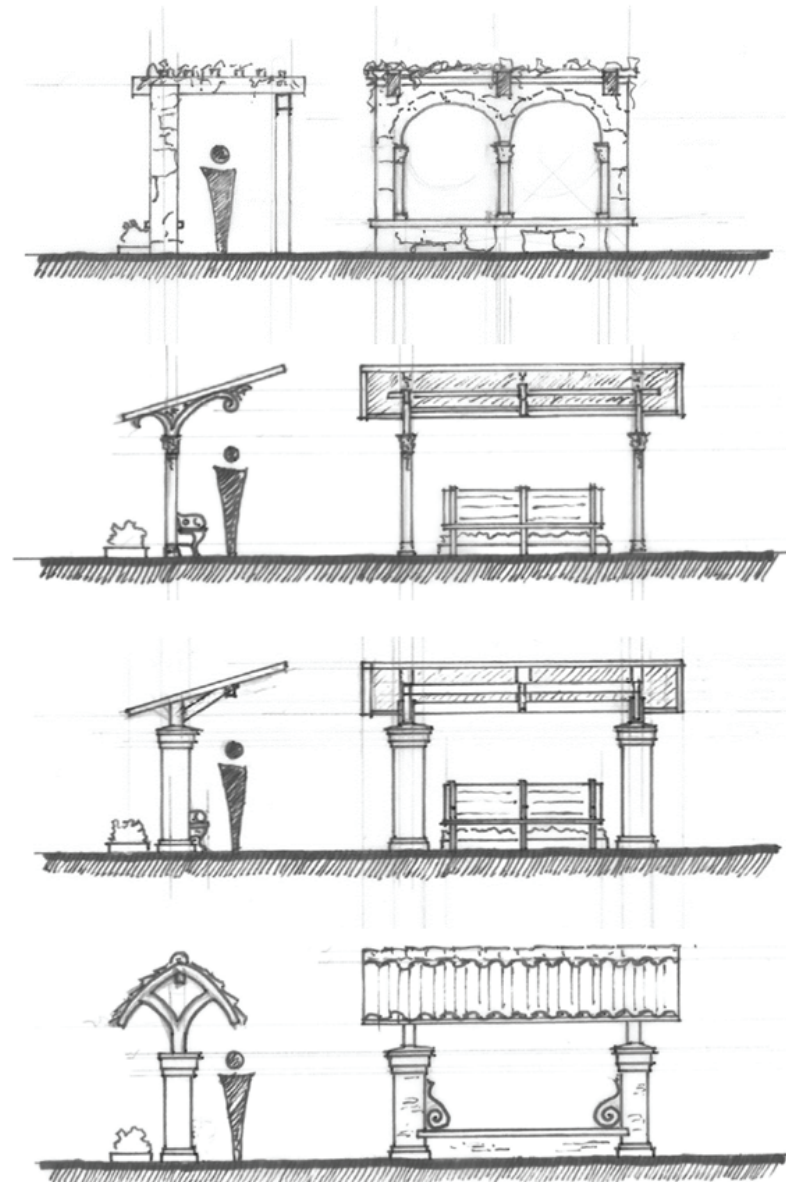
DTPW Transit Improvements

Future DTPW Transit Plans

Miami-Dade County, in partnership with FDOT, the Miami-Dade Transportation Planning Organization (TPO), the Citizens Independent Transportation Trust, are spearheading a refreshed countywide transit initiative called the Strategic Miami Area Rapid Transit (SMART) Plan. This SMART Plan provides a blueprint for developing a vision of enhanced premium transit service in six major corridors, complemented by a network of Bus Express Rapid Transit (BERT) corridors.

The initiative comprises three main components:

Figure 6.27: Bus Shelter Variations



- Corridor transit alternatives studies: Led by FDOT and DTPW, these Project Development and Environmental (PD&E) Studies which are underway will examine corridor alternatives for technology, alignment, and station locations, and arrive at a locally preferred alternative.
- Corridor land use planning studies: Led by the TPO, these studies will identify and define transit-oriented development (TOD) opportunities for each of the premium transit corridors.
- Financing strategy: Led by the TPO working with SMART Plan partners, this element is charged with devising a multifaceted strategy to generate local, state, and federal funding for both capital improvements as well as ongoing operating costs.

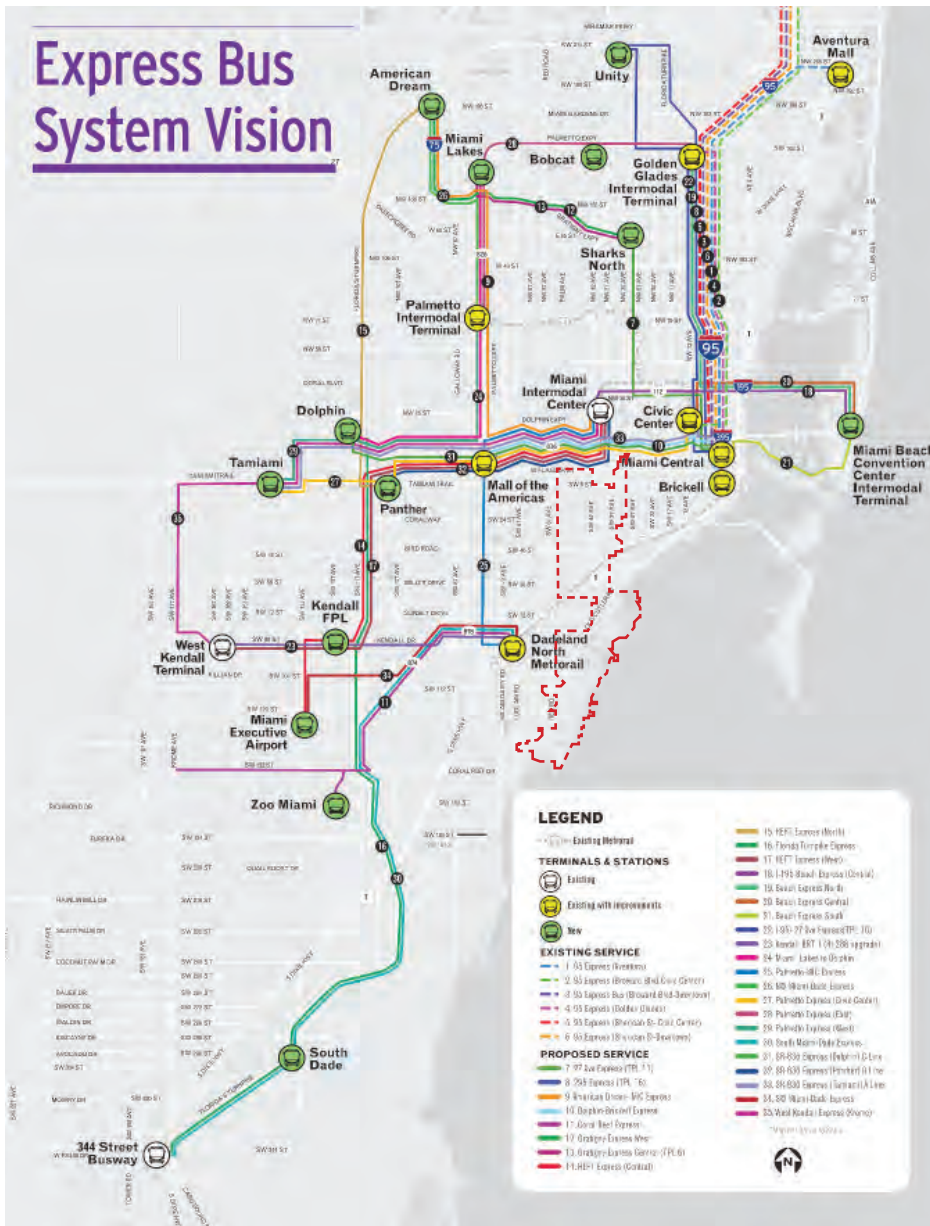
Figure 6.28 displays the plan’s rapid transit and Bus Express Rapid Transit (BERT) corridors, extending the reach of the original Metrorail system and cross-connecting the network, creating a broader range of transit travel choices. While there is no new rapid transit corridor in Coral Gables, the range of destinations across the county that can be more easily reached from Metrorail in Coral Gables will be multiplied. If the SMART plan is fully implemented, Coral Gables will be near the center of a transit-accessible metropolitan region, providing substantially more options to commute to work via transit. This means Coral Gables residents will have far more options for sustainable travel options without contributing to automobile congestion and its related environmental impacts

Figure 6.29 provides greater detail on the proposed configuration of BERT corridors across the county, showing individual but often overlapping routes in the various corridors and how several existing and planned transit terminals will be interconnected. From a Metrorail station, Coral Gables travelers once connected to Dadeland, the MIC, or downtown Miami, would have dozens of travel connections to diverse destinations across the county and beyond to the north.

Figure 6.28: Strategic Miami Area Rapid Transit Plan



Figure 6.29: Miami-Dade County Express Bus System Vision



It is noted that over the long term following implementation of the corridors shown in the SMART Plan per Figure 6.29 will extend the reach of the existing Metrorail line which runs along US 1 through Coral Gables southward along US 1 to Florida City and westward along West Kendall Dr. to SW 167th Ave. This will expand the reach of premium transit and provide an attractive travel alternative to automobile use along US 1 for commuters residing in the south and southwest parts of the county. Likewise, proposed Bus Express Rapid Transit service along Flagler St. and the planned premium transit along SR 836/Dolphin Expressway will provide east-west commuters with improved travel choices. These transit options should help to slow the rate of traffic growth in the affected corridors and contribute incrementally to slow the growth of arterial street traffic and the related cut-through traffic that Coral Gables experiences on its neighborhood streets.

DTPW 10-Year Transit Development Plan

The Miami-Dade County Department of Transportation and Public Works (DTPW) prepares an annual report on transit program performance and needs for the Miami-Dade Transit (MDT) services it provides. This report is prepared to fulfill State of Florida requirements as monitored by FDOT. The most recent edition is entitled MDT 10 Ahead – Transit Development Plan (2017-2018) – Annual Update. This document identifies needed transit capital and operational investments and prioritizes them against available funding projections. Based on the update, the following projects, that benefit Coral Gables have been identified.

Funded Projects

Funded project investments are focused on implementation of two express bus routes beginning at the MIC and running westward along SR 836, as well as construction of Underline improvements along the Metrorail corridor westward to SW 22nd Ave. Other capital projects are minor improvements and state-of-good repair

projects across the bus and rail system. These include upgraded bicycle lockers at all Metrorail stations. The express bus projects do not directly affect transit services in Coral Gables.

Partially Funded Projects

There is one partially funded transit project relating to Coral Gables, the Flagler St. Bus Rapid Transit (BRT) extending west from downtown Miami past the northern tip of Coral Gables where the city trolley route ends, and westward past FIU (see Project 3 in **Figure 6.30**). This corridor could be accessed via the city trolley service or other existing transit routes. A planning study of this corridor was initiated, but is understood to be on hold currently due to issues with providing exclusive transit lanes for certain improvement alternatives.

Figure 6.30: Partially Funded DTPW Projects



Unfunded Projects

In the Unfunded category is one project relating to Coral Gables, Project 6 – NW 37th Ave Limited Stop Enhanced Bus Service (see **Figure 6.31**). A prior planning study for this project found that one travel lane in each direction of the roadway could be assigned for transit vehicles. This corridor would connect from the Douglas Rd. Metrorail station north to the MIC and MIA.

Unfunded – 2028 and Beyond

The projects shown in **Figure 6.32** and **Table 6.2** below are included in the Unfunded – 2028 and Beyond category:

These projects are all designated as Limited Stop Enhanced Bus Services, except for Projects 6 and 50. Project 6 is a proposed Bus Rapid Transit service which would be an upgrade over Project 6 in the Unfunded category. Project 50 represents the further evolution of transit service on SW 37th Ave. as a Light Rail Transit facility. Collectively, these projects would provide expedited mobility on several corridors crisscrossing Coral Gables, but no funding has yet been identified for their implementation.

Figure 6.31: Unfunded DTPW Project



Figure 6.32: Unfunded - 2028 and Beyond Vision



Table 6.2: Unfunded – 2028 and Beyond Vision within Coral Gables

Project	Corridor	Service Type	Limits
6	SW 37th Ave.	BRT	Douglas Rd. Metrorail - MIC
32	SW 8th St.	LS EBS	Brickell Metrorail - Panther Station FIU
50	SW 37th Ave.	LRT	Douglas Rd. Metrorail - MIC
57	SW 57th Ave.	LS EBS	South Miami Metrorail - MIC
61	Miller Dr.	LS EBS	University Metrorail - Tamiami Station
62	SW 72nd St.	LS EBS	South Miami Metrorail - West Kendall
72	Coral Way	LS EBS	Brickell Metrorail - West Dade
73	SW 42nd Ave.	LS EBS	Douglas Rd. Metrorail - MIC
Bus Rapid Transit		BRT	
Limited Stop Bus Service	Enhanced	LS EBS	
Light Rail Transit		LRT	
Miami Intermodal Center		MIC	

Summary

There are no significant DTPW transit projects funded for the next 10 years that affect Coral Gables, and only one partially funded project on Flagler St. which would connect to the north end of the trolley route. Other prospective improvements are unfunded and lie 10 years or further into the future. Based on this assessment, the following recommendations are made:

- The City should monitor annually the DTPW Transit Development Plan for changes in project definition, priorities, and funding status.
- DTPW has long had plans for transit service improvements in the SW 37th Ave. corridor from the MIC south to the Douglas Rd. Metrorail station; long ago this took the shape of elevated Metrorail technology. In the current plan, it is a progression of enhanced bus, bus rapid transit, and then finally light rail transit. The City should consider this transit corridor

designation in its land use planning in terms of future station locations and associated transit oriented development.

- The City should continue monitoring the FDOT District 6 studies of the US 1 and Bird Rd. multimodal corridor planning studies in terms of their implications for transit services in those two corridors.

Trolley Maintenance Facility

The City is in the process of developing a new trolley maintenance facility which will enable it to consolidate all functions at a single site. The new facility is being developed in conjunction with the renovation of Fire Station 2 at 525 South Dixie Highway. The trolley depot will be a two-story building located about 1/4-mile from the existing trolley route, so that deadhead mileage when the trolleys are not in service will be reduced. The current maintenance site is located outside of the City. There will be storage for 12 trolleys. The result will be a facility that is more accessible while enabling more efficient maintenance activity. Operational cost savings are estimated at \$125,000 annually.

The facility construction cost which includes the fire station renovation is \$10,400,000. The design-build construction contract is scheduled to be executed by May 15, 2018, the start of construction by October 1, 2018, completion of the fire station renovations and addition by August 31, 2019, and completion of the trolley building by November 30, 2019. The depot will be a welcome addition to the trolley operation and will enable more efficient, consistent, and high quality service to trolley customers.

The recommended action is to complete the project and identify a method for determining the actual cost savings to be derived. This recurring savings will be useful in helping to replace and expand the trolley fleet and route coverage.

6-3 RECOMMENDATIONS

Transit service is an important tool in the mobility toolbox, capable of providing a real alternative to the auto for medium length and longer trips. This section has highlighted opportunities for transit to play an expanded role in mobility choices for those traveling to, from, and within Coral Gables. **Table 6.3** summarizes the recommendations that were identified in reinforcing the role of transit in the next 10 years.

Table 6.3: Transit Element Actions

Project No.	Policy	Program	Project	Implementation Phase *			Title	Description	Conceptual Cost Estimate					
				Short Range	Medium Range	Long Range			Capital Cost	Planning	Design	Construction, Engineering, Inspection	Soft Cost Subtotal	TOTAL
T-1			✓		✓		Expand hours of trolley operation.	Determine which expansion plan to deploy.	\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
T-2	✓			✓			Prioritize future trolley route expansion.		\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
T-3		✓		✓			Consider mobility fee as funding source.		\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
T-4	✓			✓			Continue to seek development funding for rolling stock or operational costs.		\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
T-5			✓	✓			Implement Last Mile transit stop upgrades on local city streets. No City project code.	Budget is per City CIP.	\$1,510,000	\$105,700	\$271,800	\$151,000	\$528,500	\$2,038,500
T-6			✓		✓		Evaluate feasibility of bus stop upgrades on County and State streets.		\$-	\$30,000	\$-	\$-	\$30,000	\$30,000
T-7		✓		✓	✓	✓	Monitor County TDP on annual basis.	Track changes in projects, priorities, funding.	\$-	\$2,500	\$-	\$-	\$2,500	\$2,500
T-8		✓		✓			Evaluate planning needs for SW 37th Ave. transit.	This corridor has long been planned for premium transit, but lacks funding.	\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
T-9		✓		✓			Coordinate with FDOT on implementation of US 1 Study recommendations.	Master list included in Chapter 7 Vehicles. Actions should be funded by FDOT.	\$-	\$2,500	\$-	\$-	\$2,500	\$2,500
T-10		✓		✓			Coordinate with FDOT on implementation of Bird Rd. Study recommendations.	Master plan included in Chapter 7 Vehicles. Actions should be funded by FDOT.	\$-	\$2,500	\$-	\$-	\$2,500	\$2,500
T-11			✓	✓			Complete the maintenance facility project and track cost savings.	Monitoring costs only.	\$-	\$2,500	\$-	\$-	\$2,500	\$2,500
SUBTOTAL									\$1,510,000	\$170,700	\$271,800	\$151,000	\$593,500	\$2,103,500

* NOTE: Short Range 1-2 years Medium Range 3-5 years Long Range 6-10 years | FDOT - Florida Dept. of Transportation DTPW - Miami-Dade Dept. of Transp. & Public Works

CORAL
GABLES®
THE CITY BEAUTIFUL



7

VEHICLES



TABLE OF CONTENTS

#	Title	Page
7	Vehicles.....	7-1
7.1	Context	7-2
	Functional Classification.....	7-2
	Existing and Future Traffic Volumes and Level of Service .	7-6
	Coral Gables Trip Analysis.....	7-9
	Crash History.....	7-12
	Programmed and Planned Street Improvements.....	7-14
7.2	Analysis	7-16
	US 1/South Dixie Highway.....	7-17
	Bird Road Planning Study.....	7-19
	Ingraham Terrace.....	7-30
	Flagler Street	7-32
	Cartagena Plaze	7-33
	Granada Boulevard	7-38
	LeJeune Road.....	7-43
	University Drive	7-46
	Alhambra Circle.....	7-46
	Ponce de Leon Boulevard.....	7-47
	Downtown Streets	7-47
7.3	Recommendations	7-55

Figures

7.1	Map of Coral Gables (1924).....	7-1
7.2	Views of Miracle Mile.....	7-2
7.3	Functional Classification.....	7-4
7.4	Street Responsibility	7-4
7.5	Posted Speed Limits	7-4
7.6	Intersection Controls and Street Flow Continuity.....	7-5
7.7	Historical Street Designations.....	7-5

#	Title	Page
7.8	Historical District Designations.....	7-6
7.9	Existing Traffic Volumes.....	7-7
7.10	Existing Level of Service.....	7-8
7.11	Future Level of Service	7-8
7.12	Future Level of Service	7-9
7.13	Existing Internal/External Trip Patterns.....	7-11
7.14	Future Internal/External Trip Patterns.....	7-12
7.15	Vehicle Miles of Travel Trend	7-12
7.16	Crash History 2011-2016	7-13 - 7-14
7.17	Crash Distribution 2011-2016.....	7-14
7.18	US 1 Corridor Study Identified Needs	7-17
7.19	US 1 Corridor Improvement Strategies.....	7-18 - 7-19
7.20	Bird Road Study Objectives	7-20
7.21	Bird Road Typical Sections West of Ponce de Leon Blvd. - Existing and Future	7-20
7.22	Bird Road Typical sections East of Ponce de Leon Blvd. - Existing and Future	7-21
7.23	Proposed Access Management Improvements.....	7-22
7.24	Bird Road Improvement Recommendations - SW 61st Avenue to SW 57th Avenue.....	7-24
7.25	Bird Road Improvement Recommendations - Alhambra Circle to Santa Maria Street	7-25
7.26	Bird Road Improvement Recommendations - University Drive to Palmarito Street.....	7-26
7.27	Bird Road Improvement Recommendations - University Drive Detail	7-27
7.28	Bird Road Improvement Recommendations - Segovia Street to SW 39th Avenue.....	7-28
7.29	Bird Road Improvement Recommendations - SW 38th Court to US 1	7-29
7.30	Ingraham Terrace/LeJeune Road Intersection Options.....	7-31-7-32
7.31	Flagler Street Premium Transit Alternatives.....	7-33
7.32	Cartagena Circle	7-34

TABLE OF CONTENTS CONT.

#	Title	Page
7.33	Catagena Plaza Looking South Showing Expansive Pavement	7-34
7.34	Columbus Plaza Improvement Concepts	7-36
7.35	Ponce de Leon Plaza Improvement Concepts.....	7-37
7.36	Visualizations of Ponce de Leon Plaza Improvements.....	7-38
7.37	Granada Boulevard Corridor	7-39
7.38	Desoto Plaza Improvement Options.....	7-40
7.39	DeSota Plaza Visualization.....	7-41
7.40	Granada Boulevard Typical Section Concept.....	7-41
7.42	Valencia Avenue/Andalusia Avenue One-Way Pair.....	7-41
7.41	Granada Boulevard Typical Section Visualization.....	7-42
7.43	LeJeune Road Typical Section Concept	7-43
7.44	San Amaro Drive Typical Section Concept.....	7-45
7.45	Biltmore Way Typical Section.....	7-46
7.46	60ft ROW Downtown - Wide Sidewalks	7-49
7.47	Typical 60-foot One-Way Street.....	7-50
7.48	200 Block of Majorca Avenue.....	7-51
7.49	Alhambra Circle (Douglas Road to Galiano Street.....	7-52
7.50	Alhambra Circle (Commercial District).....	7-53
7.51	Salzedo Street/Galiano Street (Commercial Area)	7-54

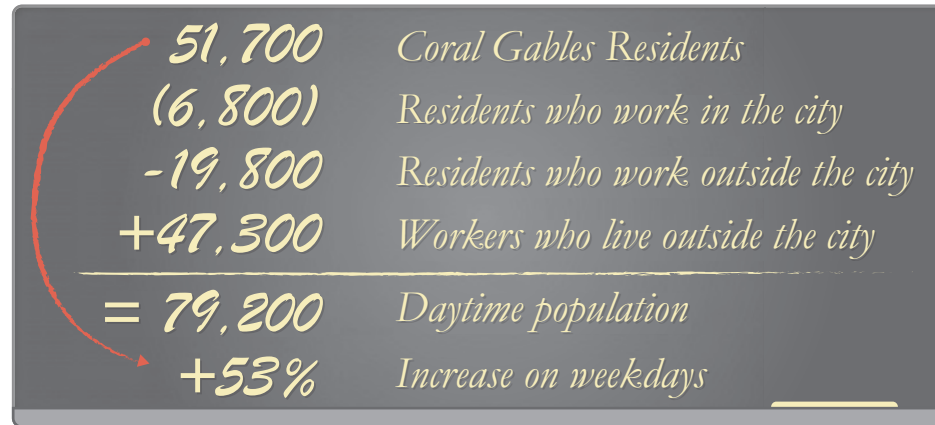
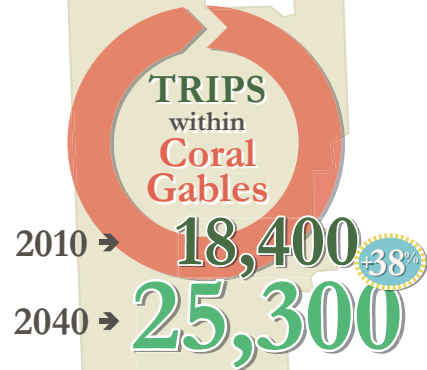
Tables

7.1	Demographic Forecasts.....	7-9
7.2	Daily Trips by Type	7-10
7.3	Summary of Daily Trips by District	7-10
7.4	Summary of Trip Patterns.....	7-11
7.5	Miami-Dade Five-Year Transportation Improvement Program.....	7-15
7.6	City Roadway Projects (2019-2023).....	7-15
7.7	Proposed Intersection Modifications.....	7-20
7.8	Intersection Level of Service Results (2040).....	7-23
7.9	Conceptual Cost Estimates for Bird	

#	Title	Page
	Road Improvements	7-30
7.10	Potential Granada Boulevard Intersection Improvements.....	7-38
7.11	Vehicular Element Actions.....	7-56

VEHICULAR

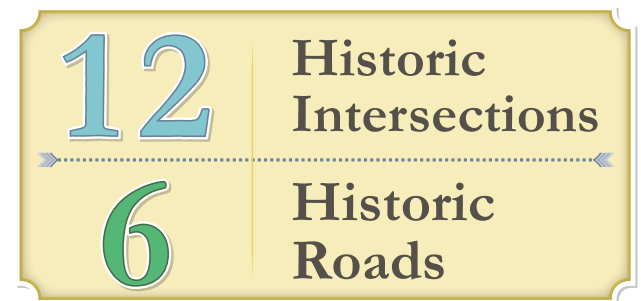
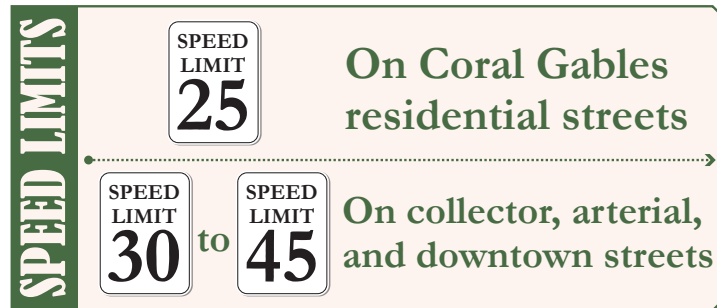
VEHICLE TRIPS in Coral Gables



About
3,000
crashes
annually
on city
streets

www.census.gov/ and <https://www.beaconcouncil.com/why-miami-dade/cities/coral-gables/>

TRIPS THROUGH Coral Gables



TRIPS TO or FROM Coral Gables



Source: Regional Travel Model

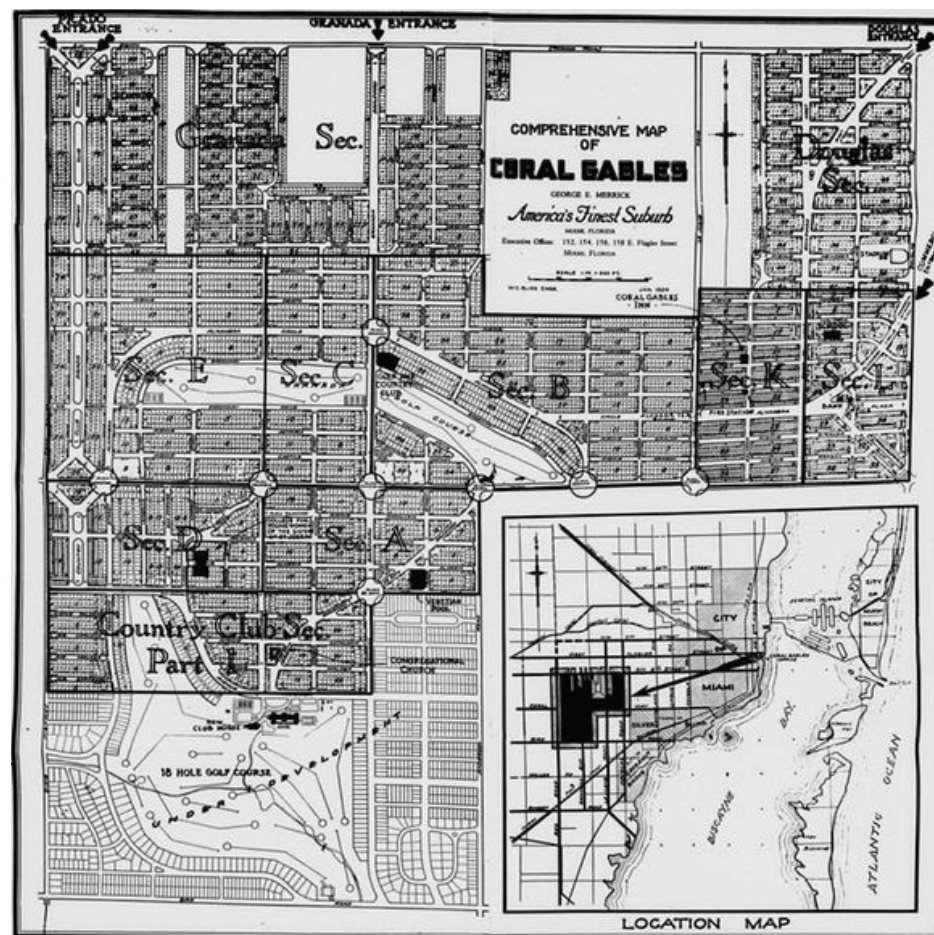


7 VEHICLES

Automobiles dominate travel in the US, but given the known negative externalities of traditional gasoline-powered vehicles, limited space to widen roads, and shifting priorities towards sustainable modes, adding automobile capacity through road widening is no longer feasible or desirable. Nationally, increasing focus is being directed towards trying to help traffic flow more efficiently within existing built facilities while assuring that non-auto travel choices are expanded and that their safety and convenience for users is enhanced.

Coral Gables was one of the first planned communities, and its planning was based on the popular early twentieth century City Beautiful Movement. The city was developed by George Merrick during the Florida land boom of the 1920s. By 1926, the city covered over 15 square miles. The basic street pattern was a grid of rectangular-shaped blocks, but was transfigured with a series of curvilinear and angled streets, interrupted by canals and green spaces, and highlighted by several large circles and plazas, or enlarged intersections. The result is a distinctive street network which is unique in South Florida, as shown in **Figure 7.1** (historicflorida.com).

Figure 7.1: Map of Coral Gables (1924)



For perspective on the evolution of the City's street system, these images in **Figure 7.2** (historicflorida.com) show the Miracle Mile corridor through the years. This section of the report describes the City's street network, current and anticipated issues and needs, discusses potential improvements, and provides recommendations for incorporation into the transportation plan implementation program.

Figure 7.2: Views of Miracle Mile



7.1 CONTEXT

This section provides a description of the Coral Gables street network, its features and characteristics. This discussion will set the stage for analysis of the transportation issues and need, and proposed improvement actions.

Functional Classification

Roadway networks are classified into a hierarchy of role and importance – their functional classification. This hierarchy is typically classified by Freeway, Arterial, Collector, and Local categories, although there can be additional categories such as major arterial and minor arterial, for example. Local streets comprise the bulk of the street system with the primary purpose to provide property access. Collector streets are those to which traffic flows for access to arterial streets. Arterial streets form the trunk network for longer trips and for access to retail and employment centers; they also provide the main connections to freeways and expressways.

The functional classification of streets in Coral Gables is provided in **Figure 7.3** (from the Miami-Dade County Comprehensive Plan). This classification identifies US 1, Bird Road, SW 8th Street, Flagler Street, and part of LeJeune Road as State Principal Arterials. SW 57th Avenue is classed as a State Minor Arterial. County Minor Arterials include Coral Way, SW 37th Avenue, sections of University Drive and Granada Blvd., Sunset Drive, Maynada Street, Blue Road, Ingraham Highway, and Old Cutler Road. Collector streets include Alhambra Circle, Ponce de Leon Blvd., Granada Blvd. north of Bird Road, Anderson Road, and Anastasia Avenue.

Street Responsibility

Jurisdictional responsibility for a street is assigned to the State, County, and City of Coral Gables, as shown in **Figure 7.4**. The Florida DOT is responsible for SW 57th Avenue, SW 8th Street, Flagler Street, Bird Road, US 1, and Lejeune Road

north of US 1/Bird Road. This jurisdictional responsibility includes oversight of the design, improvements, access, and traffic operations aspect of these corridors. As a result, the City must coordinate with the State and County for issues relating to roads under their jurisdiction.

Street Widths

Street widths in Coral Gables vary widely. Wider streets typically have a higher functional classification. Local streets in Coral Gables are often narrow, ranging from 16-24 feet wide, with the narrowest being located in residential areas.

Posted Speed Limits

As shown in **Figure 7.5**, posted speed limits in Coral Gables range from 45 mph to 25 mph. This City recently enacted a reduction in residential speed limits from 30 mph to 25 mph as part of its Neighborhood Livability efforts to improve the safety of traffic operations in residential districts. The higher speed limits are associated with the streets having a higher functional classification and higher traffic volumes.

Intersections and Street Flow Continuity

Figure 7.6 displays an inventory made of intersection traffic controls across Coral Gables. These range from signalized intersections to Stop signs and Yield signs. Once individual intersection controls were compiled into the map, flow continuity lines were drawn to show those street segments where traffic flow is unimpeded by intersection controls. There can be relatively long segments on major streets without flow interruption. However, where these segments appear on local streets, this can be useful information in the effort to manage traffic speeds within residential districts.

Historical Street Designations

Coral Gables, given the distinctive history of its development and the attention paid to the layout and design of its street system, has a dozen intersections designated as historically significant. In addition, there are five corridors designated as state historic roadways. These are shown and listed in **Figure 7.7**. The 12 city sites require input and review from the City Historical Resources and Cultural Arts Director before any modifications can be made. The purpose of this coordination is to preserve the character and design of the intersection as intended by Merrick. Similarly, state historic roadways require state historic consultation prior to roadway infrastructure modifications.

In addition to historic intersections and roadways, there are several historic districts (see **Figure 7.8**). Street modifications in these areas would also require review for historic preservation considerations.

Figure 7.3: Functional Classification

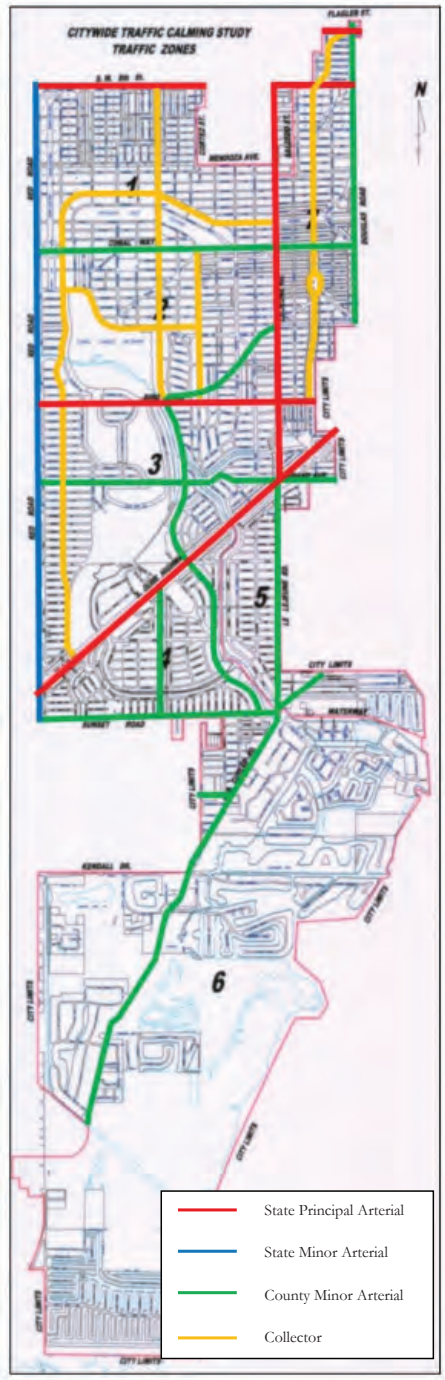


Figure 7.4: Street Responsibility

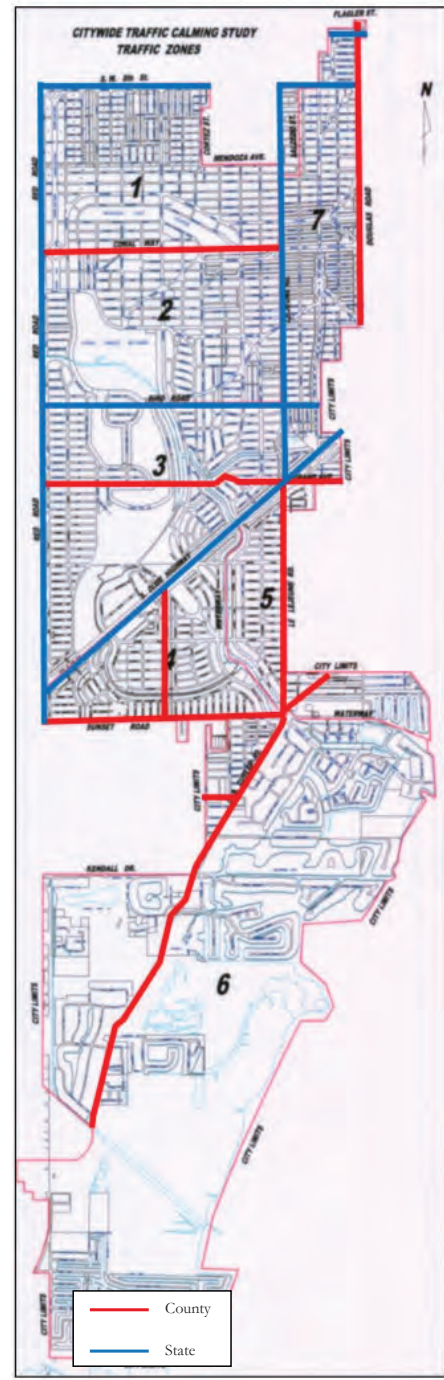


Figure 7.5: Posted Speed Limits



Figure 7.6: Intersection Controls and Street Flow Continuity

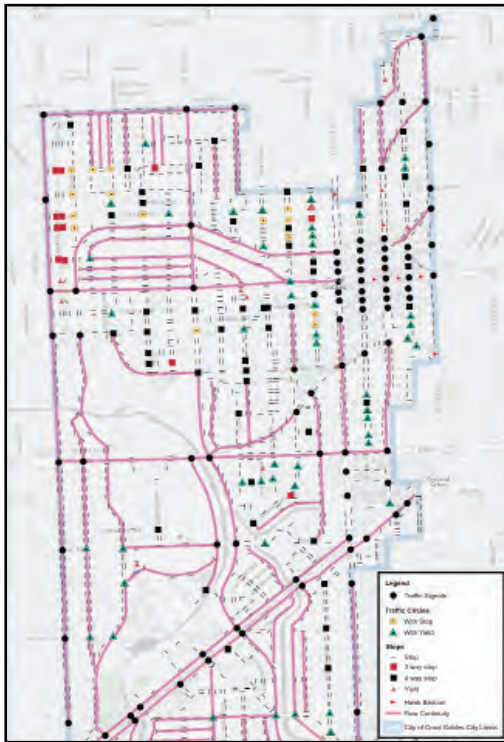


Figure 7.7: Historical Street Designations

HISTORIC INTERSECTIONS

1. Segovia Plaza - Intersection of Coral Way, Segovia Street and N. Greenway Drive
2. DeSoto Fountain & Plaza - Intersection of Sevilla Ave., Granada Blvd. and DeSoto Boulevard
3. Granada Plaza - Granada Boulevard and Alhambra Circle
4. Granada Entrance - Granada Boulevard and SW 8 Street
5. Columbus Plaza - Coral Way, Intersection of Columbus Blvd. and Indian Mound Trail
6. Balboa Plaza - Coral Way, Intersection of S. Greenway Drive, De Soto Blvd. and Anderson Road
7. Ponce de Leon Plaza - Coral Way and Granada Boulevard
8. Douglas Entrance - corner Douglas Road and SW 8th Street
9. LeJeune Plaza - Coral Way and Le Jeune Road
10. Country Club Prado Entrance - Country Club Prado and SW 8 Street
11. Commercial Entrance - Intersection Alhambra Circle, Madeira Ave. and Douglas Road
12. Alhambra Plaza Street Median

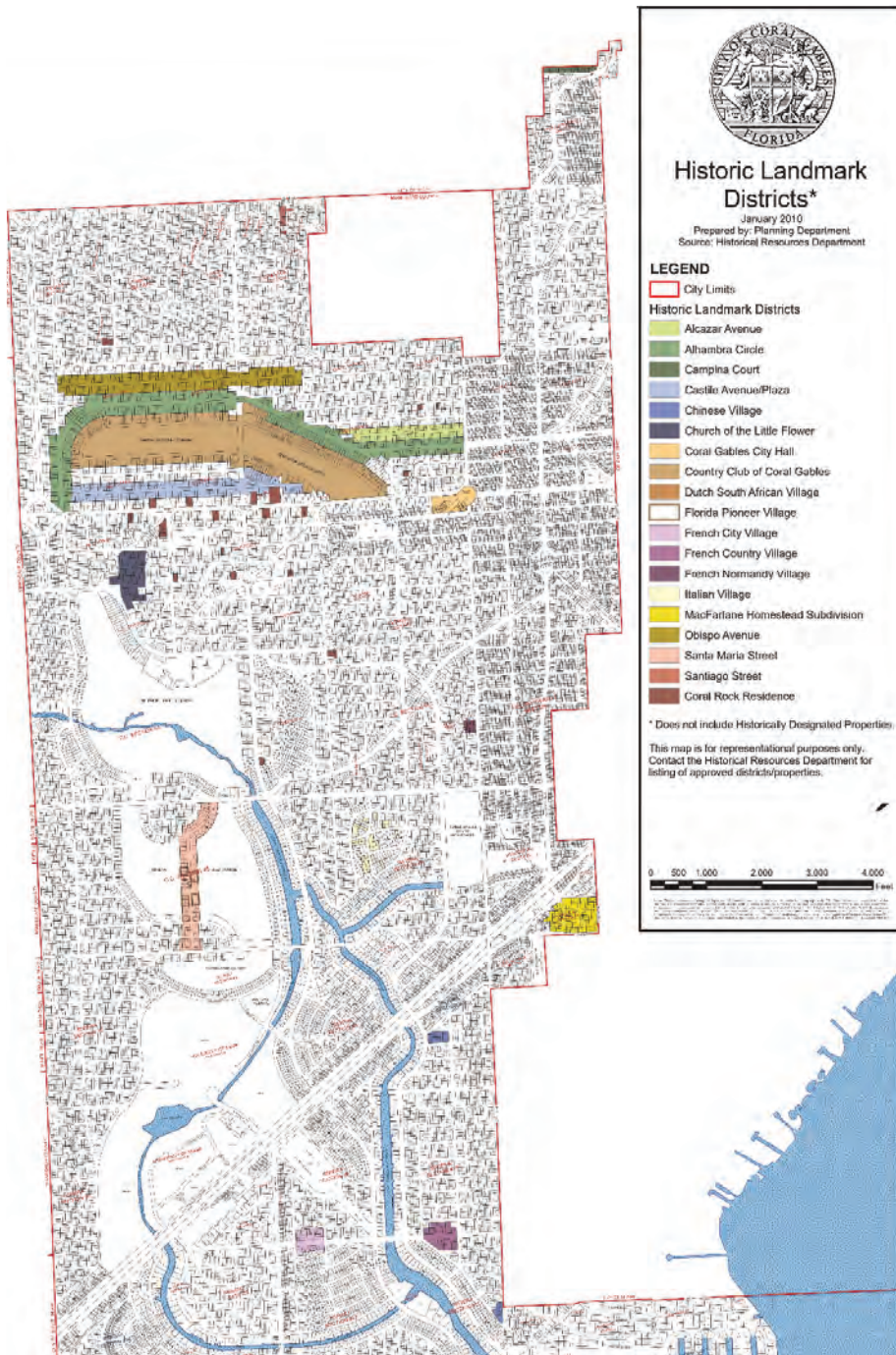
STATE HISTORIC ROADWAYS

- A. Bird Road - Between Red Road and Ponce de Leon Boulevard
- B. Coral Way - Between LeJeune Road and Red Road
- C. Old Cutler Road
- D. Red Road - From S.W. 8th Street to S.W. 72nd Street
- E. Sunset Drive - Between Cartegena Plaza and Southwest 56th Avenue
- F. Calle Ocho

Source: City of Coral Gables website – Locally Designated (Historic) Properties



Figure 7.8: Historical District Designations



Existing and Future Traffic Volumes and Level of Service

An important barometer of traffic conditions is the mapping of network traffic volumes and the associated level of traffic service. This section discusses both for the existing time frame (2010 base year) and future time frame (2040 forecast year, using map outputs from the South East Florida Regional Planning Model (SER-PM), the travel demand model used across Miami-Dade, Broward, and Palm Beach Counties to analyze travel patterns, network traffic volumes, and traffic service.

Figures 7.9 and 7.10 show the existing network traffic volumes and PM-peak traffic service levels, respectively for Coral Gables and the surrounding area. Figures 7.11 and 7.12 provide the same information for the future 2040 network conditions. It is noted that the traffic level of service (LOS) is rated on a letter scale in steps from A to F, where A is free-flowing and F is overcapacity. It is also noted that the travel demand model is a tool showing general patterns of movement, but may not be fully accurate for every individual segment of the coded street network. Nonetheless, it is useful in flagging the nature of changes in network use and performance over time. From these maps, these observations can be noted:

- Between the base year and 2040, most arterial roadways experience continuing traffic growth, roughly in the vicinity of 10% increase. This is a relatively small annual growth rate, but this is generally the case that those roads are already fairly congested and cannot absorb larger growth in traffic volumes.
- Over the same period, many non-arterial streets within the City see higher increases in traffic volumes, as traffic routes onto less congested streets.
- In terms of the level of traffic service, for the base condition, it is seen that there is widespread congestion in the area of interest, with many directional roadway segments operating at LOS D (congested), LOS E (capacity), and LOS F (overcapacity), although there are some segments operating at LOS A to C.

- Over time to 2040, it is seen that traffic LOS worsens, with the extent of LOS D, E, and F broadening, and LOS values worsening on various segments, across most of the City, although there are some still adequately performing segments.

The Gables Redevelopment and Infill District (GRID) is identified as a traffic concurrency exemption area and is a defined area along the central spines of Ponce de Leon Boulevard and US 1. Within the GRID, developments meeting certain requirements are basically exempt from traffic concurrency requirements. These developments must conduct traffic impact studies identifying transportation system impacts, but are not obligated to mitigate those impacts. Most significant development projects within the City fall within the GRID boundaries. While development can increase traffic, there is also synergy between mixed use developments which can tend to reduce trips external to the GRID. Thus the GRID is an important factor in the City’s traffic future.

Another key element is new technology and its potential influence on traffic demands placed upon City streets. An example are the new wayfinding applications for smartphones which find minimum travel time paths for traffic considering congestion and delay. This phenomenon has contributed to through traffic that belongs on arterial streets meandering through neighborhood district streets, aggravating street safety in those areas. This issue has confronted the City long before smartphones, and the City has adopted a longstanding program of neighborhood traffic calming to address this challenge and better manage cut-through traffic in neighborhoods.

Due to Coral Gables’ historic nature, built-out urban development pattern, and limited right-of-way, widening roads to alleviate projected congestion problems is not feasible, or desirable. Focus should be given to reducing automobile travel demand through active mobility infrastructure, transit, and shared mobility services.

Figure 7.9: Existing Traffic Volumes

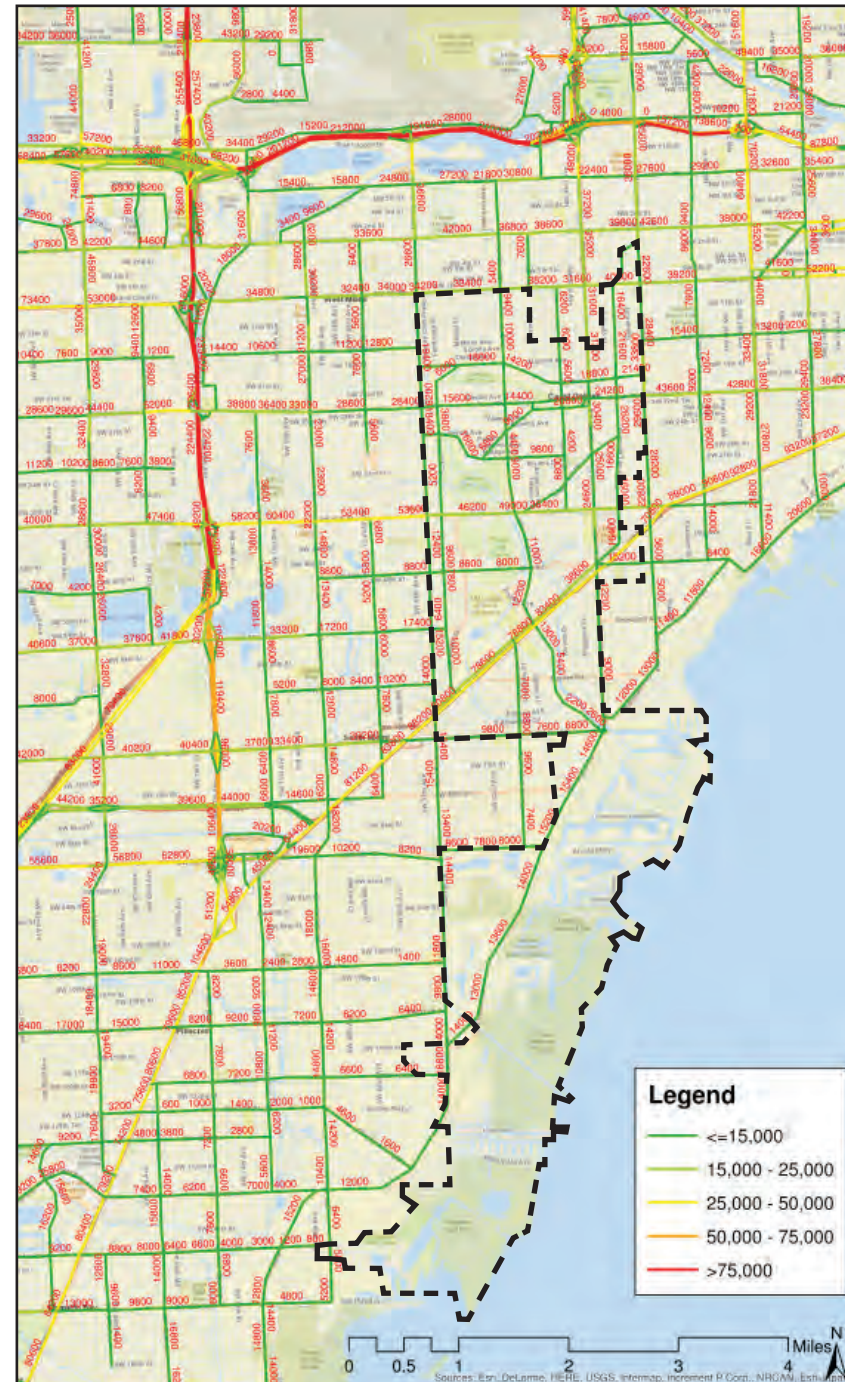


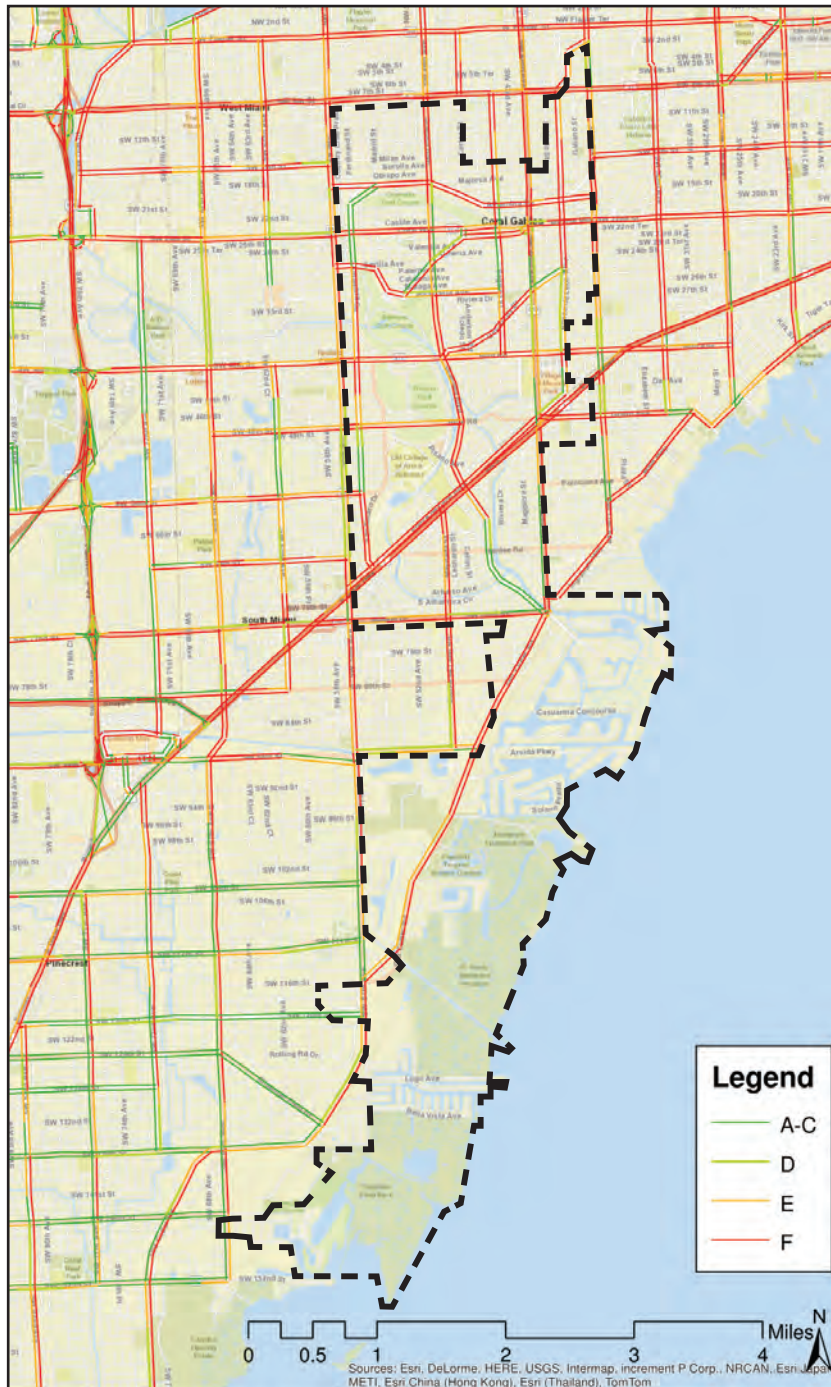
Figure 7.10: Existing Level of Service



Figure 7.11: Future Traffic Volumes



Figure 7.12: Future Level of Service



Coral Gables Trip Analysis

Using the SERPM files, an analysis was made of trip making patterns in and around Coral Gables for existing and future conditions. Data for Coral Gables was isolated by selecting the traffic analysis zones in the model that matched the City boundaries. **Table 7.1** presents demographic data for population, employment, and students for the base existing year and for 2040. For this summary, the City was divided into four districts as listed in the table and shown in the adjacent map.

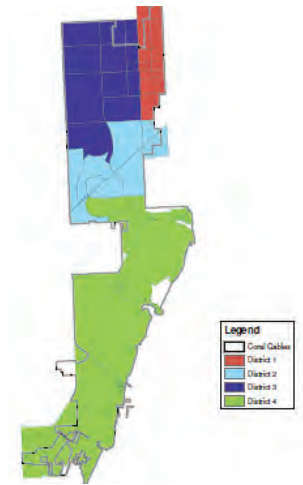


Table 7.1: Demographic Forecasts

District	Area	Population	Employment	Students (K-College)
2010				
1	Downtown	11,200	26,900	2,440
2	US 1 Corridor	9,600	16,000	6,160
3	Residential - North	20,800	5,600	5,390
4	Residential - South	10,400	1,900	3,070
Total		52,000	50,400	17,060
2040				
1	Downtown	18,400	33,900	3,880
2	US 1 Corridor	11,700	20,400	6,520
3	Residential - North	21,500	7,800	5,460
4	Residential - South	11,300	2,200	3,180
Total		62,900	64,300	19,040
% Increase				
1	Downtown	64%	26%	59%
2	US 1 Corridor	22%	28%	6%
3	Residential - North	3%	39%	2%
4	Residential - South	9%	16%	4%
Total		21%	28%	12%

From this table, these observations can be drawn:

- A 21% increase in population is forecast with most of that growth to occur in the downtown district and the US 1 corridor.
- Employment growth is forecast for 28%, and is more distributed across the City, noting that even the mostly residential could see employment growth in retail or institutions.
- Student growth of 12% is concentrated in the downtown.

Table 7.2 shows daily trips by type of trip. Overall trips are forecast to grow by 23%, noting that these are trips within, into and out of Coral Gables. Transit trips show a decline but this is thought to be an anomaly from the windowing of data from the model, while bicycle and walking trips show a dramatic increase. Single occupancy vehicle trips are and continue to dominate the travel scene. Average trip lengths do not change much over time.

There is a sizable increase in the bike/walk trip activity and a small decline in the transit trips. It is likely that the partitioning to isolate Coral Gables trips in the model may have some anomalies in terms of how trips were or were not captured, but it was not possible to ascertain the cause. Regardless, more bike/walk trips would be beneficial, especially in view of the overall increase in trips.

Table 7.2: Daily Trips by Type

Mode	2010	2010	2040	2040	% Increase in Daily Trips
	Daily Trips	Trip Length (miles)	Daily Trips	Trip Length (miles)	
SOV – Single Occupancy Vehicle	249,900	7.82	305,500	8.11	22%
HOV- High Occupancy Vehicle	178,400	6.41	198,500	6.34	11%
Transit	25,200	--	22,300	--	-12%
Bike/Walk	66,400	1.16	115,500	1.25	74%
Truck	23,500	8.91	27,300	9.31	16%
Total	543,400		669,100		23%

Table 7.3 summarizes by City district the daily trips within, into, and out of each district. It is seen that the downtown district has the largest share of trips and the highest growth in trips over time. The US 1 corridor also has growth but to a lesser degree. The residential districts exhibit minimal growth in trips generated by or attracted to those areas. Downtown accounts for the majority of trips and its share will increase over time, taking share from the other districts.

Table 7.3: Summary of Daily Trips by District

District	Area	2010	Share	2040	Share	% Increase
1	Downtown	226,900	38%	327,200	45%	44%
2	US 1 Corridor	180,700	30%	206,700	28%	14%
3	Residential - North	137,200	23%	144,400	20%	5%
4	Residential - South	54,500	9%	54,500	7%	0%
Total		599,300		732,800		22%
Note: Trips traveling between districts within Coral Gables are counted in both districts.						

Table 7.4 presents a summary of daily trips by pattern type, as defined in the table. This information relates to the common perception that Coral Gables, given its location within the county, is subject to large volumes of through traffic.

The data show that these external to external, or through, trips are currently about 153,000 daily trips currently, declining in share over time. These through trips could take many forms, such as straight east-west trips along Bird Road, Coral Way, or US 1. They could also be L-shaped trips, traversing say Coral Way and LeJeune Road. Internal trips that begin and end within the City are a relatively small share. This is due in part to the narrow shape of the City and the proximity of nearby work, retail, and errand destinations.

Internal to external trips and the reverse are trips which begin or end in Coral Gables. Examples would be a Coral Gables resident who works in downtown Miami or travels to Florida International University for school. This trip pattern also

Table 7.4: Summary of Trip Patterns

Trip Type	Description	2010 Daily Trips	Share	2040 Daily Trips	Share	% Increase
I-I Internal to Internal	Trips within Coral Gables	18,400	5%	25,300	4%	38%
I-E & E-I Internal to External and External to Internal	Trips Beginning or Ending in Coral Gables	198,200	54%	330,400	60%	67%
External to External	Trips Passing Through Coral Gables	152,700	41%	195,900	36%	28%
Total		369,300		551,600		49%

includes County residents traveling to school at the University of Miami, or to a job on the Miracle Mile.

Figures 7.13 and 7.14 provide a graphic depiction of the distribution of internal to external and external to internal trips, trips beginning or ending within Coral Gables, for both existing and future conditions, respectively. It is seen for the existing condition that there is a broad field of distribution, which is more intense the closer to the city limits. In the future condition, the field of coverage broadens and intensifies slightly. This pattern is not unexpected, as shorter trips are more common, and include all trip types, including work, shopping, and other non-work trips.

Figure 7.13: Existing Internal/External Trip Patterns

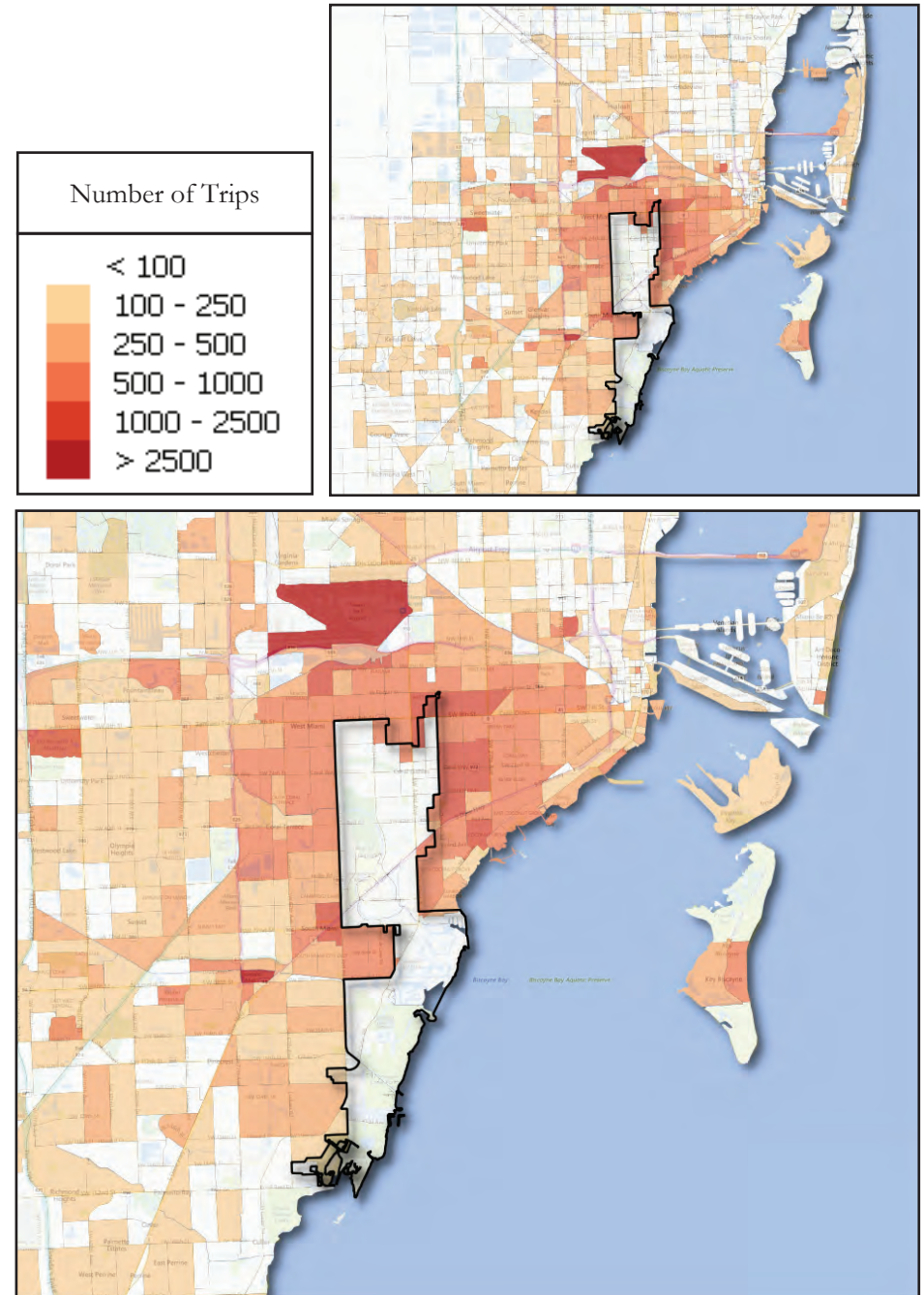
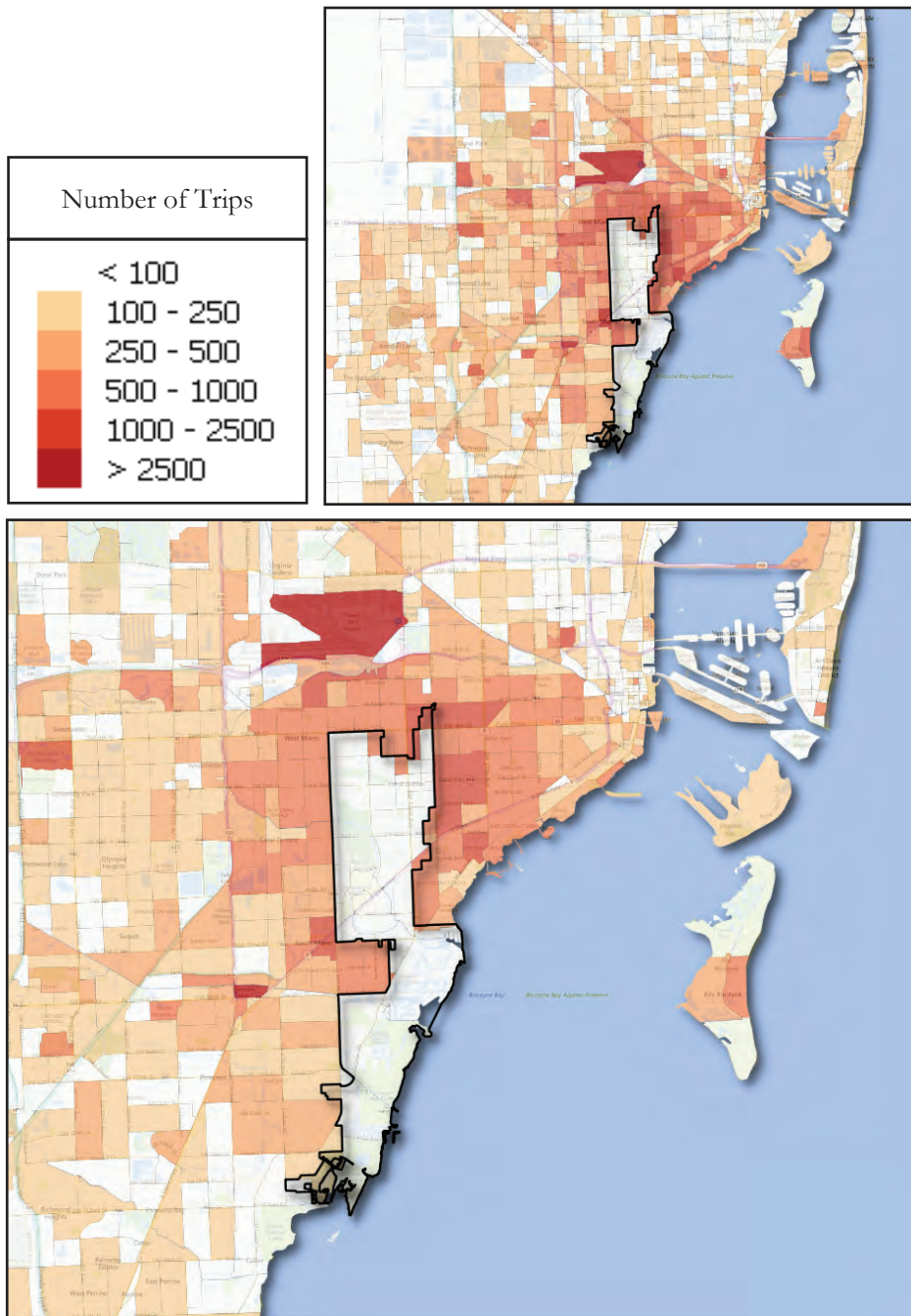
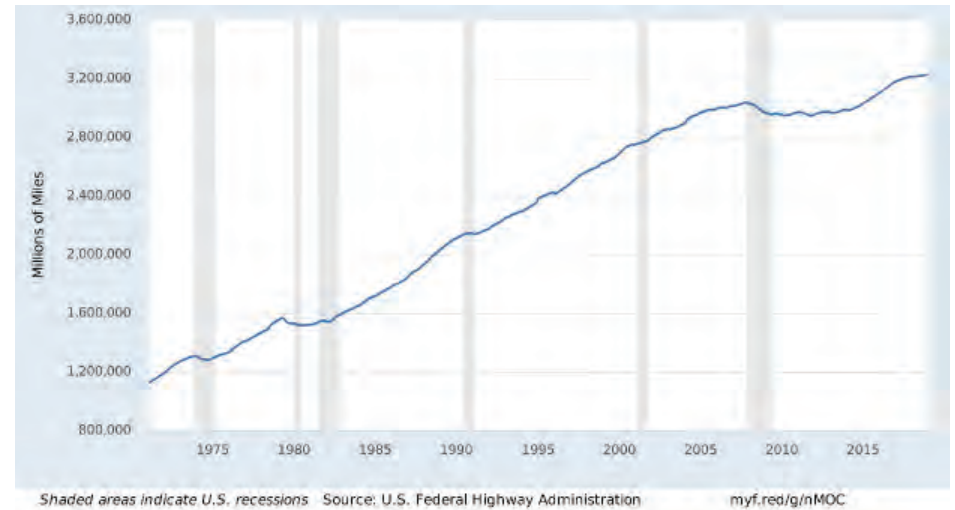


Figure 7.14: Future Internal/External Trip Patterns



To place the preceding information in context, **Figure 7.15** shows the historic national trend of vehicle miles of travel (VMT) in moving 12-month format from January 1971 to January 2019. Gray shading in the chart highlights economic recessions which tend to blunt the growth trend. While US population has grown from approximately 211 million to 328 million over this period (55% increase, VMT has grown by 260%. This equates to a gross increase in VMT per capita, including all personal and commercial road travel), from 5,679 miles/capita to 9,738 miles/capita, a 71% increase. Clearly, the collective travel of the population and our economy is placing more challenging demands on our transportation network.

Figure 7.15: Vehicle Miles of Travel Trend



Crash History

A key operational element of the City transportation network is the crash history, in terms of geographic as well as temporal distribution, severity, type, and field conditions. Figure 7.16 provides several of these statistics in graphic and tabular form for a five-year period of 2011-2016, using data from the Signal Four Analytics website (<http://s4.geoplan.ufl.edu/>). Signal Four Analytics is a statewide

interactive, web-based geospatial crash analytical tool developed by and hosted at University of Florida Geoplan Center. Figure 7.17 shows the distribution of accidents over this same period in the form of a “heat map”, where the colors show the relative concentration of crashes across the City, where the blue color shows low crash frequency, white at greater concentrations, and shades of red where crashes are most frequent.

These observations cover key points drawn from this information:

- The number of crashes per year has been relatively stable, in the vicinity of 3,000 annually.
- The most frequent crash type is rear end crashes. These are more common where there are speed differentials, like moving vehicles approaching the end of a queue in congested areas.
- A group of accident types is moderately frequent, including angle, left turn, sideswipe types along with the “other” category. Other types are much less frequent. Pedestrian and bicycle accidents are both near 1% of the total, occurring at a rate together of 5-6 monthly.
- The distribution of crashes across the day closely parallels daily traffic volume patterns.
- Most crashes occur under dry conditions, during daylight hours, and under clear conditions.
- Crash severity ranges from 82.5% for property damage only, 17.4% involving an injury, and 0.1% for fatalities, which average four per year. This distribution is indicative of lower speed conditions, representative of the urbanized area in which Coral Gables is situated and the posted speed limits as well.
- The heat map highlights concentrations of crash occurrences in the downtown area and the US corridor.

- Moderate intensity of crashes occurs along Bird Road and SW 8th Street.
- Lighter concentrations are seen in the fringes of downtown, along Coral Way, SW 57th Avenue, and Old Cutler Road.

Addressing these crash patterns can be approached through a variety of strategies:

- Arterials: crash pattern analysis partnering with FDOT to identify causation and remedies; traffic calming strategies to reduce speeding.
- Neighborhoods: new 25 mph speed limit, traffic calming, City PACE program, enforcement.
- General: education and awareness for courtesy and undistracted driving, enforcement.

Figure 7.16: Crash History 2011-2016

Crash Type 2011-May 2016		
Crash Type	Crashes	Percent (%)
Rear End	58,23	37%
Other	2,618	17%
Angle	1,923	12%
Left Turn	1,693	11%
Sideswipe	1,435	9%
Off Road	695	4%
Unknown	609	4%
Right Turn	281	2%
Bicycle	177	1%
Pedestrian	150	1%
Rollover	139	1%
Head On	123	1%
Animal	7	0%
Total	15,673	100%

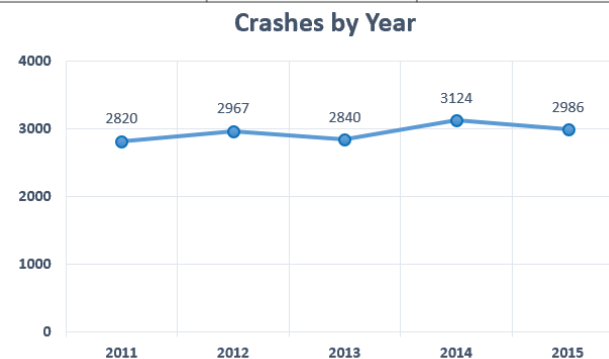


Table 7.5: Miami-Dade Five-Year Transportation Improvement Program

Project ID	Project	TIP Year	Agency	Description	Funding (\$1,000)
PW0000179	DeSoto Fountain	2019	DTPW	Roundabout	\$200 previous year funding
PW000525	Coral Way/ Anderson Road	2019	DTPW	Roundabout installation.	\$200 previous year funding
PW000705	Ponce de Leon Blvd.	2019	DTPW	Add left turn lanes	\$110 design \$1,380 construction
DT4347661	LeJeune Road/ Bird Road	2019	FDOT	Intersection improvement	Not specified
PW000955	LeJeune Road/ Coral Gables Canal	2019	DTPW	Bridge replacement	\$182 design \$4,410 construction
PW000644	Cocoplum Circle	2019	DTPW	Intersection improvements	\$81 design \$567 construction
DT4334552	US 1/ Riviera Ave.	2019	FDOT	Intersection improvements	\$60
DT4334553	US 1 (Riviera Ave. to SW 27th Ave.)	2020	FDOT	Resurfacing	\$4,000 construction

DTPW - Miami-Dade Dept. of Transp. & Public Works, FDOT – Florida Dept. of Transportation

The Five-Year Transportation Improvement Program (see **Table 7.5**) is compiled by the Miami-Dade Transportation Planning Organization (TPO) with the cooperation of transportation agencies and providers in the county. The listed projects have committed funding, and changes may occur as local priorities are adjusted.

The adopted 2040 Long Range Transportation Plan prepared by the TPO contains projects for which funding is considered to be available according to their phased implementation across the planning horizon to 2040. In review of this plan, no roadway improvement projects in the vicinity of Coral Gables were noted.

Table 7.6: City Roadway Projects (2019-2023)

Project ID	Project	TIP Year	Agency	Description	Funding (\$1,000)
c-dsoftn	DeSoto Fountain	2019-2021	City	Roundabout enhancement	\$204 design \$339 construction
c-g&ccircl	Granada and Columbus Plazas Transportation Improvement	2019-	City	Beautify and enhance plazas.	\$22 design \$279 construction
No ID	North Ponce District Streets- cape Program	2019- 2022	City	Street, land- scaping, and re- lated upgrades	\$90 design \$900 construction
c-bw-stscp	Biltmore Way Streetscape Im- provements	2019- 2022	City	Streetscaping and landscap- ing	\$80 design \$810 construction
c-pdl-phs3	Ponce de Leon Blvd. Streetscape Improvements Phase 3	2019- 2020	City	Street recon- figuration and streetscaping	\$214 design \$1,870 construction
No ID	SW 8th St. Beautification	2019- 2023	City	Streetscape improvements	\$1,300 construction
c-trafcalm	Citywide Traffic Calming Program	2019- 2023-	City	Neighborhood traffic calming	\$110 design \$2,323 construction

The current Coral Gables Capital Improvement Program was reviewed to identify projects to improve street condition, visual quality, capacity, or traffic operations which are programmed for implementation over the 2019- time frame. Other maintenance or drainage projects are not listed. Those identified projects are listed in **Table 7.6**.

Vehicular traffic will continue to increase in Coral Gables due to the City’s population and job growth, as well as increased commuting to and from regional job centers. While automobile travel will be accommodated on the City’s street network, Coral Gables, like most other cities, has reached the limit on the amount

of automobile capacity that is capable of being added to the street network. Demand-based solution which encourage shared mobility services, transit, and pedestrian/bicycle trips will help mitigate automobile trips while providing environmental and public health benefits. Given the project increase in cycling and walking trips by 74% between 2010 and 2040, addition a active mobility infrastructure will be critical in accommodating new employment and population growth in the coming decades.

Traffic calming devices will also discourage speeding and through traffic on local streets, diverting through traffic to collector and arterial roads. This will create a need to improve safety and multimodal access on collectors and arterials while still maintaining acceptable automobile level of service. Coordination and partnerships with Miami-Dade Count and FDOT will be necessary due to their substantial authority over high-volume roadways.

7.2 ANALYSIS

This section of the report addresses issues identified with the street system in Coral Gables from the standpoint of vehicular movements. These issues were identified by City transportation staff, field observations by the consultant staff, and comments made by citizens by way of emails to the Public Works Department and feedback provided at several public open house meetings during the plan preparation.

These proposals are grouped by arterial and collector street corridors, and address identified issues and concerns for street segments and for specific intersections. Several intersections have been reviewed for improvements to reduce unused or excess pavement. The reduction of pavement at complex intersections can make navigating the intersection clearer and safer for both motorists and pedestrians, thereby reducing the potential for collisions.

The corridors and locations considered in this analysis include:

- US 1/South Dixie Highway
- Bird Road
- Coral Way
- SW 8th Street
- Flagler Street
- LeJeune Road
- Andalusia and Valencia Avenues (Downtown)
- Granada Boulevard
- Alhambra Circle
- Ponce de Leon Boulevard
- Andalusia Avenue
- Valencia Avenue

US 1/ South Dixie Highway

US 1 is a major Miami-Dade County artery connecting from the middle and far southern suburbs to central County and downtown Miami. While it is generally viewed within Coral Gables as a traffic barrier penetrating the City with tens of thousands of through vehicles, it is also an important multimodal corridor affording access choices to City residents.

The US 1 corridor includes the current M-Path shared use bicycle-pedestrian pathway that runs underneath the elevated Metrorail heavy rail transit line on the north side of US 1. The M-Path is planned to evolve into the Underline, a transformed active transportation corridor 10 miles long with neighborhood parks, urban trails, art installations, and public interaction nodes. Coral Gables is directly served by the Metrorail University Station adjacent to the University of Miami, as well as the Douglas Road and South Miami Stations both just outside the city limits. As such, US 1 is an important transportation asset.

The Florida Department of Transportation – District 6 (FDOT) initiated in 2016 a multimodal planning study of US 1 from I-95 to SW 88th Street/Kendall Drive. The FDOT corridor study included existing conditions analyses that identified recurring congestion locations and evaluated multimodal transportation improvement needs based on future travel demand. This US 1 Corridor Study aimed to unify these efforts, taking into consideration prior recommendations and current conditions to present recommended improvements that address the needs of all users. As a final product, the study identified conceptual improvements that address transportation needs along the SR 5/US 1 corridor.

The study identified and screened a range of potential improvement actions. While it has been determined that the basic six-lane configuration of the US 1 corridor cannot be altered to provide added lane capacity, the study investigated

options to improve the efficiency of traffic flow, to enhance the safety and convenience of bicycle and pedestrian movements along and across the corridor, and to facilitate access to corridor transit services. These corridor needs are summarized in **Figure 7.18**.

Figure 7.18: US 1 Corridor Study Identified Needs

US 1 NEEDS	
NEED	GOAL
Increase efficiency of auto trips along US 1	Manage daily traffic congestion
Reduce auto crashes	Promote driver awareness of stopped and turning traffic and areas of high levels of bicycle and pedestrian crossing activity Reduce occurrences of unsignalized turns from mainline US 1 at intersections and driveways
Improve Access to Metrorail, Metrobus and corridor destinations by all modes	Promote access to premium transit by all modes, with an emphasis on non-motorized modes Increase reliability of local bus service and reduce the impact of area congestion on local transit accessing premium transit stations
Increase safety and convenience for pedestrians & bicyclists	Create a safe and inviting environment for pedestrians Establish a complete network of safe and attractive bicycling facilities
Encourage new development and redevelopment that attains a higher percentage of walk, transit and bicycle trip-making	Encourage real estate investment that helps to build walkable, bike and transit friendly networks and places Ensure that new development supports transit, bicycling and walking for most daily travel

Source: US 1 Corridor Study (State Road (SR) 5/US 1/Dixie Hwy. from SR 94/SW 88th St./Kendall Drive to SR 9/I-95) – Final Summary Report, Florida DOT, March 2019.

Separately from the US 1 study, it is noted that there was also public input during the transportation plan open houses regarding the US 1 corridor:

- Improved crosswalk locations and markings are needed along the corridor to facilitate pedestrian movements across US 1, to/from Metrorail stations, and to/from the M-Path.
- Traffic is “blocking the box” at some intersections along US 1 in peak peri-

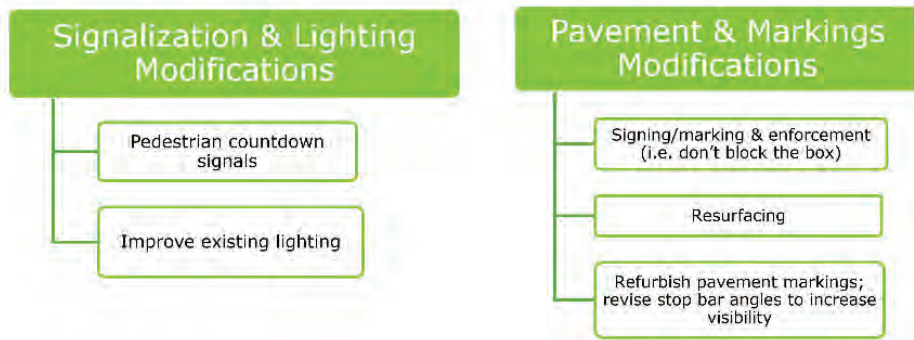


ods, which creates gridlock situations at those intersections. Better enforcement is needed.

The US 1 study analyzed and screened a wide range of improvement actions, and with public input, narrowed these down to a set of corridor-wide strategies, and four strategy families each comprising several specific improvement actions, as shown in **Figure 7.19**.

Figure 7.19: US 1 Corridor Improvement Strategies

"GIVEN" CORRIDOR-WIDE STRATEGIES



STRATEGY "FAMILIES" UNDER CONSIDERATION

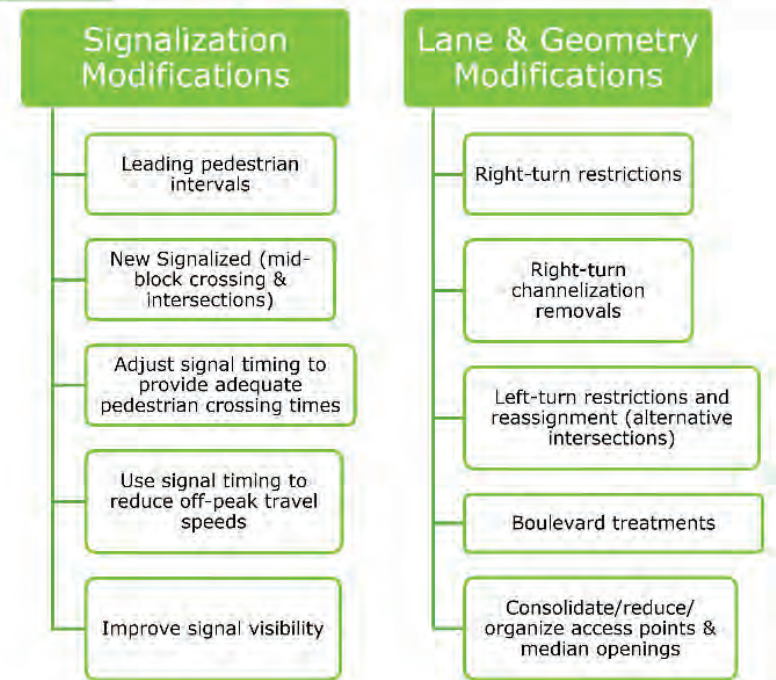
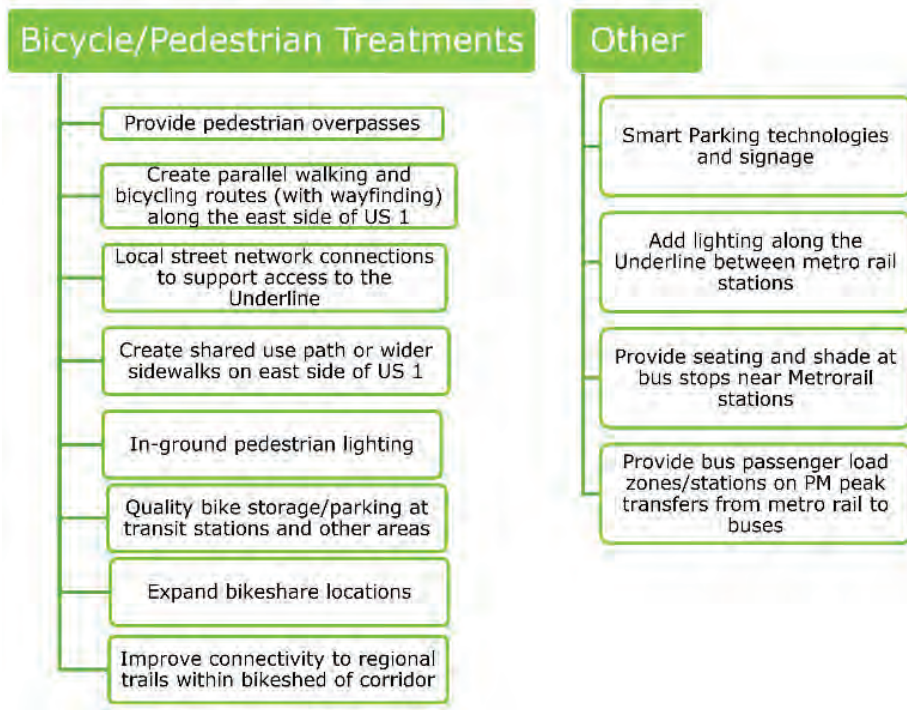


Figure 7.19: US 1 Corridor Improvement Strategies (continued)



The study has been completed, with a wide-ranging set of improvement recommendations, based in part on ongoing public input and stakeholder involvement, including City of Coral Gables staff. These actions would find their way into the FDOT improvement program, based on prioritization, for eventual implementation.

In total, 210 recommendations were made for 23 locations along US 1 in Coral Gables. The specific issues addressed by the actions include the following:

- Reduce auto crashes
- Improve pedestrian/bicycle safety and convenience
- Reduce effects of congestion
- Improve access to transit by all modes

All these projects total approximately \$3.5 million in cost. As US 1 is a state highway, the vast majority of the improvement costs would fall to FDOT. The list of projects is included in the Appendix.

Bird Road Planning Study

Bird Road (State Road 976) US 1 is a major east-west section line road corridor extending from the western suburban fringes to US 1, continuing east as Bird Avenue to its terminus at Aviation Avenue. Through this extent, the road configuration and its adjacent land uses vary significantly. Within Coral Gables, Bird Road is a tree-canopied four-lane street fronted by residences west of Riviera Drive. To the east, commercial frontages become prevalent and the tree canopy is replaced by intermittent trees. Bird Road is understood to be an important street link, but is also viewed as a conduit for through traffic between the western suburbs and the US 1 corridor.

The corridor is mostly vehicular in its orientation, with some simple transit stops, sidewalks only on the north side of the street west of Riviera Drive, and no bicycle accommodations. Bird Road is also a designated state historic highway from Red Road to Ponce de Leon Boulevard (refer to Chapter 80-433, Laws of Florida). This designation means that improvements to the road must be reviewed with the State of Florida Department of State, and that work needed to preserve public safety is not precluded. However, preservation of the road and its scenic features to take precedence over traffic management and public safety when less impactful means are available. There is an exception to allow improvement of the bridge over the Coral Gables Canal and the two adjacent intersections, provided such improvements include pedestrian and bicycle pathways.

FDOT undertook in late 2016 a study of Bird Road from SR 821/Florida's Turnpike east to US 1 (SR 5) (Bird Road/SW 40th Street Planning Study (From SR 821/

HEFT to SR 5/US 1): Technical Memorandum No. 5 – Conceptual Alternatives Analysis (Dec. 2018), and Technical Memorandum No. 6 – Preliminary Concept Plans (Dec. 2018) – Florida DOT District 6); this study was recently completed. The FDOT corridor study has inventoried existing and future conditions, identified possible improvement alternatives, and has been screening options to arrive at final recommendations with stakeholder input. **Figure 7.20** presents the study’s objectives.

Figure 7.20: Bird Road Study Objectives

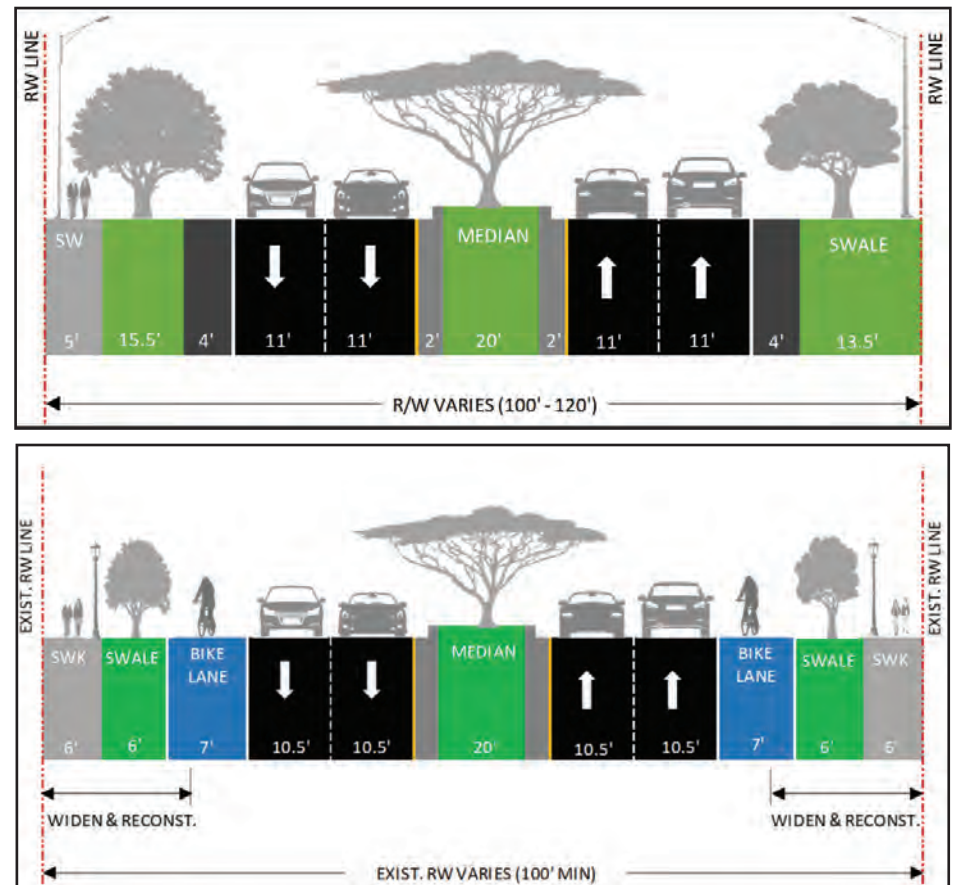


The study has formulated three alternative improvement packages. These are:

- Build Alternative 1: lower scale access management and non-auto mobility improvements
- Build Alternative 2: capacity improvements at various intersections
- Build Alternative 3: substantial intersection improvements at selected locations

Figure 7.21 shows the existing and proposed configuration of the Bird Road segments within Coral Gables west of Ponce de Leon Boulevard. The proposed configuration was selected from three options considered for each corridor study segment. West of Ponce de Leon Boulevard, the concept shows 7-foot bicycle lanes in both directions of the existing roadway, and a wider shared use path on the north side of the street only.

Figure 7.21: Bird Road Typical Sections West of Ponce de Leon Blvd. – Existing and Future



It is noted that the State Historic Highway designation may preclude the implementation of some of the proposed typical section features. Coordination has been initiated with the Florida DOT District 6 Legal Office and Environmental Office and the City of Coral Gables for clarification on this matter.

Figure 7.22 shows the existing and proposed configuration of the Bird Road segments within Coral Gables east of Ponce de Leon Boulevard. East of Ponce de Leon Boulevard, there is no designated bicycle lane treatment, but a sharrows treatment is proposed. Sidewalks on both sides of the street are maintained. City acceptance of these FDOT proposals is needed prior to any implementation.

Figure 7.22: Bird Road Typical Sections East of Ponce de Leon Blvd. – Existing and Future

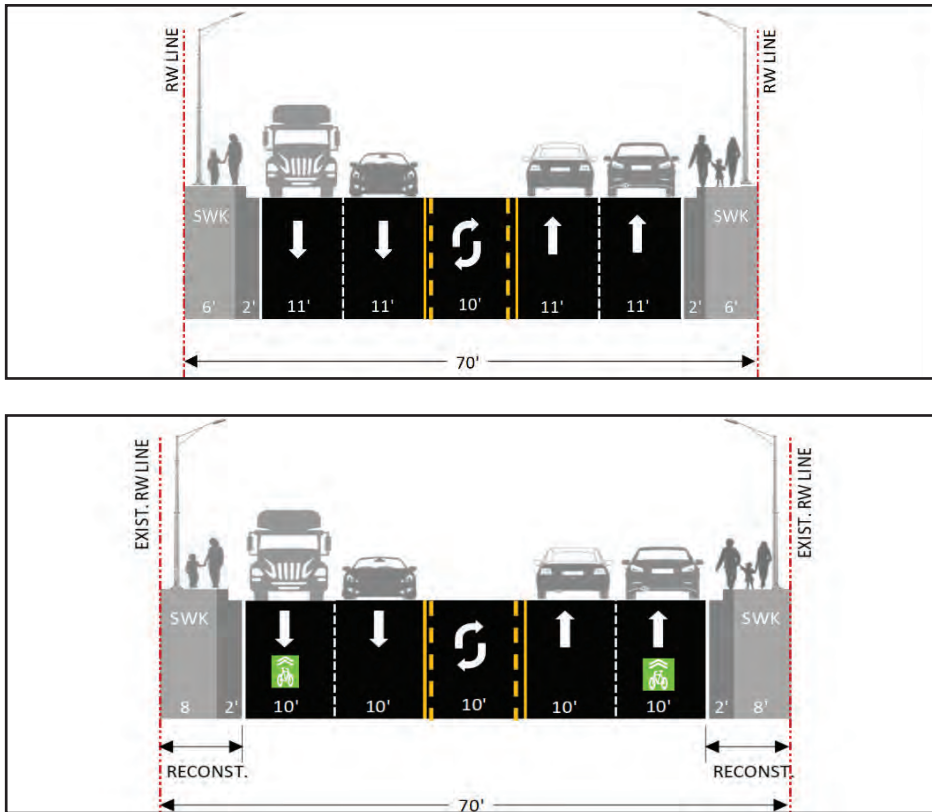


Figure 7.23 shows the locations and types of recommended access management modifications along Bird Road.

Improvement options were explored along Bird Road at existing signalized and unsignalized intersections, and a recommended action was identified from the options considered.

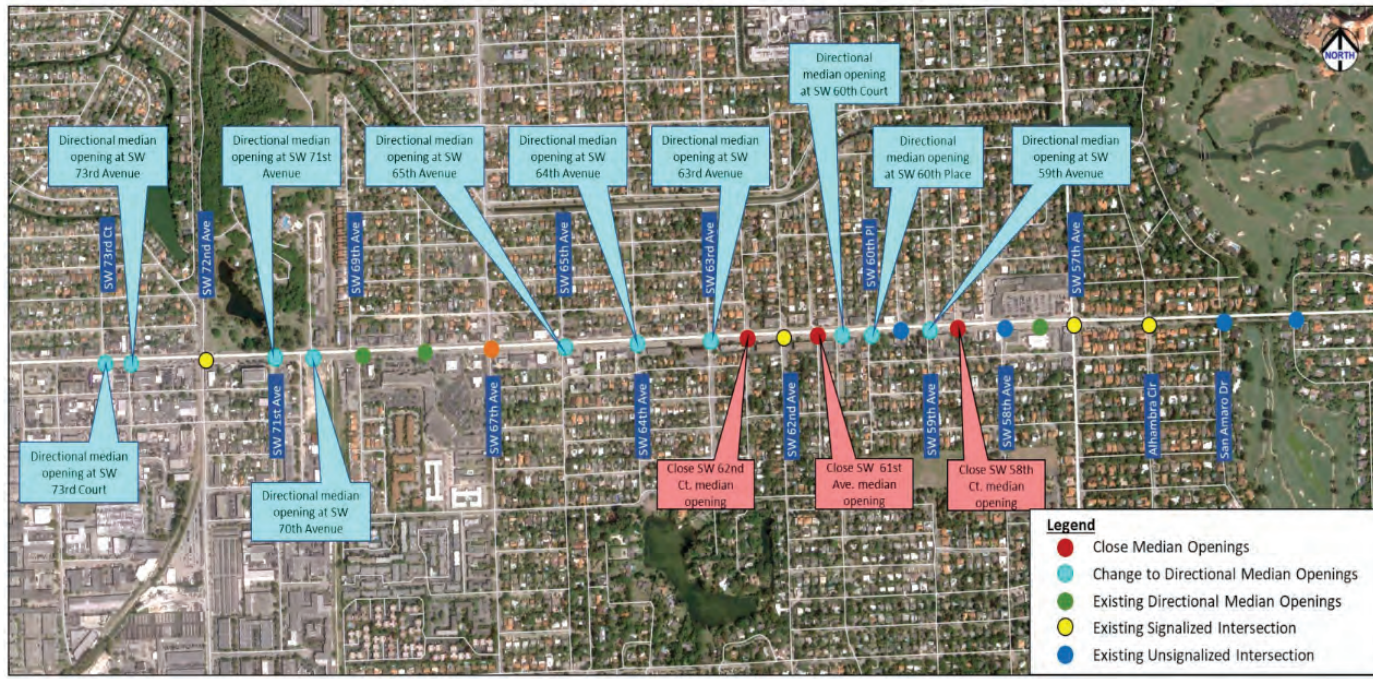
Table 7.7 provides a tabular listing for Coral Gables intersections at which access management or other intersection improvements are proposed.

At SW 57th Avenue, it is proposed to add a westbound through and right turn

Table 7.7: Proposed Intersection Modifications

1	Alhambra Circle	<ul style="list-style-type: none"> Provide exclusive SB right-turn and left-turn lanes
2	Granada Blvd/ University Dr	<ul style="list-style-type: none"> Provide exclusive EB and WB left-turn lanes Provide exclusive NB right-turn and left-turn lanes Change to University Dr to one-way EB roadway from Toledo St to Bird Rd Upgrade traffic signal to accommodate the new traffic pattern
3	Toledo St	<ul style="list-style-type: none"> New signalized intersection Provide exclusive EB and WB left-turn lanes
4	Anderson Rd	<ul style="list-style-type: none"> Close median opening
5	Palmetto St	<ul style="list-style-type: none"> Close median opening
6	Segovia St	<ul style="list-style-type: none"> Change median to NB and SB directional left-turns
7	Riviera Dr	<ul style="list-style-type: none"> Provide exclusive NB right-turn and left-turn lanes Provide exclusive NB left-turn lane

Figure 7.23: Proposed Access Management Improvements



lane within existing right-of-way. To the east of Coral Gables on Bird Road, it is proposed to close the existing median opening at SW 39th Avenue.

Figures 7.24 to 7.29 display the proposed improvements in conceptual schematic format.

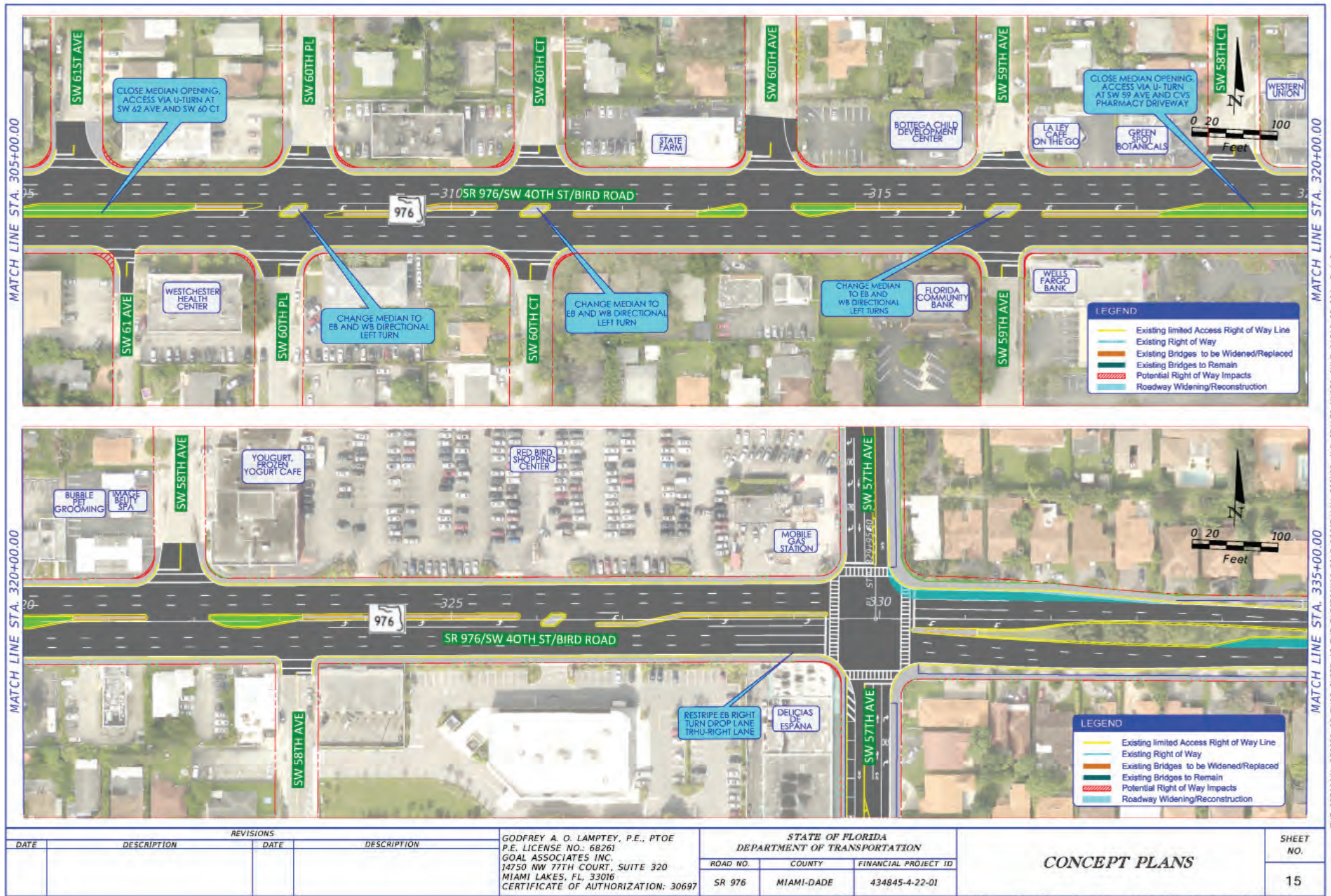
Currently, the intersection of Bird Road, Granada Boulevard, and University Drive is a confusing junction of streets with high levels of traffic, few crosswalks, and no way to circulate safely by foot or bicycle. It is noted that several alternatives were investigated at the intersection of Bird Road/University Drive/Granada Boulevard. The selected concept is shown as Figure 7.27. It involves making a portion of University Drive from Granada Boulevard to Toledo Street one-way westbound flow. Toledo Street would provide the eastbound movement from Bird Road to University Drive, by way of a new traffic signal at Bird Road and Toledo Street.

Within the Bird Road study corridor, traffic level of service (LOS) values were calculated for 2040. Based on the recommended improvements, the resulting traffic LOS, on the scale of A to F with A being very good and F being over capacity, is shown in Table 7.8. It is seen that the recommended improvements have the potential of improving traffic service at SW 57th Avenue, Alhambra Circle, and University Drive/Granada Boulevard from LOS F to LOS D or E. For the four remaining intersections within or near Coral Gables at the bottom of the table, it was not possible to elevate the LOS with traffic improvements. The dashed box highlights Coral Gables locations.

Table 7.8: Intersection Level of Service Results (2040)

#	Intersection	No-Build Condition		Build Condition	
		AM LOS	PM LOS	AM LOS	PM LOS
1	SW 117 Ave	F	F	E	E
2	SW 112 Ave	D	F	D	E
3	SW 107 Ave	F	F	E	E
4	SW 102 Ave	F	F	E	E
5	SW 97 Ave	F	E	E	D
6	SW 92 Ave	F	F	E	E
7	SW 87 Ave	F	F	D	D
8	SW 84 Ave	F	E	D	D
9	SW 82 Ave	F	E	E	D
10	SW 79 Ave	F	F	C	E
11	SW 7800 block	B	B	B	B
12	SR 826 SB Off-Ramp	F	D	D	D
13	SR 826 NB Off-Ramp	D	E	C	C
14	SW 72 Ave	F	F	E	E
15	SW 67 Ave	F	F	E	E
16	SW 62 Ave	C	F	C	D
17	SW 57 Ave	F	F	D	D
18	Alhambra Circle	F	F	D	D
19	University Dr & Granada Blvd	F	F	E	E
20	Riviera Dr	F	F	D	E
21	SE 42 Ave	F	F	F	F
22	Ponce de Leon	F	F	F	F
23	SW 37 Ave	F	F	F	F
24	SR 5/US 1/South Dixie Hwy	F	F	F	F

Figure 7.24: Bird Road Improvement Recommendations – SW 61st Avenue to SW 57th Avenue

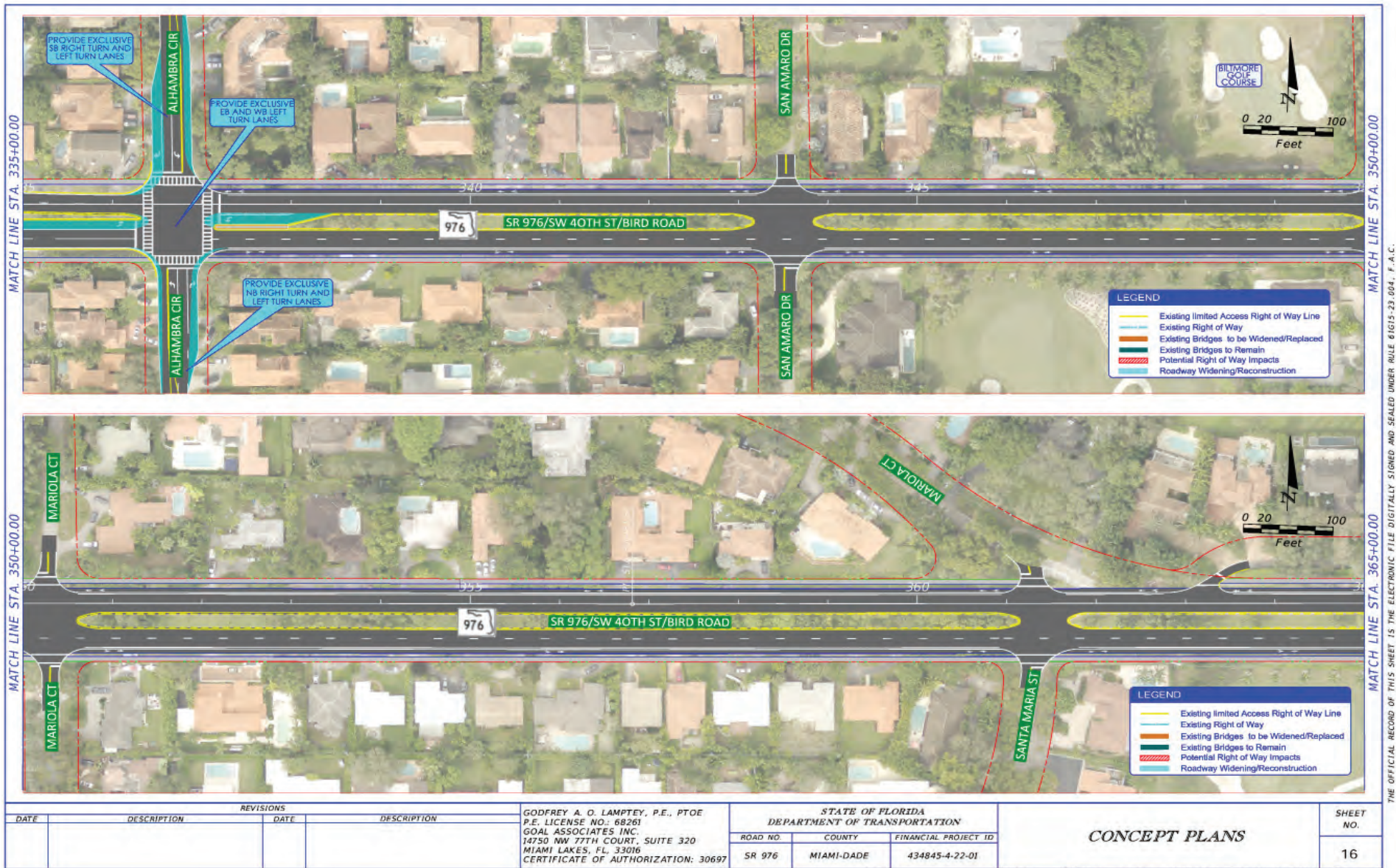


THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS		DESCRIPTION		GODFREY A. O. LAMPTEY, P.E., PTOE P.E. LICENSE NO.: 68261 GOAL ASSOCIATES INC. 14750 NW 77TH COURT, SUITE 320 MIAMI LAKES, FL 33016 CERTIFICATE OF AUTHORIZATION: 30697	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO. 15
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 976	MIAMI-DADE	434845-4-22-01		

planley 1/4/2019 4:23:20 PM X:\G18005 - Bird Road Planning Study\06 CAD\PLANNING\02-11.dgn

Figure 7.25: Bird Road Improvement Recommendations – Alhambra Circle to Santa Maria Street



THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS				STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO. 16
DATE	DESCRIPTION	DATE	DESCRIPTION	ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
				SR 976	MIAMI-DADE	434845-4-22-01		

GODFREY A. O. LAMPTEY, P.E., PTOE
 P.E. LICENSE NO.: 68261
 GOAL ASSOCIATES INC.
 14750 NW 77TH COURT, SUITE 320
 MIAMI LAKES, FL 33016
 CERTIFICATE OF AUTHORIZATION: 30697

plansky 1/1/2019 4:21:00 PM K:\GAT6005 - Bird Road Planning Study\06 CAD\02-PLAN\RD02-12.dgn

Figure 7.26: Bird Road Improvement Recommendations – University Drive to Palmarito Street

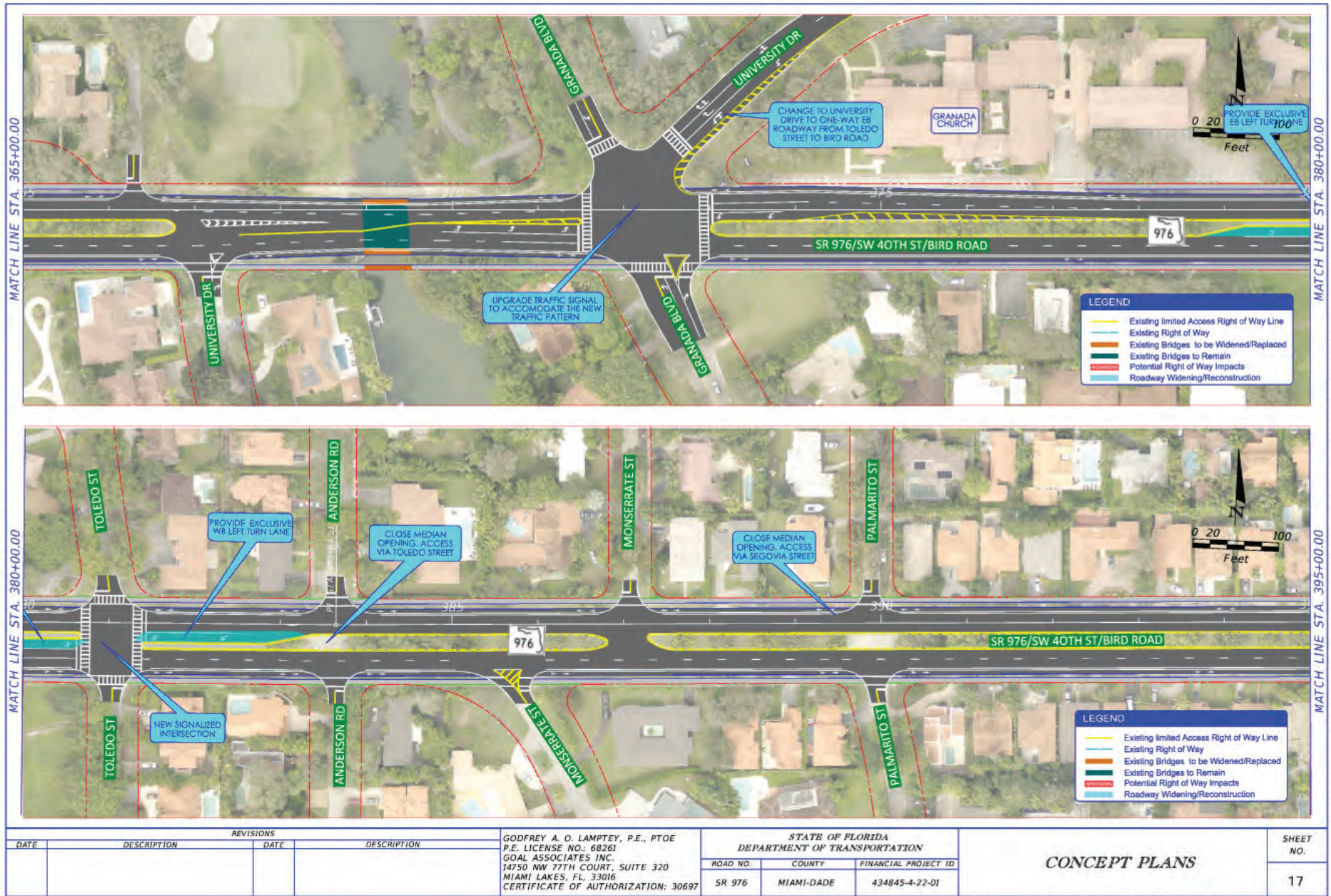
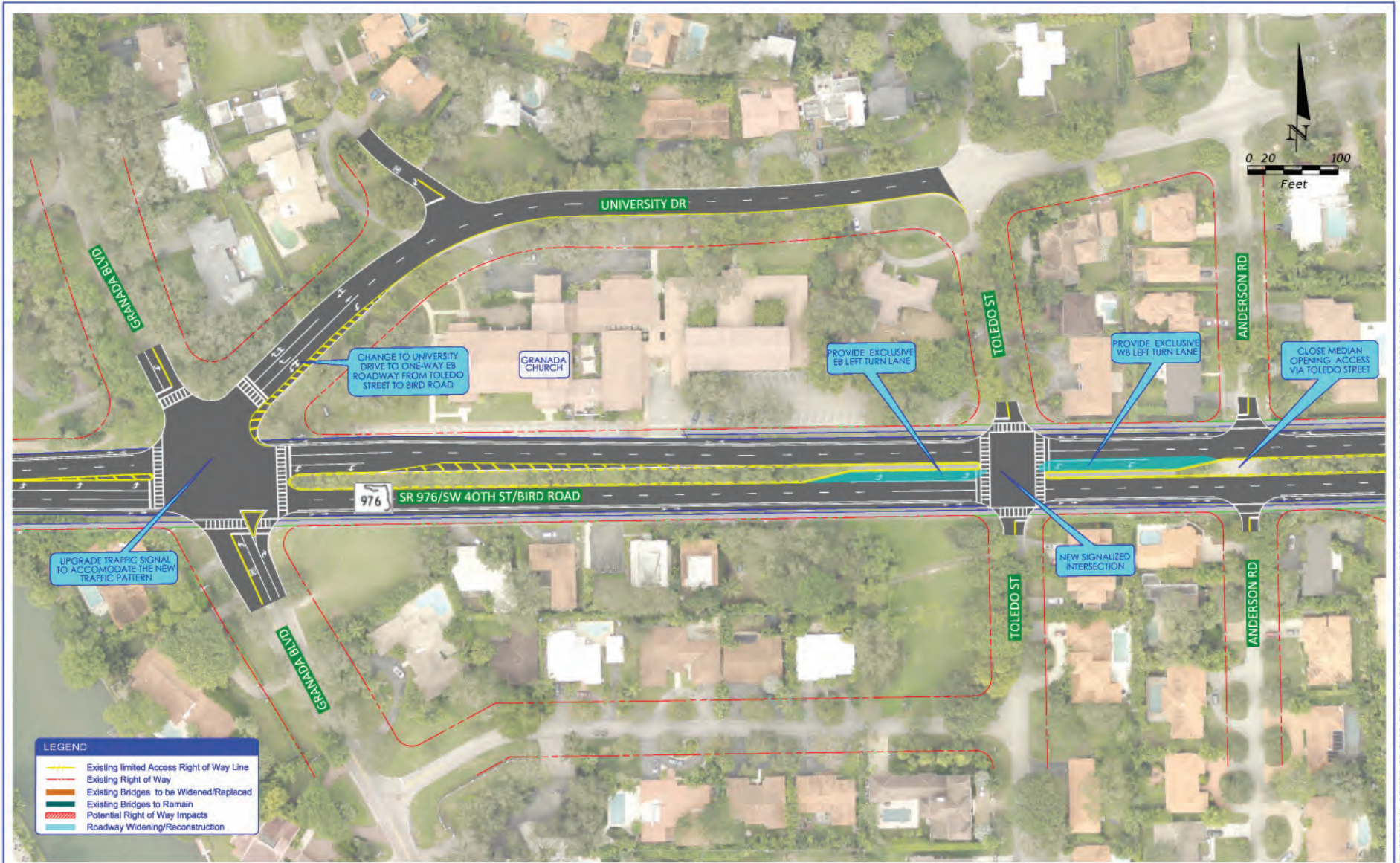


Figure 7.27: Bird Road Improvement Recommendations – University Drive Detail



THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

REVISIONS		DESCRIPTION		GODFREY A. O. LAMPTEY, P.E., PTOE P.E. LICENSE NO.: 68261 GOAL ASSOCIATES INC. 14750 NW 77TH COURT, SUITE 320 MIAMI LAKES, FL 33016 CERTIFICATE OF AUTHORIZATION: 30697	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			GRANADA BLVD/UNIVERSITY DR INTERSECTION IMPROVEMENTS	SHEET NO. 26
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 976	MIAMI-DADE	434845-4-22-01		

plampley 1/4/2019 4:27:08 PM X:\GAI6005 - Bird Road Planning Study\06 CADD\PLAN\RD02-22.dgn

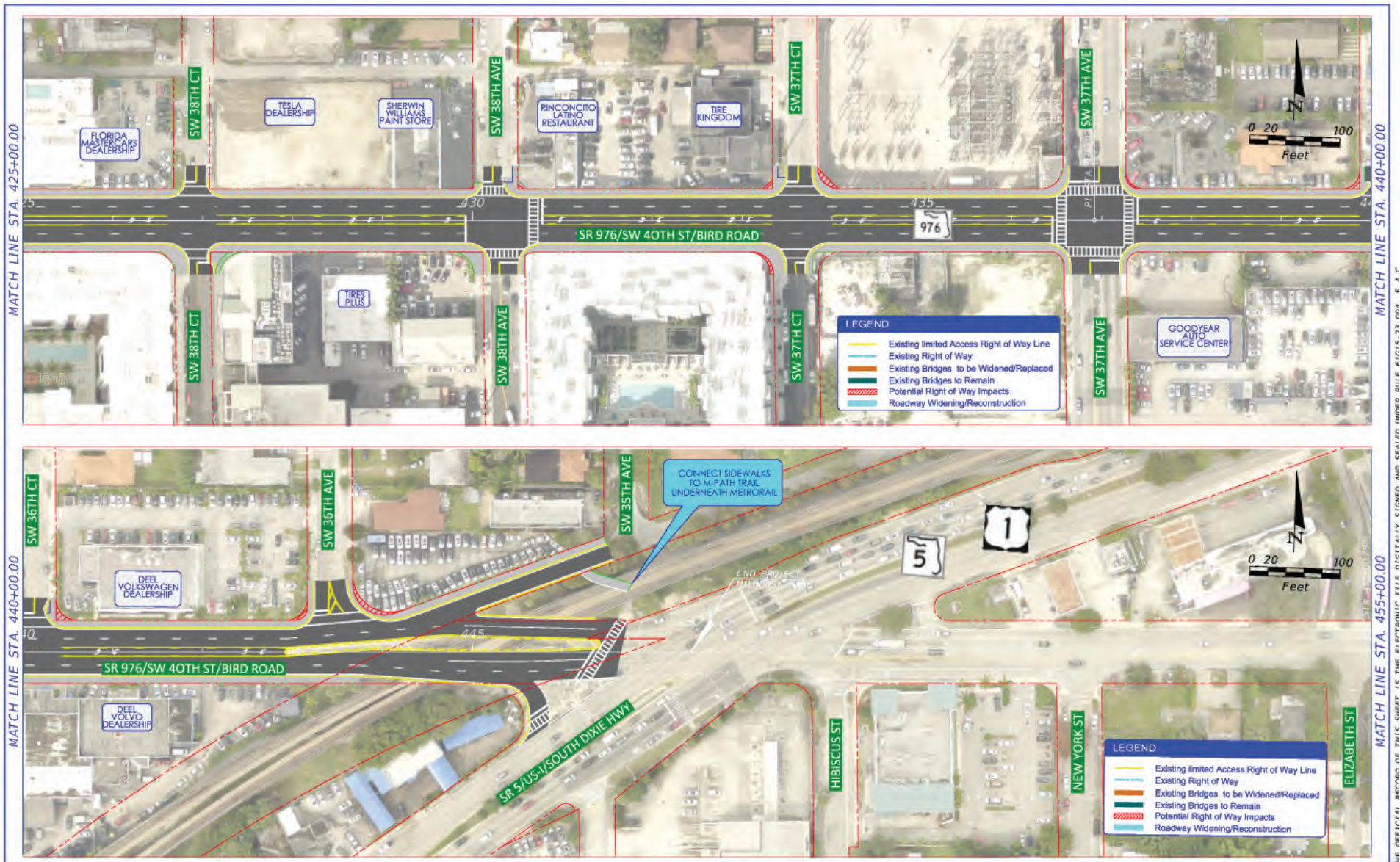
Figure 7.28: Bird Road Improvement Recommendations – Segovia Street to SW 39th Avenue



REVISIONS		DESCRIPTION		GODFREY A. O. LAMPTEY, P.E., PTOE P.E. LICENSE NO.: 69261 GOAL ASSOCIATES INC. 14750 NW 77TH COURT, SUITE 320 MIAMI LAKES, FL 33016 CERTIFICATE OF AUTHORIZATION: 30697	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO. 18
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
					SR 976	MIAMI-DADE	434845-4-22-01		

THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE DIGITALLY SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

Figure 7.29: Bird Road Improvement Recommendations – SW 38th Court to US 1



REVISIONS		DESCRIPTION	GODFREY A. O. LAMPTEY, P.E., PTOE P.E. LICENSE NO.: 68261 GOAL ASSOCIATES INC. 14750 NW 77TH COURT, SUITE 320 MIAMI LAKES, FL 33016 CERTIFICATE OF AUTHORIZATION: 30697	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			CONCEPT PLANS	SHEET NO. 19
DATE	DESCRIPTION			DATE	ROAD NO.	COUNTY		
				SR 976	MIAMI-DADE	434845-4-22-01		

g.lamptey 3/7/2019 4:31:57 PM X:\0416005 - Bird Road Planning Study\06 CADD\PLAN\RD2-15.dgn

The study also proposed corridor-wide improvement actions, including:

- Installation of adaptive traffic signal controllers.
- High-emphasis crosswalks at all signalized intersections.
- Retrofitting of signalized intersection lighting to meeting FDOT requirements.
- Coordination with Miami-Dade County and the City to provide bus shelters along the corridor.
- Upgrading of curb ramps to meet ADA requirements.

These actions would find their way into the FDOT improvement program, based on prioritization, for eventual implementation. **Table 7.9** presents conceptual cost estimates for the described improvements.

Table 7.9: Conceptual Cost Estimates for Bird Road Improvements

Cost Components	Segment 2	Segment 3
	SW 57th Ave to Ponce de Leon	Ponce de Leon Blvd to SR 5/US-1
Base Const. Cost	\$10,398,000	\$4,820,000
Mobilization	\$728,000	\$337,000
Maint. of Traffic	\$1,040,000	\$482,000
Subtotal	\$12,166,000	\$5,639,000
Engineering Design	\$980,000	\$460,000
CEI	\$980,000	\$460,000
Project Unknowns	\$3,050,000	\$1,410,000
Right of Way	\$18,000	\$94,000
Total Cost	\$17,194,000	\$8,063,000

Notes:

Mobilization = 7% of Base Construction Cost

Maintenance of Traffic = 10% of Base Construction Cost

Engineering Design = 8% of Construction Subtotal

Construction Engineering Inspection = 8% of Construction Subtotal

Project Unknowns = 25% of Construction Subtotal

Ingraham Terrace

A short segment of Ingraham Terrace is situated within the City, extending eastward from the intersection with LeJeune Road. The T-intersection of Ingraham Highway with LeJeune Road, both two-lane roadways, experiences long queues in both morning and evening peak hours. Just to the east of this intersection is the T-intersection of Ingraham Terrace and Edgewater Drive. In 2015, the City commissioned a traffic analysis of these two intersections. The study recommended roundabouts at both currently signalized intersections, but did not prepare schematics.

As part of the transportation plan, further analysis was undertaken at the LeJeune Road/Ingraham Terrace intersection. Two improvement concepts were examined:

- Roundabout intersection
- T-intersection with the through movement being Ingraham Highway connecting to the south leg of LeJeune Road, with the north leg of LeJeune Road intersecting at a 90-degree angle

These two concepts are shown in **Figure 7.30**.

Option 1: Curve South LeJeune Road to meet intersection at 90-degrees. Add left turn lanes on South LeJeune Road in both directions. This will prioritize the flow of traffic between Ingraham Terrace and South LeJeune Road in both directions. This will prioritize the flow of traffic between Ingraham Terrace and South LeJeune Road in both directions. This will prioritize the flow of traffic between Ingraham Terrace and South LeJeune Road.

Option 2: Three-Point Roundabout - It is possible to reconfigure the intersection to add a 90-degree inscribed diameter roundabout and remove the traffic signals altogether. This option would help relieve congestion at this intersection and allow a constant flow of traffic.

Figure 7.30: Ingraham Terrace/LeJeune Road Intersection Options

Existing Conditions



Figure 7.30: Ingraham Terrace/LeJeune Road Intersection Options (Continued)

Option 1 – Reversed T-Intersection

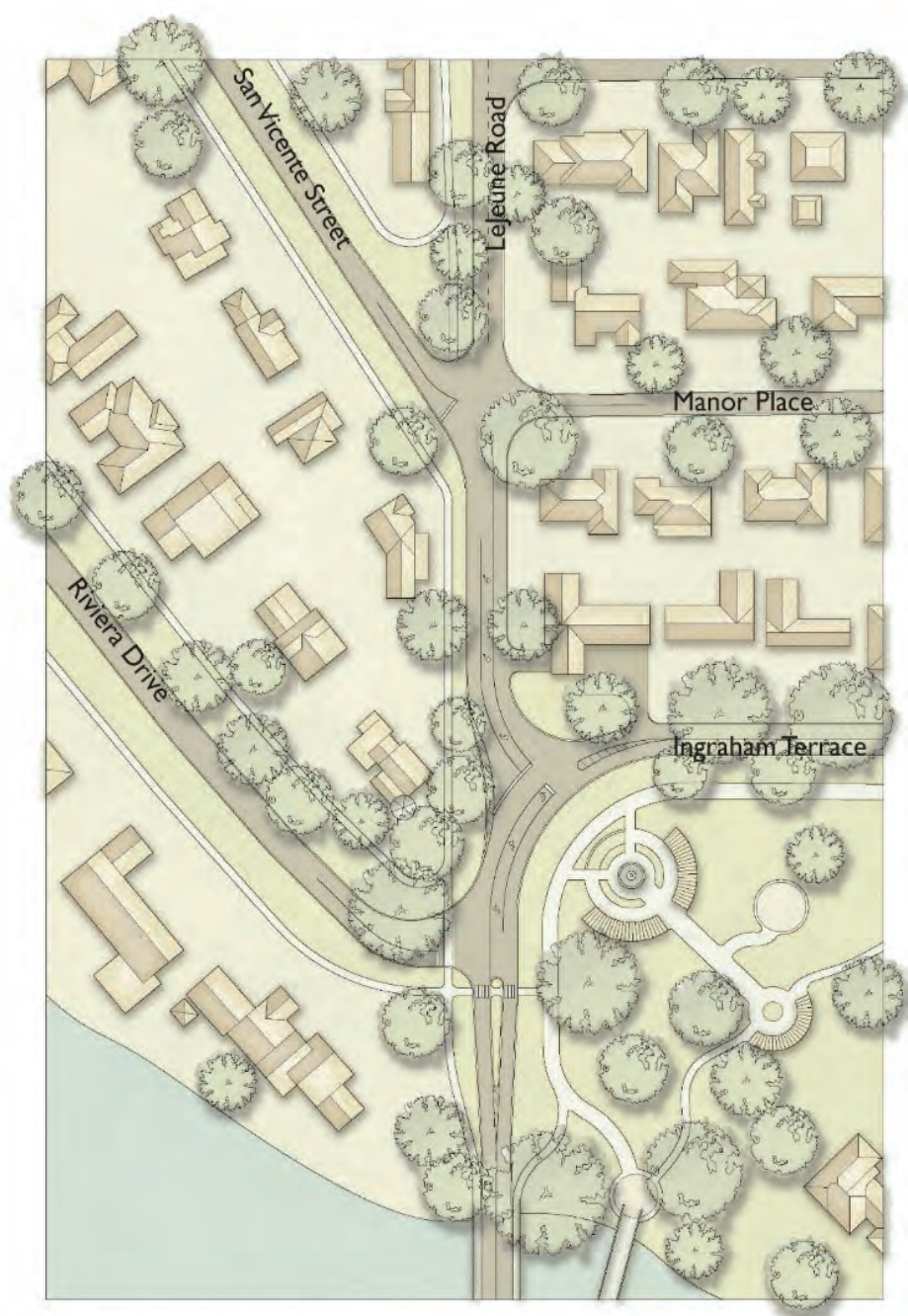


Figure 7.30: Ingraham Terrace/LeJeune Road Intersection Options (Continued)

Option 2 - Roundabout



Based on the traffic analysis of this intersection, the roundabout was found to be the more efficient intersection improvement. More detailed geometric layout is recommended to see how the roundabout geometric could fit within existing trees bordering the intersection. Any improvement should complete sidewalk connections between the legs of the intersections.

Flagler Street

Flagler Street traverses for a very short segment through the northern part of Coral Gables. There are no currently programmed or planned projects on this street. However, FDOT is conducting a premium transit study along Flagler Street from downtown Miami to three existing and planned transit hubs on NW 12th Street at the Turnpike (Dolphin Station), and on Tamiami Trail west of SW 107th Avenue at Panther Station (FIU) and SW 137th Avenue (Tamiami Station). While this is a study of bus rapid transit (BRT), it is noted here as its alternatives could reconfigure the street layout.

The study screened a large number of potential combinations of transit service and street configurations, with input from the public. The final Build Alternatives under consideration are (see **Figure 7.31**):

- Alternative 1 - Business Access Transit (BAT) lanes: Curbside lanes reserved for buses and right-turning vehicles.
- Alternative 2 – Exclusive Reversible Car Center Lanes: Curbside lanes reserved for buses and right-turning vehicles. Reversible Car lane in the median operates eastbound in the morning, and westbound in the afternoon.
- Alternative 3 - Center lanes reserved for buses only.
- The study will conduct further public meetings, arrive at the locally preferred alternative (LPA), and complete its documentation in early 2019.

Figure 7.31: Flagler Street Premium Transit Alternatives



Cartagena Plaza

Located at the junction of LeJeune Road, Sunset Drive, Cocoplum Road, and Old Cutler Road, Cartagena Plaza is the meeting point of two state historic highways (Sunset Drive and Old Cutler Road (See Figures 7.32 and 7.33)). The plaza is also referred to as Cocoplum Circle. This plaza is a busy interchange of commuter trips from the surrounding residential areas in the morning and evening peak periods. It is also popular with bicyclists using the Old Cutler Road bicycle path and with walkers attracted by the open space, the adjacent canal, and Ingraham Terrace park.

The plaza is expansive with a 150-foot diameter central island and a surrounding roadway 75 feet in width, for a total diameter of 300 feet. This is larger than the De Soto Plaza just discussed. All the intersecting roads are under County jurisdiction, except for Cocoplum Road which is a City facility.

The fringe of the plaza is used by local residents to visit the open space and bicycle path, but is also reported used as a layover location by transportation network company drivers.

Miami-Dade County has programmed this location for improvement in 2019. It is anticipated that the project will reduce paved areas used for traffic movement, organize the entry and exit points of the circle with splitter islands, and fully accommodate the movement of pedestrians and bicyclists around the circle.

Figure 7.32: Cartagena Circle



Figure 7.33: Cartagena Plaza Looking South Showing Expansive Pavement



Coral Way

Coral Way between Red Road and LeJeune Road is a County-maintained street and a state-designated historic highway. In addition, across this segment are five City-designated historic intersections:

- Columbus Plaza – at Columbus Boulevard
- Ponce de Leon Plaza – at Granada Boulevard
- Balboa Plaza – at S. Greenway Drive, DeSoto Boulevard, and Anderson Road
- Segovia Plaza – at Segovia Avenue and N. Greenway Drive
- LeJeune Plaza – at LeJeune Road (adjacent to City Hall)

There were many citizen comments about Coral Way, summarized below in bullet and graphic form:

- Long segments of this street with no designated pedestrian crossings on Coral Way.
- Pedestrian crossings needed for access to recreational facilities, pool, parks, walking paths, and bus stops.



The City has installed a roundabout at the Segovia Street/N. Greenway Drive (Segovia Plaza) intersection with crosswalk treatments on all legs of the junction. Miami-Dade County has programmed a roundabout installation in its work program at the Anderson Road/S. Greenway Drive intersection (Balboa Plaza), which should also fully accommodate pedestrian movements.

The City is planning to conduct improvement studies at the Granada and Columbus Plazas in 2019 to beautify and enhance the plazas, including consideration of intersection layout options.

Presently along Coral Way, there are marked crosswalks across the street at Red Road, Alhambra Circle, Granada Boulevard and Segovia Street.

As a result, there is a 3,300-foot long gap from Alhambra Circle to Granada Boulevard without a marked crossing of Coral Way, and similarly a 2,600-foot gap from Granada Boulevard to Segovia Street.

As part of this transportation plan, alternative intersection improvement concepts were developed for the Columbus and Ponce de Leon plazas. Assuming that these two projects, and a third at Balboa Plaza (Anderson Road) all included pedestrian crossings of Coral Way, then crosswalk gaps along Coral Way would be greatly reduced:

- Red Road to Alhambra Circle: 750 feet
- Alhambra Circle to Columbus Plaza: 1,900 feet
- Columbus Plaza to Ponce de Leon Plaza: 1,400 feet
- Ponce de Leon Plaza to Balboa Plaza: 1,300 feet
- Balboa Plaza to Segovia Plaza: 1,300 feet

The only further improvement in crosswalk connections across Coral Way would be at an intermediate point between Alhambra Circle to Columbus Plaza, perhaps at Madrid Street, breaking that 1,900-foot section into 900-foot and 1,000-foot long sections. Policy requirements of public works agencies are not supportive of

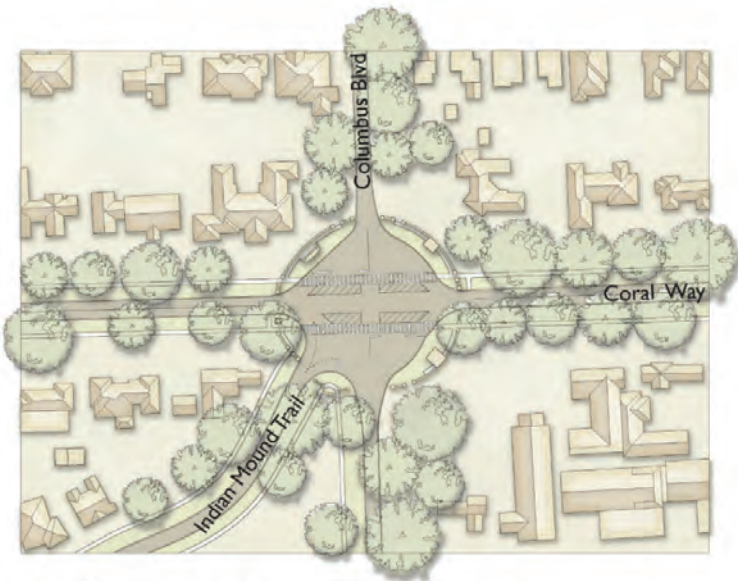
marked crosswalks, especially in lower pedestrian volume areas. Nevertheless, the City should continue to work with the Miami-Dade County Dept. of Transportation and Public Works to improve pedestrian accessibility across Coral Way.

As part of this transportation plan, improvement concepts were developed for the Columbus and Ponce de Leon Plazas. For the Columbus Plaza, three options were developed, all with pedestrian crosswalks on all legs of the intersection, as shown in **Figure 7.34**:

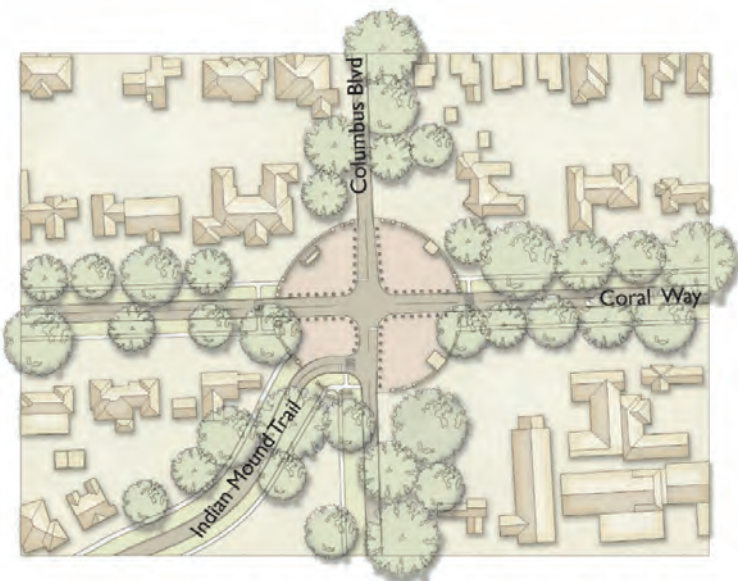
- Option 1: Refined four-legged intersection with Indian Mound Trail shunted to a T-intersection just south of Coral Way. No left turn lanes are provided along Coral Way because the architectural ring wall feature, with a 100-foot radius from the center of the intersection, limits the space available to do so.
- Option 2: Roundabout with smaller center island and splitter islands on approaches, maintaining current paved area.
- Option 3: Roundabout with larger center island and splitter islands on approaches, reducing the paved area.

For the Ponce de Leon Plaza, the intersection geometry and proposed solutions are identical to those for the Columbus Plaza, but without the fifth intersection street. **Figure 7.35** presents these concepts and **Figure 7.36** shows visualizations as well. It is noted that the City is currently conducting a transportation study (<https://www.coralgables.com/intersection-improvement-project>) that is considering improvements along Coral Way at Columbus Blvd., Granada Blvd., and N. Greenway Drive at Granada Blvd. As a State Historic Road with five historic intersections designated by the City (see **Figure 7.7**), any roadway modifications must undergo review by The City Historical Resources and Cultural Arts Director. A preliminary review of the consultant concepts for Columbus and Ponce de Leon for historical concerns indicated a preference for the Option 1 treatments. However, the historical review needs to be refreshed in view of the ongoing city study, and state review is also needed.

Figure 7.34: Columbus Plaza Improvement Concepts

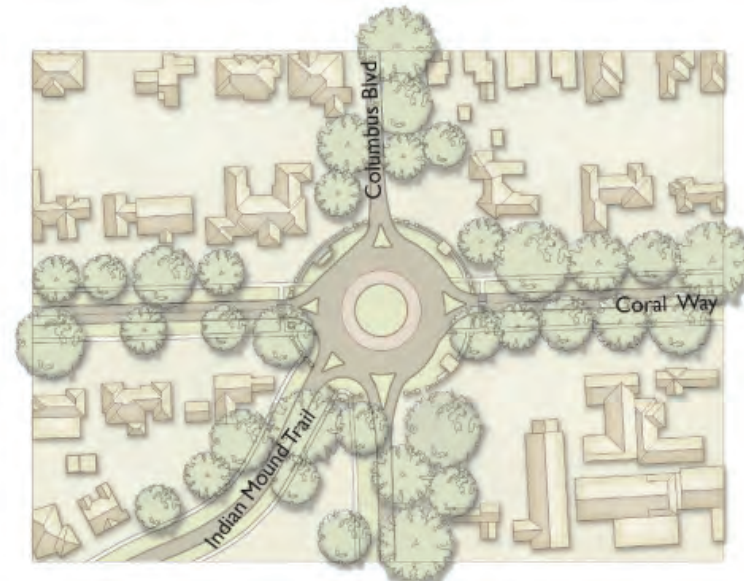


Coral Way & Columbus Boulevard: Existing Condition

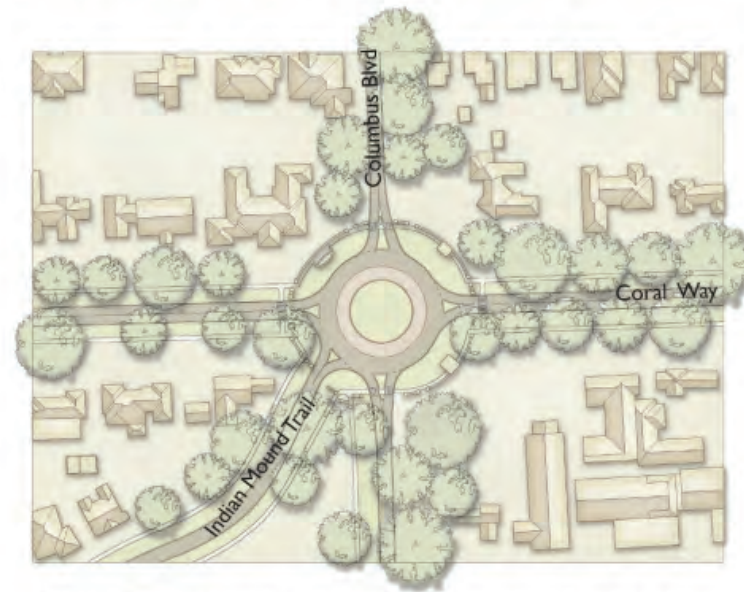


Option 1: Convert Indian Mound trail to a T-intersection with Columbus Boulevard. This simplifies the intersection of Coral Way and Columbus Boulevard to a 4-way intersection with a plaza at each quadrant. The plazas may be flush with the street or have a small curb and they may be separated from the road with bollards, pots, or planters.

Figure 7.34: Columbus Plaza Improvement Concepts (Continued)

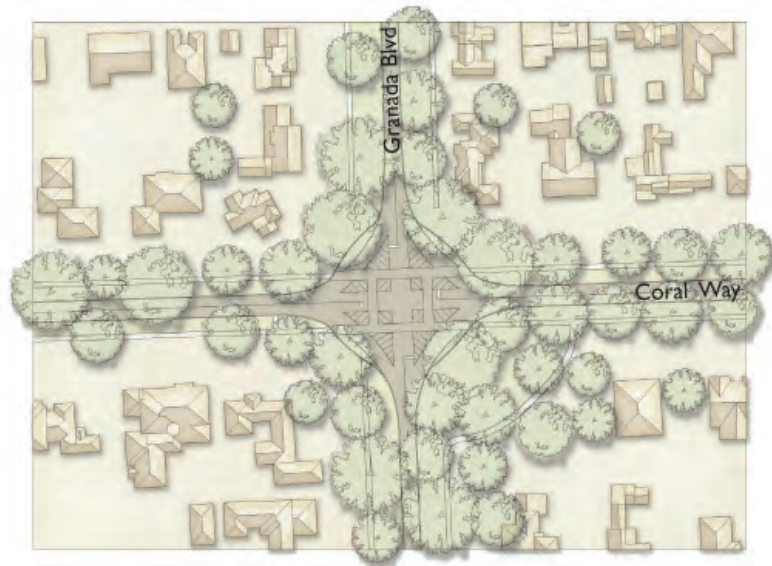


Option 2: Create an informal five-point roundabout without changing the existing curbs by adding a smaller center island and divider medians.



Option 3: Create a formal five-point roundabout that resolves the geometry of the intersection more completely by re-drawing the existing curbs and adding divider medians and a center island.

Figure 7.35: Ponce de Leon Plaza Improvement Concepts



Coral Way & Granada Boulevard: Existing Condition

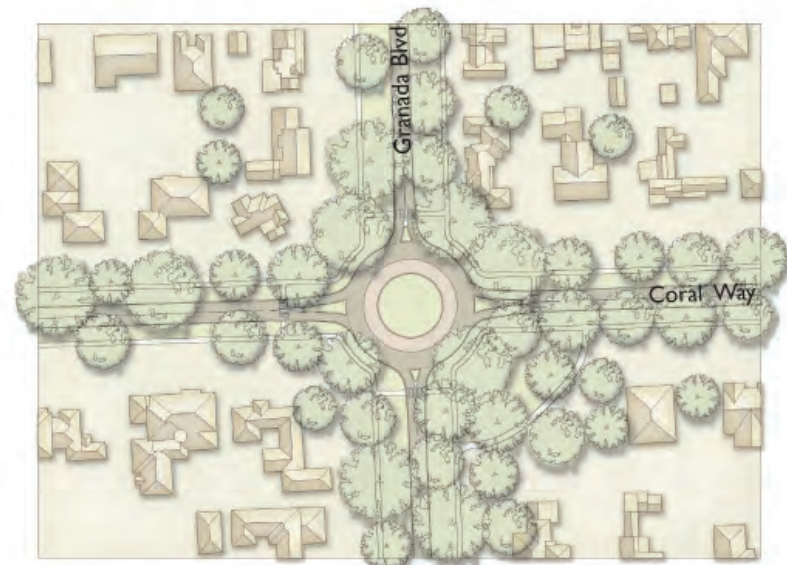


Option 1: Convert to a typical 4-way intersection and create a plaza at each quadrant. The plazas may be flush with the street or have a small curb and they may be separated from the road with bollards, pots, or planters.

Figure 7.35: Ponce de Leon Plaza Improvement Concepts (Continued)



Option 2: Create an informal four-point roundabout without changing the existing curbs by adding a smaller center island and divider medians.



Option 3: Create a formal four-point roundabout that resolves the geometry of the intersection more completely by re-drawing the existing curbs and adding divider medians and a center island.

Figure 7.36: Visualizations of Ponce de Leon Plaza Improvements



Coral Way and Granada Existing Condition



Coral Way and Granada Visualization of Option 1: 4-way intersection with Plazas



Coral Way and Granada Visualization of Option 3: Formal 4-Point Roundabout

Granada Boulevard

Granada Boulevard is a two-lane roadway which traverses the middle of Coral Gables continuously from SW 8th Street to Sunset Drive, making it the longest street, at 4.8 miles long, in the City under City jurisdiction. Per **Figure 7.3**, it is functionally classified as City collector street north of Coral Way, and a County minor arterial to the south of Coral Way.

Corridor Identity

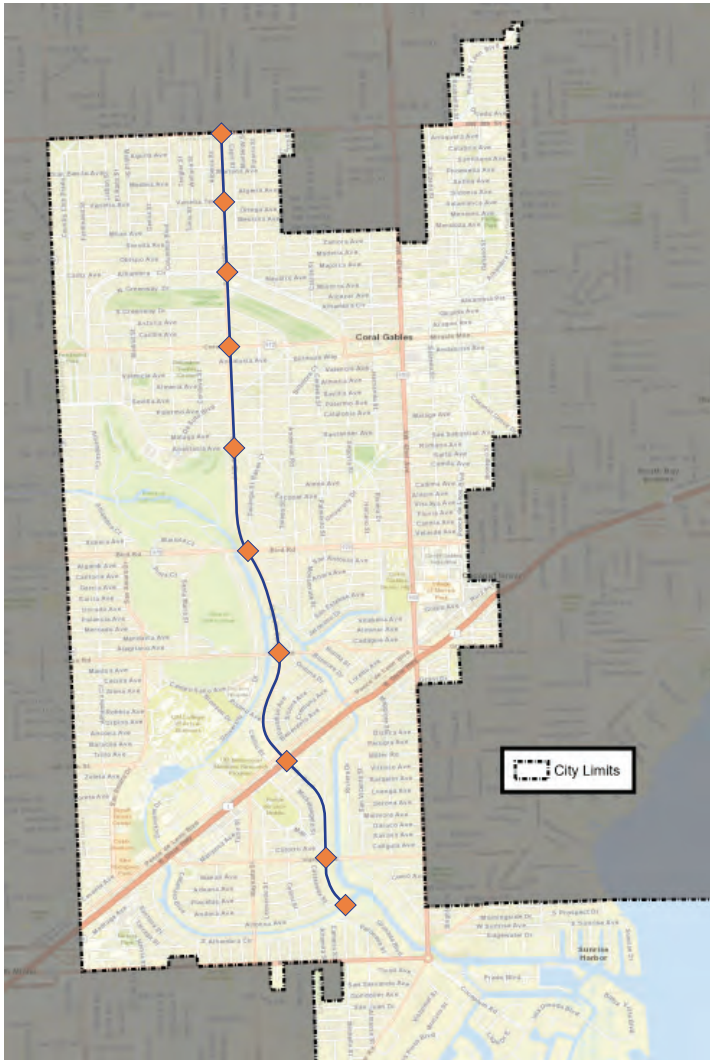
Granada Boulevard is thus a prominent street within the overall network, even if motorists only travel portions of the corridor. In this vein, it was considered to provide the street a stronger identity in relation to its function.

A review was made of the corridor in terms of significant intersections, key features, and existing traffic controls as shown on **Table 7.10** and **Figure 7.37**.

Table 7.10. Potential Granada Boulevard Intersection Improvements

Intersection	Historic Feature	Existing Traffic Control	Future Traffic Control
SW 8th Street	Granada Entrance	Traffic Signal	No change
Venetia Terrace		2-Way Stop East-West	Roundabout
Alhambra Circle	City Historic Plaza	Traffic Signal	Roundabout
Coral Way	City Historic Plaza, State Historic Road	Traffic Signal	Roundabout
De Soto Boulevard	City Historic Plaza	Traffic Circle	Improved Roundabout
Anastasia Ave.		4-way Stop	Roundabout
Bird Road		Traffic Signal	Intersection Improvement
Blue Road		Traffic Signal	Roundabout
US 1/Ponce de Leon Boulevard		Traffic Signals	No change
Hardee Road		Traffic Circle	No change
Sunset Drive	State Historic Road	Stop sign at T Intersection	Roundabout

Figure 7.37: Granada Boulevard Corridor



These intersection locations break the corridor into a series of 10 segments of ¼-mile to ½-mile in length. Based on this review, it is proposed to modify six of the 10 intersections to roundabouts. All of the intersections that do not have an historic feature could be enhanced with distinguishing pylons, walls, or other features consistent with the historic design motif of the City, thus helping to unify the Granada Boulevard corridor into a cohesive whole, with a distinctive identity.

De Soto Plaza

De Soto Fountain is an important monument in Coral Gables. Sitting on a roundabout at the intersection of De Soto Boulevard, Granada Boulevard, and Sevilla

Avenue, the beauty of the fountain is often lost to the excess asphalt and confusing nature of the intersection.

The following design options shown in **Figure 7.38** transform this oddly shaped intersection into a clearly defined roundabout while giving pedestrians an easy way to cross each street. This is particularly important at this site because the intersection sits right in between the Biltmore Hotel and the Venetian Pool and must be crossed by visitors going to either location. **Figure 7.39** provides a visualization of Option 3.

Granada Boulevard Typical Section

Granada Boulevard has a wide 100-foot right-of-way along its entire length. This provides a unique opportunity to enhance the street environment along the corridor. Presently, sidewalks are intermittent along the street, and the two travel lanes are 11-1/2 feet wide. Existing trees are planted within the street swales, along with large trees to define the streetscape.

Figure 7.40 shows a proposed street section adding a six-foot wide sidewalk at the outside edge of the right-of-way. A small buffer could separate a new bicycle lane in each direction of travel.

Figure 7.41 depicts a visualization of the conceptual cross-section along Granada Boulevard at Anastasia Avenue. While a two-foot buffer is shown in **Figures 7.39 and 7.40**, a wider buffer can be considered in implementation for plant viability and maintenance reasons.

Figure 7.38: Desoto Plaza Improvement Options



De Soto Fountain: Existing Condition

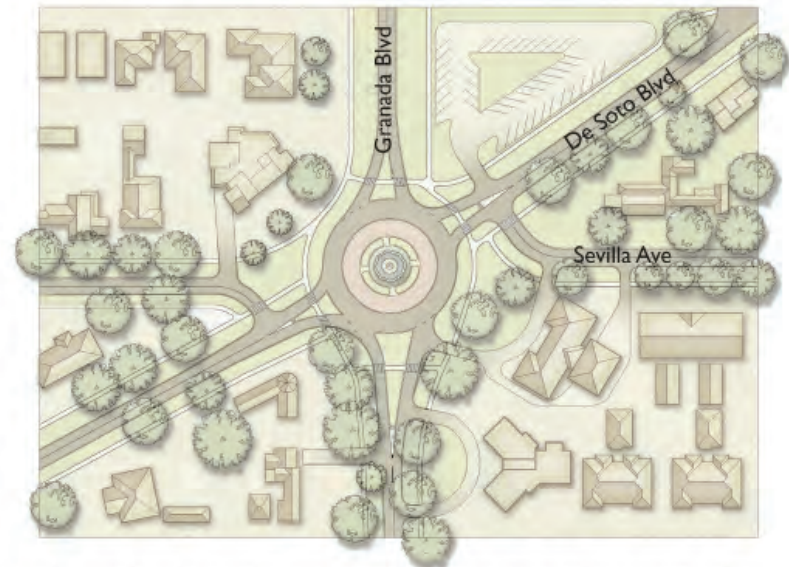


Option 1: Six-Point Roundabout - Leave all streets as they are, resulting in no curb changes and many complex splitter islands.

Figure 7.38: Desoto Plaza Improvement Options (Continued)



Option 2: Five-Point Roundabout - Merge De Soto Boulevard and Sevilla Avenue at the northeast end, resulting in some curb changes and less splitter islands.



Option 3: Four-Point Roundabout - Merge De Soto Boulevard and Sevilla Avenue at both ends, resulting in more curb changes and fewer splitter islands.

Figure 7.39: DeSoto Plaza Visualization

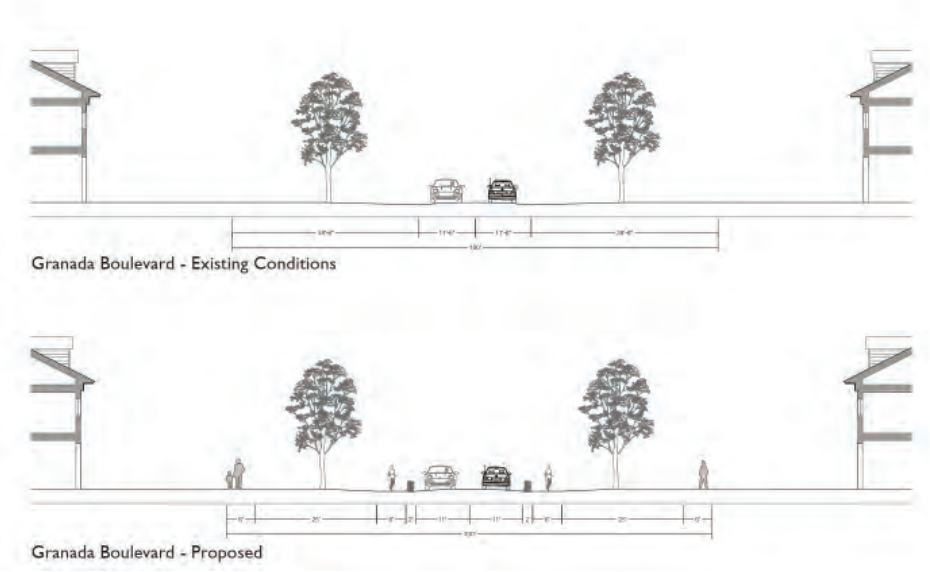


De Soto Fountain Existing Condition



De Soto Fountain Visualization of Option 3: Four-Point Roundabout

Figure 7.40: Granada Boulevard Typical Section Concept



Andalusia Avenue/Valencia Avenue

These two streets between LeJeune Road and SW 37th Avenue currently function as a one-way pair, with Andalusia Avenue flowing eastbound and Valencia Avenue flowing westbound (see Figure 7.42). There were several citizen comments suggesting that this one-way pair be reverted to two two-way streets.

Figure 7.41: Valencia Avenue/Andalusia Avenue One-Way Pair



Figure 7.42: Granada Boulevard Typical Section Visualization

The following illustration shows the proposed bike lane and sidewalks along Granada Boulevard.



Granada Boulevard - Existing Conditions



Granada Boulevard - Proposed

Both streets have 60-foot rights-of-way, with 9-foot wide sidewalks and curb parking on both sides. Valencia Avenue is striped for three 9-foot wide travel lanes, while Andalusia Avenue has two wide 13-foot lanes.

For conversion to two-way operation, both Valencia Avenue and Andalusia Avenue would require the following changes:

- Pavement markings would need to be converted for two-way flow.
- Traffic signals at all five intersections along this street segment would require modification of signal display hardware, and reprogramming of the traffic controller for two-way flow.
- Traffic signing would need to be modified for two-way flow.
- The eastbound transition across the LeJeune Road intersection would require modification from three through lanes to two through lanes reducing to one-lane eastbound.
- Some parking meters would need relocation.
- The intersection of SW 37th Avenue at Valencia Avenue is unsignalized. It may be necessary to review the need for signalization, if the street flow is revised.

Presently, Andalusia Avenue distributes some eastbound traffic from Biltmore Way to Ponce de Leon Boulevard and other points.

Advantages of the one-way pair configuration focus on higher roadway capacity, better signal progression. Disadvantages of the one-way pair relates to the typically higher travel speeds which in a downtown area conflicts with greater pedestrian volumes at the intersections. Higher speeds are also associated with diminished pedestrian safety.

Advantages of the reversion to two-way operation of both streets would be greater flexibility in street circulation and lower expected travel speeds. The key disadvantage would be lower capacity of the streets.

However, based on field review, peak traffic volumes on these streets were not especially congested. In addition, the existing one-way pair is only four blocks long.

Based on this cursory review, it is considered that there is merit in reviewing the conversion of the one-way pair to two-way operation. More detailed traffic analysis of street operations and estimation of the capital cost of the conversion requirements would provide valuable input into the decision-making process.

LeJeune Road

LeJeune Road through Coral Gables north of US 1 is a State-maintained roadway. It has a constrained right-of-way which precludes widening to improve the traffic service. Citizen comments related to traffic operations along this roadway are addressed in this section.

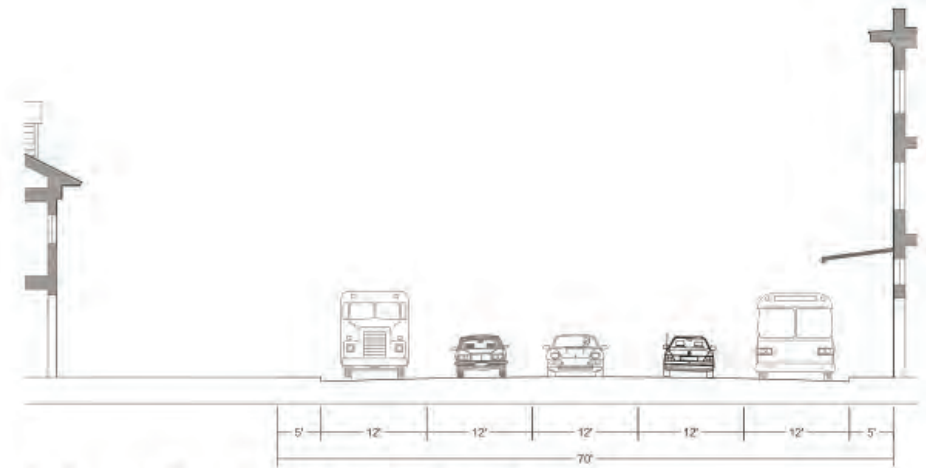
Street Cross-Section

The existing conditions for LeJeune Road has a minimal 5-foot sidewalk directly against a five-lane road section with two lanes in each direction and a central turn lane. Sidewalks are partially blocked by power poles, street light poles, and traffic sign posts. In addition, building frontages and residential hedges further tend to constrain the walking environment.

A proposed street section would reduce the width of the travel lanes to create a separation of pedestrians from traffic. The five-foot sidewalk would remain and be complemented by a paved 4-foot margin for trees with ADA-compatible grates, and a location off the sidewalk for light poles, trash receptacles, electric boxes, and other infrastructure that often blocks the sidewalks.

Figure 7.43 illustrates this typical section concept.

Figure 7.43: LeJeune Road Typical Section Concept



LeJeune Road - Existing Conditions



LeJeune Road - Proposed

Residential Street Access

At the transportation plan open houses, there were numerous citizen comments about vehicles on LeJeune Road making left or right turns from the main roadway onto perpendicular local streets to avoid congestion and traffic queues. The particular areas of concern are from Alhambra Circle north to SW 16th Street, and from Valencia Avenue south towards Bird Road. While traffic intrusion can occur from both right and left turns entering residential streets, citizen comments focused mainly on northbound left turns.

Many of these residential streets have short left turn bays for those movements. However, citizens reported that left turns are made at some locations without left turn bays or where there is a marked left turn lane for the southbound direction. Several citizens stated they would like the right-turn only treatment at Sevilla Avenue and LeJeune Road and that prohibiting northbound left turns would help.

The City may wish to consider discussing this strategy with FDOT traffic operations to determine if alternative traffic controls and/or left turn restrictions could be implemented to deter unnecessary neighborhood traffic intrusion.

Pedestrian Crossings

There were several citizen comments requesting a signalized pedestrian crossing on LeJeune Road between Bird Road and University Drive to facilitate access between residential areas on the east side of LeJeune Road to access the Library, the Youth Center, and parks to the west. The installation would be similar to the pedestrian crossing signal on LeJeune Road to the north near Mendoza Avenue, which serves a similar purpose along a long section of LeJeune Road with no signalized intersections. Implementing this concept will require coordination with the Florida DOT.

It was also noted by community members that the mid-block signals on LeJeune Road near Mendoza Avenue does not function properly. There is a long delay between the time pedestrians push the button to activate the signal and when the signal turns red. It was also mentioned that sometimes the mid-block signals do not work at all. This issue will require coordination between Coral Gables, Miami-Dade County and Florida DOT.



Pedestrian signal on LeJeune Road at Mendoza Ave.

Speeding

There were numerous citizen comments regarding speeding on LeJeune Road north and south of downtown Coral Gables. To the north, there is no traffic signal between Minorca Avenue and SW 8th Street. To the south, there is no signal for six blocks north from University Drive, and for 11 blocks south from University Drive to Bird Road. The posted speed limit in both areas is 40 mph.

Another citizen comment noted that many intersections along Lejeune Road have inadequate sight triangles, making turns from the side streets more hazardous when coupled with higher speeds.

It is recommended that the City collect speed data in these two segments. If high speeds, outside peak periods, is validated, then the data should be taken to the Florida DOT for further discussion and possible action. The City could also consider increased enforcement of speeds.

One possible longer term action would be the modification of the street cross-section as discussed in this subsection. Narrower lanes would have a traffic calming effect and be more “self-enforcing”. This reconstruction could be considered the next time that Lejeune Road cycles into a periodic “resurfacing/restoration/rehabilitation” project, where the agency often makes adjustments to the roadway configuration.

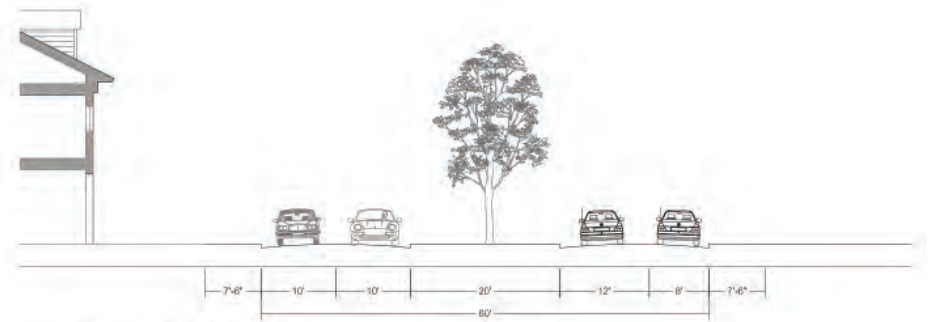
San Amaro Drive

San Amaro Drive has a typical street section of 7.5-foot sidewalks with a center median that divides two travel lanes in one direction from a single travel lane with onstreet parking in the other direction. The proposed street section would keep the sidewalks and medians as they are but would reallocate the pavement within the roadway. The two travel lanes would become a single travel lane with on-street parking while the other side remains a single travel lane with a buffered bike lane (See **Figure 7.44**).

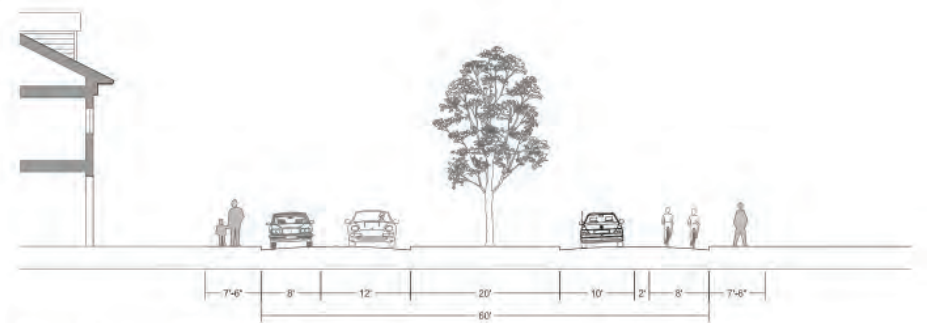
Biltmore Way

The existing conditions for Biltmore Way provide a generous 12-foot sidewalk with angled parking on each side of the street with four wide travel lanes. The proposed street section (see **Figure 7.45**) would reduce the width of the travel lanes as well as convert the angled parking to parallel parking. This will create enough space to create a grade-separated bike lane in each direction. The bike lane can be separated from the roadway with an 8-foot planting strip for new street trees and separated from the sidewalk by being at a slightly lower level than the sidewalk.

Figure 7.44: San Amaro Drive Typical Section Concept

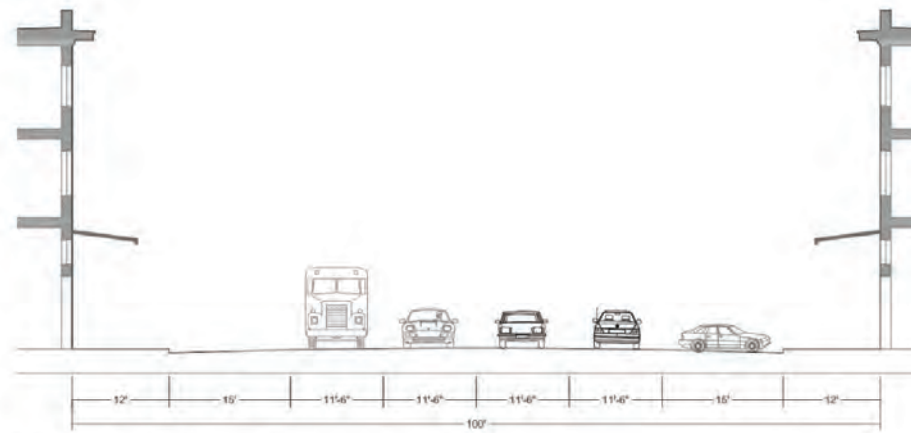


San Amaro Drive - Existing Conditions



San Amaro Drive - Proposed

Figure 7.45: Biltmore Way Typical Section



Biltmore Way - Existing Conditions



Biltmore Way - Proposed

University Drive

There were several citizen comments regarding speeds along University Drive west of LeJeune Road, near the Youth Center and Library. There is a signed pedestrian crosswalk in this area as well. It is recommended the city conduct a traffic study for this location in the future.

It is noted that the City has considered installation of a roundabout at Anderson Road, about 1/2-mile to the west. A roundabout could be considered for installation at the University Drive/Riviera Drive intersection.

Alhambra Circle (Bird Road to Miller Drive)

Alhambra Circle is an important street extending for 4.5 miles from downtown Coral Gables westward and then southward to San Amaro Drive at the University of Miami. It is functionally classified as a City collector street over its length. Specific citizen comments focused on speeding in the segment from Bird Road to Blue Road, and from Blue Road to Miller Drive.

The traffic calming element of this plan has proposed to construct four roundabouts on Alhambra Circle as part of a package of traffic calming actions between Bird Road and Blue Road. Vehicular speed data was collected between Bird Road and Blue Road, determining that traffic calming criteria were satisfied, in part to the relatively high travel speeds. As a result, traffic roundabouts are proposed at these cross streets:

- Cantoria Avenue
- Sarria Avenue
- Palancia Avenue
- Mendovia Avenue

Based on similar citizen input about speeds on Alhambra Circle between Blue Road and Miller Drive, traffic circles were proposed on this segment, pending collection of vehicle speed data and validation of traffic calming criteria being satisfied. The three locations tentatively proposed for traffic roundabouts are:

- Sienna Avenue
- Robbia Avenue
- Ancona Avenue

Another comment made multiple times was that the bridge over the Coral Gables Canal near Taragona Drive was rendered unsafe by vehicles parked in the grass swale near the bridge. The speed limit across all of Alhambra Circle is 30 mph. The straight bridge occurs on a combined horizontal and vertical curvature roadway geometry, and has an unusual offset intersection just to the south. There are warning signs on both bridge approaches with the following actions are recommended for this location:

- Refresh the centerline striping on both bridge approaches and install new reflective pavement markers.
- Relocate the warning sign on the southbound approach further to the north from its present location at the bridge abutment.
- Consider installing reflective pavement markers on top of the bridge railing posts to accentuate the bridge geometry to motorists.
- Consider performing vehicular speed studies near the bridge to determine if traffic calming actions are justified. Speed humps tailored to the safe speed to traverse the bridge would help control excessive speed through this area.
- Consider painting existing bike lanes green to improve visibility for motorists and cyclists. Bike lanes are currently faded and need maintenance.
- In general, when canal bridges are scheduled for maintenance or replacement, bicycle and pedestrian facilities should be considered in the design.

Ponce de Leon Boulevard

Ponce de Leon Boulevard is a City collector street with 2 travel lanes in each direction with a raised median or center turn lane. Several citizen comments were fielded regarding excessive vehicle travel speeds on the street north of downtown. There is a 4,200-foot long segment of this street with only one signalized intersection at the midpoint (Salamanca Avenue) and two signalized pedestrian crossings closer to downtown, from Alcazar Avenue north to SW 8th Street. The only marked pedestrian crossings are at Salamanca Avenue and the two signalized pedestrian crossings to the south. However, much of the street is lined with commercial buildings and further north multistory residential buildings.

The City will be implementing its North Ponce Streetscaping Project in 2019-2022, and the County has a left turn lane project scheduled for 2019. Both these projects should consider suitable locations for designated pedestrian crossings along this stretch of Ponce de Leon Boulevard.

Downtown Streets

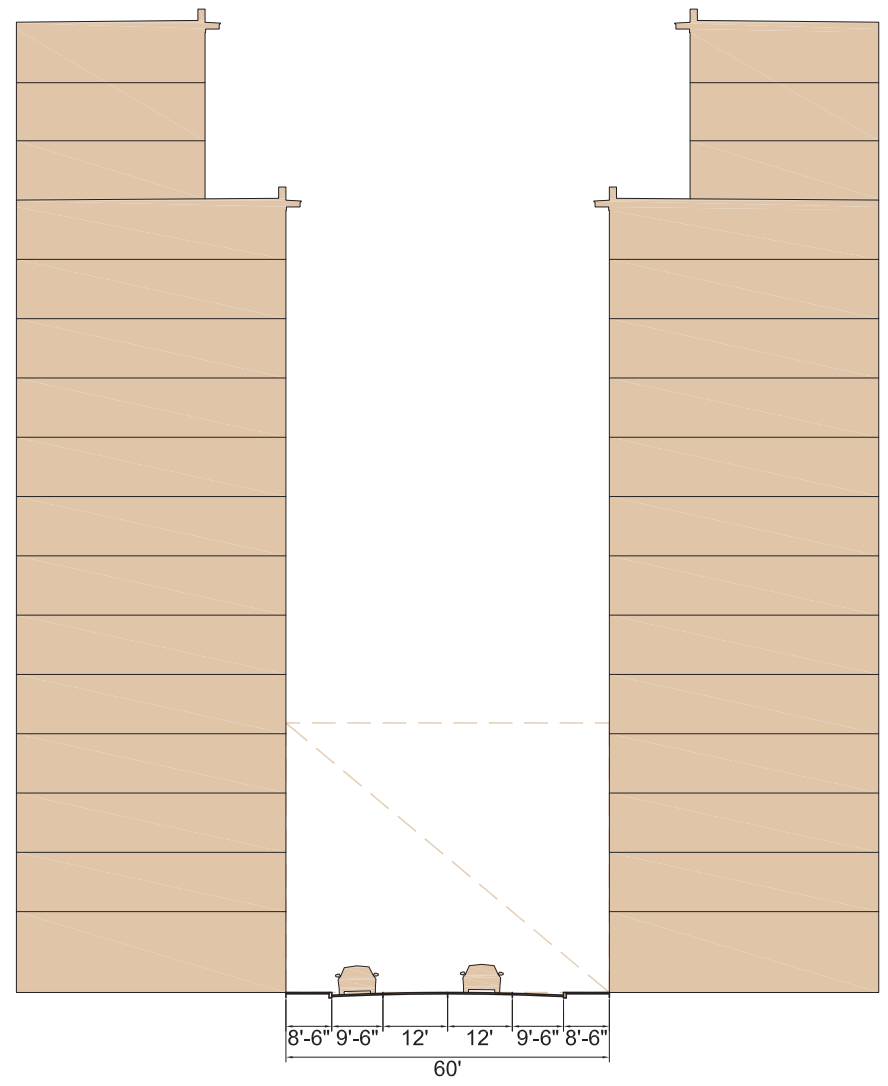
Typical streets in the downtown have a narrow 60-foot right-of-way. There are 10-foot sidewalks with 8-foot wide lanes for parallel parking, and a 12-foot travel lane in each direction.

The proposed street section would reduce the width of the travel lanes to widen the sidewalk and plant street trees occasionally within the parking strip. These conditions afford limited opportunities for landscaping, wider sidewalks, and where appropriate, bicycle lanes. Several schematic s from the City Planning Department capture alternative typical section to enhance the walkability and livability of downtown streets, as follows:

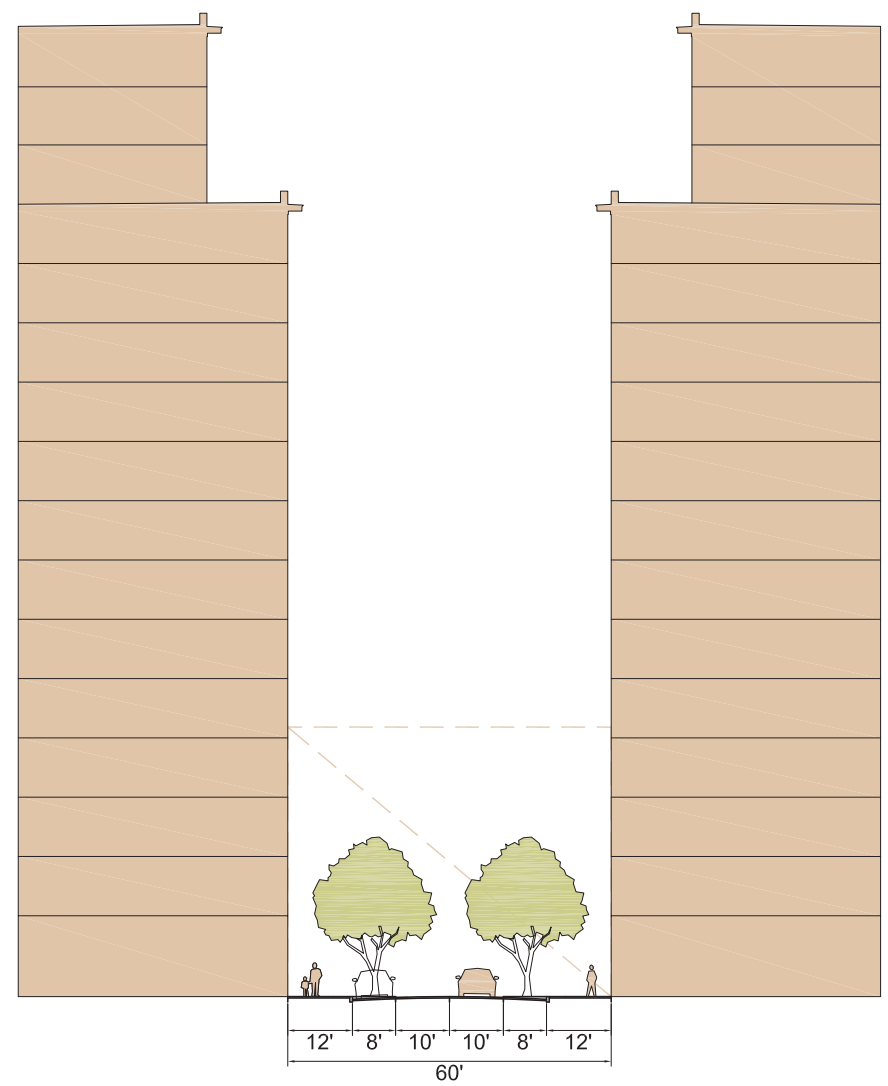
- Figure 7.46: Typical 60-foot Downtown Street
- Figure 7.47: Typical 60-foot One-Way Street
- Figure 7.48: 200 Block of Majorca Avenue
- Figure 7.49: Alhambra Circle (Douglas Road to Galiano Street)
- Figure 7.50: Alhambra Circle (Commercial District)
- Figure 7.51: Salzedo Street/Galiano Street (Commercial Area)

The street improvements represented by these schematics would most likely be implemented in phases. For example, those on Alhambra Circle (Douglas Road to Galiano Street) could be implemented first, as they are less involved. Gradual conversion of downtown streets would begin to transform the look and character of the downtown district.

Figure 7.46: 60ft ROW Downtown - Wide Sidewalks



Typical 60' ROW Downtown Street Existing



Typical 60' ROW Downtown Street Shade Trees and Wide Sidewalks

Figure 7.47: Typical 60-foot One-Way Street

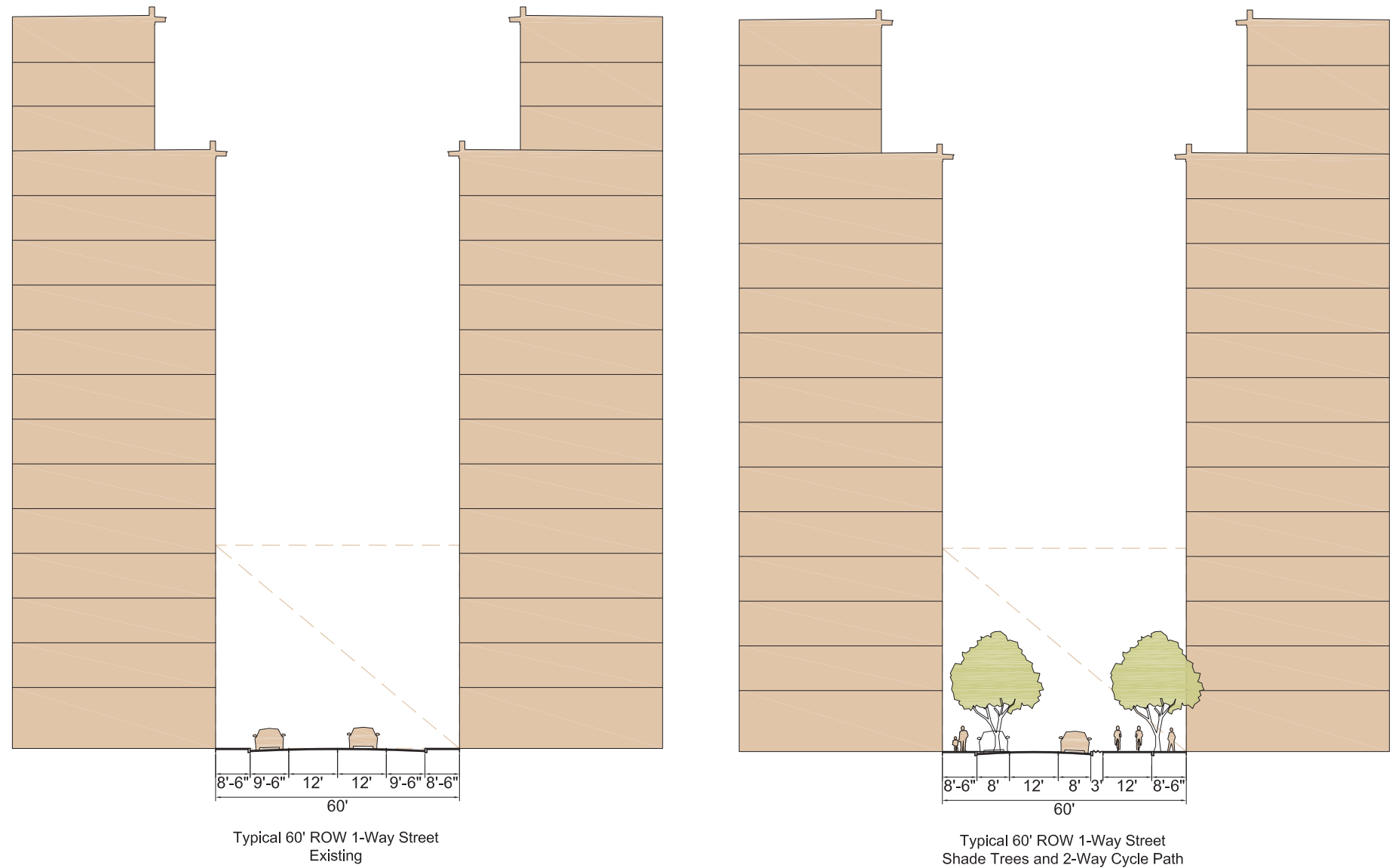
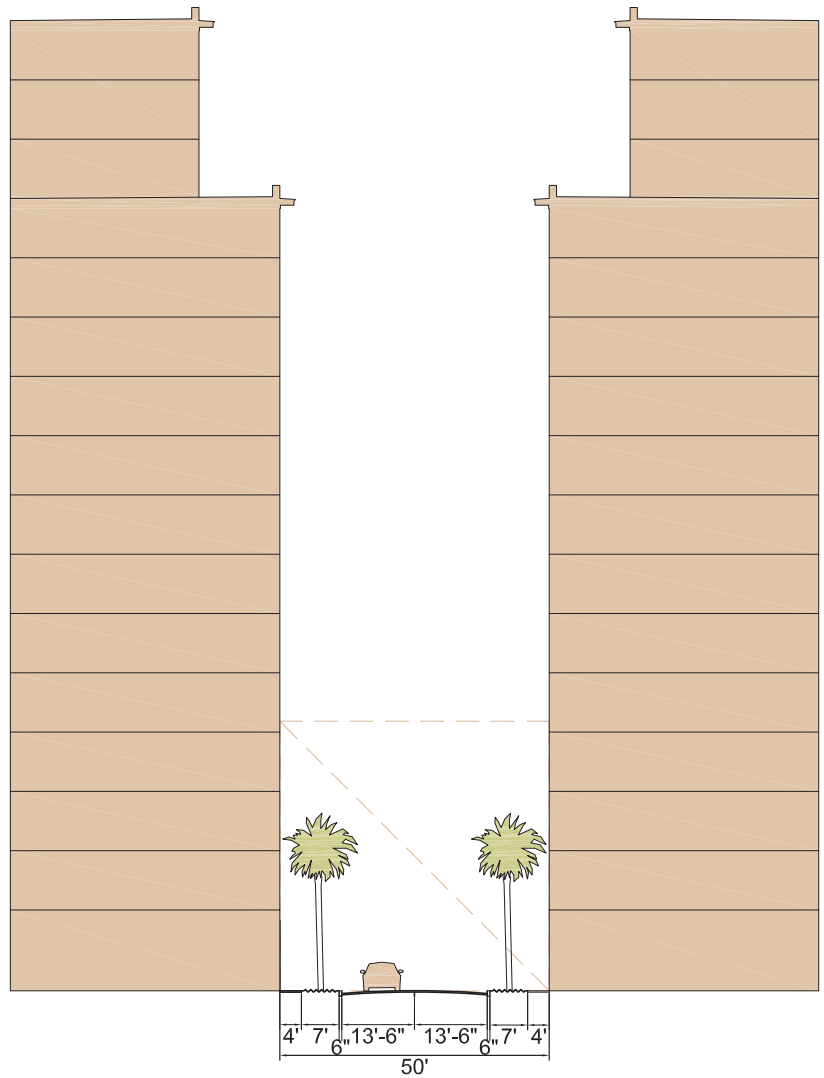
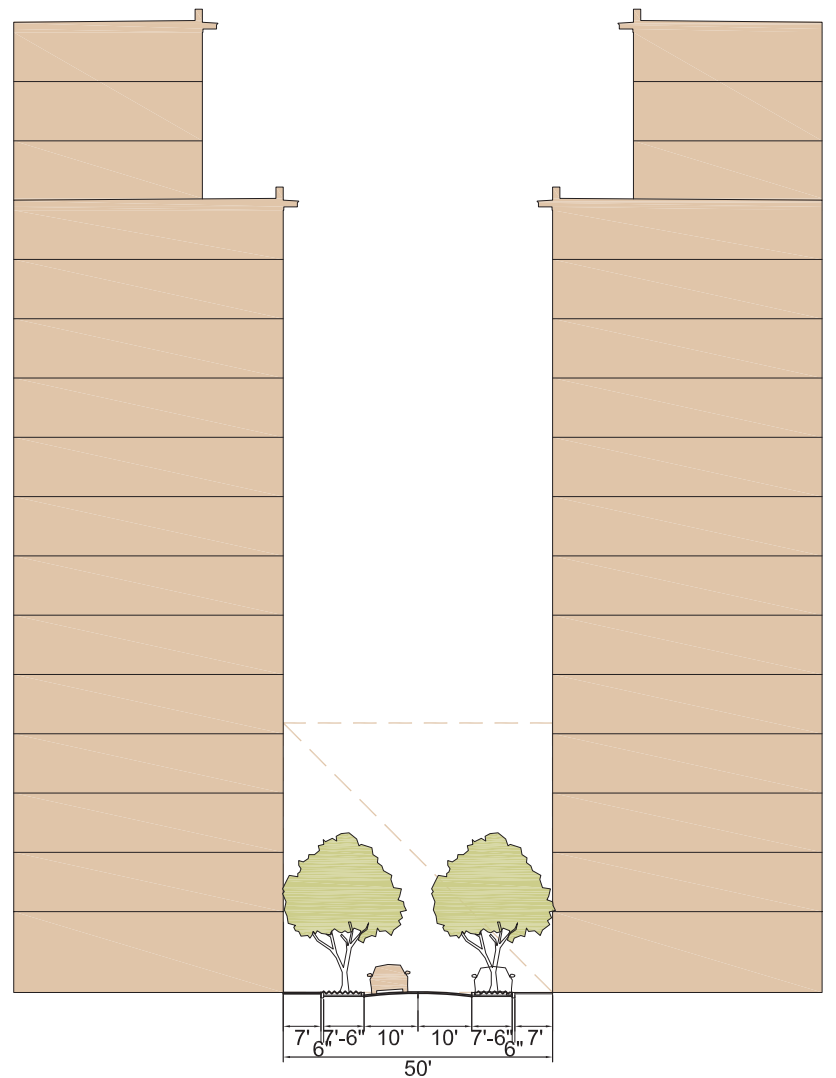


Figure 7.48: 200 Block of Majorca Avenue



200 Block of Majorca
(Commercial Segment)
Existing



200 Block of Majorca
(Commercial Segment)
Proposed on-street parking + trees

Figure 7.49: Alhambra Circle (Douglas Road to Galiano Street)

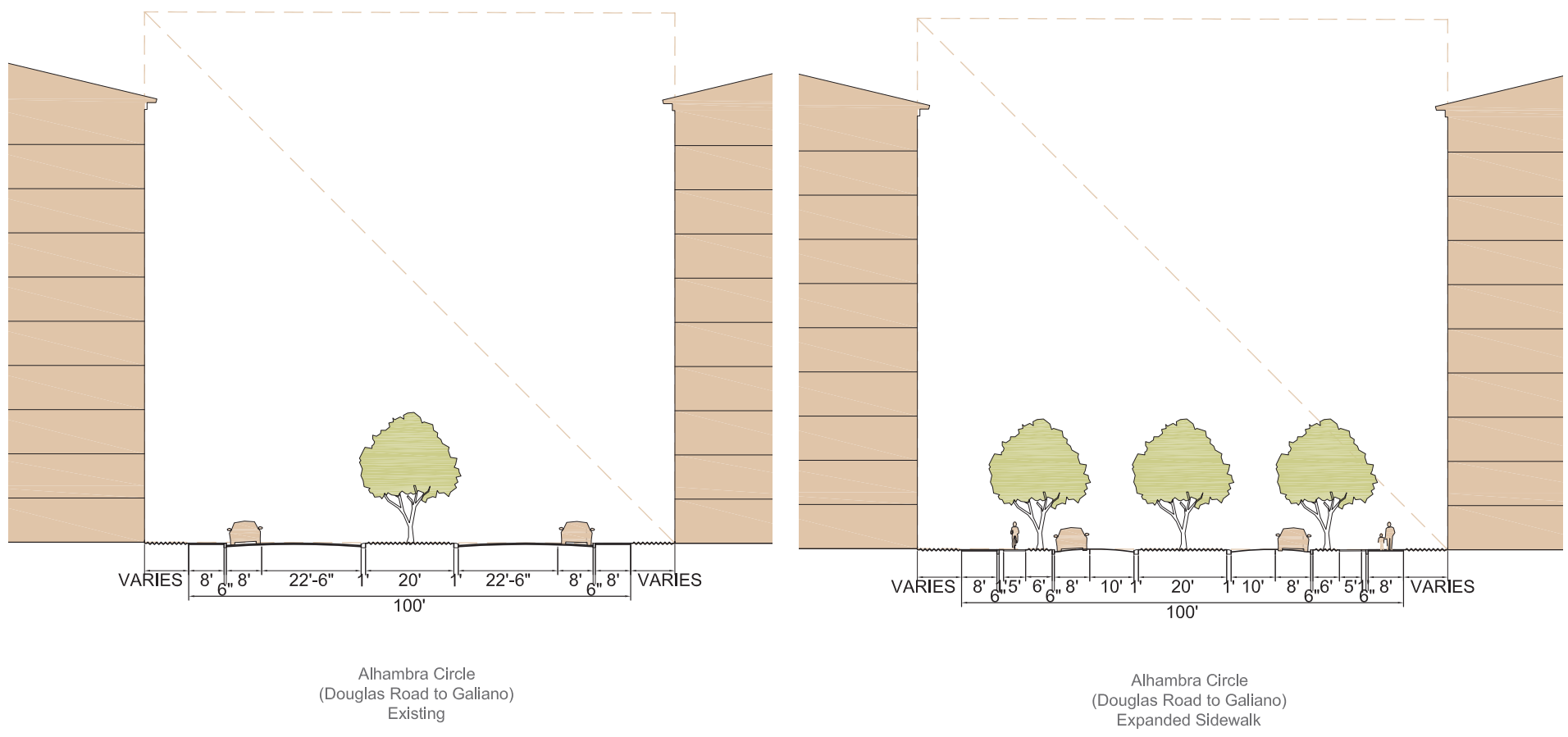


Figure 7.50: Alhambra Circle (Commercial District)

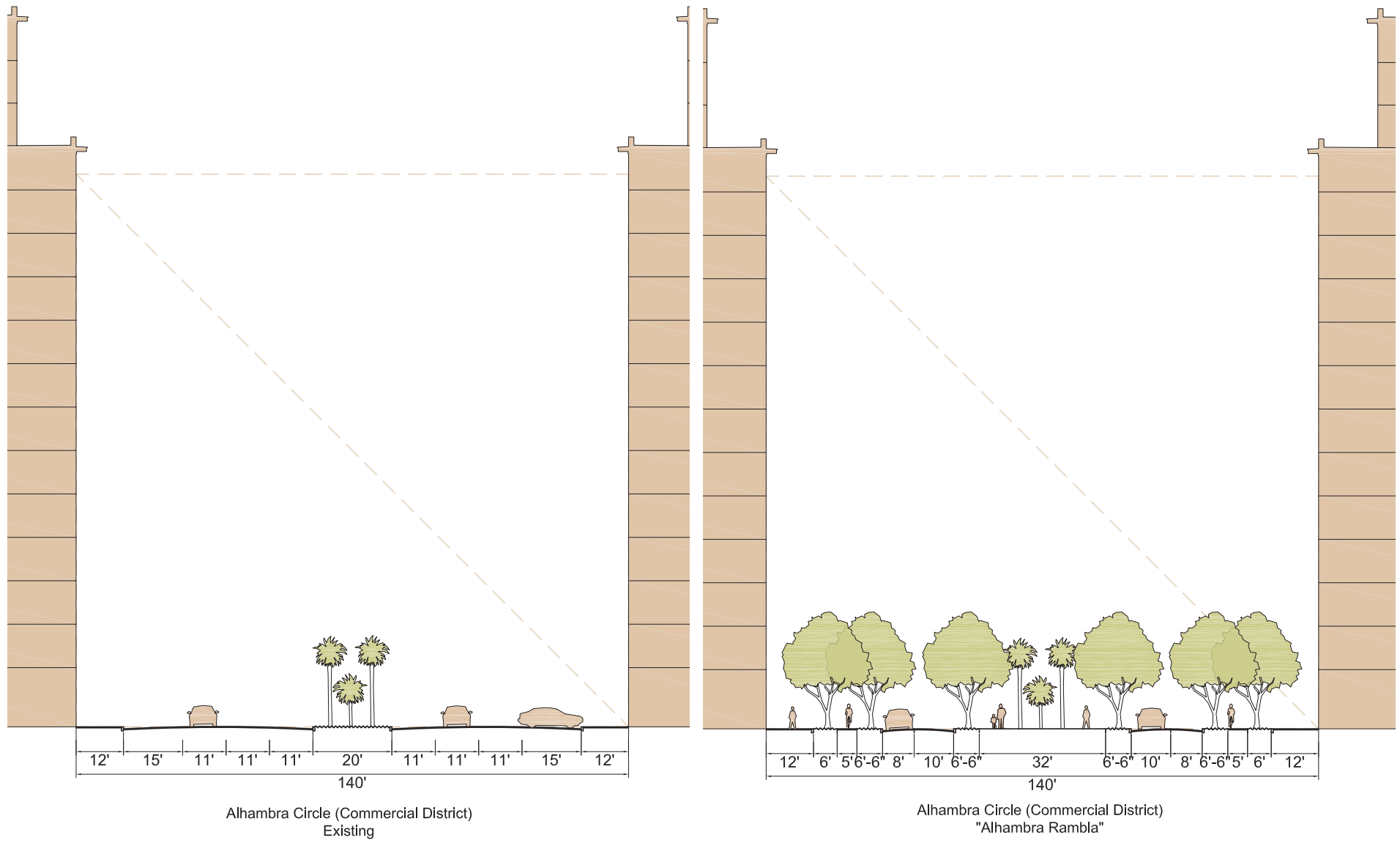
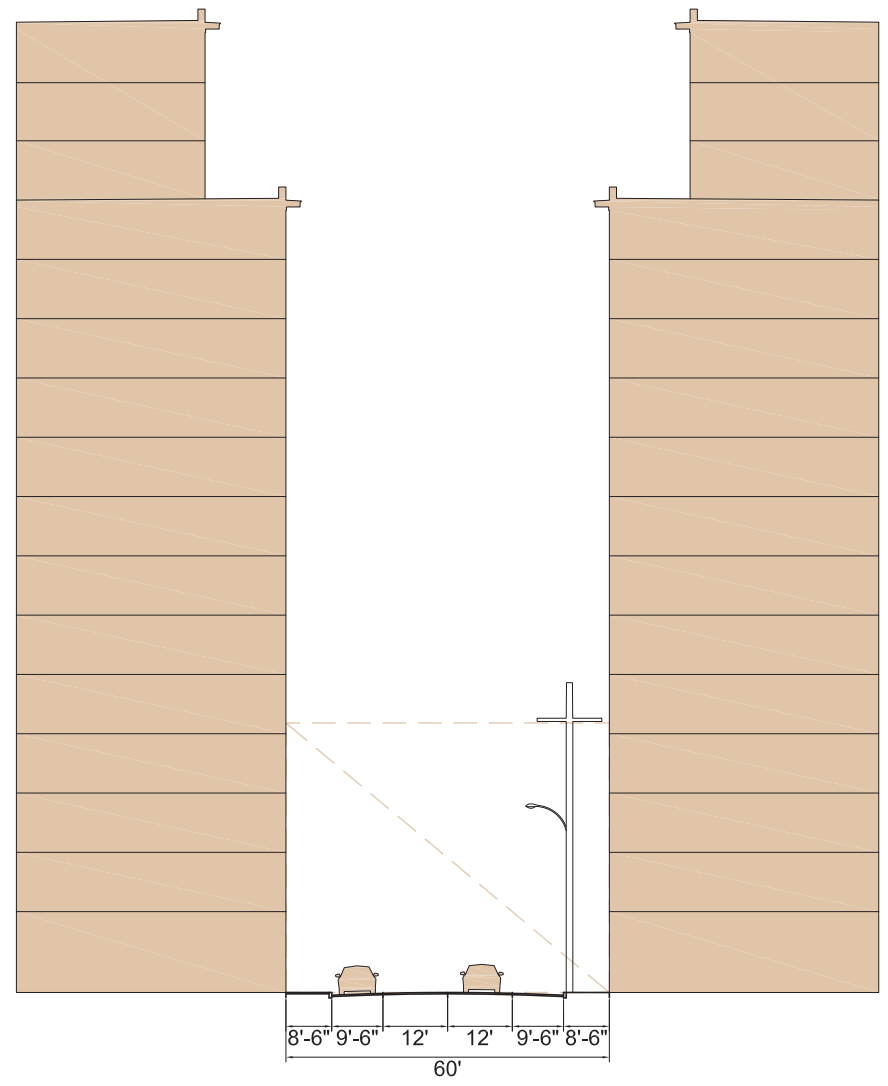
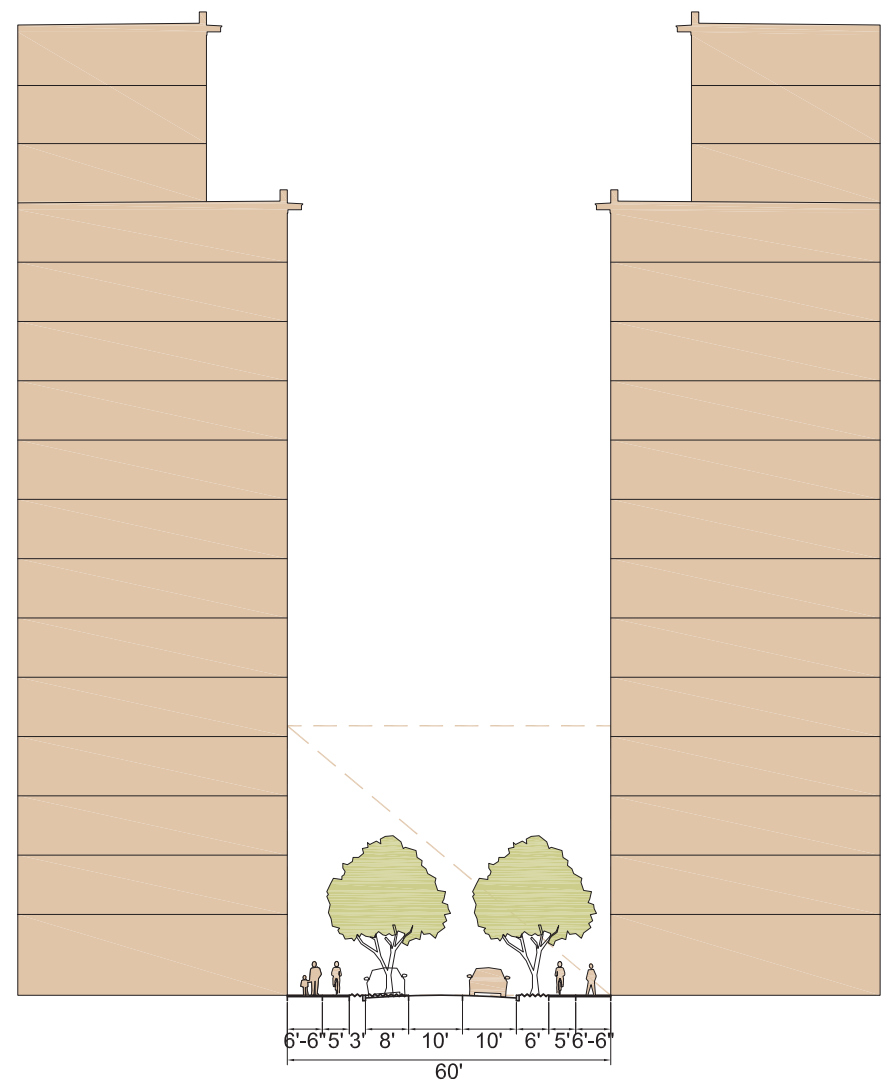


Figure 7.51: Salzedo Street/Galiano Street (Commercial Area)



Salzedo / Galiano (Commercial Area)
Existing



Salzedo / Galiano (Commercial Area)
Underground Utilities, Shade Trees and Bike Paths

7.3 RECOMMENDATIONS

The safe and efficient movement of vehicular traffic is a necessary and important part of a balanced and well-rounded transportation program. While encouraging travelers to use non-auto options is vital to a more sustainable future, addressing various street and roadway needs is still at the core of a functioning transportation network. This section has highlighted issues, needs, and solutions for the vehicular element of the transportation system in Coral Gables. **Table 7.11** summarizes the recommendations that were identified in supporting the role of streets in vehicular travel over the next 10 years.

Table 7.11: Vehicular Element Actions

Project No.	Policy	Program	Project	Implementation Phase *			Title	Description	Conceptual Cost Estimate					
				Short Range	Medium Range	Long Range			Capital Cost	Planning	Design	Construction, Engineering, Inspection	Soft Cost Subtotal	TOTAL
V-1			✓	✓			Coordinate with FDOT on implementation of US 1 Study recommendations.	Master list included in Chapter 7 Vehicles. Actions should be funded by FDOT.	\$-	\$10,000	\$-	\$-	\$10,000	\$10,000
V-2			✓	✓			Coordinate with FDOT on implementation of Bird Rd. Study recommendations.	Master plan included in Chapter 7 Vehicles. Actions should be funded by FDOT.	\$-	\$10,000	\$-	\$-	\$10,000	\$10,000
V-3			✓			✓	Implement Ingraham Terrace/Lejeune Road roundabout.	Coordinate with Miami-Dade County. Preliminary cost estimate for Option 2 per Figure 7-29 is \$97,500.	\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
V-4		✓		✓			Monitor results of FDOT Flagler Street premium transit study and street modifications.	Coordinate with FDOT.	\$-	\$2,500	\$-	\$-	\$2,500	\$2,500
V-5			✓	✓	✓		Implement Cartagena Plaza improvements. c-crtagena	Coordinate with Miami-Dade County. Cost per CIP budget.	\$92,600	\$6,482	\$16,668	\$9,260	\$32,410	\$125,010
V-6			✓	✓			Complete City study of Coral Way plazas – Columbus Plaza and Ponce de Leon Plaza (Granada Blvd.) Capital project: c-g&ccircl	Final recommended actions will need to be costed and programmed. Option 1 per Figures 7-33 and 7-34 are \$73,700 and \$69,950, respectively. City CIP budget shown.	\$222,500	\$15,575	\$40,050	\$22,250	\$77,875	\$300,375
V-7			✓	✓			Implement Ponce de Leon Plaza improvements.	Coordinate with Miami-Dade County.	\$-	\$2,500	\$-	\$-	\$2,500	\$2,500
V-8			✓	✓			Investigate installation of crosswalks at Coral Way and Madrid Street.	Coordinate with Miami-Dade County.	\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
V-9		✓				✓	Evaluate adoption of Granada Way improvement program.	Includes cross-section modifications, sidewalk completion, and roundabouts. Preliminary cost estimate is \$2.04 million/mile.	\$-	\$15,000	\$-	\$-	\$15,000	\$15,000
V-10			✓	✓			Implement De Soto Plaza improvements.	Cost of Option 3 (Figure 7-37) is \$255,350. City CIP budget figure is shown.	\$402,500	\$28,175	\$72,450	\$40,250	\$140,875	\$543,375
V-11			✓			✓	Evaluate Andalusia Ave./Valencia Ave. one-way pair conversion.	Initial cost of one-way to 2-way conversion is \$2.220 million, per Figure 7-41.	\$-	\$10,000	\$-	\$-	\$10,000	\$10,000

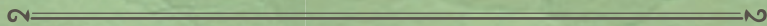
* NOTE: Short Range 1-2 years | Medium Range 3-5 years | Long Range 6-10 years | FDOT - Florida Dept. of Transportation | DTPW - Miami-Dade Dept. of Transp. & Public Works

Project No.	Policy	Program	Project	Implementation Phase *			Title	Description	Conceptual Cost Estimate					
				Short Range	Medium Range	Long Range			Capital Cost	Planning	Design	Construction, Engineering, Inspection	Soft Cost Subtotal	TOTAL
V-12		✓			✓		Evaluate LeJeune Road typical section modifications.	Coordinate with FDOT. Modification per Figure 7-42 is estimated to cost \$1.148 million/mile.	\$-	\$2,500	\$-	\$-	\$2,500	\$2,500
V-13			✓		✓		Investigate LeJeune Road traffic turn restrictions.	Coordinate with FDOT.	\$-	\$2,500	\$-	\$-	\$2,500	\$2,500
V-14		✓			✓		Evaluate LeJeune Road speeding issue.	Coordinate with FDOT.	\$-	\$2,500	\$-	\$-	\$2,500	\$2,500
V-15		✓			✓		Assess vehicular speeds and determine management approach.	Coordinate with FDOT.	\$-	\$2,500	\$-	\$-	\$2,500	\$2,500
V-16		✓				✓	Evaluate implementation of San Amaro Drive cross-section modifications.		\$-	\$15,000	\$-	\$-	\$15,000	\$15,000
V-17		✓				✓	Evaluate implementation of Biltmore Way cross-section modifications. C-bw-stscp	Preliminary cost estimate per Figure 7-44 is \$2.58 million/mile for 1/2-mile long project, or approx. \$1.29 million. City project budget is \$890,000.	\$659,400	\$46,158	\$118,692	\$65,940	\$230,790	\$890,190
V-18		✓				✓	Evaluate implementation of downtown streets cross-section modifications.	Preliminary cost estimate per Figure 7-45 is \$638,260/mile.	\$-	\$10,000	\$-	\$-	\$10,000	\$10,000
V-19			✓		✓		Implement traffic calming on University Drive near library, or roundabout at Riviera Drive.	Coordinate with Miami-Dade County.	\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
V-20			✓	✓			Implement safety actions at Alhambra Drive bridge across Coral Gables Canal.		\$80,000	\$5,600	\$14,400	\$8,000	\$28,000	\$108,000
V-21			✓	✓			Implement traffic calming vehicular speed analysis on Alhambra Drive between Blue Road and Miller Drive.	Implement roundabouts if warranted. No capital costs included.	\$-	\$10,000	\$-	\$-	\$10,000	\$10,000
V-22			✓	✓			Evaluate the need for a signalized pedestrian crossing on North Ponce de Leon Boulevard.		\$-	\$20,000	\$-	\$-	\$20,000	\$20,000
V-23		✓		✓			Coordinate adaptive traffic signal control system with Miami-Dade County..		\$-	\$10,000	\$-	\$-	\$10,000	\$10,000
V-24			✓	✓			Coordinate with DTPW and FDOT on implementation of TIP projects in Table 7.5.	Minimal costs to City. Total of design and construction cost is \$1.12 million.	\$-	\$2,500	\$-	\$-	\$2,500	\$2,500
V-25			✓	✓			Coordinate implementation of City funded projects in Table 7.6.	Excludes traffic calming capital costs.	\$5,498,000	\$384,860	\$989,640	\$549,800	\$1,924,300	\$7,422,300
SUBTOTAL									\$6,955,000	\$629,350	\$1,251,900	\$695,500	2,576,750	\$9,531,750

* NOTE: Short Range 1-2 years Medium Range 3-5 years Long Range 6-10 years | FDOT - Florida Dept. of Transportation DTPW - Miami-Dade Dept. of Transp. & Public Works

CORAL GABLES®

THE CITY BEAUTIFUL



8

TRAFFIC
CALMING



TABLE OF CONTENTS

#	Title	Page
8	Traffic Calming.....	8-1
8.1	Context	8-1
8.2	Analysis	8-12
8.3	Recommendations	8-35
 Figures		
8.1	Likelihood of Pedestrian Harm Versus Vehicle Speed	8-1
8.2	Existing Traffic Calming Devices.....	8-2
8.3	Typical Intersection Circle.....	8-3
8.4	Roundabout at Blue Road and Alhambra Circle.....	8-3
8.5	Existing Median Divider.....	8-3
8.6	Curvilinear T-Intersection	8-3
8.7	Biltmore Drive Speed Humps.....	8-4
8.8	85th Percentile Speed	8-7
8.9	Intersection Controls and Street Flow Continuity.....	8-7 - 8-8
8.10	Pre-Approved Traffic Calming Devices.....	8-9
8.11	Pre-Approved Traffic Calming Devices.....	8-10
8.12	Other Types of Traffic Calming Devices.....	8-11
8.13	Pace Car Application Form.....	8-12
8.14	Citizen Input on Traffic Calming	8-14
8.15	Example Public Comments from 2018	
	Open House Meetings	8-15
8.16	Mapping of All Citizen Comments	8-15 - 8-16
8.17	Existing Traffic Calming, Those in Design, and Barricaded Street Ends.....	8-16
8.18	Locations Tested Against the New Traffic Calming Warrants	8-17
8.19	Prior Two Figures Combined	8-17
8.20	Analysis Area A Impacts.....	8-20
8.21	Analysis Area A Proposals.....	8-21

#	Title	Page
8.22	Analysis Area A Intersection Proposals - Preliminary Concepts	8-22
8.23	Country Club Prada at San Marco Avenue Concepts (Looking Southeast) - Preliminary Concepts.....	8-23
8.24	Columbus Boulevard at Venetian Terrace Proposed Roundabout	8-24
8.25	Analysis Area B Impacts	8-26
8.26	Analysis Area B Proposals	8-26
8.27	Analysis Area B Intersection Proposals.....	8-27 - 8-28
8.28	Riviera Drive at Toledo Street and Banos Court	8-28
8.29	Toledo Street and Toledo Plaza Realignment	8-29
8.30	Analysis Area C Impacts	8-30
8.31	Analysis Area C Proposals	8-30
8.32	Segovia Street and San Esteban Street Intersection - Preliminary Concept	8-31
8.33	Analysis Area D Impacts	8-32
8.34	Analysis Area D Proposals	8-33
8.35	Menendez Avenue/Amalfi Avenue/Maggiore Street Roundabout - Preliminary Changes	8-33
8.36	Menendez Avenue/Amalfi Avenue/Maggiore Street Roundabout Rendering	8-34
8.37	Edgewater Drive Treatments - T-Intersection at Douglas Road and Median Dividers.....	8-34

Tables

8.1	Revised Traffic Calming Methodology for Residential Streets Only.....	8-5
8.2	Examples from Traffic Calming Tracking Table.....	8-18
8.3	Traffic Calming Actions.....	8-36

TRAFFIC CALMING

Traffic calming works to

Reduce

traffic

speed & volume through

Horizontal and

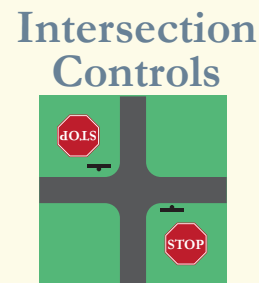
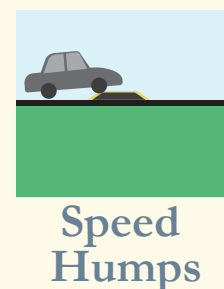
Vertical

deflection of vehicles



Smart phone apps are routing through traffic through local streets

Many types of traffic calming devices:

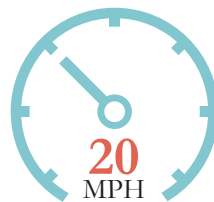


82 existing traffic circles & roundabouts

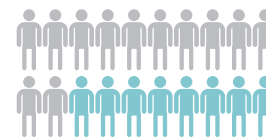
Speed humps and speed cushions can reduce speeds on residential streets by more than

20%

Slower speeds reduce pedestrian risk



13% Likelihood of fatality or severe injury



40% Likelihood of fatality or severe injury



73% Likelihood of fatality or severe injury

Source: *Impact Speed and a Pedestrian's Risk of Severe Injury or Death*, Brian Effete, AAA Foundation for Traffic Safety, 2011

8 TRAFFIC CALMING

Traffic calming in Coral Gables is focused on reducing the impact of excessive traffic volumes and speed on residential neighborhoods. One of the best ways to improve neighborhood livability and safety is to reduce traffic speeds while discouraging cut-through traffic.

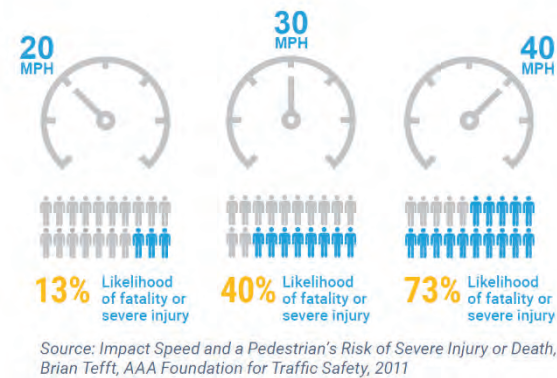
A robust definition of traffic calming was developed by the Federal Highway Administration (FHWA) and the Institute of Transportation Engineers (ITE) for the online ePrimer for Traffic Calming (https://safety.fhwa.dot.gov/speedmgt/ePrimer_modules/module2.cfm#mod21). That definition follows:

The primary purpose of traffic calming is to support the livability and vitality of residential and commercial areas through improvements in non-motorist safety, mobility, and comfort. These objectives are typically achieved by reducing vehicle speeds or volumes on a single street or a street network. Traffic calming measures consist of horizontal, vertical, lane narrowing, roadside, and other features that use self-enforcing physical or psycho-perception means to produce desired effects.

8.1 CONTEXT

Neighborhoods are the heart of the community, and the City places high importance on “neighborhood livability”. Managing traffic in neighborhoods through traffic calming is part of that bigger picture. Many residential districts in the City experience cut-through traffic, and the city has received numerous complaints about excessive traffic speeds. High traffic speeds not only pose a risk to drivers and passengers, but to pedestrians as well. The likelihood of pedestrian fatalities increases substantially as traffic speeds approaches 40 mph, per **Figure 8.1**.

Figure 8.1: Likelihood of Pedestrian Harm Versus Vehicle Speed



The City has responded to these concerns by consistently pursuing the installation of traffic calming devices in locations demonstrating excessive speeding or traffic volumes. **Figure 8.2** shows the location of traffic calming devices in place at the beginning of this plan preparation.

Figure 8.2: Existing Traffic Calming Devices

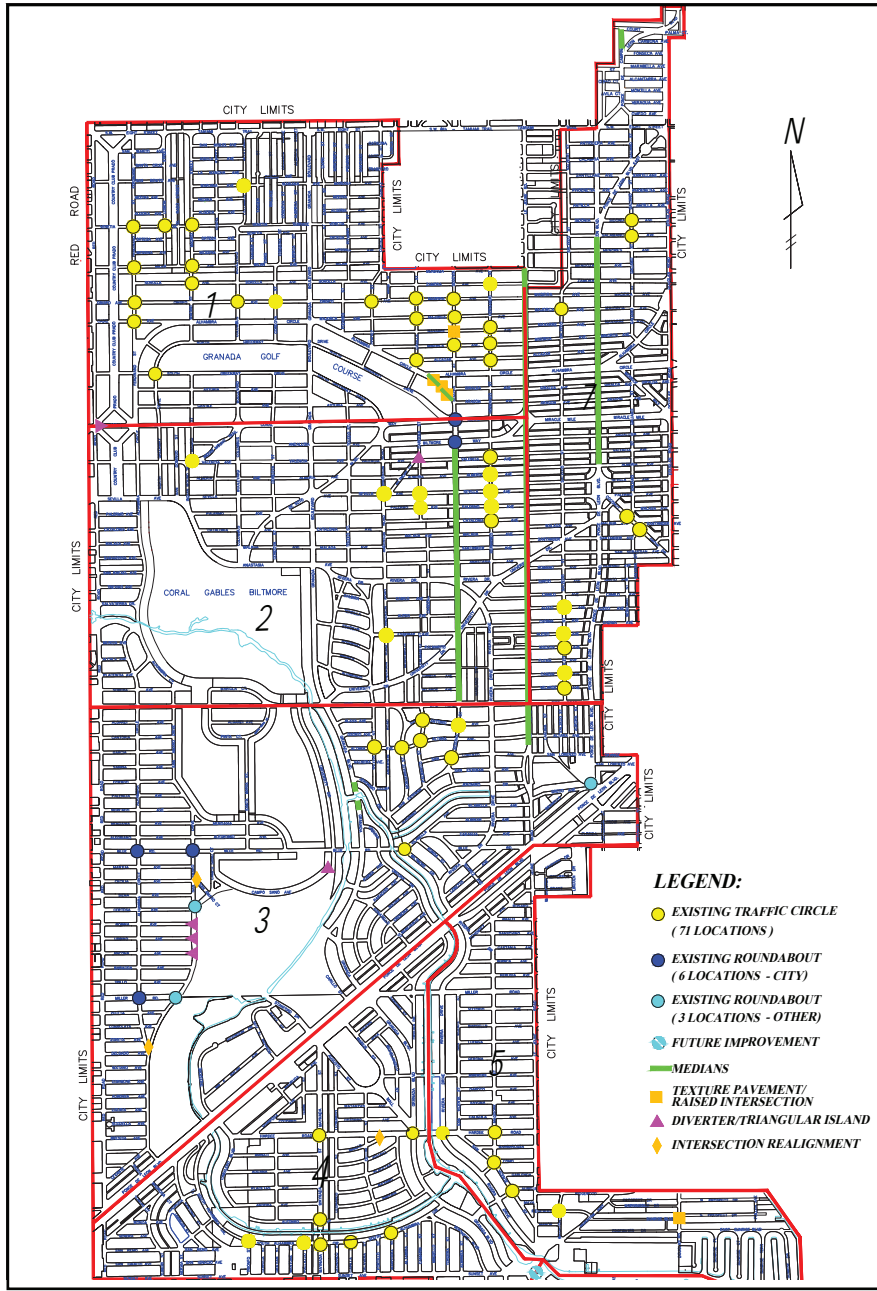
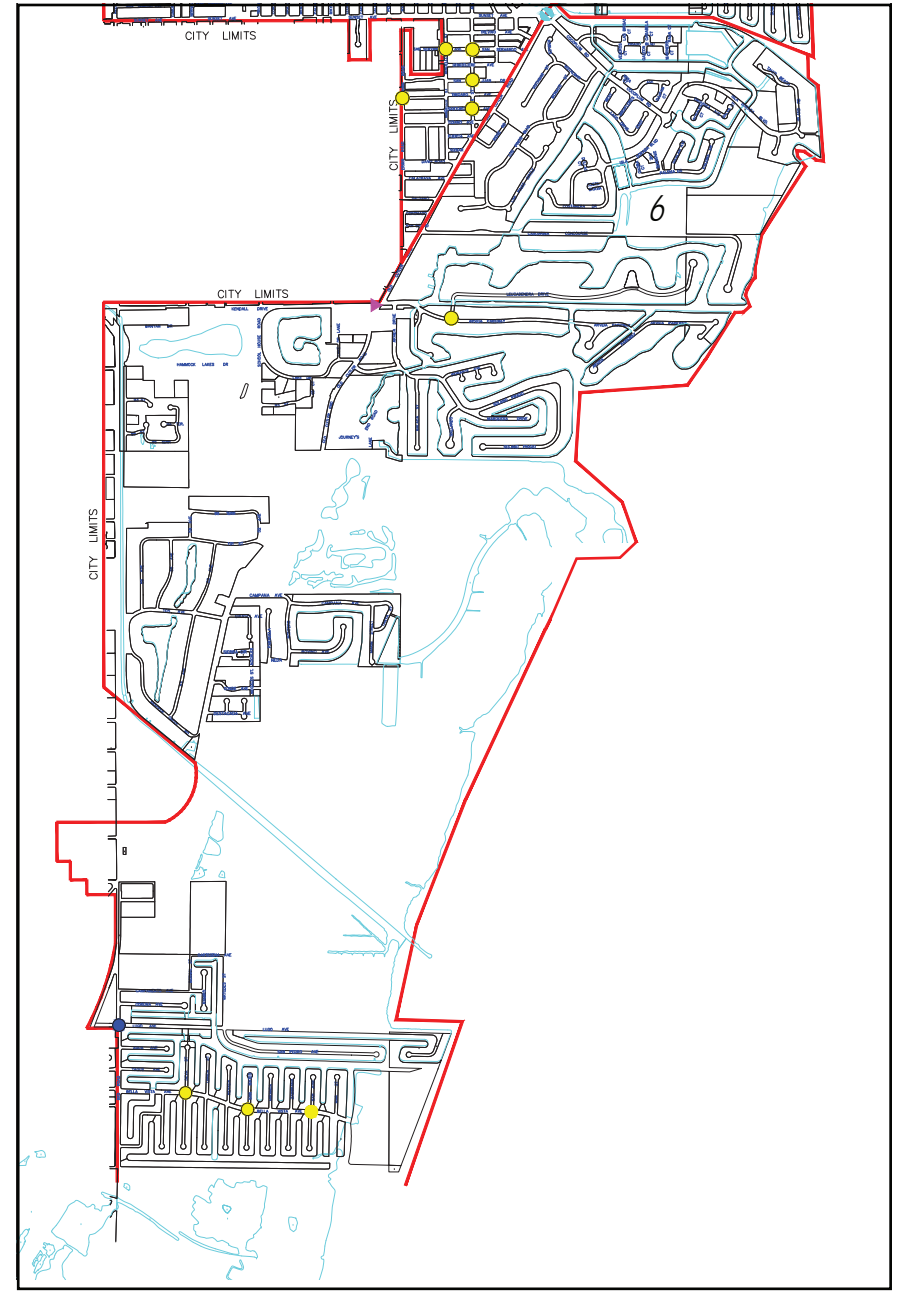


Figure 8.2: Existing Traffic Calming Devices (Continued)



Examples of the types of traffic control devices that the City has deployed are shown in **Figures 8.3 through 8.6.**

Figure 8.3: Typical Intersection Circle



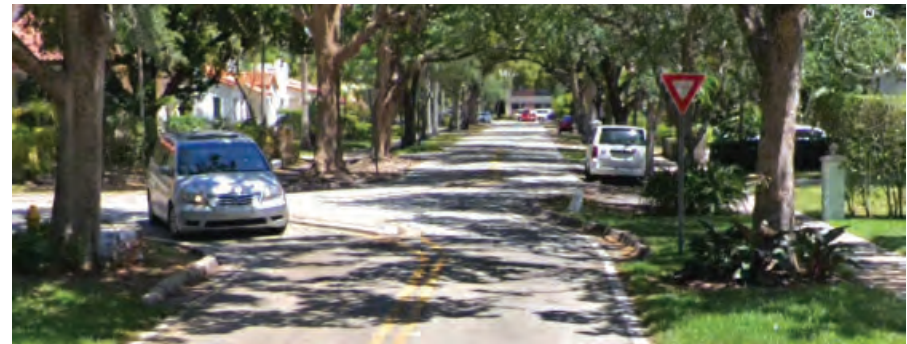
Figure 8.4: Roundabout at Blue Road and Albambra Circle



Figure 8.5: Existing Median Divider



Figure 8.6: Curvilinear T-Intersection



More recently the City has been in the process of installing speed humps or speed tables to more effectively control vehicle speeds. **Figure 8.7** references a Miami Herald traffic calming story which featured temporary speed cushions on Biltmore Drive.

Figure 8.7: Biltmore Drive Speed Humps



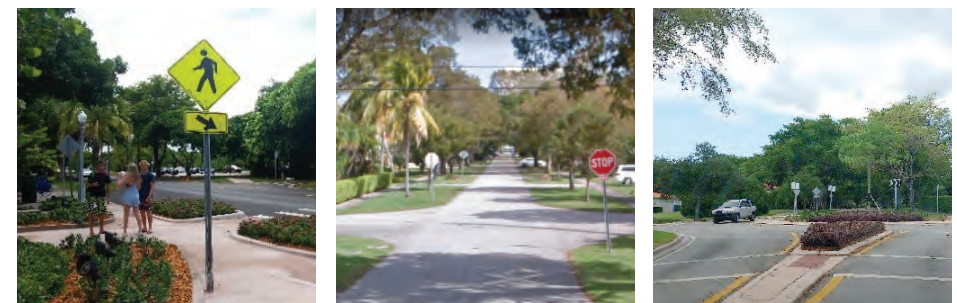
However, under agreements with a city, the County can delegate certain authority over traffic calming management to that city. Coral Gables decided to pursue a new traffic calming agreement with the County that was more tailored to the needs of the City, would establish a different threshold methodology, and would grant the City more authority over some traffic calming decisions.

The process of negotiations and approval of the new agreement with the County took almost two years, but the outcome of the agreement will make more local Coral Gables streets eligible for traffic calming.

The new traffic calming agreement, approved in August 2018, provides for:

- Traffic calming thresholds better tailored to Coral Gables residential streets.
- Pre-approval by the County of specific traffic calming treatments.
- More investigation still required for treatments not pre-approved for use in the City.

The new Coral Gables traffic calming methodology uses a point system and is shown in **Table 8.1**. Proposed locations for traffic calming improvements are evaluated against the list of factors shown, including traffic volume and traffic speed, and points are awarded accordingly. Those sites with more than 10 points are eligible for possible traffic calming improvement actions.



A rubberized speed hump is designed to slow the streams of rush-hour traffic on Blue Road in Coral Gables.

Source: Posted on November 5, 2018 – Miami Herald: “ Sick of speeders on your street? Put away the middle finger, try ‘traffic calming’ “

Traffic Calming Management

Traffic calming management is a traffic engineering function involving problem identification, data collection and technical analysis, development of engineering plans, and construction of the improvement.

Locally, Miami-Dade County has an oversight role for all public streets, with approval authority over roadway geometry and traffic controls. The County has established rules pertaining to analysis and approval of traffic calming improvements. In the past, applying the standard County traffic calming thresholds led to few sites of concern in Coral Gables being eligible for traffic calming improvement actions.

Table 8.1: Revised Traffic Calming Methodology for Residential Streets Only

	Narrow Residential Local Street	Residential Local Street	Residential Collector Street	Points
Daily Volume	0 to 500 VPD	0 to 1,000 VPD	0 to 2,000 VPD	0
	501 to 750 VPD	1,001 to 1,250 VPD	2,001 to 2,500 VPD	1
	751 to 1,100 VPD	1,251 to 1,750 VPD	2,501 to 3,000 VPD	2
	1,101 to 1,700 VPD	1,751 to 2,500 VPD	3,001 to 4,000 VPD	3
	1,701 to 2,300 VPD	2,501 to 3,000 VPD	4,001 to 5,000 VPD	4
	> 2,300 VPD	> 3,000 VPD	5,001 to 8,000 VPD	5
85th Percentile Speed	0 to 1.0 MPH > speed limit			0
	1.1 to 2.0 MPH > speed limit			1
	2.1 to 3.0 MPH > speed limit			2
	3.1 to 4.0 MPH > speed limit			3
	4.1 to 5.0 MPH > speed limit			4
	5.1 to 6.0 MPH > speed limit			5
	6.1 to 7.0 MPH > speed limit			6
	7.1 to 8.0 MPH > speed limit			7
	8.1 to 9.0 MPH > speed limit			8
	9.1 to 10.0 MPH > speed limit			9
	> 10 MPH > speed limit			10
Presence of Pedestrian Facilities	Both sides			0
	One Side			1.5
	None			3
Pedestrian Generators	Schools within 0.5 miles (each)			1
	Parks within 0.5 miles (each)			0.5
	Transit lines with stops			0.5
Number of correctable crashes	≥ 10 Driveway per 500 feet (Circular driveways should be considered as one)			1
	≥ 3 per year		≥ 6 per year	5

The general steps in the traffic calming problems process are listed here:

1. A traffic calming issue is identified by City staff or the public.
2. Traffic speed and volume data, as well as other needed data, is collected at the specific location.
3. Data and criterion are tested to determine if the traffic calming threshold is met.
4. If the traffic calming warrant is met, the traffic calming solution is designed.
5. The traffic calming solution is voted on by homeowners, with the approval requiring 50% or more of the homeowners.
6. If approved by the homeowners, then the traffic calming solution is constructed once funds are programmed.

The flow chart below summarizes the traffic calming project process:

There are a variety of technical considerations in the evaluation of the need for a traffic calming improvement. These include the following:

- Traffic volume data
- Traffic speed data (85th percentile speed)
- Street width
- Functional classification
- Historical designation, if any
- Speed limits
- Sidewalks
- Existing traffic calming features
- Street responsibility (city, county, state)
- Bicycle facilities (existing and planned)
- Traffic flow continuity
- Proximity to pedestrian/bicycle activity generators

Key factors include the traffic volume and traffic speed data collected for the proposed improvement site as well as other existing traffic calming features nearby.

Figure 8.8 shows a graph of the 85th percentile speed concept. The 85th percentile speed is the speed at which 85% of observed traffic **travels at or below**.

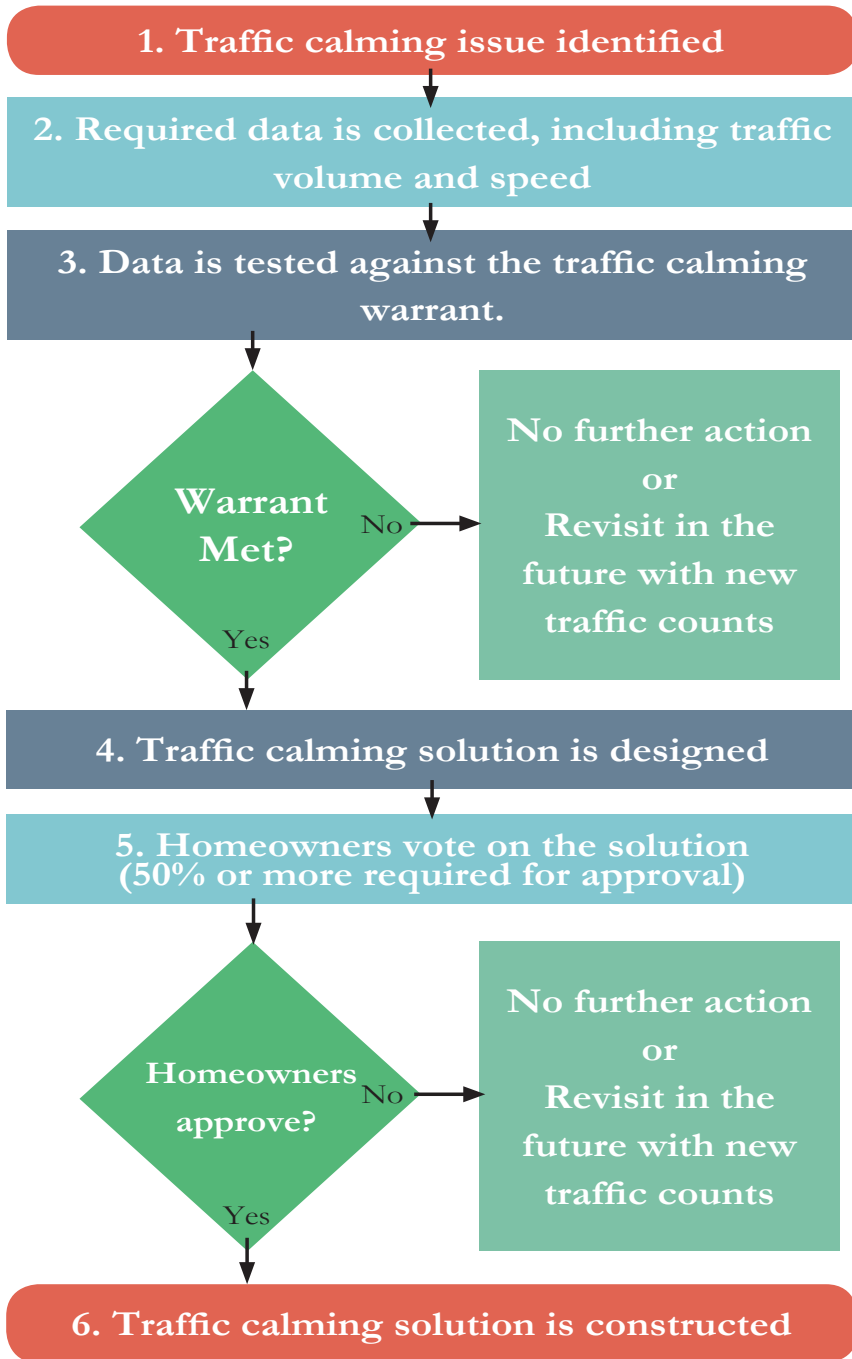


Figure 8.8: 85th Percentile Speed

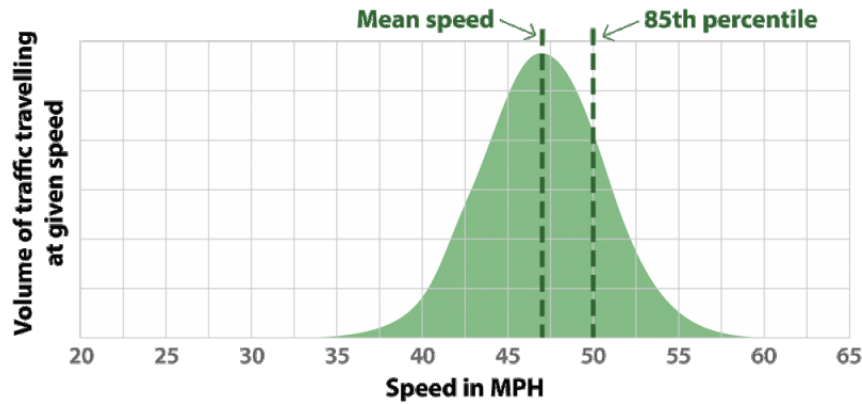
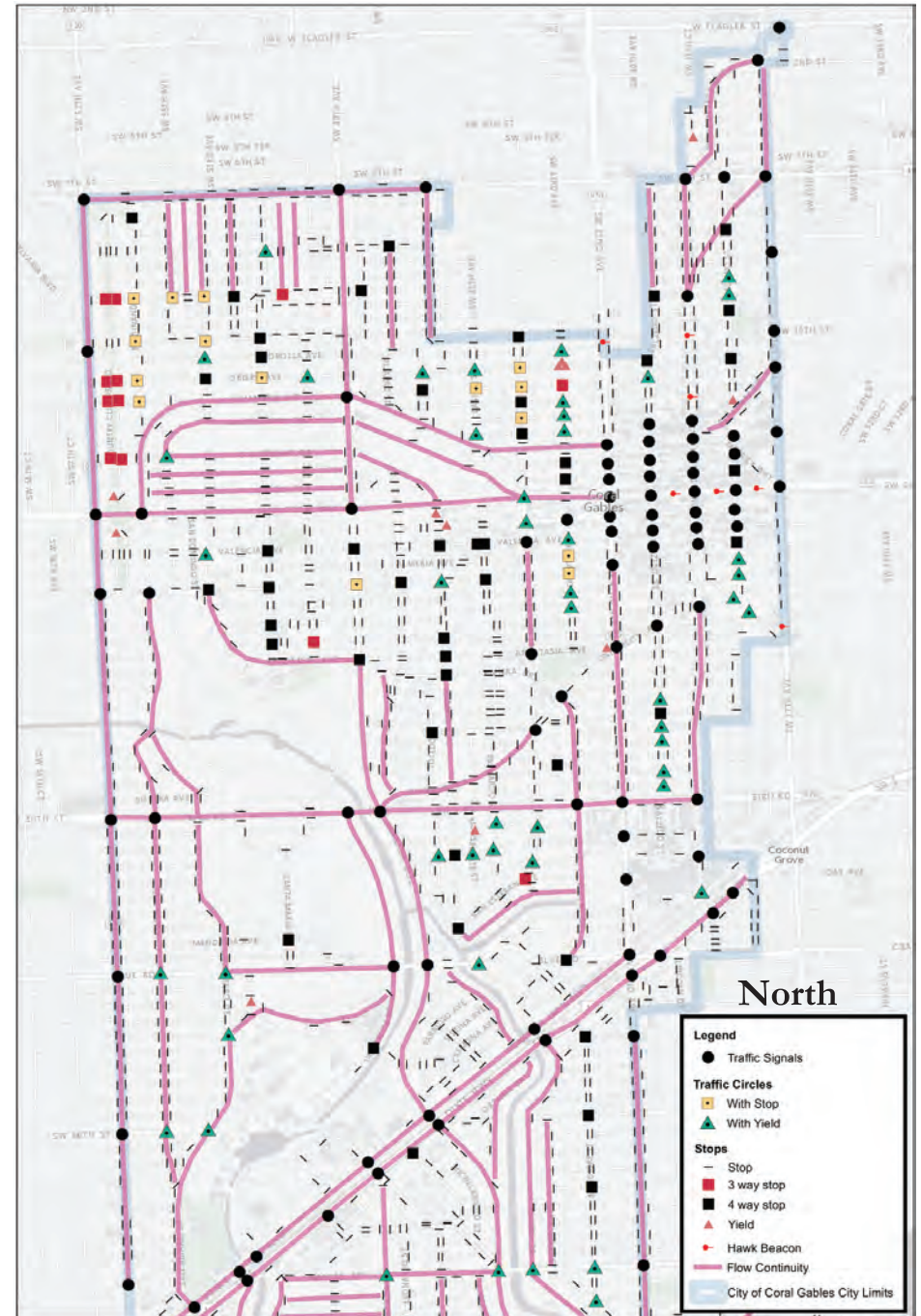


Figure 8.9: Intersection Controls and Street Flow Continuity

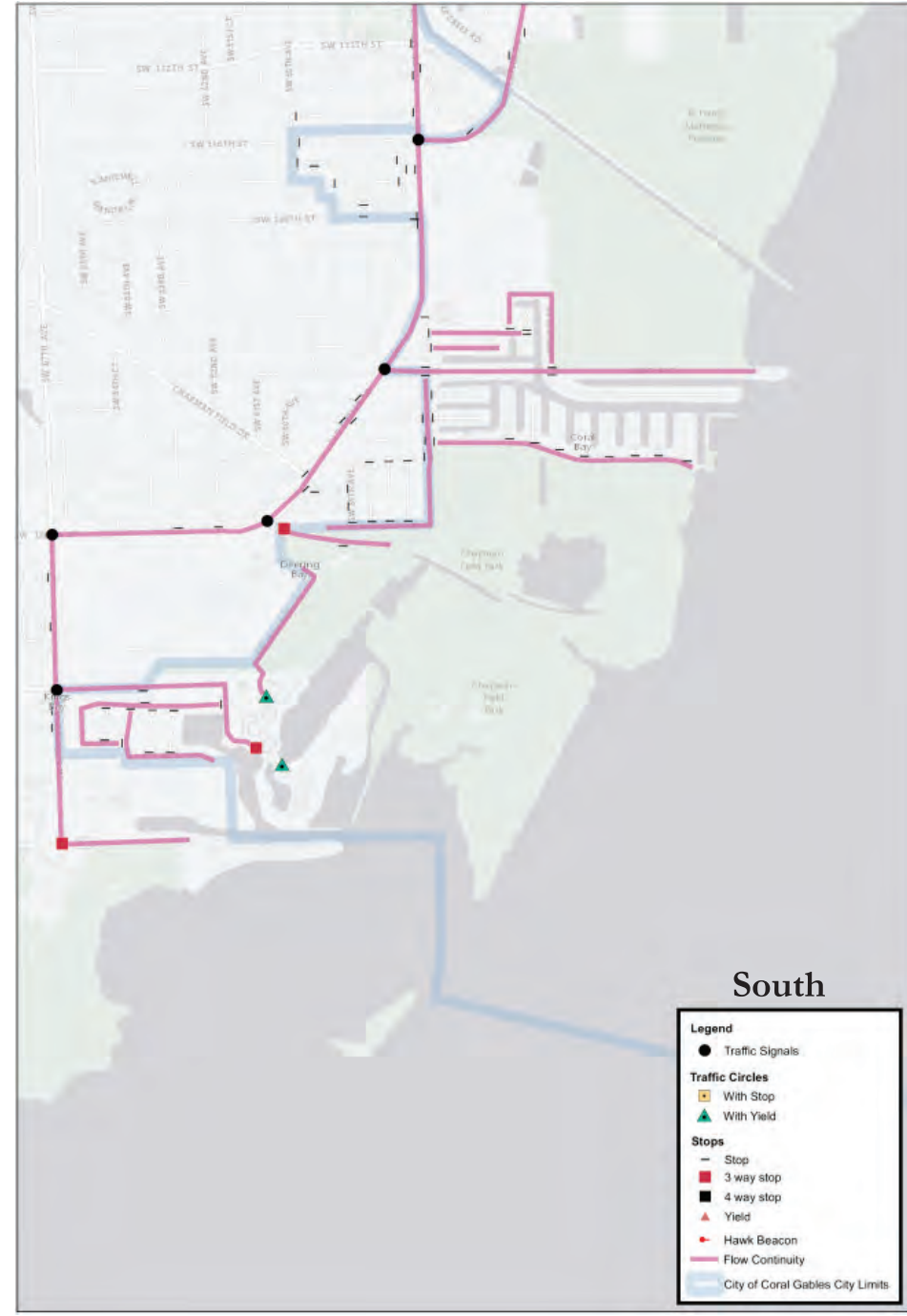
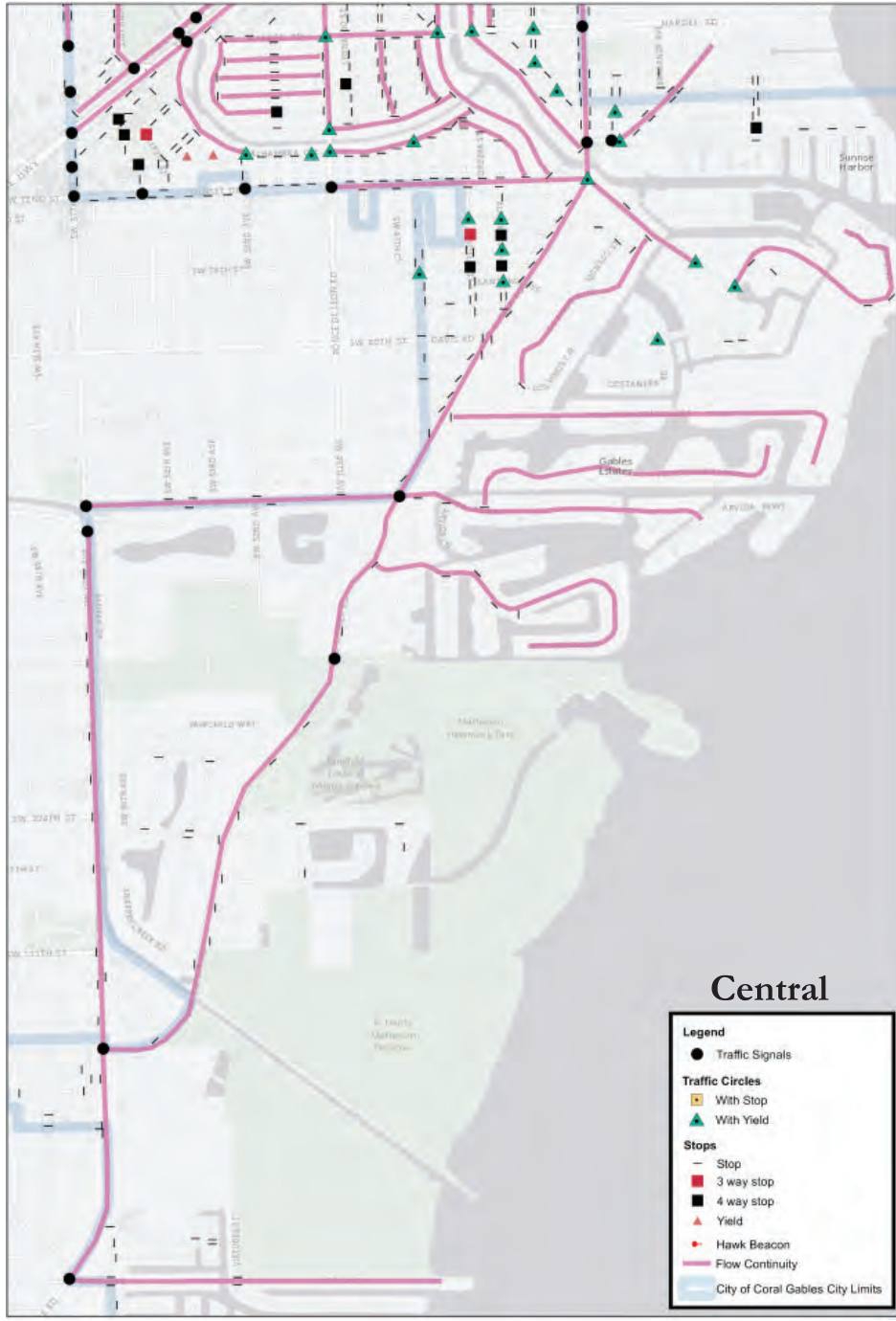


Other key considerations include the location of existing traffic control devices, as shown in **Figure 8.8**, as well as existing intersection traffic controls. As part of this plan, traffic controls at all intersections in the City were inventoried and mapped as shown in **Figure 8.9**. Besides showing intersection controls themselves, the figure also shows “traffic flow continuity”, those street segments where traffic control types and orientation permit the unimpeded flow of vehicles along a street. Long segments of uninterrupted traffic flow can be expected on major arterial streets.

However, where they appear on local streets, there can be opportunities to modify intersection controls to shorten segments of flow continuity, especially where there are traffic calming concerns. Installing stop signs and signals, where warranted, on local streets can also improve pedestrian connectivity and create safer intersection crossings. The figure shows several local street segments that may be candidates for strategic revisions to intersection traffic controls.

Figure 8.9: Intersection Controls and Street Flow Continuity (Continued)

Figure 8.9: Intersection Controls and Street Flow Continuity (Continued)



Under its new traffic calming agreement with Miami-Dade County, there are presently five “pre-approved” traffic calming devices in the traffic calming toolkit that the City can install at sites which meet the new traffic calming threshold. The advantages of using these devices is that they require no further County review and thus allow for quicker turnaround in implementation. These pre-approved devices are:

- **Speed humps and speed tables:** These have raised shapes that force vehicles to travel at an acceptable speed to negotiate the device, which extends across the entire road. The speed table can also be used for a mid-block pedestrian crossing.
- **Speed cushions:** These are like speed humps but do not extend across the entire road. They are designed so that cars have to slow down, but wider axle vehicles such as fire trucks do not need to slow down.
- **Pedestrian crossings:** These are denoted by signing and pavement markings for the passage of pedestrians across a street. They could be used with a speed table as described previously.
- **Traffic circles/roundabouts:** These devices involve the placement of a central raised area in an intersection, requiring vehicles to move in a circular manner to exit the intersection. The center island is usually landscaped. Approaches typically have a splitter island to direct traffic into and out of the circle. Coral Gables has already installed dozens of circles and roundabouts across the city. Traffic circles are small radius circles that fit within small intersections, with usually with limited pavement markings and no splitter islands. Roundabouts are larger radius circles with full design features including splitter islands, center aprons to accommodate larger vehicles, and pedestrian crossings integrated into the design.
- **Raised intersections:** These devices are like speed tables but cover an entire intersection. The intersection platform is raised above the level of

the intersecting streets, and often has a brick pattern.

Figure 8.10 illustrates these five traffic control devices.

Figure 8.10: Pre-Approved Traffic Calming Devices

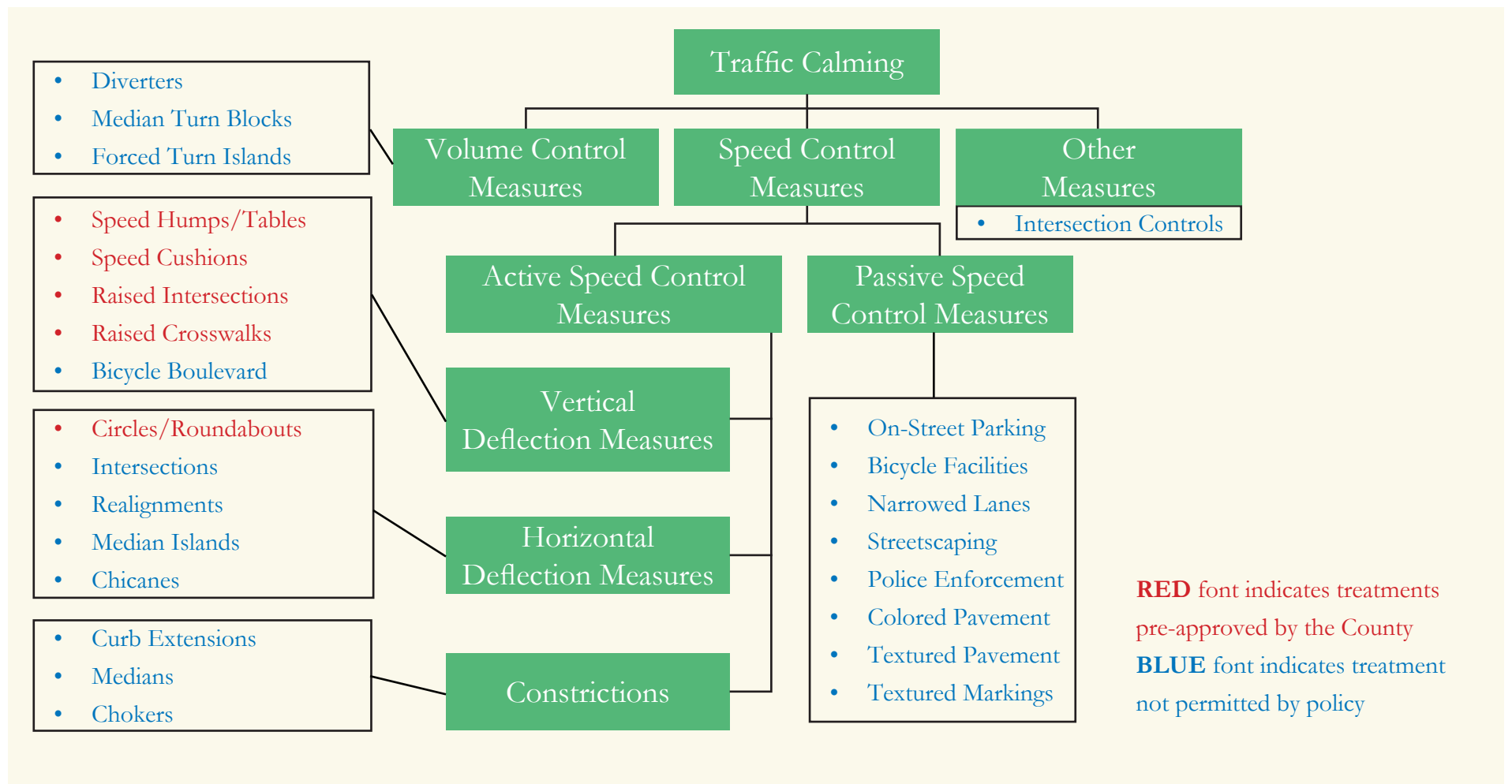


There are several other traffic control devices that can be considered to address particular traffic concerns in neighborhoods. By policy, the City will not use those types of devices shown in bright blue type that block or close off movements at intersections. In **Figure 8.11** are a variety of traffic calming devices, organized into several categories. Under speed control measures are active and passive treatments. Shown in red are those devices which are pre-approved by the County, and in dark blue, other potential traffic control devices which could be considered.

Examples of some of the other traffic calming options include the following:

- **Raised medians:** These can be used in mid-block areas to constrain the roadway and force slower travel speeds, or at intersections to better define turning patterns.
- **Chicanes:** These devices introduce curved travel paths into the roadway alignment, also to manage travel speeds of vehicles.
- **Chokers:** These are a less commonly used traffic calming device that

Figure 8.11: Pre-Approved Traffic Calming Devices



require opposing traffic movements to yield to each other in order to traverse the device.

- **Intersection controls:** The application of intersections controls should conform to accepted traffic engineering practice for warrants and usage, but there are situations where their appropriate use can contribute to traffic calming.
- **Intersection realignments:** These treatments are another way to improve driver understanding and expected behavior at intersections, usually by simplifying intersection geometry and removing confusing paved areas.
- **Bulb-outs:** These are another geometric treatment to better define intersection geometry and in some cases shorten the length of pedestrian crosswalks.

These traffic calming treatments are shown in **Figure 8.12**.

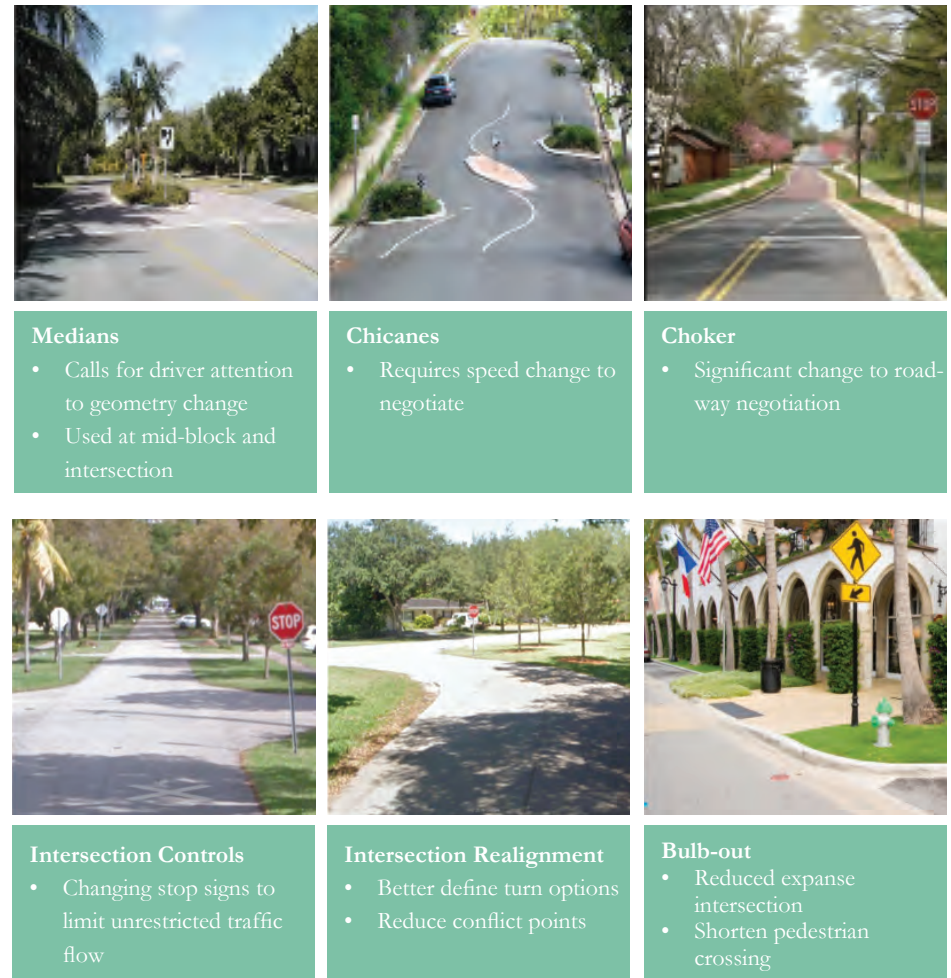
Traffic calming treatments can address concerns about vehicular volumes and speeds in residential districts, and in so doing, contribute to enhanced neighborhood livability.

Other Neighborhood Livability Initiatives

Speed Limit Reduction

During the development of this transportation plan, the City undertook the process of seeking to reduce neighborhood speed limits from a statutory 30 mph to 25 mph. The purpose of this effort was to reduce typical vehicular speeds on neighborhoods to enhance safety for other users of the street, and in so doing make excessive speeds incrementally easier to enforce by virtue of the 25 mph threshold versus a 30 mph threshold. Typically police do not issue tickets unless speeds about 7 mph over the limit are observed to allow for arguments in court regarding speed measurement device accuracy.

Figure 8.12: Other Types of Traffic Calming Devices



This speed limit change required to conduct an organized collection of vehicle speed data at 25 residential locations across the City for a seven-day period. The results of that data collection and analysis demonstrated results that met the thresholds for speed limit reduction. The City petitioned Miami-Dade County with the results of the study, and in August 2018 received approval for the speed reduction to 25 mph in neighborhoods. About 70% of attendees at the first round of open houses conducted for this plan supported the speed limit reduction.

The City designed a signing plan to post the new speed limits on the perimeters of neighborhoods, and procured a contractor to implement the sign installations. A publicity and education effort was undertaken as well to make residents and others aware of the change. The City plans to conduct future speed studies to assess the effectiveness of the speed limit change.



Pace Car Program

The City promotes the Pace Car Program which enlists residents to drive prudently in neighborhoods. By operating at the 25 mph speed limit, Pace Car drivers demonstrate compliance and can cause following cars to experience the same. Participants receive a Neighborhood Pace Car magnet if they pledge to:

- Be aware of their speed and observe the speed limit.
- Slow down near schools and other areas such as playgrounds, parks, residential streets where children are present.
- Always yield to pedestrians crossing the street
- Come to a complete stop at stop signs and then look carefully before proceeding.
- Be courteous to bicyclists and other road users
- Not tailgate.
- Not block walkways, bike lanes, or driveways when parking.
- Consider using alternate means of transportation and consolidate car trips to lessen traffic on residential streets.
- Display the Pace Car Bumper Sticker on their vehicle so other drivers know why they are driving courteously and at a safe speed.
- Encourage others to sign the pledge. The more Pace Car drivers, the safer City streets will become.

Figure 8.13 shows the Pace Car application form.

Figure 8.13 Pace Car Application Form

8.2 ANALYSIS

This subsection addresses the development of traffic calming actions that begin to address issues identified by the public in a manner compatible with the context and requirements for traffic calming as discussed in the previous subsection.

Traffic Calming Process Summary

The traffic calming analysis performed as part of this transportation plan development consisted of these basic steps:

1. The City provided a set of emails relating to traffic calming issues received in the Public Works Department from citizens extending back 2-3 years. There

were 143 emails in the data set.

2. The consultant created a tabulation of these comments referred to as the traffic calming tracking table, to include an identification number, date, traffic analysis zone, email sender and address, nature of the comment (speed issue, volume issue, other issue), and a short narrative summary of the comment. Using street addresses, the comments were geocoded and mapped by issue and ID number to provide a graphic depiction of patterns of distribution and issues.
3. Using available resources, 48 locations were selected for field data collection of vehicular speed data. Another 20 locations previously counted by the City yielded a total of 68 locations for which data became available
4. Another City consultant tested the 68 locations against the newly approved City traffic calming threshold to determine which sites met the required standard of at least 10 points when scored against the rating criteria. Of the 68 locations, 50 were found to satisfy the new traffic calming warrant.
5. For each site for which traffic calming comments were received, the consultant reviewed the comment content, the traffic calming warrant results, field conditions, and other relevant background data, including nearby traffic calming devices, traffic flow continuity, and citizen feedback from open house meetings.
6. Traffic calming improvement proposals were made for each location which met the new traffic calming warrant, based on the analysis and assessment. In some cases, proposals were made for nearby locations for which field speed counts and the subsequent warrant test had not been performed. This analysis was captured in the traffic calming tracking table. Proposals were posted onto mapping of City streets which also showed the locations of existing

traffic calming devices.

7. Another round of open house meetings at six locations around the City was conducted to present the traffic calming proposals to the public for reaction and feedback. The public comments related not only to the traffic calming proposals on the maps, but also to other additional traffic calming issues they perceived in their neighborhoods. These additional reported “problem areas” were added to the traffic calming tracking table: there were an additional 79 comments tabulated, for a total of 222 comments. Of those, 42 related to the City’s arterial streets and were segregated for consideration in Section 7 – Vehicles of the plan. The 60 net new traffic calming comments were not analyzed further but will be included with those traffic calming issue locations in the original group which have not yet been tested against the new traffic calming warrant.

Because of its scale, the City traffic calming program is a continuous, long-term effort. The City has been budgeting a significant amount of its operating and Capital Improvement Program funds to address further analysis, design, and construction of new traffic calming treatments.

As was discussed in Section 3 of this plan, extensive civic engagement occurred through the plan development process. This began with a kick-off meeting that was held at the Coral Gables Library. There were two additional rounds of open houses, the first consisting of five meetings in September 2017. At these meetings, additional public input was sought on a variety of topics, including neighborhood traffic issues. The second set of open houses were held in September/October 2018. At these meetings, proposals for traffic calming actions in neighborhoods were presented for feedback and additional input on traffic issues across the City was received as well.

Figure 8.14: Citizen Input on Traffic Calming

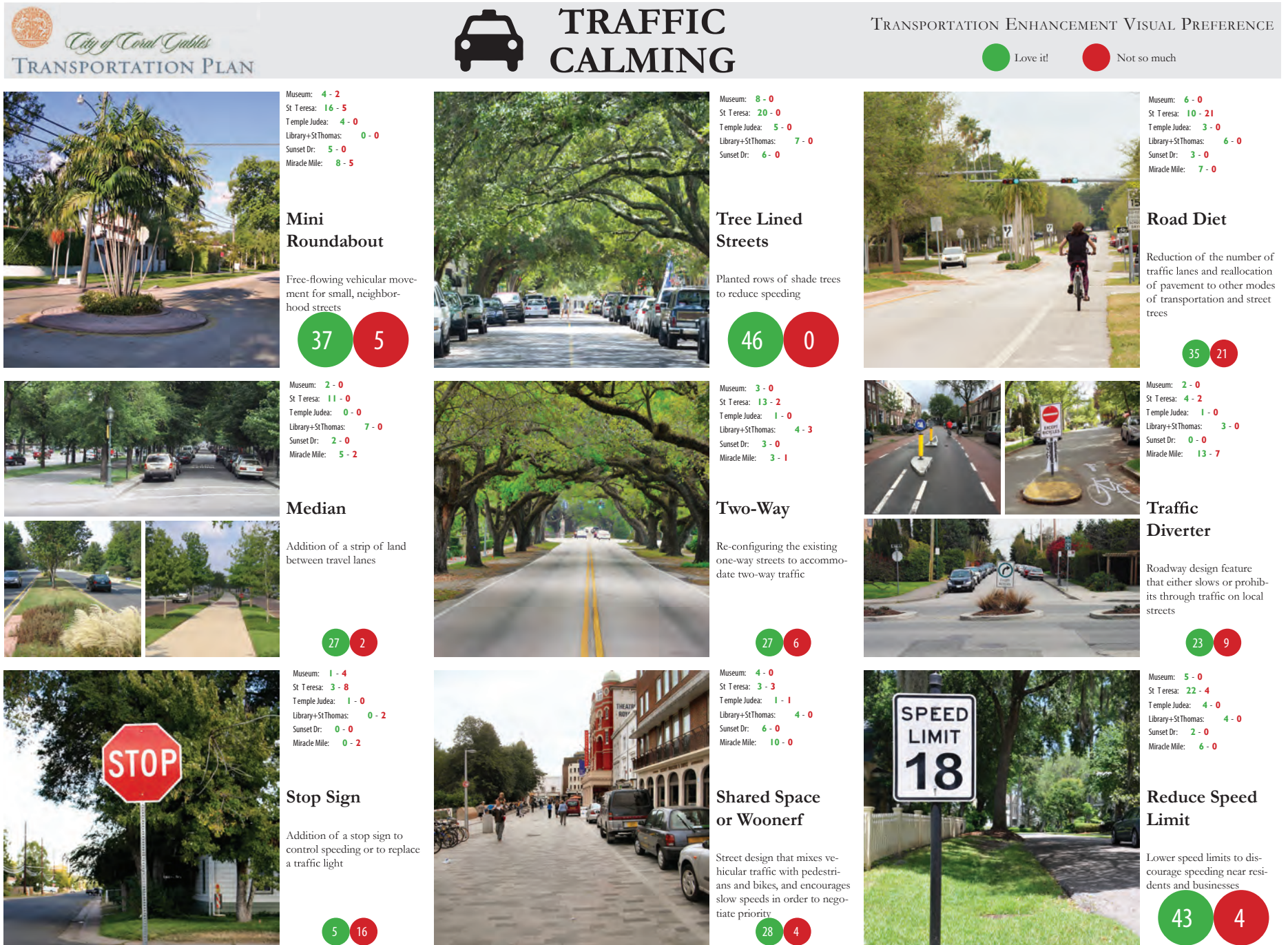


Figure 8.16: Mapping of All Citizen Traffic Calming Comments (Continued)

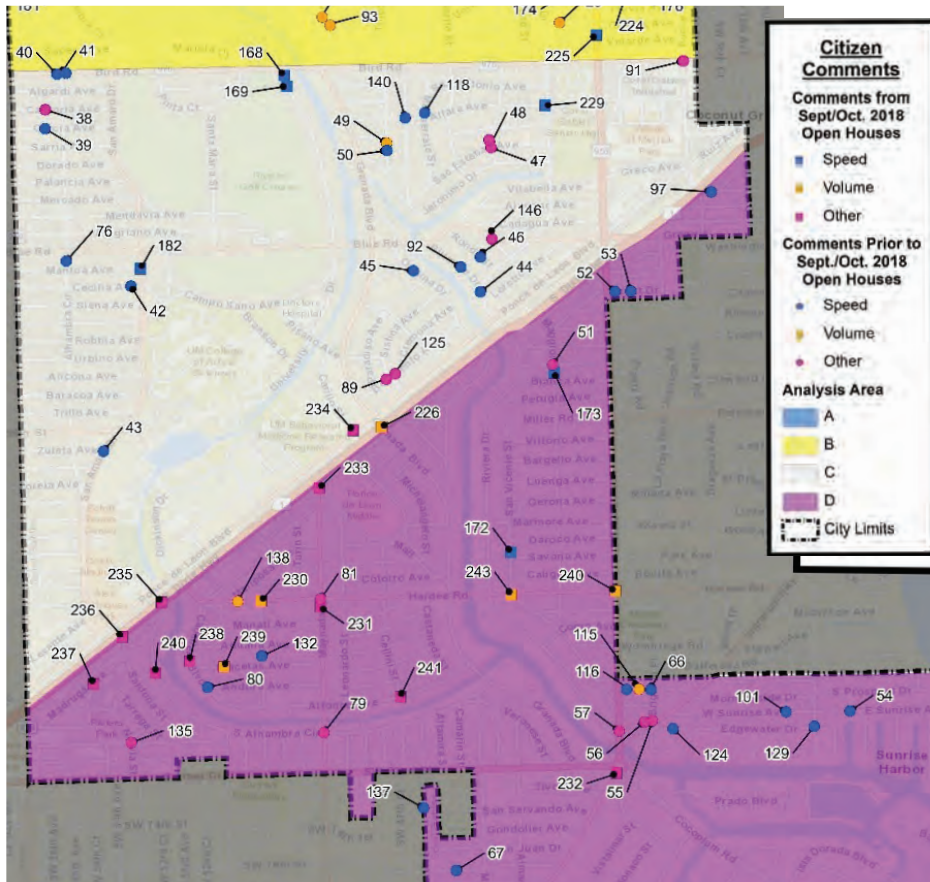
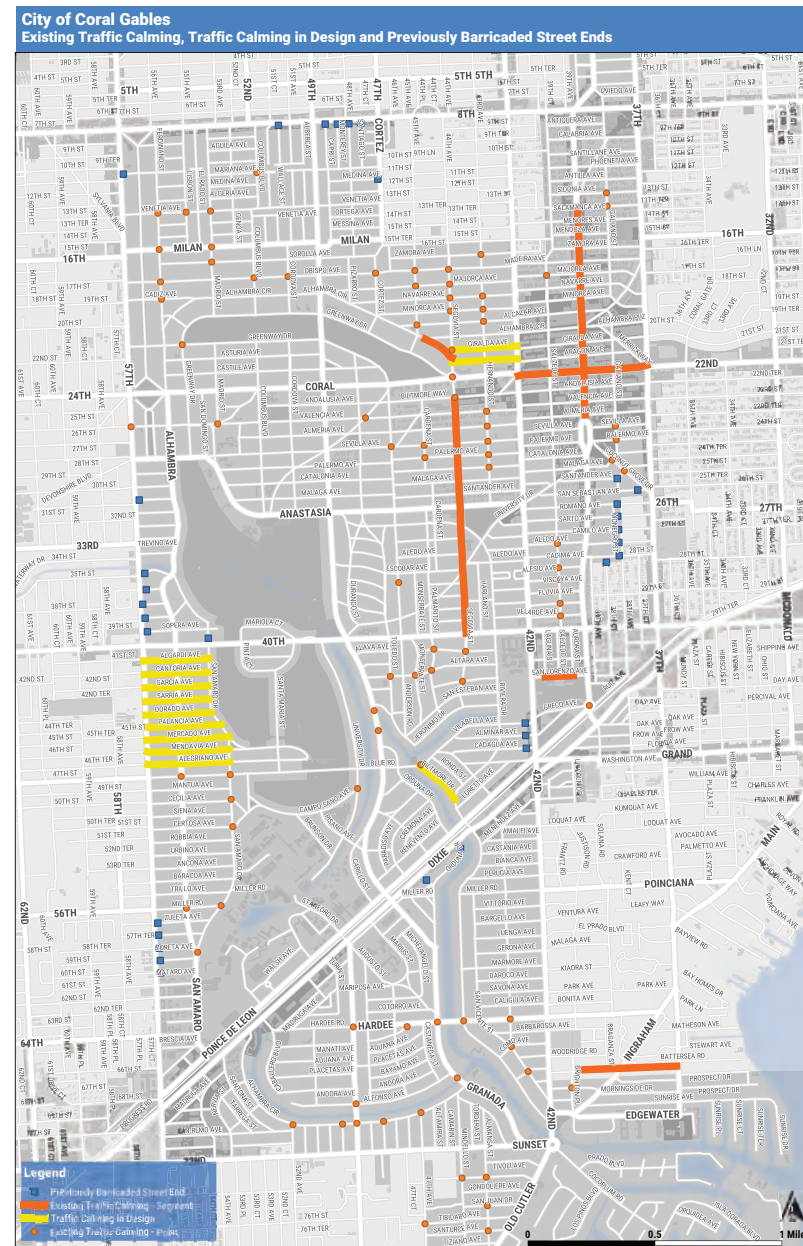


Figure 8.17: Existing Traffic Calming, Those in Design, and Barricaded Street Ends



As noted in the process description above, large maps depicting traffic calming proposals were prepared for the second round of open house meetings. Other exhibits depicting relevant background information and other residential area traffic improvement concepts were also presented.

Figure 8.17 shows the existing traffic calming devices in a simplified format. Figure 8.18 shows the locations that were tested for the new traffic calming warrant, included those which did and did not meet the required threshold. Figure 8.19 shows the information of the two preceding figures in a combined format. Table 8.2 provides an excerpt of the traffic calming tracking table which was used to record the supporting information and analysis.

Figure 8.18: Locations Tested Against the New Traffic Calming Warrants

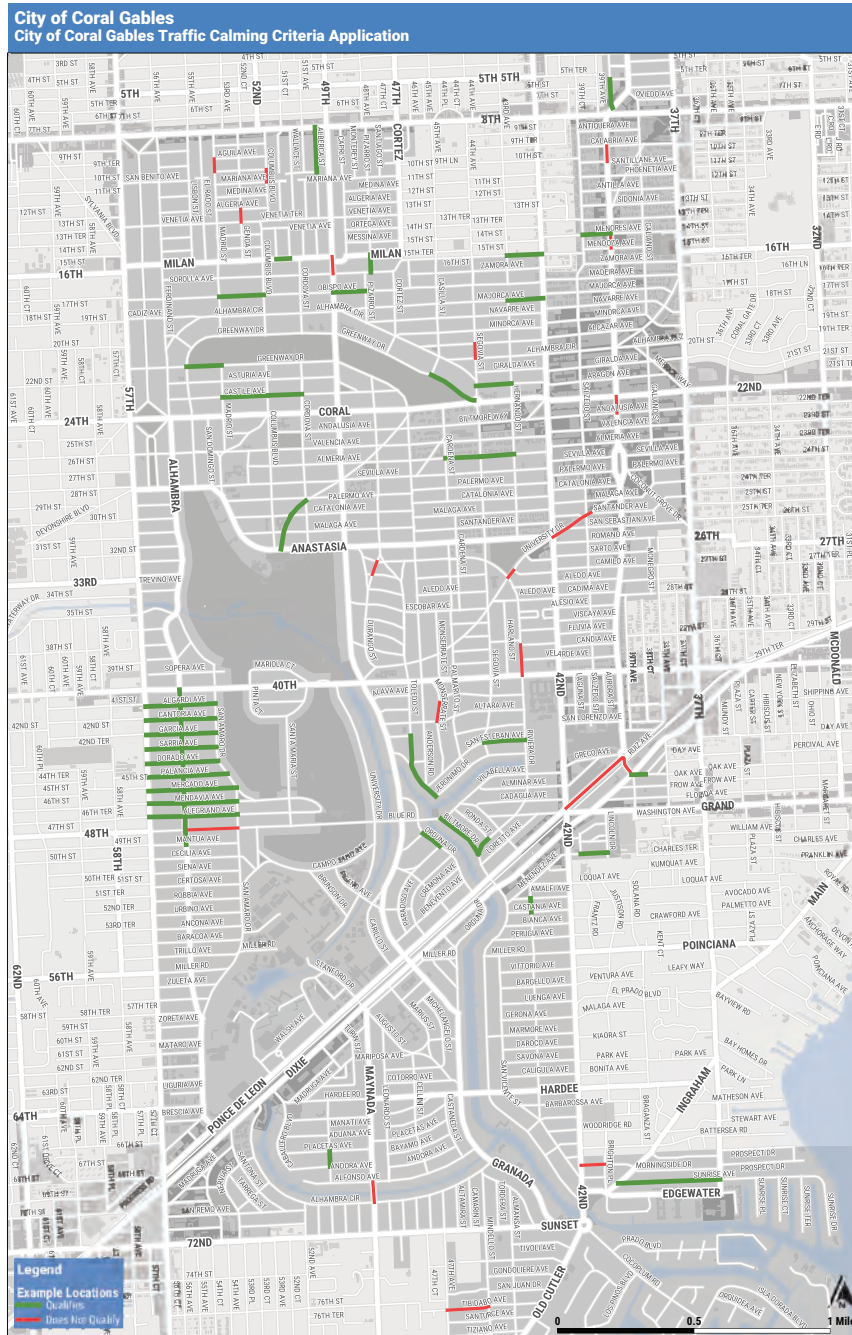


Figure 8.19: Prior Two Figures Combined

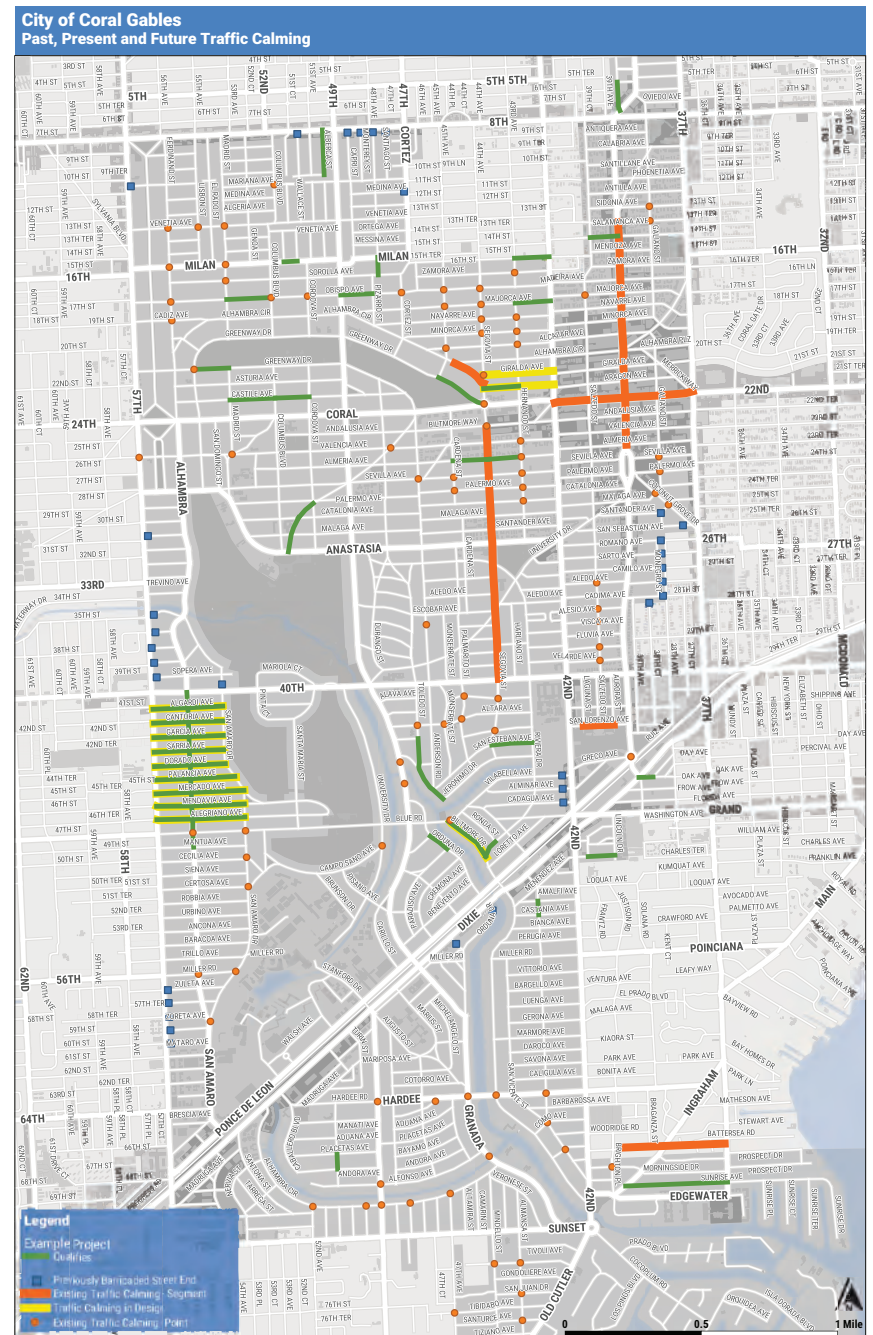


Table 8.2: Excerpt from Traffic Calming Tracking Table

1	A	B	C	D	E	F	G	H	I	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB
1	Prim	Sec	Thrd	4th	5th	Month	Year	Street_1	Street_2	Comment_Tv	Comment_Su	Notes	POINT	POINT	Fr	Mo	Traffic Calming	App	T	Traffic Calm	Act	Proposed Notes	Mail	Call	Act
69	120	S	7	0	8	March	2017	Mercado Avenue		Speeding	Traffic Calming	Requesting traffic calming due to speeding along Mercado across from the park	-80.25645763	25.15650040	120	Speed	T	A		Not tested	See notes	Not tested for TC threshold. Other adjacent streets should be reviewed to a similar problem if there are other issues. Proposed future traffic volume/speed control	S	3	20
70	121	S	1	1	5	March	2017	Lejune		Speeding		Speeding along Lejune all day long	-80.26211564	25.14698524	121	Speed	1	A		Not tested	See notes	Area of residential, not part of neighborhood viability effort	S	3	20
71	126	S	1	1	26	April	2017	Obispo	Red Road	Speeding		Continues traffic	-80.28157630	25.14662078	126	Speed	1	A		Not tested	See notes	Area of residential, not part of neighborhood viability effort	S	3	20
72	127	S	1	0	7	April	2017	Alberca Street		Speeding	Volume	Currently no speed limit signs on Alberca, mostly in PTP area. Does not want speed bumps, would prefer the area closed to adjacent ones.	-80.27624041	25.16206049	127	Speed	1	A	47	Tested, street traffic calming	Speed outflow	Planned to be replaced with 36" x 36" solar and LED. Camera does not work speed bump, reduce close the area which is not possible. Placement of table very difficult due to narrow street. Inquire about use of table for parking. Suggest 2 pairs of speed cushions to assist neighborhood leads.	S	1	2
73	128	S	1	0	6	March	2017	Pizzo Street	Ortega Avenue	Speeding	Stop sign	Speeding down Ortega, turning stop sign. Requesting 4-way stop at Pizzo/Ortega	-80.27376311	25.15657663	128	Speed	1	A		Not tested	Traffic circle	4 TC threshold limit, install circle at Pizzo/Ortega	S	3	4
74	130	S	1	1	11	January	2018	Mercado Avenue	Conce	Speeding	Traffic Calming	Requesting measures to address the traffic situation at this intersection	-80.27827600	25.15667600	130	Speed	1	A		Not tested	Intersection realignment	Install curbside T-intersection geometry at this intersection.	S	3	13
75	133	D	1	1	23	June	2017	Ansalia Avenue		Not speeding	No traffic problems	Looks like user accident, impeding traffic, there is not a traffic or speeding problem down this part of the road in this direction	-80.28320423	25.15044383	133	Other	1	A		Not tested	See notes	Commented	O	3	20
76	134	S	1	1	24	August	2017	Madeira Avenue	1100 Block	Speeding	Traffic Volume	Address speeding and traffic volume problem.	-80.27114534	25.15531100	134	Speed	1	A		Not tested	Speed hump	Install 1 speed hump TC threshold limit. Intersection realignment. Consider minor changes to north-south 7-block with no stop signs to help manage traffic speeds. Re-eval and meet TC threshold, propose to install 4 speed tables along Sabado St. between Salamanca Ave. and SW 96 street. See also 7/26/18	S	3	1
77	141	S	7	0	12	March	2017	Amiques	Sabado	Speeding	Cut-through traffic	Driver use Sabado as a shortcut to avoid Lejune and get to 9th and drive at dangerously high speeds.	*****	25.16362633	141	Speed	T	A		Not tested	Speed hump	Install 1 speed hump TC threshold limit. In between the 2 blocks of Sabado St. between Lejune and 9th street. See also item 26	S	3	1
78	142	V	1	1	20	March	2018	Soledad	Conce to Granada	Traffic Volume		Concerned about traffic volumes during rush hours	-80.27446707	25.15638566	142	Volume	1	A		Not tested	Speed hump	Install 1 speed hump TC threshold limit. In between the 2 blocks of Conce St. between Granada St. and SW 96 street. See also item 26	V	3	1
79	143	S	7	0	9	March	2017	Sabado	Sidonia	Speeding	Traffic Calming	Would like speed bumps on Sabado	*****	25.15361510	143	Speed	T	A		Not tested	Speed hump	Install 1 speed hump TC threshold limit. In between the 2 blocks of Sabado St. between Sidonia St. and SW 96 street. See also item 26	S	3	1
80	149	1						MIlan Ave	Columbo Blvd						149	1	A		Not tested	Traffic circle	Circle to calm traffic and streamline turn.	O	3	4	
81	150	1						Veneta Ave							150	1	A		Not tested	Traffic circle	Circle to calm traffic and streamline turn.	O	3	4	
82	151	1						Country Club Prado	San Marco Ave						151	1	A		Not tested	Traffic circle	Circle to calm traffic and streamline turn. Also Action 13 at south intersection	O	3	4	
83	152	1						MIlan Ave	Cordeira St						152	1	A		Not tested	Intersection realignment	Modify existing T intersection with curb/realignment	O	3	13	
84	153	1						Ansalia Avenue	Maded Street to Conce Street						153	1	A		S	Intersection control	In line with proposal for Calle Ave. Items 71, 72 and 73, reverse stop sign orientation from E to W	O	5	25	
85	154	1						N. Greene St	Maded Street to Conce Street						154	1	A		S	Intersection realignment	In line with proposal for N. Greene St. east of Columbus St. and for S. Greene St. between Columbus St. and N. Greene St. Install curb/realignment intersection geometry on N. Greene St. at intersections with Madel St., Columbus St., and Conce St.	O	5	13	
86	155	7						E. Ponce de Leon Blvd	Sanfilippo Avenue to Calabria Avenue						155	7	A		S	Intersection control	Propose making right-of-way intersection with one-way E to W on Calabria St. and one-way W to E on Caroline St.	O	5	16	
87	23	V	2	2	26	November	2014	Candia Avenue	Rivera to Lejune	Cut-through	Traffic Calming	Speed bumps/traffic calming/school bus using as cutthrough	*****	25.13632433	23	Volume	2	B	22	Tested, does NOT meet traffic calming threshold	See notes	Tested for TC threshold and did not meet. Low traffic volume and slight elevated speed of 30 ft. Could be addressed by BTRIS lane lane 10 intersection congestion, but volume is only 250 vehicles. City does really concern at 47th St. Caldeira Ave. with similar results. Suggest looking a parallel street when/where TM is investigated.	V	2	20
88	32	S	2	2	10	May	2013	Valencia Street	300s Block	Speeding	Salary	Worked about a speed (kph + 10)	-80.27376276	25.14624444	32	Speed	2	B		Not tested	Speed outflow	Tested and TC threshold met, install speed cushions/redbook on Valencia Ave. between Granada Blvd and Toledo St.	S	3	2
89	33	S	2	2	27	June	2016	Hernando Avenue	Valencia to Altrera	Speeding	Anti-traffic circle	Youth center, morning/leaving rush hour speeding, traffic circle on hernando and valencia "distaster"	*****	25.14650806	33	Speed	2	B		Not tested	Intersection control	Pending speed/volume counts and meeting TC threshold, action would be to re-align intersection controls (half signal) along Hernando St. from Valencia Ave. southward, here are few consecutive circles. 4-way yield signs and 1-way stop signs. On-ramp parking 400 in block on Valencia to Caldeira. Needs to be reviewed.	S	3	16
90	34	V	2	2	6	March	2016	Lejune (SW 42nd)	Alberca Avenue	Left Turn	Signage	Left turn signage, speed limit sign	-80.26267810	25.14657605	34	Volume	2	B		Not tested	See notes	Investigate under aerial traffic proposals. Open with item 33A.	V	3	20
91	35	D	2	2	8	August	2014	Rivera Drive	Banco Court	Traffic Calming	Traffic Circle	Wants traffic circle on Rivera.	*****	25.14093725	35	Other	2	B	30	Tested, does NOT meet traffic calming threshold	Traffic circle	Banco Ct was tested for TC threshold. Suggest testing Rivera St. against these speeds and volume levels/gues. If TC threshold met, propose a "double" traffic circle (see sketch) to valencia.	O	2	4
92	36	D	2	2	3	April	2016	Rivera Drive	University Drive	Traffic	Traffic Light	Concern with removing traffic, adding traffic circle. Suggest "no left"	-80.26307657	25.13667638	36	Other	2	B	31	Tested, does NOT meet traffic calming threshold	See notes	Wanted for TC circle and passed but a courtesy road and collector street. Consider under aerial traffic actions.	O	2	20
93	37	D	2	2	2	April	2016	Rivera Drive	University Drive	Dangerous Intersection	Traffic Calming/Circle	Requesting traffic circle to manage flow and minimize accidents	*****	25.13668456	37	Other	2	B	31	Tested, does NOT meet traffic calming threshold	See notes	Wanted for TC circle and passed but a courtesy road and collector street. Consider under aerial traffic actions.	O	2	20
94	65	V	2	0	3	March	2016	Durango Street	Algarve Avenue	Traffic	Traffic Calming/Circle	Traffic circle request - lots of traffic at the intersection including 10 hour buses	-80.27462413	25.13629045	65	Volume	2	B		Not tested	Paired Intersection	If location to tested and meets TC threshold, it is proposed to install a raised intersection, so the clear angle precludes a small circle. Comments 65 and 68 are similar at this location.	V	3	5
70	70	S	7	0	12	July	2016	University Drive	Sarandee Avenue	Cozy walk	Speeding	Requesting painted sidewalk here/speeding on	*****	25.13236463	70	Speed	T	B	70	Tested, does NOT meet	See notes	Tested against TC threshold - Collector street posted at 30 mph, so considered to be a speed limit proposal. Traffic light requested.	S	2	20

The following subsections present the results of the traffic calming analysis process just described. These results are summarized for each individual traffic calming analysis area, A, B, C, and D, from north to south across the City.

Traffic Calming Analysis Area A

Traffic calming analysis area A lies north of Coral Way. It is the area of the most citizen comments, and also the area historically that has had the most traffic calming devices, mostly intersection circles, installed.

Figure 8.20 shows the original citizen comment locations, and presents the locations that were tested against the new City traffic calming warrant, and which of those met the old and new threshold. There were 18 locations tested, 11 of which passed the test.

Figure 8.21 depicts the proposed traffic calming improvements, as well as some that are proposed but not yet tested. Those would require further analysis to validate moving forward with traffic calming treatments. The latter were proposed were there were multiple citizen comments speaking to a common issue, adding to the possibility that they would meet the warrant once tested.

It is seen that the proposals are a mix of speed humps, speed cushions, roundabouts, intersection traffic control changes, and intersection improvements. The latter are T-intersection treatments as shown in Figure 8.22 which follows. Proposed traffic calming actions are summarized as follows:

Tested and Warranted Traffic Calming Actions

- Alberca St. (SW 8th St. to Pinero Ave.): two speed cushions
- Obispo Ave (Columbus Blvd. to Madrid St.): two speed cushions
- Obispo Ave. at Pizzaro St.: roundabout
- Mendoza Ave./SW 16th St. (LeJeune Rd. to Hernando St.): speed cushion
- Majorca Ave. (LeJeune Rd. to Hernando St.): speed cushion
- Boabadilla St. (Ponce de Leon Blvd. to Cibao Ct.): speed cushions north and south of Avila Ct.; convert Yield sign on Avila Ct. to Stop sign
- This segment is part of the “Flagler Street Community Vision” that proposes to reduce pavement area and incorporate street trees.
- Menores Ave. (Ponce de Leon Blvd. to Salzedo St.): speed cushion
- Milan Ave. (Tunis St. to Tangier St. and Cordova St. to Alberca St.): two speed cushions
- Milan Ave. at Cortez St.: install curvilinear T-intersection
- South Greenway Dr. at Madrid St.: T-intersection treatment
- Castile Ave. at Cordova St., Columbus Blvd., and Madrid St.: reverse two-way Stops signs from N-S orientation to E-W orientation
- North Greenway Drive (Coral Way to Casilla St.): one speed table midblock and T-intersection treatment at Casilla St.

Untested Proposed Actions

- Genoa St. at LaMancha Ave.: reverse two-way Stops signs from E-W orientation to N-S orientation or install 4-way Stop signs
- San Marco Ave. at Country Club Prado: oval roundabout
- Columbus Boulevard at Venetia Terrace: A twin roundabout configuration is proposed.

- Ortega Ave. at Pizzaro St.: small roundabout
- Milan Ave. at Capri St.: T-intersection treatment
- Sorolla Ave. at Pizzaro St.: speed hump between the two legs of Pizzaro St.
- Obispo Ave. (Granada Blvd. to Columbus Blvd.): two speed cushions
- Obispo Ave. (Madrid St. to Ferdinand St.): two speed cushions
- Madeira Ave. (Costado St. to Casillo St.): speed cushion
- Zamora Ave. at Segovia Ave.: small roundabout
- Madeira Ave. at Hernando St.: small roundabout
- Zamora Ave./SW 16th St. (LeJeune Rd. to Hernando St.): speed cushion
- Madeira Ave. (LeJeune Rd. to Hernando St.): speed cushion
- Galliano Street at East Ponce de Leon Boulevard south of Calabria Avenue: revised East Ponce de Leon Blvd. as one-way away from Galliano Street on both sides for one block
- Salzedo Street (Antiquera Ave. south to Zamora Ave.) (possible bicycle boulevard corridor):
 - Intersection table at Calabria Ave. (per Planning Dept. as a neighborhood focal feature)
 - Calabria Ave. to Antiquera Ave: speed cushion
 - Just north of Santilla Ave: speed cushion
 - Phoenetia Ave. to Antilla Ave. speed cushion
 - Antilla Ave. to Sidonia Ave.: speed cushion
 - Zamora Ave. to Mendoza Ave.: speed cushion
- Asturia Ave. at Madrid St., Columbus Blvd., and Cordova St.: reverse two-way Stops signs from N-S orientation to E-W orientation

- South Greenway Dr. at Columbus Blvd., Cordova St., and Toledo St.: curvilinear T-intersection treatment
- North Greenway Dr. at Madrid St., Columbus Blvd., Cordova St., and Cortez St.: curvilinear T-intersection treatment
- North Greenway Dr. (Granada Blvd. to Casilla St.): two speed tables, one in each midblock area

Planning Department Recommendations

(subject to meeting traffic calming warrant)

- Galiano Ave. from Antiquera St. to Antilla St.: speed humps with crosswalks and/or roundabouts near the trolley stop and the school
- Galiano Ave. at Majorca St.: install a 4-way Stop or relocate 4-way Stop at Madeira Ave.
- Coral Gable Prep Academy area: consider traffic calming to address school traffic issues
- East Ponce de Leon Blvd: traffic calming measures to addressed perceived speeding issue
- Alhambra Circle from LeJeune Rd. to Douglas Rd.: needs traffic calming and narrowing per Planning Dept. schematics from the North Ponce Visioning exercise
- Ponce de Leon Blvd. (Phase III): address perceived speeding issue with traffic calming
- Central Business District: consider lowering speed limit to 20 mph
- Galiano Street at Merrick Way/Giralda Ave.: simplify the confusing intersection – possible actions may be a roundabout, or closing the segment of Merrick Way between Giralda Ave. and Galiano St. with a three-phase signal operation for NB/SB, WB, and SE bound

Figure 8.20: Analysis Area A Inputs

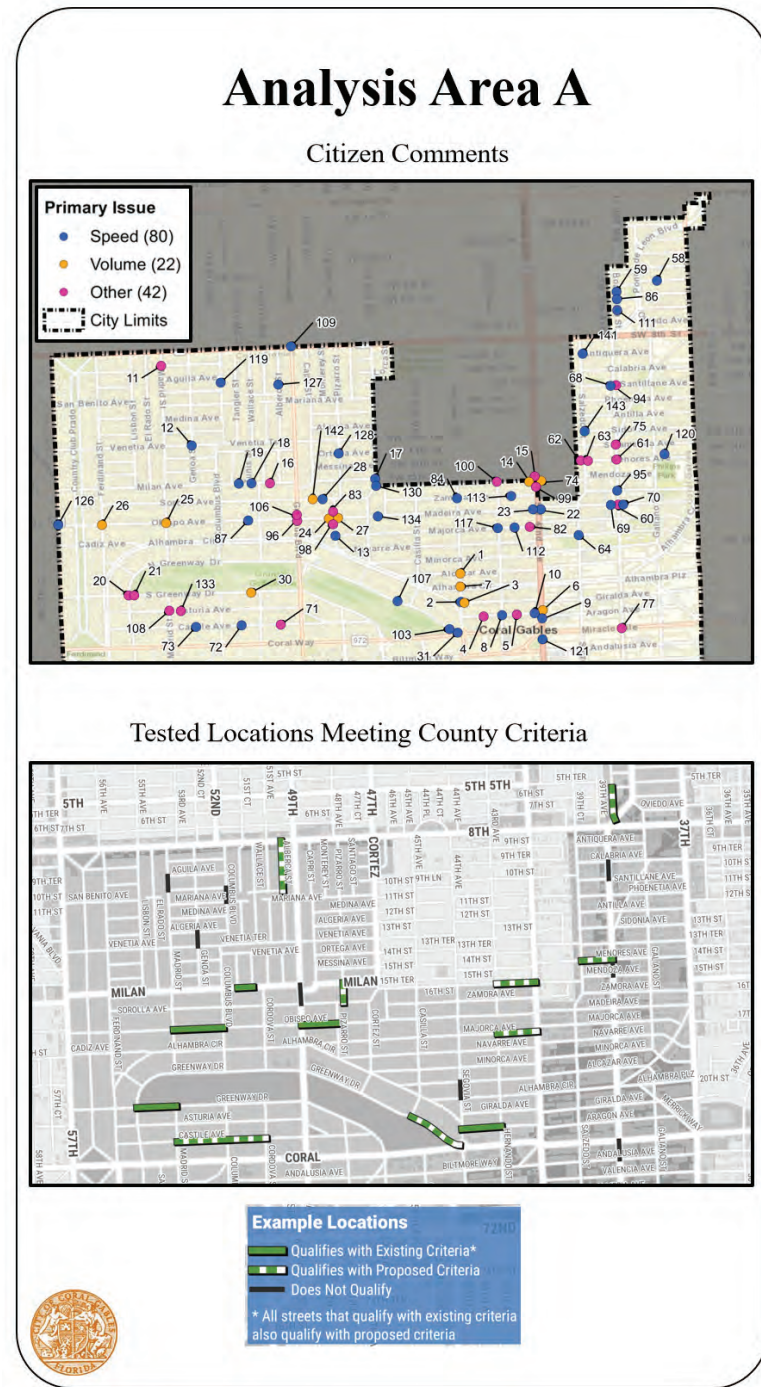
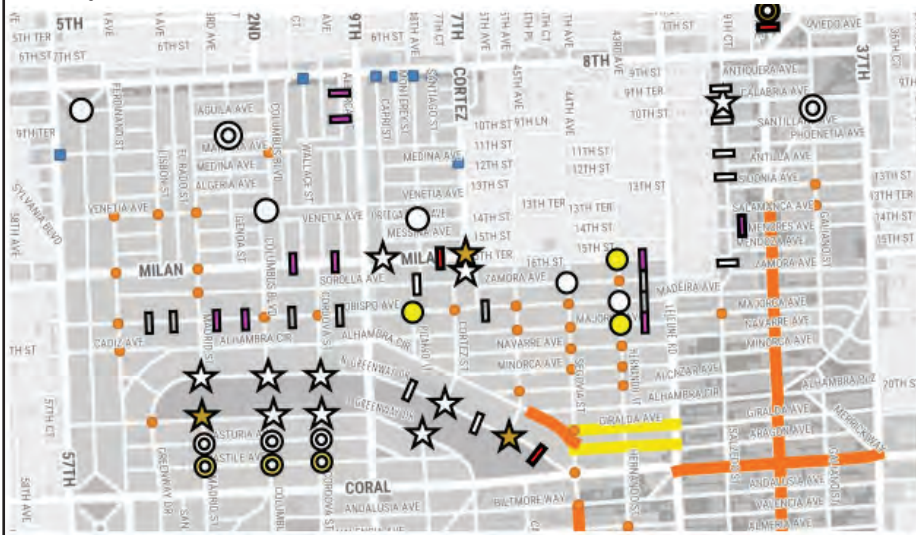


Figure 8.21: Analysis Area A Proposals

**Coral Gables Neighborhood Livability
Traffic Calming Improvement Proposals
Analysis Area A**



LEGEND			
Existing	Proposed Criteria Met	Proposed Criteria Not Tested	Traffic Calming Element
			Existing Traffic Calming - Point - Segment
			Previously Barricaded Street End
			Traffic Calming in Design
			Roundabout
			Pedestrian Crossing
			Speed Table
			Speed Cushion
			Median Treatment
			Intersection Improvement
			Intersection Controls

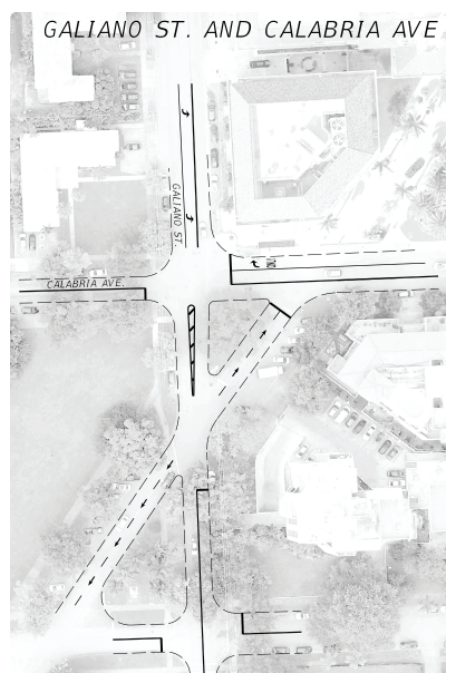
Intersection controls refer to Stop signs and Yield signs.

Figure 8.22 highlights proposed improvements at intersections:

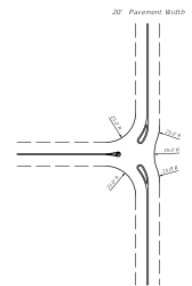
- Milan Avenue and Capri Street: A small roundabout is proposed. It is noted that Milan Avenue is proposed for a bicycle boulevard facility. This site was tested and met the traffic calming warrant.
- Galliano Street at East Ponce de Leon Boulevard south of Calabria Avenue: The proposal is to make the diagonal street one-way away from Galliano Street on both sides for one block to simplify traffic movements. This site has not been tested against the traffic calming warrant.
- The T-intersection treatment would be applied to the “star” locations on North and South Greenway Drive in Figure 8.21. Only one of these locations was tested and met the traffic calming warrant.
- Country Club Prado at San Marco Avenue: An oval roundabout is proposed. Per a comment from the Planning Dept., the pavement curvature around the fountain could be retained as pedestrian plazas with a connecting sidewalk. This site has not yet been tested against the traffic calming warrant.
- Columbus Boulevard at Venetia Terrace: A twin roundabout configuration is proposed. Roundabouts would have pedestrian crossing features on each approach. The smaller roundabout could be replaced by a T-intersection treatment as is shown for the intersection south of the larger roundabout, and a pocket park created on the excess right-of-way. It is noted that Columbus Boulevard is proposed as a bicycle boulevard facility. This site has not yet been tested against the traffic calming warrant.

Figures 8.23 and 8.24 show renderings of the latter two intersection treatments.

Figure 8.22: Analysis Area A Intersection Proposals – Preliminary Concepts



T-INTERSECTION OPTION



MILAN AVE. AND CAPRI ST.

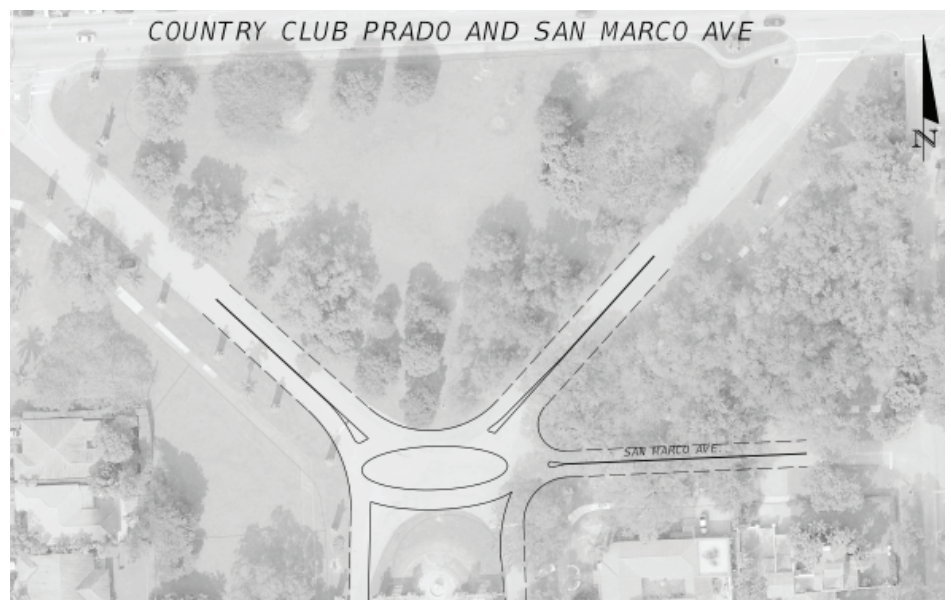
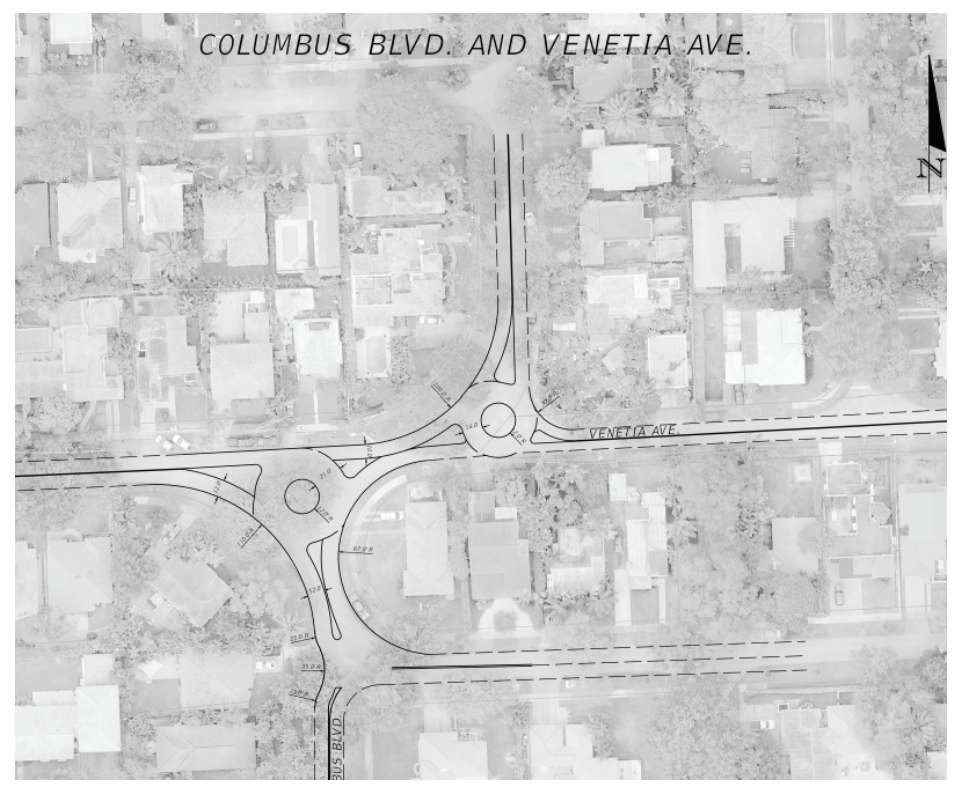
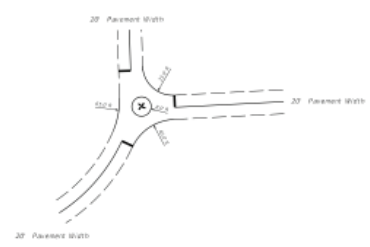


Figure 8.23: Country Club Prado at San Marco Avenue Concepts (Looking Southwest) – Preliminary Concepts

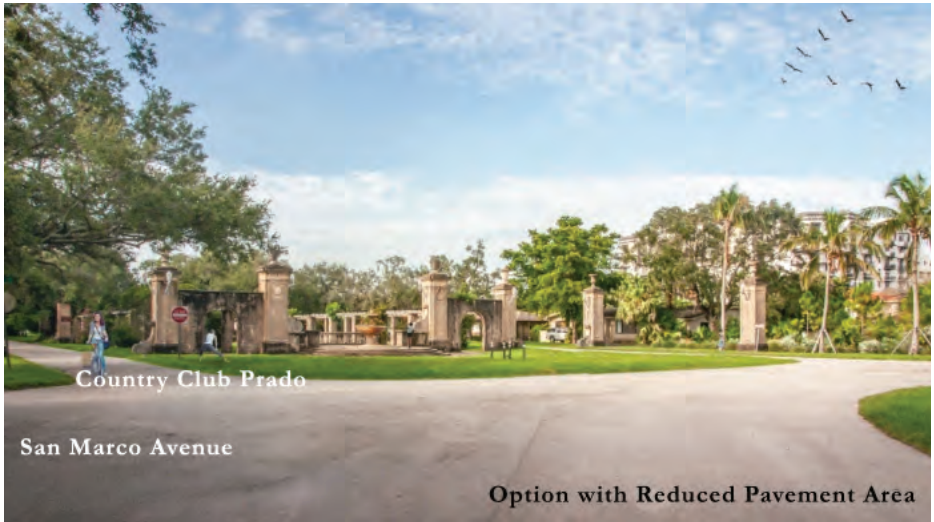


Figure 8.24: Columbus Boulevard at Venetia Terrace Proposed Roundabout

(Looking east along Venetia Terrace) – Preliminary Concepts



Traffic Calming Analysis Area B

Traffic calming analysis area B lies between of Coral Way and Bird Road. This area has numerous citizen comments on traffic issues, and also contains a number of existing traffic calming devices.

Figure 8.25 shows the original citizen comment locations and presents the locations that were tested against the new City traffic calming warrant, and which of those met the old and new threshold. There were nine locations tested, four of which passed the test.

Figure 8.26 depicts the proposed traffic calming improvements, as well as some that are proposed but not yet tested. Those would require further analysis to validate moving forward with traffic calming treatments. The latter were proposed where there were multiple citizen comments speaking to a common issue, adding to the possibility that they would meet the warrant once tested.

It is seen that the proposals are a mix of speed humps, roundabouts, pedestrian crossings and intersection improvements. Proposed traffic calming actions are summarized as follows:

Tested and Warranted Traffic Calming Actions

- Orduna Drive (Paradiso Avenue to Palma Ave.): speed cushion
- Toledo Street/Colma Court/Geronimo Drive: traffic circle
- Oak Avenue at Industrial Drive: T-intersection treatment
- Desoto Boulevard at Palermo Street/Cordova Avenue: Proposal is for twin roundabouts or a single roundabout with intersection realignment.
- Desoto Boulevard and Catalonia Avenue: An intersection realignment and pedestrian crosswalk is proposed.

- Fluvia, Candia, and Velarde Avenues (Riviera Drive to LeJeune Road): speed cushions on each block
- Alhambra Circle (Bird Road to Blue Road): four roundabouts

Untested Proposed Actions

- Sistena Avenue at Benevento Avenue: roundabout
- Orduna Drive (Paradiso Avenue to Benevento Avenue): two speed cushions
- Ronda Drive: two speed humps
- San Esteban Avenue at Segovia Street: roundabout within a larger roundabout
- Durango Street/at Banos Court and Tendilla Avenue: intersection realignment and pedestrian crosswalk
- San Esteban Avenue at Segovia Street: A roundabout within a larger roundabout is proposed
- Toledo Street at Toledo Plaza: An intersection realignment is proposed.
- Riviera Drive at Toledo Street and Banos Court: A roundabout within a larger roundabout is proposed.

Planning Department Actions (subject to meeting traffic calming warrant)

- University Drive east of LeJeune Road: traffic calming to “right-size” the street and manage traffic speeds
- Segovia Street (primarily between Valencia Avenue and Anastasia Avenue): traffic calming/pedestrian crosswalks to further calm the street

Figure 8.27 highlights proposed improvements at intersections:

- Desoto Boulevard at Palermo Street and Cordova Avenue: The proposal is for twin roundabouts or a single roundabout with an intersection

realignment.

- Desoto Boulevard and Catalonia Avenue: An intersection realignment and pedestrian crosswalk is proposed.
- Durango Street/ at Banos Court and Tendilla Avenue: An intersection realignment and pedestrian crosswalk is proposed.
- San Esteban Avenue at Segovia Street: A roundabout within a larger roundabout is proposed.
- Toledo Street at Toledo Plaza: An intersection realignment is proposed.
- Riviera Drive at Toledo Street and Banos Court: A roundabout within a larger roundabout is proposed. It is recommended to retest this area with a speed count on Riviera Drive rather than Banos Court which did not meet the traffic calming warrant.

Figures 8.28 and 8.29 show renderings of the latter two intersection treatments.

Traffic Calming Analysis Area C

Traffic calming analysis area C lies between Bird Road and US 1. This area had fewer citizen comments on traffic issues than the areas to the north. There are about 20 existing traffic calming devices spread through this area.

Figure 8.30 shows the original citizen comment locations and presents the locations that were tested against the new City traffic calming warrant, and which of those met the old and new threshold. There were nine locations tested, four of which passed the test.

Figure 8.31 depicts the proposed traffic calming improvements, as well as some that are proposed but not yet tested. Those would require further analysis to validate moving forward with traffic calming treatments. The latter were proposed where there were multiple citizen comments speaking to a common issue, adding to the possibility that they would meet the warrant once tested. It is seen that the

Figure 8.25: Analysis Area B Inputs

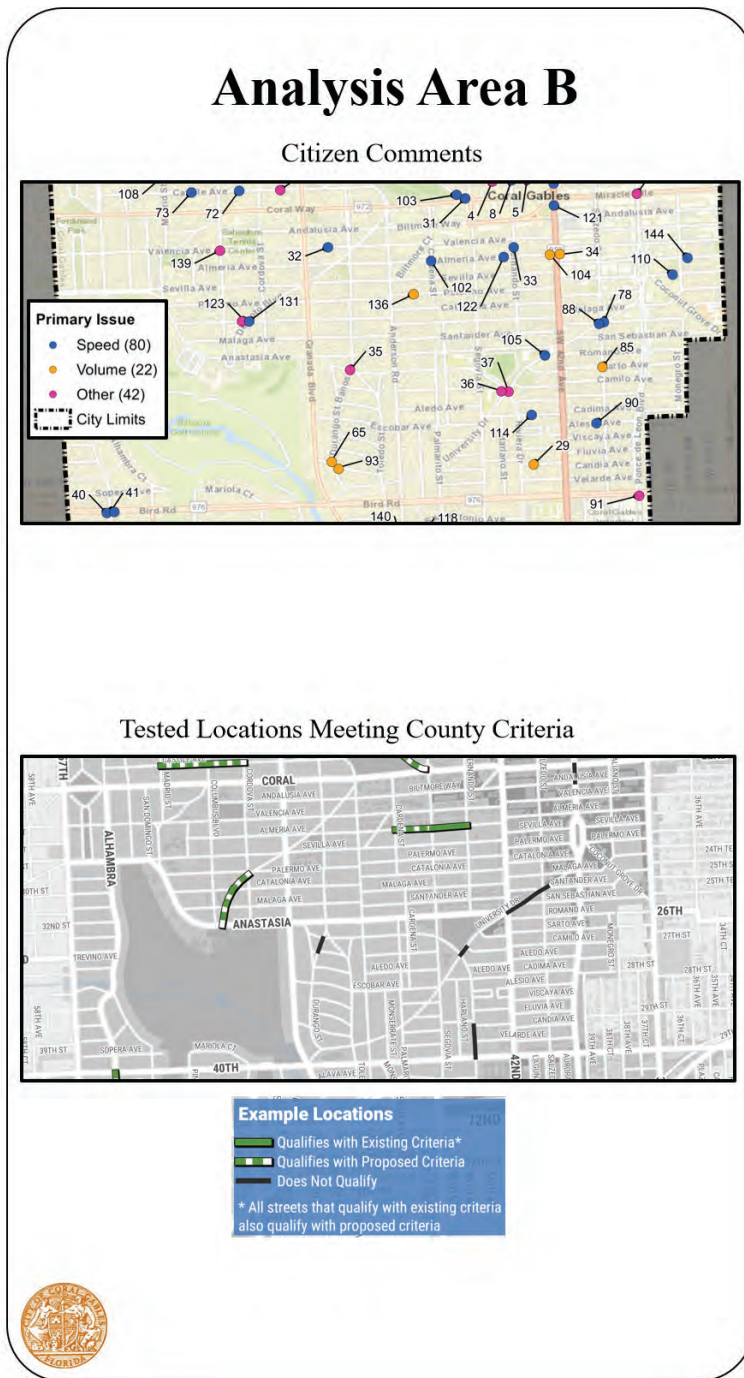


Figure 8.26: Analysis Area B Proposals

Coral Gables Neighborhood Livability

Traffic Calming Improvement Proposals

Analysis Area B



LEGEND			
Existing	Proposed Criteria Met	Proposed Criteria Not Tested	Traffic Calming Element
			Existing Traffic Calming - Point - Segment
			Previously Barricaded Street End
			Traffic Calming in Design
			Roundabout
			Pedestrian Crossing
			Speed Table
			Speed Cushion
			Median Treatment
			Intersection Improvement
			Intersection Controls

Intersection controls refer to Stop signs and Yield signs.

Figure 8.27: Analysis Area B Intersection Proposals – Preliminary Concepts

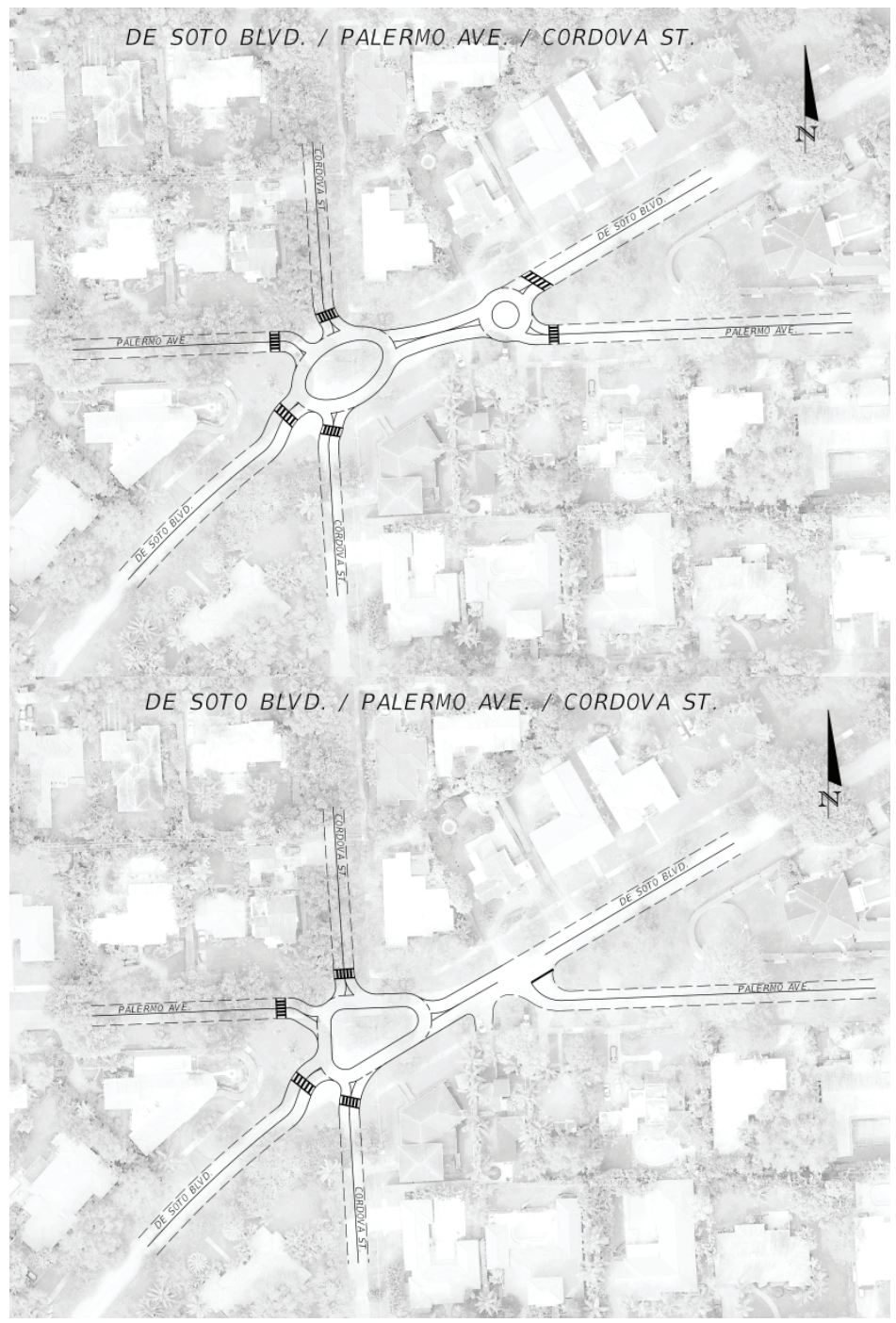


Figure 8.27: Analysis Area B Intersection Proposals – Preliminary Concepts (Continued)



Figure 8.27: Analysis Area B Intersection Proposals – Preliminary Concepts (Continued)

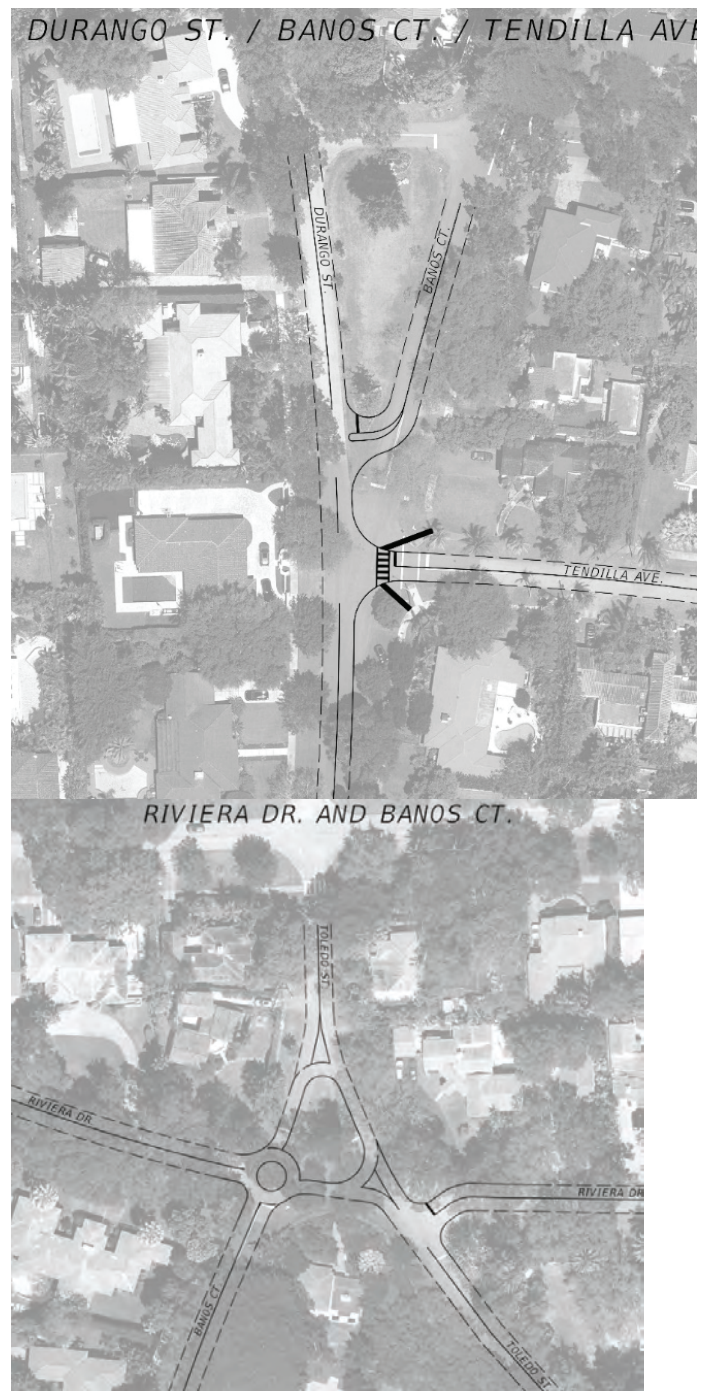


Figure 8.28: Riviera Drive at Toledo Street and Banos Court
(Looking Westbound along Riviera Drive) – Preliminary Concepts



Figure 8.29: Toledo Street and Toledo Plaza Realignment
(Looking North along Toledo Street) – Preliminary Concepts



proposals are a mix of speed humps, roundabouts, and intersection improvements. Proposed traffic calming actions are summarized as follows:

Tested and Warranted Traffic Calming Actions

- Orduna Drive (Paradiso Avenue to Palma Ave.): speed cushion
- Toledo Street/Colma Court/Geronimo Drive: traffic circle
- Oak Avenue at Industrial Drive: T-intersection treatment
- Alhambra Circle (Bird Road to Blue Road): four roundabouts

Untested Proposed Actions

- Sistena Avenue at Benevento Avenue: roundabout
- Orduna Drive (Paradiso Avenue to Benevento Avenue): two speed cushions
- Ronda Drive: two speed humps
- Anderson Road: two speed humps
- Cecelia Avenue: speed hump
- Alhambra Circle (Blue Road to Miller Drive): three roundabouts

Figure 8.32 shows the proposed improvement concept for the Segovia Street/San Esteban Ave. intersection which still needs testing for the traffic calming warrant.

Traffic Calming Analysis Area D

Traffic calming analysis area D lies between US 1 and Davis Road/SW 80th Street. This area had fewer citizen comments on traffic issues than the areas to the north. There are about 20 existing traffic calming devices spread through this area.

Figure 8.30: Analysis Area C Inputs

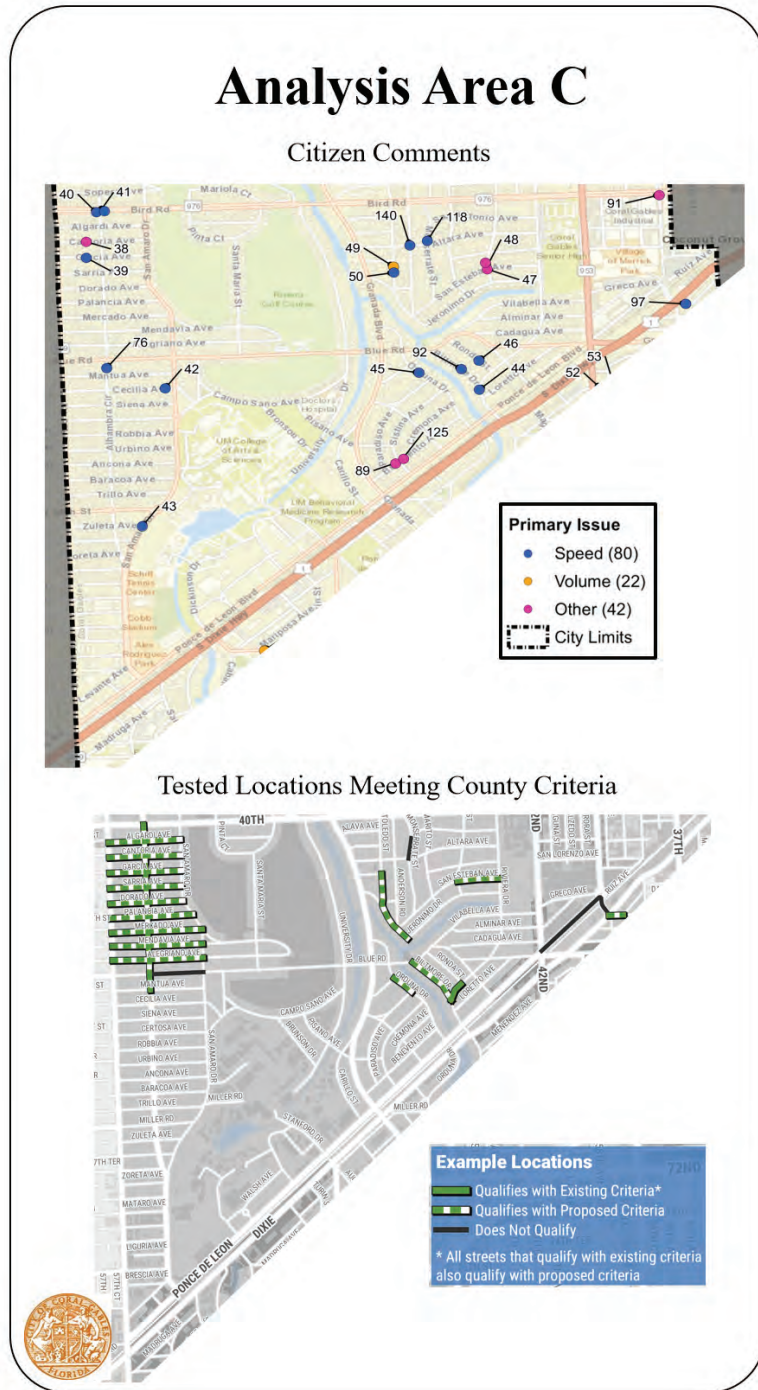
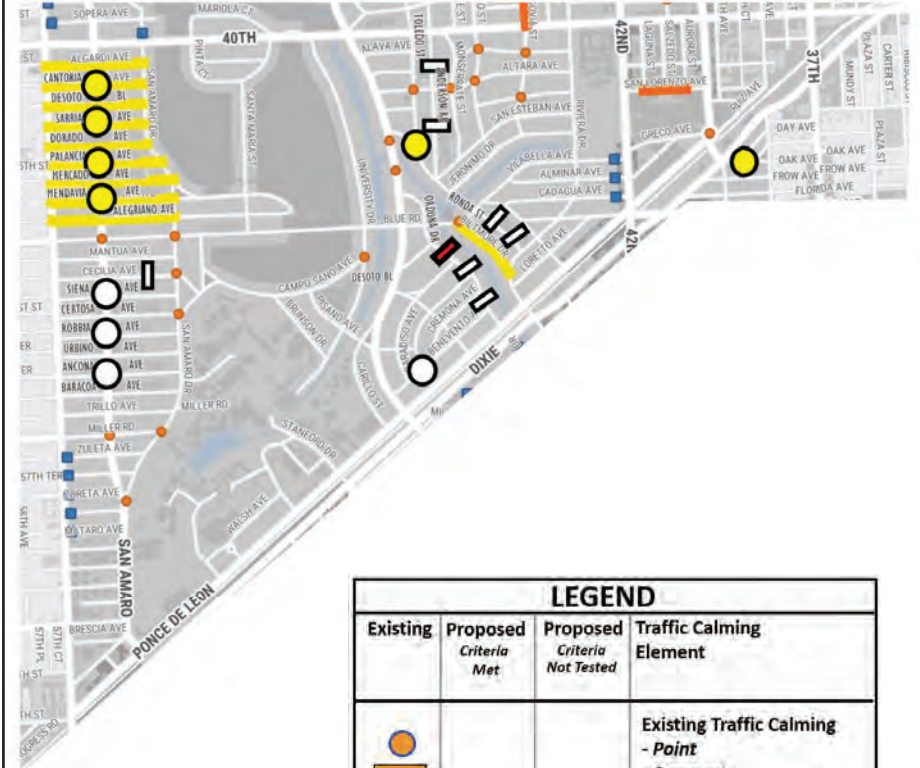


Figure 8.31: Analysis Area C Proposals

Coral Gables Neighborhood Livability Traffic Calming Improvement Proposals Analysis Area C



Intersection controls refer to Stop signs and Yield signs.

LEGEND			
Existing	Proposed Criteria Met	Proposed Criteria Not Tested	Traffic Calming Element
			Existing Traffic Calming - Point
			Existing Traffic Calming - Segment
			Previously Barricaded Street End
			Traffic Calming in Design
			Roundabout
			Pedestrian Crossing
			Speed Table
			Speed Cushion
			Median Treatment
			Intersection Improvement
			Intersection Controls

Figure 8.32: Segovia Street and San Estaban Street Intersection – Preliminary Concept



Tested and Warranted Traffic Calming Actions

- W. Sunrise Avenue: three speed cushions
- Castania Avenue at Maggiore Street: intersection table
- Maggiore Street at Menendez Avenue: roundabout
- Grant Drive: two speed humps
- Hardee Road at Caballero Boulevard: roundabout as part of the adjacent Paseo development
- Hardee Road at Madruga Avenue: intersection realignment as part of the adjacent Paseo development

Untested Proposed Actions

- Hardee Road: speed tables and median dividers (could be modified if this segment is designated for a bicycle facility)
- Edgewater Drive: four median dividers
- Edgewater Drive at Douglas Road: T-intersection rounded curb treatment
- Morningside Drive: two speed cushions
- E. Sunrise Drive east of Douglas Road: speed cushion
- Nervia Street (south leg at San Remo Avenue): marked crosswalk
- Caballero Boulevard: two speed cushions
- Andorra Avenue: two speed cushions

It is seen that the proposals are a mix of speed humps, speed cushions, roundabouts, and an intersection improvement. The latter is at Castania Avenue and Maggiore Street and is proposed to be an intersection table.

Figure 8.33 shows the original citizen comment locations and presents the locations that were tested against the new City traffic calming warrant, and which of those met the old and new threshold. There were nine locations tested, four of which passed the test.

Figure 8.34 depicts the proposed traffic calming improvements, as well as some that are proposed but not yet tested. Those would require further analysis to validate moving forward with traffic calming treatments. The latter were proposed where there were multiple citizen comments speaking to a common issue, adding to the possibility that they would meet the warrant once tested. Proposed traffic calming actions are summarized as follows:

Figure 8.35 highlights proposed improvements at one intersection:

- Menendez Avenue at Almalfi Avenue and Maggiore Street: The proposal is for an oval roundabout to simplify this five-legged intersection.

Figure 8.36 shows a rendering of the latter intersection treatment.

Figure 8.37 provides details for proposed improvements to Edgewater Drive, assuming the street is tested for and meets traffic calming warrants. Four short median dividers two feet in width and approximately eight feet in length would be installed in the median, near the addresses of 10, 81, 171, and 185 Edgewater Drive. The road would be widened to maintain the 11-foot wide lanes, unless the City receives County approval for 10-foot lanes. The intersection of Edgewater Drive with Douglas Road would be given a modified T-intersection treatment, if traffic calming warrants are met.

Traffic Calming Design

The design of all traffic calming should be context-sensitive and thoughtfully designed to be compatible with the existing character of the neighborhood in terms of design, materials, and colors. To the extent practicable, the traffic calming should serve multiple purposes:

- Speed table also serves as a raised sidewalk.
- Median divider also provides for landscaping.
- Roundabout also allows for shade trees, pedestrian crossing, and sidewalk connections.

In this way, neighborhood enhancement occurs through the traffic management improvements whose design is integrated with the setting.

Figure 8.33: Analysis Area D Inputs

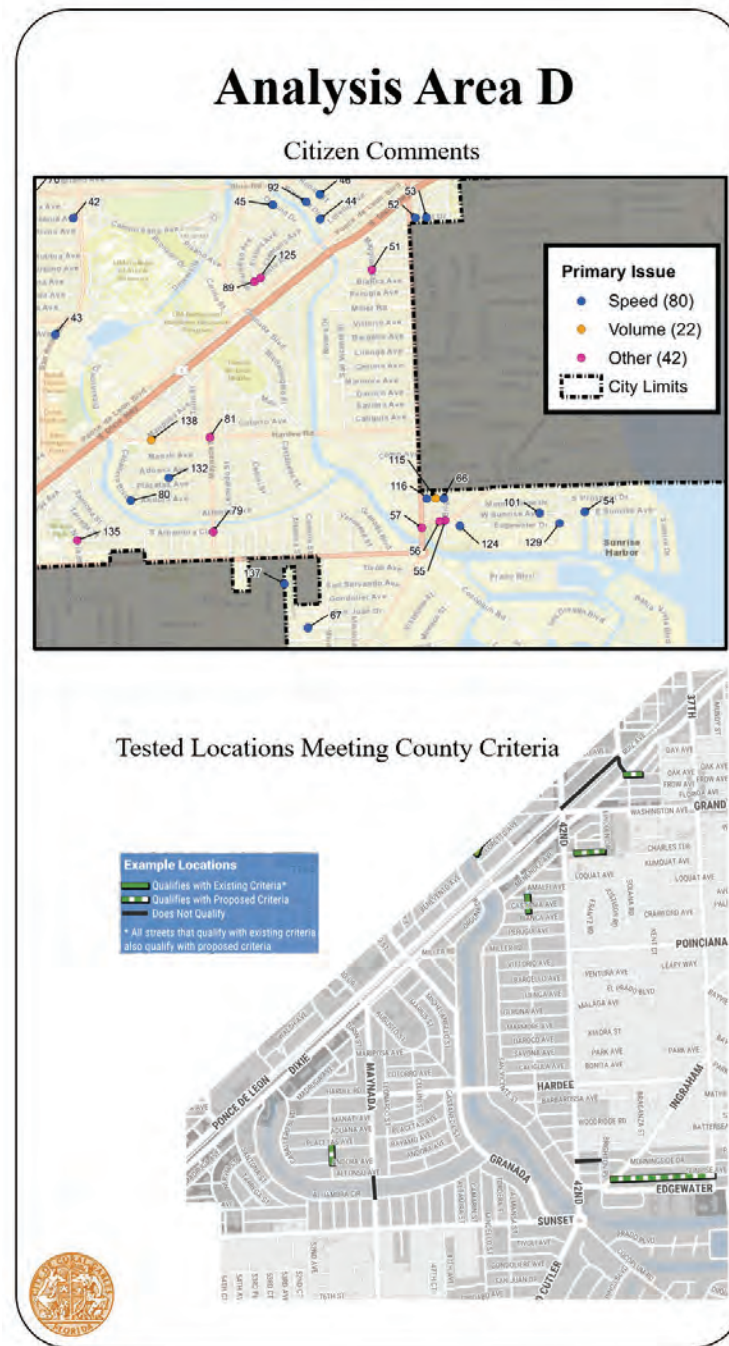


Figure 8.34: Analysis Area D Proposals

**Coral Gables Neighborhood Livability
Traffic Calming Improvement Proposals
Analysis Area D**

LEGEND			
Existing	Proposed Criteria Met	Proposed Criteria Not Tested	Traffic Calming Element
			Existing Traffic Calming - Point - Segment
			Previously Barricaded Street End
			Traffic Calming in Design
			Roundabout
			Pedestrian Crossing
			Speed Table
			Speed Cushion
			Median Treatment
			Intersection Improvement
			Intersection Controls

*Intersection controls refer
to Stop signs and Yield
signs.*



Figure 8.35: Menendez Avenue/Amalfi Avenue /Maggiore Street Roundabout – Preliminary Concept

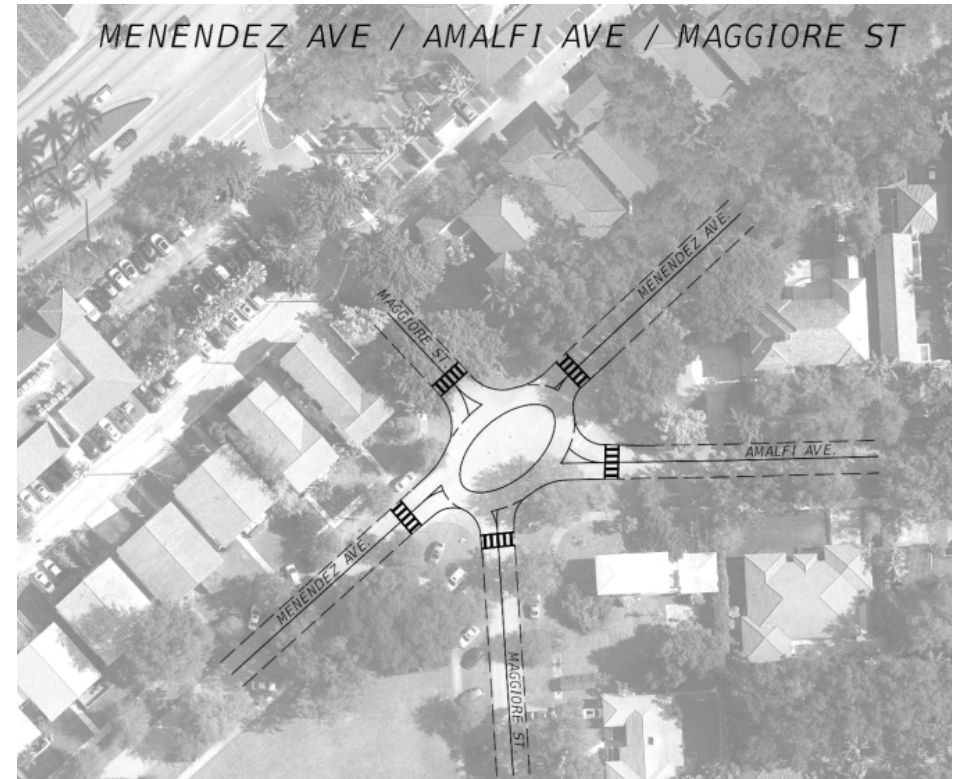


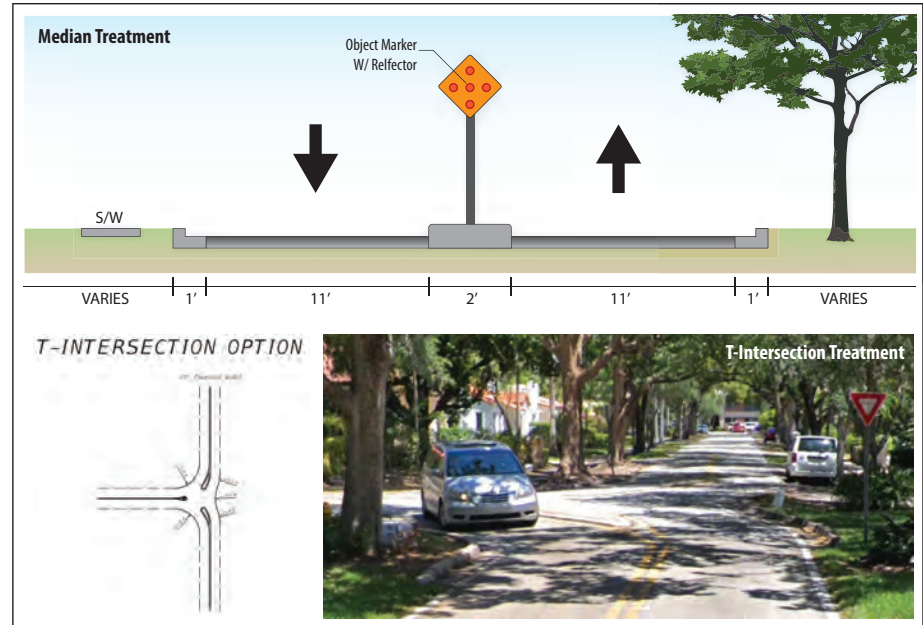
Figure 8.36: Menendez Avenue/Amalfi Avenue/Maggiore Street Roundabout Rendering

(Looking northeast along Menendez Avenue) – Preliminary Concepts



Figure 8.37: Edgewater Drive Treatments – T-Intersection at Douglas Road and Median Dividers – Preliminary Concepts

Preliminary Concepts



8.3 RECOMMENDATIONS

Traffic calming is a critical component of neighborhood livability and the city's long term transportation goals. This section has highlighted a large number of additional traffic calming improvements and other intersection specific improvements. **Table 8.3** summarizes the recommendations that were identified to advance the state of neighborhood livability in the City.

Table 8.3: Traffic Calming Actions

Project No.	Policy	Program	Project	Implementation Phase *			Title	Description	Capital Cost	Conceptual Cost Estimate				
				Short Range	Medium Range	Long Range				Planning	Design	Construction, Engineering, Inspection	Soft Cost Subtotal	TOTAL
TC-1			✓	✓			Implement Analysis Area A traffic calming improvements.	Pertains to those locations which have been tested. Involves design and construction. NOTE: current 5-year traffic calming budget is \$2.431 million.	\$321,802	\$22,526	\$57,924	\$32,180	\$112,631	\$434,433
TC-2			✓		✓		Implement Analysis Area A intersection improvements.	Pertains to those locations which have been tested. Involves design and construction. None yet tested.	\$-	\$-	\$-	\$-	\$-	\$-
TC-3			✓			✓	Prioritize additional Analysis Area A traffic calming and intersection improvements for testing against the traffic calming warrant.	Requires testing against new traffic calming warrant, and followup analysis. Assume 50% approval rate.	\$588,026	\$41,162	\$105,845	\$58,803	\$205,809	\$793,834
TC-4			✓	✓			Implement Analysis Area B traffic calming improvements.	Pertains to those locations which have been tested. Involves design and construction.	\$102,733	\$7,191	\$18,492	\$10,273	\$35,957	\$138,690
TC-5			✓		✓		Implement Analysis Area B intersection improvements.	Pertains to those locations which have been tested. Involves design and construction.	\$172,262	\$12,058	\$31,007	\$17,226	\$60,292	\$232,554
TC-6			✓			✓	Prioritize additional Analysis Area B traffic calming and intersection improvements for testing against the traffic calming warrant.	Requires testing against new traffic calming warrant, and followup analysis. Assume 50% approval rate.	\$210,615	\$14,743	\$37,911	\$21,061	\$73,715	\$284,330
TC-7			✓	✓			Implement Analysis Area C traffic calming improvements.	Pertains to those locations which have been tested.	\$252,367	\$17,666	\$45,426	\$25,237	\$88,328	\$340,695
TC-8			✓		✓		Implement Analysis Area C intersection improvements.	Pertains to those locations which have been tested. Involves design and construction.	\$-	\$-	\$-	\$-	\$-	\$-
TC-9			✓			✓	Prioritize additional Analysis Area C traffic calming and intersection improvements for testing against the traffic calming warrant.	Requires testing against new traffic calming warrant, and followup analysis. Assume 50% approval rate.	\$224,958	\$15,747	\$40,492	\$22,496	\$78,735	\$303,693
TC-10			✓	✓			Implement Analysis Area D traffic calming improvements.	Pertains to those locations which have been tested. Involves design and construction.	\$243,134	\$17,019	\$43,764	\$24,313	\$85,097	\$328,231
TC-11			✓		✓		Implement Analysis Area D intersection improvements.	Pertains to those locations which have been tested. Involves design and construction.	\$85,021	\$5,951	\$15,304	\$8,502	\$29,757	\$114,778

* NOTE: Short Range 1-2 years | Medium Range 3-5 years | Long Range 6-10 years | FDOT - Florida Dept. of Transportation | DTPW - Miami-Dade Dept. of Transp. & Public Works

Project No.	Policy	Program	Project	Implementation Phase *			Title	Description	Conceptual Cost Estimate					
				Short Range	Medium Range	Long Range			Capital Cost	Planning	Design	Construction, Engineering, Inspection	Soft Cost Subtotal	TOTAL
TC-12			✓			✓	Prioritize additional Analysis Area D traffic calming and intersection improvements for testing against the traffic calming warrant.	Requires testing against new traffic calming warrant, and follow up analysis. Assume 50% approval rate.	\$181,812	\$12,727	\$32,726	\$18,181	\$63,634	\$245,446
TC-13			✓		✓		Assess additional citizen traffic calming comments from the second round of open house meetings.	These would be prioritized along with those from actions TC-3, -6, -9, and -12. Assume 50 locations meet traffic calming warrant at average cost of \$25,000 each.	\$1,250,000	\$87,500	\$225,000	\$125,000	\$437,500	\$1,687,500
TC-14		✓		✓	✓	✓	Continue to promote the Pace Car Program.		\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
TC-15		✓		✓	✓	✓	Selectively monitor traffic calming implementation with vehicle speed studies.		\$-	\$10,000	\$-	\$-	\$10,000	\$10,000
TC-16		✓		✓	✓	✓	Utilize the traffic calming tracking table to continue to log and monitor citizen comments on issues.		\$-	\$20,000	\$-	\$-	\$20,000	\$20,000
SUBTOTAL									\$3,632,729	\$289,291	\$653,891	\$363,273	\$1,306,455	\$4,939,183

* NOTE: Short Range 1-2 years | Medium Range 3-5 years | Long Range 6-10 years | FDOT - Florida Dept. of Transportation | DTPW - Miami-Dade Dept. of Transp. & Public Works

CORAL GABLES®

THE CITY BEAUTIFUL



9

POLICY ELEMENTS



TABLE OF CONTENTS

#	Title	Page
9	Policy Elements.....	9-1
9.1	Context.....	9-1
9.2	Analysis.....	9-1
	Mobility Management/Travel Demand Management.....	9-1
9.3	Recommendations.....	9-25

Figures

9.1	Mobility Management Strategies and Enablers in Relation to Travel Behavior.....	9-2
9.3	Seattle TDM City Center Mode Share Results and Benefits Offered.....	9-6

Tables

9.1	Mobility Management Strategies.....	9-3
9.2	Enablers of Mobility Management Strategies.....	9-3
9.4	Summary of Proposed Mobility Management Program Elements.....	9-9
9.5	Policy Element Actions.....	9-25

9 POLICY ELEMENTS

This section of the report addresses a variety of transportation management strategies, approaches, and methods that can be used to create an efficient, safe, multi-modal transportation system that meets the needs of the 21st century. While the City is a partner with Miami-Dade County, FDOT, other municipalities, and the private sector in this process, there are many things the City can do to improve its transportation network.

9.1 Context

Much of this transportation plan has focused on the identification of physical projects or provisions of certain services to address identified transportation needs. The overall plan recommendations are structured to relate to policies, programs, and projects. This section addresses the policy aspects of the overall transportation plan.

There are many policy elements which can complement capital improvement projects. Policies can shape how street and multimodal improvement projects are defined and engineered, how new developments are reviewed for transportation impacts and how community needs such as pedestrian crosswalk and sidewalk construction are advanced. Well thought-out policies can also influence how trolley service upgrades are targeted, and how bicycle facility projects are vetted and implemented. These initiatives are underpinned by the provisions in the City Comprehensive Development Master Plan as discussed in Section 1 and by other supporting ordinances, and regulations.

The balance of this section of the report speaks to various policy-related elements the City already has in place and that it has been pursuing, as well as others the City can implement to expand and improve its oversight of the transportation system.

9.2 Analysis

The specific topics discussed above are individually addressed in this subsection.

Mobility Management/Travel Demand Management

Overview

Mobility management planning can assist in the implementation and advancement of strategies to provide a wider range of travel choices, thus reducing traveler reliance on the single-occupant, private vehicle mode of travel. By doing this, the need for built infrastructure might be incrementally deferred or possibly avoided, more efficient use can be made of the existing transportation system investments, and a broader range of mobility choices can be offered to Coral Gables residents, workers, and visitors.

“Mobility management” is intended to convey a fresh philosophy on how government approaches the utilization of the transportation network. Mobility management involves a comprehensive and market-oriented approach to facilitate mobility by working to influence how the transportation network is used rather than simply adding capacity to the network.

Mobility Management and Its Role in Transportation

System Development

Today’s traditional transportation management practices are facing mounting challenges. Major concerns include increasing congestion on the primary highway network; mobility costs consuming a greater share of household budgets; declining buying power of fuel tax revenues which fund transportation infrastructure; adverse effects of low-density and disjointed land development patterns; and limitations on alternative mobility choices.

Mobility management is an increasingly important tool for transportation agencies. Mobility management embraces strategies to modulate and distribute the demand by the public and businesses to use transportation facilities and services for higher quality and more efficient mobility. As such, mobility is a natural complement to the traditional response to user demand of building more system capacity—increasing the supply.

In the face of mounting infrastructure costs, coupled with limits to funding capacity and greater adverse impacts of construction projects, **managing the demand for transportation** is an increasingly pragmatic and effective strategy in addressing escalating congestion and mobility impacts. Case studies later in this chapter highlight the opportunities available to the City in this arena.

Mobility Management Defined

The term “transportation demand management” came into use in the 1970s by the planning and engineering community to describe the management of capacity needs through moderation of the demand for travel. The Florida Department of Transportation (FDOT) continues to support the concept of mobility management; for example, its Mobility Review Guide (http://www.fdot.gov/research/Completed_Proj/Summary_PL/FDOT-BDK84-977-02-rpt.pdf) provides a framework for review of local government multimodal transportation strategies’

For the purposes of this discussion, “mobility management” is used as the operational term for TDM and other related strategies to address the user demand side of the transportation system.

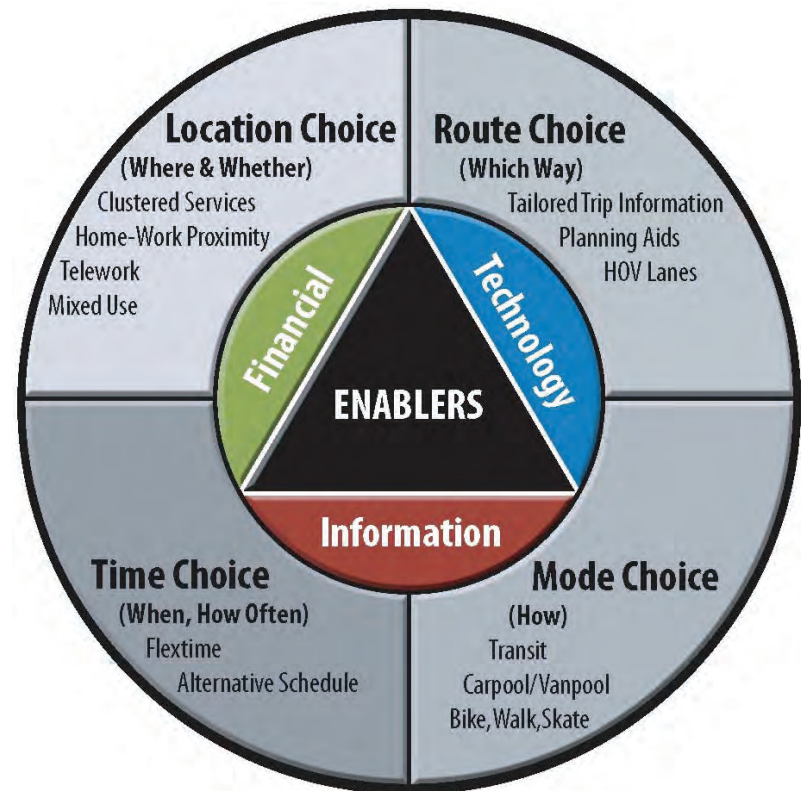
An organization that sees itself as a mobility manager:

- Facilitates alternatives to the single-occupant automobile.
- Provides new travel options to the public.

- Expands on its traditional service mission.
- Goes beyond mandates to voluntarily address the public’s transportation needs.

Mobility management strategies can be characterized by the type of action, by the target audience or market, or more commonly by the target element of travel behavior. More frequently, the framework of mobility management strategies and enablers is structured around the target elements of travel behavior, as shown schematically in **Figure 9.1**.

Figure 9.1: Mobility Management Strategies and Enablers in Relation to Travel Behavior



Source: Derived from a presentation by TDOT’s Diane Davidson in December 2004 and with material adapted from Wayne Berman of the Federal Highway Administration.

Table 9.1 is a more complete listing of the types of strategies targeted to the four components of the trip-making decision process:

Table 9.1. Mobility Management Strategies

Mode Choice (How the trip is made and on what mode)
Single-occupant-vehicle disincentives: Parking cost, parking availability, managed-use lanes
Carpool/vanpool: Parking cashout, preferential parking, ridematching, high-occupancy vehicle (HOV) lanes, cost subsidy
Transit: Express services, transit benefit, parking cashout, guaranteed ride, passes, park-and-ride lots, , service frequency, fare incentives
Bike/walk/scooter/skate: Onsite facilities, storage, parking cashout, improved pathways
Innovative: Carsharing, flexcars (car rental by the hour)
Premium transit access: Express bus, bus rapid transit, transit congestion bypasses
Public information: Cost of SOV commuting
Time Choice (When and how often a trip is made)
Flextime: flexible schedules
Alternative schedules: compressed work weeks
Demand pricing: higher fares and tolls during peak periods
Location Choice (Where and whether a trip is made)
Telework: Part-time/full-time
Clustered services: Onsite day care, consumer services
Home-work proximity: Special mortgages, relocation incentives, affordable housing
Land use: Smart growth, transit-oriented development, mixed uses, parking strategies
Route Choice (Which path a trip takes)
Tailored information: 511 commuter information, advance traveler information, Internet-based realtime routing information
Access management: Preferential traffic operations treatments

Mobility management strategies are supported and facilitated by “enablers,” components that support, complement, and enhance the core strategies shown in Table 9.1, making the strategies more feasible, practical, attractive, or competitive compared to travel by auto. Table 9.2 lists a variety of mobility management strategy enablers.

Table 9.2: Enablers of Mobility Management Strategies

Information Enablers	Financial Enablers	Technology Enablers
Marketing and education	Tax credits	Internet
Transit service information	Direct subsidies	GPS and navigation
Construction updates	Tax incentives	Wireless
Incident/emergency information	Cost sharing	E-payments
Weather status	Location-efficient mortgages	WiFi networks
Schedules and delays	Pay-as-you-drive insurance	Decision support
Real-time travel data	Parking cashouts	

The Role of Mobility Management

Through its various transportation agencies, our society invests considerable resources in developing, maintaining, and operating our modal transportation networks. Traditionally, the majority of funds have been directed toward the capital development of the system and the physical maintenance of the built infrastructure.

Even today, peak-hour travel periods do not experience the maximum number of possible trips. Typically, some commuters have shifted trip times to avoid the worst peak-hour delays, and other workers are on vacation, home sick, linking several short trips into a chain, or away on business. Imagine the congestion if all possible commute trips were compressed daily into a 4-hour commute window. This hypothetical differential in system performance is indicative of the incremental additional benefits of a well-conceived and executed suite of suitable mobility management strategies.

The dominant response to congestion has historically been to increase system, corridor, or link capacity. This approach has been complemented by Transportation Systems Management (TSM), which involves actions to address signal timing, high hazard locations, traffic management, and related operations elements. The investment in such operational enhancements can significantly affect system operations where capacity is lacking.

Mobility Management Toolbox: Review of Practices

Mobility management addresses the demand side of the transportation equation, with strategies to reduce the amount, extent, timing, need, and manner of travel, with a goal to reduce reliance on single-occupant vehicle travel, especially in peak-hour travel periods. This contrasts with the supply side of the equation, which focuses on increasing the capacity of transportation networks to address increasing demand and congestion and includes facility capacity expansion and TSM strategies that involve actions to improve facility efficiency.

Mobility management and TDM application principles have been gleaned from the national experience in well-executed initiatives. Some of these are described below.

- Mobility management strategies should be conceived to address mode choice, time choice, location choice, and route choice, or a combination of these.
- Mobility management strategies can be grouped into three basic types of measures:
 - Alternatives to single-occupant-vehicle travel
 - Incentives and support strategies
 - Implementation mechanisms

While a variety of classifications of the types of mobility management and TDM actions occurs throughout the literature, this three-element breakdown is simple.

- Mobility management solutions tend to be most effective when targeted at the site, workplace, or activity center level, rather than at a regional or urban level.
- **Impacts of up to a 20 to 50 percent reduction in peak-hour vehicle trips are achievable from mobility management programs with a**

small focus area. The most successful of these use financial incentives and disincentives to induce commuters to use non-single-occupant-vehicle travel means.

These points are relevant to Coral Gables where the opportunities to increase street capacity are limited.

Mobility Management Toolbox: Success Stories

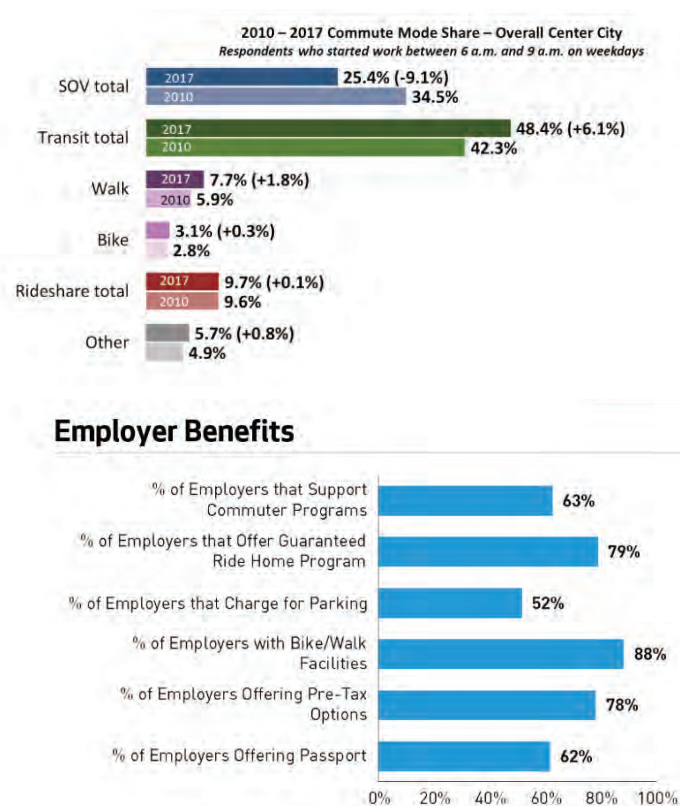
The mobility management and TDM literature has extensive compilations of programs and projects around the country, describing the history and features of initiatives and the results that have been achieved. Examples of successful programs include the Washington State Department of Transportation Commute Trip Reduction Program; the Portland, Oregon, Smart Growth Land Use Management Program; Houston Metro Smart Commuter Program tied into HOV lanes; and the South Florida Commuter Assistance Program.

Successful programs are usually denoted by coordinated interagency efforts that leverage resources, capacity, and program visibility. Programs involving a variety of financial/pricing incentives and disincentives generally perform well. Mature programs exhibit a robust range of tools and techniques to attract, motivate, and sustain participants. More detailed profiles of six example mobility management case studies follow:

- **Montgomery County, MD Transportation Management Districts (TMD):** Given its size and population, the county has focused on six TMDs with greater development density. In the TMDs, an employer with more than 24 employees must sign a Traffic Mitigation Plan (TMP) and a developer must sign a Traffic Mitigation Agreement (TMAg). Participants draw from a menu of options to meet TMD requirements for traffic reduction, including promoting travel choices, transit subsidies, and better bicycle/pedestrian connections. Other options are providing for car sharing

bicycle parking and locker/shower facilities, transit pass subsidies, and fee parking for carpools and vanpools. There is a companion Commute Trip Reduction Program which applies to employers with 100 or more employees, while TMPs apply to entire buildings. Over a seven-year period, the program has shown significant results as shown in **Figure 9.2**. The share of single occupant vehicle (SOV) travel has dropped over 9%, while transit and other modes have increased per the 2017 Center City Commuter Mode Split Survey report prepared by the Seattle DOT. The figure also shows the types of incentives offered by employers. (<http://www.seattle.gov/transportation/projects-and-programs/programs/transportation-options-program/commute-trip-reduction-program>)

Figure 9.2: Seattle TDM City Center Mode Share Results and Benefits Offered



- Movability Austin TDM Challenge:** Movability Austin is a Transportation Management Association focused on advancing travel options in greater Austin. In particular, the Mobility Challenge is an invitation to employers and commuters to help change the math of traffic congestion by encouraging better use of our existing infrastructure and mobility solutions. Movability Austin is partnering with the Capital Area Metropolitan Planning Organization (CAMPO) to develop a specific regional TDM plan with a vision, priorities, and strategies, drawn from baseline data and performance metrics. With downtown, the state Capitol and government offices, and the University of Texas campus, the ingredients for a successful initiative, building on the foundation laid to date, are in place. (<http://movabilityaustin.org/mobility-challenge/>)
- Houston Metro Transit System Reimagining:** Houston was among the first of a growing number of municipal transit systems to reinvent how it deployed its hours of buses in revenue service. After suffering steady ridership declines, the agency decided to modernize and transform how it delivers its bus service. The service plan was revised in three key ways: (1) Major routes now have 15 minute headways so that customers don't have to plan their day around the bus; (2) Routes were reconfigured into a grid pattern from the former radial and loop orientation; and, (3) The same schedules of service prevail across weekdays and weekends to better capture travel needs over the entire week. The first year of the change saw an 8% increase in ridership overcoming the trend for decline. Ridership continues to display an overall pattern of growth. The planners relied on extensive data analysis, public input, and civic discussion in crafting the new service strategy. Now the agency is focusing on first mile/last mile transit access through better stop amenities, sidewalk upgrades, bicycle routes, and partnerships with ridesharing services. (<https://www.ridemetro.org/Pages/Reimagining.aspx>)

These case studies point out the range of opportunities available to the City through expanded mobility management. As an example, the Houston transit system revisions were nearly cost-neutral, and show how reinventing the application of resources can lead to real and positive results in improved ridership, through a simpler and more intuitive route layout, using recent travel data. While locally this would need to be a Miami-Dade County led initiative, it is one in which the affected cities like Coral Gables should have a voice in the process of planning refined transit routes through the City.

The Case for Integrated Mobility Management in Coral Gables

Coral Gables, as a municipality within a large urban area, experiences peak period traffic congestion not unlike many other municipalities. Given its location mid-County, it experiences considerable traffic volumes traversing through the City. In addition, it has its own employment centers in the downtown district and along the US 1 corridor. These circumstances can be viewed in terms of these broader trends:

- Land use continues to trend toward suburban, low-density, auto-dependent character, and statewide travel trends show significant increases in per capita trips, per capita miles traveled, and per capita auto ownership. At the same time, fuel costs, vehicle costs, and housing costs are beginning to stress many household budgets to the point where some fundamental shifts in trip making behavior may begin to manifest themselves.
- Many less expensive projects (those requiring no right-of-way or those having few structures) have been implemented; however, the next increments of capacity will be inherently more costly.
- Funding shortfalls for capacity expansion will likely translate into an outright or de facto reduction in quality of service standards (longer peak periods of freeway congestion or more flight delays at the airport). This is a

common accommodation to chronically inadequate infrastructure funds.

- A key challenge facing public agencies is to extract more productivity from built infrastructure through demand management and capacity utilization in the face of travel trends, and to optimize future investments in capacity expansion in terms of multimodal capacity, flexibility, and choices.
- Silver bullet solutions—a major capital project within a single mode—will become less common due to spiraling material and land costs. Projects will need to be conceived in many cases as multifaceted, involving several kinds of physical investments and operational management.

Mobility management (and TDM) is recognized as an important transportation management tool in ongoing Miami-Dade TPO transportation programs.

The preceding discussion highlights emerging trends affecting the growing demand for transportation, inefficiencies in how facilities are used, the impacts of land use patterns on the need for transportation facilities, the increasing scarcity of funding for conventional and more costly transportation capacity projects, and emerging pressures on individual household budgets in purchasing mobility. All of these factors support the underlying strategy of mobility management to capture more efficient use of built transportation facilities and existing services, provide practical travel choices, and enhance overall mobility with relatively small investments.

Several factors support the pursuit of a more integrated mobility management program in Coral Gables:

- Coral Gables can build upon the existing foundation of mobility management initiatives of its own and in the region.
- Synergistic benefits can be realized by promoting and marketing mobility management programs under an umbrella effort.

- A wealth of research, case studies, best practice findings, and practical results from mobility management and TDM initiatives locally and across the country can be used to steer the initial expansion of efforts and to help define reasonable expectations for enhanced and expanded mobility management in Coral Gables.
- Mobility management initiatives are relatively inexpensive and usually leverage on existing resources, funding, facilities, and services to be more cost effective.
- There are funding and grant programs that can be tied into mobility management initiatives to promote the advancement of mobility management.
- Continued leadership in mobility management initiatives under the mantle of “mobility management” by Coral Gables would demonstrate the importance of an expanded mobility management philosophy to all interests and market segments across the state and complement City policies on quality of life, the environment, and prudent management of transportation system assets.
- Mobility management initiatives are highly scalable and can be pursued in increasing increments over time as programs become established and demonstrate anticipated performance.
- The type and level of mobility management and TDM programs are such that they permit modification and refinement for improved performance, based on periodic monitoring of program performance.
- Successful mobility management programs can help to defer, reduce, or even avoid certain capital investments, allowing scarce funds to be steered toward more cost-effective projects that demonstrate better return on public investment.

Based on these considerations, it is concluded that the pursuit of a comprehensive and integrated mobility management program is a relatively low-cost, low-risk,

high-payback proposition, one that is worthy of pursuit at a pace that is comfortable and achievable, and one with potentially significant and meaningful benefit to Coral Gables’ residents, commuters, businesses, and institutions, both individually and collectively.

A compelling case exists for an increased role in mobility management by Coral Gables, given the extent of existing TDM and mobility management activities, and the potential benefits of properly selected additional initiatives, well-conceived and effectively executed.

It is suggested that Coral Gables should adopt a more proactive role in mobility management. This effort would expand on its current initiatives, partner with other resources, and build community and business awareness about mobility management.

Mobility Management Program Structure and Work Plan

Proposed initiatives are intended to complement, augment, and strengthen ongoing efforts. The proposed mobility management program elements are grouped into three components:

- Program Oversight and Advocacy
- Mobility Management Initiatives
- Regional Partnerships

The first group of elements addresses oversight and advocacy activities that are important to the proper management of the overall program. These activities include mobility management plan refinement, program management and reporting, performance monitoring, coordination and communication, marketing, and policy initiatives. These functions are given program element status because of their importance to program execution and success and to ensure that they are recognized

accordingly and executed appropriately.

The second group of program elements consists of technical program elements that Coral Gables would undertake and manage. The third group comprises efforts in collaboration with partner agencies. **Table 9.4** summarizes the proposed mobility management program elements and those facets of demand management to which they primarily relate. It also discusses various organizational and implementation considerations.

Table 9.4: Summary of Proposed Mobility Management Program Elements

			Mobility Management Emphasis Area			
			Mode	Time	Location	Route
A.1	Coordination and Communication					
A.2	Marketing and Publicity					Not directly applicable.
A.3	Performance Monitoring					
B.1 Congestion Relief						
B.1.1	Vanpooling/Ridesharing	✓	✓			✓
B.1.2	Special Events	✓				
B.2 Choices						
B.2.1	Multimodal Choices	✓				
B.2.2	Smart Growth and Redevelopment		✓		✓	
B.2.3	Conservation Initiatives	✓				
B.3 Corridors						
B.3.1	Building Mobility into Project Development	✓				
B.3.2	Building Mobility into Projects	✓	✓		✓	✓
C.1 Coordinate with Miami-Dade TPO						
C.1	Coordinate with Miami-Dade TPO	✓	✓		✓	✓
C.2 Coordinate with Miami-Dade County						
C.2	Coordinate with Miami-Dade County	✓	✓		✓	✓
C.2 Coordinate with FDOT						
C.2	Coordinate with FDOT	✓	✓		✓	✓
C.2 Coordinate with Local Organizations						
C.2	Coordinate with Local Organizations	✓	✓		✓	✓

The following discussion outlines the key activities in each identified program element.

A. Program Oversight and Advocacy

A.1 Coordination and Communication

- Maintain liaison with partner organizations.
- Provide Commission updates periodically.
- Advocate for specific initiatives.

A.2 Marketing and Publicity

- Develop a presentation and collateral pieces.
- Provide information on the City website.
- Make presentations to civic groups and target audiences.

A.3 Performance Monitoring

- Incorporate mobility management metrics into the City performance tracking system.

B. Mobility Management Initiatives

B.1 Congestion Relief

B.1.1 Vanpooling/Ridesharing

- Coordinate with the South Florida Commuter Assistance Program on program support.
- Work through the City Chamber of Commerce and Business Improvement District to enlist employer participation.
- Require proactive participation by new developments as part of the approval process.
- Coordinate with the University of Miami on employee mobility

initiatives.

B.1.2 Special Events

- Develop multimodal plans to accommodate special civic events in the City.
- Utilize Trolley and Freebee resources to manage remote parking.
- Coordinate with FDOT and County as needed.

B.2 Choices

B.2.1 Multimodal Choices

- Explore opportunities for Trolley service enhancements.
- Monitor and refine Freebee service.
- Coordinate with the County on Metrorail station enhancements and first mile/last mile access actions.
- Coordinate with FDOT on US 1 and Bird Road corridor study multimodal implementation actions.
- Advance capital programs for sidewalk construction and bicycle network implementation.
- Implement the City's grant project for first mile/last mile transit stop improvements on City streets.

B.2.2 Smart Growth and Redevelopment

- Consider requiring development within the GRID to support Trolley capital and/or operating costs.
- Continue to support mixed use developments in targeted areas.
- Continue to examine pedestrian and bicycling access requirements for new projects.

B.2.3 Conservation and Sustainability

- Publicize the cost of operating an auto for a work trip, and the budget savings by using alternative modes.
- Tie into the City’s existing sustainability program.

B.3 Corridors

B.3.1 Planning and Operations

- Coordinate with FDOT and the County on installation of advance traffic management system (traffic signal control) improvements on their respective corridors through the City.
- Coordinate with FDOT and the County for improved pedestrian access across major streets and near key transit stop locations.
- Promote redesign of key arterial streets to provide wider and safer pedestrian sidewalks without obstructions and with ramps and marked crossings.

B.3.2 Building Mobility into Projects

- Leverage the City’s new Complete Streets policy to ensure that arterial street improvement projects serve all street users and that all local street projects consider all users.
- Include transit shelters along major County transit routes at key locations.

C. Local, Regional and TPO Partnering

C.1 Coordinate with Miami-Dade TPO

- Leverage the City’s seat on the TPO Governing Board to promote and prioritize strategic street, transit and other projects.
- Utilize the TPO municipal grant program to fund studies supporting mobility management.

C.2 Coordinate with Miami-Dade County

- Improve liaison with Miami-Dade County to prioritize key improvement projects enhancing mobility management, including street enhancement projects on County streets, transit service and stop upgrades, and future transit corridor development projects.

C.3 Coordinate with FDOT

- Improve liaison with FDOT to prioritize key improvement projects enhancing mobility management.

C.4 Coordinate with Local Organizations

- Promote mobility management concept and strategies with local organizations such as the Chamber of Commerce, the Business Improvement District, University of Miami, and other high employment stakeholders.
- Consider developing transportation alliance that serves local jurisdictions’ desire to implement more progressive approach to multimodal transportation.
- Advancement of these mobility management efforts would build on current City activities under this umbrella that are already active and ongoing and can be pursued on a multiyear basis.

The more formalized mobility management program represents an exciting new dimension to the traditional transportation system and service development role, and an opportunity to formalize it within the City organization as a transportation management tool. It will signal the City’s recognition of the role of mobility management as a key approach to addressing urban congestion, mobility choices, and air quality. More importantly, it will place the City in a position of leadership in mobility management initiatives and, in so doing, help synergize and catalyze mobility management efforts undertaken by the City as well as those managed by

transportation agencies in the region.

Mobility management offers a valuable enabling tool to assist the City in accomplishing these objectives with a low level of investment that can meaningfully complement and enhance the efforts underway in the urban area transportation planning agencies. In this capacity, Coral Gables can function as a robust mobility manager, putting mobility management into action.

Transportation Management Association

A Transportation Management Association (TMA) could be another mechanism for pursuing the activities mapped out under the preceding discussion of mobility management. According to the Victoria Transport Policy Institute (VTPI), “Transportation Management Associations (TMAs) are non-profit, member-controlled organizations that provide transportation services in a particular area, such as a commercial district, mall, medical center or industrial park. They are generally public-private partnerships, consisting primarily of area businesses with local government support. Transportation Management Coordinators are professionals who work for TMAs or individual employers.”

TMAs provide an organizational structure for providing travel demand management programs and services across a number of participating entities and firms, both large and small. They usually have government entities such as cities and transportation departments as members and partners.

Regional or local governments, chambers of commerce or management of a major facility (such as a mall or hospital) can help create a TMA and provide seed funding. Some cities require developers or building management to participate in a TMA to mitigate local congestion and parking problems. TMAs are most usually fund through grants from transportation agencies and partners, as well as by dues paid by members.

VTPI identified the following best practices for TMAs:

- TMAs should support a variety of transportation services, travel options and incentives, including planning efforts to create more pedestrian- and transit-friendly land use, and parking brokerage services to help businesses share and trade their parking resources.
- TMAs should include both positive and negative incentives. TDM programs tend to be most effective when they improve consumers’ travel choices and provide incentives to use alternatives to driving when possible.
- TMAs should work to develop and maintain cooperation between transportation agencies, transit service providers, businesses, employees and residents who are affected by their programs.
- Produce an annual “State of the Commute” report, which describes TDM programs and resources, travel trends, peer comparisons, and performance indicators.

The TMAs in place around the state of Florida include these:

- South Florida Education Center (SFEC) TMA
[<http://www.sfec.org/>]
- Downtown Fort Lauderdale (DFL) Transportation Management Association (DFL)
[<http://www.suntrolley.com/>]
- First Coast Commuter Service
[<http://firstcoastmpo.com/>]
- St. Petersburg Downtown Partnership
[<http://www.stpetpartnership.org/>]
- New North Transportation Alliance
[<http://newnorthalliance.org/>]
- Tampa Downtown Partnership

[<http://www.tampasdowntown.com/>]

- West Shore Alliance TMA

[<http://www.choosewestshore.com/>]

The SFEC TMA is a private, nonprofit organization in Davie that helps manage and reduce congestion in the area and strives to make transportation easy and accessible for students. In addition, the SFEC TMA offers students of all ages, income levels, and cultural diverse backgrounds access to a vast spectrum of educational possibilities including college prep, K-12 education, technical certificates, industry certifications and non-credit programs.

The DFL TMA coordinate the efforts of government and private employers, developers, and property owners in addressing common transportation concerns; improving accessibility and mobility; providing transportation services; and working cooperatively with local and state government for the continued growth and development of downtown Fort Lauderdale while avoiding traffic congestion. This TMA also administers the Sun Trolleys which provide community transportation in the City of Fort Lauderdale to visitors and residents.

A TMA could coordinate with the South Florida Commuter Assistance Program to accomplish certain objectives in travel demand management. Alternatively, the City working with its identified partners could serve as the lead for the functions of a TMA without forming a separate entity.

It is recommended that the City assess the suitability of a TMA versus the City in advancing Mobility Management strategies as it may choose to do.

South Florida Commuter Assistance Program

The South Florida Commuter Assistance Program (SFCAP) is collaboratively managed by District 6 (Miami) and District 4 (Fort Lauderdale), to promote and facilitate carpooling, vanpooling, and other mobility alternatives to the single-occu-

pant vehicle. The services of SFACAP are free of charge to employers and other participants. A 2014 report on the effectiveness of these programs statewide (Commuter Assistance Program Evaluation, Center for Urban Transportation Research, 2014 (<https://www.cutr.usf.edu/wp-content/uploads/2013/09/CAP-Evaluation-Final-BDK84-943-34.pdf>)) found that the South Florida program was the largest and yielded considerable benefits to users and the environment.

A few key statistics on the effectiveness of the SFCAP include these figures for 2011:

• Avoided fuel consumption	\$3,486,000
• Avoided tire wear	\$214,000
• Avoided maintenance	\$956,000
• Avoided depreciation	\$1,528,000
• Total avoided cost	\$6,581,000
• Avoided vehicle miles of travel	18,922,000
• Avoided gas consumption (gallons)	839,000
• Avoided tons of CO2 emissions	7,500
• Vanpool person trips	1,135,000
• Vanpool vehicles	221

SFCAP notes that their programs can assist employers with employee job satisfaction, company finances, maintaining a positive organization image, and improving quality of life in your community and the environment. SFCAP can provide these services:

- Analysis of employee commuting habits.
- Assistance in implementing employee commuter benefits.
- Administration of commuter programs such as the Preferential Parking

Program.

- Web-based tools to help you calculate the overall financial and environmental benefits of an employer’s commuter program.
- Innovative ideas on how to encourage employees to use alternative modes of transportation through use of incentives.
- Potential tax benefits associated with commuting options such as transit, vanpools and parking cash-out.

SFCAP works with employers to develop and implement customized transportation programs to address the commuting challenges facing their worksite. The first step is to have an Outreach Representative meet with company stakeholders, conduct an on-site analysis of the worksite, and survey employee commuting habits. This analysis will assist SFCAP in identifying the solutions that will work best for the company and its employees. Program components may include elements such as:

- Transit trip planning
- Transit discount programs
- Carpool matching
- South Florida Vanpool Program
- Parking management strategies
- Telework programs
- Commuter Tax Benefit program
- Emergency Ride Home program
- Natural disaster/hurricane plans

SFCAP can provide information, background, and case studies for a variety of commuter options noted above. They can convey promotional information for

telework, pooling, user benefits, employer benefits, and more. They also have the Emergency Ride Home program that provides South Florida commuters who car-pool, vanpool, ride transit, bike, or walk, three or more days a week with six free taxi vouchers a year to use in the event of an unexpected emergency or unscheduled overtime.

It is recommended that the City engage with Coral Gables employers to determine the upside of participation in the services of SFCAP.

Complete Streets Policy

Complete Streets is a street design and operations philosophy that seeks to configure all streets as appropriate to serve all travel modes and all users of all ages and abilities. In 2017, the City drafted a “Sustainable Complete Streets Policy” which was reviewed internally, and then presented to the City Commission as a Resolution where the policy was adopted by resolution on February 27, 2018.

Over 1,400 Complete Streets policies have been adopted in the United States, including by at least 33 states, 77 regional planning organizations, 64 counties, and 955 municipalities. In addition, the Miami-Dade Board of County Commissioners unanimously adopted a Complete Streets resolution (995-14) in November 2014, and Miami-Dade County promulgated the Complete Streets Design Guidelines to provide policy and design guidance to local agencies and other engaged in Complete Streets implementation. Through the policy, it is the desire of the City of Coral Gables to renew its commitment to the principles of Sustainable Complete Streets for all of the City’s streets.

The City strives to develop a safe, reliable, efficient, integrated, connected, and livable multimodal transportation system that best enables access, mobility, economic development, aesthetics, health, and well-being for people of all ages and abilities, and supports enhancement and sustainability of the environment.

The transportation system shall be designed, to the greatest extent possible, to ensure the safety, security, comfort, and convenience of pedestrians, bicyclists, transit/paratransit users, assistive mobility device users, motorists, emergency responders, and routine commercial service providers.

When there are conflicting needs among users and modes, the following prioritization will apply:

1. Above all, safety is paramount, followed by mobility.
2. Among modes, pedestrians shall come first citywide, followed by the next most vulnerable types of users; and finally.
3. Seek balance among all modes involved. It is recognized that all modes cannot receive the same type of accommodation and space on every street, but the overall goal is that everyone – young, old, and of varying ability – can safely, comfortably, and conveniently travel across the network using all modes.

Under the policy, the City shall approach every transportation improvement and project phase as an opportunity to create safer, more accessible streets for all users. These improvements and phases include: planning, programming, design, right-of-way acquisition, subdivision and land development, new construction, construction engineering, reconstruction, operation, repair, capital improvements, re-channelization projects and major maintenance, and routine maintenance and rehabilitation.

The balance of the policy narrative addresses:

- Exceptions to the policy.
- Applicability to all public streets as well as encouraging owners of private travelways to participate.
- Applicability to all City Departments as appropriate, developers and

builders as applicable, and all agencies over which the City has permitting authority.

- Partnering and leveraging resources of other governmental agencies, private developers, and utilities.
- Applicability to all transportation and development projects.
- Referencing and modifying the Transportation Element of its Comprehensive Plan, its land development regulations, its roadway design standards, and any modal plans for bicycles, pedestrians, and transit to ensure consistency with the policy.
- Coordinating planned infrastructure investments with the partner transportation agencies.
- Developing a connected network through the policy, repurposing existing rights-of-way for all modes, and linking key civic facilities, commercial centers, and regional hubs, with optimal internal and external connectivity.
- Requiring large new development and redevelopment projects to provide interconnected street networks with small blocks and bicycle/pedestrian connections, as appropriate.
- Promote pedestrian-oriented development where possible through zoning regulations and the land development code related to parking location, building setbacks.
- Encourage context-sensitive designs relating to the project surroundings and community values and promote walkable, livable communities in harmony with adjacent land uses and neighborhoods, with input from local stakeholders.
- The City will integrate natural features and low maintenance native vegetation to protect habitat and natural resources.
- Historic elements will be integrated and preserved, into the design of its

streets.

- The City will design streets with a strong sense of place, using architecture, landscaping, streetscaping, public art, and signage that reflect the community and neighborhood.
- The City will coordinate street improvements in retail and commercial corridors, to promote vibrant and livable districts.
- Thoughtfully apply the best and latest engineering and urban design guidance, standards, and recommendations at the human scale for the needs and comfort of all people.
- The City will provide well-designed, accessible pedestrian bicycle, and transit accommodations on its streets.
- Where conditions permit and warrant, an emphasis will be placed on the addition and strategic placement of landscaping and street trees to provide shade for pedestrians.
- Reduce pavement to the greatest extent possible to improve stormwater management and urban heating effects.
- The City will apply Sustainable Complete Streets principles, incorporating specified roadway design and Complete Street guidance.
- Consideration of stormwater, sustainability, resiliency/accessibility, and attention to aesthetics.
- An annual report will be made to the City Commission showing implementation using these performance measures:
 - Total miles of dedicated bicycle facilities provided.
 - Linear feet of pedestrian facilities.
 - Number of ADA accommodations built.
 - Number of transit accessibility accommodations built.
- Number of new curb ramps installed along city streets.
- Percentage of tree canopy along City streets and/or new street trees planted.
- Crosswalk and intersection improvements.
- Transit trips on the City Trolley.
- Percentage of transit stops accessible via sidewalks and curb ramps.
- Number and severity of total crashes.
- Number of pedestrian-vehicle and bicycle-vehicle crashes.
- Severity of pedestrian-vehicle and bicycle-vehicle fatality crashes.
- Change in multimodal level of service.
- Periodic community surveys conducted to obtain feedback on policy performance.
- The policy will be implemented through the following elements:
 - Public Works Department will be the lead department in the implementation and internal coordination.
 - The Transportation Advisory Board will oversee the implementation of this policy, in coordination with other relevant departments and units.
 - Applicable departments will review current design standards to ensure that they reflect the best available design standards and guidelines.
 - The Transportation Element of its Comprehensive Plan and other relevant existing documents will be updated.
 - The City will maintain an inventory of implemented pedestrian, bicycle, and other neighborhood livability improvement infrastructure, integrated with the existing City database, and used as a tool to identify coverage gaps and needs.
 - Current and potential future sources of funding will be identified and

updates to the project selection criteria will be made. Partner agency funding will be sought.

- Monitor performance measures for completeness in capturing Sustainable Complete Streets implementation benefits, and refine if needed, in order to best collect data on how well the streets are serving all users.
- City staff training through a variety of avenues will be encouraged.
- Every Sustainable Complete Streets project should include an educational component so that users can safely and properly utilize Sustainable Complete Streets project elements.

The Sustainable Complete Streets policy promises to transform the City's streets over time, in keeping with the strong historic and aesthetics context, but allowing for reasoned introduction of street elements that enhance the utility and functionality of streets to build greater travel continuity across all modes.

These recommendations are made in the furtherance of the Sustainable Complete Streets policy initiative:

- Add a Sustainable Complete Streets page to the City Transportation website to explain the concept and how it is applied, with examples.
- Submit the adopted policy to the National Complete Streets Coalition (NCCS) to have the City policy adoption recognized on the NCCS website. <https://smartgrowthamerica.org/program/national-complete-streets-coalition/publications/policy-development/policy-atlas/>
- Consider submitting the adopted policy to NCCS during the 2018 window for submittal: <https://smartgrowthamerica.org/resources/best-complete-streets-initiatives-2017/>. In 2017, 12 policies were recognized for their forward-thinking provisions.
- Propose codifying the City's adopted Sustainable Complete Streets policy as a City ordinance. This would underscore the role of Complete Streets as a

key element of the City's sustainability program and embed certain Complete Streets design process and standards into the street project planning and implementation process. Many jurisdictions around the country have taken this step, including Manatee County, FL. Baltimore, MD is another example where this action is being pursued, and additional information on that initiative can be found at: www.baltimorecompletestreets.com/justification/.

Mobility Fee

In 2016, Coral Gables conducted a study to update its impact fees imposed on new development for Police, Fire, Municipal Facilities, Parks/Recreation, and Sewer Capacity. A new impact for Mobility was also determined in this study. Per the study, the impact fees are one-time development payments used to construct system improvements needed to accommodate the new development. The fee represents the proportionate share of capital facility needs. Impact fees may not be used for operations, maintenance, replacement of infrastructure, or correcting existing deficiencies.

To calculate the Mobility impact fee, the analysts identified those Capital Improvement Program projects that fit the requirement for future capital facility needs and assigned a share of those project costs related to growth associated with development. The analysis defined mobility service units as related to population and employment and forecast the growth of these two parameters. For the incremental increase in both, the analysis then calculated the applicable affected units in terms of daytime population and employment for both residents and non-residents. A person density was assigned to both residential and employment "development units", defined as dwelling units and 1,000 square feet of employment space, and formed the basis for assigning the Mobility impact fee. The analysis identified \$7.3 million of growth cost for Mobility capital projects, and the Mobility impact fee is structured on an equitable basis to recoup that amount over time. This Mobility

growth cost amounts to about 21% of the cost of identified eligible transportation capital costs, therefore making a meaningful contribution to the City's transportation funding portfolio.

The introduction of this Mobility impact fee provides additional funding for essential transportation system improvements, reflecting the incremental demand for these new facilities imposed by new residential populations and employment generated new development in the City.

It is recommended that the City monitor the Mobility impact fee revenue generation over time. Going forward, it would be good policy to identify transportation capital projects more closely tied to new development, whose costs could be better recouped through the Mobility impact fee.

Performance Monitoring

The City has embraced performance monitoring as an embedded approach to assessing accomplishments on key initiatives as defined in its Strategic Plan and in various programs that support the plan. Public Works currently monitors measures such as trolley ridership, miles of bicycle facilities, length of sidewalk additions, pedestrian and bicycle crashes, and others to gauge progress towards established goals.

The Complete Streets policy adopted in early 2018 and discussed in this section identifies another 14 performance metrics which include several of those noted above.

This evaluation framework is critical to continued advancement of various transportation program initiatives for pedestrians, bicyclists, and transit, as well as for the vehicle mode. This approach applies not only to tracking implementation of critical infrastructure projects, but also to operational performance measures such as bicycle and pedestrian crashes. Not all program elements lend themselves to

both physical and operational dimensions, and not all measures that are monitored need to be applied to actual reported program performance.

The City may wish to consider a master matrix of performance measures relating to all of its priority Transportation programs. The value of this approach is that some measures may be used over multiple programs, and the matrix could be organized accordingly. It may also be useful to capture how the measure is calculated and the source of input data.

The organization of the performance measures across transportation programs or components is suggested as follows:

A. Program/Component Category

- Bicycling (corridors/paths, parking, bikeshare)
- Pedestrians (sidewalks, crosswalks, ramps, shade)
- Transit (Trolley, Freebee, County transit)
- Vehicles (volumes at key locations, volume trends, implementation of US 1 and Bird Road corridor recommendations)
- Neighborhood Livability (traffic calming installations)
- General Mobility (public survey, ridesharing, etc.)

B. Performance Measures

- Infrastructure (units installed vs. goal)
- Usage (demand for infrastructure/service where applicable)
- Operations/Safety (crash rate, number of incidents, cost per user, etc.)

Sustainability

The City has firmly embraced the concept of sustainability as demonstrated through its Strategic Plan, its Comprehensive Development Master Plan, the Sus-

tainability Advisory Board, its Complete Streets policy adoption, the Sustainability Public Infrastructure Division as a formal City program, its attention to tree canopies, and a variety of other policies.

Sustainability is embedded as a core principle of how the City operates, and this philosophy carries through into its Transportation programs.

Two key challenges relating to transportation that the City recognizes and is confronting are sea level rise, and greenhouse gases.

As a City with coastal frontage, sea level rise over time will begin affecting residential communities fronting Biscayne Bay, much as it already has in Hollywood and Miami Beach with the King Tide phenomenon. Tidal surge from hurricane events is another intermittent threat to the City's coastal frontage. Rising sea levels could eventually begin affecting public roads; the initial response in Miami Beach has been to elevate roads, but after a few initial projects, this effort is on pause as it is reevaluated.

Another important sustainability front is the carbon footprint of society relating to global warming. One significant approach to this challenge is reducing vehicle miles of travel (VMT). This can be accomplished by increasing use of transit, ride-sharing, bicycling, walking, and teleworking or teleshopping. The discussion of Mobility Management in this section of the report goes into more detail on the strategies to reducing VMT.

The City website features all of its sustainability-oriented and “green” programs. The City Sustainability Management Plan (<https://evogov.s3.amazonaws.com/media/91/media/a84ba0d8-879f-4801-ba83-8106faa78c77.pdf>) lays out its strategy across multiple program areas including Land Use and Transportation, where the immediate focus is on increasing trolley ridership and bicycle/pedestrian enhancements to yield reductions in vehicle miles of travel. There are also targets for reduced fuel

consumption and greenhouse gas emissions.

While the City has been pursuing actions to support attainment of specified targets per the plan, it is considered that more could be done on the transportation sustainability front in terms of promoting less reliance on single occupant vehicle (SOV) trips through more rapid expansion of bicycle and pedestrian networks and connectivity, transportation demand management through a more proactive transportation demand management and/or transportation management association approach to reduce SOV travel, not only for residents but also employees who visit the City daily. It is recommended that the City consider augmenting its sustainability plan with more robust transportation management actions and targets, and follow up with program support to advance the attainment of those targets.

Through its past and ongoing efforts, the City is well positioned to continue progressing towards a more sustainable and resilient setting for the entire community.

Transportation Concurrency Management

An important transportation management of the City is transportation concurrency management. Through the Comprehensive Development Master Plan (CDMP), as discussed in Section 1 of this plan, the City's policies and procedures, reflecting applicable regulations and statutes, lays out its approach to overseeing transportation concurrency. These are several of the key elements in this oversight function:

- CDMP: Goal MOB-2 of the CDMP and Objectives MOB-2.1 and 2.2 with their supporting policies map out the details of concurrency management in Coral Gables, in coordination with the requirements pertaining to State and County roadways.
- Transportation Concurrency Exception Area (TCEA): The TCEA is an element of the City Concurrency Management Program and is defined as

the Gables Redevelopment and Infill District (GRID). The GRID consists of a specified corridor lying within a few blocks its central spines of Ponce de Leon Boulevard and US 1. Within the GRID, developments meeting certain requirements are basically exempt from traffic concurrency requirements. These developments conduct traffic impact studies identifying transportation system impacts, but are not obligated to mitigate those impacts. Most significant development projects within the City fall within the GRID boundaries.

- **Special Transportation Area (STA):** The STA is designated as all of the City lying north of Sunset Drive, with the exception of areas within the GRID. Per the CDMP, the STA is characterized by “special planning and urban management needs related to server limitations of right-of-way conditions, high land values, urban infill development, highly regarded historic, aesthetic, environmental and unique residential nature of the area, combined with central business district requirements for LOS stands which support more intense road and mass transit utilization for productive and essential human and business interact are recognized by the City’s establishment of the STA”.
- **Multimodal (MM) Level of Service (LOS) and Traffic Impact Studies:** As noted, new development or redevelopment projects are required to perform a transportation impact analysis to characterize project trip generation and assess impacts on the surrounding street system, per a predefined analysis methodology. **The City requires as part of this analysis that a MM LOS review be done.** There are established protocols for assessing LOS for each mode – vehicular, transit, pedestrian, and bicycle. The MM analysis is performed individually for each mode rather than in a combined manner so as to not disguise any disparities in the quality of LOS afforded by the proposed transportation conditions of the built project. In addition, this approach allows for evaluation of differing street treatments on the

modal LOS values to assess trade-offs and strike a proper balance in street right-of-way allocation.

The procedures for performing transportation impact assessments for development projects was updated on March 20, 2018 with the adoption of Ordinance 2018-09. This ordinance updated requirements for the conduct of these studies. Previously, a developer would self-fund a transportation impact study following the agreed upon methodology, and typically using the services of a transportation consultant. The City would review these studies as part of the development process using its staff or consultant resources, with cost reimbursement from the developer. The new ordinance stipulates that the City will now take the lead in conducting the studies to provide an independent and fully objective perspective on the development. This provision was to begin being implemented in late November after the City had consultant resources in place.

This composite group of transportation policy and LOS requirements sets the framework for managing and assessing the quality of transportation operations across the City.

While there are often citizen comments about development projects and their associated traffic, many times the incremental traffic added by a redevelopment project is reduced by the traffic associated with an existing development that it is replacing. In addition, the GRID in conjunction with the land use and zoning code has clearly steered development to where it is intended to occur. The issue is that new projects within the GRID, especially along US 1, happen in areas where the street network is saturated with traffic in peak hours. It is also worth noting that the type of development in a given project can significantly affect the amount of external traffic that is generated. For example, a mixed use project with residential, office, retail, and dining tenants is shown to capture more trips internally on foot than conventional single use developments. Moreover, when such mixed use proj-

ects are in proximity to each other, a significant share of vehicular trips are replaced by walking trips, and parking requirements can be reduced through shared parking resources.

Refinements to transportation impact study provisions could be considered, such as carrying out the trip distribution to an extent where each thread of distribution constitutes less than 5% of the receiving roadway traffic volume. This may extend the area of influence for a project to streets outside the GRID and would raise the question of whether mitigation is required.

Another approach that could be considered is creating a Trolley benefit district, or possibly the GRID boundary, where a small property tax would be levied to offset the capital and/or operating requirements of the Trolley, with the rational nexus that the Trolley benefits various parties in its operating corridor, including nearby residents, employers, and businesses. The fee could be set to a partial funding level, but would allow the current funding the City receives from the County Peoples Transportation Plan sales surtax to be stretched further to improve operating hours, days, or coverage.

It is recommended that the City consider the suitability of these two options discussed above in relation to the transportation concurrency management topic.

Technology and the Future of Transportation

Technology in various forms has always had sway over the transportation industry, but the pace of change, innovation, and disruption of business as usual is quickening.

While technology applications generally advance quality of life, they can generate undesirable consequences. These include loss of jobs through automation, increased costs for certain affected services, and persons left behind due to inability to access the technology or understand it. Another unintended consequence on the

transportation front is the negative impact of smartphone navigation applications (apps) that, because of advances in street network mapping coverages, now route traffic on congested arterials into and through residential neighborhoods. This traffic often travels over the posted and safe speeds through these residential districts, diminishing the safety and quietude of residents using their local streets. In response, the City has undertaken its traffic calming program to address the issues created by neighborhood traffic intrusion.

On a positive front, Coral Gables has embraced technology and its integration into City operations for the benefit of its citizens in the form of continuous improvement of customer service and quality of life through ongoing digital transformation. These efforts are branded under the “Smart City Initiative”. The City’s Smart City plan includes a Smart City Hub public platform, a Data Marketplace, an Application Store, Transparency Portals, Data Platforms, and a robust and resilient technology infrastructure with high-speed communications. The City has a forward-looking program driven by its internal Innovation Council.

A wide range of projects are planned or are underway to include:

- Smart street lights with CCTV cameras and sensors at pilot locations.
- Traffic and parking sensors.
- Smart kiosks and digital signs.
- Additional Internet of Things (IoT) sensors and smart lights are being installed on Miracle Mile and other areas of the City. Sensor data currently reports pedestrian counts, and will soon provide real-time vehicle traffic, parking, and environmental data.
- Expand the IoT platform with new components and integrated features.

There are a variety of smart phone apps available as well. Relative to transportation, these include:

- Trolley app: information regarding location of trolley vehicles.
- Freebee app: interface app for reserving pickup with this free downtown transportation service.
- Traffix app: tool to report traffic issues or suggestions to improve City transportation.
- ParkMe app: tool to get information on City parking.



The City also is advancing online tools such as the Parking e-Permitting to facilitate residential onstreet parking permits and the Parking Enforcement System.

The City is to be congratulated for its forward-looking approach to embracing technology to improve the interface between its citizens and solutions to their transportation needs. The City should continue its progressive approach to providing transportation data and information, and web-based and smartphone app links to access transportation services.

On a broader front, the TPO has prepared an exploratory report on the applicability of emerging technologies on transportation planning, operations, and infrastructure, specifically in relation to the upcoming 2045 Long Range Transportation Plan for Miami-Dade County (Impact of Future Technology on the 2045 Long Range Transportation Plan, June 2017).

Per that report: “Technology advancements are causing a shift in the way automotive vehicles are manufactured, as well as the way we will plan, design, and

construct our infrastructure roads, bridges, and transit systems) to accommodate them in the future. Traditional modes of transportation are being inundated with technology, and, as with everything else technology-driven, the future of transportation is evolving at a rapid pace with auto companies, alone, each spending billions of dollars each year. The limitations are, in fact, not technology, as much as the regulations to be put into place.

By adding computers, or on-board units (OBU), with Wi-Fi connections, sensors, cameras, and detectors, vehicles will: communicate, calculate, process data, optimize route planning, avoid crashes, and provide other driver-assist functions. As technology further evolves, vehicles will become fully autonomous. Eventually, the computers will perform all of these tasks simultaneously and as quick as, or quicker than the human brain. This will change the transportation infrastructure of the future.”

Based on extensive literature searches and distillation, the TPO study provided this outlook in a variety of technology categories over the next 10 plus years:

- **Infrastructure** that is capable of supporting future technology needs, such as road design to better support autonomous vehicle technology.
- **Autonomous Vehicles (AV)/Cars:** It is expected that the penetration of privately-owned AV cars will be about 25 percent during the period 2026–2035. This will cause some job losses in the transportation sector. Nonetheless, while AVs will have limited personal ownership, their impact cannot be ignored.
- **Autonomous Vehicles/Buses:** It is possible that AV buses will have a significant place in local transit. The job impact will be complicated by union relations/negotiations. In this area, there will be a need for increased skills, with higher pay, and, likely, increased numbers of maintenance personnel to service the new AV technology.

- **Autonomous Vehicles/Trucks:** The use of self-driving, heavy-duty trucks will be limited but growing during the period 2026–2035. Acceptance of AV trucks by the unions is an issue. So is the willingness of fleet owners to accept completely driverless vehicles—ones that are hands off the wheel as well as foot off the accelerator and brake. Rather, there is more of a focus on “semi-autonomous” truck capability, perhaps for short durations on the highway but more applicable in low-speed environments, such as at truck stops or at warehouse docks.
- **Autonomous Vehicles/Ambulances:** AV ambulances will still be considered experimental in 2026–2035 because fully autonomous ambulances will need to achieve the highest level of automation (Level 4) before allowing the emergency medical technician (EMT) ambulance driver to assist the other EMT with patient care while the ambulance is in motion. On the other hand, there will be increased use of ambulance drones (or AirMules) by hospitals and, to a lesser degree, by government.
- **AV Infrastructure:** Vehicle-to-Infrastructure (V2I) technologies are not likely to be extensively deployed in the United States in the period 2026–2035 as existing infrastructure systems are replaced or upgraded.
- **AV Ridesharing vs. Car-sharing:** It is expected that ridesharing will widely expand in 2026–2035, much of which will be in autonomous vehicles. Uber expects its entire fleet will be fully autonomous by 2030. That, too, will have a job impact, albeit relatively small, both for Uber drivers and those in the taxi business.
- **Logistics:** IoT devices, complemented by gradual implementation of “block chain” technology, that will save logistics businesses billions by helping move goods and assets through their supply chains and warehouses faster and more cheaply.
- **Car-sharing** will be more limited than ridesharing. Still, it will place a number of AV cars on the road.
- **Electric Vehicles (EVs):** There are many limitations that prevent suddenly swapping out large numbers of current vehicles for electric ones. Not everybody has access to charging stations. Nonetheless, with the sale by General Motors of the Chevy Bolt at a reasonable price, and the federal commitment of \$4.5 billion to support development and use of EVs, their presence will grow in the period 2026–2035.
- **Drones:** Between 2026 and 2035, drone use will grow extending beyond aerial photography, real estate, various inspections, agriculture, and film-making, to department stores and food stores plus firefighting, search-and-rescue, and conservation.
- **Roadway Traveler Information Systems:** These systems, already widely in use and will continue to expand.
- **Traffic Management Technology:** By 2026, it is anticipated that Miami-Dade County will be increasing the installation of pole-mounted wireless technologies (cameras, sensors of environmental conditions) to manage everything from traffic/pedestrian activities to flooding to ozone/pollution problems. The investment will need to be steady and significant.
- **Pedestrian Safety Technology:** The County is anticipated to advance in installing solar-powered in-road light systems which detect the presence of a pedestrian crossing or preparing to cross the street, plus safety reflectors which feature sensors, LED lights, wireless charging, and communications made to blink and alert vehicle drivers to pedestrian movements.
- **Bikes:** The County has done extensive study and implementation of bicycle facilities and programs. It is expected to continue that work over the next generation to provide a truly multimodal transportation system.
- **Parking:** In the period 2026–2035, vehicle self-parking will be more prevalent. But its effects on parking facilities will not be determined until the number of CAVs in the vehicle population exceeds a majority.

- **Energy:** The smart grid is one of the most well-developed and widely recognized IoT systems. Smart grids rely on smart meters, which relay information about a system’s energy usage to a central management system to efficiently allocate resources. In the period 2026–2035, the County will push forward in this area of energy efficiency.
- **Solar Roadways:** While possible, it is unlikely that solar roadways will play a significant role locally before 2036. The technology is years away from being proven.
- **Smart Cities:** It is expected Smart Cities technologies will continue to be engaged over the 2020–2025 period and will be aggressively moving forward in the 2026–2035 period.

Automakers, network transportation companies, and even social network providers are very active in offering their own driver-assist options, autonomous, developing autonomous vehicles, and even active on-street CAV testing in those states which permit the activity.

Popular and technical literature is populated with articles and papers on the future of transportation as Connected and Autonomous Vehicles (CAV), also referred to as “self-driving” vehicles), become more present on our streets. Miami-Dade County is advancing partnering projects with the private sector to explore applications locally, and representatives of other transportation agencies, universities, and private companies locally are coordinating their CAV program efforts with an eye to the future.

In the face of the potential that less and less parking supply may be demanded and needed, developers are beginning to consider how they design parking decks for future conversion to livable space, by changing floor heights, designing floor decks for residential loads, using vertical circulation outside the floor decks, and including utility chases to facility conversion.

Increased attention is being directed to First Mile/Last Mile (FM/LM) connectivity. This concept relates to the notion that if we are successful in getting more urban commuters and travelers to use premium transit lines, the connection between the transit station and the final traveler destination becomes critical. While a sector of traveler may be comfortable with walking or biking to fill that travel gap, there are others because of age, physical ability, or comfort factor would prefer a rubber-tired means of making the connection. Today, some of that need is handled by “microtransit” services such as shuttle routes (such as for Tri-Rail), by municipal transit (the Coral Gables Trolley is a great example), by taxi or Uber, or by a friend or spouse. A number of transit agencies have struck contracts with transportation network companies to provide the FM/LM connectivity. Once reliable, convenient, and cost-effective links are established by one of these means, commuters will adopt them as part of their transportation regime.

A planning study conducted by the County for the Metrorail stations, discussed in Chapter 6 -Transit mapped out such improvements. The recently completed US 1 Corridor Study conducted by FDOT also identified proposals to enhance FM/LM connectivity via walking, biking, and other means.

It is recommended that the City continue to embrace the application of technology across the array of transportation improvement solutions, and advocate for the implementation of recommendations of completed studies by other agencies to leverage continuous improvement in transportation choices to identified mobility needs.

9.3 RECOMMENDATIONS

Management and oversight of the transportation system is a critical function in addition to conceiving and delivery infrastructure and maintaining built facilities.

Table 9.5 summarizes the recommendations that were identified in this section regarding transportation policy elements.

Table 9.5: Policy Element Actions

Project No.	Policy	Program	Project	Implementation Phase *			Title	Description	Conceptual Cost Estimate					
				Short Range	Medium Range	Long Range			Capital Cost	Planning	Design	Construction, Engineering, Inspection	Soft Cost Subtotal	TOTAL
TC-1			✓	✓			Implement Analysis Area A traffic calming improvements.	Pertains to those locations which have been tested. Involves design and construction. NOTE: current 5-year traffic calming budget is \$2.431 million.	\$321,802	\$22,526	\$57,924	\$32,180	\$112,631	\$434,433
TC-2			✓		✓		Implement Analysis Area A intersection improvements.	Pertains to those locations which have been tested. Involves design and construction. None yet tested.	\$-	\$-	\$-	\$-	\$-	\$-
TC-3			✓			✓	Prioritize additional Analysis Area A traffic calming and intersection improvements for testing against the traffic calming warrant.	Requires testing against new traffic calming warrant, and followup analysis. Assume 50% approval rate.	\$588,026	\$41,162	\$105,845	\$58,803	\$205,809	\$793,834
TC-4			✓	✓			Implement Analysis Area B traffic calming improvements.	Pertains to those locations which have been tested. Involves design and construction.	\$54,733	\$3,831	\$9,852	\$5,473	\$19,157	\$73,890
TC-5			✓		✓		Implement Analysis Area B intersection improvements.	Pertains to those locations which have been tested. Involves design and construction.	\$172,262	\$12,058	\$31,007	\$17,226	\$60,292	\$232,554
TC-6			✓			✓	Prioritize additional Analysis Area B traffic calming and intersection improvements for testing against the traffic calming warrant.	Requires testing against new traffic calming warrant, and followup analysis. Assume 50% approval rate.	\$210,615	\$14,743	\$37,911	\$21,061	\$73,715	\$284,330
TC-7			✓	✓			Implement Analysis Area C traffic calming improvements.	Pertains to those locations which have been tested.	\$252,367	\$17,666	\$45,426	\$25,237	\$88,328	\$340,695

* NOTE: Short Range 1-2 years | Medium Range 3-5 years | Long Range 6-10 years | FDOT - Florida Dept. of Transportation | DTPW - Miami-Dade Dept. of Transp. & Public Works

Project No.	Policy	Program	Project	Implementation Phase *			Title	Description	Capital Cost	Conceptual Cost Estimate				TOTAL
				Short Range	Medium Range	Long Range				Planning	Design	Construction, Engineering, Inspection	Soft Cost Subtotal	
TC-8			✓		✓		Implement Analysis Area C intersection improvements.	Pertains to those locations which have been tested. Involves design and construction.	\$-	\$-	\$-	\$-	\$-	\$-
TC-9			✓			✓	Prioritize additional Analysis Area C traffic calming and intersection improvements for testing against the traffic calming warrant.	Requires testing against new traffic calming warrant, and followup analysis. Assume 50% approval rate.	\$224,958	\$15,747	\$40,492	\$22,496	\$78,735	\$303,693
TC-10			✓	✓			Implement Analysis Area D traffic calming improvements.	Pertains to those locations which have been tested. Involves design and construction.	\$243,134	\$17,019	\$43,764	\$24,313	\$85,097	\$328,231
TC-11			✓		✓		Implement Analysis Area D intersection improvements.	Pertains to those locations which have been tested. Involves design and construction.	\$85,021	\$5,951	\$15,304	\$8,502	\$29,757	\$114,778
TC-12			✓			✓	Prioritize additional Analysis Area D traffic calming and intersection improvements for testing against the traffic calming warrant.	Requires testing against new traffic calming warrant, and follow up analysis. Assume 50% approval rate.	\$181,812	\$12,727	\$32,726	\$18,181	\$63,634	\$245,446
TC-13			✓		✓		Assess additional citizen traffic calming comments from the second round of open house meetings.	These would be prioritized along with those from actions TC-3, -6, -9, and -12. Assume 50 locations meet traffic calming warrant at average cost of \$25,000 each.	\$1,250,000	\$87,500	\$225,000	\$125,000	\$437,500	\$1,687,500
TC-14		✓		✓	✓	✓	Continue to promote the Pace Car Program.		\$-	\$5,000	\$-	\$-	\$5,000	\$5,000
TC-15		✓		✓	✓	✓	Selectively monitor traffic calming implementation with vehicle speed studies.		\$-	\$10,000	\$-	\$-	\$10,000	\$10,000
TC-16		✓		✓	✓	✓	Utilize the traffic calming tracking table to continue to log and monitor citizen comments on issues.		\$-	\$20,000	\$-	\$-	\$20,000	\$20,000
SUBTOTAL									\$3,584,729	\$285,931	\$645,251	\$358,473	\$1,289,655	\$4,874,383

* NOTE: Short Range 1-2 years | Medium Range 3-5 years | Long Range 6-10 years | FDOT - Florida Dept. of Transportation | DTPW - Miami-Dade Dept. of Transp. & Public Works

CORAL GABLES®

THE CITY BEAUTIFUL



10

IMPLEMENTATION



TABLE OF CONTENTS

#	Title	Page
10	Implementation	10-1
10.1	City Capital Improvements Element	10-1
10.2	Funding Sources.....	10-3
10.3	Recommendations Summary.....	10-6

Tables

10.1	FY 2019-2023 Five Year CIP by Project Type.....	10-1
10.2	FY 2019-2023 Five Year CIP by Funding Source	10-1
10.3	FY 2019-2023 Five Year CIP Breakdown for Grant and Other Funding.....	10-1
10.4	FY 2019-2023 Five Year CIP Project Level Listing for Transportation and Right-of-Way Projects	10-2
10.5	Revenue Sources in Other Cities	10-3
10.6	Summary of Plan Recommendations by Type, Phasing, and Estimated Costs by Mode	10-6

10 IMPLEMENTATION

This section of the report addresses the implementation of the plan’s findings and recommendations. Following up on proposed activities and developing projects for public use are both key in advancing transportation management strategies, and in constructing projects that contribute to a more efficient, safe, multi-modal transportation system that improves the quality of life for City residents, workers, and visitors. In this process, the City is a partner with Miami-Dade County, FDOT, other municipalities, and the private sector.

10.1 City Capital Improvements Element

The City prepares a Capital Improvement Plan (CIP) annually as required under Subsection 163.3177 (3) (b) 1, Florida Statutes. Local governments are required to update their CIP annually, providing a financially feasible Five-Year Schedule of Capital Improvements. The CIP insures that sufficient funds are available to repair, replace, preserve, as well enhance the capital infrastructure of the City.

The CIP reflects the citywide capital investment strategy and is a compilation of projects and programs organized by project type that addresses City Commission priorities, selected based on critical needs meet regulatory requirements, provide for the essential maintenance of City facilities, and remedy conditions to improve public health, safety and welfare for residents, visitors and employees. The most recently approved CIP covers fiscal years (FY) 2019 through 2023.

Table 10.1 presents a summary of the FY 2019-2023 Five Year CIP by type of project. **Table 10.2** presents a summary of the FY 2019-2023 Five Year CIP by funding source for each type of project. **Table 10.3** provides a breakdown of the grant and other funding sources for each type of project.

Table 10.1: FY 2019-2023 Five Year CIP by Project Type

PROJECT NAME	FIVE-YEAR ESTIMATE								FIVE-YEAR PROJECT TOTAL
	PR YR AVAIL	OPEN P.O.	NEW	TOTAL	2020	2021	2022	2023	
CAPITAL EQUIPMENT REPL/UPGRADES	\$ 1,692,808	\$ 1,114,480	\$ 2,111,002	\$ 4,918,290	\$ 2,322,002	\$ 2,421,002	\$ 1,950,002	\$ 1,950,002	\$ 13,561,298
FACILITY REPAIRS/IMPROVEMENTS	1,630,277	376,832	1,291,074	3,298,183	5,504,311	2,217,578	1,221,229	1,015,923	13,257,224
HISTORIC FACILITY RESTORATION	4,816,296	305,982	1,490,000	6,612,278	3,182,250	2,359,534	2,361,852	1,614,205	16,130,119
MOTOR POOL EQUIP REPL/ADDITIONS	674,684	2,027,179	3,606,762	6,308,625	3,380,910	3,440,076	3,500,277	3,561,532	20,191,420
PARKING IMPROVEMENTS	1,430,987	404,394	600,567	2,435,948	2,307,376	16,054,212	456,075	457,966	21,711,577
PARKS & RECREATION IMPROVEMENTS	6,521,652	1,881,706	2,402,655	12,806,013	2,944,992	3,216,217	2,837,760	2,859,626	24,664,608
PUBLIC SAFETY IMPROVEMENTS	54,894,173	12,933,690	5,681,212	73,509,075	3,694,290	1,170,072	777,816	785,223	79,886,476
TRANSPORTATION & RIGHT OF WAY	6,648,981	1,484,188	3,125,000	13,258,169	6,517,502	6,137,670	6,218,650	3,790,000	35,921,991
UTILITY REPAIR/IMPROVEMENTS	6,567,168	1,966,047	4,487,951	13,021,166	6,880,722	6,642,328	6,860,874	7,684,520	41,089,660
TOTAL	\$ 88,877,026	\$ 22,494,498	\$ 24,796,223	\$ 136,167,747	\$ 36,684,405	\$ 43,658,689	\$ 26,184,535	\$ 23,718,997	\$ 266,414,373

Table 10.2: FY 2019-2023 Five Year CIP by Funding Source

PROJECT TYPE	GEN CAP IMPR	MHP	ROADWAY	GOB	CG IMP FEES	STORM WATER	SAFI SEWER	MOTOR POOL	TROLLEY	PARKING SYSTEM	GRANT & OTHER	FIVE-YEAR PROJECT TOTAL
CAPITAL EQUIPMENT REPL/UPGRADES	\$ 13,096,088	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 484,000	\$ -	\$ -	\$ -	\$ 13,580,088
FACILITY REPAIRS/IMPROVEMENTS	11,453,426	-	-	-	153,788	-	-	-	-	-	-	11,607,214
HISTORIC FACILITY RESTORATION	25,709,357	30,810	-	-	-	-	-	-	-	-	317,962	16,130,119
MOTOR POOL EQUIP REPL/ADDITIONS	-	-	-	-	-	-	-	20,191,420	-	-	-	20,191,420
PARKING IMPROVEMENTS	18,300,299	179,835	-	-	1,800,000	-	-	-	-	4,461,845	-	24,742,979
PARKS & RECREATION IMPROVEMENTS	18,683,656	3,114,070	-	181,812	2,645,065	-	-	-	-	2,000,000	-	24,664,608
PUBLIC SAFETY IMPROVEMENTS	22,253,456	-	-	1,401,804	3,048,802	-	-	-	340,000	-	-	29,044,062
TRANSPORTATION & RIGHT OF WAY	17,593,346	374,866	12,348,257	-	-	-	-	-	886,138	473,249	4,318,135	35,212,991
UTILITY REPAIR/IMPROVEMENTS	-	-	-	-	-	20,303,743	18,784,371	-	-	-	-	41,089,660
TOTAL	\$ 117,092,238	\$ 1,649,181	\$ 12,348,257	\$ 1,643,616	\$ 8,607,965	\$ 20,208,761	\$ 18,784,271	\$ 20,656,020	\$ 1,226,138	\$ 1,913,092	\$ 62,279,766	\$ 266,414,373

Table 10.3: FY 2019-2023 Five Year CIP Breakdown for Grant and Other Funding

PROJECT TYPE	SPEC ASSESS	M-D IMP FEE	COUNTY GRANT	MDC GRANT	DEVELOPER FEE	HISTORIC ART	ART IN PUB. PLACES	PRIVATE GRANT	SUN STATE FINANCING	FEDERAL GRANT	STATE GRANT	FIVE-YEAR PROJECT TOTAL
CAPITAL EQUIPMENT REPL/UPGRADES	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
FACILITY REPAIRS/IMPROVEMENTS	-	-	-	-	-	-	-	50,000	1,600,000	-	-	1,650,000
HISTORIC FACILITY RESTORATION	-	-	107,275	-	-	150,000	70,252	-	-	-	425	327,962
MOTOR POOL EQUIP REPL/ADDITIONS	-	-	-	-	-	-	-	-	-	-	-	-
PARKING IMPROVEMENTS	-	-	-	-	-	-	-	-	-	-	-	-
PARKS & RECREATION IMPROVEMENTS	-	-	-	-	2,000,000	-	-	-	-	-	-	2,000,000
PUBLIC SAFETY IMPROVEMENTS	-	-	-	-	958,924	-	-	-	40,383,130	-	1,500,000	51,842,054
TRANSPORTATION & RIGHT OF WAY	29,700	1,668,745	-	597,670	-	-	815,309	-	241,711	1,000,000	-	4,358,135
UTILITY REPAIR/IMPROVEMENTS	-	-	-	-	-	-	-	-	1,977,842	-	173,786	2,151,628
TOTAL	\$ 29,700	\$ 1,668,745	\$ 107,275	\$ 597,670	\$ 2,958,924	\$ 150,000	\$ 905,561	\$ 50,000	\$ 53,142,683	\$ 1,000,000	\$ 1,674,211	\$ 62,279,769

Table 10.4 presents a listing of CIP specific CIP projects for Transportation and Right-of-Way where most transportation project budgets reside, and also for Parking projects where there are related transportation projects.

Table 10.4: FY 2019-2023 Five Year CIP Project Level Listing for Transportation and Right-of-Way Projects and for Parking Projects

PAGE #	PROJECT NAME	FIVE-YEAR ESTIMATE								FIVE-YEAR PROJECT TOTAL
		2 0 1 9				2020	2021	2022	2023	
		PR YR AVAIL	OPEN P.O.	NEW	TOTAL					
TRANSPORTATION & RIGHT OF WAY IMPROVEMENT PROJECTS										
135	Granada & Columbus Plazas Transportation Improvements	-	21,725	-	21,725	278,502	-	-	-	300,227
137	Installation of Bike Infrastructure	1,091,284	217,774	300,000	1,609,058	200,000	200,000	200,000	200,000	2,409,058
139	Multimodal Transportation Plan	-	83,427	-	83,427	-	-	-	-	83,427
141	Old Cutler Road Entry Features	267,500	6,880	-	273,980	-	-	-	-	273,980
143	Citywide Alleyway Paving Improvements	200,042	122,940	-	322,982	250,000	250,000	250,000	250,000	1,322,982
145	Citywide Pedestrian Infrastructure Program	579,807	162,742	530,000	1,272,549	550,000	550,000	550,000	550,000	3,472,549
147	Citywide Street Resurfacing Program	23,057	160,555	540,000	723,607	600,000	600,000	600,000	600,000	3,123,607
149	Channel Markers Upgrade & Maintenance Program	30,093	-	15,000	45,093	15,000	15,000	15,000	15,000	105,093
151	Citywide Traffic Calming Program	610,102	71,611	350,000	1,031,713	350,000	350,000	350,000	350,000	2,431,713
153	Bridges & Waterway Repairs/Impr.	95,204	-	-	95,204	100,000	100,000	100,000	100,000	495,204
154	Bridge Painting Program	113,482	14,144	-	147,626	-	-	-	-	147,626
155	Biltmore Way Street Scapes Improv.	80,000	-	-	80,000	450,000	400,000	-	-	890,000
157	Cartagena Circle Landscape Improv.	124,785	-	-	124,785	-	-	-	-	124,785
159	De Soto Fountain Traffic Circle	200,000	4,185	-	204,185	389,000	-	-	-	543,185
161	Miracle Mile Streetscape Improvements	852,477	201,014	-	1,053,491	-	-	-	-	1,053,491
163	Giralda Ave. Streetscape Improvements	70,862	104,691	-	175,553	-	-	-	-	175,553
165	Ponce de Leon Landscape - Phase III	1,673,500	90,245	-	1,763,745	300,000	-	-	-	2,063,745
167	Neighborhood Improvements North of SW 8th Street	281,250	-	200,000	481,250	200,000	200,000	200,000	200,000	1,281,250
169	Residential Waste Pit Restoration	88,742	100,000	-	188,742	75,000	75,000	75,000	75,000	483,742
171	Street Tree Succession Plan	409,501	-	200,000	609,501	200,000	200,000	100,000	100,000	1,409,501
172	Arangon Pedestrian Lighting Improvements	256,685	68,426	-	325,111	400,000	-	-	-	725,111
173	Decorative Street Lights	400,000	-	-	400,000	200,000	200,000	200,000	200,000	1,000,000
174	LED Street Lights Conversion	300,000	-	150,000	450,000	150,000	150,000	150,000	150,000	1,050,000
175	Monagró Crafts Section Street Ends	240,040	48,570	-	288,610	-	-	-	-	288,610
177	Alhambra Median Landscape Lighting	100,000	-	-	100,000	-	-	-	-	100,000
179	Monument Signage Program Improvements	545,593	5,696	250,000	801,289	250,000	250,000	150,000	150,000	1,601,289
180	Street Ends Beautification	-	-	200,000	200,000	100,000	100,000	100,000	100,000	600,000
181	Underline Bicycle and Pedestrian Bridge	-	-	-	-	250,000	250,000	250,000	-	750,000
182	8th Street Beautification	-	-	300,000	300,000	250,000	250,000	250,000	250,000	1,300,000
183	Acquisition of Gateways	-	-	-	-	500,000	500,000	500,000	500,000	2,000,000
184	North Ponce Streetscape	-	-	80,000	80,000	300,000	300,000	300,000	-	980,000
185	Alhambra Circle Bike Lanes	-	-	-	-	250,000	1,047,670	-	-	1,297,670
186	Last Mile Transit Stop Improvements	-	-	-	-	-	150,000	1,878,650	-	2,028,650
TOTAL TRANSPORTATION & RIGHT OF WAY PROJECTS		8,648,981	1,484,188	3,125,000	13,258,169	6,517,502	6,137,670	6,218,650	3,790,000	35,921,991
PARKING IMPROVEMENT PROJECTS										
75	Garages 2 & 6 Improvements	282,548	34,978	-	307,524	-	-	-	-	307,524
77	Parking Lots & Garages Repairs/Replacement Program	200,050	9,720	120,567	330,337	122,376	124,212	126,075	127,966	830,966
79	Parking Lot Lighting	312,137	18,811	180,000	510,948	180,000	180,000	180,000	180,000	1,330,948
81	Installation of Adult Space Play Stations	830	132,710	300,000	433,540	300,000	150,000	150,000	150,000	1,183,540
83	Closed Circuit Television Security System	1,174	-	-	1,174	120,000	-	-	-	121,174
85	Lot 25 Park Development	378,260	51,175	-	429,435	300,000	300,000	-	-	1,029,435
86	Garage 7 Design and Construction	248,000	167,000	-	415,000	1,285,000	15,300,000	-	-	17,000,000
TOTAL PARKING IMPROVEMENT PROJECTS		1,430,967	404,394	600,567	2,435,948	2,307,376	16,054,212	486,075	457,966	21,711,577

The following points summarize the key elements of the plan recommendations over the 10-year plan horizon:

- The majority of the recommendations are project related with 59 of 116 recommendations. Note that some recommendations, such as traffic calming, contain several proposed improvements within one recommendation so the total number of discrete projects is larger.
- The timing of the majority of projects is in the short-range and medium-range periods. This includes some ongoing projects as well as some newly recommended actions.

- The Walking element of the plan is the largest but includes a \$6 million allowance for City participation in the development of the Underline corridor within the City.
- The Vehicles element of the plan is next largest, owing to the fact that the transportation projects included in the existing City Capital Improvement Program (CIP) are incorporated into the recommendations table.
- The Traffic Calming element is third in size, and includes the existing CIP budget allocations as well as new recommendations for additional traffic calming as discussed in Chapter 8 of the plan.

10.2 Funding Sources

Funding for transportation projects comes from three primary sources: Local, State and Federal. Each year funding is more difficult to come by. Cities and counties, face the dilemma of rising costs of transportation projects, increasing traffic volumes and limitations on the ability to generate revenue.

The cost of construction and materials has consistently increased by a sustained rate of over 3% per year, or nearly 35% per decade, more than the overall rate of inflation. At the same time, there is continuing pressure on local governments to address urban growth and the resulting traffic congestion and neighborhood traffic issues, while striving to provide travel choices to their public. Transportation needs continue to outpace funding resources. This transportation plan has identified numerous additional improvement actions across all the modal programs that are in excess of the historic level of transportation project funding in Coral Gables.

As a result, it will be necessary for the City to refine the priorities across the 116 individual recommendations of this plan, and determine which are to be included in the updated CIP for implementation. While it is noted that there are a number of recommendations which are no-cost or low-cost in nature, involving staff time to formulate and support implementation of policies or oversee program-type actions, there is still the need to prioritize the capital improvement types of projects. The City has been resourceful in securing grant funds for some projects such as the Last Mile Transit Stop project. However, strategies that leverage federal, state, and county funding, complemented by improvements funded through development project agreements will be in high demand going forward.

A recent survey of funding sources utilized by cities across the country is summarized in **Table 10.5**. Of the cities surveyed, the large majority utilized property tax and sales tax revenues. Impact fees and gas taxes were relied on in about half

of the cities. More scattered use was made of local payroll taxes and local vehicle registration fees.

Table 10.5: Revenue Sources in Other Cities

City	Property Tax	Sales Tax	Payroll Tax	Impact Fee	Veh. Reg. Fee	Gas Tax
Atlanta, GA	✓	✓		✓		
Austin, TX		✓				
Charlotte, NC	✓	✓			✓	
Dallas, TX	✓	✓				
Denver, CO	✓	✓				
Ft. Worth, TX	✓	✓		✓		
Indianapolis, IN	✓		✓			
Minneapolis, MN	✓	✓				
Nashville, TN	✓	✓				
Orlando, FL	✓			✓		✓
Phoenix, AZ				✓	✓	✓
Portland, OR	✓			✓		
Raleigh, NC	✓	✓		✓		
San Diego, CA	✓	✓		✓		✓
San Jose, CA	✓	✓		✓	✓	✓
Seattle, WA	✓	✓			✓	✓
Tampa, FL	✓	✓		✓		✓

The following discussion summarizes existing and potential funding sources that can be considered and pursued towards more complete and sooner implementation of plan recommendations.

Funding resources for the current CIP are summarized as follows:

- Coral Gables Impact Fees
- Federal Grants
- General Capital Improvement Funds
- General Obligation Bonds
- Miami-Dade Impact Fees

- Miami-Dade Peoples Transportation Plan
- Metropolitan Planning Organization Grant
- Neighborhood Renaissance Program
- Special Assessment
- University of Miami

Other transportation projects within Coral Gables are funded by transportation partners FDOT and the Miami-Dade DTPW, using a variety of funding sources that support their infrastructure programs.

Key funding sources are profiled as follows:

Local Funding. Local funding is typically generated within a city mostly from property tax levies, and augmented by other smaller funding sources. In some instances, communities also have concurrency fees or impact fees which are applicable to local infrastructure projects. In some locales, concurrency or impact fees have evolved into mobility fees which embrace all travel modes (pedestrian, bicycling, and transit).

Property Tax: Property taxes are typically the largest source of revenue for municipalities. Property taxes may be allocated to capital funding through the general fund or dedicated to capital or bond issues through a separate ad valorem property tax levy. A property tax offers a broad based revenue stream.

Local Impact Fees and Concurrency Management: The City's Concurrency Management System, Mobility fee, and impact fees are discuss in Chapters 1 and 9.

Miami-Dade TPO SMART Moves Program. The former Municipal Grant Program overseen by the Miami-Dade TPO has morphed into the SMART Moves program, whose focus is now on studies and project development for improvements which interconnect in some manner with the SMART Plan suite of transit

improvement projects including six primary new premium transit corridors and the supporting Bus Express Rapid Transit Network. The original Municipal Grant Program accepted proposals from municipalities to receive funding on a competitive basis. A 20% funding match from the municipality was required for participation. The City was selected as a SMART Moves program recipient for its current City of Coral Gables Road Network Level of Stress Assessment.

Miami-Dade County People's Transportation Plan, ½ Penny Sales Tax Miami-Dade County's People Transportation Plan (PTP) half-penny transportation surtax was approved by Miami-Dade County voters in November 2002. The PTP funds to be provided were for major transit and road improvements. Twenty percent of the total funding is provided to municipalities, based on their population. Each city must spend at least 20% of their funds on transit projects. Importantly, this source of funds can be used for a local match to federal funding. Coral Gables uses its allocation from this source to fund the Coral Gables Trolley.

Local Option Fuel Taxes: County governments are authorized to levy up to 12 cents of local option fuel taxes in three separate levies on fuel sold within the county. The funds are used for transportation expenditures. The ninth-cent fuel tax is a task of 1 cent on every net gallon of motor and diesel fuel sold within a county. The tax of 1-6 cents on every net gallon of motor and diesel fuel sold within a county. The tax of 1-5 cents on every net gallon of motor fuel sold within a county, with diesel fuel being exempt.

State Funding: The State of Florida through FDOT funds transportation investments on State, county and local roadways. However, the funding emphasis of FDOT is upon its Strategic Intermodal System.

FDOT Safety Office Programs: FDOT funds grants that address traffic safety priority areas such as aging road users, community traffic safety, impaired driving,

motorcycle safety child passenger safety, pedestrian and bicycle safety, police traffic services, speed and aggressive driving, teen driver safety, and traffic records. Several of these are identified as high-return categories and are favored investments. These grants require a local match.

Economic Development Transportation Fund: The Economic Development Transportation Fund, often referred to as the Road Fund, is an incentive tool designed to alleviate transportation needs for a specific company's location or expansion decision. The award amount is a function of the number of new and retained jobs and the eligible transportation project cost up to a \$3 million ceiling. The award is made to the local government on behalf of a specific business for the described transportation improvements.

Transportation Regional Incentive Program (TRIP): The TRIP fund was created as part of growth management legislation under SB 360 in 2005. Its purpose is to support regional planning by providing state matching funds for improvements to regionally significant transportation facilities as determined by regional partners. TRIP funds can match local funds up to 50% of project cost and in-kind contribution and private funds are allowed.

Federal Funding Programs: Federal funding programs support in a major way large transportation projects normally led by state DOTs. The US DOT helps communities fund transportation projects by offering grants to eligible recipients for a variety of purposes, through the provisions of the Fixing America's Surface Transportation (FAST) Act., Enacted on December 4, 2015, it was the first federal law in over a decade to provide long-term funding certainty of surface transportation infrastructure planning and investment, and incorporates these funding components:

- Surface Transportation Block Grant Program – funds transportation improvement projects
- Highway Safety Improvement Program – addresses enhancement of safety on roadways
- Transportation Alternatives – combines the prior Transportation Enhancement, Safe Routes to School, and Recreational Trails Programs into a combined program.
- National Freight Program
- Nationally Significant Freight and Highway Projects Program.

10.3 Recommendations Summary

Throughout each chapter of this report beginning with Chapter 4 – Walking, plan recommendations are summarized at the end of the chapter. The overall plan recommendations are structured to relate to policies, programs, and projects. This section addresses the policy aspects of the overall transportation plan.

As noted in Chapter 9, policies can shape how street and multimodal improvement projects are defined and engineered, how new developments are reviewed for transportation impacts and how community needs such as pedestrian crosswalk and sidewalk construction are advanced. Well thought-out policies can also influence how trolley service upgrades are targeted, and how bicycle facility projects are vetted and implemented. These initiatives are underpinned by the provisions in the City Comprehensive Development Master Plan as discussed in Section 1 and by other supporting ordinances, and regulations.

Programs relate to ongoing efforts that complement policies and projects by providing an educational initiative, raising awareness of policies and procedures affecting how the transportation system can be used, publicizing the availability of City services and facilities for public use and benefit. An example is the PACE Car program the City sponsors through which residents can provide an example of proper driving behavior in local neighborhoods.

Projects comprise the majority of plan recommendations, covering a variety of improvements to address traffic safety, traffic management, traffic operations, and creating facilities to enhance pedestrian and bicycle circulation and safety. While many projects are the initiative and responsibility of the City, partner agencies such as the County and FDOT have a leading role on certain roadways for funding and implementing projects.

The recommendation tables in each chapter include the following components for each recommendation:

- Name and description
- Type: policy, program or project
- Phasing: short, medium or long-range
- Cost estimate: capital, planning, design, and construction related cost elements

Table 10.6 provides an overview of the transportation plan recommendations in terms of project type, phasing, and costs.

Table 10.6: Summary of Plan Recommendations by Type, Phasing and Estimated Costs by Mode

Chapter	Title	Number of:			Phasing by Range:					
		Policies	Programs	Projects	Short Only	Medium Only	Long Only	Short & Medium	Medium & Long	Short, Medium & Long
4	Walking	5	12	15	20	8	0	1	0	3
5	Bicycling	3	7	11	11	5	4	1	0	0
6	Transit	2	5	4	8	2	0	0	0	1
7	Vehicles	0	9	16	13	7	4	1	0	0
8	Traffic Calming	0	3	13	4	5	4	0	0	3
9	Policy Element	8	3	0	7	5	2	2	0	1
	TOTAL	18	39	59	63	32	14	5	0	8

Chapter	Title	Estimated Cost by Project Development Stage (2019)				
		Capital	Planning	Design	Construction	TOTAL
4	Walking	\$ 9,488,800	\$ 836,716	\$ 1,707,984	\$ 948,880	\$ 12,982,380
5	Bicycling	\$ 3,174,100	\$ 313,295	\$ 471,330	\$ 261,850	\$ 3,664,975
6	Transit	\$ 1,510,000	\$ 170,700	\$ 271,800	\$ 151,000	\$ 2,103,500
7	Vehicles	\$ 6,955,000	\$ 629,350	\$ 1,251,900	\$ 695,500	\$ 9,531,750
8	Traffic Calming	\$ 3,632,729	\$ 289,291	\$ 653,891	\$ 363,273	\$ 4,939,183
9	Policy Element	\$ -	\$ 155,000	\$ -	\$ -	\$ 155,000
	TOTAL	\$24,760,629	\$ 2,394,352	\$4,356,905	\$ 2,420,503	\$33,376,788

The majority of recommendations fall within the short-range time frame. Many of these are low-cost policy and program actions. There are a significant number of medium-range recommendations as well. A few recommendations span multiple time frames.

The table also summarizes project cost estimates. A number of recommendations relate only to the planning development stage of a project and do not involve a capital project. For capital projects allowances were made for planning, design, and construction oversight components. Projects in the current CIP are also captured in the estimate. A detailed spreadsheet was utilized to document estimated project costs by individual project. These tables are provided at the end of each plan chapter that contains recommendations, to include all the information provided in **Table 10.6**.

Remaining steps regarding plan recommendations include the following:

- Identify priority non-capital plan recommendations for follow up actions.
- Prioritize capital improvement projects, considering ongoing efforts, relation to other projects, and funding availability.
- Incorporate selected projects into the updated CIP for the 2020-2024.

This transportation plan provides a blue print to continue the evolution and enhancement of Coral Gable's transportation infrastructure over the next 10 years. Implementation of the plan findings and recommendations will support the transportation network in terms of efficiency, safety, and multimodal travel choices, enhancing the quality of life for the City's citizens, workers, students, and visitors.