CITY OF NORTH MIAMI

Bike, Park and Ride

A Plan for Connecting Bicycle Parking and Transit

Prepared for

Prepared for

NORTH MIAMI FLORIDA

In Conjunction with

MIAMI-DADE MPO Metropolitan Planning Organization

Prepared by

Kimley-Horn and Associates, Inc.

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Fort Lauderdale, Florida

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INTRODUCTION

The City of North Miami plans to expand its bicycle network to promote bicycling as both a transportation and recreation activity. Promoting bicycling as a viable mode for transportation has several benefits, including the reduction in automobile trips, access to the transit network from a wider area, reduced need for motor vehicle parking, and environmental benefits. The City's Transportation Master Plan established the groundwork for a comprehensive bicycle network by identifying several bicycle projects and strategies. The Transit Oriented Development Feasibility Study increased the viability and accessibility of transit as a mode choice. Through the Bike, Park and Ride Study, the City seeks to improve the linkage between transit ridership and bicycle trips, and between surrounding land uses and bicycle trips, thereby increasing the mode share and enhancing opportunities for additional bicycle travel within the City.

An important element of a successful bicycle network is bicycle parking facilities. A major concern of non-recreational bicycle users is the lack of safe and secure parking facilities. The best way to promote bicycling as a viable transportation alternative and thereby help reduce congestion is to improve bicycle parking and other amenities that are part of the "end-of-trip" facilities for bicyclists.

In addition, bicycle parking at bus stops and transfer hubs can help bicyclists extend their trip, thereby increasing the range of destinations that can be accessed. All Miami-Dade Transit (MDT) Metrobuses are equipped with bike racks, which allow the riders to take bicycles to their destination. However, bike racks on buses only accommodate two bicycles, and not every transit user needs to take his/her bicycle to the destination. Therefore, secure bicycle parking is important at transit stops.

According to the 2001 National Household Travel Survey, nearly one-half of all trips are less than three miles in length. Approximately 28 percent of trips are less than one mile. Yet less than one percent of all trips are made by bicycle according to United States Census data. Active transportation, such as bicycling, walking, or accessing public transportation, has the potential to serve a greater portion of trips than it currently does. Facilities such as bicycle parking areas

and interconnected bike lanes are important for attracting a greater modal share for alternative travel modes. Surveys have shown that 50 to 60 percent of current bicyclists would cycle more if more facilities such as bike lanes and bike parking were provided. Focusing planning efforts on alternative transportation modes is vital.

This study attempts to maximize opportunities for bicycle parking usage within North Miami by inventorying the existing facilities and condition, establishing requirements for incorporating bicycle parking facilities at transit hubs and other developments, and identifying locations for additional bicycle parking facilities.

The main elements of the study include:

- Developing an inventory of existing bicycle parking facilities
- Reviewing the City of North Miami and Miami-Dade County's Bicycle Parking Standards and Plans
- Identifying best practices of bicycle parking requirements
- Determining bicycle parking requirements for the City
- Updating the City's Future Bicycle Network Map
- Identifying potential bicycle connectivity to transit facilities
- Developing cost estimates for recommended improvements
- Establishing priorities for implementing improvements

Novelty Bike Rack Shaped Like a Car

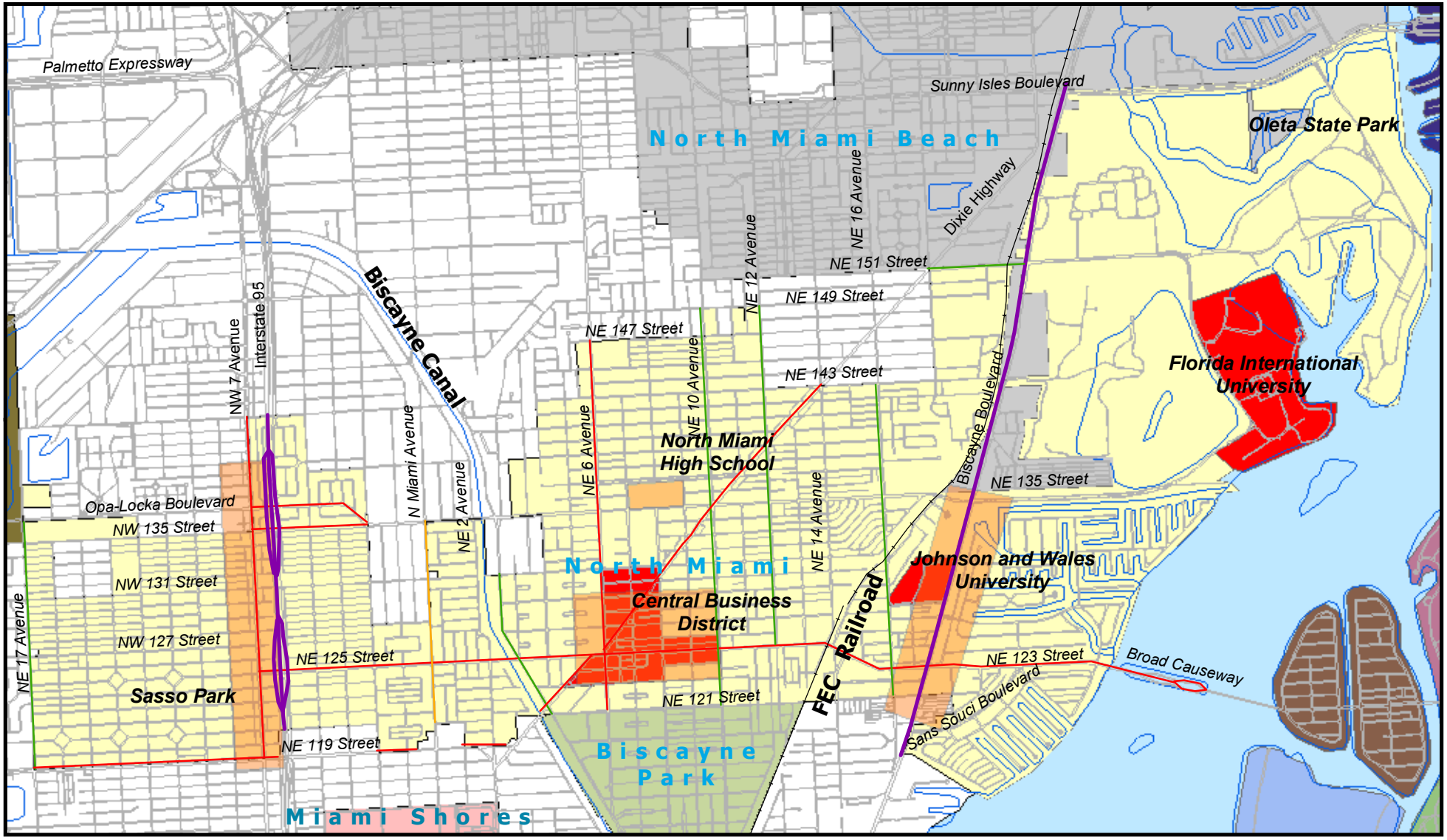
EXISTING BICYCLE PARKING FACILITIES

This chapter presents an inventory developed to assess existing bicycle parking facilities at the City of North Miami's public locations, including arterial and collector roadway rights-of-way, schools, universities, parks, retail centers, and public buildings. *Figure 1* depicts major streets and land uses of the City. The findings of the field review were used to determine the need for additional bicycle parking and to assist in developing bicycle parking guidelines for the City of North Miami.

Field reviews were conducted on Thursday, July 17, 2008, Thursday, July 24, 2008, and Wednesday, October 8, 2008, to determine the location, amount, type, condition, and usage of existing bicycle parking facilities. The other information collected during the field review included visibility of parking facilities from streets, signage, availability of sidewalks or bike lanes, and amenities such as covered parking and lighting. In addition, bicycle parking at non-designated locations was recorded to determine locations with bicycle parking demand but where no existing parking facilities are provided. Two types of survey forms were developed to collect data:

- An inventory survey form to document locations and characteristics of bicycle parking facilities.
- A usage survey form to record the number of bicycles parked during different times of the day at bike racks (designated bike parking areas) and also at locations where no bike racks are provided (undesignated bike parking areas).

The data collected during field reviews are presented in Appendix A including the inventory and usage survey. A photo log illustrating bicycle parking in the City of North Miami is provided in Appendix B.



Functional Class

- County Collector
- County Minor Arterial
- State Minor Arterial
- State Principal Arterial

- Bike Parking Areas
- Major Generators
- North Miami City Limits

Figure 1

Study Area Map

0 0.375 0.75 1.5 Miles

N W E S

NORTH MIAMI FLORIDA

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Field Review Observations

Figure 2 depicts locations where either designated parking facilities (bike racks) were available or undesignated bicycle parking was observed. A majority of the observed undesignated bicycle parking was near business-related uses along NW 7th Avenue, U.S. 1 (Biscayne Boulevard), and NE 125th Street. However, there was some transit-related bicycle parking near transit stops such as at Dixie Highway and NE 14th Avenue and along Biscayne Boulevard at the intersections of NE 123rd Street, NE 135th Street, and NE 151st Street. Key observations from the field review are summarized below.

- Bicycle parking was observed at both designated and undesignated locations.
- NE 125th Street, NW 7th Avenue (S.R. 7), NW 119th Street, and Biscayne Boulevard are the most notable arterials/collectors where bicycle parking was observed.
- The majority of bicycle parking facilities were observed within Downtown North Miami, North Miami High School, and Florida International University (FIU). In general, designated parking facilities were associated with developments such as schools, colleges, retail centers, or fast food restaurants. There is a shortage of public bicycle parking facilities at transit stops.
- During field reviews, approximately 21 bicycle rack locations with approximately 139 bicycle parking spaces were counted. About 61 of those parking spaces were provided within North Miami High School and another 17 spaces were provided within FIU campus facilities.

Bicycles Parked at a Bus Stop along U.S. 1

- The parking utilization survey counted approximately 147 parked bicycles at both designated and undesignated locations. Approximately 55 percent of those bicycles were parked at existing bicycle parking facilities, while the others were parked at undesignated locations, typically tied to a sign pole, structure, or a tree.

Bike Rack at FIU Campus Housing

- The majority of undesignated parking was observed along NW 7th Avenue (S.R. 7), NW 119th Street (S.R. 924), within Downtown North Miami, and along Biscayne Boulevard (U.S. 1). It should be noted that transit routes operate along these three corridors and serve the Downtown area. Bicycles were found tied to poles on the sidewalk at several bus stop locations.

Bicycle Tied to a Tree along U.S. 1

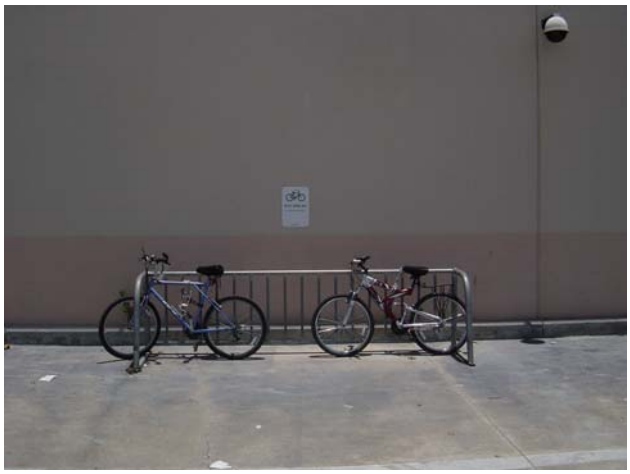
- The majority of designated bicycle parking facilities spaces are under-utilized. The highest utilization was observed to be at FIU campus housing. Bike lanes and sidewalks were also provided in the campus.
- Public parks and community facilities were also inventoried for bicycle parking. Bicycle parking that was observed at Sasso Park and other facilities are illustrated in *Figure 2* and *Appendix A*.
- Overall, the notable volume of parking at undesignated locations along corridors that are served by transit routes indicates the need to provide parking facilities at transit stops.

Other Observations

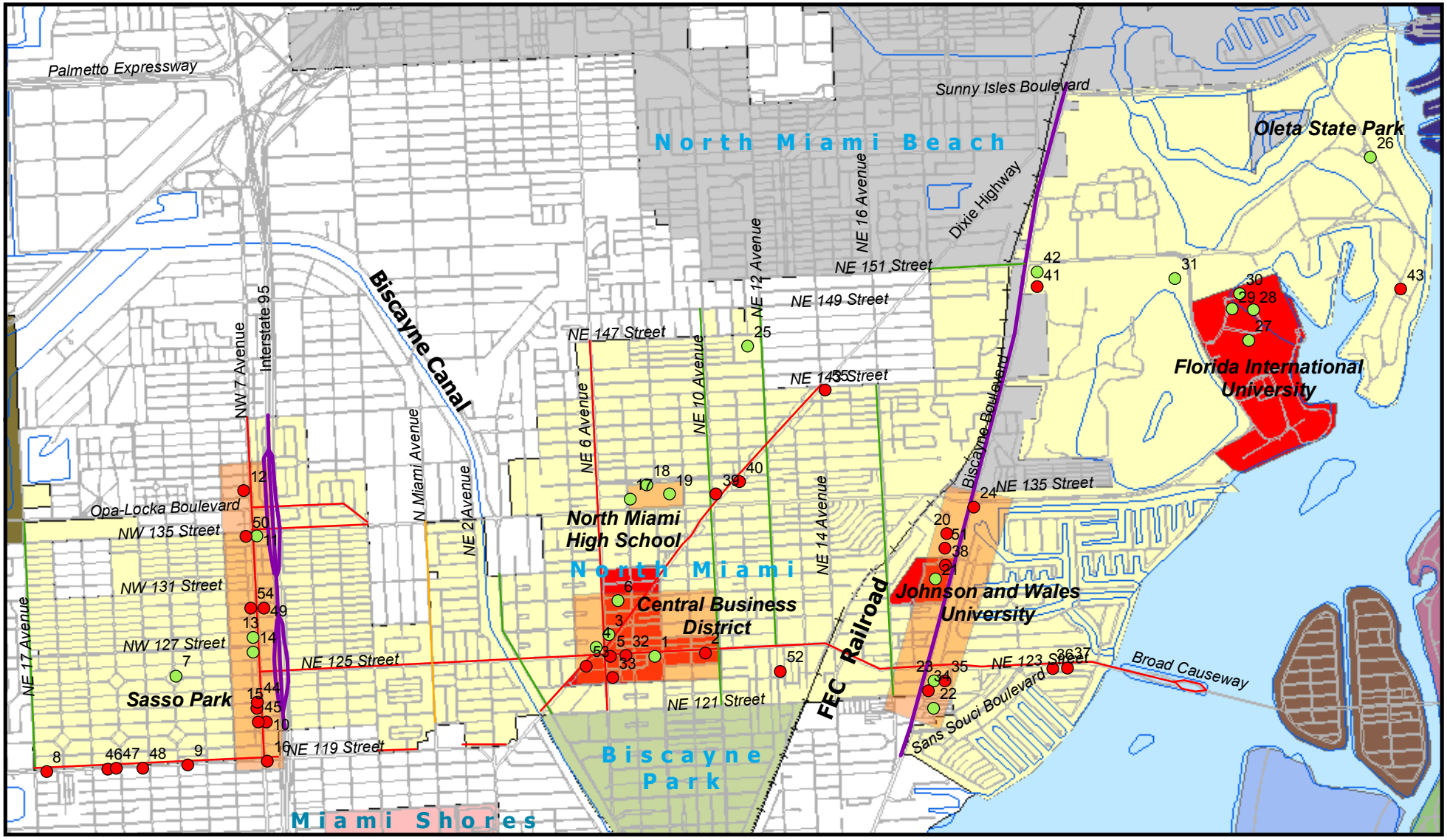
- The majority of bicycle parking facilities could be seen from adjacent streets. In general, access to the facilities from streets appears to be good.
- However, no signage is provided for the bicycle parking facilities.
- The location of the bike racks associated with buildings was generally observed to be very close to the buildings or the building entrance. In some cases, the installation of the bike rack was too close to the building or some other fixed object, thereby reducing the capacity of the bike rack and/or discouraging proper use of the bike rack.

Bike Rack near City Hall / Art Museum

Bike Rack Installed Too Close to a Building, Which Limits Appropriate Use of the Rack



Bikes Parked Parallel to a Rack for Maximum Security and Stability



Bike Parking
- Designated
- Undesignated

Functional Class
- County Collector
- County Minor Arterial
- State Minor Arterial
- State Principal Arterial
- Bike Parking Areas
- Major Generators
- North Miami City Limits

Figure 2

Bicycle Parking Inventory

0 0.375 0.75 1.5 Miles

N W E S

Note: See Appendix A of the report for a description of the site numbers identified on the map.

NORTH MIAMI FLORIDA

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EXISTING BICYCLE PARKING STANDARDS

This chapter presents a review of codes and planning documents of the City of North Miami and Miami-Dade County to determine standards and regulations for the provision of bicycle parking facilities. The findings of the review will be used to determine the need to update the City of North Miami's codes to reflect desirable bicycle parking standards. The following documents were reviewed:

- North Miami Zoning Code (Land Development Regulations)
- North Miami Comprehensive Plan
- North Miami Transportation Master Plan
- North Miami Transit Oriented Development Feasibility Study
- Miami-Dade County Zoning Code

North Miami Code of Ordinances

Appendix A of Chapter 29 of North Miami's Zoning Code, which is also referred to as the Land Development Regulations (LDR), was reviewed to identify bicycle parking related regulations. Section 29-10 presents criteria related to off-street parking. Parking space requirements for different land uses are specified in an *off-street parking schedule*. While land use based parking space requirements are provided for motor vehicle parking, such rates are not provided for bicycle parking.

The City of North Miami recently adopted updates to the City's Land Development Regulations. The City's Land Development Code was reviewed to determine impacts to bicycle planning and transportation demand management (TDM).

Article 5. Development Standards

Section 5-702.B Transportation Demand Management – The owner of a new development or substantial rehabilitation of an old development that affects a roadway classified as having a level of service E or F shall provide secure facilities for the storage of bicycles.

Section 5-803.C Transit Oriented Development Design Standard City-Wide – Public spaces adjacent to a street and transit stops should be encouraged to be welcoming to the pedestrian with landscaping, benches, bicycle stands, public art and other attractive elements.

Section 5-803.G Bicycle Standards –

- Bicycle racks or other means of bicycle storage that can secure at least four bicycles shall be required for all new public facilities, nonresidential development, and new multifamily development with parking lots that have at least 51 parking spaces.
- Quantity of bicycle parking spaces required:

Total Parking Spaces in a Lot	Required Number of Bicycle Parking Spaces
25 to 50	4
51 to 100	8
101 to 500	12
501 to 1000	16
Over 1000	Four (4) additional spaces for each 500 parking spaces over 1000

- Single family and duplex units are exempt from the provisions of this subsection.

- Location and design of bicycle parking spaces: The bicycle parking spaces shall be located near the principal entrance to the building. At building and shopping centers that have multiple parking lots, the bicycle parking spaces should be installed near the entrance to the buildings served by the lots. The bicycle parking spaces should be in a highly visible, well-lighted location that provides enough clear space to facilitate easy use and does not impede pedestrian traffic or handicap accessibility and is protected from the weather by being located under roof overhangs and canopies. The parking spaces may not be placed in the County maintained right-of-way. The design for the bicycle rack should permit the locking of the frame and at least one wheel with a standard size "U" lock and accommodate the typical range of bicycle sizes. The bicycle rack must resist removal, must be solidly constructed to resist rust, corrosion and vandalism and must be properly maintained.
- At the owner's option, bicycle parking may also be installed in the form of storage rooms, lockers or cages.
- All bicycle parking spaces shall be posted with a permanent and properly maintained above-ground sign entitled "Secured Bicycle Parking." The bottom of the sign must be at least five (5) feet above grade within attached to a building, or seven (7) feet above grade for a detached sign.

North Miami Comprehensive Plan

The following *Goals, Objectives, and Policies* are identified in the Comprehensive Plan (December 2007) with regard to bicycle parking and bicycle facilities.

Objective (2A-8):

- Increase bicycling within the Transportation Concurrency Exception Area (TCEA) by providing safe and adequate facilities.

Policies:

- (2A.8.1) Maintain and update a geographic information system (GIS) based inventory of bicycle facilities on arterial, collector, and local streets.
- (2A.8.2) Study bicycle facilities to develop an interconnected bicycle system within TCEA by January 2010.
- (2A.8.3) Coordinate with Miami-Dade Transit to increase the number of bus routes that participate in Bike and Ride Program.
- (2A.8.4) To amend City's Land Development Regulations (LDR) by January 2008, requiring bicycle parking facilities to be included for all new development and redevelopment of non-residential uses.
- (2A.8.5) To amend City's LDR by January 2008, requiring redeveloped areas, and new developments when applicable, to provide bicycle access into and through the developments.
- (2A.8.6) The City, by December 2008, will conduct a study of all municipal parking lots and provide bicycle parking facilities and appropriate signage in areas where there are deficiencies.

Other Information

As indicated in Section 2A.9, the City will continue to improve the bicycle path system to primarily serve for recreational purposes. The focus areas identified for recreational bicycling facilities include Oleta River State Recreation Area, Interama Tract, and Florida International University Biscayne Bay Campus. In addition, Section 1.6 calls for a parking needs study and the development of a Parking Master Plan by December 2009. The objectives of developing a Parking Master Plan include the joint utilization of parking spaces in residential and business areas; design of parking facilities that are safe, attractive, and space efficient; and development of parking spaces and structures to support mixed use and business developments in downtown.

North Miami Transportation Master Plan

The Plan recommends improving bicycle facilities and providing connectivity to transit nodes to enhance the multimodal usage. The City's well-connected grid network provides opportunities for establishing an interconnected bicycle network. Several bicycle projects and strategies are identified in the Master Plan. Some of the recommended strategies are listed below.

- Provide bicycle parking at key destinations, starting with City Hall.
- Work with MDT to increase the number of routes with bicycle racks.
- Add bicycle racks to NoMi Express routes.
- Create a "bicycle suitability" map for distribution to provide residents with information on the routes where bicycling is safer and more comfortable.
- Develop and sign a designated bicycle network.
- Install bicycle activated signals at six key intersections and expand along all major bicycle corridors and crossings.

Both bike rack projects are identified as Priority I projects, which are recommended for funding within a 1-3 year timeframe.

North Miami Transit Oriented Development Feasibility Study

This study examines potential locations for transit oriented development (TOD) within North Miami. The presence of a well-developed bicycle network increases the suitability of a location for TOD. An evaluation of land use and transportation facility characteristics of nine locations in the vicinity of transit transfer points (Miami-Dade Transit and local transit circulator routes) resulted in a definition of a transit oriented development district. The proposed TOD District is roughly defined by Biscayne Boulevard to the east, NE 125st Street to the south, West Dixie Highway to the west, and

NE 135th Street to the north. As part of TOD supportive strategies, the study recommends premium transit corridors which are supported by transit facilities with bus shelters, bike racks, benches, and landscaping. The study discusses the possibility of adopting flexible design standards within the TOD District whereby future developments would provide fewer parking spaces than the current requirement due to the proximity to superior transit services.

Miami-Dade County Zoning Code

Section 33-122.3 of Miami-Dade County's Zoning Code specifies the parking requirements for bicycles. For park, shopping center, office, and restaurant uses with parking lots, racks or other means of storage, bicycles are required per the table below.

Total Parking Spaces in a Lot	Required Number of Bicycle Parking Spaces
25 to 50	4
51 to 100	8
101 to 500	12
501 to 1000	16
Over 1000	Four (4) additional spaces for each 500 parking spaces over 1000

For all other uses, other than single family, duplex, townhouse, or airport or seaport terminals, bicycle storage facilities are required when their parking lot has 101 or more spaces.

Application to existing uses – All property owners of existing establishments that are required to provide bicycle parking spaces (above-mentioned land uses) must comply within one year from the effective date of the ordinance from which the Zoning Code derives. Existing multi-family uses are exempt from this requirement.

The location and design requirements for bicycle parking are presented below.

- The bicycle parking spaces shall be located near the entrances to the building.
- At buildings and shopping centers that have multiple parking lots, the bicycle parking spaces should be installed near the entrances to the buildings served by the lots.
- The bicycle parking spaces should be in a highly visible, well-lighted location that provides enough clear space to facilitate easy use and does not impede pedestrian traffic or handicap accessibility.
- The bicycle parking may not be placed in the County maintained right-of-way.
- The design of the bicycle rack should permit the locking of the frame and at least one (1) wheel with a standard size "U" lock and accommodate the typical range of bicycle sizes.
- The bicycle rack must resist removal, resist rust, corrosion, and vandalism, and must be properly maintained.

The other forms of bicycle parking/storage facilities that could be provided at the owner's option include storage rooms, lockers or cages. All bicycle parking spaces are required to be posted with a permanent above-ground sign entitled "Secure Bicycle Parking".

Summary

The review of zoning codes and planning documents concludes that the City of North Miami is developing new guidelines/requirements for the provision of bicycle parking facilities in vehicle parking lots that appear to be consistent with Miami-Dade County's Code. Several policies are presented in North Miami's Comprehensive Master Plan to expand facilities for bicycles. An important policy decision included in the Plan is to require bicycle parking facilities in new developments. The Transportation Master Plan

recommends several projects to improve bicycle facilities. North Miami's Zoning Code outlines vehicle parking space requirements for land uses.

Miami-Dade County's Zoning Code requires bicycle parking spaces in parking lots with 25 or more spaces for vehicular parking and requires the design of the bicycle parking rack to permit the locking of the frame and at least one (1) wheel with a standard size "U" lock. The applicability of Miami-Dade County's bicycle parking standards to the City of North Miami will be assessed by taking into consideration the City's bicycle usage, demographics, and policies of planning documents. In addition, a review of best practices for bicycle parking requirements (see next chapter) will be used when developing bicycle parking standards for the City of North Miami.

BEST PRACTICES OF BICYCLE PARKING REQUIREMENTS

The parking standards of several other jurisdictions were reviewed and summarized to provide a comparison of standards and provide a best practice assessment. In general, bicycle parking demand is determined by developing a correlation with (1) amount of required off-street vehicle parking or (2) overall square footage of a building and its occupancy. The first method provides a straightforward way for determining bicycle parking needs; however, in an area that might seek to reduce automobile parking requirements, the number of required bicycle parking locations would also be reduced. The second method provides a more direct linkage between bicycle use and specific land uses, but can be more cumbersome for determining how many parking locations are needed. This review of standards of other jurisdictions will assist in determining the best approach to develop bicycle parking standards for North Miami.

Boca Raton, Florida

Article XVI. Off-Street Parking and Loading

Sec. 28-1646. Definitions

Provides the definition and examples of long term bicycle parking and short term bicycle parking.

Long term bicycle parking examples:

- Fully enclosed lockable space accessible only to the owner/operator of the bicycle.
- Attendant parking with a check-in system accessible only to the attendant(s).
- A secure, lighted, covered area, or a locked room or office inside a building.

Short term bicycle parking example:

- Stationary parking device on a concrete surface, which adequately supports the bicycle and must hold at least 180 degrees of the wheel arc.

Sec. 28-1648. Alteration, Repair of Existing Structure or Facility

Buildings previously constructed before the bicycle parking requirements were adopted are not required to meet the bicycle parking requirements. When alterations or redevelopment to the structure takes place, bicycle parking must be provided as specified in the ordinance.

Sec. 28-1653.Design (12 and 14)

The design criteria for bicycle parking facilities references the use of the Engineering Design Standards Manual used for the City of Boca Raton to create bicycle facilities that have accessible and functional connections between and within off street parking facilities. The installation of bicycle facilities is thought to encourage the use of bicycles within multi-family and non-residential zoning districts.

In addition to the installation of bicycle parking facilities in multi-family and non-residential zoning districts, off street parking facilities in residential zoning districts are required to create safe and convenient connections between buildings, facilities, and spaces on the same site. Facilities located within multi-family and non-residential zoning districts are required at least a 5-foot wide accessible route between the above listed elements to aid in the circulation of bicyclist and pedestrians.

Sec. 28-1654. Plans.

Within the City of Boca Raton all plans requiring off street parking submitted for a building permit are required to meet both vehicle and bicycle parking space requirements, in addition to the required landscaping, route accessibility, pedestrian and bicycle circulation, access to aisles and driveways, and the relation to the uses or structures of the off-street parking facilities.

Sec. 28-1655 Required Off-Street Parking

The City of Boca Raton's vehicle and bicycle parking requirements are determined by the function of the land use associated with the off-street parking facility. The function of the land use is assumed to generate a specific number of vehicles or persons which would affect the required number of parking spaces needed to accommodate the demand. The main elements of the land use that would affect the number of vehicles or persons expected to be drawn to the facility include the size of the facility and/or function. Larger structures house a higher number of people, increasing the number of required parking spaces. Other land uses are measured by their function that influences the demand for parking, such as the number of bedrooms for residential and/or number of employees for office buildings.

Under this ordinance each land use contains vehicle and bicycle parking requirements broken down separately. The number of required bicycle parking spaces for all land uses was 5 percent of the total number of motor vehicle parking requirements, with the exception of a few specific land uses. Those land uses that required a higher ratio of bicycle parking than 5 percent are listed below.

- Dormitories, fraternities and sororities: 50 percent per number of required motor vehicle parking
- Bowling Alleys: 10 percent per number of required motor vehicle parking
- Elementary schools, public, private or parochial: 100 percent per number of required motor vehicle parking
- Middle schools, public, private or parochial: 200 percent per number of required motor vehicle parking
- Senior high schools, vocational or trade schools, colleges, public, private or parochial: 100 percent per number of required motor vehicle parking
- Public or private transportation facilities: 20 percent per number of required motor vehicle parking

- Racquetball, tennis and similar court facilities: 15 percent of required number of motor vehicle parking
- Care centers (child, adult and specialized): 1 space per 4 employees

Tallahassee, Florida

Section 10-362 - Bicycle Parking

This section describes the criteria and standards that bicycle facilities must meet to be listed by the City of Tallahassee as an approved bicycle parking facility. Standards included in this code describe the design, function and location of the required bicycle parking facilities. Below list the required criteria used for approval.

- Designed to allow each bicycle to be supported by its frame.
- Designed to allow the frame and wheels of each bicycle to be secured against theft.
- Designed to avoid damage to the bicycles.
- Anchored to resist removal and solidly constructed to resist damage by rust, corrosion, and vandalism.
- Accommodate a range of bicycle shapes and sizes and to facilitate ease of locking without interfering with adjacent bicycles.
- Located to prevent damage to bicycles by cars.
- Compatible with the surroundings in color and design and be incorporated whenever possible into building or street furniture design.
- Located in convenient, highly-visible, active, well-lighted areas.
- Located so as not be interfere with pedestrian movements.
- Located in near proximity to the principal entrance of the building as practical.
- Provide safe access from the spaces to the right-of-way or bicycle lane.

Article VI. Off-Street Parking, Loading and Vehicular Interconnection Requirements

Division 2 - Sec. 10-358. Schedules of Required Parking Spaces.

The City of Tallahassee has two schedules of parking space requirements. Schedule A outlines the requirements for land uses in all zoning districts except Design Review districts and Schedule B outlines the parking requirements for the land uses that are in the Design Review districts.

The more commonly used land uses within the Schedule A table outlines the following bicycle parking requirements for off-street parking facilities.

- Residential: 10 percent per number of required motor vehicle parking
- Commercial/Office: 10 percent per number of required motor vehicle parking
- Restaurant (Sit-down): 10 percent per number of required motor vehicle parking
- Restaurant (Take-out): 25 percent per number of required motor vehicle parking
- Retail, Furniture and Appliance: 5 percent per number of required motor vehicle parking
- Elementary and Junior High School: 5 spaces per required motor vehicle parking, with separate requirements for teachers and visitors.
- Senior High Schools: 1 space per number of required motor vehicle parking
- Colleges: 1 space per number of required motor vehicle parking
- Entertainment/Recreation: ranged between 10 and 25 percent per number of required motor vehicle parking, depending on the activity
- Hospitals: 10 percent per number of required motor vehicle parking

Schedule B (Table 6.5.6) outlines the residential and non-residential land uses within the design review districts. Bicycle parking requirements within these districts is three percent per number of required motor vehicles, except for single family dwellings where there is no bicycle parking requirement.

Gainesville, Florida

Article IX. Additional Development Standards

Division 2- Sec. 30-331.(A) Design Requirements for Bicycle and Motorcycle Parking.

This ordinance describes the criteria and standards of bicycle facilities in the City of Gainesville. Standards included in this code describe the design, function and location of the required bicycle parking facilities. Below list the criteria used for design, construction and maintenance of these facilities.

- Include secure storage and locking of bicycles on a hard surface at least seven feet in length, from an approved list of bicycle parking devices maintained by the department of community development.
- Fixed objects intended to serve as bicycle parking facilities shall be clearly labeled as bicycle parking.
- Undivided lockers or rack spaces shall consist of an area not less than 12 square feet per bicycle with locking devices.
- Bike racks should be spaced at least 2.5 feet on center.
- Individual locker spaces or racks shall be designed with convenient ramped access to users.

Sec. 30-332. Required Number of Parking Spaces.

The number of parking spaces listed in this section shall be the minimum number of spaces provided for bicycle parking and bicycle use. The table below is a summary of the commonly used land uses from this section. For more specific land use types refer to Article IX. Sec. 30-332 within the City of Gainesville's Land Development Code (LDC).

Land Use	Number of Vehicle Spaces	Number of Bicycle Spaces (percent of total number of vehicle spaces)
Multiple Family Dwellings	1 space per Bedroom	10-25%
Dormitories (sorority and fraternity houses)	1 per 110 SQ FT Bedroom	50%
Housing for elderly	1 per every 3 units	50%
Subsidized housing types	1 per dwelling unit	10%
Auditoriums/Movie theaters	1 for every 3-4 seats	10%
Billiards and pool halls	2 per table	20%
Bowling Alley	2 per land	15%
General recreation (see code for specific recreational uses)	4 per 1,000 SQ FT accessible to the public	25%
Corporate Offices	1 space per 300 SQ FT	10%
Medical Facilities	See code for specific medical facility types	5%
Rehabilitation Centers	1 per 500 SQ FT	10%
Elementary Schools	30, plus 3 per classroom	100 %
Middle Schools	35, plus 2 per classroom	200%
High Schools	1 per employee plus 1 per 10 students	100%
Religious Assemblies	1 for 3 seats or 1 per 40 SQ FT	10%
Food and Convenience stores	1 per 200 SQ FT	10% (maximum 15 spaces)
Central City District (CCD)	See code for specific uses	10%

(h) Reduction in Number of Required Bicycle Parking Spaces

The development review board or city plan board, through development plan review, or staff, when only review is required, may authorize a reduction in the number of required bicycle parking spaces if requested by the owner/petitioner in good cause and is found in compliance with the below four criteria.

- Evidence that there are an adequate number of bicycle parking spaces within 100 feet of the development available for public use.
- Evidence that the proposed future use of the development will generate less bicycle parking than required.
- Evidence that the reduction of bicycle parking will not result in unauthorized use of pedestrian areas for bicycle parking.
- Evidence that bicycle parking/storage space is available for employees and the general public within a building or structure on the development site.

A request for a reduction in the bicycle parking requirements shall not be granted for the erection, construction or placement of any building on any land.

Article V. Bicycles

Sec. 26-188. Parking

Bicycles can be secured to publicly owned poles or posts for a period of not more than 72 consecutive hours along a sidewalk, provided it does not obstruct the normal and reasonable movement of pedestrians or other traffic or an official traffic control device or any applicable law or ordinance prohibits parking at that location. Bicycles cannot be secured to any fire hydrant, police or fire call box or park a bicycle in a location that blocks or obstructs any building entrance or exit, ramp, breezeway or loading dock. Bicycles can be secured to trees as long as it is secured in a manner that is not damaging to the tree.

San Luis Obispo, California

Chapter 12.38 - Parking and Driveway Standards

12.38.050 (j) Geometrics and Design Standards - Bicycle Parking

Bicycle parking is required to be in accordance with the City zoning requirements and may include lockable racks and/or lockers.

Chapter 17.16 – Property Development Standards

17.16.060 (f)(2)Parking Space Requirements.

Under the property development standards ordinance, bicycle parking facilities requiring ten or more spaces must provide facilities in accordance with Table 6.5 and be located on the ground floor, but are subject to some relief if they fit within the following guidelines.

- Projects which provide more bicycle and/or motorcycle spaces than required may reduce the required car spaces at the rate of one car space for each five bicycle spaces, up to a ten percent reduction.
- All bicycle parking that exceeds the required number of spaces shall be apportioned between short-term and long-term bicycle spaces as stipulated by Table 6.5.

TABLE 6.5 BICYCLE PARKING SPACE REQUIREMENTS			
Zone	**Number of bike spaces as a percentage of required auto spaces**	**Minimum short-term bicycle spaces**	**Minimum long-term c/d bicycle spaces**
R-2, R-3, R-4	5%	100%	—
C-C, C-R, C-N, C-D	15%	50%	40%
O	15%	10%	80%
C-T	5%	10%	80%
C-S, M	15%	10%	80%
PF (schools, junior high to college)	1 space per 3 students		
Park & ride lots	10%	—	100%

Table Notes:

- When less than one-half space is calculated, one space is required.
- Short-term bicycle parking is used by visitors to multifamily housing and by patrons of commercial and institutional uses. Bicycle racks are used to satisfy this need.
- Long-term bicycle parking is used by employees of commercial and institutional uses and by residents. Fully enclosed lockers are used to satisfy this need. Lockable rooms reserved for bicycle storage and secured parking areas managed by attendants are other acceptable forms. Bicycles shall be parked vertically or horizontally with at least the rear tire resting at floor level.
- In addition to short- and long-term parking required for commercial uses, residential uses in all zones shall provide bicycle lockers or interior space within each dwelling or accessory structure (e.g., garages) for the storage of at least two bicycles per unit.

Denver, Colorado

The objective of the Denver, Colorado bicycle parking standards is to encourage the use of bicycles for personal transportation as an alternative to motor vehicles, and provide access to employment, commercial, and other transportation travel destinations.

The bicycle parking standards document begins with the description of the approved bicycle rack system. The approved bicycle rack used in Denver is the "Inverted U" type bicycle rack, which allows the user the ability to secure their bicycle in two locations with either a cable or U type lock. Within the City's guidelines the specific size, colors, and locations of the "Inverted U" rack is outlined. Other proposed racks are subject to approval by the transportation office.

Alternative security devices submitted for approval by the transportaiton office must fit within the following standards:

- Support the bike frame at two locations, at the frame and at least one wheel (not just a wheel).
- Rack allows the use of either a cable or "U-type" lock.
- Must accommodate bicycles that do not have kickstands.
- Must fit various types, sizes of frames, wheels and tire widths of bicycles.

For proposed non-residential sites having an off-street parking requirement of 15 spaces or more, a number of off-street bicycle parking spaces shall be provided equal to five percent of the automobile parking space requirement. Each Inverted-U provided will count as two bicycle parking spaces.

The location for these racks is to be installed within the public right-of-way (ROW), or on private sites in conformance with the front setback requirements. When selecting a location the following should be considered:

- Racks should be placed within 50 feet of building entrances.
- Allow visibility of surrounding elements and potential conflict between alternative modes.
- Racks should be on concrete and located a minimum of 24 inches from a parallel wall and 30 inches from a perpendicular wall.

Another option for bicycle security is with lockers. Bicycle parking lockers are specifically encouraged for use by employees and bicycle commuters. Bicycle parking capacity provided via lockers will be considered as being in compliance with the rules outlined in these ordinances.

Summary of Literature Review

The following table provides a comparison of the ordinances reviewed in this study. As indicated in the table, most of the local government ordinances have varying bicycle parking requirements based upon land use of the site. Another notable observation is that the ratio of bicycle parking to automobile parking increases with increase in car parking in several municipalities, whereas the ratio tapers at a certain point in Miami-Dade County. Miami-Dade County also requires compliance with bicycle parking requirements for existing developments within one year of adoption of bicycle parking requirement ordinance. Denver's ordinance contains detailed specifications for the type of bicycle storage facilities ("inverted U" type bicycle rack). All ordinances contain specifications for the location of bicycle parking and storage facilities relative to location of building entrance and community destinations.

Comparison of Bike Parking Standards in Cities Reviewed

Criteria	Miami-Dade County, FL	Boca Raton, FL	Tallahassee, FL	Gainesville, FL	San Luis Obispo, CA	Denver, CO
Parking based on land use/zoning	No	Yes	Yes	Yes	Yes	Yes
Ratio based on motor vehicle parking spaces	Yes	Yes	Yes	Yes	Yes	Yes
Separate short-term and long-term parking space requirements	No	No	No	No	Yes	No
Requires bicycle rack location criteria	Yes	Yes (lighting, site design, urban design)	Yes (lighting, site design, urban design)	Yes	Yes	Yes (lighting, site design, urban design)
Security Features	Bike storage required when more than 101 car parking spaces on site. Bike racks with "U" lock to lock frame and one wheel.	Fully enclosed lockable space for long term parking	Anti-theft requirements included	Individual locker spaces and racks required	Bicycle lockers required for long-term parking	Inverted U-type bicycle rack required. Other bicycle security criteria included
Incentives for additional bicycle parking	No	No	No	No	Yes. Reduction in car parking requirements	No
Salient Features	▪ Location close to building entrance ▪ Requires existing developments to comply with bicycle parking requirements within one year from the effective date of the ordinance	▪ Bicycle routes connecting all bicycle parking facilities, both private and public ▪ Does not apply to existing developments unless a change in use is proposed	▪ Requirements to accommodate a range of bicycle shapes and sizes ▪ Does not apply to existing developments unless a change in use is proposed	▪ Reduction in bicycle parking is allowed on a case-by-case basis if other public parking is available nearby ▪ Does not apply to existing developments unless a change in use is proposed	▪ Bicycle racks for short-term parking ▪ Bicycle lockers for long-term parking ▪ Bicycle lockers or storage space requirement of 2 bicycles per residential unit ▪ Does not apply to existing developments unless a change in use is proposed	▪ Size, color & location requirement ▪ Rack requirement within 50 feet of building entrance ▪ Does not apply to existing developments unless a change in use is proposed

RECOMMENDED REVISIONS TO THE CITY'S LAND DEVELOPMENT REGULATIONS

The information gathered from the review of bicycle parking standards of other jurisdictions, and review of the North Miami Code of Ordinances and other planning documents was utilized to develop recommendations to update the City's existing bicycle parking standards. A summary of key recommended revisions is presented below.

- Correlate bicycle parking spaces to the number of automobile parking spaces required. The proposed bicycle parking ratios are similar to that of Miami-Dade County's.
- Develop land use specific bicycle parking requirement criteria. In contrast to the existing Miami-Dade County standard, bicycle parking should be correlated to the type of land use. Several codes of ordinances reviewed in this study specify bicycle parking based on land use type. This approach accommodates varying degree of bicycle parking needs associated with different land uses of similar magnitude.
- Provide flexibility to review requests for variance in bicycle parking requirement on a case by case basis.

The proposed revisions to Section G of the City of North Miami's Code of Ordinances are outlined below. Please note that words underlined are additions and words stricken are deletions.

G. Bicycle standards.

1. Requirement: Bicycle racks or other means of bicycle storage that can secure at least four (4) bicycles shall be required for all new ~~public facilities~~ parks, government facilities, schools, ~~and~~ nonresidential and ~~new~~ multifamily developments ~~with parking lots that have at least 51 parking spaces~~.

2. Quantity of bicycle parking spaces required

a. For all land uses except the ones listed under 2b, the following bicycle parking requirements shall apply:

Total Parking Spaces in Lot	Required Number of Bicycle Parking Spaces
1 to 25	2
~~25~~26 to 50	4
51 to 100	8
101 to 500	12
501 to 1,000	16
over 1,000	four (4) additional spaces for every 500 parking spaces over 1,000

b. For the uses listed under this subsection the following bicycle parking requirements shall apply:

- Elementary schools, Middle schools, Senior high schools, vocational or trade schools, colleges, public, private or parochial – 100 percent of the required number of motor vehicle parking
- Dormitories, fraternities and sororities – 50 percent of the required number of motor vehicle parking
- Public or private transportation facilities – 20 percent of the required number of motor vehicle parking
- Sports and Recreation Facilities (parks, playgrounds, bowling alleys, racquetball, tennis and similar court facilities) – 20 percent of the required number of motor vehicle parking

3. Exemption: Single family and duplex units are exempt from the provisions of this subsection.

4. Location and design of bicycle parking spaces: The bicycle parking spaces shall be located near the principal entrance to the building. At building and shopping centers that have multiple parking lots, the bicycle parking spaces should be installed near the entrance to the buildings served by the lots. The bicycle parking spaces should be in a highly visible, well lighted location that provides enough clear space to facilitate easy use and does not impede pedestrian traffic or handicap accessibility and is protected from the weather by being located under roof overhangs and canopies. ~~The parking spaces may not be placed in the County maintained right-of-way.~~ No private bicycle parking required by this section may be placed in the public right-of-way. The design of the bicycle rack should permit the locking of the frame and at least one wheel with a standard size "U" lock and accommodate the typical range of bicycle sizes. The bicycle rack must resist removal, must be solidly constructed to resist rust, corrosion and vandalism and must be properly maintained.

5. Other acceptable forms of bicycle storage: At the owner's option, bicycle parking may also be installed in the form of storage rooms, lockers or cages.

6. Signage and markings: All bicycle parking spaces shall be posted with a permanent and properly maintained above-ground sign entitled "Secured Bicycle Parking." The bottom of the sign must be at least five (5) feet above grade if ~~within~~ attached to a building, or seven (7) feet above grade for a detached sign.

7. Reduction in Number of Required Parking Spaces: The development review board or city commission, through development plan review, or staff, may authorize a reduction in the number of required bicycle parking spaces if requested by the owner/petitioner in good cause and is found in compliance with the below four criteria.

- Evidence that there is adequate number of bicycle parking spaces within 100 feet of the development available for public use.
- Evidence that the proposed future use of the development will generate less bicycle parking than required.
- Evidence that the reduction of bicycle parking will not result in unauthorized use of pedestrian areas for bicycle parking.
- Evidence that bicycle parking/storage space is available for employees and the general public within a building or structure on the development site.

8. All existing developments should comply with the requirements of this section within 18 months of the adoption of the ordinance.

9. Bicycle Parking Facilities. Off-street parking facilities in multi-family and non-residential zoning districts shall include a bicycle parking area in a convenient location to encourage the use of bicycles. Required bicycle parking facilities shall be designed, constructed and maintained in accordance with this ordinance and the City of North Miami Engineering Design Standards. Where not specified, both short term and long term parking facilities are permissible. Long term facilities are required at large employment centers and major transit hubs, as determined by the City.

a. Short Term Parking: "Short term bicycle parking" shall mean a stationary parking device on a concrete surface, which adequately supports the bicycle and must hold at least 180 degrees of the wheel arc. The short term parking facilities approved by the City shall consist of the “Inverted-U” rack or the “post-and-ring” rack. The Inverted-U rack shall be designed to park two bicycles, facing in opposite directions, parallel to the rack. Racks in a parallel series need to be 4 feet apart to provide adequate access to each bicycle. If adjacent racks are spaced less than 4 feet apart, they shall be counted as one bicycle parking space, not two. The Inverted-U rack

shall be a minimum of 30 inches long. The height of the Inverted-U rack shall be approximately 30-32 inches.

The "post-and-ring" bicycle rack shall be a minimum of 18 inches in diameter and the bottom of the ring shall be a minimum of 12 inches above the ground. The post-and-ring rack, when placed properly, shall count as two bicycle parking spaces. The post-and-ring rack shall be considered one bicycle rack, especially when used in multiple rack installations. All short-term parking facilities shall have a minimum of eight feet of overhead clearance.

b. "Long term bicycle parking" shall mean a locker consisting of a fully enclosed lockable space accessible only to the owner/operator of the bicycle, attendant parking with a check-in system accessible only to the attendant(s), a secure, lighted, covered area, or a locked room or office inside a building. The bicycle lockers shall provide secure locking mechanisms that store bicycles with protection from the elements. Existing developments that do not have the necessary space on site to provide for secure bicycle lockers can accommodate long term bicycle parking by converting an existing easily accessible room as a bike room or locker room. Other long term bicycle parking facilities that meet the intent of this Code shall be reviewed and accepted by the City on a case-by-case basis.

TRANSIT PARK-AND-RIDE FEASIBILITY

A concept was developed for a bicycle-oriented park-and-ride system based on the existing and potential future transit system nodes in the City of North Miami. The existing transit system consists of MDT and NOMI bus routes, which were discussed in the Existing Bicycle Parking Standards section of this report. The City's existing transit service is described below.

Miami-Dade Transit (MDT)

MDT provides existing bus transit service along the major arterials and collectors in the City of North Miami. The major trunk routes include Route G operating along NE 125th Street, Route 28 operating along NE 135th Street, Route 75 operating along NW 119th Street and West Dixie Highway, Route 2 operating along North Miami Avenue, Route 17 operating along NW 17th Avenue, Route 277 operating along SR 7, and Route 3 and the Biscayne MAX operating along US 1. Figure 3 presents transit service provided by MDT in and around the City of North Miami.

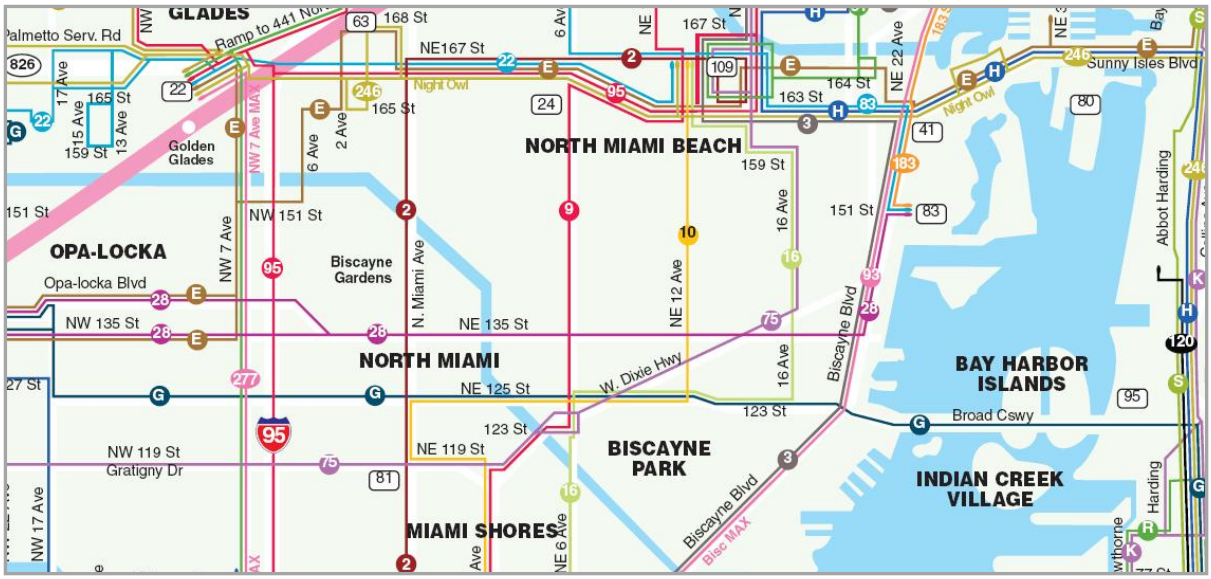


Figure 3: MDT Service in the City of North Miami

NoMi Express

The City of North Miami provides a free community bus service (NoMi Express) in order to increase the number of local destinations that can be reached by public transit. The NoMi Express will only stop at designated bus stops along the route as shown in Figure 4 below. The NoMi Express buses run from 7:00 AM to 8:00 PM, Monday through Friday with 60-minute headway.

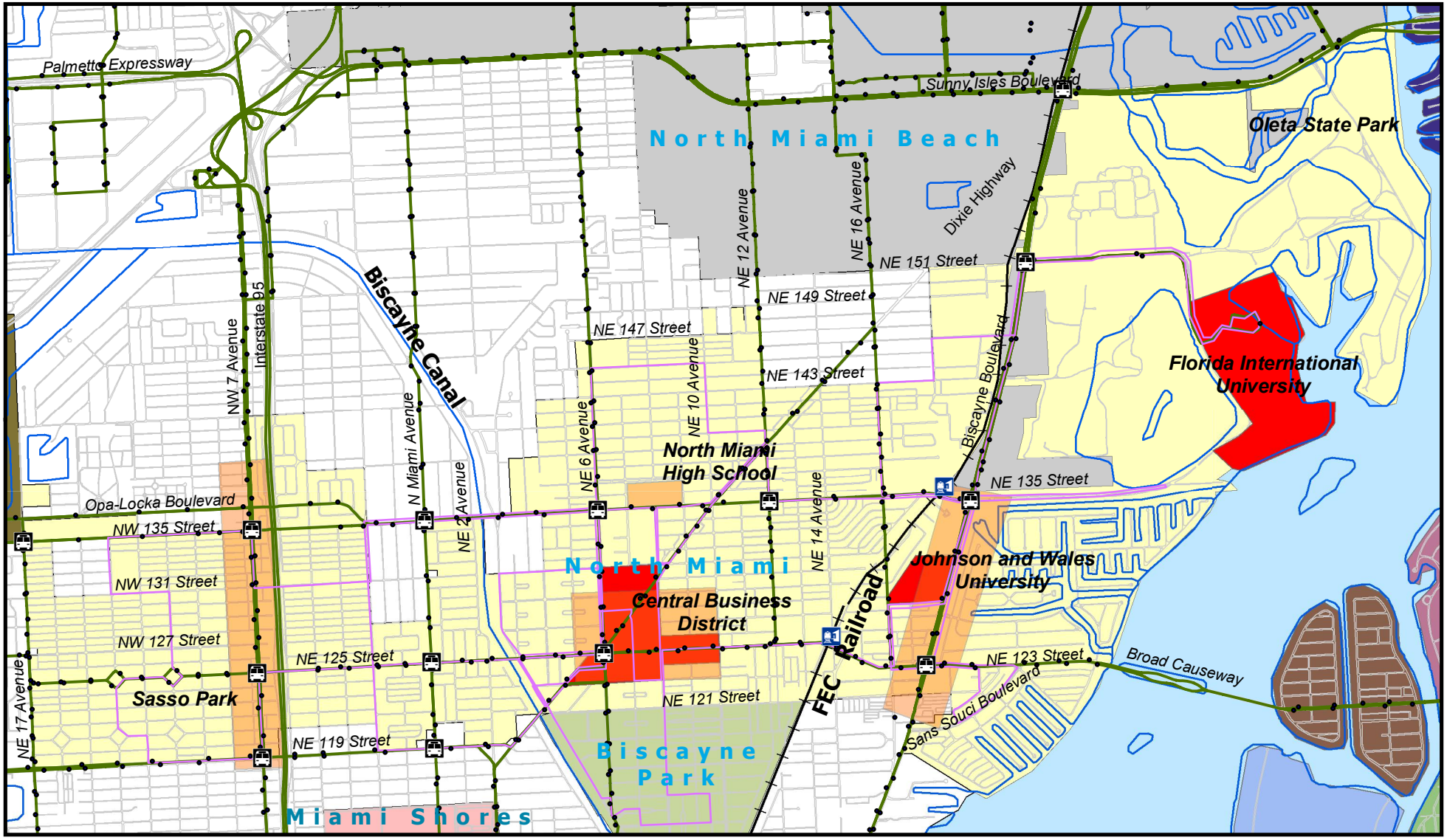
Figure 4: NoMi Express Transit Routes

To identify potential future transit improvements, transportation work programs and major transit studies were reviewed. The South Florida East Coast Corridor (SFECC) Study, which examines passenger transit alternatives centered along the existing FEC Railroad corridor, could result in a potential transit station within North Miami. This study is currently evaluating various alignments and transit technologies for the 85-mile study corridor between Downtown Miami and Tequesta in Palm Beach County.

Deriving a Methodology for Assessing Transit-Supportive Land Uses and Station Suitability presents an assessment of several locations along the corridor for their potential to serve as stations with respect to land use, densities, connectivity, trip generators, growth potential, etc. This assessment included two nodes along the FEC corridor within the City of North Miami: NE 125th Street and NE 135th Street. The overall assessment yielded a grade of "medium-high" for NE 125th Street and a "medium" for NE 135th Street. The final selection of stations would depend on several factors such as transit technology for the corridor, ridership analysis, desired station spacing, relative ranking of potential stations, right-of-way, etc.

Figure 5 identifies proposed bicycle park-and-ride locations for transit. In general, the proposed facilities are located at the intersections of existing bus routes or at potential FEC corridor stations. The proposed park-and-ride locations allow access to both east-west and north-south transit routes. The transit-oriented bicycle park-and-ride system would allow transit patrons to park their bicycles at bus stops or at transfer facilities.

The type of bicycle parking facilities recommended and typical costs of improvements are presented in the next section of this report.



Potential FEC Corridor Stations
Proposed Bicycle/Transit Connections
Bus Stop
NOMI Bus Route
MDT Bus Route
Major Generators
North Miami City Limits

Figure 5

Proposed Bicycle Park-and-Ride Locations

0 0.375 0.75 1.5 Miles

N W E S

NORTH MIAMI FLORIDA

Kimley-Horn and Associates, Inc.

RECOMMENDED NORTH MIAMI BICYCLE PARKING REQUIREMENTS

The proposed bicycle park-and-ride facilities should be located at existing bus stops, public buildings, certain private buildings (depending on the use as specified in the Code), and potential future FEC passenger rail stations.

Bicycle Park-and-Ride Facilities

The type of bicycle parking facilities proposed at short-term parking locations is different from the facilities proposed for long-term parking facilities. As an example, bicycle parking durations at retail businesses are relatively short in comparison to bicycle parking durations at railroad stations, since bicyclists typically leave their bicycle parked at a rail station for most of the day. In addition, bus stops are typically located in areas with less space to devote to bicycle parking. Therefore, bicycle racks are recommended at locations where short-term parking is expected or current space configuration limits the ability to install bicycle lockers. Bicycle lockers should be installed at passenger railroad stations, large employment centers, and housing facilities. In addition, end of trip facilities such as showers and changing rooms could be provided at large employment centers where such facilities could be more readily incorporated into the design and could help promote bicycling to work. Signage should be provided to inform bicyclists and potential bicyclists of available facilities.

Short-term Bicycle Parking

For short-term bicycle parking, the type of bicycle rack recommended for the City of North Miami is the "Inverted-U" rack or equivalent. The "Inverted-U" rack is recommended by most bicycle friendly communities according to the literature review, is generally preferred

Inverted-U Racks at a Bus Stop in New York

by bicyclists, and offers several advantages over other bicycle rack types.

Inverted-U Bike Rack with Bicycle

Inverted-U racks offer a simple, aesthetically pleasing design that can fit into limited spaces such as downtown areas or within public rights-of-way near bus stops. The Inverted-U rack is designed to park two bicycles, facing in opposite directions, parallel to the rack. Hence one Inverted-U rack when placed properly shall count as two bicycle parking spaces. Racks in a parallel series need to be 4 feet apart to provide adequate access to each bicycle. Some manufacturers may recommend spacing the racks as little as two feet apart. Spacing the racks less than 4 feet apart may result in difficulty loading and unloading bicycles from the racks when bicycles are parked adjacent to each other. It is recommended that if adjacent racks are spaced less than 4 feet apart, that they be counted as one bicycle parking space, not two.

The acceptable length of an Inverted-U rack is a minimum of 30 inches long, with a 36-inch length preferred. At lengths of 30-36 inches, two bicycles parked in opposite directions will not interfere with each other. The height of the Inverted-U bike rack should be approximately 30-32 inches. Taller bike parking racks can cause interference with handlebars, limiting how bicycles may be parked and locked. An optional design amenity is a horizontal bar stretching between the two vertical posts approximately 18 inches above the ground. The optional horizontal bar provides additional stability and flexibility in locking bicycles to the rack, especially with smaller bicycles.

Appendix C presents an example of specifications for Inverted-U bike racks from the City of Berkeley, California. Please note that Appendix C is provided for informational purposes only.

Similar to an Inverted-U bicycle rack, the "post-and-ring" bicycle rack may be utilized in a similar manner. The ring is typically approximately 18 inches in diameter and the bottom of the ring should be approximately 12 inches above the ground. The post-and-ring rack, when placed properly, shall count as two bicycle parking spaces. Similar to a short Inverted-U rack, the post-and-ring rack should be considered one bicycle rack, especially when used in multiple rack installations.

Post-and-Ring Bicycle Rack

Post-and-Ring Bicycle Rack with Two Bicycles from a Bike Sharing Program

Long-term Bicycle Parking

Long-term bicycle parking provides employees, students, residents, commuters and others who generally stay at a site for several hours a secure and weather-protected place to park their bicycles. For long-term bicycle parking, bicycle lockers are generally recommended with secure locking mechanisms that store bicycles with protection from the elements. In general, bicycle parking should be located in a clearly designated, visible location, as close to a building entrance as possible. The area should be well-lit and visible at night. A few examples of bicycle lockers are presented below.

Bicycle Lockers near a Transit Station

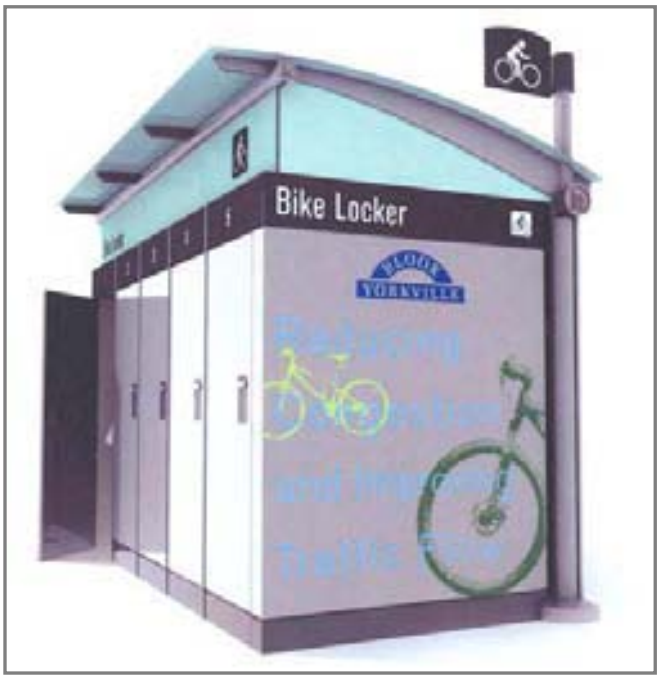
Bicyclist Using a Bicycle Locker

View-Through Bicycle Locker

Bicycle Lockers near a Sheltered Bus Stop

Bicycle Lockers with closely-spaced Inverted-U Racks

Inside View of a Bicycle Locker



City of Toronto Bike Locker Design

Another concept for long-term bicycle parking is the usage of a bike room. A bike room is essentially a storage room for long-term parking accessed from the ground level of a building, or from the lobby in view of security guards as an added feature. Existing developments that do not have the necessary space on site to provide for secure bicycle lockers can accommodate long-term bicycle parking by converting an existing easily accessible room to a bike room.

Bike Room

There have been innovative bicycle parking devices implemented in other areas. Riverside, California recently installed "bike lids" at two Metrolink commuter rail stations. Portland, Oregon installed "bike lids" at Tri-Met MAX light rail stations and WES commuter rail stations. Bike lids, like bike lockers, are designed to provide enhanced protection from theft and weather. Bike lids provide a similar concept for bicycle storage as bike lockers, and should be considered as a suitable alternative, especially in locations where space availability (or right-of-way availability) may restrict the placement of bike lockers. The following photographs illustrate the operation of bike lids.

Bike Lids (Source: Bikelid® Systems)

Typical Costs

Based on the information available from www.bicyclinginfo.org and several manufacturers, the typical cost to purchase and install a bicycle rack that holds two bicycles is between $150 and $300. The typical cost of bike lockers that hold two bicycles is between $1,000 and $4,000. These costs are for racks and lockers that each park two (2) bicycles. As a conservative estimate, a cost of $300 per bicycle rack ($150 per bicycle parking space) and $4,000 per bicycle locker ($2,000 per bicycle parking space) should be assumed. As a comparison, vehicular surface parking is typically provided at $2,000 to $3,000 per surface parking space and $10,000 to $15,000 per structured parking space (garage).

UPDATED FUTURE BICYCLE NETWORK

This section of the report summarizes the Updated Future Bicycle Network for the City of North Miami. The Future Bicycle Network update was combined with the Bicycle Parking Study to take advantage of the synthesis between providing bicycle routes and bicycle parking at key destinations and transfer points. The Future Bicycle Network was outlined in the City's Transportation Master Plan prepared in 2005 based on the Community Redevelopment Agency (CRA) Redevelopment Plan. The network has been updated as part of the City's Bicycle Parking and Transit Feasibility Study based on discussions with city staff, field observations, and input from the Study Advisory Group (SAG) about usage of these facilities.

Currently, off-street bicycle paths exist in the northeastern portions of the City within the Oleta River State Recreation Area and the Florida International University campus. Bicyclists use the lower volume residential streets and sidewalks along major arterials for riding.

The goal of the Updated Future Bicycle Network is to establish a vision for bicycle facilities on roadways within the City. According to Section 335.065(1)(a) of the Florida Statutes bicyclists and pedestrians are legitimate users of every roadway and as such should be accommodated through bicycle and pedestrian facilities. The section from the referenced statute is provided below:

> *"Bicycle and pedestrian ways shall be given full consideration in the planning and development of transportation facilities, including the incorporation of such ways into state, regional, and local transportation plans and programs. Bicycle and pedestrian ways shall be established in conjunction with construction, reconstruction, or other change of any state transportation facility, and special emphasis shall be given to projects within 1 mile of an urban area."*

The emphasis in bicycle planning has changed from the attempts to provide completely separate facilities for bicyclists, to the growing recognition that bicyclists are legitimate users of the roadway. Appropriately designed and located bicycle facilities play an important role in encouraging safe bicycle travel. Bicycle facility needs include bicycle lanes, route systems, and separate paths with the appropriate signs, control devices, parking facilities, etc.

The City's goal through the Updated Future Bicycle Network is to accommodate current bicycle use and to encourage increased use of bicycling in the future. Hence bicycle planning should be oriented toward meeting the needs of current and potential bicyclists using the roadway system. Additionally it needs to consider bicyclists of all skill levels. Roadway treatments intended to accommodate bicycle use must address the needs of both experienced and less experienced riders.

According to the U.S. Department of Transportation's Policy Guide titled *"Selecting Roadway Design Treatments to Accommodate Bicycles"*, there are three levels of bicyclists:

1. Group A – Advanced Bicyclists
2. Group B – Basic Bicyclists
3. Group C – Children

Group A – Advanced Bicyclists include the experienced drivers who can operate under most traffic conditions. They comprise the majority of the current users of collector and arterial streets and are best served by the following:

- Direct access to destinations usually via the existing street and highway system.
- The opportunity to operate at maximum speed with minimum delays.

- Sufficient operating space on the roadway or shoulder to reduce the need for either the bicyclist or the motor vehicle operator to change position when passing.

Group B—Basic Bicyclists include the casual or new adult and teenage riders who are less confident of their ability to operate in traffic without special provisions for bicycles. Some will develop greater skills and progress to the advanced level, but there will always be many millions of basic bicyclists. This group is best served by the following:

- Comfortable access to destinations, preferably by a direct route, using either low-speed, low traffic-volume streets or designated bicycle facilities.
- Well-defined separation of bicycles and motor vehicles on arterial and collector streets (bike lanes or shoulders) or separate bike paths.

Group C—Children include pre-teen riders whose roadway use is initially monitored by parents. Eventually they are accorded independent access to the system. They and their parents prefer the following:

- Access to key destinations surrounding residential areas, including schools, recreation facilities, shopping, or other residential areas.
- Residential streets with low motor vehicle speed limits and volumes.
- Well-defined separation of bicycles and motor vehicles on arterial and collector streets or separate bike paths.

The entire roadway network within the City was considered while developing recommendations for the Updated Future Bicycle Network. The Updated Future Bicycle Network classifies the City's bicycle network into three classifications:

1. Primary Routes
2. Secondary Routes
3. Local Routes

"Bike Route" Sign

Primary Routes: These routes are intended to be dedicated bicycle facilities such as designated bicycle lanes or paved shoulders with bike route signage. For corridors in which more detailed engineering analyses determines that dedicated bicycle lanes are not feasible, primary routes should be designated with signage and/or pavement markings including "Bike Route", "Sharrow" markings (contingent upon approval and inclusion in the 2009 Manual on Uniform Traffic Control Devices [MUTCD]) and "Share the Road" signs. Primary routes are generally intended for advanced bicyclists, although many basic bicyclists may feel comfortable using primary routes if designated bicycle lanes are provided.

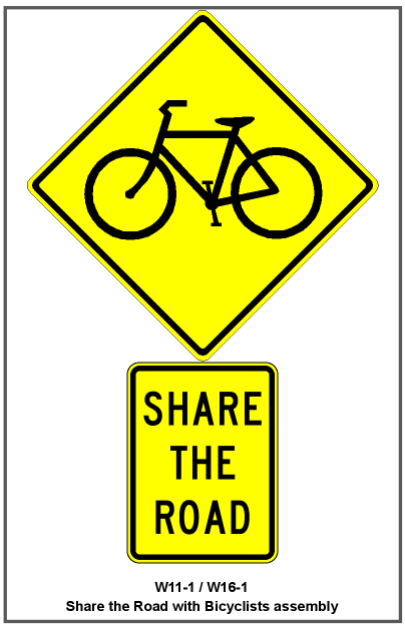
Designated Bicycle Lane

A designated bicycle lane is a portion of the roadway designated by striping, signing and/or special pavement markings for the exclusive use of bicyclists. The Florida Department of Transportation's (FDOT) *2008 Plans Preparation Manual* specifies the minimum standards for designated bicycle facilities. On roadways with flush shoulders, a minimum of 5' paved shoulder should be provided for a designated bicycle lane. On curb and gutter roadways, a 4' width measured from the lip of the gutter is required. Where parking is present, the bike lane should be placed between the parking lane and the travel lane and have a minimum width of 5'.

An undesignated bicycle lane or a paved shoulder is separated from traffic lanes by an edge stripe and should follow the same requirements for width and location as a designated bicycle lane, except it does not include bicycle lane signs and/or special pavement markings.

Secondary Routes: These routes are intended to be lower volume collector streets that may be more appropriate for a wider group of bicyclists and still provide a moderate degree of connectivity and mobility. These routes should be marked by "Share the Road" signs or "Sharrow" marking (contingent upon approval and inclusion in the 2009 MUTCD). However, designated bicycle lanes are appropriate for Secondary Routes to improve bicycle mobility where right-of-way and funding are available. The lower volumes along

Proposed "Sharrow" Sign



"Share the Road" Sign

these corridors can provide a comfortable bicycling environment for most basic bicyclists.

The word "Sharrow" is a combination of two words – share" and "arrow". Sharrows are identified by a stencil of a bike under what looks like two inverted "V"s, or chevrons. The chevrons indicate the direction of travel (always with traffic). A minimum of 14 feet wide continuous pavement is required to install as Sharrow marking. The "Sharrow" markings are painted far enough out in the lane so as to move cyclists out of the "door zone", thus reducing the chance that cyclists will be "doored" by motorists who do not check for cyclists before opening their doors in to traffic. Additionally, studies have shown that sharrows act as a form of traffic calming by subtly encouraging motorists to reduce their speed on roads with the markings.

Another type of treatment for the secondary routes can be to designate them as Bicycle Boulevards. The purpose of a Bicycle Boulevard is to increase the visibility of bike routes, expand the network of efficient bicycle routes, and to create a place where bicyclists of all skill levels will feel safer riding a bicycle without having to designate a bicycle lane. Bicycle Boulevards are typically established on low- to mid-volume collector roadways where there is not proper right-of-way or pavement width to create bicycle lanes. Bicycle Boulevards are typically installed on collector roadways where the roadway is not wide enough for bicycle lanes, yet the roadway has enough traffic volume and high enough speeds to necessitate some sort of facility to encourage bicyclists and automobiles to share the road. Bicycle Boulevards send a clear signal to motorists that bicyclists are not only going to be on the road, but that they are part of the mix of vehicles. Bicycle Boulevards are often combined with traffic calming improvements. Wayfinding signs and guide signs are also included on Bicycle Boulevards to clearly indicate destinations and attractions that can be reached by bicycle.

Examples of Bicycle Boulevard Facilities

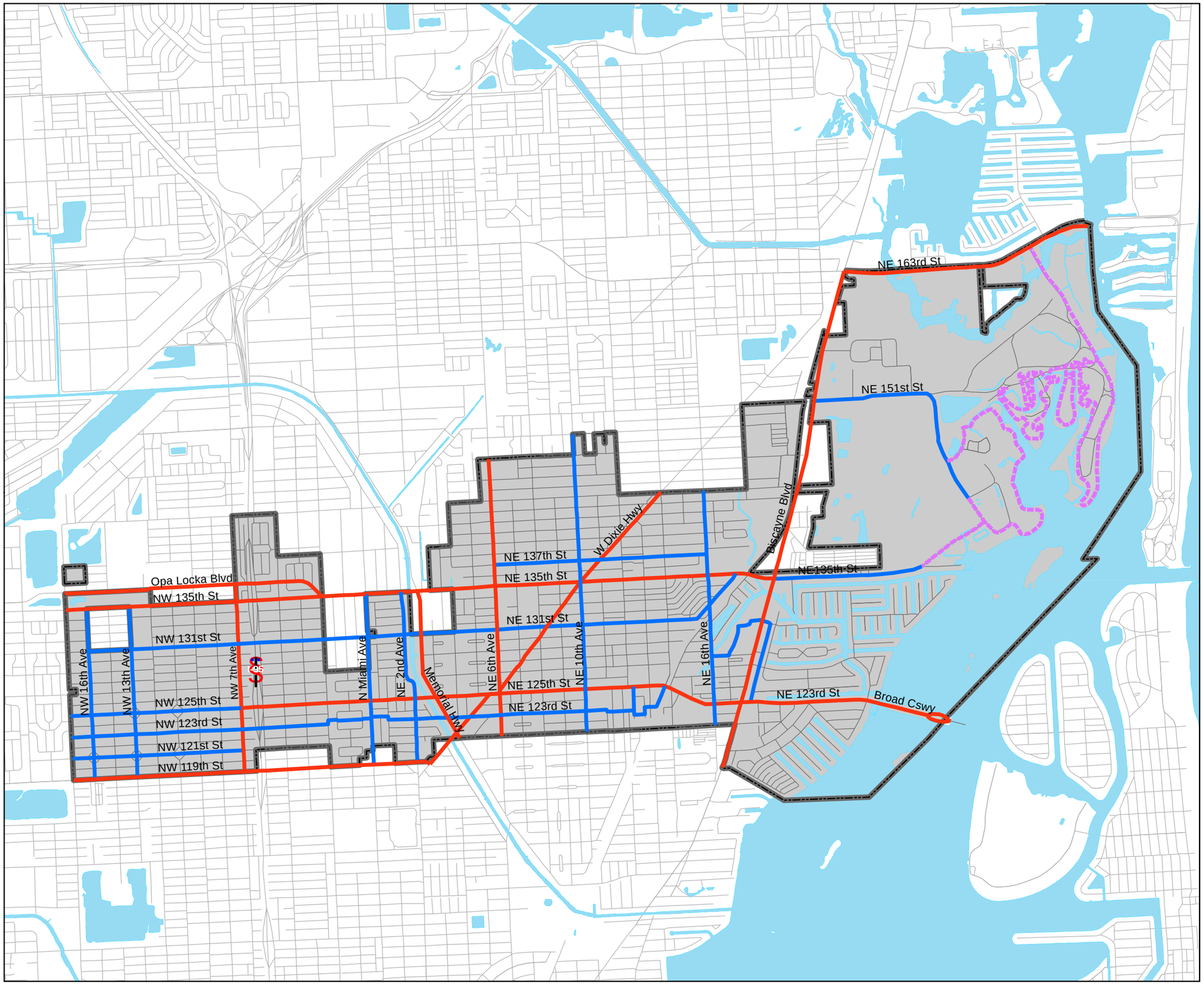
<u>Local Routes:</u> All local streets are local bicycle routes. These routes are intended to be lower volume lower speed streets where bicyclists of all skill levels can comfortably use the facility with little or no improvements or signage. In accordance with Section 335.065(1)(a) F.S., bicyclists are legitimate users of a roadway and hence should be accommodated on all roads.

The Updated Future Bicycle Network is attached as Figure 6. It is anticipated that as future reconstruction and resurfacing projects are implemented the recommendations from the Updated Future Bicycle Network will be used to allocate resources to accommodate bicycle improvements within the City.

City of North Miami

Bicycle Parking and Transit Feasibility Study

Figure 1
Updated Future
Bicycle Network



Legend

- Primary Routes
- Secondary Routes
- Existing Off-Street Paths
- Local Routes
- City Boundary

0 0.5 1 2

Miles

Kimley-Horn and Associates, Inc.

043268000

September 2008

IMPLEMENTATION PLAN

This section of the report presents the strategy for implementing additional bicycle parking at strategic locations within the City of North Miami in order to satisfy existing demand for bicycling and to make bicycling a more attractive mode choice for its residents, employees, and visitors. Bicycle parking and other end-of-trip facilities provide bicyclists with means to store their bicycle and increase the likelihood that more people will view bicycling as an attractive transportation mode choice.

Bicycle Facility Locations

The bicycle inventory described in an earlier section of this report was reviewed to determine areas that appear to have a deficiency in available bicycle parking. The national practices literature review was studied to determine locations where other bicycle friendly communities have found success in placing bicycle parking. In addition, the updated bicycle network was reviewed to coordinate bicycle parking along designated bicycle routes.

Although the utilization inventory found that many bicycle racks were under-utilized during the three days of bicycle parking counts, the inventory also found many locations where bicycles were parked in undesignated locations, indicating a clear latent demand for bicycle parking in the City of North Miami. The strategy for implementing bicycle parking should seek to provide parking in locations where bicycles are currently being parked and attached to sign posts, trees, structures, and other objects, and to provide parking at transit transfer points for bicycle park-and-ride purposes. A list of locations within the City of North Miami where new bicycle parking should be implemented is provided below. The recommended locations for bicycle facilities have been developed based on the demand observed during the bicycle inventory as well the future development plans based on the North Miami Transportation Master Plan.

- Within the Central Business Commercial District (Downtown North Miami) along the major commercial streets including the following (see list below). Bicycle parking within the Central Business Commercial District should be considered a district-wide resource and should be provided within the public right-of-way along with attractive street furniture and landscaping in locations that do not block access for pedestrians and disabled (as defined by the Americans with Disabilities Act [ADA]) users. As a district-wide resource, bicycle parking within the public realm should not relieve any private landowner from meeting the bicycle parking requirements of the City's land development regulations. Assume one to two bicycle racks per block on each side of the street. Locating bicycle racks near bus stops is preferred. The bicycle racks can be clustered or spaced out as necessary based on the characteristics of each individual block.
    - NE 125th Street between NE 4th Avenue and NE 12th Avenue (approximately 24 bicycle racks)
    - West Dixie Highway between NE 123rd Street and the turnaround (approximately 8 bicycle racks)
    - West Dixie Highway between NE 125th Street and NE 137th Street (approximately 12 bicycle racks)
    - NE 6th Avenue between NE 123rd Street and NE 127th Street (approximately 8 bicycle racks)
    - NE 124th Street between West Dixie Highway and NE 7th Court (approximately 8 bicycle racks)
    - NE 123rd Street between West Dixie Highway and NE 7th Avenue (approximately 8 bicycle racks)
- Along major roadway corridors with heavy retail and office uses. These should be provided within the public right-of-way along with attractive street furniture and landscaping in locations that do not block access for pedestrians and disabled (as defined by the Americans with Disabilities Act [ADA]) users. As a

community resource, bicycle parking within the public realm should not relieve any private landowner from meeting the bicycle parking requirements of the City's land development regulations. Assume one bicycle rack every two blocks on each side of the street. Locating bicycle racks near bus stops is preferred. The bicycle racks can be clustered or spaced out as necessary based on the characteristics of each individual block.

  - NW 7th Avenue between NE 119th Street and NE 125th Street (approximately 6 bicycle racks)
  - NW 7th Avenue between NE 125th Street and NE 135th Street (approximately 10 bicycle racks)

- At the proposed transit-bicycle park-and-ride locations identified in Figure 5. Assume four bicycle racks per proposed bicycle/transit connection.
  - NW 17th Avenue @ NW 135th Street (approximately 4 bicycle racks)
  - NW 7th Avenue @ NW 135th Street (approximately 4 bicycle racks)
  - NW 7th Avenue @ NW 125th Street (approximately 4 bicycle racks)
  - NW 7th Avenue @ NW 119th Street (approximately 4 bicycle racks)
  - North Miami Avenue @ NW 135th Street (approximately 4 bicycle racks)
  - North Miami Avenue @ NW 125th Street (approximately 4 bicycle racks)
  - North Miami Avenue @ NW 119th Street (approximately 4 bicycle racks)
  - NE 6th Avenue @ NE 135th Street (approximately 4 bicycle racks)
  - NE 6th Avenue @ NE 125th Street (approximately 4 bicycle racks)
  - NE 12th Avenue @ NE 135th Street (approximately 4 bicycle racks)
  - U.S. 1 @ NE 163rd Street (approximately 4 bicycle racks)
  - U.S. 1 @ NE 151st Street (approximately 4 bicycle racks)
  - U.S. 1 @ NE 135th Street (approximately 4 bicycle racks)
  - U.S. 1 @ NE 123rd Street (approximately 4 bicycle racks)
- At public buildings and facilities such as City Hall, libraries, schools, parks, and cultural centers (approximately 20 bicycle racks).

- Public parks and recreational facilities should have accommodations for bicycling facilities commensurate with demand.
- Design and install bicycle parking signage that can be placed at bicycle racks within the City to make the bicycle parking easily identifiable by the public.
- Enforce the bicycle parking requirements in the land development regulations to increase the available bicycle parking amenities available at private businesses and land uses.
- Install long-term bicycle parking lockers or bike lids at employment centers and future passenger rail stations. The City should consider applying for a grant to obtain bicycle parking lockers for an existing public facility such as City Hall, where there is a concentration of employees and visitors throughout the day. If premium transit is implemented in the FEC Railroad Corridor, the North Miami station should contain easily-accessible bicycle lockers for transferring between bicycles and premium transit. Most agencies that install bicycle lockers charge a monthly or annual rental fee for its use as a way of controlling usage and recovering a portion of the cost.

Bicycle Locker Sign and Bicycle Rack Sign

Milwaukee Bicycle Parking Sign

DOT Bicycle Parking Sign

The above-mentioned bicycle parking locations will provide adequate opportunities for parking within the public realm. These locations in conjunction with the requirements for new developments and existing developments to comply with the changes the City's Land Development Code will address bicycle facilities within both the public and the private realms. Bicycle parking recommendations and facility provisions within the City are intended to satisfy bicycle demand at private developments as well as for public areas and services. The bicycle parking and storage to satisfy demand for residential and non-residential developments within the City will be provided on private property.

The recommended parking (bicycle racks) at transit stops and within downtown destinations are anticipated to be provided on the public right-of-way similar to the location of transit shelters within the public right-of-way. The long term bicycle storage facilities (bicycle lockers) which are larger in size are mainly recommended for large employment centers and commuter rail stations. The lockers for the employment centers will be provided on private property. The design of bicycle storage facilities at train stations will need to be incorporated within the station design plans. Proactive coordination by the City will be required to ensure incorporation of adequate bicycle facilities within future transit stations.

Bicycle Parking near a Bus Stop, Portland

If properly designed and located, bicycle shelters can serve as an alternative to bicycle lockers. Bicycle shelters at transit stops and major community facilities can serve as an urban design feature while also providing protection from the elements.

While locating bicycle facilities on the public right-of-way and community destinations, specific considerations should be given to incorporating these facilities within the community's urban design fabric and to properly integrate it with the surrounding environment. If properly designed and implemented, these facilities can serve to promote community identity and garner interest and support within the community. One idea that has been successfully implemented in several downtown districts is to remove one or more on-street automobile parking spaces to provide several bicycle racks. The photo below illustrates a bicycle parking "corral" where two on-street automobile parking spaces were removed to create space for approximately 20 bicycle parking spaces.

Bicycle Parking "Corral"

Common Installation Mistakes

While locating bicycle racks and lockers on a site, specific attention should be given to the design and location of the bicycle facilities from the user's point of view. Merely locating a bicycle rack near a building does not guarantee effective utilization of the rack. For example in the first image below, the serpentine bicycle rack is located very close to the building effectively making one side of the rack unusable due to the close proximity to the building. Similarly in the second image, there is only one point of contact between the bicycle and the rack which could result in unstable parking with the potential of a bent wheel if the bicycle topples over. Most bicyclists prefer more than one point of contact between the bicycle rack and the bicycle in order to securely lock the bicycle. Such common installation mistakes should be carefully avoided to efficiently utilize and provide for bicycle parking facilities.

Serpentine rack too close to obstacles

Rack with unstable support

Funding

An example of a specific bicycle facility grant funding source is the Bikes Belong Coalition. The Bikes Belong Coalition seeks to assist local organizations, agencies, and citizens in developing bicycle facilities projects. The Bikes Belong Coalition will accept applications for grants of up to $10,000 each, and will consider successor grants for continuing projects. Funding decisions are made on a rolling basis.

A potential local source of funding is developer impact fees, typically tied to trip generation rates and traffic impacts produced by a proposed project. A developer may reduce the number of trips (and hence impacts and cost) by paying for on- and off-site bicycle improvements that will encourage residents to bicycle rather than drive.

Corporations and non-profit organizations are another common source of private funding. Local companies and merchants may be interested in a "corporate sponsorship" of a bicycle rack or bicycle locker. An adopt-a-sign program could be developed to provide the name of the corporate sponsor for bicycle routes.

Most agencies that have successfully implemented a bicycle parking program have done so at least in part by dedicating a certain portion of their general fund or transportation fund to installing and implementing bicycle racks, signage, and lockers. In addition, it is likely that outside grant funding potential can be enhanced by providing a local match, which shows a commitment on the City's part for the bicycle parking program to the funding agency.

Cost

According to the list of locations identified above, approximately 160 bicycle racks within public right-of-way or at public facilities would be the ultimate vision. Accompanying the bicycle racks would be signage that identifies the racks as being public bicycle parking. Bicycle racks on private property would be in addition to the 160 bicycle racks mentioned above. The table below lists potential costs for the infrastructure associated with this study.

Item	Estimated Quantity	Unit Cost	Estimated Budget
Bicycle Racks	160	$300	$48,000
Bicycle Lockers	10	$4,000	$40,000
Signage	100	$300	$30,000
Advertising Costs / Brochures	(20%)		$23,600
TOTAL			$141,600

Action Items

The following general actions are recommended to encourage implementation:

1. Adopt the *North Miami Bicycle Parking Study:* The City of North Miami should adopt the *North Miami Bicycle Parking Study* as a policy for the City's future bicycle route network and bicycle parking strategies. Adopting the Study demonstrates a commitment to both private sector and public sector stakeholders and potential funding partners of the need to implement the Plan.
2. Establish Projects, Programs, & Policies: It is important to include capital projects in the community's programs, and to adopt policies that support implementation of the proposed bicycle parking plan through public and private projects.

3. Establish an Implementation Schedule: The bicycle parking improvements can be implemented over time. Early projects should include the most critical needs, where there are existing and documented parking deficiencies:
    - Phase I: Downtown Bicycle Rack Projects and Bicycle Lockers.
    - Phase II: Transit-Bicycle Park-and-Ride Locations.
    - Phase III: System Enhancements and Bicycle Lockers at premium transit stations (when implemented).
4. Treat the *North Miami Bicycle Parking Study* as a living document that can be updated as future opportunities arise. The Plan should be flexible enough that projects and priorities can be modified to meet dynamic opportunities in the future. If the bicycle parking program is successful, additional bicycle parking and costs not included in this implementation plan should be added.
5. Develop technical specification bicycle facilities. The City should incorporate technical specifications into the City's engineering manual/standards. The standards could contain design specification for the "inverted-U" racks, the "post-and-ring" racks and bicycle lockers. The specifications should be used to solicit local fabrication and installation for the bicycle parking at public spaces. Creating a local bike rack industry will set the standard for design quality as well as reduce costs for private businesses while installing bicycle racks on-site.
6. Develop a Community Assistance Program: The City should develop a community assistance program to assist existing and new developments in complying with the proposed bicycle parking ordinance. The City can obtain bicycle racks through community grants and can make these facilities available to property owners for free or at discounted prices.

Appendix A

Field Review Data Inventory

North Miami Bicycle Parking Inventory

Date: 7/17/08, 7/24/08, & 10/8/08

Site #	Street	Land Use	Type of Parking	Capacity	Condition	Visibility and Signage	Access	Amenities	Notes
(To match with usage survey and for mapping purposes)	*(Enter street or nearest intersection)*	*(specify the most likely destination(s) served by bike facility. e.g., bus stop, church, etc.)*	*(e.g., bike racks, undesignated [no bike rack])*	*(number of bike parking spaces)*	*(condition of bike racks, pavement, etc)*	*(visibility from main street and availability of signage)*	*(Is the bike facility easily accessible from streets? Does the facility provide easy access to intended destination?)*	*(e.g., lighting, covered/canopy, security, etc)*	*(e.g., number of photos taken, need/opportunities for providing bike facilities, other observations)*
1	NE 125th Street and NE 6th Avenue	City Hall/Art Museum	Bike Rack	4	Good	Fair- Visible from side street, no signage	Good	None	1 Photo
2	NE 125th Street Between 9th and 10th Avenue	Banks	Undesignated	N/A	None	On street no signage	Good	None	1 Photo, chained to utility pole
3	NE 6th Avenue and 126th Street	Bank	Bike Rack	2	Good	Good visibility, right next to building, no signage	Good	None	1 Photo
4	NE 6th Avenue and 125th Street	Walgreens	Bike Rack	3	Fair	Good visibility	Good	Covered, lighting	1 Photo
5	NE 6th Avenue and 125th Street	McDonalds	Undesignated	N/A	None	N/A	N/A	None	1 Photo, leaning against building
6	NE 6th Avenue and 129th Street	Publix	Bike Rack	3	Good	Against building, no signage	Good	Lighting, canopy	1 Photo

Site #	Street	Land Use	Type of Parking	Capacity	Condition	Visibility and Signage	Access	Amenities	Notes
(To match with usage survey and for mapping purposes)	*(Enter street or nearest intersection)*	*(specify the most likely destination(s) served by bike facility. e.g., bus stop, church, etc.)*	*(e.g., bike racks, undesignated [no bike rack])*	*(number of bike parking spaces)*	*(condition of bike racks, pavement, etc)*	*(visibility from main street and availability of signage)*	*(Is the bike facility easily accessible from streets? Does the facility provide easy access to intended destination?)*	*(e.g., lighting, covered/canopy, security, etc)*	*(e.g., number of photos taken, need/opportunities for providing bike facilities, other observations)*
7	NW 11th Avenue and 125th Street	Swimming Pool	Bike Rack	6	Good	Good visability, no signage	Good	None	1 Photo
8	NW 17th Avenue and 119th Street	Café	Undesignated, leaned against building	N/A	Poor	N/A	Poor	None	2 Photos
9	NW 10th Avenue and 119th Street	Shopping Plaza	Undesignated, against column	N/A	Poor	N/A	N/A	None	1 Photo
10	SR 7 and 122nd Street	Shops	Undesignated	N/A	Poor	N/A	N/A	None	1 Photo
11	SR 7 and 135th Street	Checkers	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
12	SR 7 and 137th Street	Market	Undesignated	N/A	N/A	N/A	N/A	None	2 Photos
13	SR 7 and 127th Street	Burger King	Bike Rack	4	Good	Good, no signage	Good	None	1 Photo

Site #	Street	Land Use	Type of Parking	Capacity	Condition	Visibility and Signage	Access	Amenities	Notes
(To match with usage survey and for mapping purposes)	*(Enter street or nearest intersection)*	*(specify the most likely destination(s) served by bike facility. e.g., bus stop, church, etc.)*	*(e.g., bike racks, undesignated [no bike rack])*	*(number of bike parking spaces)*	*(condition of bike racks, pavement, etc)*	*(visibility from main street and availability of signage)*	*(Is the bike facility easily accessible from streets? Does the facility provide easy access to intended destination?)*	*(e.g., lighting, covered/canopy, security, etc)*	*(e.g., number of photos taken, need/opportunities for providing bike facilities, other observations)*
14	SR7 and 126th Street	Bank	Bike Rack	2	Good	Good, no signage	Good	None	1 Photo
15	SR 7 and 122nd Street	Store	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
16	SR 7 and 119th Street	McDonalds and Gas Station	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
17	NE 7th Avenue and 135th Street	North Miami High School	Bike Racks	20	Very Good	Good visibility, no signage	Good	Fenced In	1 Photo
18	NE 7th Avenue and 136th Street	North Miami High School	Bike Racks	35	Very Good	Good visibility, no signage	Good	Fenced in	1 Photo
19	NE 8th Avenue and 135th Street	North Miami High School	Bike Rack	6	Fair	Partially Visible, no signage	Good	None	1 Photo, inside school grounds
20	Biscayne Boulevard and Ixora Lane	Red Lobster	Undesignated	N/A	N/A	N/A	N/A	Lighting	1 Photo

Site #	Street	Land Use	Type of Parking	Capacity	Condition	Visibility and Signage	Access	Amenities	Notes
(To match with usage survey and for mapping purposes)	*(Enter street or nearest intersection)*	*(specify the most likely destination(s) served by bike facility. e.g., bus stop, church, etc.)*	*(e.g., bike racks, undesignated [no bike rack])*	*(number of bike parking spaces)*	*(condition of bike racks, pavement, etc)*	*(visibility from main street and availability of signage)*	*(Is the bike facility easily accessible from streets? Does the facility provide easy access to intended destination?)*	*(e.g., lighting, covered/canopy, security, etc)*	*(e.g., number of photos taken, need/opportunities for providing bike facilities, other observations)*
21	Biscayne Boulevard and 127th Street	Publix, and shopping center	Bike Rack	4	Good	Good visability, no signage	Good	None	1 Photo
22	Biscayne Boulevard and 121st Street	Home Depot	Bike Rack	6	Good	Good visibility, with signage	Good	None	1 Photo
23	Biscayne Boulevard and 123rd Street	Burger King	Bike Rack	2	Good	Good visibility, no signage	Good	Partially Covered	1 Photo
24	Biscayne Boulevard and 135th Street	Bus Stop	Undesignated	N/A	N/A	N/A	N/A	None	2 Photos
25	NE 11th Court and 147th Street	Catholic School	Bike Rack	4	Good	Poor	Access from parking lot	None	1 Photo
26	163rd Street	Oleta River	Bike Rack	3	Good	Poor	Fair	None	1 Photo, behind visitor center
27		FIU Campus Academic II	Bike Rack	2	Good	Fair, set back off of main road	Fair	None	1 Photo

Site #	Street	Land Use	Type of Parking	Capacity	Condition	Visibility and Signage	Access	Amenities	Notes
(To match with usage survey and for mapping purposes)	*(Enter street or nearest intersection)*	*(specify the most likely destination(s) served by bike facility. e.g., bus stop, church, etc.)*	*(e.g., bike racks, undesignated [no bike rack])*	*(number of bike parking spaces)*	*(condition of bike racks, pavement, etc)*	*(visibility from main street and availability of signage)*	*(Is the bike facility easily accessible from streets? Does the facility provide easy access to intended destination?)*	*(e.g., lighting, covered/canopy, security, etc)*	*(e.g., number of photos taken, need/opportunities for providing bike facilities, other observations)*
28		FIU Campus Academic I	Bike Rack	2	Good	Good	Fair	None	1 Photo
29		FIU Campus Library	Bike Racks	3	Good	Good	Good	Canopy	1 Photo
30		FIU Campus Housing	Bike Racks	10	Good	Fair	Fair	Canopy and Lighting	2 Photos
31	151st Street	K-8 School	Bike Rack	15	Good	Good	Only accessible to students	Partially Covered	Inside school, fenced in
32	NE 6th Avenue	Taco Bell	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo, leaning against building
33	NE 6th Avenue and 124th Street	Shops	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
34	Biscayne Boulevard and 121st Street	Steves Pizza	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo

Site #	Street	Land Use	Type of Parking	Capacity	Condition	Visibility and Signage	Access	Amenities	Notes
(To match with usage survey and for mapping purposes)	*(Enter street or nearest intersection)*	*(specify the most likely destination(s) served by bike facility. e.g., bus stop, church, etc.)*	*(e.g., bike racks, undesignated [no bike rack])*	*(number of bike parking spaces)*	*(condition of bike racks, pavement, etc)*	*(visibility from main street and availability of signage)*	*(Is the bike facility easily accessible from streets? Does the facility provide easy access to intended destination?)*	*(e.g., lighting, covered/canopy, security, etc)*	*(e.g., number of photos taken, need/opportunities for providing bike facilities, other observations)*
35	Biscayne Boulevard and 123rd Street	Ross	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
36	123rd Street between Sans Souci Bouelvard and Bayshore Drive	Shopping Center	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
37	124th Street between Sans Souci Bouelvard and Bayshore Drive	Shopping Center	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
38	Biscayne Boulevard and 130th Street	Shopping Center	Undesignated	N/A	N/A	N/A	N/A	None	
39	Dixie Highway and NE 135th Street	Coin Laundry	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
40	Dixie Highway and NE 136th Street	Burger King	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
41	Biscayne Boulevard and NE 150th Street	Justice Center	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo

Site #	Street	Land Use	Type of Parking	Capacity	Condition	Visibility and Signage	Access	Amenities	Notes
(To match with usage survey and for mapping purposes)	*(Enter street or nearest intersection)*	*(specify the most likely destination(s) served by bike facility. e.g., bus stop, church, etc.)*	*(e.g., bike racks, undesignated [no bike rack])*	*(number of bike parking spaces)*	*(condition of bike racks, pavement, etc)*	*(visibility from main street and availability of signage)*	*(Is the bike facility easily accessible from streets? Does the facility provide easy access to intended destination?)*	*(e.g., lighting, covered/canopy, security, etc)*	*(e.g., number of photos taken, need/opportunities for providing bike facilities, other observations)*
42	Biscayne Boulevard and NE 150th Street	Justice Center	Bike Rack	3	Good	Good	Good	None	1 Photo
43	Oleta State Park	Park	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
44	SR 7 and NW 123rd Street	Gas Station	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo, Tied to Pay Phone
45	SR 7 and NW 122nd Street	Popeyes	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo, Tied to Tree
46	NW 15th Avenue and NW 119th Street	Super Market	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
47	NW 15th Avenue and NW 119th Street	Store	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
48	NW 12th Avenue and NW 119th Street	Mechanic Shop	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo

Site #	Street	Land Use	Type of Parking	Capacity	Condition	Visibility and Signage	Access	Amenities	Notes
(To match with usage survey and for mapping purposes)	*(Enter street or nearest intersection)*	*(specify the most likely destination(s) served by bike facility. e.g., bus stop, church, etc.)*	*(e.g., bike racks, undesignated [no bike rack])*	*(number of bike parking spaces)*	*(condition of bike racks, pavement, etc)*	*(visibility from main street and availability of signage)*	*(Is the bike facility easily accessible from streets? Does the facility provide easy access to intended destination?)*	*(e.g., lighting, covered/canopy, security, etc)*	*(e.g., number of photos taken, need/opportunities for providing bike facilities, other observations)*
49	SR 7 and NW 129th Street	Store	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
50	SR 7 and NW 135th Street	Pole	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
51	Biscayne and 127th Street	US -1 Fitness	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo, Tied to hand rail
52	123rd Street and NE 12 Avenue	W.J. Bryan elementary school	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo, Tied to pole
53	W Dixie Hwy and NE 124th Street	Tire Shop	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo, tied to pole
54	SR 7 and 130th Street	Super market	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo
55	Dixie Hwy and 14th Avenue	Bus Stop	Undesignated	N/A	N/A	N/A	N/A	None	1 Photo, tied to pole

North Miami Bicycle Parking Utilization Survey

Date: 17-Jul-08 **Weather: Clear** **Name: Ali Hanes, Eric Zahn**

Time	Site #	# of Bicycles Parked	Notes
8:45 AM	2	1	CHAINED TO POLE
9:30 AM	4	0	
9:35 AM	5	1	NO CHAIN AGAINST BUILDING
10:10 AM	6	0	
10:20 AM	7	0	
10:30 AM	8	3	AGAINST BUILDING
10:35 AM	9	1	CHAINED TO COLUMN
10:45 AM	10	1	CHAINED TO LIGHT POLE AGAINST BUILDING
10:55 AM	11	2	CHAINED TO PALM TREES
11:01 AM	12	3	CHAINED TO FENCE AND POLE
11:10 AM	13	0	
11:15 AM	14	0	
11:15 AM	15	1	LEANING AGAINST POLE
11:18 AM	16	1	AGAINST PALM TREE
11:50 AM	18	1	ON RACK
11:53 AM	19	1	ON RACK
11:58 AM	17	0	
1:07 PM	20	2	BEHIND BUILDING CHAINED TO RAILING
1:10 PM	21	1	CHAINED TO RACK
1:22 PM	22	2	PARKED SIDEWAYS
1:24 PM	23	1	CHAINED TO RACK UNDER CANOPY
1:45 PM	24	3	2 CHAINED TO BUS STOP SIGN, 1 WITH MAN AT BUS STOP
2:20 PM	25	0	

North Miami Bicycle Parking Utilization Survey

Date: 17-Jul-08 **Weather: Clear** **Name: Ali Hanes, Eric Zahn**

Time	Site #	# of Bicycles Parked	Notes
3:20 PM	26	0	
3:30 PM	27	0	
3:30 PM	28	2	ON RACK NEXT TO BUILDING
3:35 PM	29	1	ON RACK NEXT TO BUILDING
3:50 PM	30	14	TOTAL BIKES ON BOTH RACKS
4:15 PM	32	1	AGAINST FRONT OF BUILDING
4:25 PM	33	1	CHAINED TO TREE
4:30 PM	1	1	
4:40 PM	3	1	

North Miami Bicycle Parking Utilization Survey

Date: 24-Jul-08 **Weather: Clear** **Name: Naveen Modali, Eric Zahn**

Time	Site #	# of Bicycles Parked	Notes
8:45 AM	1	0	
9:10 AM	4	0	
9:11 AM	3	0	
9:12 AM	6	0	
9:36 AM	23	1	1 Photo
9:40 AM	34	1	1 Photo, tree
9:42 AM	35	1	1 Photo, Handicap sign
9:50 AM	36	1	1 Photo, Handrail
9:53 AM	37	1	1 Photo, chained to fence
10:01 AM	22	0	
10:06 AM	24	2	1 Photo, Chained to bus stop sign
10:29 AM	20	2	1 Photo
10:30 AM	38	1	1 Photo
10:32 AM	21	1	1 Photo
10:57 AM	39	1	1 Photo, tree
11:12 AM	40	1	1 Photo, handrail
11:20 AM	25	0	
11:45 AM	41	1	1 Photo
11:47 AM	42	0	1 Photo
12:54 PM	26	0	
1:00 PM	43	2	1 Photo
1:15 PM	27	0	
1:18 PM	28	1	

North Miami Bicycle Parking Utilization Survey

Date: 24-Jul-08 **Weather: Clear** **Name: Naveen Modali, Eric Zahn**

Time	Site #	# of Bicycles Parked	Notes
1:18 PM	29	2	1 Photo
1:22 PM	30	14	1 Photo
1:26 PM	31	0	
2:36 PM	13	1	
2:38 PM	14	0	
2:40 PM	44	1	
2:42 PM	45	1	1 Photo, tied to tree
2:54 PM	8	1	tied to gate
2:58 PM	46	1	tied to railing
2:59 PM	47	1	tied to railing
3:00 PM	48	1	1 Photo
3:02 PM	9	1	1 Photo
3:08 PM	49	1	1 Photo, handrail
3:10 PM	11	1	1 Photo
3:10 PM	50	1	1 Photo, tied to sign pole
3:17 PM	7	0	
3:27 PM	33	1	1 Photo
3:30 PM	3	0	
3:30 PM	6	1	1 Photo

North Miami Bicycle Parking Utilization Survey

Date: 8-Oct-08 **Weather: Clear** **Name: Naveen Modali, Stefano Viola**

Time	Site #	# of Bicycles Parked	Notes
9:00 AM	26	0	
9:10 AM	42	0	
9:40 AM	27	2	
9:40 AM	28	0	
9:43 AM	29	0	1 Photo
9:43 AM	30	15	1 Photo
9:45 AM	31	3	
9:50 AM	51	1	1 Photo, Chained to Handrail
10:00 AM	52	2	1 Photo, Chained to Handicap Parking Sign
10:10 AM	53	1	1 Photo, Chained to Handicap Parking Sign
10:15 AM	21	0	
10:17 AM	22	0	1 Photo
10:25 AM	23	2	
10:40 AM	1	0	
10:42 AM	6	1	1 Photo
10:42 AM	3	0	1 Photo
10:42 AM	4	0	1 Photo
10:50 AM	7	0	
10:57 AM	13	1	1 Photo
11:05 AM	54	1	1 Photo, Chained to Handrail
11:12 AM	14	0	
11:20 AM	17	1	
11:45 AM	18	0	1 Photo

North Miami Bicycle Parking Utilization Survey

Date: 8-Oct-08 **Weather: Clear** **Name: Naveen Modali, Stefano Viola**

Time	Site #	# of Bicycles Parked	Notes
11:47 AM	19	0	
11:52 AM	25	0	
11:57 AM	55	1	1 Photo, Chained to Bus Stop Sign
1:05 PM	26	0	
1:15 PM	42	0	
1:30 PM	27	3	
1:31 PM	28	0	
1:31 PM	29	0	
1:33 PM	30	14	
1:35 PM	31	3	
1:45 PM	21	0	
1:56 PM	22	0	
1:58 PM	23	2	
2:05 PM	1	0	
2:17 PM	6	1	
2:20 PM	3	0	
2:22 PM	4	0	
2:30 PM	7	0	
2:40 PM	13	0	
2:47 PM	14	0	
2:57 PM	17	1	
3:00 PM	18	0	
3:05 PM	19	0	

North Miami Bicycle Parking Utilization Survey

Date: 8-Oct-08 **Weather: Clear** **Name: Naveen Modali, Stefano Viola**

Time	Site #	# of Bicycles Parked	Notes
3:18 PM	25	0	

Appendix B

Photo Log

Bike rack at City Hall/Art Museum NE 125th St

Bike chained to a pole on NE 125th St between NE 9th and 10th Ave

Bike Rack at Bank NE 6th Ave and NE 126th St

Bike Rack at Walgreens NE 6th Ave and NE 126th St

Bike leaning against McDonalds NE 6th Ave and NE 125th St

Scooter chained to bike rack at Publix NE 6th Ave and NE 129th St

Bike rack at swimming pool NW 11th Ave and 125th St

Bikes parked in front of a store at NW 17th Ave and NW 119th St

Bikes parked in front of store at NW 17th Ave and NW 119th St

Bike parked in front of shopping plaza at NW 10th Ave and NW 119th St

Bike chained to pole on SR 7 and NW 122nd St

Bikes chained to trees at Checkers on SR 7 and NW 135th St

Bike rack in front of Burger King on SR 7 and NW 127th St

Bike rack in front of Bank on SR 7 and NW 126th St

Bike parked in front of store on SR 7 and NW 122nd St

Bikes parked in front of market on SR 7 and NW 137th St

Bikes parked in front of market on SR 7 and NW 137th St

Bike chained to tree in front of McDonalds/Gas station on SR 7 and NW 119th St

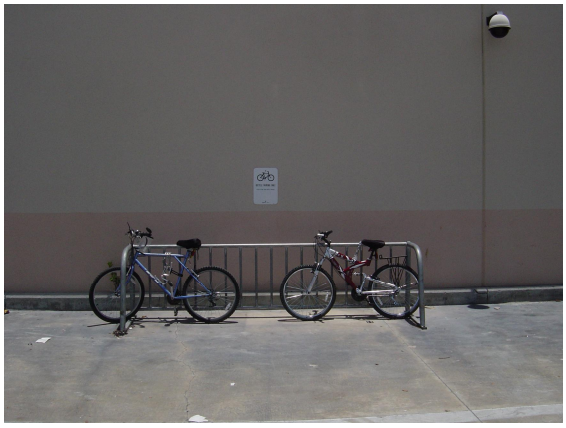
Bike racks for North Miami High School at NE 7th Ave and NE 135th St

Bike racks for North Miami High School at NE 7th Ave and NE 135th St

Bike chained to bike rack at North Miami High School at NE 8th Ave and NE 135th St

Bikes parked behind restaurant at Biscayne Blvd and Ixora Lane

Bike chained to bike rack in front of Publix at Biscayne Blvd and NE 127th St



Bikes chained to bike rack in front of Home Depot at Biscayne Blvd and NE 121st St

Bike chained to bike rack in front of Burger King at Biscayne Blvd and NE 123rd St

Bikes chained to pole at Bus Stop at Biscayne Blvd and NE 135th St

Bike rack at School at NE 11th Ct and NE 147th St

Bikes at Oleta State Park

Bikes at Oleta State Park

Bike rack in front of welcome center at Oleta River Park

Bike rack at FIU Campus (Academic II building)

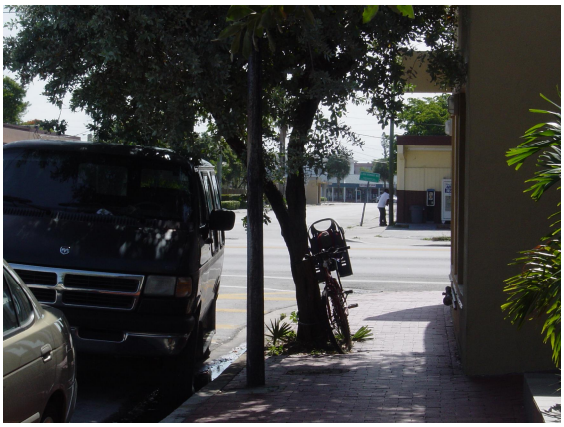
Bike rack at FIU Campus (Academic I building)

Bike rack at FIU Campus (Library)

Bike rack at FIU Campus (Housing)

Bike rack at FIU Campus (Housing)

Bike in front of Taco Bell at NE 6th Ave and NE 125th St

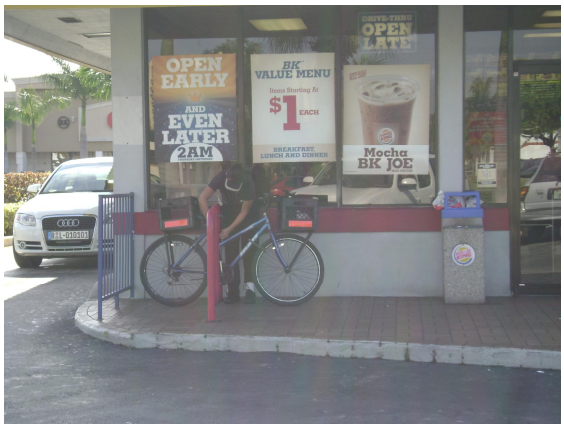


Bike chained to tree at NE 6th Ave and NE 124th St

Scooter chained to bike rack at NE 8th Ave and NE 125th St

Bike chained to bike rack at NE 6th Ave and NE 126th St

Bike chained to a tree at Biscayne Blvd and NE 121st St

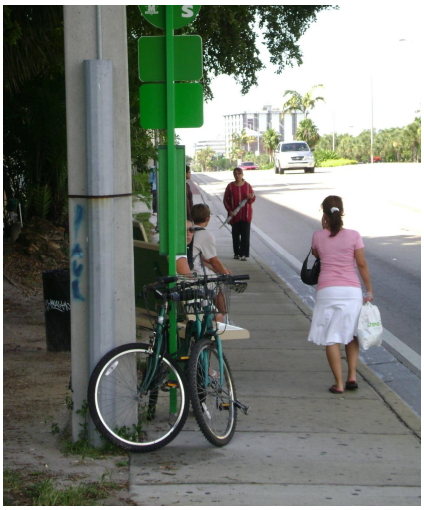


Bike rack at Burger King on Biscayne Blvd and NE 123rd St

Bike chained to a pole at Ross near Biscayne Blvd and NE 123rd St

Bike Chained to a hand rail at a shopping center on NE 123rd St

Bike Chained to a fence at a shopping center on NE 123rd St



Bike chained to a pole at a Bus-stop at Biscayne Blvd and NE 135th St

Bikes chained to hand-rail at a red-lobster at Biscayne Blvd and Ixora Lane

Bike chained to a pole in the parking lot of Publix shopping center at Biscayne Blvd and NE 127st St

Bike parked at Bike-rack located at the Publix at Biscayne Blvd and NE 127th St

Bike chained to a tree at a coin laundry at Dixie Hwy and NE 135th St

Bike chained to hand-rail at Burger-King at Dixie Hwy and NE 136th St

Bike chained to a hand-rail at Justice Center located at Biscayne Blvd and NE 150th St

Unutilized bike-rack at Justice Center located at Biscayne Blvd and NE 150th St

Bikes parked at the benches in Oleta State Park

Bikes parked at the bike-racks located at FIU Library

Bikes parked at the bike-racks located at FIU Academic Building

Bikes parked at the bike-racks located at FIU campus housing

Bikes parked at the bike-racks located at Burger-king located at SR 7 127th St

Bike chained to pay-phone near gas station at SR 7 and NW 123rd St

Bike chained to tree near Popeye's at SR 7 and NW 122nd St

Bike chained to fence at a shop on SR 7 and NW 122nd St

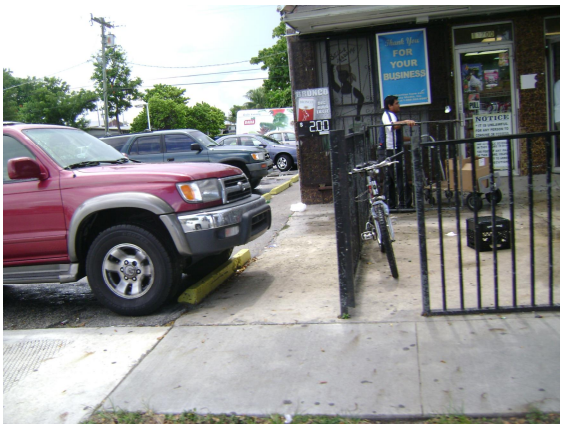
Bike chained to fence in front of a shop on SR 7

Bike in front of a mechanic shop on SR 7

Bike chained to hand-rail of a supermarket on SR 7

Bike chained to hand rail at a shopping center on SR 7

Bike chained to tree near Checkers at SR 7 and NW 135th St



Bike in front of a mechanic shop on SR 7

Bike chained to pole at SR 7 and NW 135th St

Bike chained to tree near on NE 6th Ave

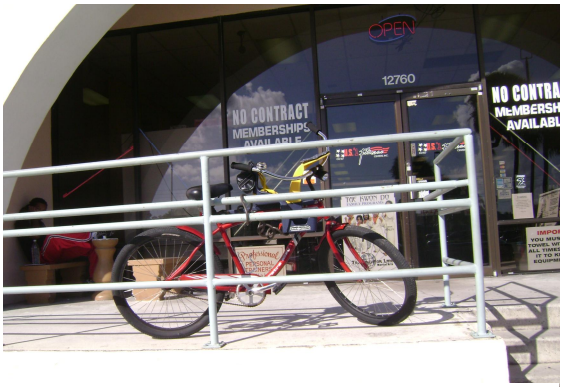
Bike parked in a bike-rack at Publix located at NE 6th Ave and NW 129th St

Bikes parked at the bike-racks located at FIU Academic Building

Bikes chained to pole at W.J. Bryan elementary school at NE 12th Ave and 123rd St

Bikes parked at the bike-racks located at FIU campus housing

Bikes chained to hand-rail at a red-lobster at Biscayne Blvd and Ixora Ln



Bike chained to hand-rail at US-1 Fitness at Biscayne Blvd and NE 127th Street

Bike Rack at Burger King on Biscayne Blvd and NE 123rd St

Bikes chained to a tree at a Taco bell on NE 6th Ave

Bike chained to a pole at a Tire shop at W Dixie hwy and NE 124th St

Bike chained to a pole at Colonial Shop Center at 125th St and NE 4th Ct

Bike chained to a pole at Colonial Shop Center at 125th St and NE 4th Ct

Bike chained to a pole at NE 7th Ave and NE 122nd St

Bike parked in front of a shop at NE 7th Ave and NE 120th St

Bike chained to a pole at a gas station at NW 10th Ave and 119th St

Bike chained to a tree at a coin laundry at Dixie Hwy and NE 135th St

Bike chained to hand-rail at Burger-King at Dixie Hwy and NE 136th St

Bike chained to a pole at a bus-stop at Dixie Hwy and NE 14th Ave

Appendix C

City of Berkeley Bike Rack Specifications and Installation Standards

January, 2006
City of Berkeley Bike Rack Specifications and Installation Standards

Rack Style

- Racks installed on City ROW shall be inverted U style, constructed of at least 2 3/8" O.D. Schedule 40 round pipe or 2"x2"x.188" wall square pipe, galvanized or stainless steel.
- Racks shall be 32" to 36" tall by 24" to 30" wide.
- Flanges for surface mounted racks must be 3/8" thick and drilled with 9/16" holes to admit ½" fasteners.
- For installation of multiple racks side-by-side, Rail Mounted Inverted U racks can be used.
- The capacity of each inverted U rack is two bicycles, locked parallel to the rack.

Mounting

- Racks installed on concrete should be surface flange mount style.
- Fasteners must be 1/2" x 3" mushroom head stainless steel Powers spike, or equivalent (manufacturer information attached)

Placement, Orientation and Clearance in the public right-of-way:

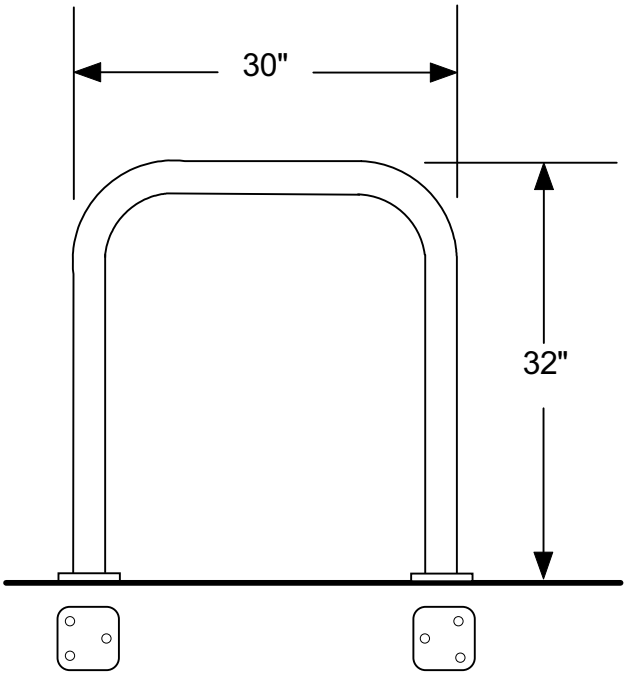
- Inverted U racks are designed to accommodate bikes parked parallel to the rack, resting against both upright members.
- Generally, racks should be installed parallel to the curb so as to minimize needlessly taking up sidewalk space.
- Where there is sufficient sidewalk width or racks are placed in the roadway, racks can be placed perpendicular to the curb.
- Multiple individual racks installed parallel to the curb, end to end, must be separated by a minimum of 48". 60" is preferred.
- Multiple racks placed perpendicular to the curb, side-by-side, must be separated by a minimum of 30". 36" is preferred.
- Racks must be oriented such that they do not interfere with pedestrian path of travel on the sidewalk, yet are not so close to the curb that the rack can be inadvertently hit by the overhang of a car as it parks.
- Check for any sidewalk utility boxes (such as water or sewer) that need to be accessed.
- Make sure that the racks posts are not in conflict with rain water leaders or drain lines under the sidewalk
- Do not locate racks where they interfere with exiting vehicles parked at the curb
- There should be a minimum of 5½' clear for pedestrian right-of-way outside the footprint; 7' in areas of heavy pedestrian traffic.
- Rack should be located a minimum of:
  - **18" from:** the curb
  - **30" from:** light pole
  - **3' from:** Newspaper Racks, US Mailbox, Light Pole, Sign Pole, Bus Shelter, Driveway, Surface Hardware (PG&E, Cable grates, etc.), Street Furniture, Standpipes, Bus Benches, Trash Cans, Other sidewalk obstructions
  - **4' from:** AC Transit Red Zone, Loading Zone, Blue Zone (disabled parking), Curb/Curb ramps, Crosswalk, BART entrance
- **5' from:** Fire Hydrant

Manager of Engineering

1/23/06
Date

City of Berkeley Bicycle Rack Specifications
Single Inverted U

January 2006



Surface Mounted Single Inverted U

Height: 32”

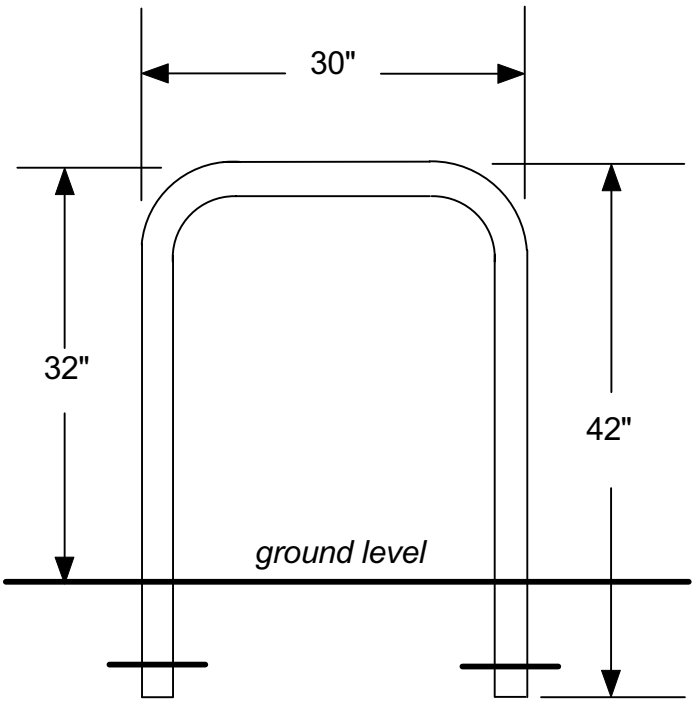
Width: 30”

Flanges: 5” x 6” x 3/8”

Mounting Holes: (6) 9/16” dia.

Square Tube: 2” x 2” x .188” wall

Finish: Hot-dipped Galvanized



Sub-Surface Mounted Single Inverted U

Height: 42”

Width: 30”

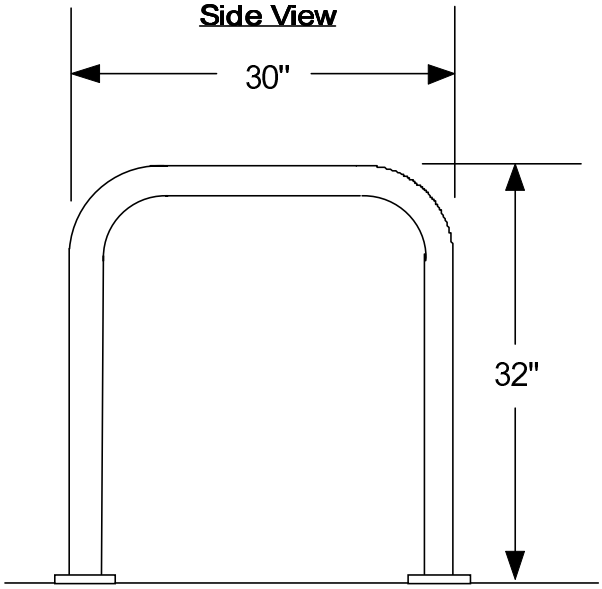
Square Tube: 2” x 2” x .188” wall

Finish: Hot-dipped Galvanized

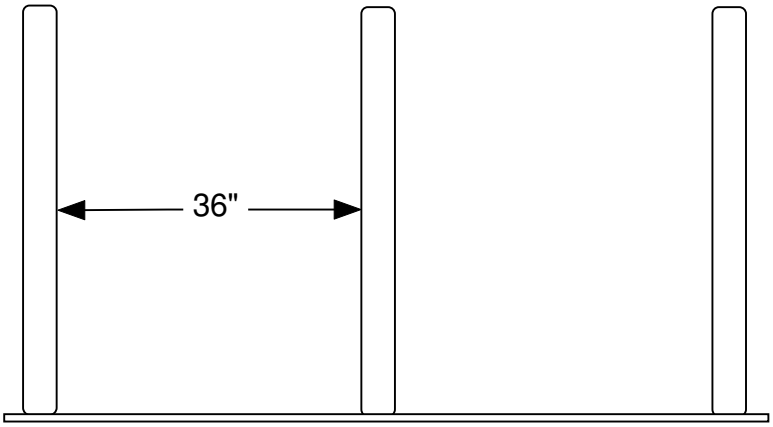
City of Berkeley Bicycle Rack Specifications
Rail Mounted Inverted U

January 2006

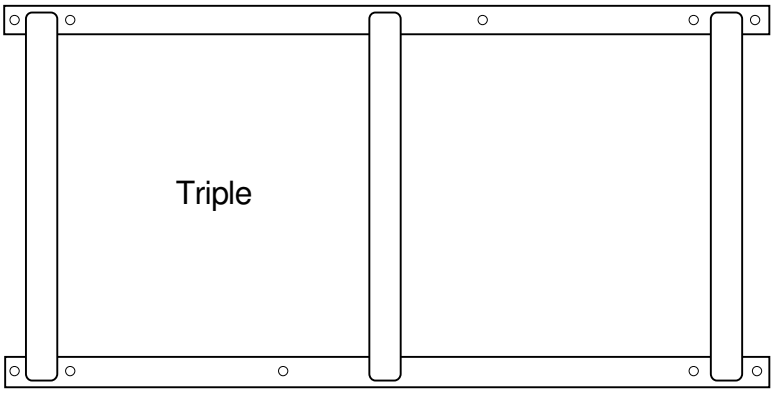
Side View

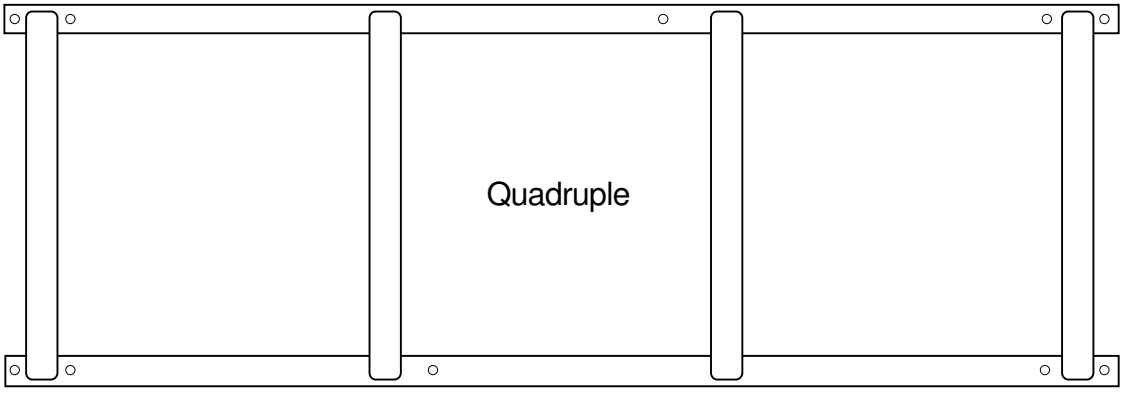


Front View

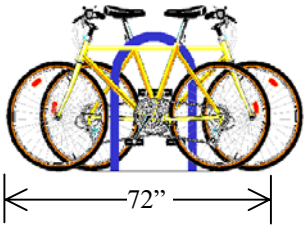


Top Views

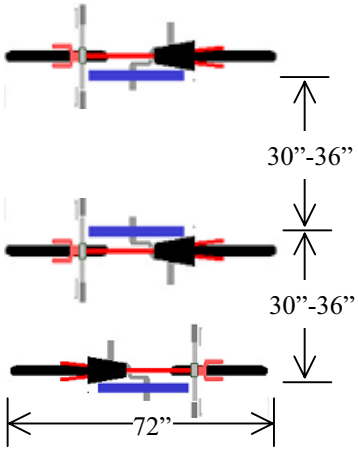




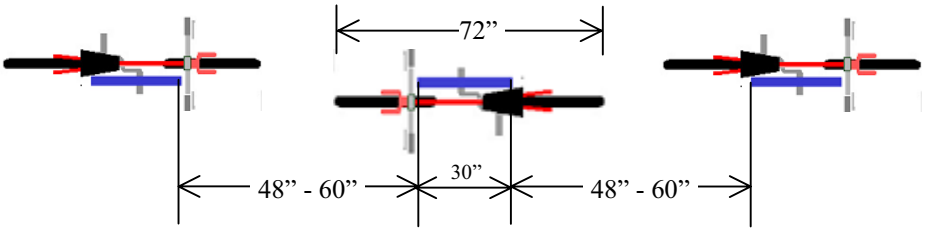
City of Berkeley Bike Rack Specifications and Installation Standards



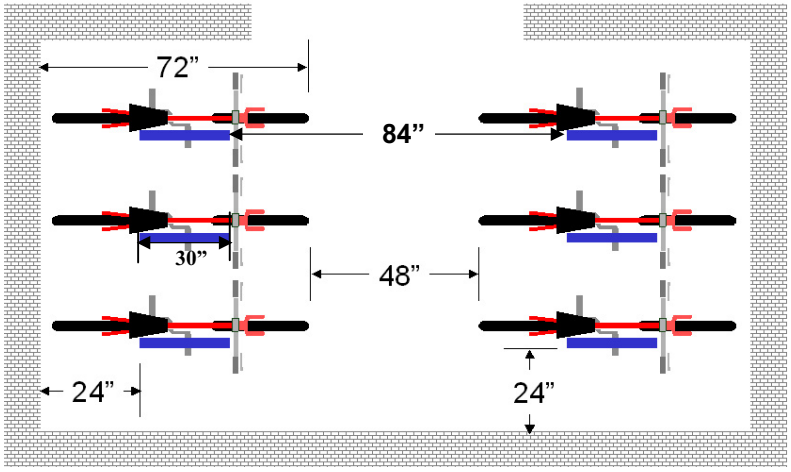
Rack Capacity is 2 bicycles.
Bikes are parked parallel to rack.
Typical bike is 72” in length.



36” spacing between side-by-side racks is preferred, minimum 30”



End-to-end racks shall be placed 48” to 60” apart.



Minimum 24” of clearance from rack to wall or fence. 84” aisles between 30” racks in enclosures, to leave 48” between bikes.