



## Bikeways Network and Facilities

Findings from the bicycle survey showed a high bicycle use and demand for on and off road bikeway facilities. Currently, the City has 185 miles of bike lanes, 40 miles of signed routes to connect the network of bike lanes and trails and over 20 miles of completed off-street trails, including: Bill Frederick Park Path, Lake Baldwin Path, Lake Fran Path, Lake Underhill Path, Cady Way Trail, Shingle Creek Trail, Orlando Urban Trail, and Southeast Trails.

Existing:	County	City only
Bike lanes:	192.80	184.58
Signed Route:	50.9	49.79
Off street:	61.8	20.55

Proposed:	County	City only
Bike Lanes:	510.8	325.0
Signed route:	74.7	59.5
Off street:	219.3	70.1

Existing bikeways are forming a connected network that is convenient and easy to use for commuter, fitness and recreation bicycle riding.

### **Bicycle Facility Elements**

The basic components of bicycle facilities are: Bicycle Parking; On-Street Bikeways; Off-Street Bikeways; Other bikeway structures.

#### Bicycle Parking

Bicycling starts and ends at bicycle parking areas. Providing bicycle parking encourages people to use their bicycles as transportation. Without adequate parking facilities, bicyclists are forced to chain their bikes to poles, trees, or similar random and stationary available objects. This random bicycle parking often creates barriers for pedestrians and increases the potential for accidents. Secure bicycle parking should be provided at where demand is locations such as transit stations, shopping centers, schools, restaurants, retail, office, recreational areas, and municipal facilities.





## Bikeways Network and Facilities

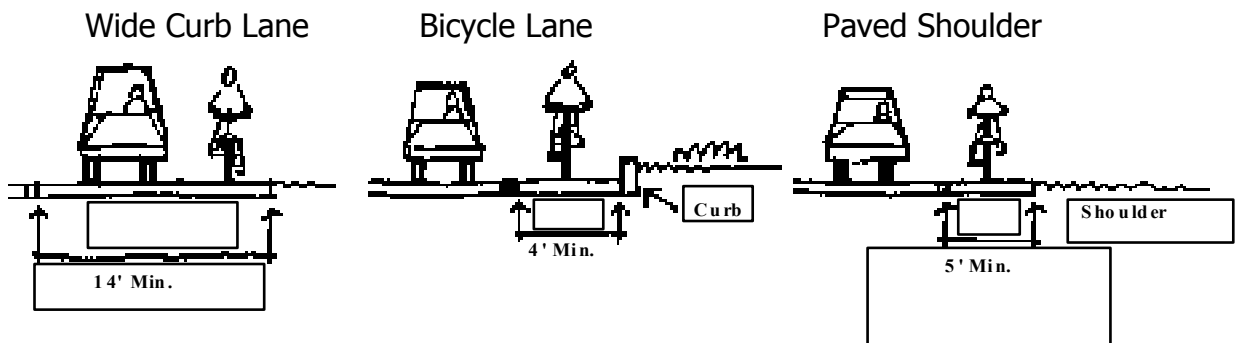
There are a variety of bike racks and lockers available on the market. The appropriate type of bicycle parking facility is related to parking duration. Racks are recommended for short term parking (less than two hours) while lockers are better for long term parking.

Racks are most useful when located close to the entrances of employment centers or in proximity to commercial areas. Bicycle racks should be sheltered from the elements, located free of automobile traffic and not blocking pedestrian circulation. Bike lockers and bike parking storage rooms provide greater security for long term storage. (Appendix E)

### On-Street Bikeways

The design guidelines for on-street bikeways are consistent with the Bicycle Facilities Planning & Design Manual of the Florida Department of Transportation (FDOT).

On-Street facilities include wide curb lanes, striped bike lanes, signed routes, and paved shoulders. These are directional, one-way facilities used by bicyclists travelling in the same direction as adjacent traffic.



### Wide Curb Lanes

Wider curb lanes are safer for bicyclists and improve traffic flow on routes used heavily by bicyclists. The extra space allows for:

- Motorists passing bicycles without changing lanes; and
- Motorists turning right into driveways and narrow streets without encroachment into the adjacent lane.





## **Bikeways Network and Facilities**

The minimum width for wide curb lanes is fourteen (14) feet. Wide curb lanes improve lateral visibility for bicyclists, resulting in a safer ride.

### **Bicycle Lanes and Signed Routes**

Bicycle lanes are a section of the roadway reserved exclusively for bicycle use. They allow bicyclists to ride independently from motorists and pedestrians, accommodate recreational and commuting bicycle rides, and motorists can turn right into driveways and narrow streets without encroachment into the adjacent lane.

Bike lanes are popular and successful in many communities, such as Denver, Colorado; Minneapolis, Minnesota; and Gainesville, Florida. One-way bicycle lanes should be a minimum of four (4) feet wide or (5) five feet next to on-street parking, as recommended by FDOT. Signed routes connect bike lanes and trails to one another when there is limited space or right-of-way.

Bike lanes are striped with a solid line and marked as such with a bicycle-shaped pavement symbol and directional arrow. Signed routes are marked with a bicycle pavement symbol and chevron also called a "sharrow". (see example below). These markings should be placed along the designated bicycle lane or route at least every one-quarter (1/4) mile within the City.



### **Paved Shoulders**

Paved shoulders are common in rural areas; however, they also exist within the City of Orlando. Paved shoulders are designed primarily to accommodate disabled vehicles but can be utilized by bicyclists.





## **Bikeways Network and Facilities**

### Off-Street Multi-Use Trail/Bikeway Facilities

Multi-Use Trails are off-street bikeway facilities that are also linear parks. They usually include amenities such as restroom areas, benches and exercise facilities for both bicyclists and pedestrians. Bike trails are usually designed to follow rivers, canals, utility rights-of-way, and railroad rights-of-way. In the City of Orlando, trails are designed to connect users (residents and visitors) to activities, employment, or recreation opportunities.

Off-street facilities reduce vehicular conflicts, accommodate recreational and commuting bicycle rides and allow young and/or unskilled bicyclists to safely ride on this facility. The down side to trails is bicyclist/pedestrian conflict due to their different moving speeds and bicyclists/vehicle conflict at intersections. Specific design standards for multi-use trails are contained in the Bicycles Facilities Planning and Design Manual from FDOT.

### Other Bikeway Structures

Occasionally, it is difficult to provide connectivity among bicycle routes because of grades, availability of land, or safety concerns. Two basic types of structures are available to overcome these limitations: Underpasses and overpasses.

Underpasses are probably the most cost effective method of separating bicycles and pedestrians from the motorists. Underpasses can be constructed of materials like steel or concrete with adequate lighting and security measures important for good design. Overpasses are used in places where construction of an underpass is not feasible such as a bridge over a 6-lane road but are usually more costly due to right of way acquisition costs.

### **Signage**

Application of traffic control devices, as described in the Manual on Uniform Traffic Control Devices (MUTCD), will tend to encourage proper bicyclist behavior. Bicycle signs are normally placed on the right hand side of the bicycle facility. They should be placed within the peripheral vision of the bicyclist, but offset sufficiently to the right (lateral clearance) to prevent a physical obstruction or hazard to bicyclists or pedestrians. In urban areas, directional bicycle route signs should be placed to supplement pavement markings.





## **Bikeways Network and Facilities**

### **Pavement Markings for Bicycle Facilities**

Pavement markings provide direct communication with the user and are particularly effective for the bicyclist and motorist as their placement on the pavement is in their normal peripheral vision area. Proper public education and enforcement is a critical part of traffic control on bicycle facilities.

### **Proposed Bikeway Facilities**

The following describes the proposed bikeway facilities, costs, and funding alternatives to accomplish the plan's goals, objectives and policies. The proposed bikeway facilities are consistent with the design guidelines shown in the previous section.

The Bicycle Plan Steering Committee and City staff analyzed a variety of bicycle related issues throughout the plan development. These issues were used to draw conceptual bikeway connections to provide continuity and linkage with each other. The following criterion was used to develop the proposed bikeway network:

- a) Major thoroughfares as defined in the City's Land Development Code (LDC) with sufficient right-of-way should be re-striped to include bicycle lanes in both directions;
- b) Road projects within the City should include bicycle lanes or wide curb lanes;
- c) Residential local streets with low traffic volume which connect other bicycle lanes and trails should be signed as bicycle routes;
- d) Transmission line easements, creeks, railroad line/tracks and areas with scenic values should be evaluated and, if possible, propose new bicycle trails facilities in those areas
- e) City and County parks with available recreational facilities should be part of the bikeways network.





## Bikeways Network and Facilities

The following bikeway facilities have been identified:

### Multi-Use Trails

Cady Way Extension West

Metroplan Funding	Design and Construction	\$250,000
-------------------	-------------------------	-----------

Shingle Creek

Conroy Road connection

Gas Tax Funding	Design and Construction	\$125,000
-----------------	-------------------------	-----------

Oakridge Rd to Sand Lake Rd

OGT/FDEP Funding	Land Acquisition	\$4 Million
------------------	------------------	-------------

Metroplan Funding	Design and Construction	\$3 Million
-------------------	-------------------------	-------------

Mission Rd	Built as part of a New Road Project	
------------	-------------------------------------	--

Orlando Urban Trail

Dinky Line Spur

Metroplan Funding	Land Acquisition	\$2 Million
-------------------	------------------	-------------

Metroplan Funding	Design and Construction	\$900,000
-------------------	-------------------------	-----------

Southeast Network

Metroplan Funding	Design and Construction	\$3 Million
-------------------	-------------------------	-------------

### Bicycle Lanes through Road Resurfacing Projects

Bumby Avenue	City Project	1 mile
--------------	--------------	--------

Mills Avenue/HWY 17-92	FDOT 3R Project	9 miles
------------------------	-----------------	---------

Princeton Street	FDOT 3R Project	1/2 mile
------------------	-----------------	----------

### Bicycle Parking

To be implemented through the Main Street Program as there is limited public right of way. The City will provide racks to the individual Main Street program manager for implementation. The Rack Type approved is an upside down "U" @ \$90 per rack (2008 DERO Bikes rack cost).

Of the \$25,000 per year Gas Tax assigned to bicycling in the City, in FY 2008/2009 \$13,500 will be spent to purchase racks for the following locations:





## Bikeways Network and Facilities

Commercial Corridors identified by the Bike Advisory Committee:

Edgewater Drive Core	25 racks
Ivanhoe Village Core	20 racks
Corrine Drive at Winter Park Avenue	15 racks
Michigan and Orange Avenue	25 racks
Mills/Fifty	25 racks
Virginia Drive Core	15 racks
Washington Shores Core	25 racks

Total	150 racks
-------	-----------

### **Bicycle Shared Arrow pavement markings for signed routes**

A 2004 study by the San Francisco department of parking and traffic showed sharrows do provoke drivers to leave about two feet more between their car and a cyclist when passing. (Seattle Post 11 August 2007). Oregon dropped signage as a means to communicate bikeways and switched exclusively to pavement markings in 1993.

According to Michael Ronkin the former ODOT Bicycle Pedestrian Traffic Engineer, Bike lane signs are “redundant and don’t convey any useful information not already conveyed by the bike lane stencils. They’re also very hard to place in locations where they’re visible to drivers and make sense.”

### **Maintenance Issues**

Maintenance requirements for the recommended bicycle plan facilities will vary according to the bikeway type, that is, on-street or off-street facilities. Maintenance of on-street facilities is addressed through the City’s street sweeping program. City streets are swept every 10-14 days. On-street bikeway facilities do not require maintenance expenditures in addition to the current street cleaning program.

Maintenance of off-street facilities requires capital and operational expenses and is typically handled through the Engineering Division, resurfacing every 10 years.





## **Bikeways Network and Facilities**

### **Implementation Funding Options for Bicycle Network**

The proposed method to implement the Bicycle Plan is a comprehensive approach. One of the key issues regarding the bicycle plan phasing is coordinating the proposed bikeway projects with other road, sewer, street resurfacing, sidewalks, parks, and storm water improvements. The City implements its capital facilities objectives through its Capital Improvement Program (CIP). The CIP contains information regarding timing and extent of capital facilities improvements.

The City's Transportation Planning, Transportation Engineering, Streets and Drainage, and Engineering Divisions will continue to coordinate development of CIP transportation elements to optimize investments in these various projects.

#### Capital Improvement Program Fund - CIP

This fund represents a specified portion of property tax revenue set aside each year for capital improvements. The Capital Improvement Program Fund is a competitive funding source since many different departments within the City compete each year for capital improvement program dollars to fund capital projects. For purposes of the Capital Improvements Element, recreation and open space capital projects will be the primary beneficiary of this fund.

The proposed Bicycle Plan will provide opportunities for city residents to use bicycles as an alternative transportation mode. Further, the Bicycle Plan implementation will enhance the area's recreational opportunities providing recreation and open space facilities on a citywide basis.

#### Federal Aid - FA

An example of federal funding includes funds provided through SAFETEA-LU and distributed through the Metropolitan Planning Organizations (MPOs), Metroplan Orlando, to projects that enhance transportation systems.

#### Six-Cent Local Option Gas Tax Funds - GAS

The six cent local option gas tax generates millions in revenue annually within Orange County. Six cents from every gallon of motor fuel sold in Orange County goes to the County and to its municipalities. By interlocal agreement, the City of Orlando's portion is thirty percent of the total net revenue, equivalent to approximately \$8 million each Fiscal Year. The revenue received can only be used for transportation related expenditures.





## **Bikeways Network and Facilities**

Proceeds must be used toward the cost of establishing, operating, and maintaining the transportation system, including the cost of acquisition, construction, reconstruction, and road maintenance. Approximately half of the revenue received is used to support LYNX. \$25,000 is earmarked annually from Gas Tax Revenue exclusively for bikeway improvements.

### Contributions through development review

There are opportunities for contributions to the City's Bikeway System through development review. The State of Florida requires that Developments of Regional Impact (DRIs) provide for other modes of transportation such as sidewalks, bus shelters and bicycle facilities as a development condition.

The City Land Development Code allows for negotiations when there is a Planned Development planned, Masterplan, or increase in density/intensity and resulting from a rezoning or land use change. Contributions are negotiated with the developer to construct or upgrade bikeways as a measure to mitigate a development's impacts.

### Grants

Trail projects can be funded through various grant programs including the Office of Greenways and Trails/Florida Department of Environmental Protection Land Acquisition program, Florida Communities Trust, Bikes Belong, Florida Recreation Development Assistance Program and several others.

