

MIAMI-DADE COUNTY

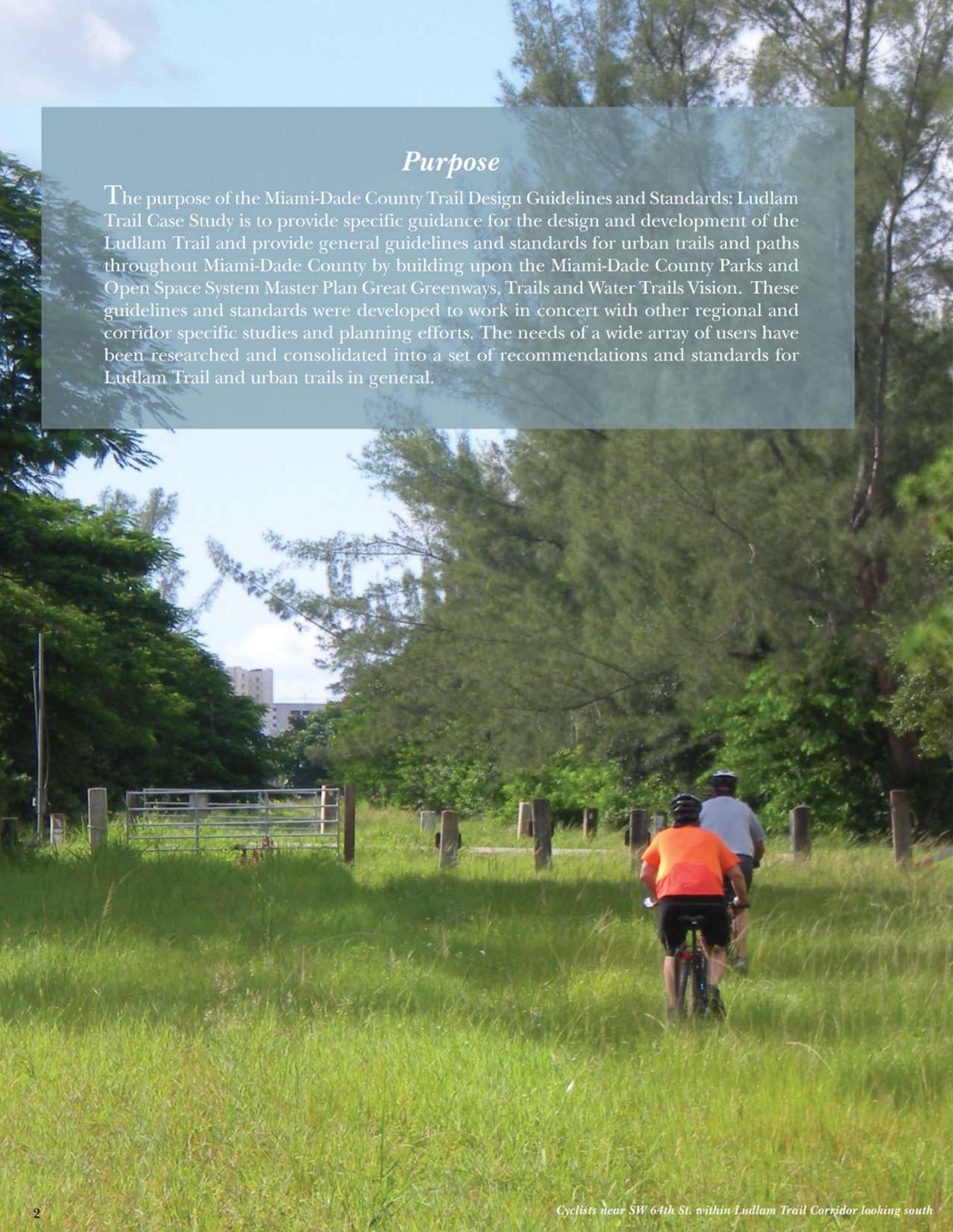
Trail Design Guidelines and Standards



*Ludlam Trail Case Study
Executive Summary*

Purpose

The purpose of the Miami-Dade County Trail Design Guidelines and Standards: Ludlam Trail Case Study is to provide specific guidance for the design and development of the Ludlam Trail and provide general guidelines and standards for urban trails and paths throughout Miami-Dade County by building upon the Miami-Dade County Parks and Open Space System Master Plan Great Greenways, Trails and Water Trails Vision. These guidelines and standards were developed to work in concert with other regional and corridor specific studies and planning efforts. The needs of a wide array of users have been researched and consolidated into a set of recommendations and standards for Ludlam Trail and urban trails in general.



GUIDELINES METHODOLOGY

Trail guidelines and standards help determine the specific needs of users and a community at large. Although no standard methodology exists for trail guidelines and standards, using a transparent, methodical approach tends to yield a thorough set of guidelines. The techniques used for the Miami-Dade County Trail Design Guidelines and Standards study included the following:



BACKGROUND INFORMATION

The Ludlam Trail corridor, currently owned by Flagler Development Group, extends from Perimeter Road (NW 12th St.) near the Miami International Airport area to the Dadeland North Metrorail Station (SW 85th St.). This corridor has been the subject of several transportation studies which identify the corridor as an opportunity for a regionally significant trail and greenway.



West Flagler Street and the Ludlam Trail corridor looking north

RESEARCH OF OFFICIAL DOCUMENTS

In an effort to build upon the work of previous planning studies and to ensure the coordination with other official documents, multiple sources of information were researched. The documents reviewed can be classified into five broad categories; governing codes and ordinances, guiding documents, regional transportation studies, corridor specific studies and design guidelines. The Kendall Corridor Transportation Alternatives Analysis noted the lack of potential ridership as the basis in not selecting the Ludlam corridor as a preferred route for bus or train transit.

ACQUISITION STRATEGIES

The AECOM and Rails-to-Trails Conservancy team evaluated several acquisition options and current land owner's needs to prepare a comprehensive approach to acquire the Ludlam Trail corridor. Options include quit claim deed, easements, lease and license. Consideration was given to the needs/ requirements of the seller to retain the right of egress along the entire length of corridor.



Ludlam Trail corridor view from SW 76th St. looking north

EXISTING CONDITIONS

The steering committee conducted a one day field review of the Ludlam Trail corridor to observe existing conditions and areas of concerns. Two land uses that could potentially create constraints were observed within the corridor at the time of the field review; active rail service and leases. The limited-use active freight rail service is confined to an area between NW 7th St. to SW 12th St., while active leases are throughout the corridor. Active leases include sub-surface uses such as fiber optic lines and surface leases such as vehicle parking lots and storage. In a few cases active billboard leases are maintained within the corridor limits. The corridor width is typically one-hundred (100) feet but due to leases is reduced to fifty (50) feet in some places, which is ample for a path.

User safety is of the highest importance while designing Ludlam Trail, however, corridor encroachment and conflicting land uses are examples of conditions that arise along the corridor. With the corridor's north to south layout, trail traffic will travel perpendicular to the flow of automobile traffic throughout south-central Miami-Dade County. This leads to a large number of roadway crossings which should be further evaluated individually.

Throughout the 6.2 mile length of the Ludlam Trail corridor there are four (4) direct school connections, three (3) park connections, regional transit, shopping facilities, and approximately a dozen neighborhood connections, leading to several opportunities to link the Ludlam Trail with surrounding areas and form a vital transportation alternative.

COMPARABLE TRAILS

Several comparable trails were evaluated which pertained to three areas of influence; national comparable trails; Florida comparable trails; and comparable trail facilities. Two national trails were studied: the Burke-Gilman Trail, located in Seattle, Washington and the Fred Marquis Pinellas Trail, located in Pinellas County, Florida. Both trails have received numerous awards and recognition for providing both transportation and recreational opportunities.

Two local or Florida based trails were also selected for further study and included the Seminole-Wekiva Trail in Seminole County and the West Orange Trail in Orange County. Both trails offered valuable research on safe roadway crossings and types of trail amenities. A comparable trail facility known as the McDonald's Cycle Center, offers a unique opportunity for transit and trail users to a bike-hub complete with bike lockers, a repair center, and restrooms. By reviewing these successful examples of shared-use paths and trail facilities, several best practices were identified for further research.



Park connection along the West Orange Trail

BEST PRACTICE PRINCIPLES

Intending to assist designers, engineers and decision makers on principles, performance measures and best practices, AECOM provided observational research on how people use trails based on successful elements of the comparable trails and trail facilities studied. Best practice principles explore thresholds and enhance criteria to help guide decision-makers in designing and placing a variety of trail elements and creating street crossings accessible and safe to a variety of potential trail users. Specific areas researched include; pedestrian needs; cyclists and wheeled devices needs; Americans with Disabilities Act/ Universal design; intersections and crossings; grade separated crossings; trail security issues; and gateways.

Spatial needs of pedestrians, cyclists, and the disabled vary. Therefore, the greatest needs should be planned with identifying features for all groups of users incorporated. An example of this thorough planning can be found in a trail's width. A typical person needs just over four (4) feet of trail

width to walk, while a disabled person may need over five (5) feet. In addition, people typically walk two abreast, increasing the needed trail width to six (6) feet. Cyclists have their own spatial needs, from four (4) feet for single-file travel to six (6) feet in each direction for passing room riding two abreast. These spatial needs were then considered along with clear-zones for vegetation and shy-zones for bridges and tunnels to develop a set of recommendations for urban trails in general throughout Miami-Dade County and specific to Ludlam Trail.

LESSONS LEARNED

Through the review and analysis of several comparable trails and facilities, 'lessons learned' were compiled and opportunities identified for the design of Ludlam Trail. These include important findings on trail widths, separation of facilities, trail surface materials, trail furnishings and amenities, and street crossings which are applicable throughout the County.



Divided trail facilities along the Fred E. Marquis Pinellas Trail

RECOMMENDATIONS AND STANDARDS

The AECOM team developed a set of recommendations for urban trails in general throughout Miami-Dade County and specific conditions of Ludlam Trail. A methodical approach which included the research and analysis of existing corridor conditions, national and local comparable trails and facilities, best practice principles, and lessons learned provides decision-makers with sound recommendations for urban trails in

general and specifically Ludlam Trail. Each recommendation is incorporated into the design guidelines and includes information on trail width, trail materials, trail lighting, access barriers, signage and wayfinding, corridor vegetation, trail amenities, street crossings, school and park connections, and trail marketing.



North Waterway Drive looking south

DESIGN GUIDELINES

Shared-use paths and trails contain many design elements which can help enhance a trail user's experience and the number of visitors. Eight study areas were identified along the Ludlam Trail corridor based on a number of opportunities and desire for representative areas which demonstrate unique, yet common issues designers will face while planning the trail.

Each study area was observed in detail, researched and analyzed for best practices principles, lessons learned and recommendations. A detailed plan, section and illustrative perspective were prepared for each study area to provide decision-makers, engineers and designers with information for design guidelines for urban trails in Miami-Dade County.

Study Areas selected include:

- Typical Above-Grade Crossing - (W. Flagler St.)
- Typical Local Street Crossing - (SW 16th St.)
- Typical Collector/Minor Arterial St. - (SW 24th St.)
- Typical Park Connection - (A.D. Barnes Park)
- Typical Arterial Road Crossing - (SW 40th St.)
- Typical School Connection - (S. Miami Senior H.S.)
- Typical Neighborhood Connection - (SW 76th St.)
- Typical Trail Junction - (Snapper Creek/C-2 Canal)

Additional trail facilities or areas of interest were identified for further study and included:

- Typical Pedestrian Mid-block Railroad Crossing - (SW 6th St.)
- Typical Trailhead - (A.D. Barnes Park)



SW 80th St. corridor view looking north

COMMITTEE REVIEW PROCESS

The committee review process included presentations to three Miami-Dade Metropolitan Planning Organization (MPO) committees. Each committee oversees an area of concern within the realm of transportation planning and includes special interests in bicycle and walking facilities. These three committees are:

- Transportation Aesthetics Review Committee (TARC)
- Bicycle Pedestrian Advisory Committee (BPAC)
- Transportation Planning Council (TPC)

COST ESTIMATE

The AECOM team prepared a budget level opinion of probable cost estimate intended to guide decision-makers. Three levels of estimates are provided; securing the corridor

(excluding acquisition costs); study area estimates, and complete trail build-out costs. Combined, these estimates total approximately \$54.6 million for the construction of the complete Ludlam Trail. For detailed information on costs please refer to the complete report

COMMUNITY OUTREACH PLAN

The AECOM and Rails-to-Trails Conservancy team has prepared a community outreach plan to build community support for the Ludlam Trail. Steps include identifying key stakeholders, issue identification, a public workshop, advisory board briefings, Commission Board briefings, letters of support from community leaders, a sample Resolution and sample newsletter article.



West Flagler Street Crossing, looking northeast



SW 16th Street Crossing, looking northwest



Coral Way (SW 24th St.) Crossing, looking north

A.D. Barnes Park Connection, looking northeast

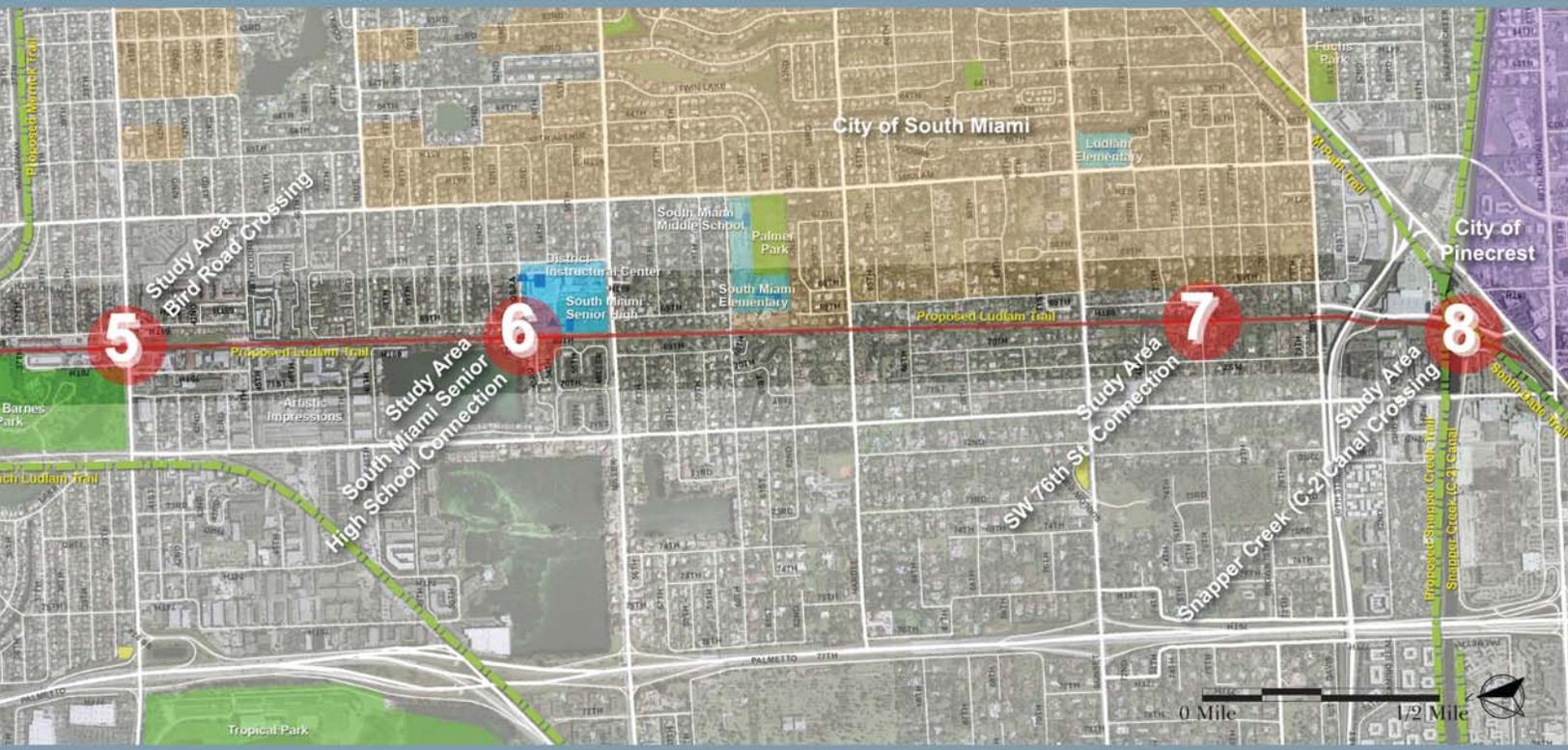




Bird Road (SW 40th St.) Crossing, looking northwest



South Miami Senior High School Connection, looking northeast



SW 76th Street Connection, looking east



Snapper Creek (C-2) Canal Crossing, looking southwest



1

Typical Above-Grade Crossing (West Flagler Street Crossing)

Flagler Street serves several transit routes into Downtown Miami from western unincorporated areas of Miami-Dade County. Building upon the existing transit and the Miami-Dade County Parks and Open Space System Master Plan's Great Streets Vision, the Ludlam Trail crossing at West Flagler Street has the opportunity to develop into a multi-modal transit hub.

Offering direct access to transit through conveniently located bus shelters and neighborhood connections, the rail-to-trail concept utilizes the full trail corridor for user amenities with a safe above-grade crossing. A bike-hub with restrooms, a vending area, bike repair shop, air for bikes and personal locker space for transit users, along with outdoor seating and gathering space forms the highlight.



West Flagler St. overpass looking northeast

2

Typical Local Street Crossing (SW 16th Street Crossing)

SW 16th Street serves as an example of a local street crossing for Ludlam Trail, a situation which takes place at eight locations along the corridor. Through the incorporation of pedestrian and cyclist friendly safety techniques and design, these crossing points will be highly efficient in moving users and vehicles through what could be hazardous situations while still providing neighborhood connections with sidewalks and bike access. The local street crossing concept utilizes a decision making area in which each trail user decides a safe time to cross the street at his or her own pace, shown to the right.



SW 16th St. crossing looking northwest

SW 16th St. section view looking north
N.T.S.



3 Typical Collector/Minor Arterial Street Crossing (Coral Way/SW 24th St. Crossing)

Starting in the Financial District and heading west through the City of Coral Gables, Coral Way, or SW 24th Street as it is known along the Ludlam Trail corridor, has deep historical roots in the Miami-Dade Community. At the Ludlam Trail crossing point, Coral Way no longer maintains the characteristic ficus and banyan trees in the median but still contains a four-lane divided roadway.

Building upon this historical aspect, the at-grade crossing concept utilizes the median as a refuge island with 'hot button' trail user activated actuators for traffic signals. Additional user safety elements include a divided decision making area for users to decide safe crossing times and an angled median crossing for maximum vehicle and user visibility.



4 Typical Park Connection (A.D. Barnes Park Connection)

A.D. Barnes Park is an environmentally significant area of Miami-Dade County. Building upon a recently completed update to the park's master plan, the Ludlam Trail corridor is the crossing point for neighborhood connectivity to the eastern side of the park with a rest area, shown to the right. Trail users will have access to park amenities which will serve as trail amenities such as a trailhead/visitor center and Eco-Hub for the park with parking, restrooms, information and indoor programmable space. Access to the Coral Gables (C-3) Canal via a canoe and kayak launch and fishing piers is achieved through the development of a perimeter path for the park accessible by Ludlam Trail.

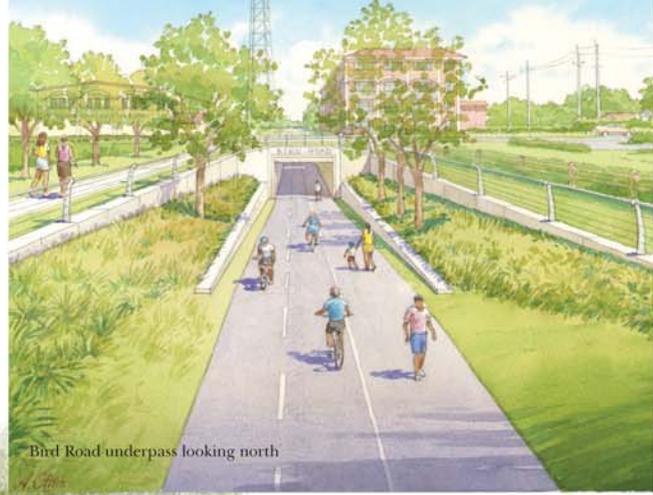
A.D. Barnes Park section view looking north
N.T.S.



5 Typical Arterial Road Crossing (Bird Road/SW 40th St. Crossing)

The Bird Road crossing is a unique opportunity to build upon the Miami-Dade County Parks and Open Space System Master Plan's Great Greenways, Trails and Water Trail Vision and Great Streets Vision through the development of a safe road crossing and protection of Bird Road's viewshed.

Located adjacent to A.D. Barnes Park, this underpass crossing highlights the use of below-grade crossing techniques to ensure a safe pedestrian crossing of a major arterial road along with neighborhood connectivity. With a 2008 Florida Department of Transportation Annual Average Daily Traffic (AADT) count of 68,000 vehicles and a forecasted count of 90,000+ vehicles by 2017, Bird Road is the busiest street Ludlam Trail crosses within the 6.2 mile corridor.



Bird Road underpass looking north



Bird Road section view looking north

N.T.S.

6 Typical School Connection (South Miami Senior High Connection)

There are five (5) schools located within a quarter mile of the Ludlam Trail corridor. Many of these students will depend upon the trail to provide a safe route to school each morning. Efforts have been taken to ensure a safe connection to each school. This includes the use of trail signage, connection sidewalks and separation of motorized traffic from trail users. The school connection concept to the right utilizes a bus lane connected to Miller Drive (SW 56th St.) to the south and connect to the school's existing parking and drop-off lot. The concept plan also shows a possible solution to trail design if easements were utilized. A fifty (50) foot trail easement would be planned for, allowing private ownership of the corridor.



South Miami Senior High plan view

South Miami Senior High School

N.T.S.



South Miami Senior High looking northeast

7 Typical Neighborhood Connection (SW 76th Street Connection)

Neighborhood connectivity is a critical element of the standards and guidelines for Ludlam Trail. With twelve (12) opportunities over the length of the corridor, Ludlam Trail will expand beyond the corridor and into neighborhoods to provide maximum user accessibility.

The typical neighborhood connection concept develops the trail into a true neighborhood meeting place with a rest area consisting of a group shelter, site furnishings, user safety elements and limited trail parking. Trail parking will utilize the existing street right-of-ways and in select instances, provide opportunities to patrol the corridor with clear visibility. Rest areas are recommended throughout the Ludlam Trail corridor every one (1) to two (2) miles.



SW 76th St. rest area looking east



SW 76th St. plan view N.T.S.

8 Typical Trail Junction (Snapper Creek/C-2 Canal Crossing)

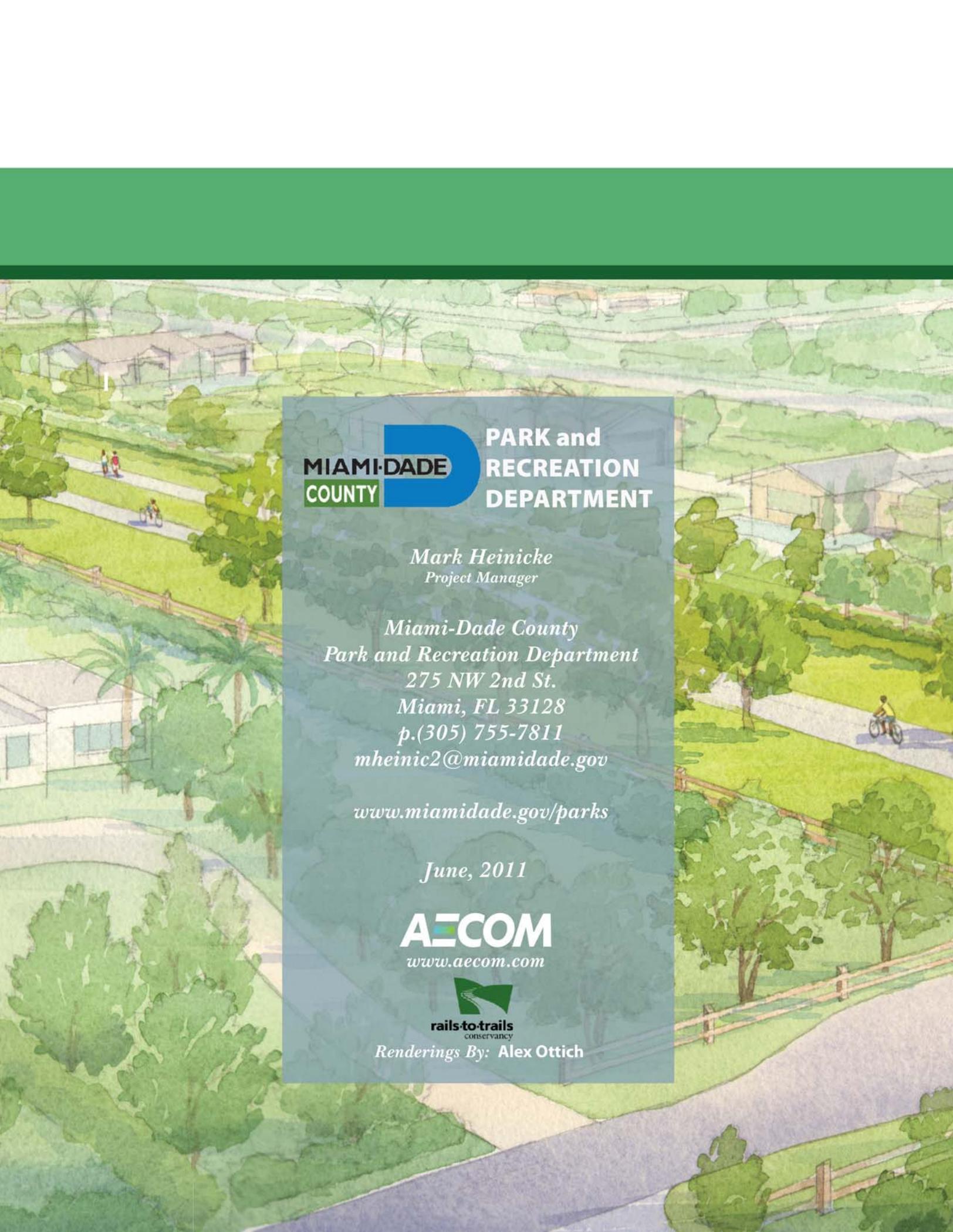
Ludlam Trail has the opportunity to connect with five or more trails and greenways to form an interconnected network. This typical trail junction concept highlights Ludlam Trail's connection and pairing with the future Snapper Creek Trail and M-Path Extension Trail. A rest area is located south of the trail junction, while an opportunity to offer shoreline fishing is provided with a flush platform adjacent to the Snapper Creek (C-2) Canal. Parking will utilize existing spaces at the Dadeland Mall and the Dadeland North Metrorail station parking garage. Trail user amenities should be added to the station's parking garage such as; bike storage and personal lockers, restrooms and showers, drinking fountains and a vending area.



Snapper Creek (C-2) Canal Crossing looking northwest from Dadeland North Metrorail Station



Snapper Creek (C-2) Canal Crossing plan view N.T.S.



**MIAMI-DADE
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