

Middle Beach encompasses the neighborhoods between Dade Boulevard in the South to 63 Street in the North, and includes the communities of Allison Island, Bayshore, Nautilus, La Gorce, and Oceanfront. The mid beach community boasts some of the best real estate in the country, with their narrow, tree lined streets and adjacency to the beach.

As the Transportation Report Card Shows, most of the trips in this area are made by car. This is one of the most suburban parts of Miami Beach, and is heavily designed around the car. 41 Street is the only pedestrian corridor in the area, and the beachwalk is the only protected bicycle facility.

Within the network, La Gorce Neighborhood forms a critical connection between Nautilus to the South, and North Beach. There are only 6 north/south corridors in Mid-beach. Four of these converge at 63 street in La Gorce. Alton Road is a critical north-south auto-connection, with volumes and speeds that require protected facilities, but a protected facility along this corridor will be difficult to accomplish in the short term. This plan proposes two alternate low-stress routes that incorporate North Bay Road and the 2- mile Pine Tree/La Gorce pair.



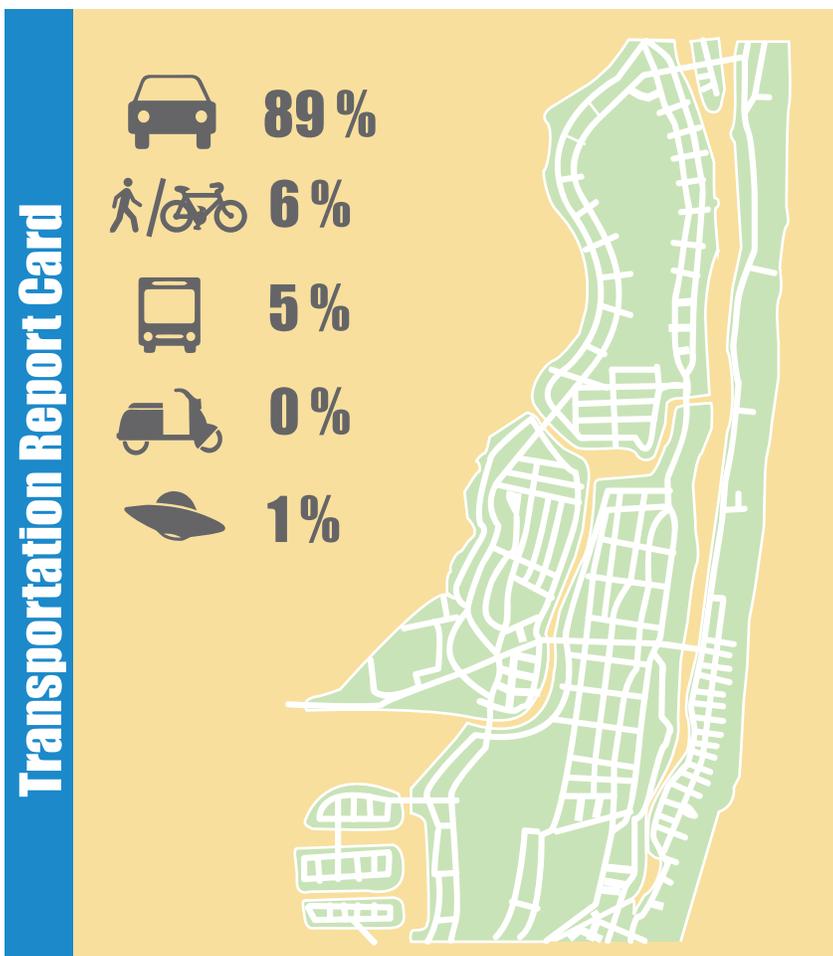
This northbound only Alton Road bicycle lane terminates abruptly at Chase Avenue.



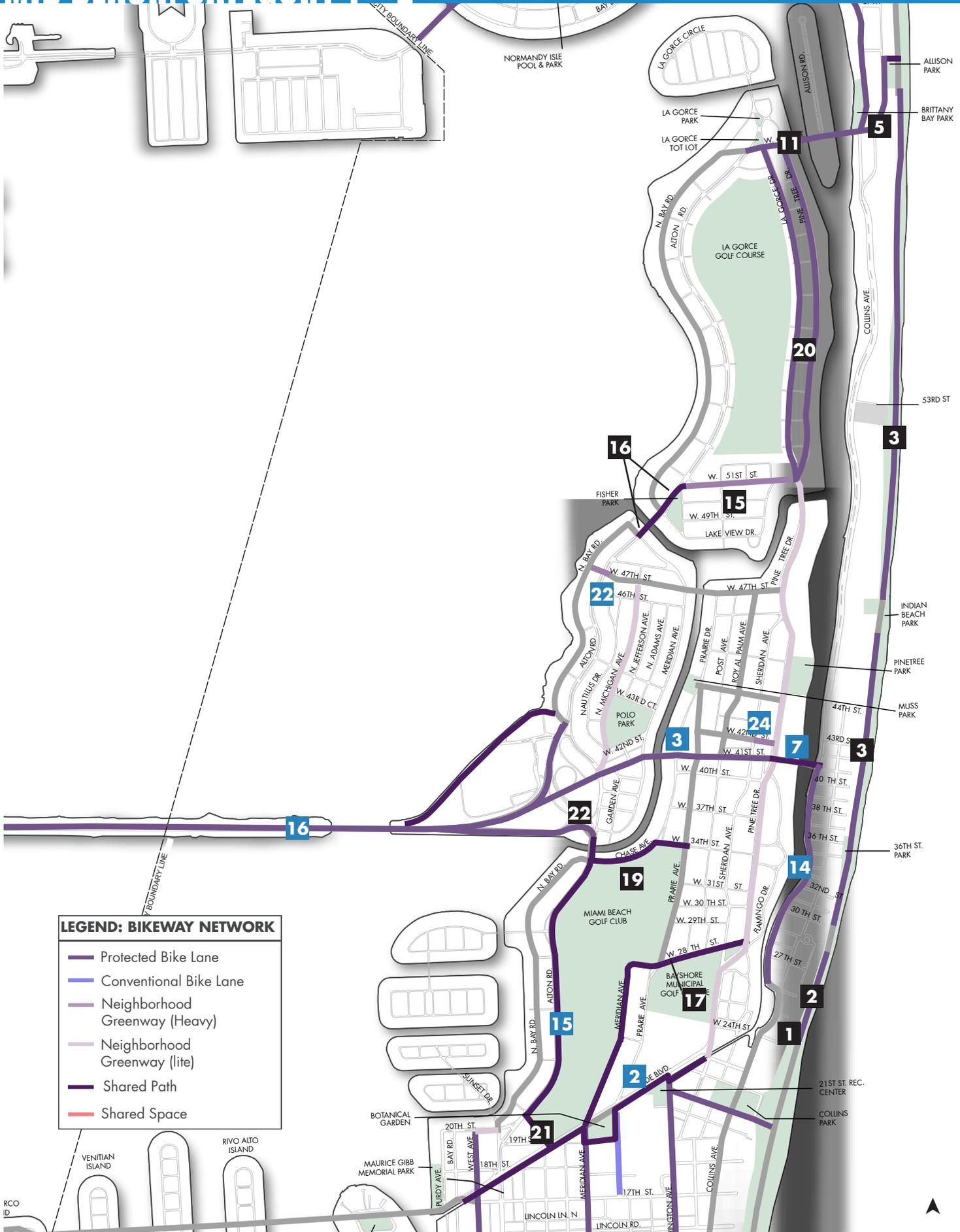
Along 47th Street, bicycle lanes of varying quality connect Pine Tree Drive with Alton Road



Narrow sidewalks along the 41st Street leave little room for bicycle parking or other pedestrian-oriented amenities.



# MID BEACH: CATEGORY 1 + 2



## LEGEND: BIKEWAY NETWORK

- Protected Bike Lane
- Conventional Bike Lane
- Neighborhood Greenway (Heavy)
- Neighborhood Greenway (lite)
- Shared Path
- Shared Space



## CATEGORY 1: FILLING IN THE GAPS

- 2** Design the section of the Beach Boardwalk between 24th and 29th, to accommodate adjacent protected bike lanes.
- 3** Design the section of the Beach Boardwalk between 30th street to Allison park ,to accommodate adjacent protected bike lanes.
- 5** Protected bike lane on 63rd St from Indian Creek to Atlantic Way.
- 11** Protected bike lane on 63rd St from Indian Creek to Alton Road.
- 15** Create bicycle lanes along W. 51st between Alton Road and Pine Tree Drive.
- 16** Shared Path along Alton Rd, between 51st and and North Bay Road.
- 17** Shared path Along W. 28th street between Prairie Ave. and Pine Tree Drive.
- 19** Shared path along Chase Avenue between Praire and Alton Road to Julia Tuttle junction.
- 20** Protected bike facilities along Pine Tree Drive and La Gorce Drive between 51st and 63rd St.
- 21** Shared path along North Michigan between Dade Boulevard and Alton Rd.
- 22** Protected bike lanes on Alton Road @ North Bay Road intersection.

## CATEGORY 2: IMPROVEMENT TO EXISTING FACILITIES

- 2** Create a robust shared path along Dade Blvd between Purdy Ave and Pine tree drive.
- 3** Protected bicycle facilities along 41st between Pine Tree and Julia Tuttle Cswy.
- 7** Shared path on 41st St, between Indian Creek and Pine Tree Dr.
- 14** Protected bike lane along Indian creek between 41st and 26th St.
- 15** Shared path along Alton Rd, between N. Michigan and Chase Ave.
- 16** Protected bike facilities along Julia Tuttle Causeway from City limits to Alton Road interchange.
- 20** Establish North Bay Road as a neighborhood greenway
- 22** Extend bike lanes on W. 47th st. West from Alton Road to North Bay Road.
- 24** Extend bike lanes on W. 42nd st from Sheridan to Pine Tree Dr.



## CATEGORY 3: ASPIRATIONAL

In order to achieve the 2035 modeshare goals, major connections will need to be made in the bicycle network. Among the changes are:

- 9** Protected bike facilities along Pine Tree Dr. between Dade Blvd and 51st Street.
- 15** Greenway on Prairie Avenue between 44th and 47th St.
- 16** Greenway along 20th St. between Purdy Avenue and N. Michigan.
- 17** Collins Ave, Protected bike lanes from 41st to 63rd
- 20** Shared Path along Maurice Gibb Memorial Park
- 24** Greenway along Purdy Ave, between the Venetian Causeway and 20th street.
- 25** Greenway on Royal Palm Ave. between 28th and 41st street.
- 27** Shared path along the Atlantic Trail between 24th and 29th street.
- 28** Shared path along the Atlantic Trail from 29th street to Allison Park.



Digital speed readout signs remind motorists when they are exceeding the speed limit along Alton Road.



An old Bike Route sign along North Bay Road reminds users of the street's history as a preferred alternative to cycling Alton Road.



Looking east along a short residential street located between La Gorce and Pine Tree Drive. Narrow residential streets like this provide a pleasant cycling environment.



South Beach has the highest volume of pedestrians and cyclists in Dade County, and competes only with Key West for having the most cyclists per capita than anywhere else in the southeastern United States.

For the purposes of street design, everything south of Dade Boulevard should be considered a pedestrian and bicycle priority zone. In the short term that means certain streets should be converted into bicycle boulevards with limited cut-through traffic, while other streets are wide enough to accommodate parking protected bike lanes now in anticipation of future reconstruction projects.

In the long term, the overall strategy on Miami Beach is to provide sidewalk level protected bike lanes on major streets, with parallel bicycle boulevards through Flamingo Park. The long term plan also envisions a shared path loop around south beach using the Baywalk on one side, and Beachwalk on the other.

Crash Data shows that South Beach has the highest concentration of crashes in all of Miami Beach. Major hot spots include the intersection of Alton Road and 17th Street and 5 Street and West Avenue.



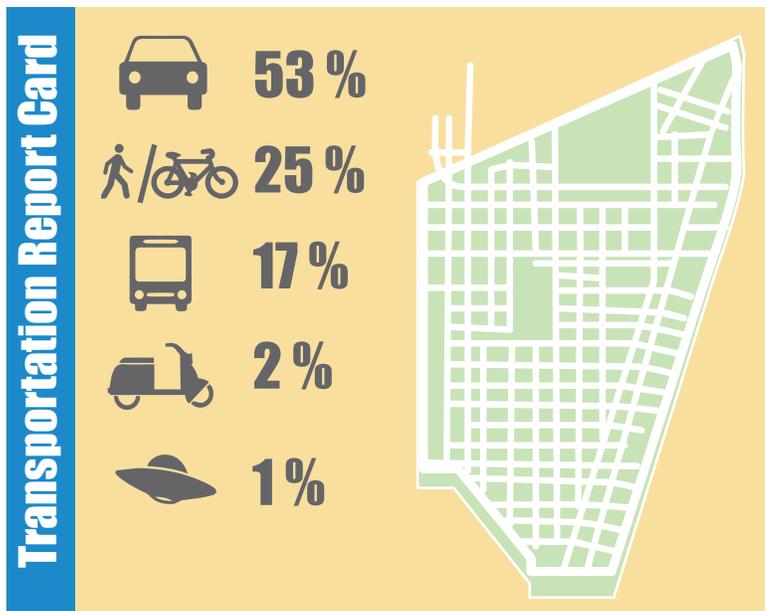
The 16th Street bicycle lane, west of Alton Rd. The use of dashed lines adjacent to the parking lot entrance visually defines a potential conflict point for motorists and cyclists.



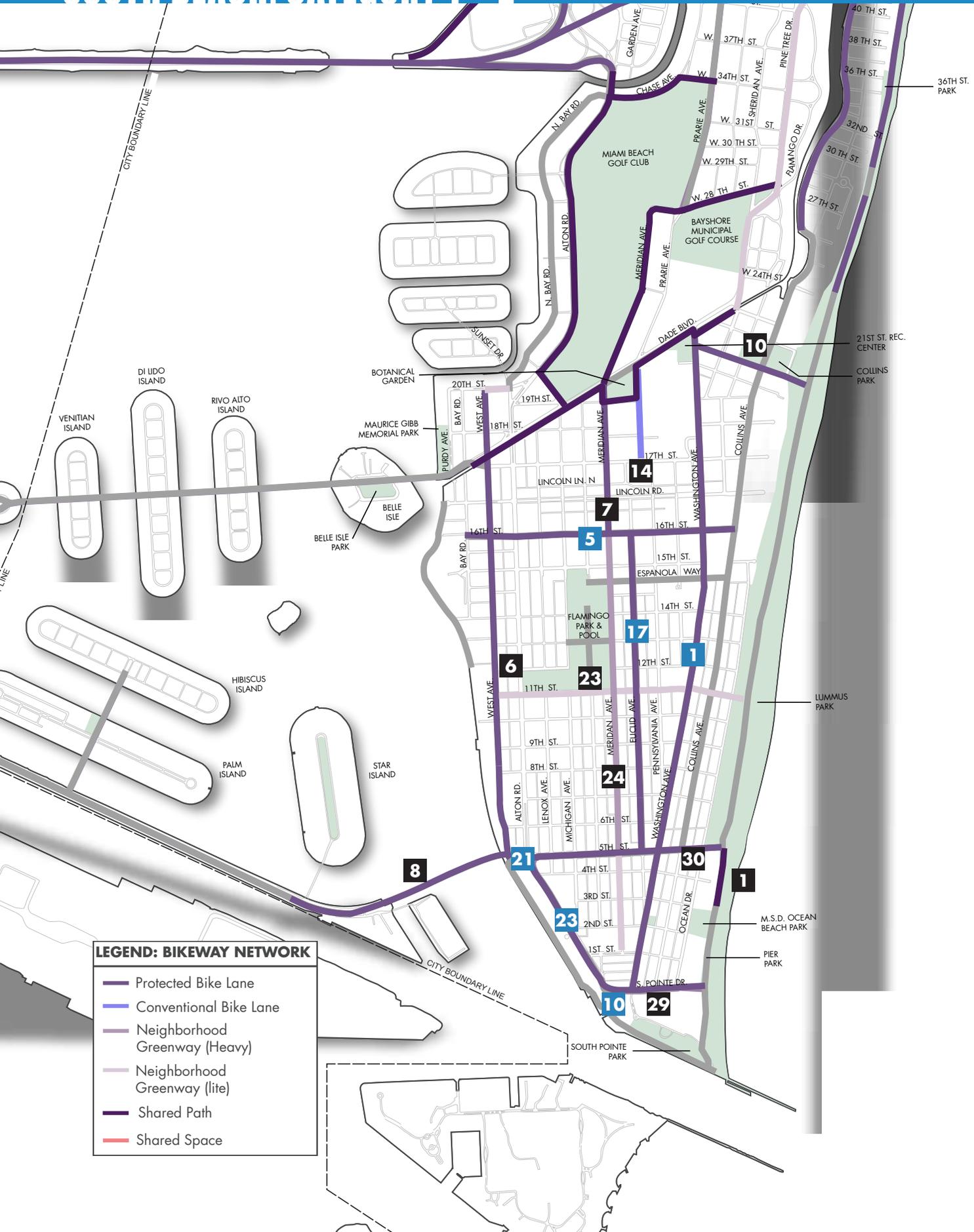
New bicycle lanes along 5th St. improve conditions for skilled bicyclists. However, the eastbound lane ends suddenly at Lenox Avenue, and without indication for how cyclists should continue to navigate.



Sharrows on Washington Ave. help guide bicyclists away from the opening doors of parked cars. They also indicate to motorists that the road is a shared space.



# SOUTH BEACH: CATEGORY 1 + 2



**LEGEND: BIKEWAY NETWORK**

- ▬ Protected Bike Lane
- ▬ Conventional Bike Lane
- ▬ Neighborhood Greenway (Heavy)
- ▬ Neighborhood Greenway (lite)
- ▬ Shared Path
- ▬ Shared Space

## CATEGORY 1: FILLING IN THE GAPS

The street network in South Beach is one of the best in the world. Despite the challenges presented by over designing the streets for cars, a network of tree-lined residential streets, and a robust bicycle culture, the short-term plan proposes an aggressive expansion of protected paths around South Beach. There are also opportunities to dovetail with upcoming reconstruction projects, such as the project planned for West Avenue.

- 1** Redesign Path along the Atlantic Trail from 3rd st to 5th st.
- 6** Protected bike lane facilities along West Ave, between 20th and 5th St.
- 7** Protected bike lanes along Meridian Ave, between Dade Blvd and 16th St.
- 8** Protected bike lanes along MacArthur Cswy between the Fisher Island Ferry Terminal and 5th/Alton Intersection.
- 10** Protected bike lane along 21st St between Atlantic Trail and Washington Avenue.
- 14** Bike lane along Convention Center Dr. between 17th St and Dade Blvd.
- 23** Greenway along 11th st from West Avenue to the Atlantic trail.
- 24** Greenway along Meridian Ave south of 16th Street.
- 29** Extend the existing bike lanes from Ocean Drive to the Atlantic Trail.
- 30** Extend bike lanes from Collins to the Atlantic Trail along 5th Street.

## CATEGORY 2: IMPROVEMENT TO EXISTING FACILITIES

- 1** Protected bike lanes along Washington Avenue between South Pointe Dr, and Dade Blvd.
- 5** Protected bike lane along 16th St, from Collins to Bay walk

- 10** Protected bike Lanes on South Pointe Dr, between Atlantic Trail and Alton Road.
- 17** Protected bike lane along Euclid Ave.
- 21** Protected bike lanes at Alton and 5th Intersection.
- Protected bike lanes along Alton from from South
- 23** Pointe Dr to 5th Street.

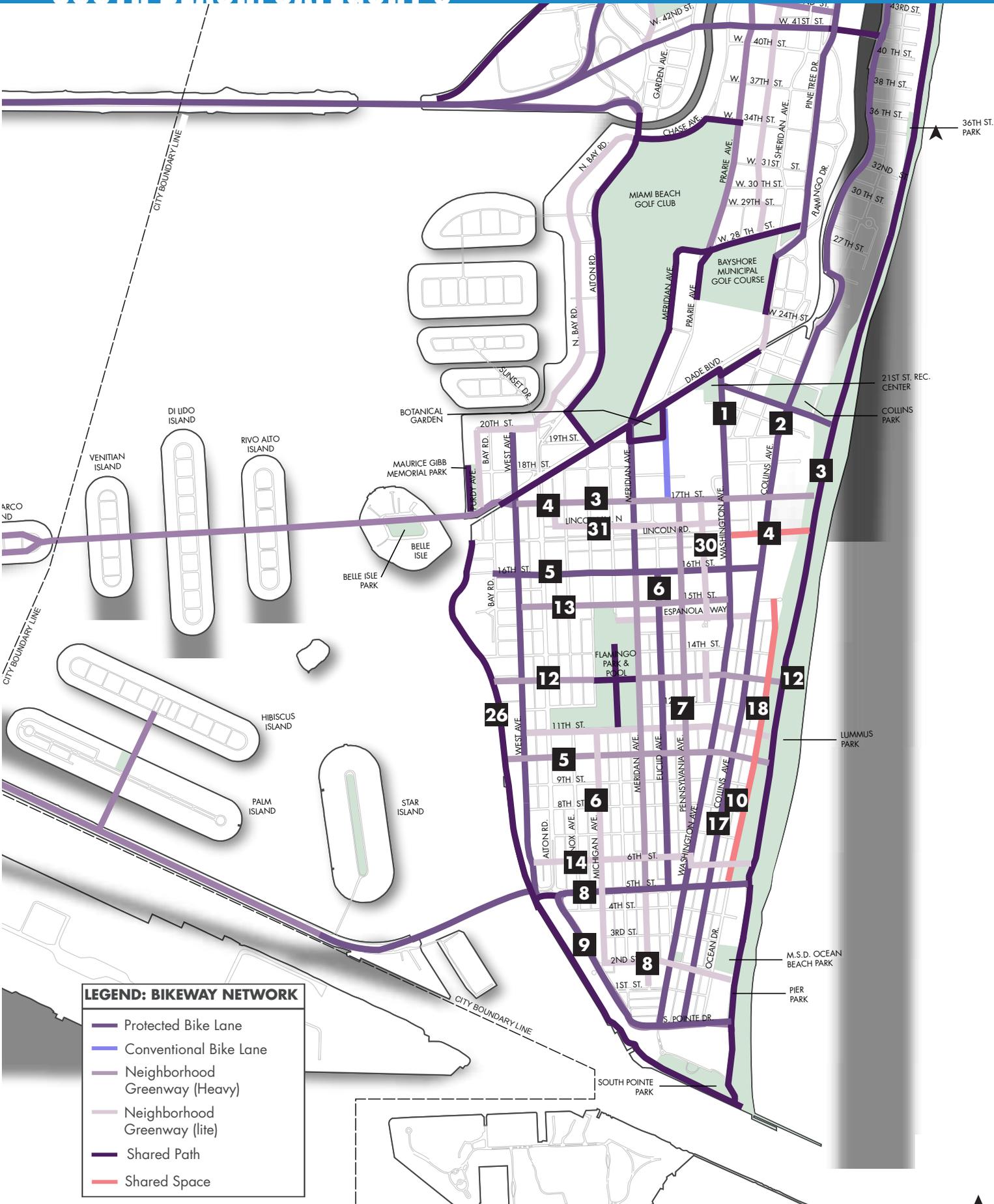


Meridian Avenue attracts bicyclists for several reasons, including it's beautiful, consistent tree canopy.



The eastern terminus of the 16th Street bicycle lane directs bicyclists into a row of parked cars.

# SOUTH BEACH: CATEGORY 3



**LEGEND: BIKEWAY NETWORK**

- Protected Bike Lane
- Conventional Bike Lane
- Neighborhood Greenway (Heavy)
- Neighborhood Greenway (lite)
- Shared Path
- Shared Space

## CATEGORY 3: ASPIRATIONAL

The longer term view on South Beach sees significant increases in investments in transit infrastructure, and along with them investments in bicycle and pedestrian infrastructure.

Regarding the former, we are looking specifically at three intersections because they are major pinch points for connectivity between the hospitals and North Beach/Collins corridor. The intersections are:

- 3** Greenway along 17th St from Atlantic Way to West Ave.
- 4** Lincoln Road Shared space “Woonerf” from Washington to Atlantic Way.
- 5** Greenway along 10th St from Bay Walk to Atlantic Trail.
- 6** Greenway along Michigan Ave, between 11th and 2nd
- 7** Greenway along Pennsylvania Ave, between 7th and 17th Street.
- 8** Greenway along 2nd St., between Ocean and Michigan Ave.
- 12** Greenway along 13th St from Bay Walk to Atlantic Trail.
- 13** Greenway along 15th St, between Washington and West Ave.
- 14** Greenway along 6th St, between Atlantic Trail and West Ave.
- 17** Protected bike lanes along Collins from South Point to mid- beach
- 18** Shared space on Ocean Dr, between 5th and 15th St.
- 26** Bay walk along sea wall from 5th to 16th St.
- 30** Greenway along Drexel between 17th and 12th.
- 31** Greenway along Lincoln Lane N.



A short segment of Euclid Avenue now includes bicycle lanes, curb extensions/rain gardens, and enhanced crosswalks.



DecoBike is one of the most successful bicycle sharing programs in the country. The City Hall DecoBike station is shown above.



Miami Beach Community Bike Ride participants set off down Washington Avenue.

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**BIKE PARKING**

# BICYCLE PARKING: EXISTING CONDITIONS

600+

BICYCLE PARKING LOCATIONS

89

CITIBIKE LOCATIONS

6

BICYCLE PARKING TYPES

## INTRODUCTION

The provision of accessible, attractive, and safe bicycle parking options for both short and long-term use is critically important to supporting bicycling as a viable mode of transportation in Miami Beach. In recent years, the City of Miami Beach, private property owners, and business owners have installed hundreds of new, well-designed bicycle racks, particularly for short-term use. This bicycle parking plan makes recommendations for developing high quality, plentiful, and visible bicycle parking options serving residents and visitors for years to come.

## EXISTING CONDITIONS

Today, there are more than 600 publicly accessible short-term bicycle parking spaces in Miami Beach, and more being added each year. As the map at left indicates, these spaces are created by a variety of bicycle parking types found throughout the city. Yet, analysis reveals that supply is not meeting the current and coming demand. And in many locations, existing bicycle parking facilities are often under-supplied and/or poorly sited, which detracts from their usefulness and viability.

Not surprisingly, most of the city's current bicycle parking supply is found



LEGEND: BICYCLE RACKS	
EXISTING RACKS	
	U-Rack
	Wave
	Bollard
	Grid
	Wheel Bender
	Handlebar

# BICYCLE PARKING: EXISTING CONDITIONS

where demand is high. These locations include public parks, at civic buildings, and along commercial streets like Washington Avenue, Lincoln Road, 41st Street, and 71st Street.

The bicycle parking intensity use map this page demonstrates where demand is concentrated. In many of these locations, the supply but also the quality of the infrastructure needs to be increased.

For example, bicycle parking at key destinations, like gyms, pharmacies, restaurants, and bars is often oversubscribed or in some cases underused because of a poor selection in bicycle parking type and/or placement. Both conditions cause people to choose to lock their bicycles to other vertical elements, like street signs, parking meters, and fences. When this occurs, the city's high number of pedestrians are inconvenienced and made less comfortable as they navigate around bicycle-strewn sidewalks.

In addition, long-term bicycle parking options, for say three hours or more, are few and far between. Bicycle parking of this kind —covered, high security, easily accessible — is needed within residential neighborhoods and at transit hubs, schools, large residential and commercial developments, and employment hubs. Such facilities will encourage more people to bicycle for transportation.

Without an increase in supply, quality, and type, it will be difficult for Miami Beach to obtain the bicycle mode share goals set forth in this plan. A more detailed analysis is found in the pages ahead for South Beach, Mid-Beach, and North Beach.



# BICYCLE PARKING: EXISTING CONDITIONS



The inverted U-rack is an excellent bicycle parking type, yet the above location could be improved.



Well placed, high-quality short-term bicycle parking provides for a clear and accessible public sidewalk in mid-Beach.



Without adequate supply and visibility, bicyclists will lock their bicycles to the nearest vertical element serving their destination.



The bicycle park type is not preferred, but it does provide designated spaces for people traveling by bicycle.



The "comb rack" is not desired because they are difficult to use and do not bicycles efficiently.



Bicycle parking needs to be supplied for bicycles of all shapes and sizes.

**+804** NEW LOCATIONS

**+5** NEW PARKING TYPES

## PROPOSED BICYCLE PARKING

The bicycle parking plan illustrated at right identifies over 800 new locations for bicycle parking. The locations were determined by analyzing land use and urban characteristics, demand, and available space. Each location was then matched with an appropriate type of parking to serve as many users as possible. The analysis revealed that many of the short-term racks found throughout the city do not meet best practice specifications (see page 84) and that long-term parking is almost non-existent. Thus, the following five short and long-term parking facilities types are being recommended.

### Short-term Parking Types

- Bike Corral
- Public Art Rack

### Long-term Parking Types

- Bicycle Shelter
- Bicycle Locker
- Bicycle Station

These five types, plus the city's standard inverted-u rack, should comprise the bulk of the city's parking in the future. A definition of short and long-term bicycle parking is located on page 80, and a visual guide to current and proposed parking types is found on page 81.

More detailed recommendations for South, Mid, and North Beach may be found on the following six pages.



# BICYCLE PARKING: SOUTH BEACH PLAN



Bicycle parking is often oversubscribed and poorly sited, such as the above example limiting pedestrian comfort.

## EXISTING CONDITIONS SUMMARY

Despite hundreds of new bicycle racks, bicycle parking is still in high demand but in low supply. This may be observed by walking along commercial thoroughfares like Collins Avenue, Washington Avenue, 5th Street, Lincoln Road, Ocean Drive, and Alton Road, among others. In these places, bicycle racks, street signs, and parking meters are often jammed with bicycles, which makes the city's most heavily trafficked sidewalks a challenge to navigate on foot. Moreover, bicycles affixed to poorly sited and many a makeshift rack are often unable to be locked properly and subject to damage or theft.

Bicycle parking is also a desired amenity within the neighborhoods of South Beach. The residential streets feature narrow sidewalks with little room to store bicycles, while the area's historic art deco buildings were not initially designed to incorporate this needed amenity. Thus, the prospect of hauling a bicycle in and out of an apartment building, or the threat of theft from poorly sited and poorly selected outdoor racks likely deters many people from making trips by bike.

With few options, bicycle storage has become an issue that needs to be addressed for thousands of residents living in the city's most bicycle-friendly neighborhoods.



Motorcycle parking is often allowed adjacent to curb cuts and intersections. Bicycle parking should be an additional option.

## PROPOSED PARKING SUMMARY

Numerous opportunities exist for upgrading the supply and quality of bicycle parking in South Beach. In the short-term, the City of Miami Beach can continue to add its high-quality silver inverted u-racks to the city's streets. The same rack type should be used for short-term parking in parks, public spaces, and schoolyards throughout South Beach.

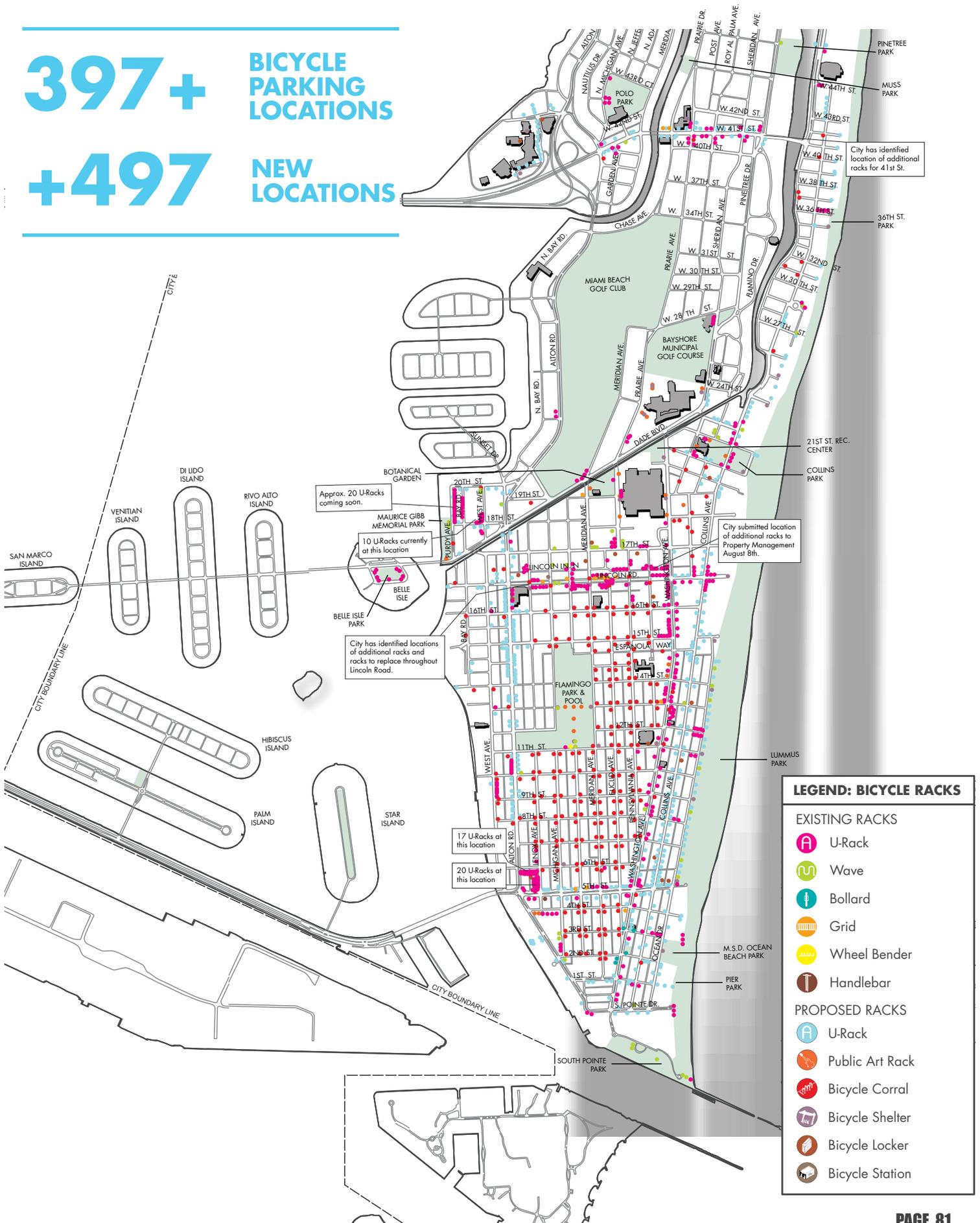
Given the area's density, physical constraints, and high-bicycle use, one of the big opportunities for increasing supply is to use street space more efficiently. This may be done by adding bicycle racks either within select areas that currently limit automobile parking, but often allow motorcycle parking. These in-street bicycle corrals may be used for short-term parking, or be provided with shelters to add more utility to longer-term use. There are more than 100 hundred such opportunities throughout South Beach and they should be taken advantage of so that more bicycle parking may be added. In select spaces, where demand is the highest as in Crunch Gym at 1259 Washington Avenue, automobile parking may be removed in favor of providing more bicycle parking. This re-allocation of space not only helps build complete streets, but helps retailers, residents, and visitors find more parking conveniently.

# BICYCLE PARKING: SOUTH BEACH PLAN

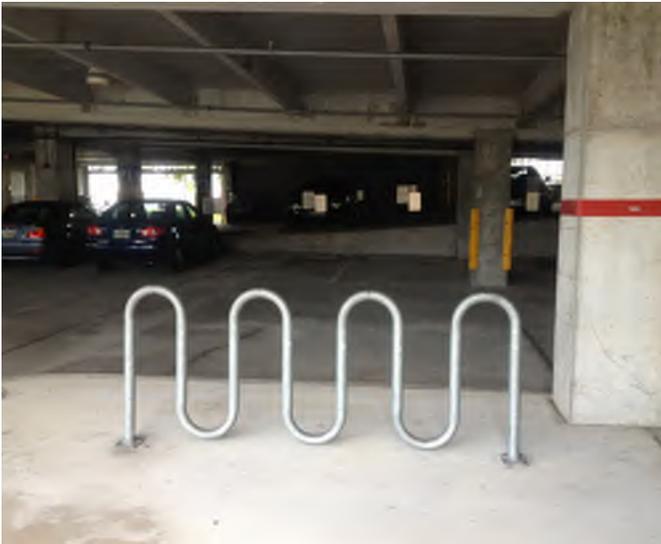
**397+**  
**+497**

**BICYCLE  
PARKING  
LOCATIONS**

**NEW  
LOCATIONS**



# BICYCLE PARKING: MID-BEACH PLAN



Covered bicycle parking at Mount Sinai's Heart Center's parking garage on Meridian Avenue/West 48th Street.

## EXISTING CONDITIONS SUMMARY

Due to a large amount of single-family housing and the presence of two golf courses, bicycle parking in Mid-Beach is largely concentrated along the 41st Street commercial corridor. Numerous inverted u-racks have been installed in recent years, attracting more bicycle use to this important destination. That said, there is a growing need to implement more parking along the corridor and the half blocks to the north and south that feature commercial land uses. This will only become more important as the bicycle network is strengthened to the north and to the south.

In addition to 41st Street, Mount Sinai's two hospital campuses make Mid-Beach an important employment and service hub for the region. There are currently few safe ways to bicycle to each hospital campus and bicycle parking at both needs to be upgraded to include much more short and long-term parking options.

Finally, there are few bicycle parking options along the Collins Avenue corridor. Specifically, there is a need for more short-term bicycle parking serving the eastern terminus of numerous streets that serve as access points to the beach walk, and parks that line the beach.



Prairie Avenue at 41st Street would be a good place to add an in-street parking corral to serve local businesses.

## PROPOSED PARKING SUMMARY

Bicycle parking in Mid-Beach should be concentrated in four distinct locations: The 41st Street corridor, Collins Avenue and the streets that terminate at the beach/beachwalk/parks, and at the two Mount Sinai hospital campuses. On 41st Street, a small amount of low-lying landscaping could be removed for short-term bicycle parking facilities. With limited space along 41st Street, additional bike parking should be placed along the intersecting streets, such as the north and south side of Prairie Avenue (adjacent to North Beach Elementary School and Montefiore) where underutilized street space could be better used for in-street parking corrals (short-term) or bicycle shelters (long-term).

Both hospital campuses should consider a district-wide bicycle parking plan, one that adds short-term parking along walkways, sidewalks, and in other open spaces near building entrances. The plan should also include bicycle lockers for long-term parking, which could be placed judiciously within select parking lots and garages.

Finally, bicycle racks, in-street corrals and a few bicycle shelters should serve residents, shoppers, and beach visitors along or near Collins Avenue.

# BICYCLE PARKING: MID-BEACH PLAN

# 57+

## BICYCLE PARKING LOCATIONS

# +116

## NEW LOCATIONS

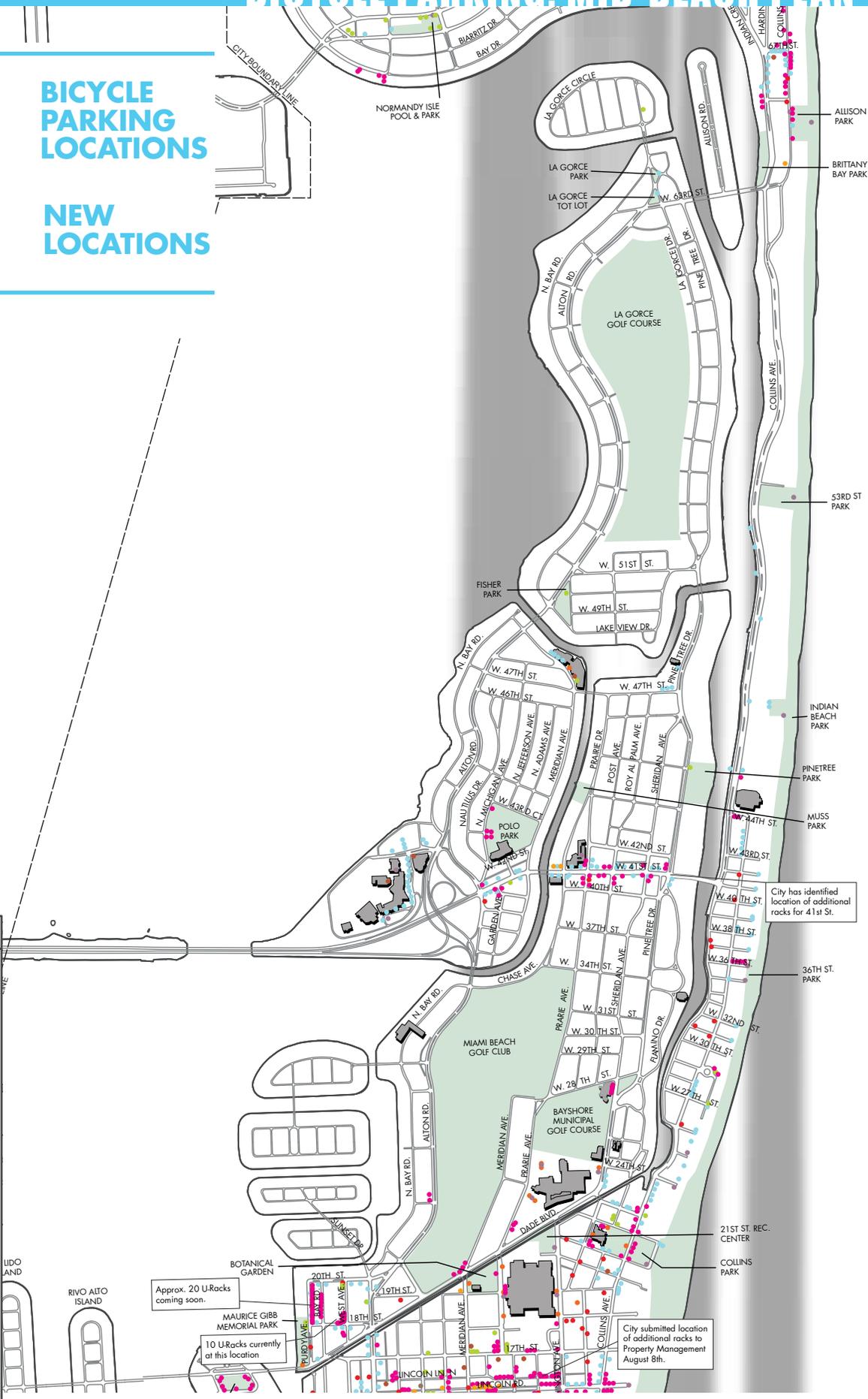
**LEGEND: BICYCLE RACKS**

**EXISTING RACKS**

-  U-Rack
-  Wave
-  Bollard
-  Grid
-  Wheel Bender
-  Handlebar

**PROPOSED RACKS**

-  U-Rack
-  Public Art Rack
-  Bicycle Corral
-  Bicycle Shelter
-  Bicycle Locker
-  Bicycle Station



# BICYCLE PARKING: NORTH BEACH PLAN



Located along Ocean Terrace, the above rack should provide two parking spaces, but due to its location, it only provides one.

## EXISTING CONDITIONS SUMMARY

North Beach is comprised of several different neighborhoods, many of which are in need of additional bicycle parking. While many short-term parking spaces have been added to the 71st/Normandy Drive and Collins Avenue commercial district, more may be implemented, especially between Indian Creek Drive and Collins Avenue, and 63rd Street and 75th Street.

With a residential density similar to that of South Beach and a growing bicycle network, there is also a need to add much more bicycle parking within the area bounded by 72nd Street to the south, Collins Avenue to the east, Tatum Waterway Drive to the west, and the city boundary to the north at 87th Terrace.

Access points to North Beach open space network would benefit from additional bicycle parking, or an upgrade in type. Locations include the Normandy Shores Golf Club, Fairway Park, Normandy Isle Park and Pool, North Shore Park, Parkview Island Park, North Shore Open Space Park, Allison Park, Brittany Bay Park, and the many connection points between east-west streets and the entrance to the beachwalk.



The North Beach bandshell has been a cultural designation for Miami Beach residents for decades. Recent programming of the space and attendance demonstrate the need for bike corrals and bike valet in the area.

## PROPOSED PARKING SUMMARY

Diversifying the type and increasing the supply of bicycle parking throughout North Beach should be viewed as a short-term implementation priority. More specifically, the addition of inverted u-racks and bicycle corrals to commercial streets will bring more customers and help declutter the relatively narrow sidewalks in the area's business districts. Moreover, in-street corrals may also be inserted in select residential neighborhoods so that residents and visitors find it easier to park.

At select parking lots or garages, bicycle lockers or covered bicycle parking could serve as a long-term storage or intermodal commuter option. The new garage on 67th and Indian Creek Drive is one such location.

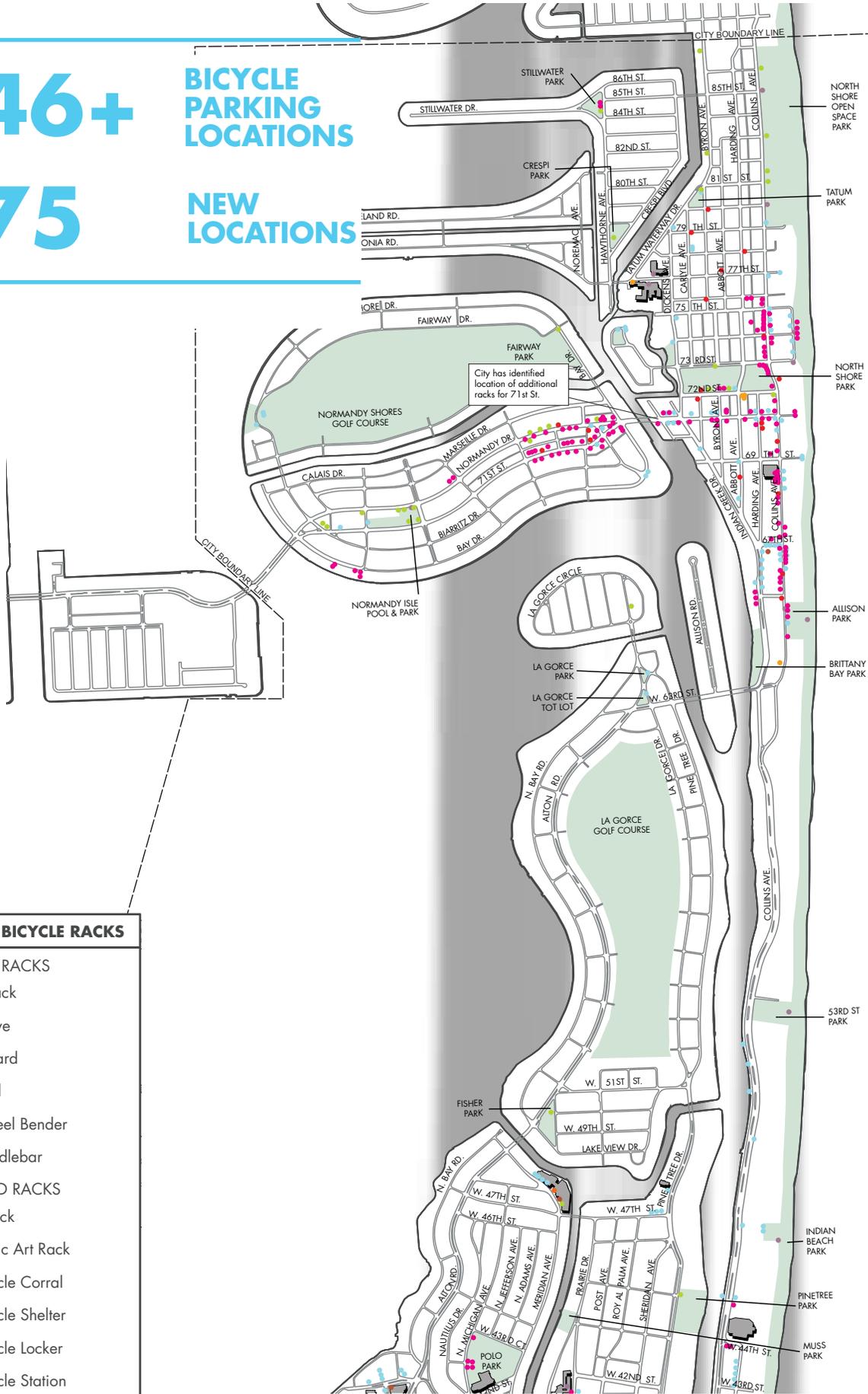
Allison Park, North Shore Open Space and others would be great places to add well-designed and highly visible bicycle parking shelters, perhaps integrated with bus stops. This would provide a longer-term parking option for intermodal commuters, as well as a safe place semi-protected from the weather to store bicycles for those spending a day at the beach. Finally, school sites like Lehrman Community Day School and Biscayne Elementary Community School should provide more accessible and sheltered parking for students and visitors.

# BICYCLE PARKING: NORTH BEACH PLAN

146+  
+75

BICYCLE  
PARKING  
LOCATIONS

NEW  
LOCATIONS



## LEGEND: BICYCLE RACKS

### EXISTING RACKS

- U-Rack
- Wave
- Bollard
- Grid
- Wheel Bender
- Handlebar

### PROPOSED RACKS

- U-Rack
- Public Art Rack
- Bicycle Corral
- Bicycle Shelter
- Bicycle Locker
- Bicycle Station

# BICYCLE PARKING: BICYCLE PARKING TYPES

## BICYCLE PARKING TYPES

Bicycle parking types range from basic bicycle racks to semi-enclosed bicycle shelters, to full “bike stations” that provide a combination of amenities that include indoor bicycle storage, repair facilities, showers, lockers, changing rooms, rentals, and even café/social gathering spaces. While countless bicycle parking designs and configurations exist, they may be described as two overarching types: short- and long-term parking. Each of these types is explained below.

Short-term parking facilities consist of standard bicycle racks, and temporary event “valet” parking. Long-term parking facilities include semi-enclosed bicycle shelters, fully enclosed bicycle lockers, and fully enclosed bicycle stations/storage rooms. Matching each of these types and the available configurations to the right land use context is not difficult, but requires an analysis of the following conditions.

- intended bicycle user group
- length for which bicycles are likely to be parked
- proposed location and surrounding land uses
- local climate considerations (shade, rain)
- ability of the proposed facility to provide orderly, safe, and attractive bicycle parking
- basic performance standards and parking site guidelines

At present, a range of short-term bicycle parking types serve the needs of bicyclists in Miami Beach with various levels of success. These types are illustrated on the opposite page. Currently, the City of Miami Beach offers no long-term parking facilities.

## SHORT-TERM BICYCLE PARKING

The majority of bicycle parking facilities are intended for short-term use, generally less than

three hours. Short-term bicycle parking is generally associated with commercial/retail, civic, and/or recreational land uses. As a result, proximity to destination is often prioritized over protection from weather and absolute security. Beyond the use of a personal bicycle lock and the quality of the rack, passive surveillance — otherwise known as “eyes on the street” — is the only security provided.

## BICYCLE RACKS

Bicycle racks allow for the temporary storage of bicycles in a safe and organized manner. The most effective types are those which are easy to identify visually, efficient in their ability to accommodate the intended amount of parked bicycles, allow for easy bicycle maneuverability in and out of the designated bicycle parking space, enable the bicycle to be secured properly by providing at least two points of contact with the bicycle frame, and allow both the frame and the wheel to be secured to the bicycle rack.

Two simple and recommended forms that meet these standards are the inverted “U” Rack and the “Post and Ring.” The former comprises the standard Miami Beach city rack.

## STANDARD BICYCLE RACK RECOMMENDATION

It is recommended that Miami Beach continue to use its standard silver inverted “U-rack.” However, certain contexts may allow or dictate a different parking facility or design type, as described below. In particular, the addition of bicycle corrals may require the city’s existing racks to be placed on ground rails.

## BICYCLE RACKS LOCATION RECOMMENDATIONS

It is recommended that the city’s standard bicycle racks be considered as a replacement to those locations where bicycle racks do not currently

# BICYCLE PARKING: BICYCLE PARKING TYPES

## EXISTING BICYCLE PARKING TYPES

SHORT-TERM



**A** INVERTED U-RACK (RECOMMENDED)



**W** WAVE RACK (NOT RECOMMENDED)



**B** BOLLARD RACK (NOT RECOMMENDED)



**G** GRID RACK (NOT RECOMMENDED)



**W** WHEELBENDER RACK (NOT RECOMMENDED)



**H** HANDLEBAR RACK (NOT RECOMMENDED)

## PROPOSED BICYCLE PARKING TYPES

SHORT-TERM



**A** INVERTED U-RACK



**C** BICYCLE CORRAL



**A** ART RACK

LONG-TERM



**S** BICYCLE SHELTER



**L** BICYCLE LOCKER



**ST** BICYCLE STATION

# BICYCLE PARKING



Bicycle parking corrals help maintain a clear sidewalk, increase overall parking supply, and often become social spaces. See page 123 of *the Street Design Guide* for additional information.

meet the design standards included in this plan. For design standards, see the bicycle parking section of the street design guide, for specific location recommendations, see page 73.

## **BICYCLE CORRAL RECOMMENDATIONS**

The bicycle corral is an increasingly common type of short-term bicycle parking type used where bicycle parking demand is high and sidewalk space is either limited or duly accommodates high volumes of pedestrian traffic. Bicycle corrals most commonly replace automobile parking spaces or are placed within site triangle vis-

ibility zones, which still allow for motorist a clear view yet also allow the added amenity of bike parking to be added. Depending on the configuration, a single motor vehicle parking space may yield between six and 12 bicycle parking spaces within a single corral.

## **PUBLIC ART BICYCLE RACKS**

The City of Miami Beach standard bicycle rack is already an attractive element in the streetscape. That said, neighborhood, civic, district, non-profit, institutional, or business groups located within Miami Beach should be encouraged to pursue



The above bicycle parking is well-spaced, properly oriented parallel to the curb, and a safe distance from the tree and the curb. See page 126 of *the Street Design Guide* for additional information.

bicycle parking facilities that reinforce an existing cultural, historical, business, or social character. In such instances, custom or public art bicycle racks can creatively address bicycle parking needs while simultaneously enhancing the profile of bicycling and the destination served by such racks. While custom bicycle racks do cost more than off-the-shelf racks, they raise the profile and visibility of bicycling in general, and improve the public perception regarding city or organizational/business values. They also bring positive attention to bicyclists for making sustainable and healthy transportation choices.

That said, many art rack designs unintentionally undermine the intended function, often resulting in inefficient, unrecognizable, and undesirable bicycle parking facilities that are avoided by users. Therefore, the provision of art racks must meet or surpass the guidelines and performance standards set forth in this Plan.

# BICYCLE PARKING

## BICYCLE RACK SAFETY AND PERFORMANCE STANDARDS

To prevent theft and to ensure public safety, all bicycle racks should meet the following design guidelines:

- support the frame of the bicycle in at least two locations;
- allow the frame and one wheel to be locked to the rack when both wheels remain on the bike;
- allow the frame and both wheels to be locked to the rack if the bicyclist decides to remove the front wheel;
- allow the use of cable, chain, and U-shaped locks;
- be securely anchored to the ground;
- be usable by bicycles with bottle cages, panniers, etc.;
- be usable by a variety of bicycle sizes and types (children's bicycles; tricycles, step-through frames, etc.) keep both wheels on the ground

In addition, all bicycle racks should not be capable of being compromised by hand tools, especially those that are easily concealed such as wire cutters or screwdrivers. Bicycle racks and the bicycles secured to them should not create a tripping hazard or barrier for pedestrians and the visu-

ally impaired (see location standards on page x). Finally, all outdoor bicycle racks and any related facilities should be well-lit and highly visible at night so that users feel safe using them at all hours.

## EVENT-BASED VALET BICYCLE PARKING

Miami Beach is home to an incredible amount of events that draw thousands and thousands of people to concentrated points. One way to manage the stress on the street network is to encourage other forms of transportation, such as cycling. In many instances, doing so could overwhelm the existing bicycle parking infrastructure. Thus, another option is to seek out organizations, like the Green Mobility Network, to help staff, manage, and promote temporary event bicycle parking.



Adding a bike valet can help attract hundreds of cyclists who might have otherwise driven.

## LONG-TERM BICYCLE PARKING

Long-term bicycle parking facilities are intended for use that generally exceeds two hours (see Table 2). Long-term bicycle parking is associated with residential, workplace, and transit-related land uses where parking for long durations is common. As a result, proximity to the final destination is a lower priority than protection from the elements and guaranteed security.

## BICYCLE SHELTERS

Bicycle shelters provide highly visible, semi-enclosed protection from the elements. Bicycle shelters should be placed at highly frequented bicycle destinations where users tend to park for periods of two-hours or more. Such places include, but are not limited to, employment centers, transit stops, civic buildings, parks, and schools.

Bicycle shelters provide an opportunity to display safety information, a map of the regional and local bicycle network, and/or any other relevant bicycle or local information.

The spacing between individual bicycle racks and/or other streetscape elements must be taken into account and should follow the general bicycle parking performance and location standards found on page 124 of the street design guide. Likewise, bicycle shelters should be easily identifiable, well lit at night, and sufficiently protect bicycles from the elements.

Developers of property in Miami Beach may consider pursuing the implementation of bicycle shelters in strategic locations, such as within the grounds of the project. Doing so will raise the profile of bicycling and provide a parking amenity for residents and visitor that provides shelter for longer parking stints.

## BICYCLE SHELTER SAFETY AND PERFORMANCE STANDARDS

To ensure public safety and high performance, all bicycle shelters should:

- include bicycle racks that support the frame of the bicycle in at least two locations and
- meet all other bicycle rack performance standards as discussed in this Plan.
- include a roof span of at least eight feet in width to ensure adequate bicycle coverage
- be located to ensure pedestrian sidewalk clearance (six feet minimum)
- be located to maintain adequate visibility clearance at intersections (fifteen minimum)
- comply with local building code requirements
- provide adequate illumination for night-time use

## BICYCLE LOCKERS

Bicycle stations are intended to serve as a local/regional hub for all bicycling activities. Such facilities may offer a wide variety of services, such as secure and attended parking facilities; bicycle rentals; showers, lockers and changing facilities; repair services or facilities; and cafe/social space.

## BICYCLE STATIONS

Bicycle stations are intended to serve as a local/regional hub for all bicycling activities. Such facilities may offer a wide variety of services, such as secure and attended parking facilities; bicycle rentals; showers, lockers and changing facilities; repair services or facilities; and cafe/social space.

## BICYCLE PARKING: LONG-TERM

The combination of these facilities provides the highest level of bicycle parking service for long-term and frequent use, and will elevate the visibility and viability of bicycling in Miami Beach.

Bicycle stations are most appropriate in urban core, central business district locations, and at transit hubs where bicycle commuters and tourists may maximize the services offered. Cities such as Chicago, IL, Santa Monica, CA, Cambridge, MA, Washington DC, Berkeley, CA, and Long Beach, CA all provide working models.

It is recommended that the City of Miami Beach pursue a bicycle station-like facility in South Beach, within the center city. An ideal location would be within a short distance of Lincoln Road where such a facility would be highly visible and of utility to bicyclists cycling to work. The exact location, programming, and construction timeline will require further study, but some ideas include a facility within a municipal parking garages, built within a municipal parking lot, or even in a leased storefront.



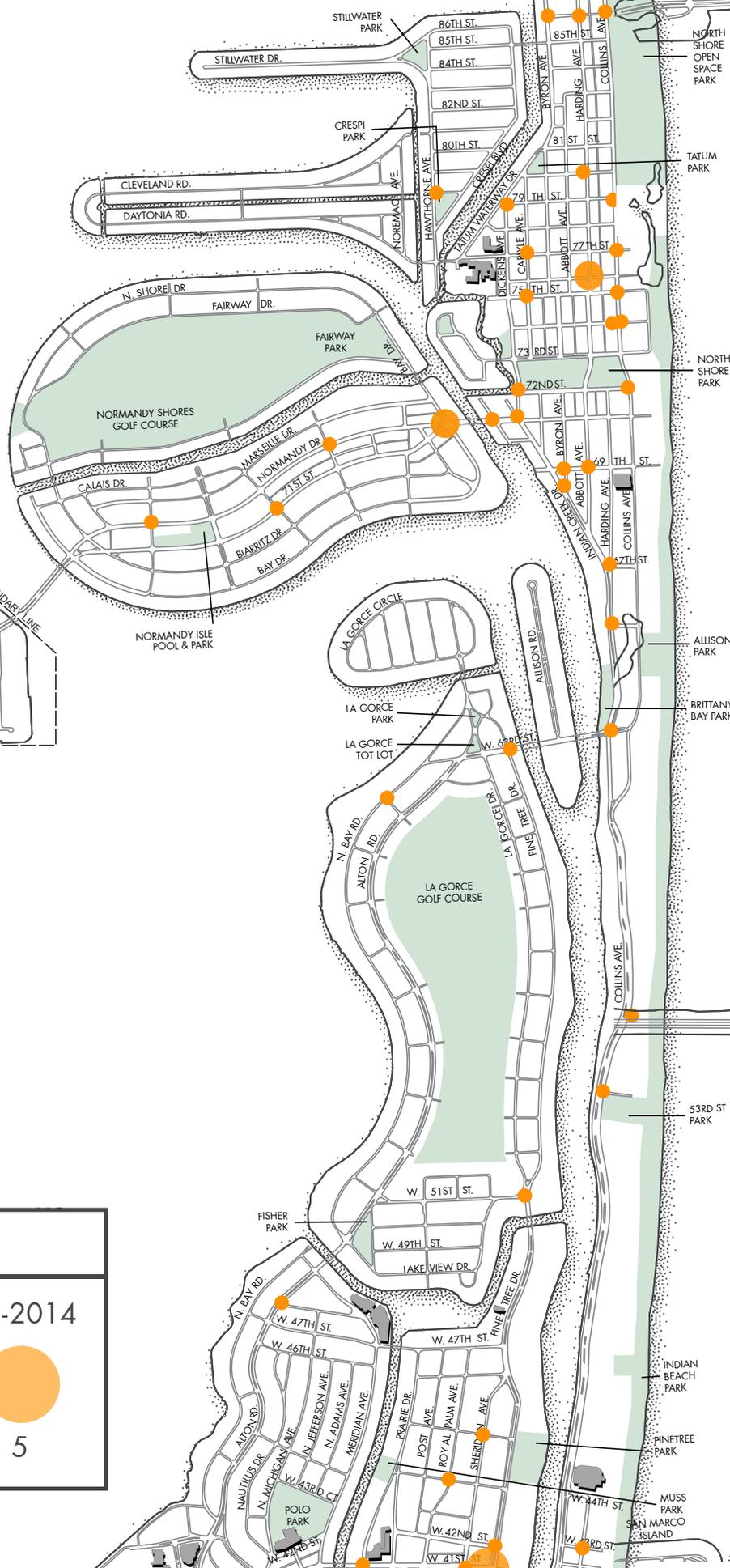
# APPENDIX: CRASH DATA

# NORTH BEACH CRASH DATA

**LEGEND: CRASH DATA**

NUMBER OF CRASHES 2012-2014

1	2	3	4	5
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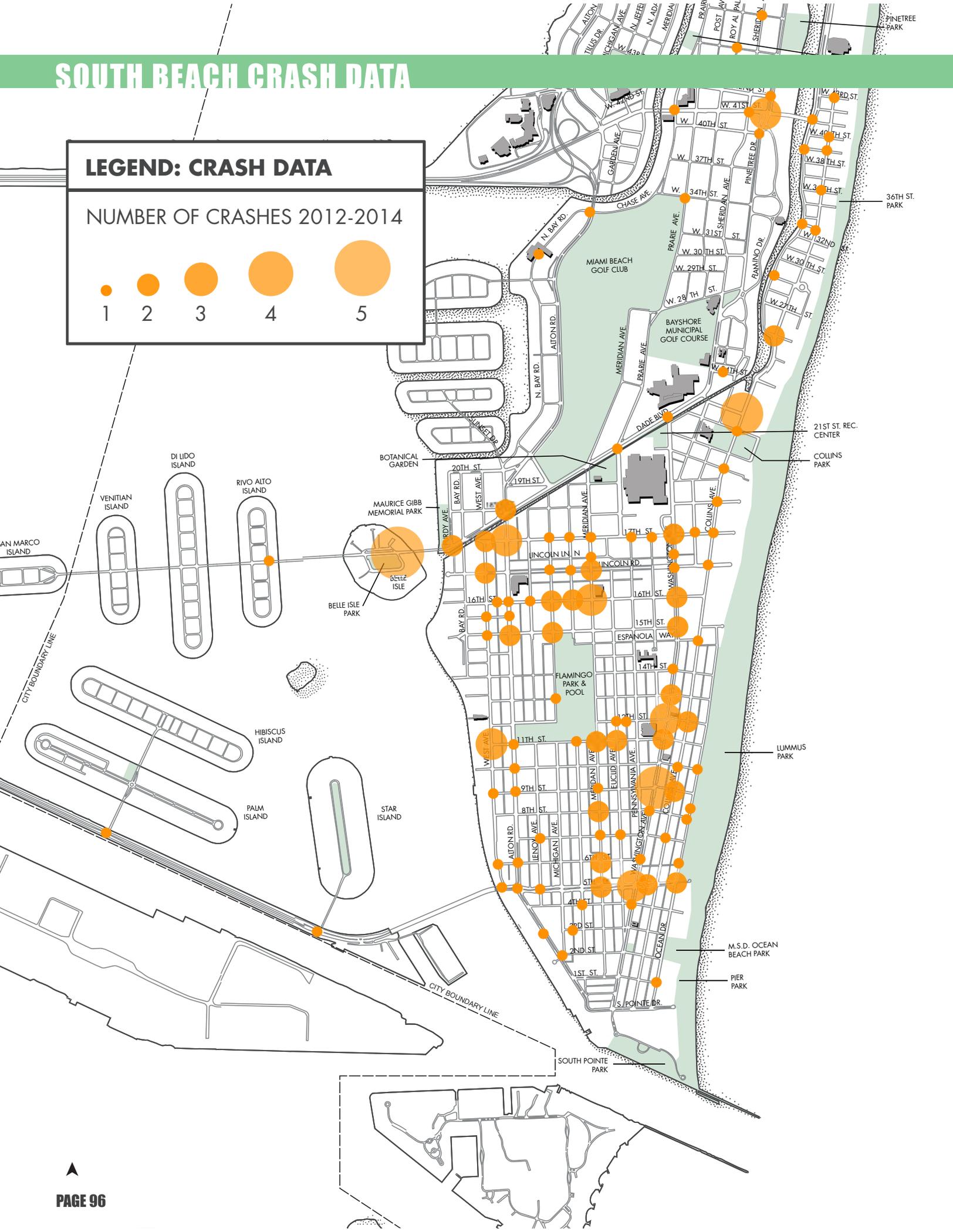




# SOUTH BEACH CRASH DATA

## LEGEND: CRASH DATA

NUMBER OF CRASHES 2012-2014



# APPENDIX: LITERATURE REVIEW

## LITERATURE REVIEW

In order to become familiar with Miami-Dade County's bicycle planning history, and specifically as it relates to the City of Miami Beach, a review of more than 20 city, county, and state plans was conducted. This effort connects the current 2012 Atlantic Greenway Plan Update planning process with those from the past and is being undertaken to identify lessons learned and key strategies for successful implementation of the City's future master plan. This review begins with the oldest relevant plan: The 1997 Miami-Dade MPO Bicycle Master Plan. This document forms the basis for many subsequent plans and studies conducted over the past fifteen years.

The completion of this review will prevent redundancy, reduce chances of error in determining the placement of planned bikeway infrastructure, and help dovetail this current bicycle master plan process into those planning efforts already underway at the local, county and state level.

The column to the right contains the list of plans reviewed and the year they were completed. Following is a brief summary and analysis focusing on the most germane information pertaining to the ongoing development of the Miami Beach bicycle network.

### MIAMI-DADE TRANSPORTATION IMPROVEMENT PROGRAM (2012)

**Summary:** The Transportation Improvement Program (TIP) is the project funding policy document for Miami-Dade County transportation projects. Updated every five years, the TIP includes investment priority for all modes of travel, including bicycle facilities.

**Analysis:** Three bikeway projects in Miami Beach were included in the 2012 TIP. They include:

- Beach walk between 46th and 64th Streets
- Beach walk between southern edge of Lummus Park and South Pointe Drive
- 5th Street between Collins Avenue and West Avenue

### FDOT EVALUATION OF SHARE LANE MARKINGS IN MIAMI BEACH, FLORIDA (2012)

**Summary:** FDOT hired researchers from the University of North Carolina Highway Safety Research Center to evaluate how the applications of Shared Lane Markings (sharrows) performed in Miami Beach. More specifically, the researchers recorded hours of videotape to analyze bicyclists on Washington Avenue before and after the application of sharrows. The study results are not just locally significant, but important statewide, as Washington Avenue was the first thoroughfare in Florida to experiment with sharrows.

**Analysis:** In general, the research team found numerous positive results associated with the use of sharrows. Specifically, bicyclists rode approximately 10.5 inches further away from parked motor vehicles after sharrows were introduced, which means more riders were passing outside of the door zone. The spacing between motor vehicles in the travel lane and those parked also increased about 4.5 inches. This effectively gives cyclists more operating space. Finally, the percentage of bicyclists using the sidewalk decreased from about 55 to 45 percent. All of the findings associated with the evaluation were statistically significant.

# LITERATURE REVIEW

## FDOT STATE ROUTE A1A BICYCLE MASTER PLAN (2011)

**Summary:** A 22-mile bicycle plan for the State Route A1A corridor. The route is contained entirely within the FDOT District 6 boundary, and includes the municipalities of Golden Beach, Sunny Isles Beach, unincorporated Miami-Dade County (through Haulover Park), Bal Harbour, Surfside, Miami Beach and the City of Miami via the MacArthur Causeway. The Plan is essentially a segment-by-segment facility plan intended to connect the 6 municipalities through which SR A1A passes with bicycle facilities. The Plan's main components include:

- Design Standards
- Background Info
- Project Approach
- Project Segmentation
- Concept Plan for each segment
- Alternative Routes analysis
- Probable Cost Analysis
- Shared Lane Marking Implementation

**Analysis:** The SR A1A corridor plays an important role in the City of Miami Beach. It currently provides the main north-south connection for the entire eastern portion of the City. In South Beach, A1A's MacArthur Causeway also offers one of the three primary connections between Miami Beach and the City of Miami. Unfortunately, it is currently one of the more difficult thoroughfares on which to bike in the city. This Plan presents needed opportunities to enhance the corridor's bicycle-friendliness.

Given the wide range of right-of-way and land use characteristics, the Plan does well to connect the entire 22-mile corridor with bicycle facilities. In some areas, the implementation of a context-sensitive facility is clearly feasible and desirable, while in other areas it remains a challenge from an engineering, design, and user perspective.

The Plan is very much conceived at the macro level and does not include details of the needed transitions between facility types/context that would need to be considered closely so that the corridor remains as continuously connected as possible.

## Plans, Studies & Documents Reviewed:

- Miami-Dade Bicycle Pedestrian Safety Plan Update (2014)
- Complete Streets Manual (2014)
- 2040 Long Range Transportation Plan (2014)
- Downtown Miami Pedestrian Priority Zone (2014)
- Application of Innovative Bicycle Strategies (2013)
- Miami-Dade TIP (2012)
- FDOT Evaluation of Share Lane Markings in Miami Beach, Florida (2012)
- FDOT State Route A1A Bicycle Master Plan (2011)
- Miami Dade County – Long Range 2035 Transportation Plan (2009)
- Miami Beach - Atlantic Greenway Network Master Plan (2008)
- Miami-Dade MPO Mountain Biking / Unpaved Trails Inventory (2008)
- Miami-Dade MPO Bicyclist Count (2008)
- Miami-Dade MPO Bikeway Map (2008)
- Miami-Dade MPO Bicycle and Pedestrian Crash and Fatality Report (2008)
- Miami Beach – West Avenue Basis of Design Report (2007)
- Miami-Dade MPO Bicycle Facilities Plan (2007)
- Miami-Dade MPO Parks Master Plan (2007)
- Miami Beach – 16th Street Phase I Basis of Design Report (2007)
- Miami-Dade MPO Crash data (2006)
- Miami-Dade MPO Bicycle Safety Plan (2006)
- Miami-Dade MPO Long Range Transportation 2030 Plan (2004)
- Miami-Dade MPO Bikeway Priority Feasibility and Evaluation Study (2003)
- Miami Beach – Nautilus Neighborhood Basis of Design Report (2002)
- Miami-Dade MPO Bicycle Facilities 2025 Plan (2001)
- Miami-Dade MPO LRTP 2025 Bike Suitability Study (2001)
- Miami-Dade MPO Bicycle Facilities Plan (1997)

## LITERATURE REVIEW

### MIAMI DADE COUNTY – LONG RANGE 2035 TRANSPORTATION PLAN (2009)

**Summary:** The 25-year planning and policy document for Miami-Dade County transportation. Updated every five years, the plan includes investment priority for all modes of travel, including bicycle facilities.

**Analysis:** Compared to the previous 2004 plan, the 2035 LRTP takes a more aggressive approach to designing and constructing bikeways. The map of prioritized projects for 2010-2014 demonstrates a fairly equal distribution of projects, including the implementation of Miami-Dade's first bicycle boulevards. On Miami Beach, priority projects include the completion of the beach walks and the development of a bicycle path along Dade Boulevard, which is currently under construction.

The intermodal portion of the plan provides few details, but underscores the importance of investing in bicycle and walking as forms of transportation. Indeed, Florida, and specifically the Miami region, is one of the least safe places to walk or bicycle and is in need of expanding safe, attractive, and connected facilities.

### MIAMI-DADE MPO: MOUNTAIN BIKING / UNPAVED TRAILS MAP (2008)

**Summary:** A single map depicting all unpaved trails in Miami-Dade County.

**Analysis:** The Miami-Dade MPO produced a useful map that displays all unpaved trails and routes designed specifically for, or well-suited to off-road biking enthusiasts. Mountain biking is largely a recreational activity that piques the interest of many riders in south Florida for which the map will prove useful. However, within the City of Miami Beach, there currently are no unpaved trails available for such use.

### MIAMI-DADE MPO: BICYCLE COUNT (2008)

**Summary:** The MPO used 45 different points and intersection locations throughout the County to tally bicycle and pedestrian traffic. The effort was intended to demonstrate and track high activity areas. Counts are to be periodically updated so that an increase or decrease in use patterns may be logged.

**Analysis:** Data was gathered on weekday mornings and weekend afternoons in the summer and winter of 2008. Eight counts were taken in Miami Beach. They include:

ter of 2008. Eight counts were taken in Miami Beach. They include:

- Venetian Causeway near Rivo Alto Island
- Washington Avenue & 16 Street intersection
- Collins Avenue near 16 Street
- 5th Street near Meridian Avenue
- Ocean Drive & 10 Street intersection
- Alton Road near 16 Street
- West Avenue near 16 Street
- 71 Street Bridge near Bay Drive

The results reveal that a vast majority of bicyclists in the City of Miami Beach are adult males who don't wear helmets. This has clear implications for future safety countermeasure and education efforts, especially as it relates to creating conditions that attract a more diverse demographic to ride bicycles. Particularly high activity areas included the Venetian Causeway, Washington Avenue, and Ocean Drive.

The systematized data collection method used and count locations now offer a baseline for future bicycle counts in the City that can monitor behavior and activity trends. Use of such counts will provide insight into how improved facilities affect use patterns.

### MIAMI-DADE MPO BIKEWAY MAP (2008)

**Summary:** A map displaying all existing bicycle paths, trails, lanes, wide curb lanes and shoulders intended for bicycle use, as well as those under construction.

**Analysis:** The map displays a range of bikeway

facilities and routes across Miami-Dade County. The map does not include several new bikeways constructed in Miami Beach since 2008, including the now approved use of sharrows, which can now be found on several Miami Beach streets. Overall, the map is relatively rough and displays a small and discontinuous regional bikeway system.

### MIAMI BEACH ATLANTIC GREENWAY MASTER PLAN (2008)

**Summary:** Adopted in December of 2008, the Atlantic Greenway Master Plan (AGN) is the guiding planning documenting for the development of bicycle facilities in Miami Beach. This existing planning effort is an update of the AGN Plan.

The AGN Plan includes an inventory of all existing conditions in the City; provided an analysis of the conditions found; created a master plan of bikeway improvements; and outlines an implementation plan.

**Analysis:** In 2012, Atkins Global was asked to review the strengths and weaknesses of the existing AGN Plan. The strengths of the AGN Plan include the level of existing conditions collection and analysis work. Indeed, the Plan paints a clear picture of the opportunities and need to create a complete and connected citywide bikeway system. However, the AGN Plan fell noticeably short on a lot of best practice measures. The Atkins memo covers many of these, the a lack of accepted bikeway and intersection treatment facilities; lack of integration with other existing transit options; lack of meaningful public participation; and adding a project feasibility analysis are but a few elements that should be included in the AGN Plan Update.

### MIAMI-DADE MPO: PARKS, RECREATION AND OPEN SPACES MASTER PLAN (2007)

**Summary:** A 50-year master plan encompassing the full extent of the County's public realm: greenways, streets, natural areas, parks, cultural areas, and waterway trails.

**Analysis:** Related to bicycling, a primary recommendation is to create network of "Great Streets" by

retrofitting the County's existing oversupply of wide, auto-centric arterial and collector roadways. Clearly, Miami-Dade County and the City of Miami Beach must work with FDOT "to move beyond vehicular performance based street design and instead design streets that are defined by their role in the community." In bringing this point to light, the Plan underscores the importance for all residents to have immediate access to bicycling facilities: for recreation, health and utility.

### MIAMI-DADE MPO: BICYCLE CRASH DATA – 2005-2007

**Summary:** A map displaying reported crash data for 2005, 2006, and 2007.

**Analysis:** Miami Beach bicycle crashes are concentrated in South and North Beach, areas where bicycle activity is higher than in Mid Beach. The map reveals that a vast majority of crashes are occurring at intersections, especially along the FDOT and County roads where motor vehicle speeds are the highest and the street design the least hospitable to people walking or bicycling.

Crashes are likely under reported, as is the case in most official pedestrian or bicycle crash statistics. Bicycle crashes in particular, tend to be minor and caused by the bicyclist, and therefore are often not reported. However, when and where bicycles crashes occur with motor vehicles, there is an increased risk of serious injury or death. In general the general trend line shows a diminishing number of crashes in the city. Instituting a more robust online crash mapping and analysis program, such as [www.crashstat.org](http://www.crashstat.org), would help provide more reliable data and offer clear areas to direct limited dollars for safety improvements.

### MIAMI BEACH – 16TH STREET PHASE I BASIS OF DESIGN REPORT (2007)

**Summary:** This Basis of Design Report (BODR) provides conceptual design plans for permanent right-of-way and infrastructure improvements along 16th Street, from Bay Road to Collins Avenue. The improvements outlined in the BODR are the result of significant and ongoing input from the City's technical staff, Program Manager, Flamingo Park residents and

the consultant team. GO Bond neighborhood projects utilizing the BODR process include: streetscape, bicycle and pedestrian improvements, traffic calming, stormwater upgrades, water and sewer upgrades and street resurfacing.

**Analysis:** The significant infrastructure improvements outlined in the 16th Street BODR have yet to be realized, save for the striping of 5' bicycle lanes. While the bicycle lanes are well used and serve as an important east-west connector running parallel to Lincoln Road, there remain operational challenges for bicyclists at intersections. Additionally, people driving frequently double park, which forces bicyclists out into the vehicular lanes. The residents of Flamingo Park continue to advocate for further changes to make the recommendations in the BODR more pedestrian and bicycle-friendly. To date, walking along 16th Street can still be challenging, as sidewalks are narrow, private landscaping encroaches on the sidewalk, and street signs and street light posts further reduce the effective width of the sidewalk. These concerns are legitimate and should be removed so that bicycling and walking are as safe and inviting as possible.

## MIAMI-DADE MPO BICYCLE SAFETY PLAN (2006)

**Summary:** This plan is built from crash data analysis (GIS, 1996-2002), and illuminates possible safety countermeasures, which include education, enforcement, and engineering/design methods.

**Analysis:** In general, the bicycle crash trend line is decreasing throughout the whole county. As it relates to Miami Beach, the largest clusters of accidents were occurring in the neighborhoods of South Beach and North Beach (high density neighborhoods with high levels of bicycle ridership, but few bicycle facilities). Particular concentrations are found along FDOT and County roads where multiple vehicle lanes and higher traffic volumes/vehicular speeds create more hostile conditions for people bicycling or walking.

Physical engineering recommendations include bicycle lanes, traffic calming measures, and experimental treatments like shared lane use markings (sharrows) and bicycle boxes. The former two are

methods are found throughout city, but bicycle boxes have not been used at all in Miami Beach or within Miami-Dade County. Additionally, developing bicycle boulevards or "neighborhood greenways" are nationally recognized as an excellent way to simultaneously calm traffic and create bicycle routes along primarily residential streets. This type of street retrofit has been studied by the County and may be a feasible option for particular areas in the City of Miami Beach, including streets that run parallel to major corridors with high crash rates. Educating City Commissioners and other city/county agencies will help decision makers prioritize these relatively inexpensive safety and quality of life improvements.

## MIAMI MPO CRASH DATA (2000 – 2006)

**Summary:** A recording of all traffic (motor vehicle, pedestrian and bicycle) injuries and fatalities. General trend is that there are fewer crashes throughout the County.

**Analysis:** The trends bode well, but there are still about the same number of bicyclist fatalities overall, despite the decrease in accidents. In general, those neighborhoods with higher ridership levels experience higher crash rates, which is to be expected and not necessarily an indication of other neighborhoods being safer for bicycling.

## MIAMI-DADE MPO LONG RANGE TRANSPORTATION 2030 PLAN (2004)

**Summary:** The 25-year planning and policy document for Miami-Dade County transportation. Updated every five years, the plan includes investment priority for all modes of travel, including freight.

**Analysis:** The plan still places a primary emphasis on pure mobility and not accessibility. As it relates to bicycles, the plan calls for expanding bicycle lanes and greenways, many of which were identified in previous studies. The plan doesn't assign specific funding stream or priority to any of the proposed projects.

## MIAMI BEACH – NAUTILUS NEIGHBORHOOD BASIS OF DESIGN REPORT (2002)

**Summary:** A Basis of Design Report (BODR) provides conceptual design plans for permanent right-of-way and infrastructure improvements. The

improvements outlined in the Nautilus BODR are the result of significant input from the City's technical staff, Program Manager, residents of Nautilus and the consultant team. GO Bond neighborhood projects utilizing the BODR process include: streetscape, traffic calming, bicycle and pedestrian improvements, storm water upgrades, water and sewer upgrades and street resurfacing.

**Analysis:** Significant infrastructure improvements have been made in the Nautilus neighborhood since the BODR was approved in 2002. As it relates to bicycling, the report called for a designated 4' wide bicycle lane along 47th Street, from Pine Tree Drive to Prairie Avenue, and on Prairie Avenue from 47th Street south to 41st Street (Arthur Godfrey Road). Additional bicycle lanes and shared use lane markings have also further improved bicycle mobility in the neighborhood. Neighborhood streets were also narrowed, intersection radii reduced to 15', which effectively reduces the speed of motor vehicles and makes bicycling and walking more comfortable.

### MIAMI-DADE MPO: BICYCLE FACILITIES PLAN (2001)

**Summary:** A comprehensive bicycle facility plan for Miami-Dade County. The plan uses quantitative analysis tools (Bicycle Level of Service) to determine the conditions and suitability of the existing arterial and collector thoroughfare network for bicycling. Of the 1,500 roadway miles analyzed, only 8.6 percent of roadway miles were at an acceptable level of service for bicycling (score of "C" or better). Moreover, over 90 percent of the roadway miles received an unacceptable LOS score of "D" or worse, with approximately 58 percent of all segments receiving an LOS score of "E" and 5.7 percent a LOS of "F" rating. Almost the entire network identified in Miami Beach received a "D" or an "F." As of 2001, The County had less than 12 miles of on-road bicycle lanes that met FDOT criteria, and only recently began implementing more bicycle facility/lane miles.

**Analysis:** The plan is a robust quantitative survey of existing conditions within the County's bicycle network, but says nothing about the actual qualitative experience. It also ignores the role of land use and urban form in determining the relative bike-friendliness of a thoroughfare. Developed more than 10-years ago, it's time for this plan to be updated

with new information and best practices.

### MIAMI-DADE MPO: BICYCLE FACILITIES PLAN (1997)

**Summary:** In the early 1990s, the Intermodal Surface Transportation Efficiency Act (ISTEA) and Clean Air Act (CAA) gave incentives to MPOs for promoting the expansion of bicycle facilities. This resulted in a renewed interest in bicycling, which spurred the creation of many plans, such as the Miami-Dade 1997 Bicycle Facilities Plan.

**Analysis:** The 1997 plan was largely a physical needs-based document used to determine future routes, infrastructure needs, and the existing conditions for bicycling within the County, including the City of Miami Beach. The latter was done using a quantitative and objective Roadway Condition Index (RCI). The index found that more than 60% of roadways were unsuitable for safe bicycling in the County. Interestingly, a similar LOS analysis in 2001 indicated that 90% of roadways were unsuitable for such use. The RCI and the subsequent LOS metrics, while intended to correctly identify unsafe conditions and promote bicycle-friendly streets, often do the opposite. For example, as the plan mentions, the RCI promoted wide curb lanes and turn lanes for "more automobile capacity." This directly conflicts with the same RCI notion that lower ADT equals a more bike-friendly street.

### MIAMI-DADE MPO BICYCLE AND PEDESTRIAN INJURIES AND FATALITIES (2008)

**Summary:** A graph displaying reported countywide injury and fatality numbers from 1990 - 2008.

**Analysis:** While this MPO document does not break out the crash trend lines in Miami Beach, the county as a whole is becoming a safer place to walk and bicycle. Bike crashes did increase slight over 2007, but fatalities continued to decline, and are now at an all-time low.

### APPLICATION OF INNOVATIVE STRATEGIES TO IMPROVE BICYCLE SAFETY AND MOBILITY (2012)

**Summary:** Also known as "Application of Innovative Strategies to Improve Bicycle Safety and Mobility". The study was intended to develop innovative solutions to bicycle transportation

## LITERATURE REVIEW

access, safety, and capacity problems including recommendations of the National Association of City Transportation Officials (NACTO) Urban Bikeway Design Guide and recent experience with bicycle transportation experts from the Netherlands.

**Analysis:** The report includes a variety of bicycle solutions that correspond with national and international best practices. Where ever possible, this report corroborates many of the same techniques being used in the Miami Beach Street Design Guide.

In addition, the report analyzes dozens of specific intersections and corridors and makes specific recommendations. In Miami Beach it calls for:

- A connection on the MacArthur Causeway between end of bike lane and bike lane on 5 Street/Alton South.
- A colored or advisory bike land on Pine Tree between Dade Boulevard and 51 Street, and a bicycle boulevard north of 51 Street. The report also includes the following volume data for Pine Tree and La Gorce:

Pine Tree Dr, S of 37th St - 16,200 vpd LOS D

Pine Tree Dr, S of 51st St - 11,000 vpd LOS C

Pine Tree Dr, S of 55th St - 5,100 vpd LOS C

La Gorce Dr, N of 57th St - 4,800 vpd LOS C

### MIAMI-DADE COMPLETE STREETS MANUAL (2014)

**Summary:** A manual documenting complete streets ideas and reviewing select case studies.

**Analysis:** This is the first complete streets manual produced for Miami-Dade County. While the idea is very positive, the execution of the report leaves too many questions unanswered. The document provides for a very limited view of complete streets, and relies on many of same conventional strategies that prioritize car travel over other modes. Examples include wide shoulders for bicyclists to “share the road”, and a 12’ travel lane standard. The document also lacks adequate graphics to explain the concepts.

### 2040 MIAMI-DADE LONG RANGE TRANSPORTATION PLAN (2014)

**Summary:** The LRTP is a federally mandated policy document that provides a minimum time horizon of 20 years. The LRTP is a comprehensive transportation infrastructure plan that includes, at a minimum, highway and transit infrastructure improvements. The Miami-Dade LRTP includes highway, transit, freight, and non-motorized components.

**Analysis:** The plan currently lacks any mention of mode share targets or goals. Projects are listed, but no overall transportation goal is made. Mention is made of non-motorized and public transportation, but no attempt is made to prioritize these modes in a verifiable way. The report discusses the performance monitoring program envisioned by the last transportation reauthorization program, MAP-21. This involves the identification of metrics, performance targets for those metrics, and the measurement of the transportation system performance against the metrics. This model has not yet been implemented. Among the projects listed that relate to Miami Beach are:

- Dade Boulevard Path (priority II) - from Meridian to the Atlantic Trail
- Atlantic Trail (priority IV) - Boardwalk replacement between 23 Street and 46 Street)
- Pine Tree / La Gorce (priority IV)

### DOWNTOWN MIAMI PEDESTRIAN PRIORITY ZONE PLAN ORDINANCE AND STANDARDS (2014)

**Summary:** The City of Miami drafted a Pedestrian Zone Plan for Downtown Miami that implemented ten policies and standards to prioritize pedestrians above all other modes.

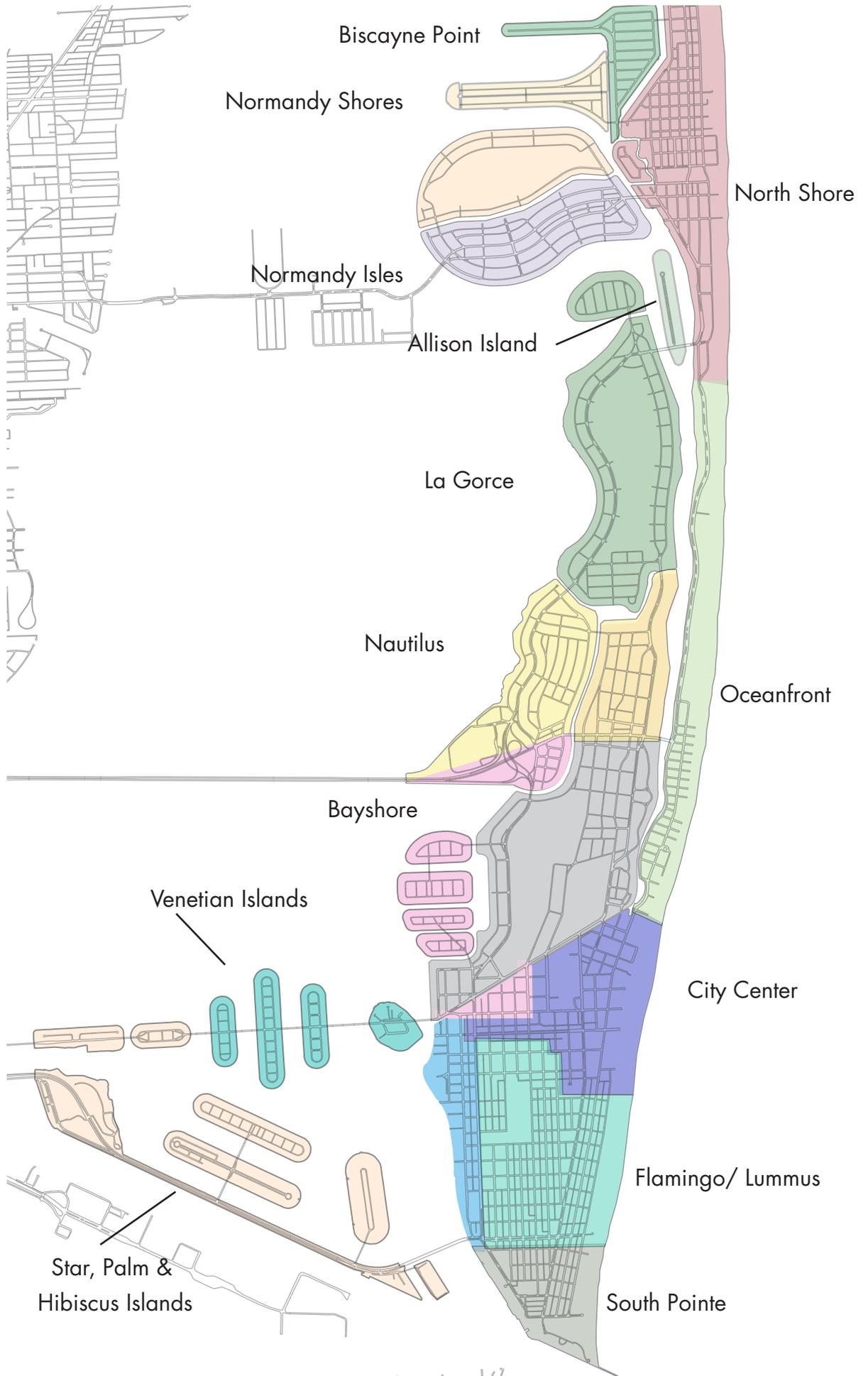
**Analysis:** The plan calls for both infrastructure based and policy based solutions to enhance pedestrian safety and comfort. No right on red policies, tight curb radii, and narrow travel lanes are among the elements included in the plan. Many of the same elements will be included in the policy and street design sections of the report.

### MIAMI-DADE BICYCLE PEDESTRIAN SAFETY PLAN UPDATE (2014)

**Summary:** In 2014 Miami-Dade County updated the 2006 Bicycle Safety Program Plan and developed a Pedestrian Safety Program Plan.

The purpose of the Plan is to evaluate and recommend safety countermeasures to improve the conditions for walking and bicycling.

**Analysis:** The plan calls for both infrastructure based and policy based solutions to enhance pedestrian safety and comfort. No right on red policies, tight curb radii, and narrow travel lanes are among the elements included in the plan. Many of the same elements will be included in the policy and street design sections of the report.



# ABOUT THE ANALYSIS

The street sections in the pages that follow include over 30 different intersections and roadway segments calibrated using the Street Design Standards. This analysis focuses on significantly improved bicycle and pedestrian safety and access. Proposals are described with typical plans, sections, and intersection conditions.

## NORTH BEACH

### **NORTH SHORE**

Byron Avenue  
72 Street  
73 Street  
Harding

### **Normandy Isles Normandy Shores**

## MIDDLE BEACH

### **BAYSHORE**

Alton Road @ 27 Street  
North Bay Road  
Royal Palm Avenue  
Meridian Avenue  
Indian Creek @ 27th Street  
Dade Boulevard @ Meridian  
Dade Boulevard @ 19 Street  
19 Street  
20 Street  
Purdy Avenue

### **LA GORCE**

Alton Road @ 63 Street  
63 Street  
Pine Tree Drive  
La Gorce Drive  
51 street  
Pine Tree / La Gorce @51 Street  
Pine Tree / La Gorce @ 63 Street

### **NAUTILUS**

Alton Road  
Intersection @ 195/Alton

### **OCEANFRONT**

Collins  
Beachwalk

## SOUTH BEACH

### **WEST AVENUE**

Intersection @ 16 Street

### **FLAMINGO PARK/ LUMMUS**

Euclid Avenue  
Euclid @ 16 Street  
Pennsylvania  
Washington  
16 Street  
11 Street  
10 Street  
Meridian  
5 Street

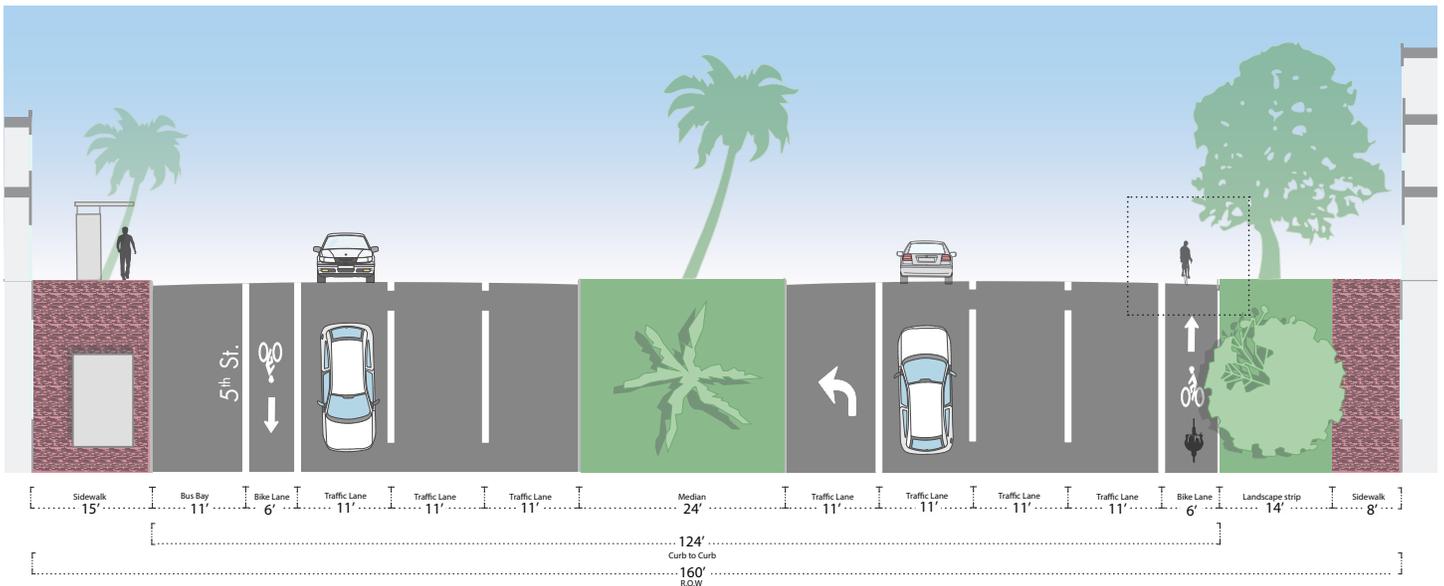
### **City Center South Pointe**

# APPENDIX: STREET DESIGN ANALYSIS

# 5<sup>TH</sup> STREET

STREET DATA	
Public Right-of-Way Width	160'
Pavement Width	117' typical
Posted Speed Limit	35 mph
Daily Volume	67,050 ADT
Project Limits	Between Alton Road and Ocean Drive
Project Length	Approximately 3,000', 0.56 Miles
Predominant Land Use	commercial
Predominant Development Pattern	high density, low scale commercial
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	Main entrance to Miami Beach; regional connection on MacArthur
Impact on modeshare	high
Upcoming Public Works Project	Yes - Baylink

## EXISTING CONDITIONS

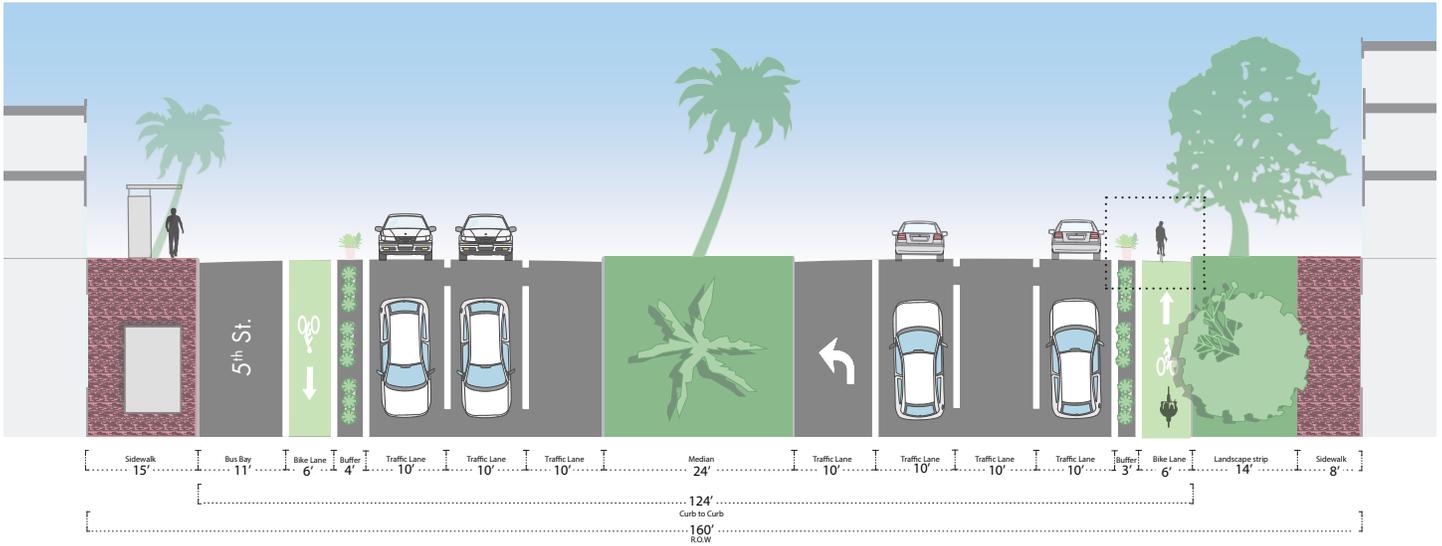


Refer to figure 3.18 of the street design guide for additional information.



5th Street is the main entrance for most visitors to Miami Beach. It is a wide six lane, palm tree lined boulevard. It currently has on-street bicycle facilities. Given the high volume of traffic and high speeds, upgrading this corridor to a protected facility should be prioritized in the near term. Over the long term, the addition of transit along this corridor will provide an opportunity to implement protected bicycle facilities, more street trees and reduced car capacity.

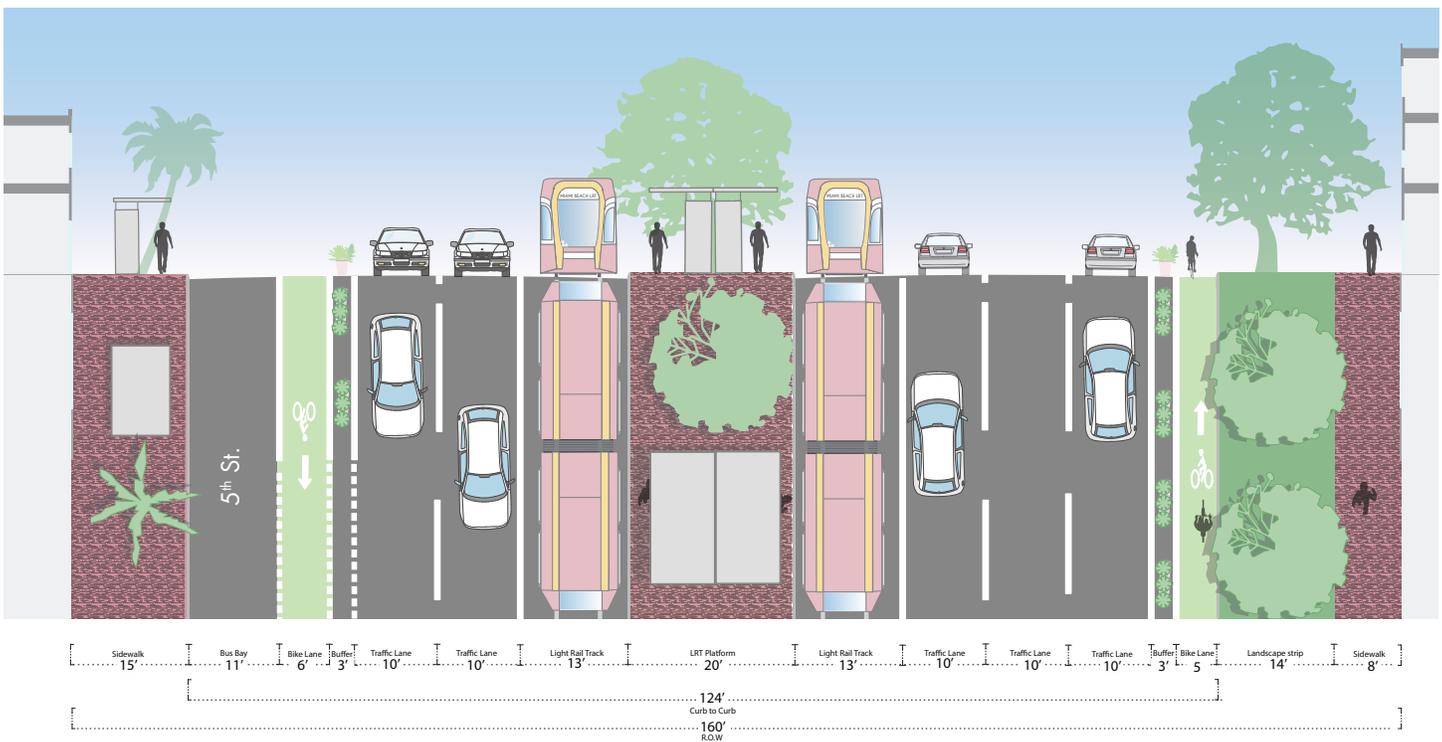
PROTECTED LANES

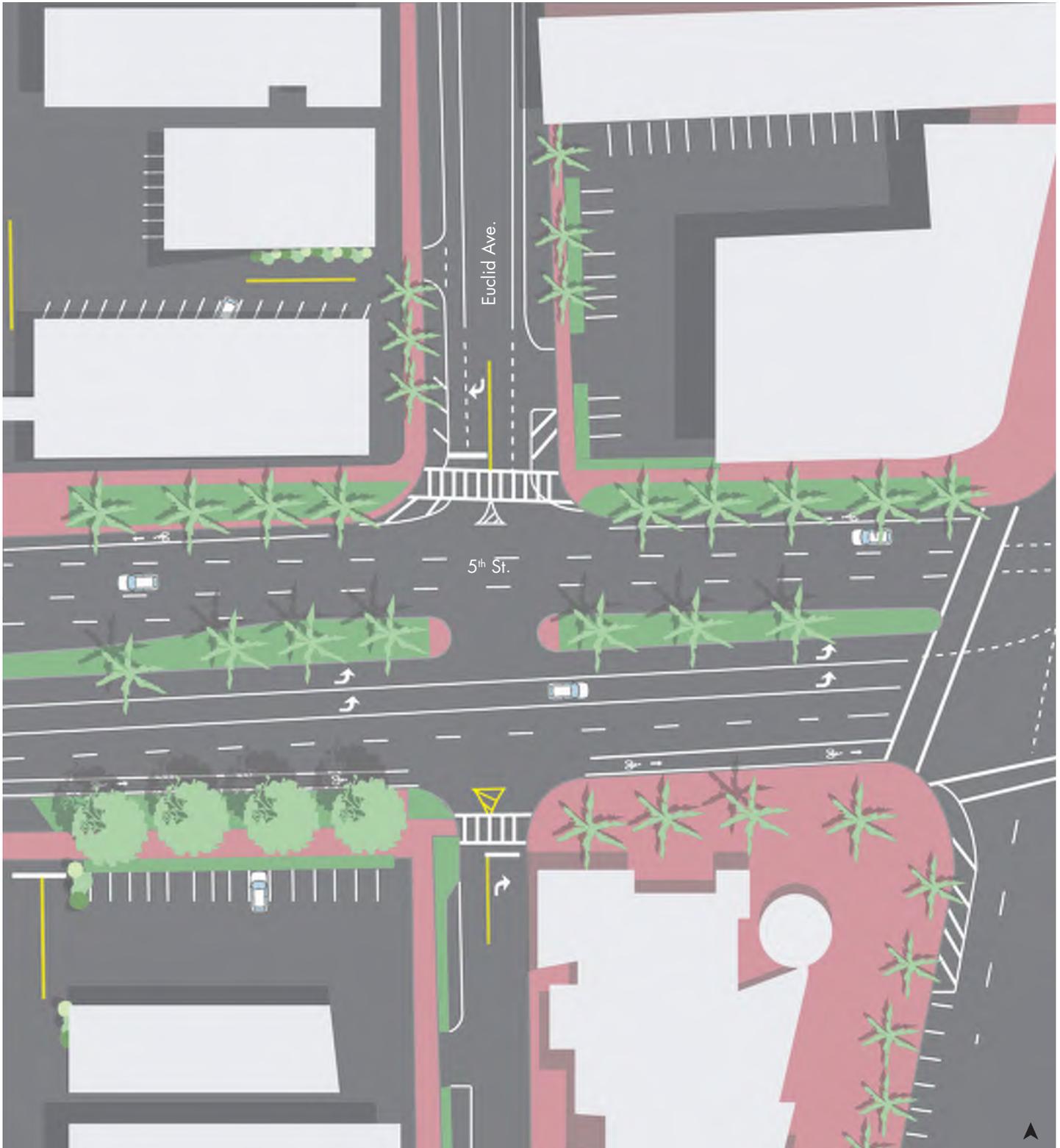


Refer to figure 3.20 of the street design guide for additional information.



PROTECTED BICYCLE LANES WITH LIGHT RAIL





Streets with a volume of >3000 ADT, speeds greater than 20 mph, and 2 or more lanes, crosswalks should be the norm at intersections. Frequent crossings, that are wide and visible to motorists, enhance walkability and safety. In addition, crosswalks fuel future demand.

When deciding on the implementation of a crosswalk, consider multiple factors like: present and future demand, speed safety along the corridor, desired crossing locations and crash history. The minimum of 300' spacing might not be enough to determine crosswalk implementation or additional devices that might be installed.



☐ Refer to figure 3.40 of the street design guide for additional information.

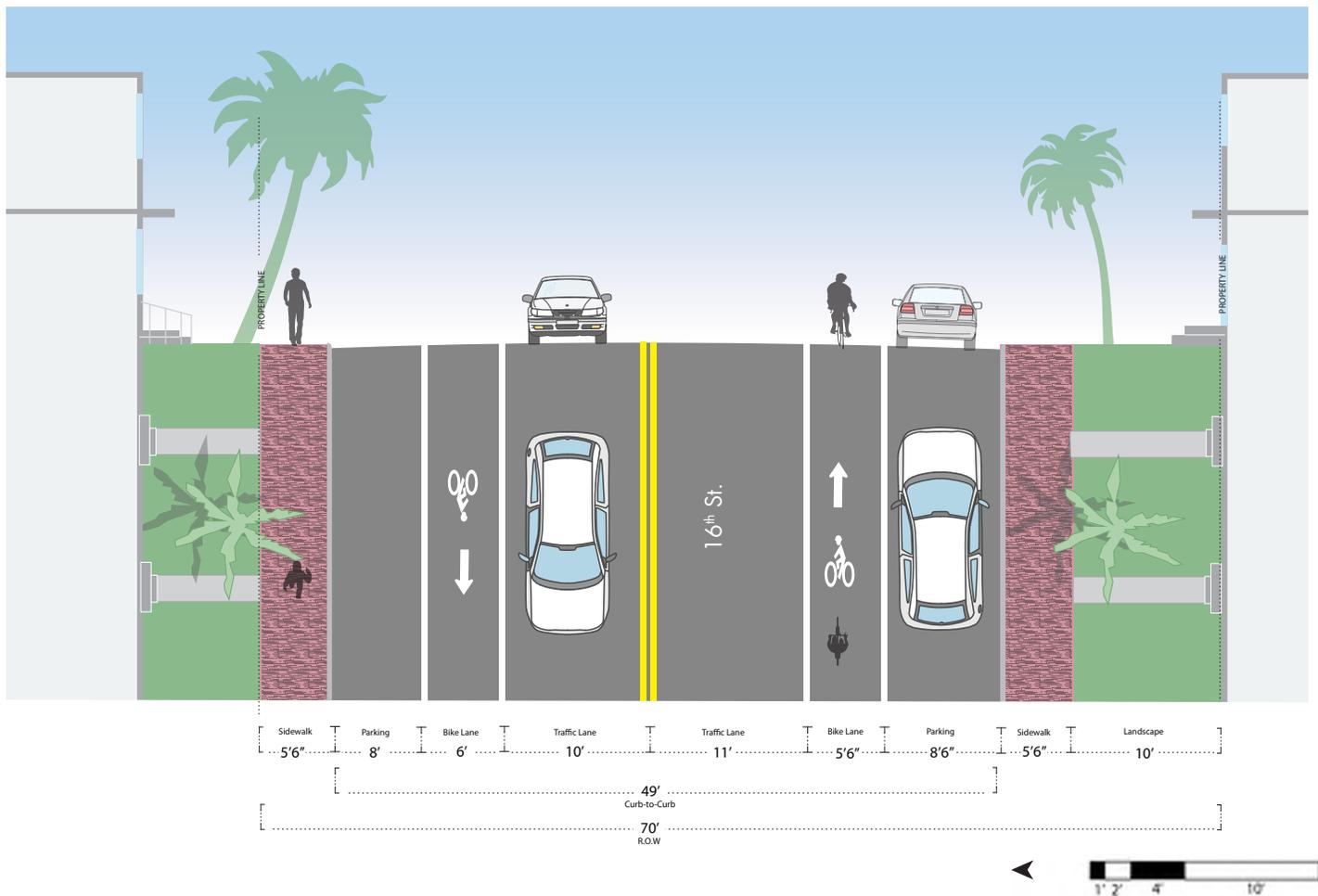
Discouraging pedestrian/bicyclists crossings by leaving uncontrolled crossings unmarked is not a valid safety measure. Instead, it encourages unsafe, risk-taking behavior and discourages walking citywide. Efforts should be made to enhance or highlight desired crossings as much as possible. Hybrid beacons, rapid flash beacons (RFBs), raised crossings, medians, and other safety counter-measures may be suitable and less expensive than full signalization. These should all be considered before leaving an uncontrolled crossing unmarked.

Wherever a pedestrian crossing is granted, bicycle crossing must be present in order to maintain connectivity.

# 16<sup>TH</sup> STREET

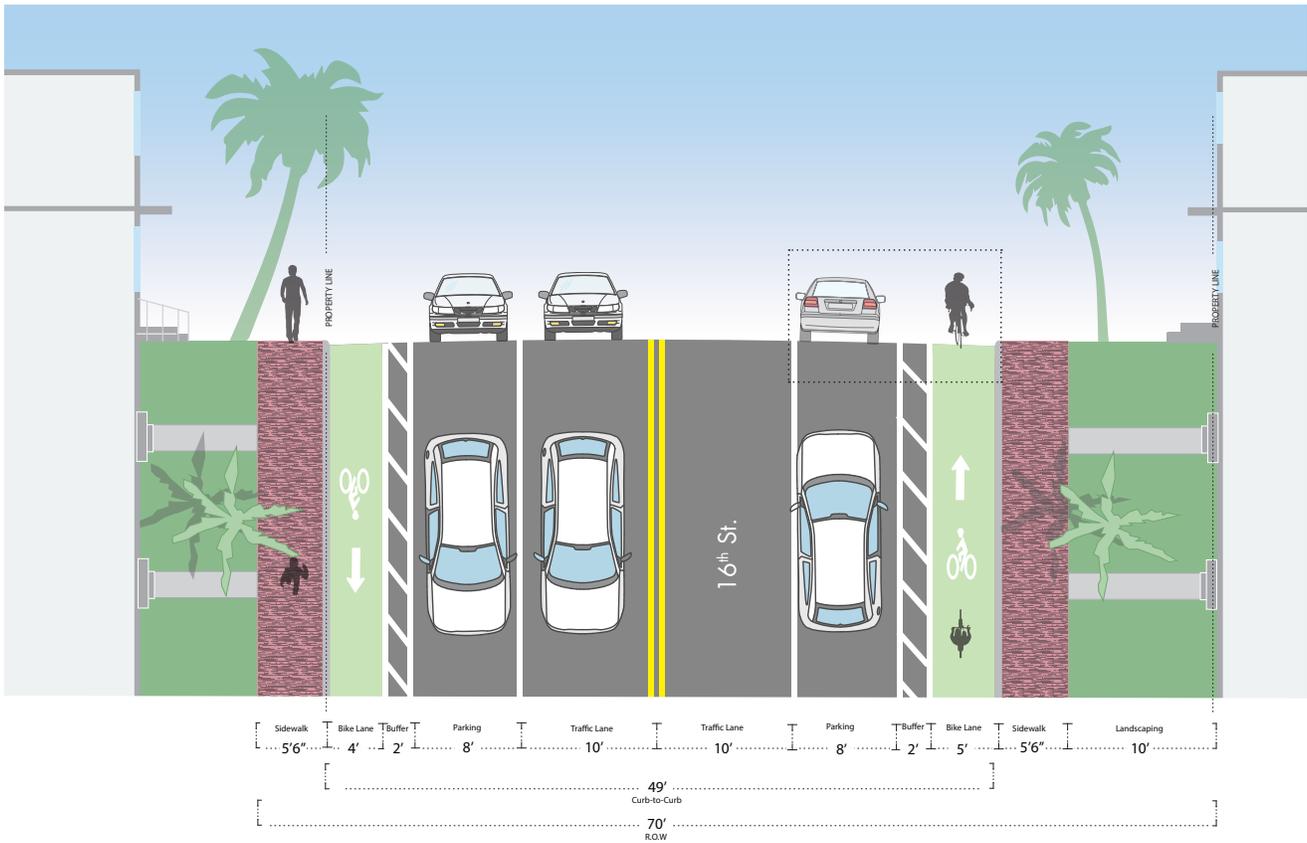
STREET DATA	
Public Right-of-Way Width	70'
Pavement Width	49' typical
Posted Speed Limit	25 mph
Project Limits	Between Alton Road and Washington
Project Length	Approximately 3,500', 0.66 Miles
Daily Volume	9,200 -16,500 ADT
Predominant Land Use	multifamily residential
Predominant Development Pattern	Compact urban apartment types
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	with a conventional bike lane, is one of the most heavily used bike corridors in the city.
Impact on modeshare	high
Upcoming Public Works Project	Yes - CIP

## EXISTING CONDITIONS



16<sup>th</sup> Street is one of the most popular bicycle routes in Miami Beach. Making it as safe as possible, and attracting even more people to ride on this street is one of the best opportunities The City has to encourage a robust bicycle network.

PROTECTED BIKE LANE



Refer to figure 3.13 of the street design guide for additional information.



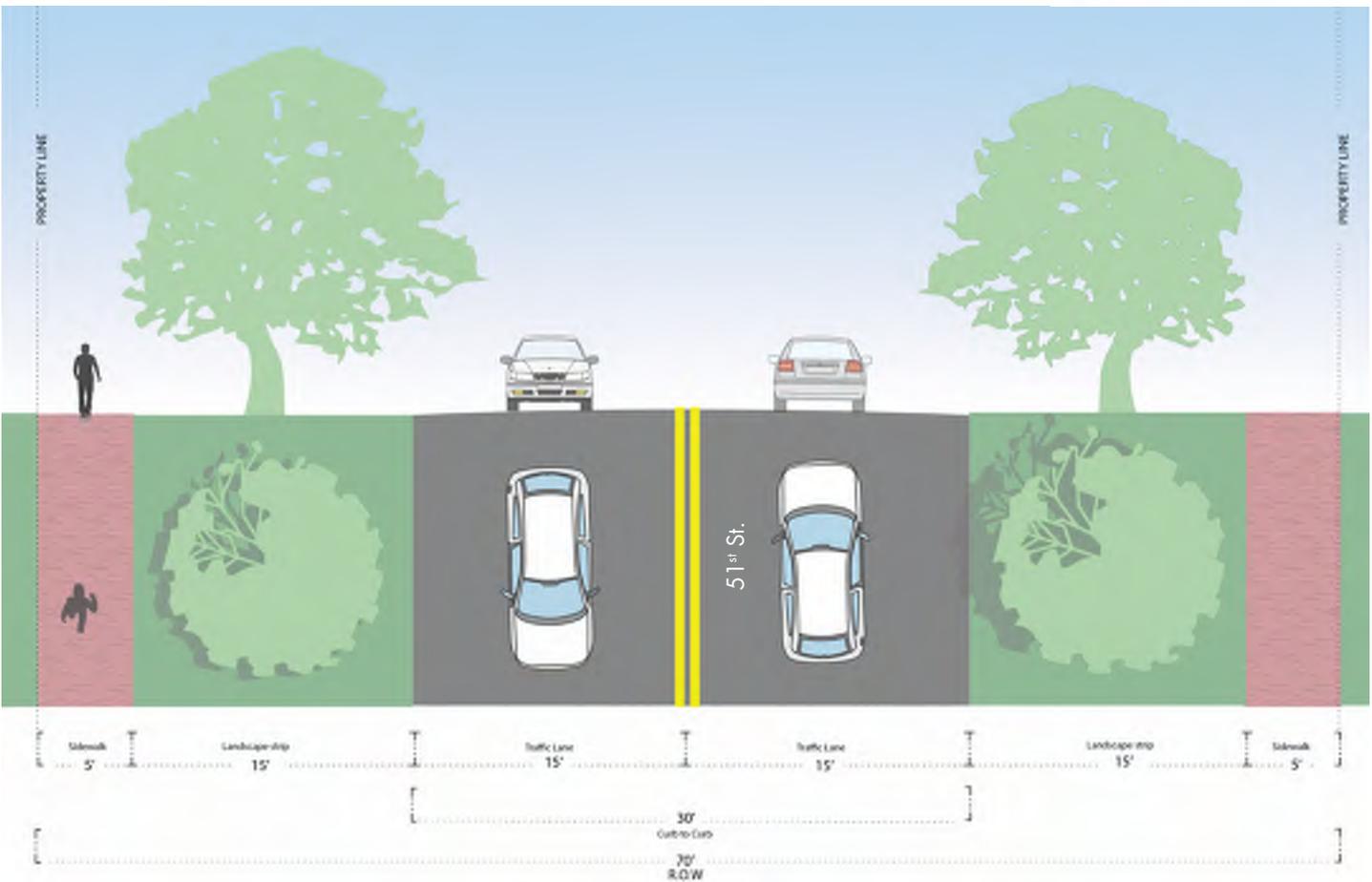
Creating a parking protected bike lane on 16<sup>th</sup> Street should be a priority. Either at the sidewalk level or street level, the volume of cyclists on this route warrant a higher level of service.

In the protected bicycle lane recommendation, gutters have been relocated to the buffer area of the bike lanes.

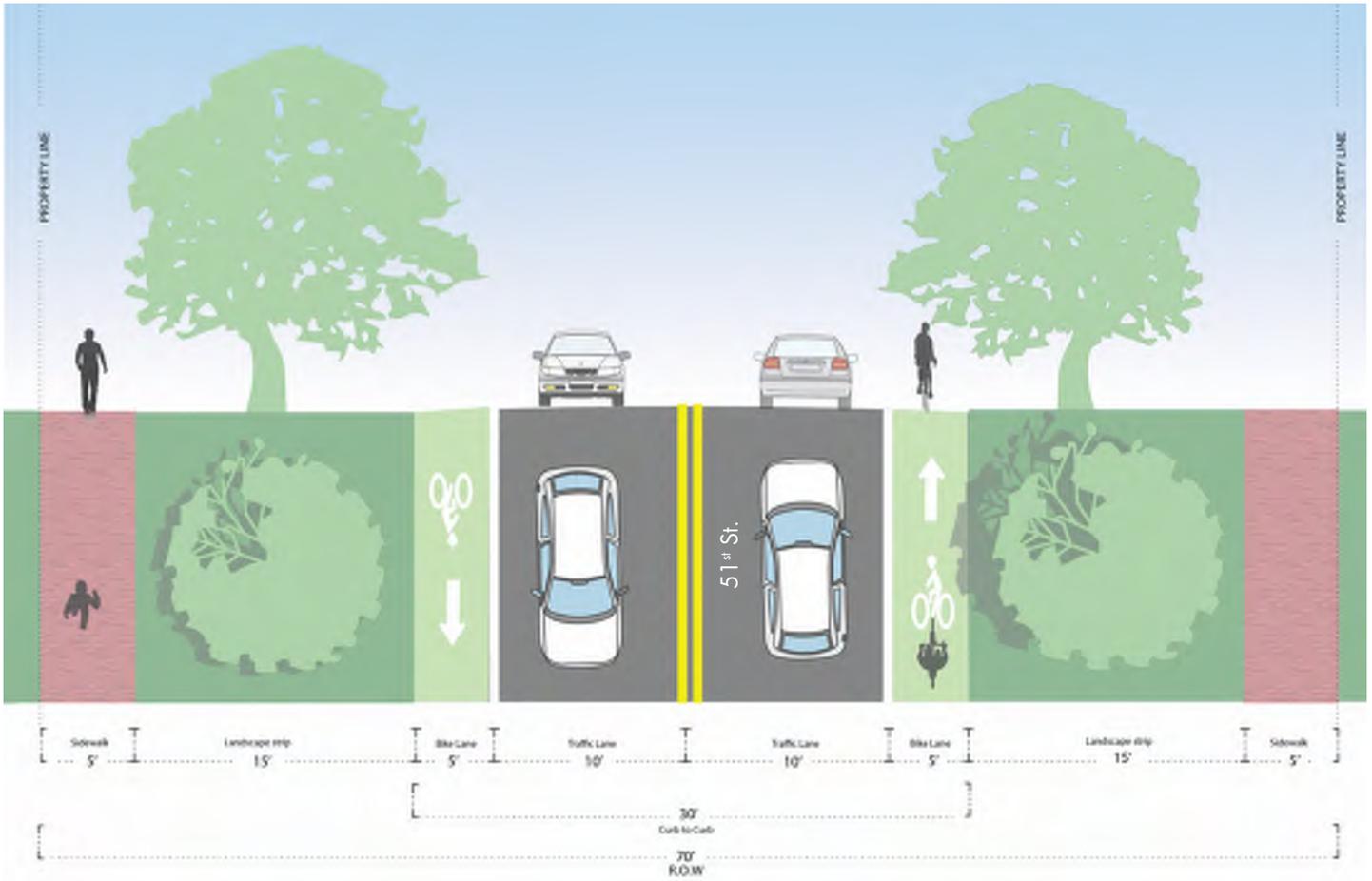
# 51<sup>ST</sup> STREET

STREET DATA	
Public Right-of-Way Width	70'
Project Limits	Between Alton Road and Pine Tree Drive
Project Length	2,000', 0.4 Miles
Pavement Width	30' typical
Posted Speed Limit	25 mph
Daily Volume	N/A
Predominant Land Use	Single Family Residential
Predominant Development Pattern	Suburban Detached
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	There is a small park on the corridor. The value of this corridor is in the connectivity between routes.
Impact on modeshare	moderate
Upcoming Public Works Project	No

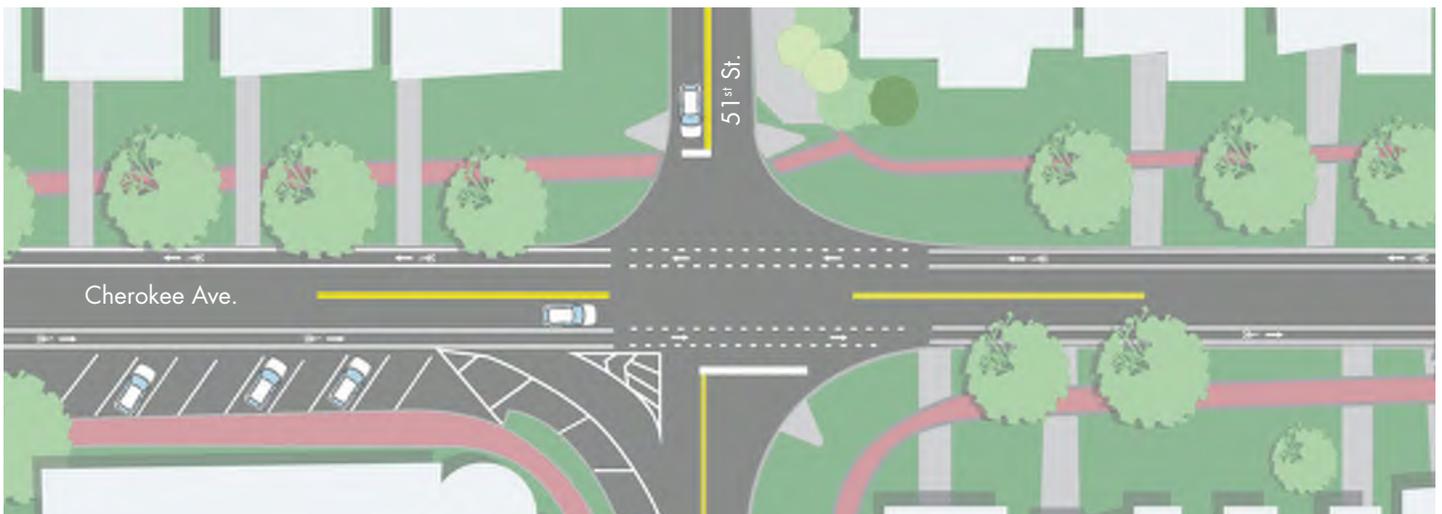
## EXISTING CONDITIONS



51 Street is another east /west connection in the bicycle network. It connects Alton Road and Pine Tree / La Gorce pair.



5' Bike lanes on this 28' roadway surface can be implemented in the short term with no pavement expansion. Given the observed speeds and volumes on this route, the criteria allow for a conventional bike lane.

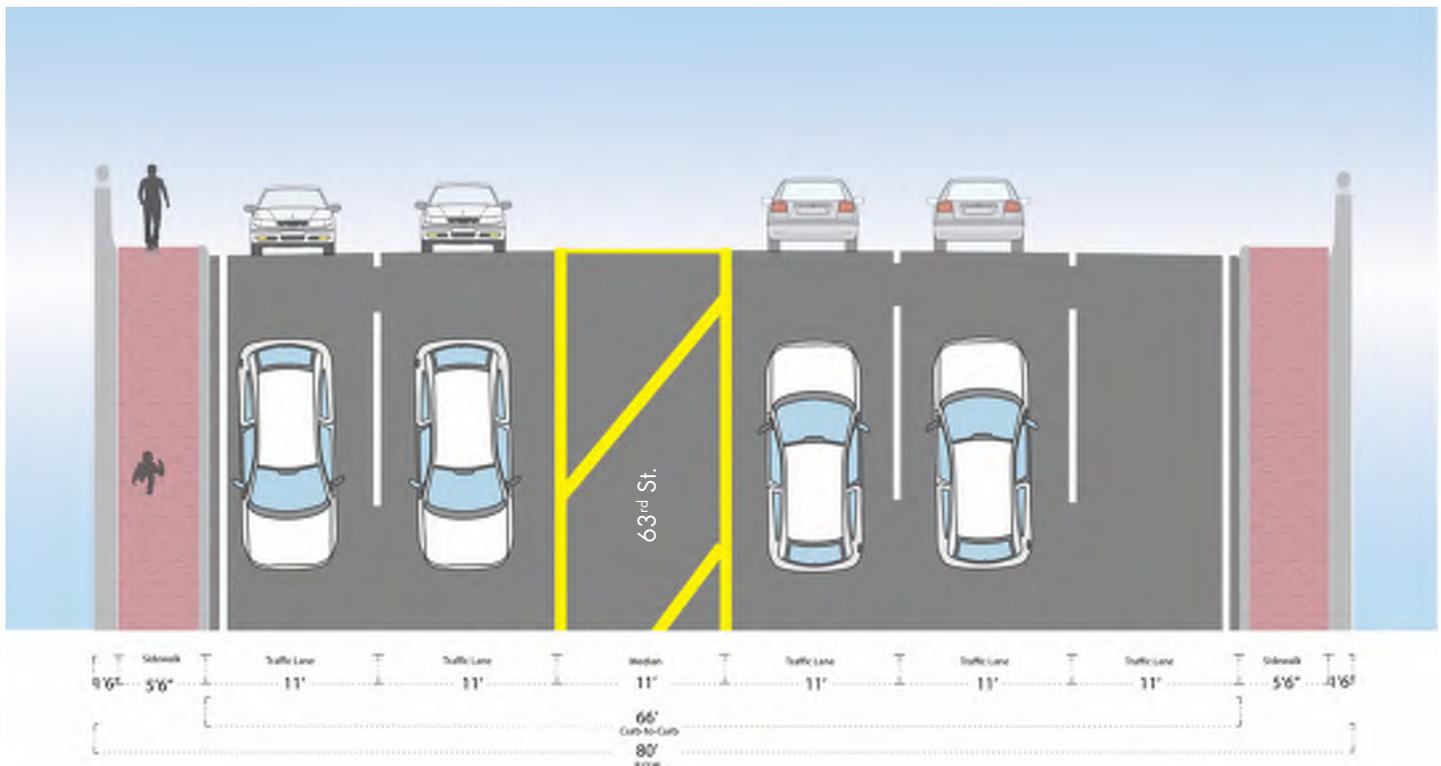


Cherokee Avenue is the site of a unique condition. A combination of angled parking and small scale retail allow for bicycle lanes that serve the neighborhood in addition to overall network connectivity. By reconfiguring the existing angled parking into back-angle parking, bicyclist are more visible to motorists.

# 63<sup>RD</sup> STREET

STREET DATA	
Public Right-of-Way Width	80'
Pavement Width	66' typical
Project Limits	Between Alton Road and Indian Creek Drive
Project Length	2,000' 0.4 Miles
Posted Speed Limit	35 mph
Daily Volume	32,960 ADT
Predominant Land Use	Single Family Residential / multifamily residential
Predominant Development Pattern	Suburban Detached/ small apartment buildings
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	High density residential apartment buildings and the beach are both major pedestrian and bicycle generators in this area.
Impact on modeshare	High
Upcoming Public Works Project	Yes - FDOT

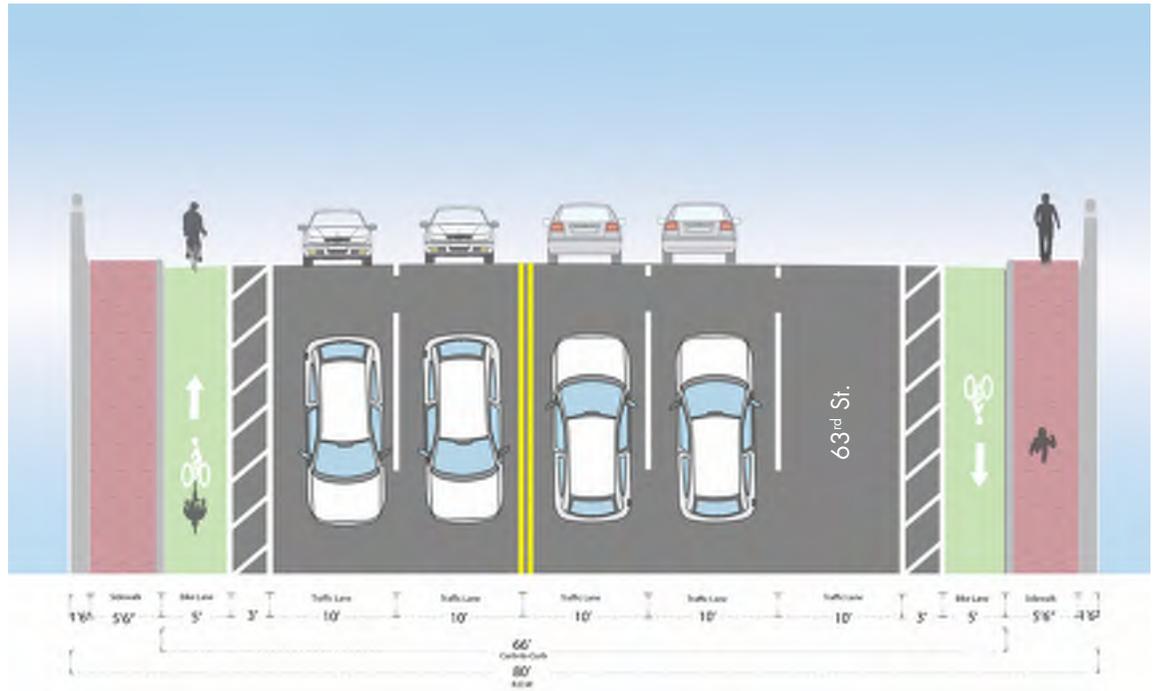
## EXISTING CONDITIONS



63 Street is a critical connection between mid/south beach and the communities of north beach. The street is the subject of an upcoming FDOT road redesign, and preliminary designs are headed in the right direction. A reduction in lane widths is a good step, but there are serious concerns regarding the proposed section's ability to provide much needed connectivity for cyclists where they need it most. While traffic volumes approaching the bridge are very high, the proposed sections do little to alleviate the comfort of cycling. Unfortunately, there is no parallel option here, as North Bay and/or La Gorce/Pine Tree St all empty out onto this point. For this reason, and because the volume of traffic is high, the most emphasis should be placed here on safe and comfortable bicycle and pedestrian infrastructure, not the least.

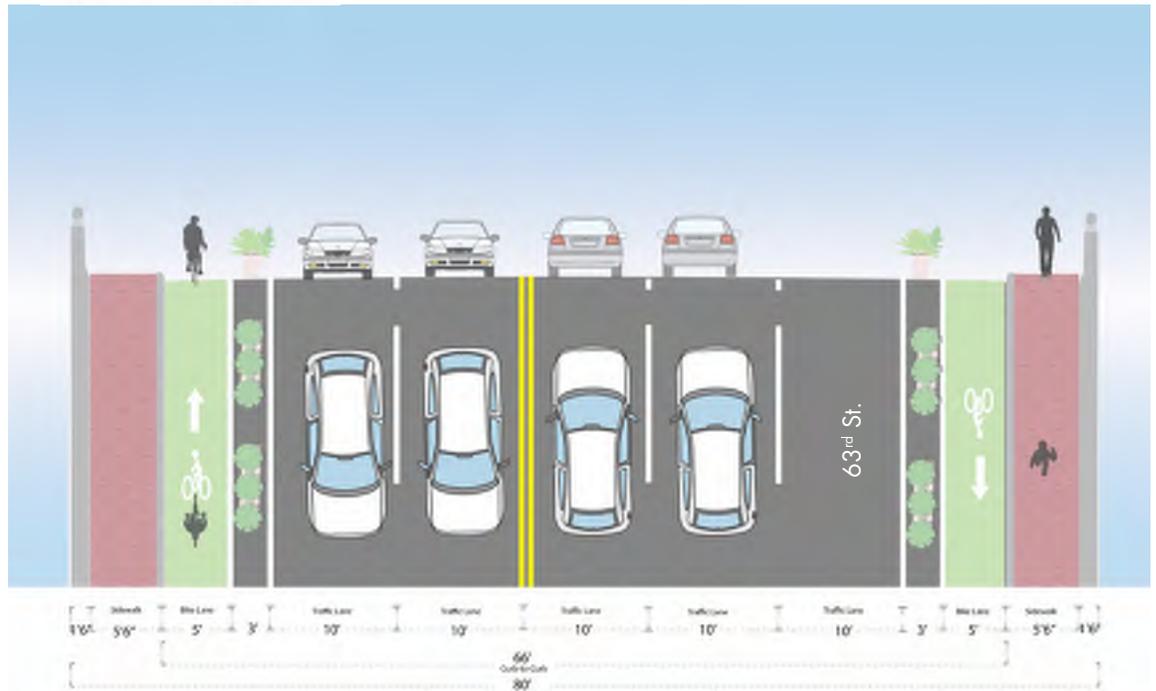
**OPTION 1: PROTECTED BIKE LANE**

Reductions in lane widths to 10', along with the elimination of a center turn lane provide the space needed to expand bicycle and pedestrian facilities. In the short term, a bike lane can be striped with a buffer or a temporary physical separation.



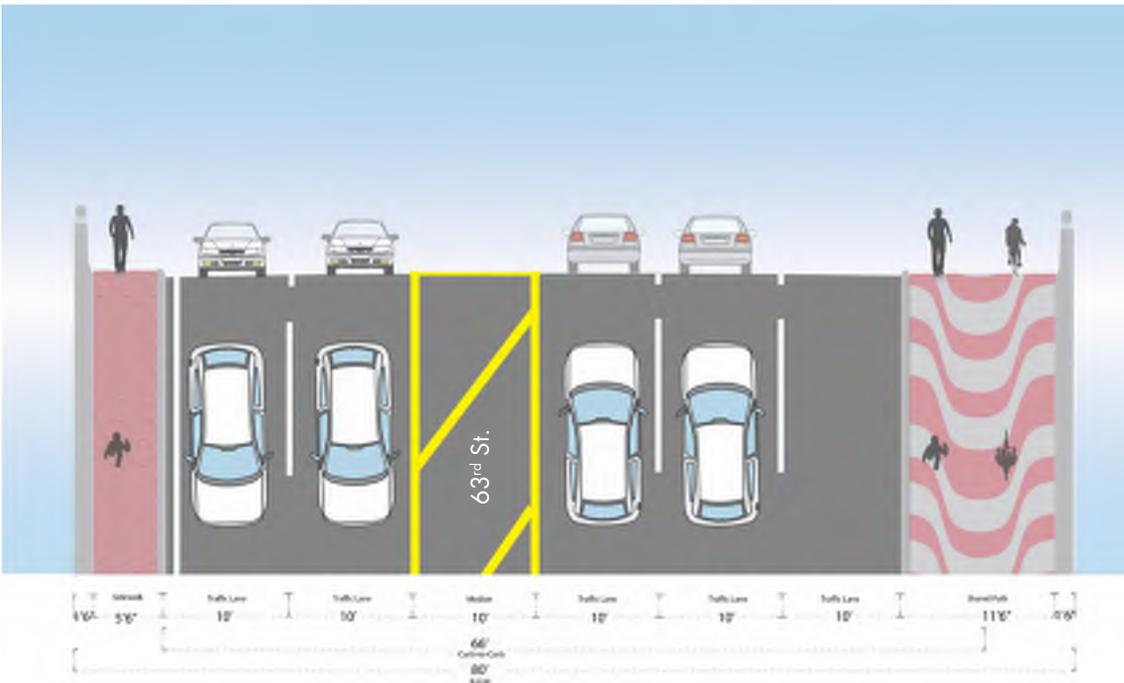
**OPTION 2: PROTECTED BIKE LANE**

A variation of the protected bike lane could contain planters with shrubs or flowers.



# 63<sup>RD</sup> STREET

## OPTION 3: SHARED PATH



This last option shows a shared path on the south side of the street and a protected lane on the north side. This provides for ample protected facilities for those coming from points north through the westbound protected bike lane. Travelers coming from points south take the shared path. At a minimum, the shared path can provide a critical off-street connection.

## ALLISON ISLAND EXISTING CONDITIONS



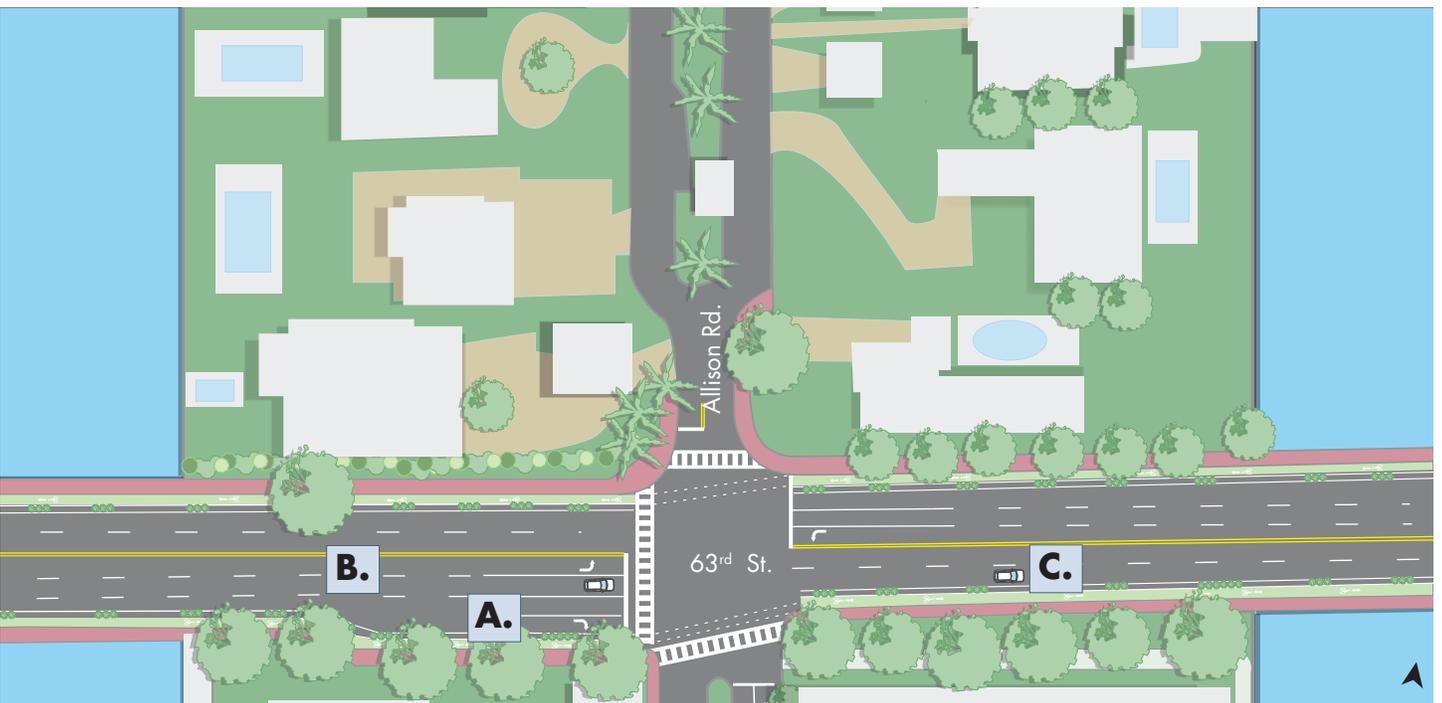
The proposal to add pedestrian and bicycle space to 63<sup>rd</sup> Street comes from the idea that this critical connection between the communities of Middle and North Beach needs a low-stress connection for the Type 3 riders. 63<sup>RD</sup> is a high speed, high volume corridor that requires a protected facility.

## ALLISON ISLAND SHARED PATH



In this proposal a shared path is located on the south side of the bridge. Travel lanes have been narrowed to accommodate the needed bicycle pedestrian space.

## ALLISON ISLAND PROTECTED BIKE LANE

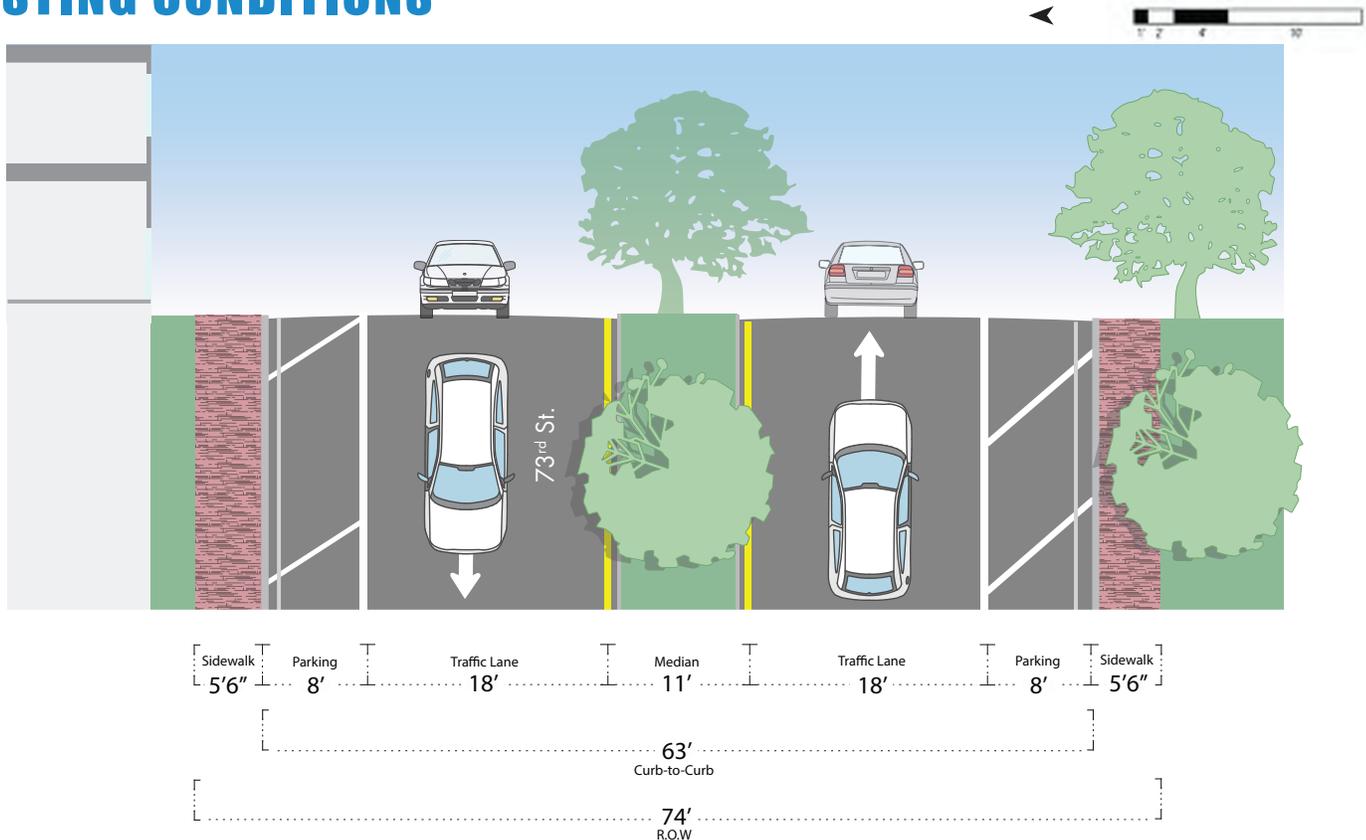


In this proposal a protected bike lanes are on both sides of the bridge. **A.** The right turn into Allison Island is still there. **B.** Travel lanes have been narrowed, **C.** East-Bound lane eliminated to accommodate the needed bicycle pedestrian space.

# 73<sup>RD</sup> STREET

STREET DATA	
Public Right-of-Way Width	74'
Pavement Width	63' typical
Project Limits	Between Collins and Dickens
Project Length	1,800' or 0.35 Miles
Posted Speed Limit	25 mph
Daily Volume	NA
Predominant Land Use	Compact Urban
Predominant Development Pattern	2 - 3 story apartment buildings
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	The high density residential apartment buildings, North Shore Park, and the beach are both major pedestrian and bicycle generators in this area.
Impact on modeshare	low
Upcoming Public Works Project	Yes

## EXISTING CONDITIONS

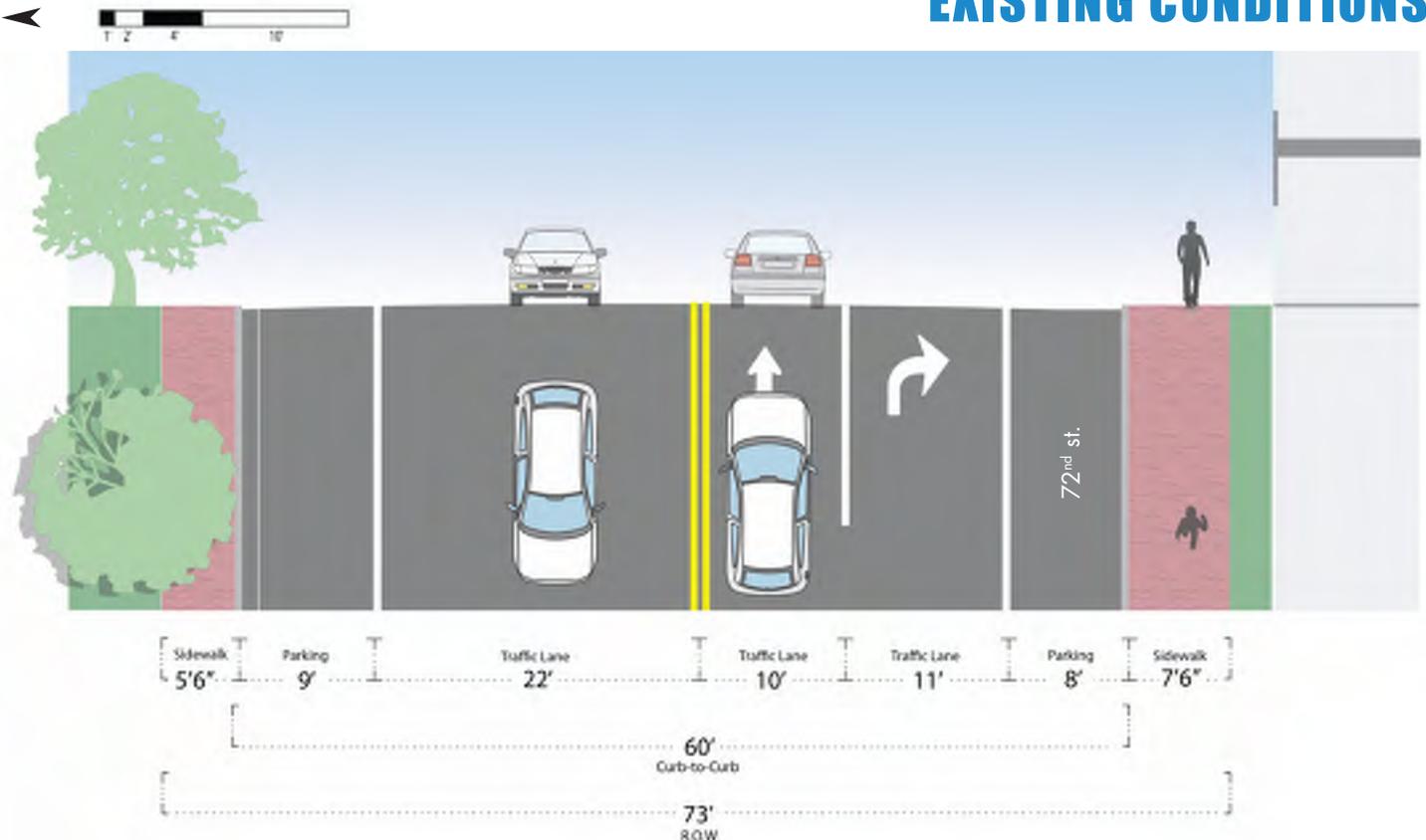


The adjacency to both North Shore Park and the 71 Street commercial district make the 73 Street/72 Street Pair an important east west axis, connecting Park View Island, Carlyle Avenue, Harding, Collins and the Beachwalk. The ample roadway dimensions (70' and 74') allow for several different variations of protected and unprotected bicycle facilities on both corridors, shown on pages 44 - 45. Most of the crashes shown on page 36 for the North Shore area occur on 71 Street, but several are on 72 (at Collins and Dickens).

A Basis Of Design Report for the North Shore area was created in 2003 and reviewed as part of this effort. The report proposes increases in sidewalk width on the south side of the street and increases the median width for 73 street. These are great starts. For 72 Street, the report takes a currently wide street with on-street parking on

STREET DATA	
Public Right-of-Way Width	73' (70' Typical, 73' at times)
Pavement Width	60' typical
Project Limits	Between Collins and Dickens
Project Length	1,800' or 0.35 Miles
Posted Speed Limit	25 mph
Daily Volume	NA
Predominant Land Use	Compact Urban
Predominant Development Pattern	1 - 2 Commercial Buildings
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	North Shore Park and recreational center and the Beachwalk are major bicycle /pedestrian trip generators in this area.
Impact on modeshare	low
Upcoming Public Works Project	Yes

## EXISTING CONDITIONS

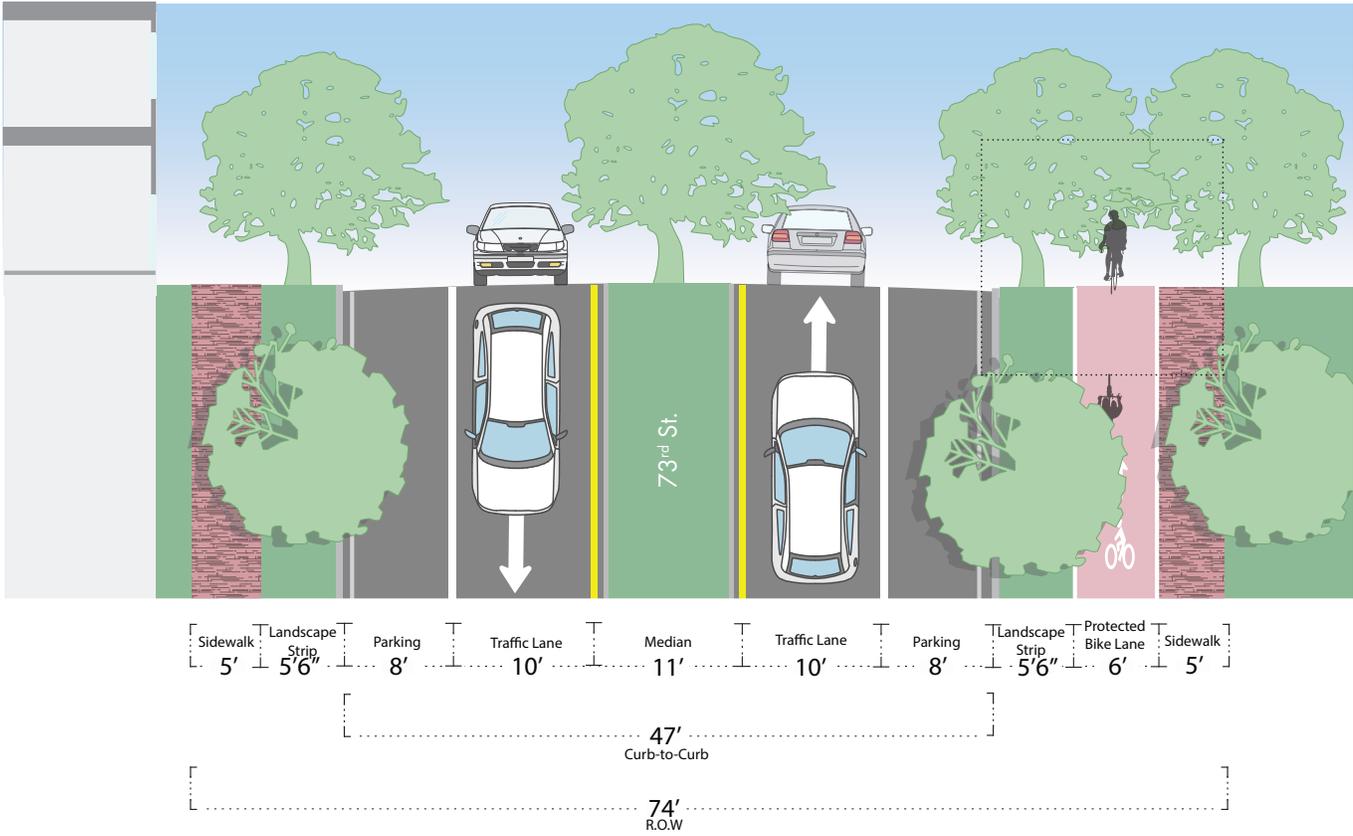


both sides, and introduces angled parking in the median. The plan results in a net increase of 10 parking spaces (from 85 spaces currently to 95 spaces) at the expense of a wide swath of potential pedestrian and bicycle roadway surface.

The proposals described on the following pages approach the design of 72<sup>nd</sup> and 73<sup>rd</sup> Street as a one way pair of facilities. The first phase proposes parking protected bike lanes without reconstructing the street between the parallel parking and the sidewalk. In the long term, the street can be redesigned with street trees, narrow lanes, wider sidewalks and a sidewalk level bicycle facility going westbound. These are steps in the right direction.

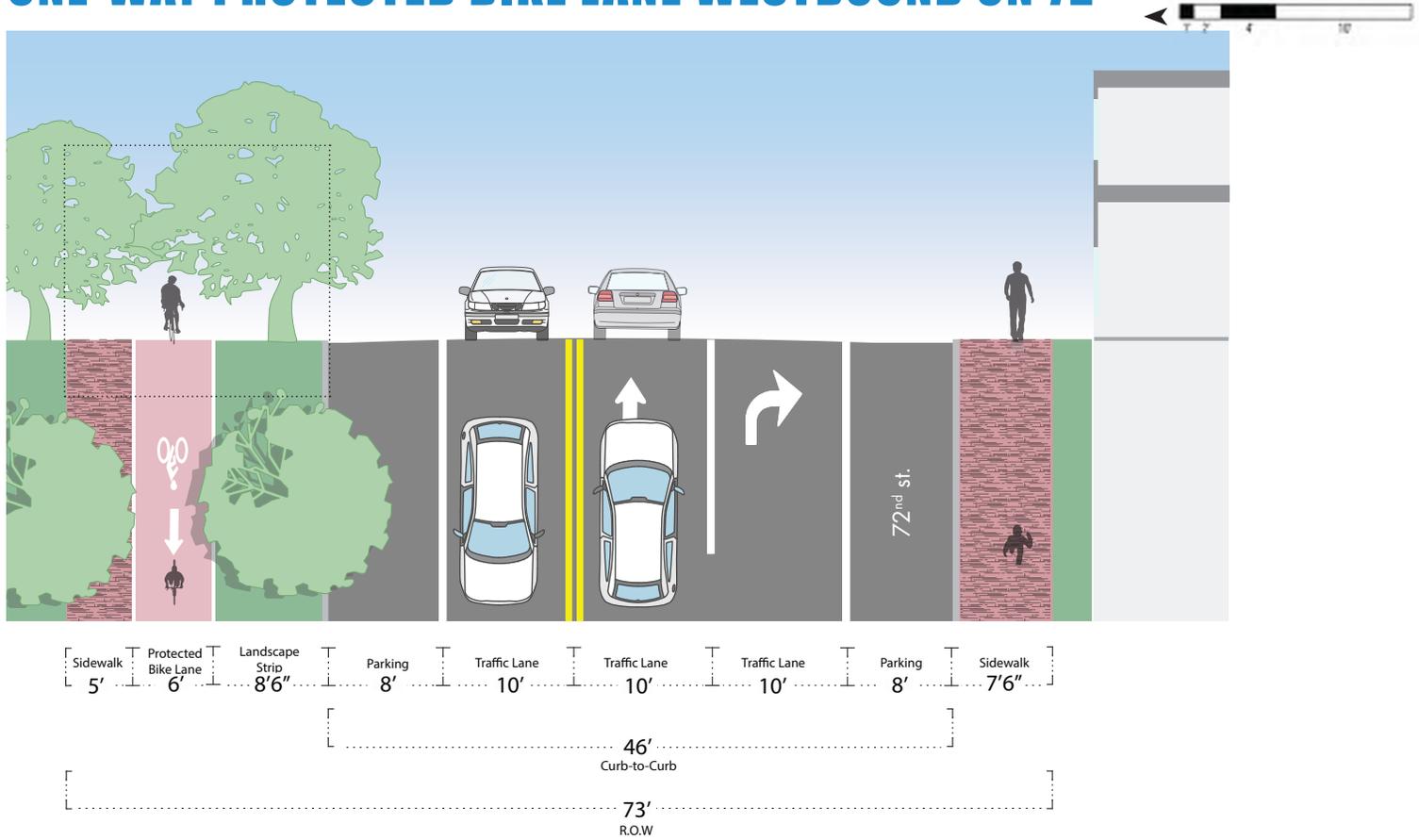
# 73<sup>RD</sup> STREET

## ONE-WAY PROTECTED BIKE LANE EASTBOUND ON 73<sup>RD</sup>



Refer to figure 3.25 of the street design guide for additional information.

ONE-WAY PROTECTED BIKE LANE WESTBOUND ON 72<sup>ND</sup>

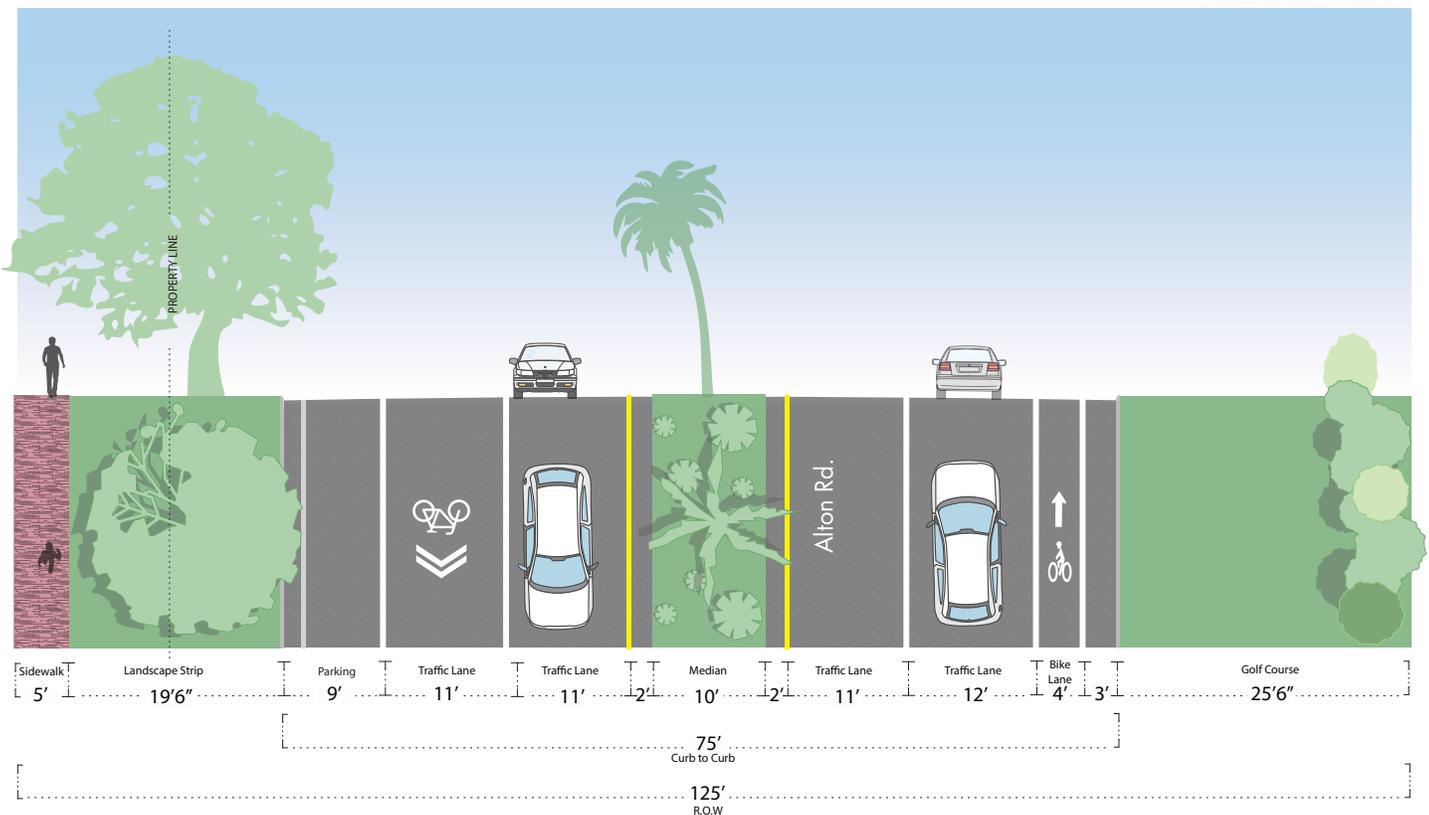


Refer to figure 3.25 of the street design guide for additional information.

# ALTON ROAD

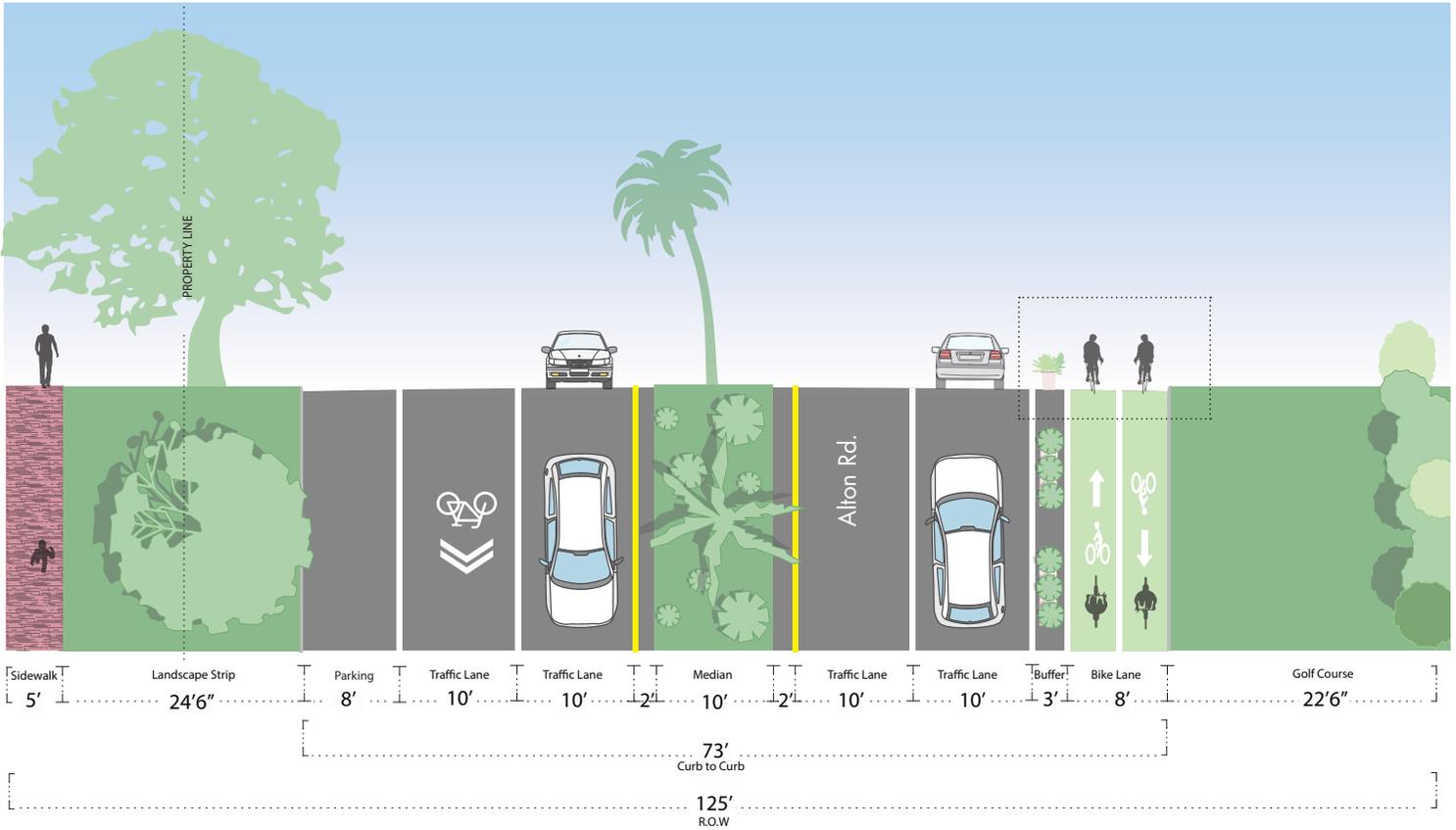
STREET DATA	
Public Right-of-Way Width	125'
Pavement Width	75' typical
Posted Speed Limit	35 mph
Daily Volume	32,000 ADT
Predominant Land Use	Single Family Residential
Project Limits	Between Chase Avenue And North Michigan Avenue
Project Length	Approximately 4,500', 0.8 Miles
Predominant Development Pattern	Detached single family homes with driveways, and a municipal golf course.
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	The appeal of this corridor is that it is a direct north/south connector. It is also a high volume street that make it a candidate for protected facilities.
Impact on modeshare	High
Upcoming Public Works Project	Yes - FDOT resurfacing

## EXISTING CONDITIONS



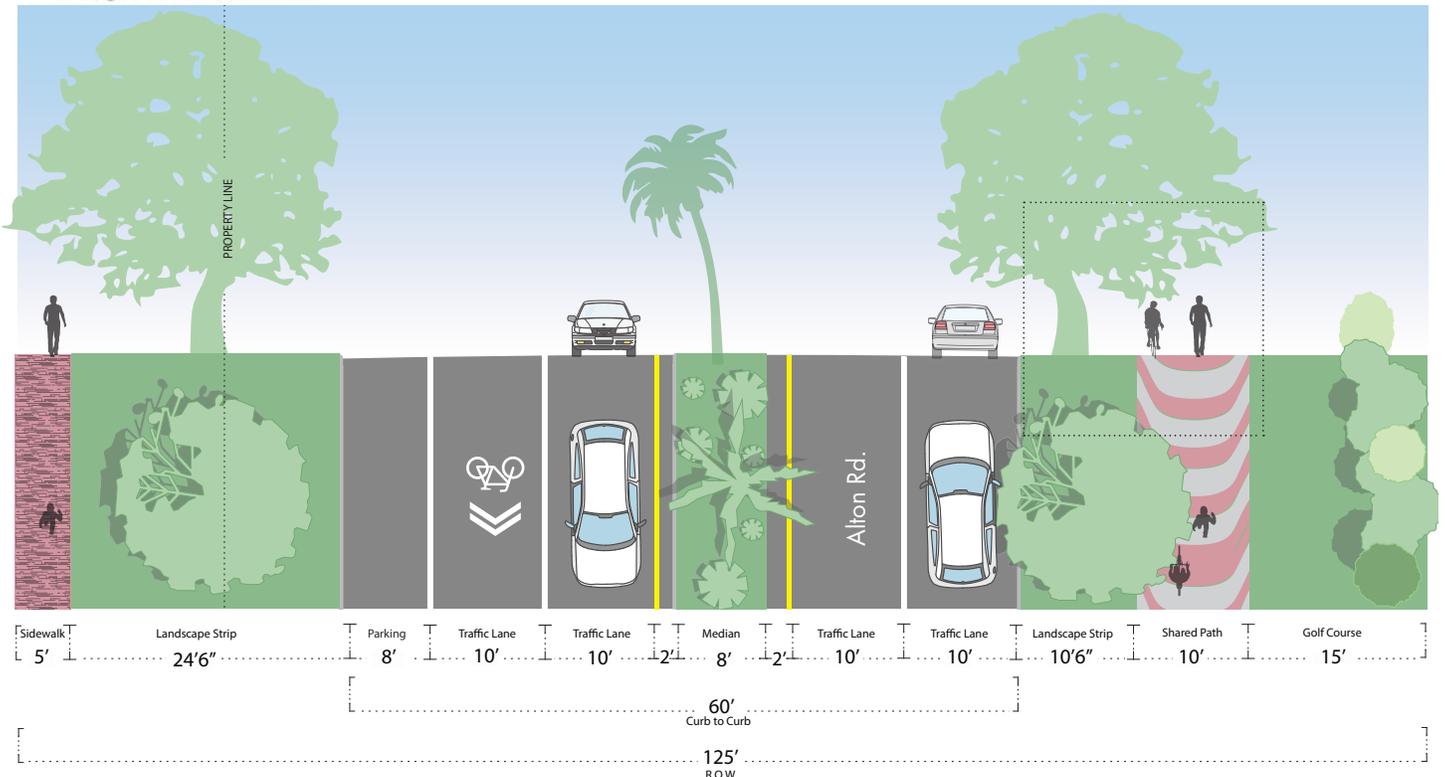
The upcoming reconstruction of Alton Road by the Florida Department of Transportation provides an opportunity to improve bicycle access on one of the city's main north/south thoroughfares. For a street of this volume and speed the Street Design criteria recommend an off street or protected on-street facility. The corridor currently has a bike lane going north and a sharrows going south. These facility types are not likely to attract the vast majority of users. Our primary recommendation for this corridor is a shared path, or other protected facility like the two-way protected bike lane (shown on page 121). The proposals envision a reduction in lane widths from those proposed by the FDOT to 10' standard, together with a reduction of the median area. These facilities take advantage of the minimal number of conflicts on the golf course side of the corridor.

## TWO WAY BIKE LANE



Refer to figure 3.20 of the street design guide for additional information.

## SHARED PATH

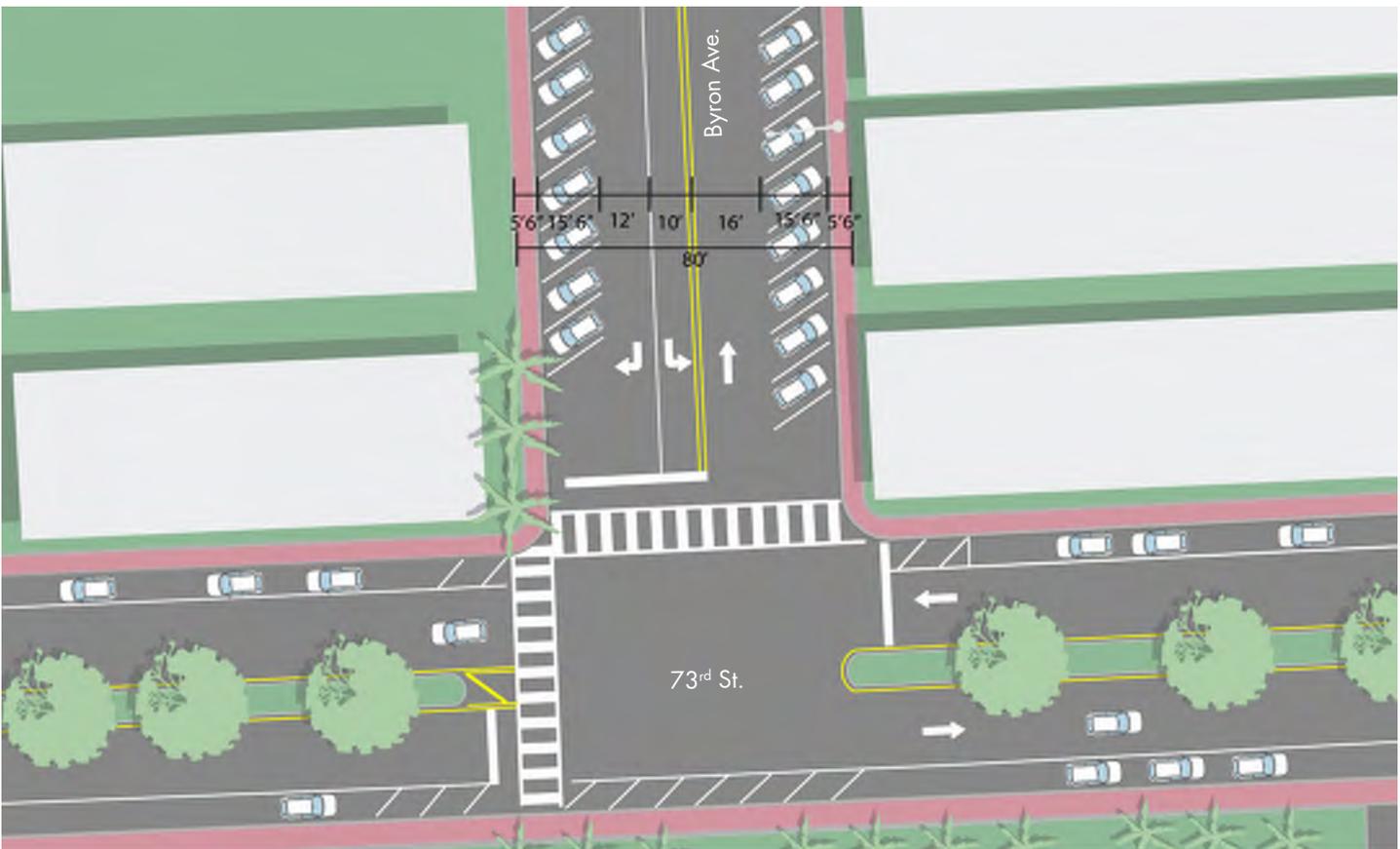


Refer to figure 3.29 of the street design guide for additional information.

# BYRON AVENUE

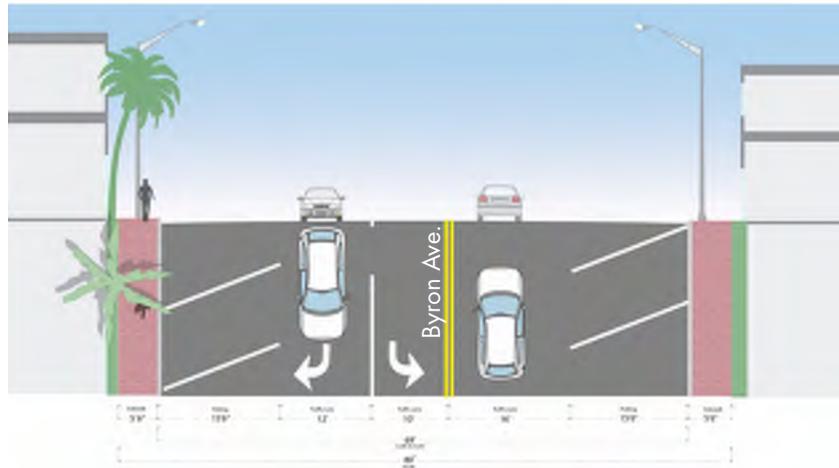
STREET DATA	
Public Right-of-Way Width	80'
Pavement Width	69'
Posted Speed Limit	25 mph
Daily Volume	NA
Predominant Land Use	Compact Urban
Predominant Development Pattern	2 - 5 Story Apartment Buildings
Project Limits	Between Tatum Waterway Drive and 73 Street
Project Length	3,000', 0.05 Miles
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	Medium density residential apartment buildings and the beach are both major pedestrian and bicycle generators in this area.
Impact on modeshare	low
Upcoming Public Works Project/Study	Included for study in BODR

## EXISTING CONDITIONS

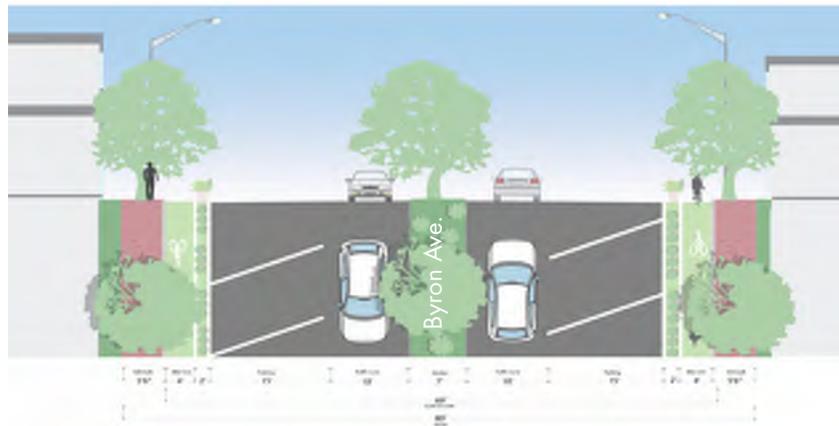


Byron Avenue at 73rd Street is an 80' wide three lane street with angled parking. There is ample room here to create a great street, and an important connection within the bicycle network. Given the low volume of traffic and low speeds, this route is a good candidate for a bike lane or neighborhood greenway.

# BYRON AVENUE EXISTING CONDITIONS

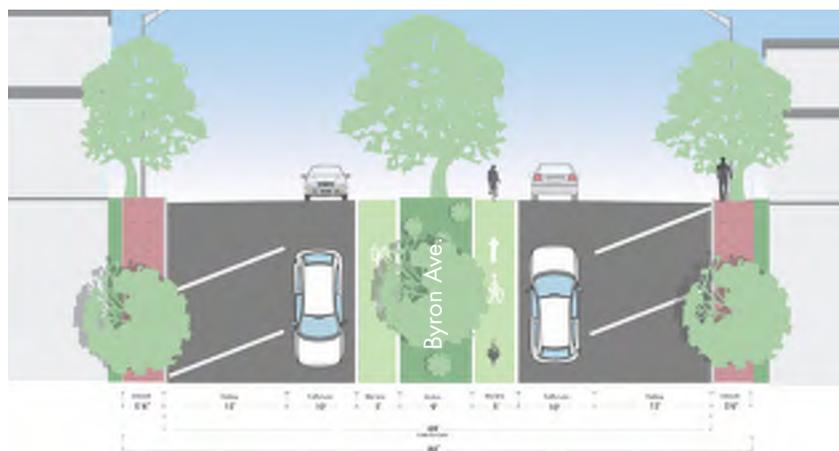


## BIKE LANE



This section of Byron has angled parking. In cases with angled parking, conventional bike lanes are not ideal. One potential tool to use is the protected bikeway. Here a 4' bike lane is protected by a 3' buffer between the angled parking and the sidewalk.

## PROTECTED BIKE LANE

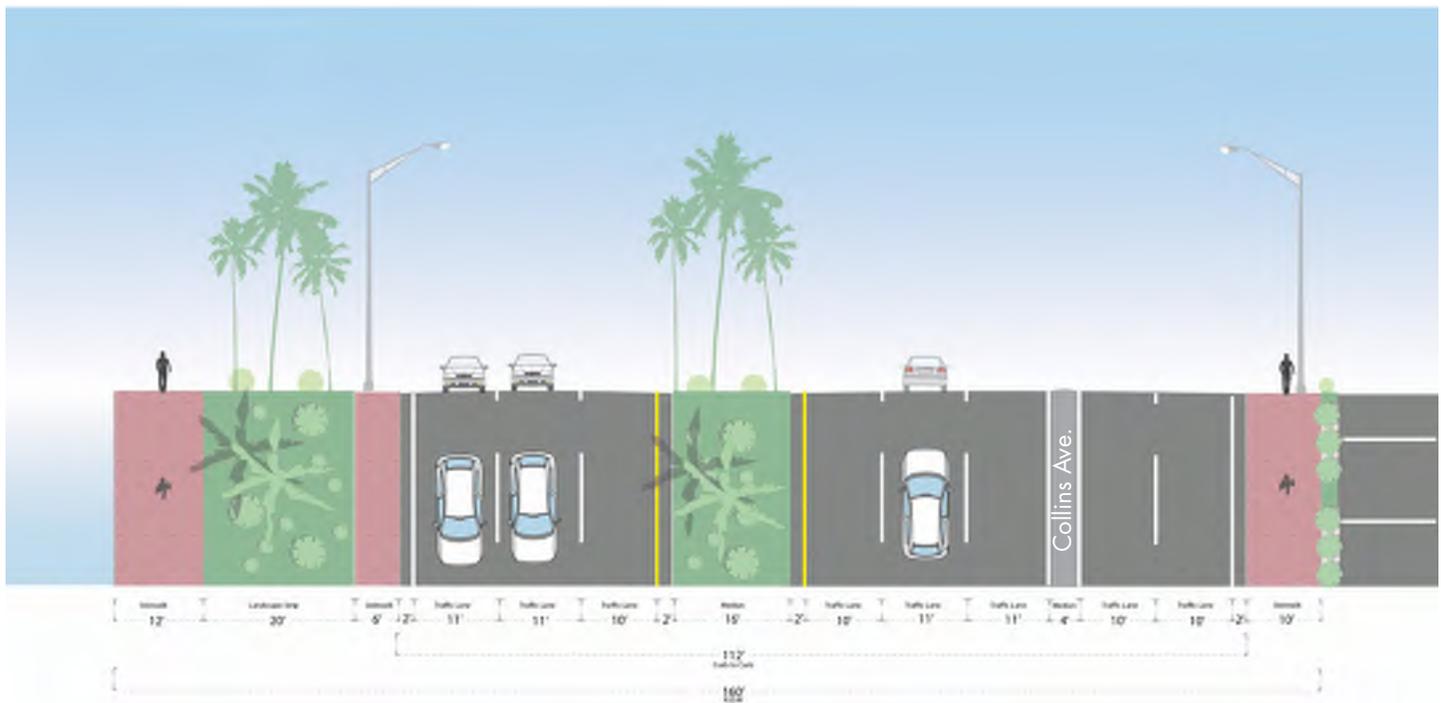


This variation on the idea of conventional bike lanes on the driver side of the travel lane provides more visibility to riders in the street, and the green paint alerts motorists that this is a bicycle priority corridor.

# COLLINS AVENUE

STREET DATA	
Public Right-of-Way Width	160'
Project Limits	Between 41 Street and 63 Street
Project Length	11,400', 2.2 Miles
Pavement Width	112' typical
Posted Speed Limit	35 mph
Daily Volume	15,120 - 32,520 ADT
Predominant Land Use	High Density Residential
Predominant Development Pattern	Resort style mid rise and high rise apartment buildings with no ground level commercial.
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	The high density residential apartment buildings and the beach are both major pedestrian and bicycle generators in this area.
Impact on modeshare	High
Upcoming Public Works Project	Yes

## EXISTING CONDITIONS



Collins Avenue between 41 Street and 71 Street is the heart of Mid-Beach and the main point of access for thousands of Miami Beach residents. The ample roadway dimensions, daily volumes and speeds suggest that this should be a priority corridor both for transit access and for protected bicycle facilities. From a mode share perspective, this corridor could provide critical connectivity to thousands of residents with the thoughtful redesign of the street to accommodate protected bicycle facilities and additional street trees as shown in the drawings on the following pages.

## PROTECTED BIKE LANE

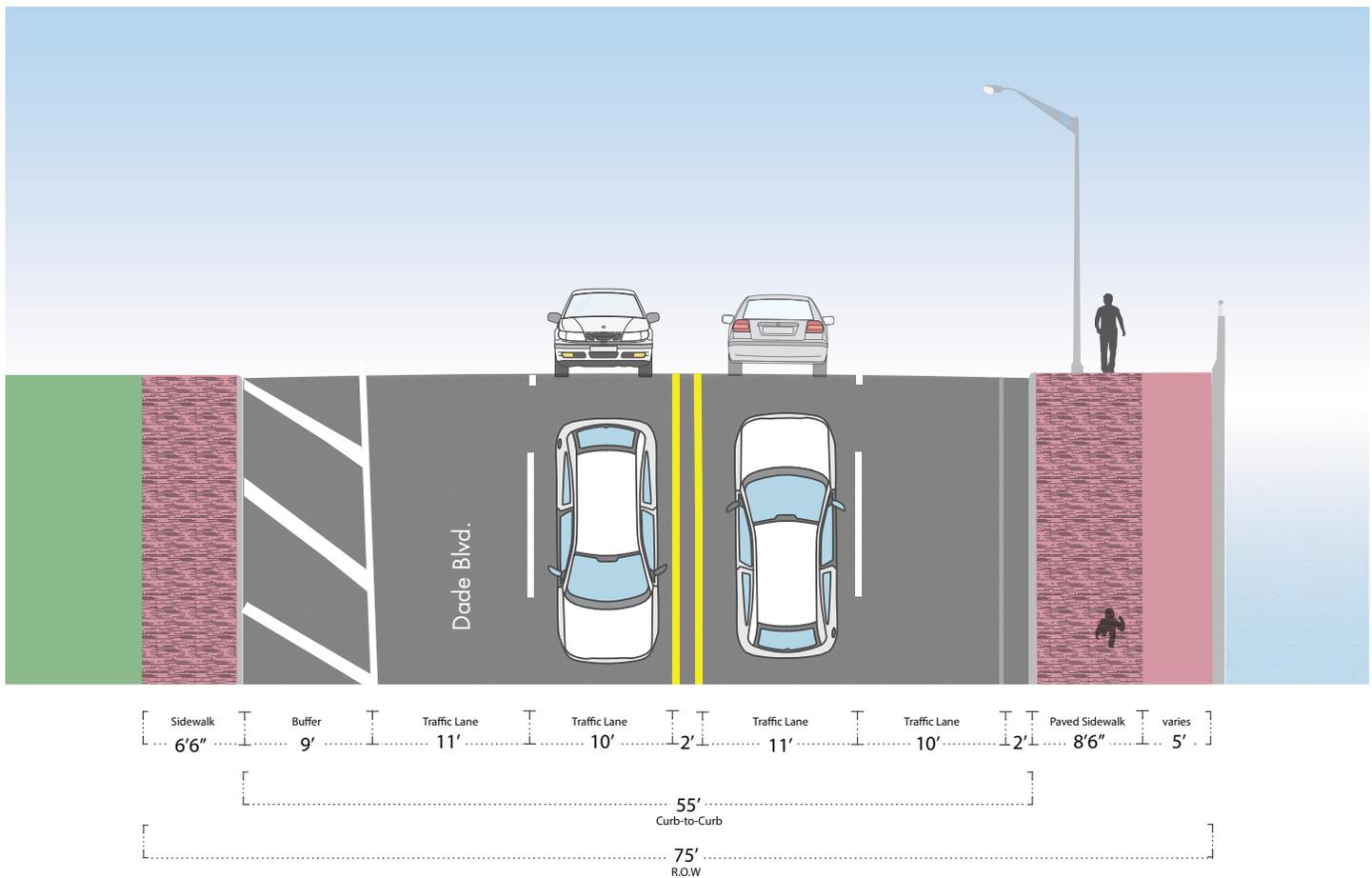


This treatment suggests the removal of a travel lane in either direction to create new landscape protected bike lanes. The design repurposes the median on the northbound side of the street to accommodate a protected bike lane. Entrance/exits from the slip lane can maintain their current geometries with additional treatments for the bike lane. Travel lanes have been reduced to 10' for interior lanes, and 11' for outer lanes. New street trees should be added along the new south bound bike lane, on the median, and along the northbound sidewalk.

# DADE BOULEVARD

STREET DATA	
Public Right-of-Way Width	74'
Pavement Width	55' typical
Posted Speed Limit	35 mph
Project Limits	Between 20 Street and Sheridan
Project Length	Approximately 5,500', 1.0 Miles
Daily Volume	44,330 ADT
Predominant Land Use	Single Family Residential, multifamily, civic
Predominant Development Pattern	Suburban Detached
Bicycle / Pedestrian trip generator(s) (parks, paths, bike shop, etc.)	There are several schools, museums, and small parks that generate pedestrian activity along this route.
Impact on modeshare	High
Upcoming Public Works Project	Yes - CIP

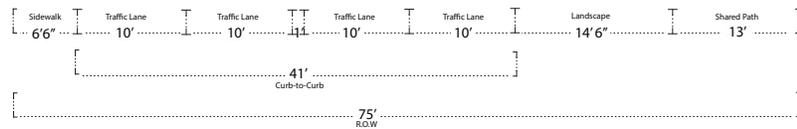
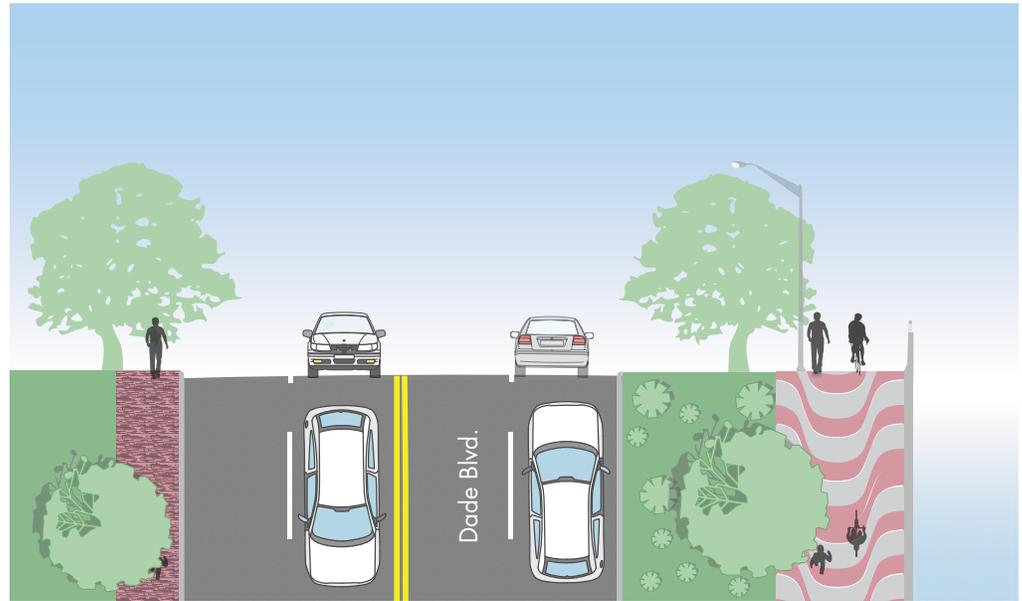
## EXISTING CONDITIONS



Dade Boulevard is one of the most important corridors in the bicycle network. It divides South Beach from Mid-beach, and has ample right-of-way space to accommodate a premium protected bicycle facility. The recent sea wall reconstruction project produced a street section that lacked street trees and quality bicycle pedestrian facilities. For most of the corridor, the center turn lane can be removed. The ideal proposal for this street should include a wide tree-lined sidewalk along with a comfortable, protected bicycle facility.

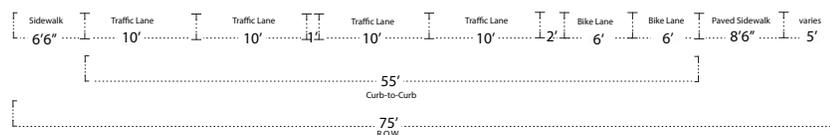
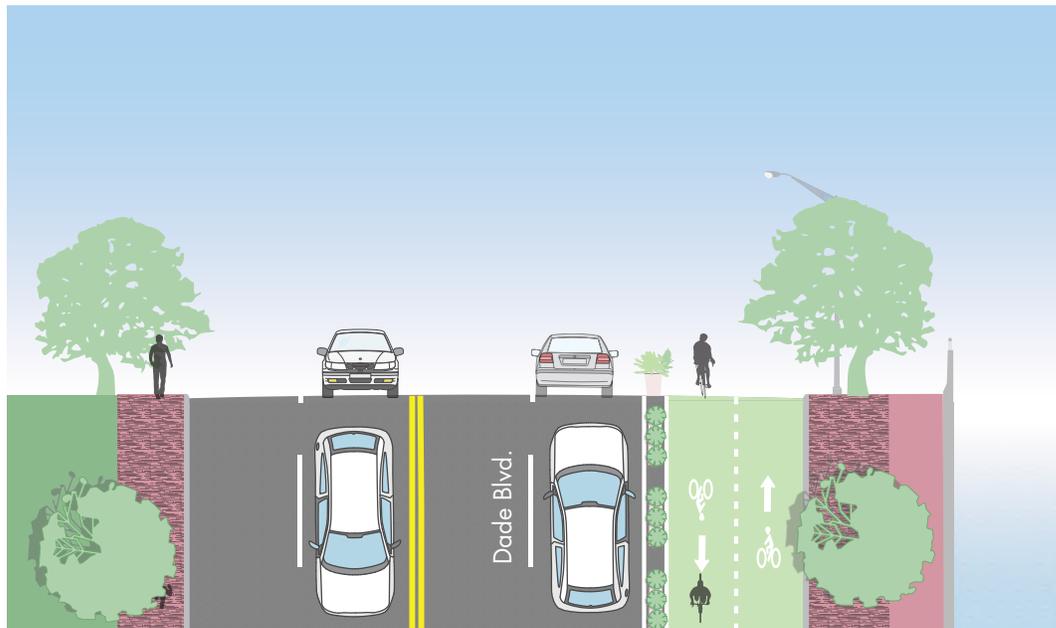
## SHARED PATH WITH LANDSCAPING

One of the signature projects included in this plan, the creation of a grand row of trees in a wide landscape strip between the shared path and Dade Boulevard. The center turn lane is removed for most of the corridor.



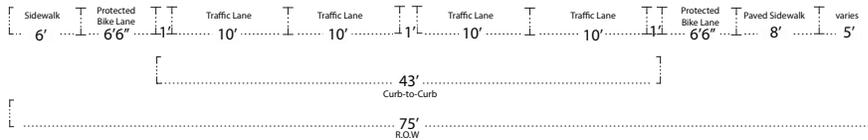
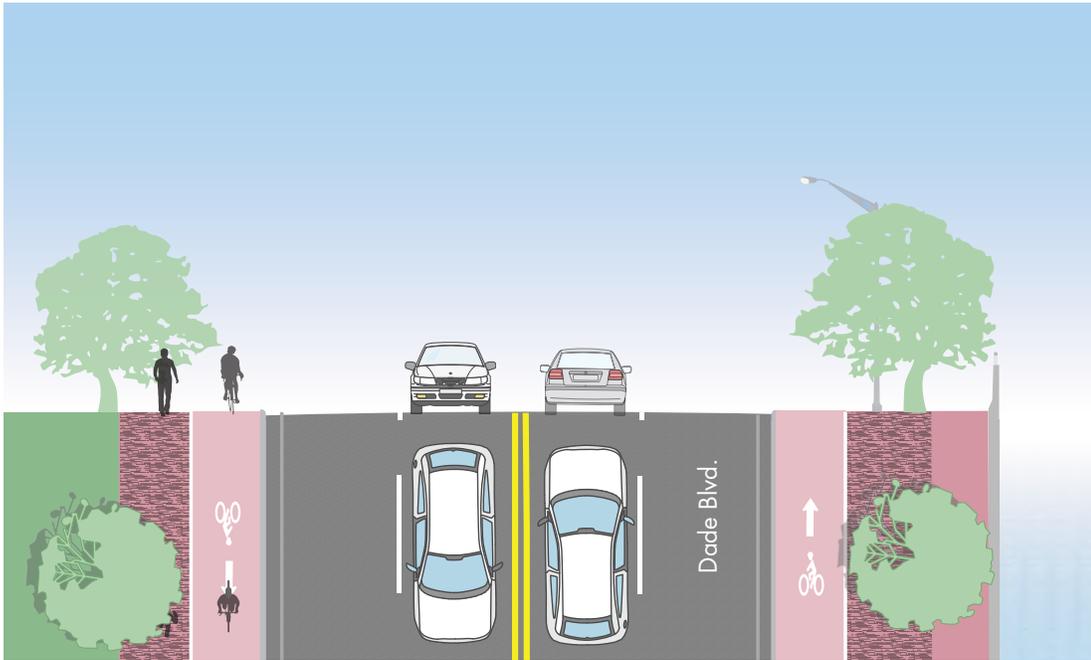
## PROTECTED BIKE LANES

Given the volumes and speeds on Dade Boulevard, a protected bicycle facility is required, either as a shared path or protected bike lane. This are two way protected bike lanes. Any number of variations to Dade Boulevard exist. These were all calibrated using street design methods outlined in the street design guide and are on the pages that follow.

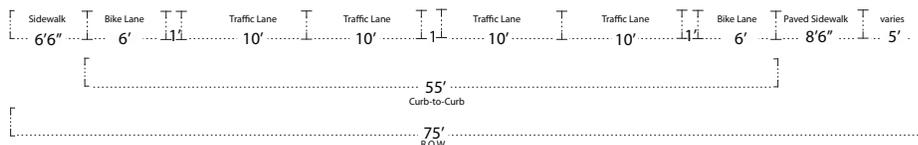
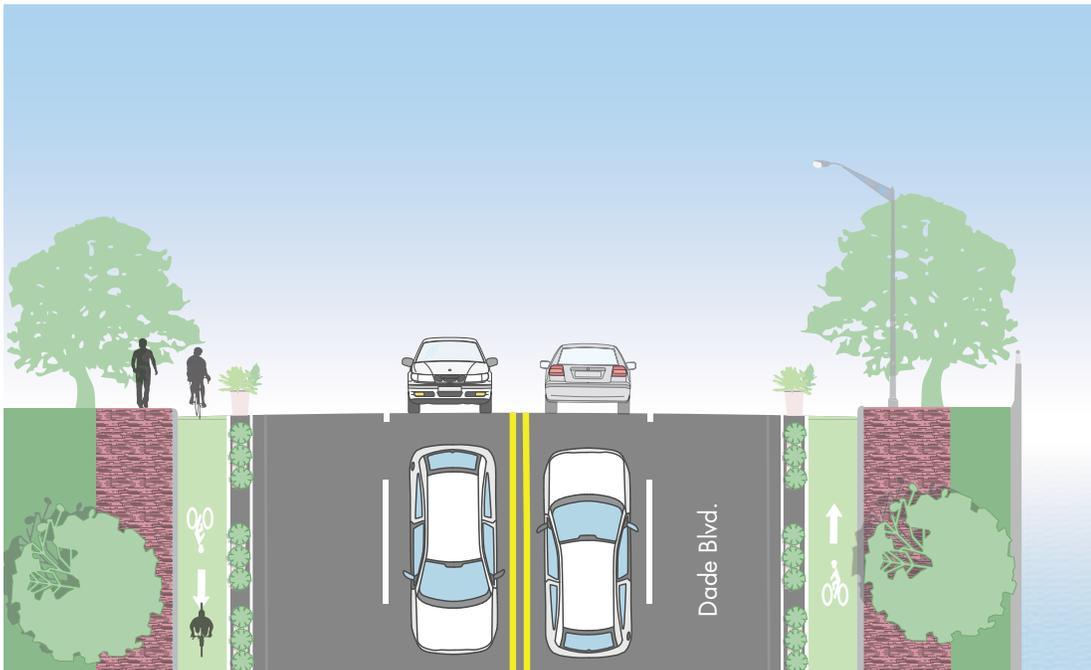


# DADE BOULEVARD

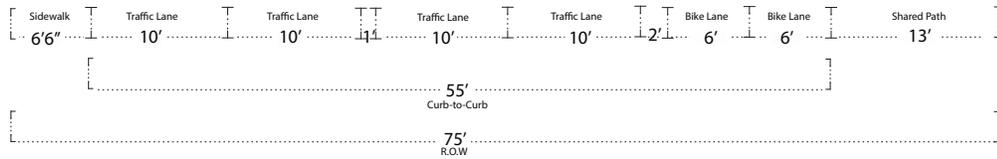
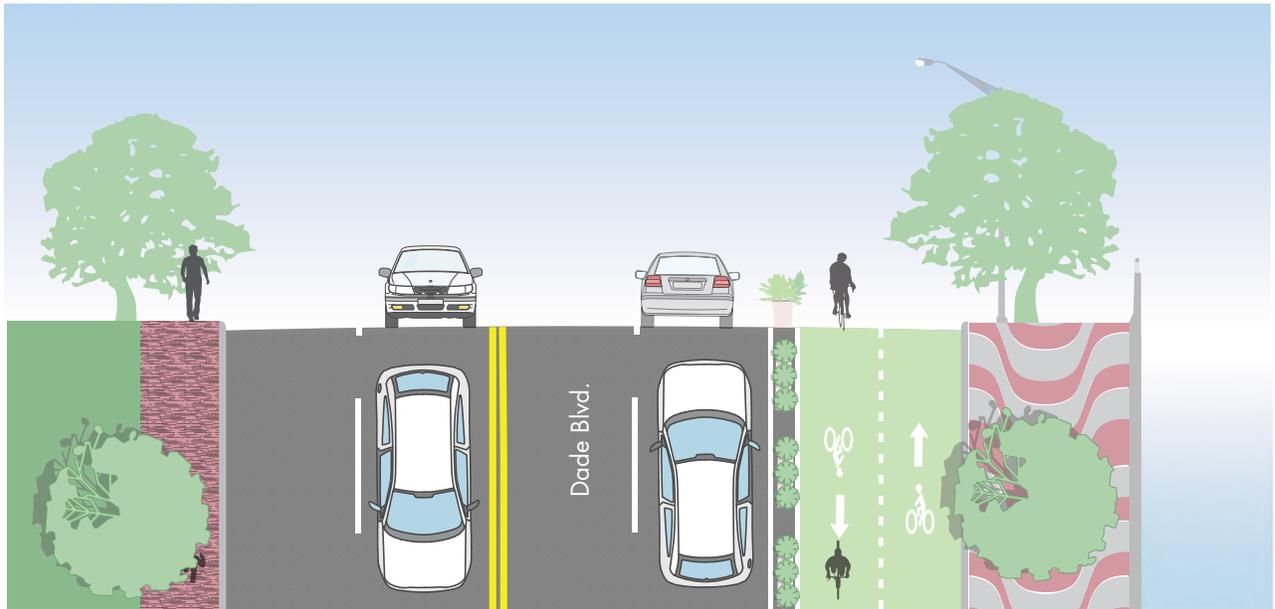
## SIDEWALK LEVEL PROTECTED BIKE LANES



## PROTECTED LANES



## SHARED PATH AND PROTECTED BIKE LANES



## SHARED PATH

