Bicycle

PROJECT FEASIBILITY EVALUATION

Work Order #GPC II-02

MIAMI-DADE MPO
Metropolitan Planning Organization

Kimley-Horn and Associates, Inc.

Bicycle PROJECT FEASIBILITY EVALUATION

Kimley-Horn and Associates, Inc.

November 19, 2003

Mr. David Henderson
Bicycle/Pedestrian Specialist
Miami-Dade County MPO
111 N.W. 1st Street, Suite 910
Miami, Florida 33128

Dear David:

We are pleased to submit a Bicycle Project Feasibility Evaluation for seven of the high-priority bicycle and pedestrian projects identified in the 2001 Miami-Dade County MPO Bicycle and Pedestrian Facilities Plans. This document examines the seven corridors and ranks them based on the feasibility for developing an initial demonstration project. Building on these efforts, a more detailed design evaluation was completed for Commodore Trail as the highest ranked corridor.

As you know, the results of the detailed evaluation for Commodore Trail are encouraging and warrant moving forward with public outreach and dialog with officials at the Miami-Dade County Public Works Department to consider the formulation of an official master plan for the corridor as the first step in the design process. Concurrent with these efforts, the Miami-Dade County MPO should work towards earmarking transportation funds to begin implementation efforts for Commodore Trail as a premier bicycle and pedestrian facility within Miami-Dade County.

We sincerely appreciate the opportunity to be part of this effort and look forward to riding the trail in the future.

Very truly yours,

KIMLEY-HORN AND ASSOCIATES, INC.

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Introduction

Bicycle PROJECT FEASIBILITY EVALUATION

Bicycling provides both transportation and recreational opportunities for the citizens, employees, and visitors of Miami-Dade County. Many people take advantage of favorable weather throughout much of the year to enjoy bicycle riding for leisure and mobility. Providing appropriate bicycle facilities can encourage short trips to be made on a bicycle instead of in an automobile and contributes to a healthy citizenry. Although some bicycle facilities exist within Miami-Dade County, improvements to the bicycle network can be made to increase the mobility and accessibility of bicycle routes.

The Miami-Dade County Metropolitan Planning Organization (MPO) Governing Board adopted the current Bicycle and Pedestrian Facilities Plans in December 2001. Within these documents, a list of seven priority bicycle projects were identified for improvements to possibly be implemented under an assumed minimum revenue plan.

The seven high-priority projects selected for evaluation include:

- Commodore Trail from Cocoaplum Circle to Brickell Avenue
- Bird Road from SW 67th Avenue to SW 37th Avenue
- NW 11th Street from NW 32nd Avenue to NW 22nd Avenue
- Palm Avenue from W 9th Street to Okeechobee Road
- Red Road from U.S. 1 to SW 8th Street
- North Federal Highway from NE 36th Street to NE 54th Street
- M-Path Trail from SW 67th Avenue to Downtown

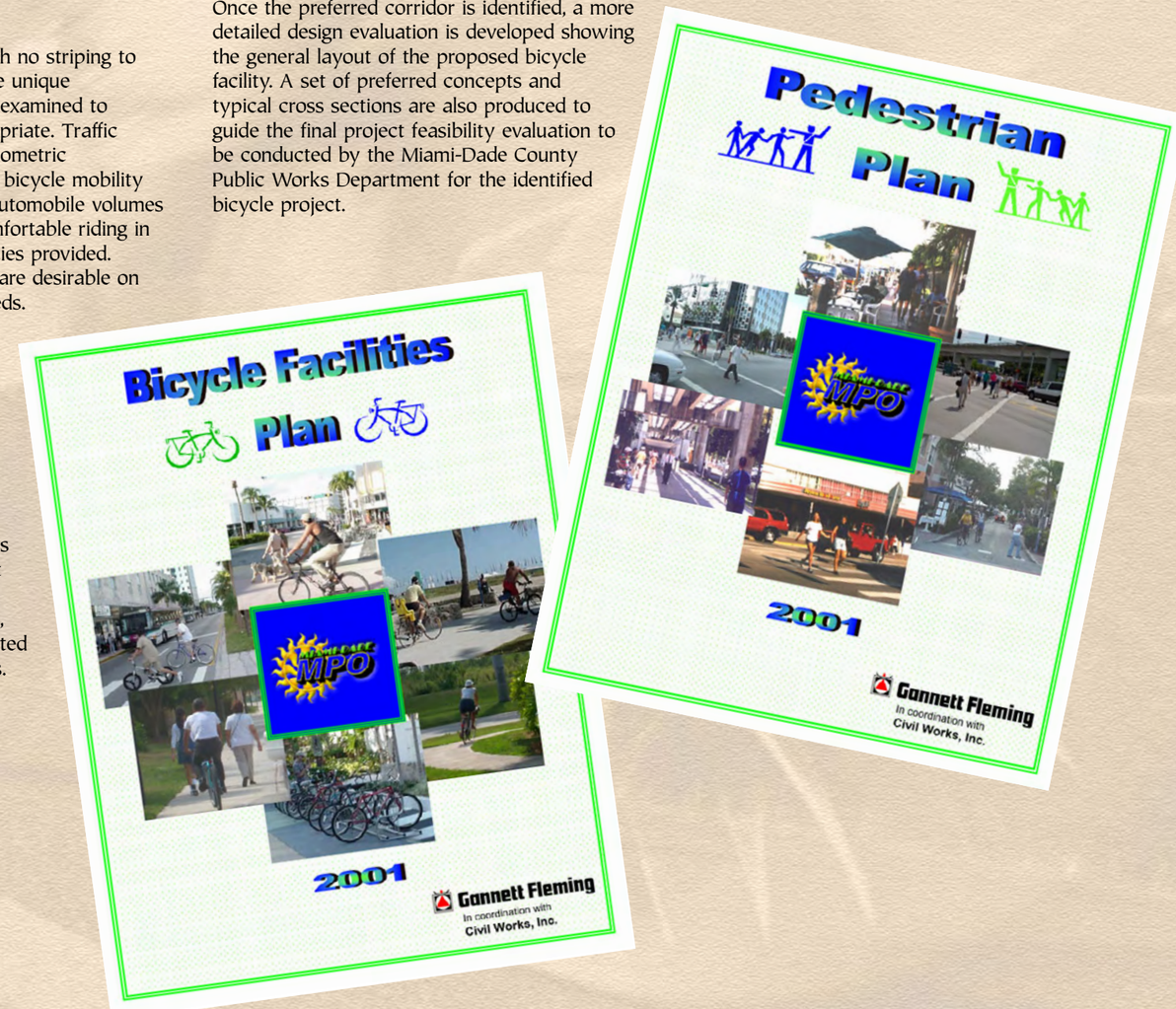
Building on these efforts, the MPO has committed to complete a more detailed evaluation of the seven high-priority projects to determine the feasibility for constructing the bicycle improvements identified for these corridors within the adopted facility plans. This study examines the seven corridors and ranks the corridors based on feasibility for developing an initial bicycle project. In addition, a more detailed design evaluation is produced for the highest-ranked corridor. The purpose is to provide analysis of the seven corridors and develop a feasible concept for implementing an appropriate bicycle facility along the corridor most suitable for bicycle improvements.

Bicycle facilities range from wide curb lanes with no striping to marked bike lanes to off-road bicycle paths. The unique circumstances of a particular roadway must be examined to determine the bicycle facility that is most appropriate. Traffic volume, prevailing travel speed, and roadway geometric characteristics are common factors examined in bicycle mobility analyses. For example, on roadways with low automobile volumes and slow travel speeds, bicyclists often feel comfortable riding in mixed-flow traffic with no specific bicycle facilities provided. Marked bicycle facilities or adjacent bike paths are desirable on higher volume roadways with higher travel speeds. Considerable planning and engineering is often required to ensure the appropriate bicycle facility can be designed around constraints such as right-of-way availability, existing utility infrastructure, and intersection geometry.

For the corridors under consideration in this study, existing conditions and potential design constraints are evaluated. Field reviews are completed for each of the seven priority projects to gain a better understanding of the issues that are crucial to successful implementation of targeted bicycle improvements. Roadway design, right-of-way, and utility conflicts are also evaluated through the data collection and analysis process.

The corridor evaluation process leads to a ranking of the seven priority bicycle corridors based on the feasibility of a potential bicycle project that would be realistically implementable and would afford access to multimodal and recreational opportunities.

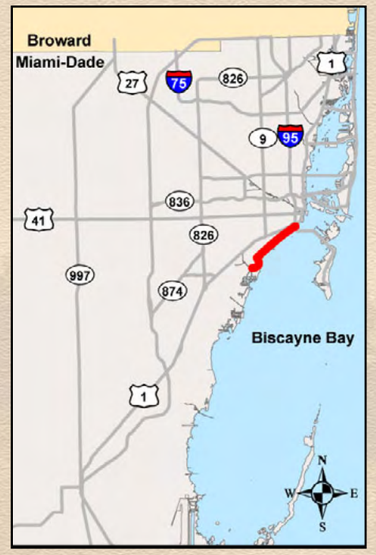
Once the preferred corridor is identified, a more detailed design evaluation is developed showing the general layout of the proposed bicycle facility. A set of preferred concepts and typical cross sections are also produced to guide the final project feasibility evaluation to be conducted by the Miami-Dade County Public Works Department for the identified bicycle project.



Corridor Descriptions

Bicycle PROJECT FEASIBILITY EVALUATION

COMMODORE TRAIL



Commodore Trail is a proposed bicycle facility for the corridor beginning in the south at Cocoaplum Circle and comprised of Ingraham Highway, Edgewater Drive, SW 37th Avenue, Main Highway, McFarlane Road, Bayshore Drive, and South Miami Avenue. Much of the proposed alignment already carries a high volume of bicycle and pedestrian activity as it has served as Bicycle Route 1 for the City of Miami since the late 1970s. The northern limit of the Commodore Trail corridor is the intersection of Miami Avenue and Brickell Avenue (U.S. 1). The southern limit of the corridor, Cocoaplum Circle, also serves as the northern trailhead for the Old Cutler Road Bike Path, which connects to Franjo Road in the vicinity of SW 216th Street. Parking is provided at Cocoaplum Circle, however the Commodore Trail extension to the north is not evident at Cocoaplum Circle. Bicyclists must currently cross the Lejeune Road bridge and ride northward along Ingraham Highway to access Edgewater Drive. A bike/ped bridge may be needed at Cocoaplum Circle if the Lejeune Road bridge cannot be widened.

Portions of the bicycle corridor already exist along Main Highway and Bayshore Drive. Existing portions include wide curb lanes and adjacent bicycle paths. In other locations, bicyclists are forced to ride in mixed traffic or on 5-foot sidewalks. A need exists to make the existing Commodore Trail facilities more uniform and to provide continuity of facilities.

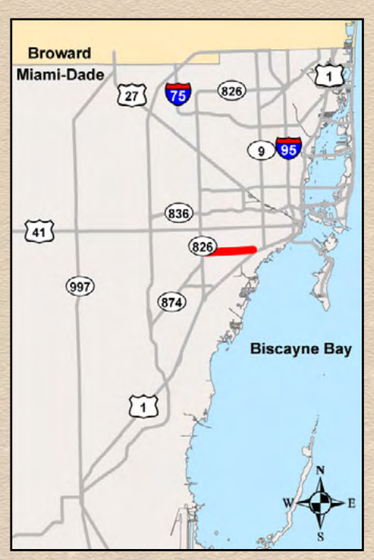
Recreational opportunities are abound along the entire five-mile alignment with parks and scenic viewing areas including Ingraham Park, Barnacle State Historic Site, Miami Museum of Science, Space Transit Planetarium, Kennedy Park, Biscayne Bay, Coral Reef Yacht Club, and Vizcaya Museum and Gardens. Kennedy Park features a scenic bicycle loop and is a popular recreational destination. The corridor also provides multimodal access to the downtown Cocoanut Grove activity center. A canopy of trees exists along much of the corridor providing shade to bicyclists and traffic calming to motorists.

Several areas along the path present safety concerns to bicyclists. Of primary concern is the intersection of Main Highway and Douglas Road, where cars often drift into the potential paths of bicyclists. Also, the roots of mature trees have damaged the path in certain locations. A significant number of pedestrians and joggers conflict with bicyclists on the path along Bayshore Drive. Improvements to the width and other design features of the path may be necessary to ensure adequate mobility for bicyclists.

Another area where safety concerns exist is the half-mile section between Mercy Hospital and Kennedy Park, where tree trunks and utility poles are located within the path. Throughout this section, the bike path is narrowed and motorists tend to drive at higher rates of speed. Repairs need to be made in areas where trees have uprooted the paved sidewalks. Space for bicyclists does not exist along Edgewater Drive from Ingraham Park almost to SW 37th Avenue. Sidewalk additions and repairs may need to be made in areas where the sidewalk is narrow or does not exist.

Lejeune Road Bridge North of Cocoaplum Circle

BIRD ROAD



Bird Road (SW 40th Street) is a state principal arterial with six lanes from Ludlam Road (SW 67th Avenue) to Red Road (SW 57th Avenue) and four lanes from Red Road to Douglas Road (SW 37th Avenue). The posted speed limit along the entire corridor is 40 MPH. This corridor would provide scenic views of the Biltmore and Riviera golf courses as well as provide multimodal access to the Metrorail on SW 37th Avenue. One feature that might prevent this corridor from being developed into an initial on-road bicycle project is that there are issues with modifying the cross-section, which is further described below.

Six-Lane Section of Bird Road

The six-lane section of the Bird Road corridor has approximately 33 feet of pavement on each side for three travel lanes, a center median with turn lanes, and curbing the entire length. Street lights exist along the entire alignment with utility lines underground. Buildings exist within 10 to 15 feet from the back of the sidewalk in some locations. The large number of driveways would make moving the curb difficult and could create Americans with Disabilities Act (ADA) issues. One possible solution might be reducing the median width to provide more room for adding bike lanes, however any reduction would be constrained by the presence of left-turn lanes.

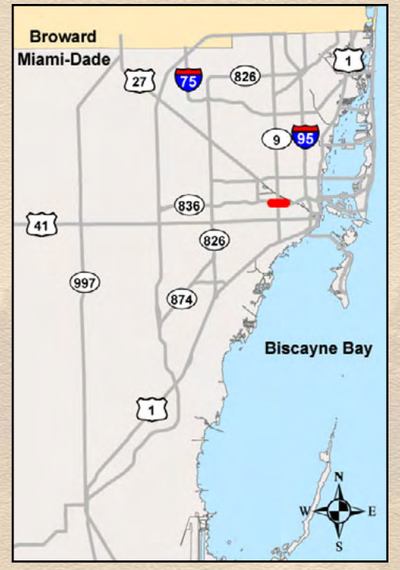
Four-Lane Section of Bird Road

The four-lane section of the Bird Road corridor has approximately 22 feet of pavement on each side for two travel lanes without any curb, resulting in open-drainage. Utility poles exist close to the street. A grass median separates traffic that is lined with a large number of mature trees. The grass median exists along Bird Road from Red Road to Ponce De Leon Boulevard. No sidewalks are provided along this section between Red Road and Coral Gables High School. A possible solution in this area would be to add pavement to the outside lane to create room for bike lanes, although this would require utility relocation.

East of Ponce De Leon Boulevard, Bird Road is a four-lane arterial with no median. From Coral Gables High School to SW 37th Avenue, building and utility poles are located close to the roadway.

Corridor Descriptions

NW 11TH STREET



NW 11th Street is a city collector with two lanes from NW 32nd Avenue to NW 27th Avenue and four lanes from NW 27th Avenue to NW 22nd Avenue. The posted speed limit along the entire corridor is 30 MPH. This corridor provides access to Fern Isle Park and Sewell Park. Neither multimodal connections nor continuity to specific destinations exist that may warrant the addition of bicycle lanes along the corridor.

Two-Lane Section of NW 11th Street

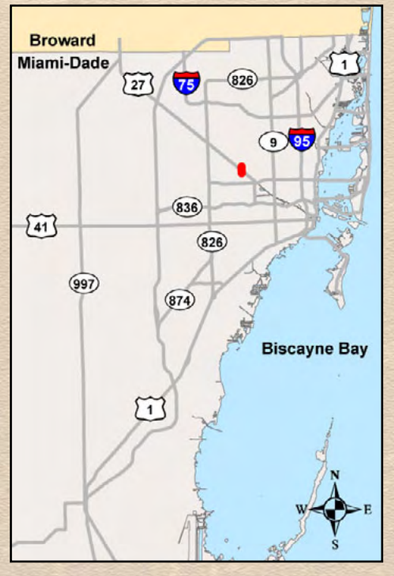
The two-lane section is approximately 25 feet wide with no curb, resulting in open drainage. Utility poles exist along the entire length and sanitary sewer lines are located underground. During field reviews, parked cars were prevalent along this section of the corridor that may restrict bicycle mobility. Problems may also exist with modifying the cross section due to the intersection geometry at NW 27th Avenue. A possible solution might be to add pavement to the outside lanes to implement a bike lane, although this would require utility relocation.

Four-Lane Section of NW 11th Street

The four-lane section between NW 27th Avenue and NW 22nd Avenue has approximately 40 feet of total pavement width with 10-foot lanes and a center grass median with mature trees. Utility poles exist along the corridor and sidewalks exist on both sides.

One possible solution would be to add pavement to the outside lanes and implement a bicycle lane. Another potential cross-section is to modify the four-lane section to a two-lane roadway (with 12-foot lanes) with left-turn lanes where necessary and convert the outer pavement width to bicycle lanes.

PALM AVENUE



Palm Avenue is a county minor arterial with on-street parking and two 10-foot travel lanes from West 9th Street to Okeechobee Road. The posted speed limit along the corridor is 25 MPH. Curb and gutter exists throughout the corridor. A wide sidewalk exists between the on-street parking and buildings.

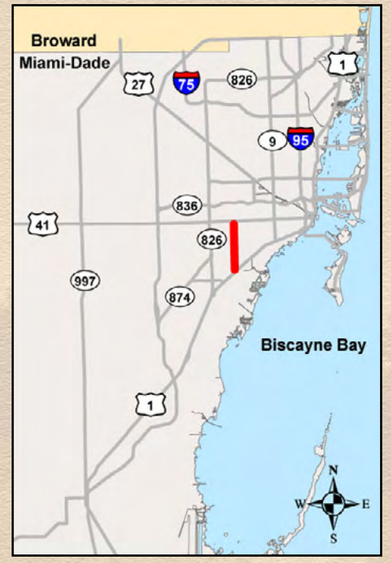
Palm Avenue Corridor

The corridor has recently undergone improvements undertaken by the City of Hialeah in the downtown area. An enhanced streetscape was implemented producing a narrower cross-section and providing on-street parking. Palm Avenue has been developed into a signature roadway for downtown Hialeah. These recent improvements along this corridor may preclude Palm Avenue from being developed into a demonstration on-road bicycle project. The narrow cross-section and prevalence of on-street parking present mobility deficiencies for bicyclists. However, slow travel speeds along Palm Avenue may be attractive for experienced cyclists to ride in mixed-flow.

Palm Avenue Corridor

Corridor Descriptions

RED ROAD



Red Road (SW 57th Avenue) is a state minor arterial with four lanes from U.S. 1 to SW 64th Street and two lanes from SW 64th Street to south of U.S. 41 (SW 8th Street). Near the U.S. 41 intersection, Red Road widens to a four-lane cross section. The posted speed limit along the entire corridor is 35 MPH northbound and 40 MPH southbound.

Red Road Four-Lane Section

The four-lane section is curbed in some areas and the two-lane section has open drainage with no curb. The four-lane section has approximately 30 feet of pavement on each side with two 14-foot travel lanes and the two-lane section has 14-foot travel lanes in each direction. Utility poles exist throughout both sections of the corridor.

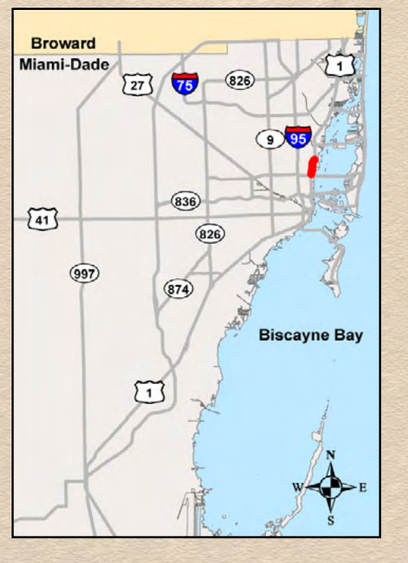
Red Road Two-Lane Section

Several recreational attractions exist along the corridor including Schenley Park and Coral Gables Wayside Park, and the University of Miami lies adjacent to Red Road north of U.S. 1. Multimodal access to the South Miami Metrorail station exists adjacent to the southern end of the Red Road corridor.

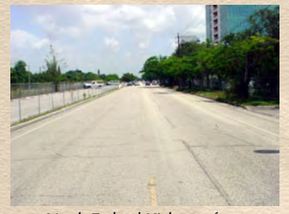
Significant utility relocation along the west side of Red Road would be required to add bicycle facilities. However, in some locations along the corridor the existing sidewalk is wide enough to accommodate bicyclists. Since sidewalks exist along the length of the corridor, it might be possible to add width to the sidewalk in some locations to create a multi-use path. However, residential and commercial driveway connections are common along Red Road that may create numerous conflicts for bicyclists. Motorists backing out of driveways often do not look for bicyclists in their path, thus creating a safety concern for bicyclists.

It might be possible to add a bicycle lane if the lane width could be reduced and pavement width added to the outside. However, this would also require modifications to some driveways. In addition, bridge widening would be necessary at the bridge over the Coral Gables Canal.

NORTH FEDERAL HIGHWAY



North Federal Highway is a city collector from NE 36th Street to NE 54th Street. The cross section from NE 36th Street to NE 39th Street has a total pavement width of 40 feet including a 13-foot lane northbound, two 10-foot lanes southbound, and 6½ feet for parking on the northbound side. The cross-section from NE 39th Street to NE 54th Street has a total pavement width of 40 feet including a 14-foot lane northbound, a 15-foot lane southbound, and 8 feet for parking outside the northbound lane.


North Federal Highway from NE 36th Street to NE 39th Street

Utility poles exist on the east side of the road throughout the corridor. The pylons for the Interstate 195 overpass would prevent the addition of an on-road bicycle lane for the southbound direction. In the northbound direction, providing a bicycle lane would require relocating the sidewalk or converting existing on-street parking to a bicycle lane. Despite no striping or signage indicating it, the outer northbound lane is currently utilized for parking.

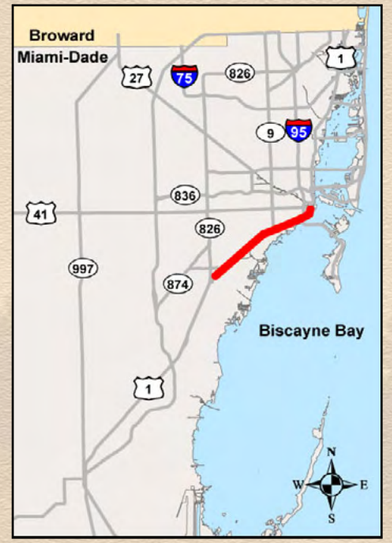
North Federal Highway from NE 39th Street to NE 54th Street

The lateral restrictions caused by the pylons under Interstate 195 represent a significant hindrance to implementing bicycle lanes through widening pavement width. One option may be to reduce the travel lanes for motorists to two lanes that could accommodate the width of bicycle lanes. However, recreational and multimodal opportunities affected by the North Federal Highway corridor do not appear as extensive as the other corridors.

The Florida East Cost (FEC) railroad corridor exists along the west side of the corridor. A parking lot exists between Federal Highway and the FEC railroad. The location of the parking lot may restrict widening of Federal Highway to accommodate bicycle lanes.

Corridor Descriptions

M-PATH TRAIL



The Metrorail Bicycle Path (M-Path Trail) is a bicycle greenway trail adjacent to U.S. 1 from SW 67th Avenue to downtown Miami. The existing southern terminus of the M-Path is the SW 67th Avenue (Ludlam Road) intersection, located just north of the area known as Dadeland. Extending the path south to the existing southern terminus of Metrorail would provide access to the Dadeland Mall shopping area. However, this would require bridging the Snapper Creek Canal. The existing northern terminus of the M-Path is the Miami River. Adjacent destinations include the Brickell Financial District and the University of Miami. Extending the path to the north would require diverting the path onto an existing on-road facility or constructing a bike/ped drawbridge to allow marine navigation of the Miami River. Either option would require significant investment.

M-Path Trail

M-Path Trail Curving Under Metrorail

The M-Path follows the Metrorail alignment and crosses approximately 20 intersecting roadways. Due to the M-Path crossing roadways at awkward angles and often at mid-block, significant safety concerns abound for bicyclists. Some areas along the M-Path lack curb cuts, crosswalks, and are not lighted at night. There are also some areas where the trail is discontinuous. Improving crossing conditions and continuity for bicyclists should be a priority for M-Path improvements. Connecting the M-Path to the South Dade Trail, which is a bicycle facility located adjacent to the South Dade Busway, is another improvement that would enhance bicycle mobility in the southern portion of Miami-Dade County.

The M-Path trail provides excellent multimodal opportunities for bicyclists through use of the Metrorail from downtown Miami to Kendall Drive. The M-Path can be used by bicyclists to access Metrorail stations. Since bicycles are permitted aboard Metrorail trains, bicyclists can use Metrorail to extend their ride. In addition, the M-Path can serve as a transportation mobility alternative to the congested U.S. 1 corridor.

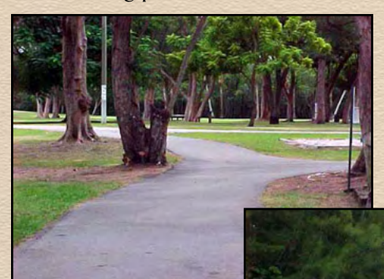
Ranking of Corridors for Bicycle Improvements

Bicycle PROJECT FEASIBILITY EVALUATION

A ranking system was developed for evaluating the feasibility of implementing or repairing bicycle facilities for each corridor. The criteria selected for evaluation includes potential costs, physical constraints, traffic flow disruptions during implementation, the adjacent attractions and destinations, and the multimodal opportunities available along the corridor. The potential cost criterion is based on the estimated amount of changes that must be made to the corridor to implement or improve a bicycle facility. Physical constraints include utility relocation, physical barriers, right-of-way, and roadway geometric characteristics. The traffic flow disruptions criterion is the estimated impact that constructing or repairing a bicycle facility along the corridor would have on adjacent traffic. The adjacent attractions and destinations criterion is based on locations that can be accessed using the bicycle facility, such as recreational parks, educational facilities, and employment centers. The multimodal opportunities criterion is based on the amount of connectivity a bicycle facility would have to existing transit, bicycle, and pedestrian facilities. The following corridors are ranked in order of their feasibility with respect to the selection criteria.

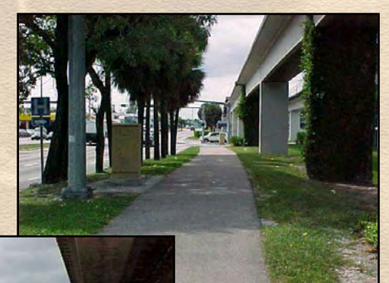
1. Commodore Trail
(Cocoaplum Circle to Brickell Avenue)

The Commodore Trail was determined to be the most feasible and beneficial of all the projects identified in the Bicycle & Pedestrian Facilities Plans. Some bicycle, pedestrian, and/or shared-use facilities already exist in the area and the corridor is already in use by bicyclists and pedestrians. A need exists to provide greater connectivity along Commodore Trail between the existing facilities. Certain geometric improvements would improve safety and demonstrate the County's commitment to providing quality facilities in areas with demonstrated demand. Commodore Trail provides good connections to areas where walking and bicycling are prevalent recreational and transportation activities such as Cocoanut Grove, Kennedy Park, and Ingraham Park. Improvements to the area would be relatively inexpensive as well since certain portions of the corridor already exist. There are only a few areas where paths need to be added or width added to the existing path to create a shared use path.



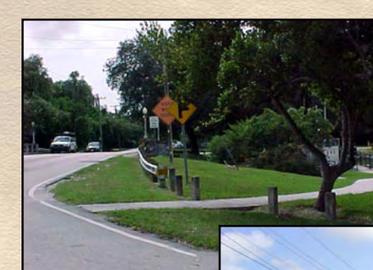
2. M-Path
(Kendall Drive to Downtown)

The M-Path was selected second because of the excellent multi-modal opportunities and complete separation from traffic between roadway crossings. Since the bike path already exists, construction costs would be greatly reduced. The path crosses approximately 20 roadways, at mid-block in many cases, and may need improvement for safety concerns. Also, some areas along the M-Path lack adequate lighting, which could be fixed relatively easily. Construction done on the path would not interfere with traffic flow other than at roadway crossings. Some sections of the M-Path are hard to follow by bicyclists, especially at major roadway crossings. This reduces the connectivity of the corridor. The numerous major roadway crossings make the M-Path more suitable for experienced cyclists.



3. Red Road
(U.S. 1 to SW 8th Street)

Red Road does not currently have a bicycle lane along the corridor. There are several parks and recreational opportunities as well as multimodal opportunities available along the corridor with nearby access to Metrorail. Utility relocation would be required to implement a bike lane. The bridge over the Coral Gables Canal could also require widening. It may be possible to add a bike lane along the Red Road corridor if the lane width could be reduced and pavement width added to the outside shoulder. The sidewalk may be widened enough to accommodate a multiuse path if adequate right-of-way is available. A wide sidewalk (approximately 10 feet in width) already exists on the west side of the road in the northern section of the corridor.

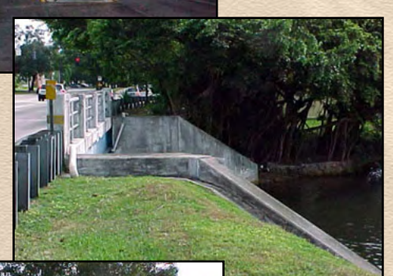


Ranking of Corridors for Bicycle Improvements continued

Bicycle PROJECT FEASIBILITY EVALUATION

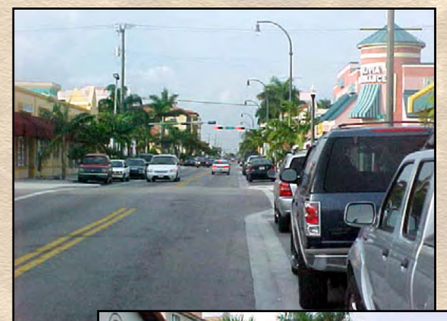
4. Bird Road
(Ludlam Road to Douglas Road)

Bird Road does not currently have a bicycle lane along the corridor. Bird Road has similar features to Red Road, but fewer attractions and destinations. The bridge over the Coral Gables Canal would have to be widened in order to accommodate a bicycle lane. Right-of-way restrictions exist where buildings are close to the existing sidewalk, especially in the eastern portion of the corridor. The center median could be reduced or eliminated in the six-lane section if warranted; however, this would add significantly to the project cost.



5. Palm Avenue
(West 9th Street to Okeechobee Road)

Palm Avenue has recently undergone significant improvements along the corridor. Due to this recent development of the streetscape into a signature roadway for the City of Hialeah, it may not be feasible to make changes to the design so soon after completion. Furthermore, implementing a bicycle lane along Palm Avenue would be challenging based on the presence of on-street parking, the proximity of buildings to the road, and the available pavement width of 20 feet.

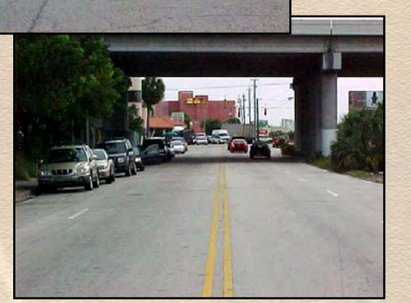


6. NW 11th Street
(NW 32nd Avenue to NW 22nd Avenue)

The NW 11th Street corridor does not currently have a bicycle lane. There are only a few destinations provided along or near the corridor that would warrant the addition of a bicycle lane. The only multimodal connections along the corridor are the Metrobus routes operating along State Road 9. Additional right-of-way may have to be purchased to construct a bicycle lane, unless roadway lane widths are reduced or the lateral separation between the sidewalk and the roadway is reduced. Utilities would have to be moved throughout the entire corridor to provide a bicycle lane. The corridor intersects State Road 9, which has seven lanes of traffic to cross, creates significant safety concerns for bicyclists.

7. North Federal Highway
(NE 36th Street to NE 54th Street)

Federal Highway does not currently have a bicycle lane. The I-195 overpass would restrict the widening of Federal Highway due to the cost of moving bridge pylons. Also, utilities would have to be moved along the entire corridor and possibly the purchase of additional right-of-way. The corridor does not provide any recreational or multimodal opportunities to the immediate area.



Bicycle PROJECT FEASIBILITY EVALUATION

Tier I Evaluation

Summary of Results

Kimley-Horn and Associates, Inc.

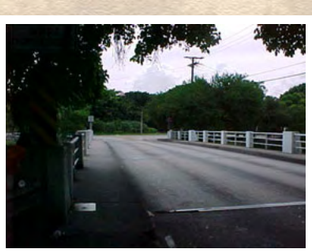
Tier I Evaluation

COMMODORE TRAIL FROM INGRAHAM HIGHWAY TO MCFARLANE ROAD

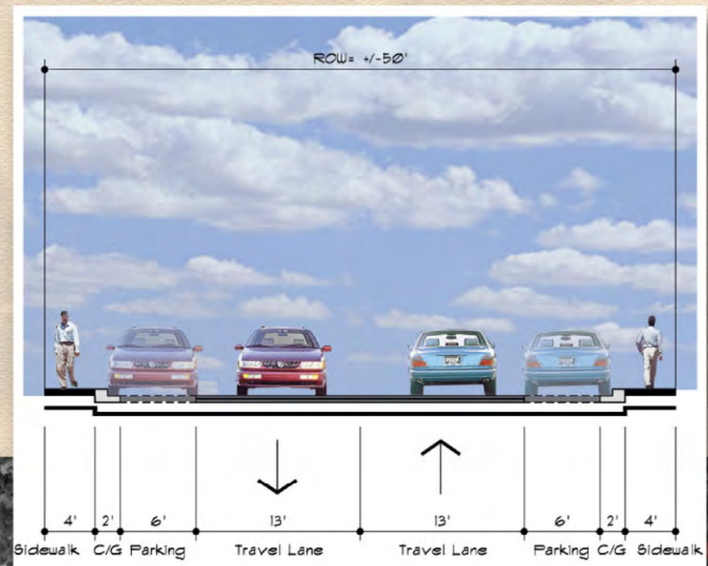
Bicycle PROJECT FEASIBILITY EVALUATION

quickfacts

- Ranked 1st in priority list
- On- and off-street facility
- 5.03 miles
- 18,000 - 32,000 AADT
- 30 mph posted speed limit

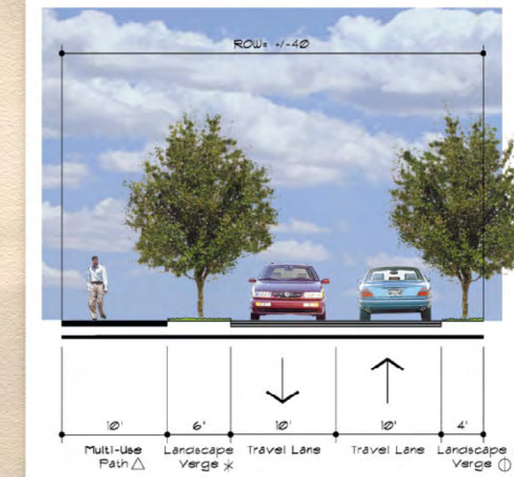


Limited width at the bridge over the Coral Gables Canal forces bicyclists to walk their bike across the canal.



Edgewater Drive

(SW 37th Ave. to Ingraham Highway)



Main Highway/ SW 37th Avenue

(Franklin Ave. to Edgewater Dr.)

△ Multi-Use Path varies between 5' & 10' between Douglas Rd. & Edgewater Dr.

✳ Landscape Verge becomes Paved Shoulder between Douglas Road & Edgewater Dr.

⦶ Landscape Verge varies along corridor

Portions of a 2-way multiuse path already exist along the corridor.

Limited right-of-way and on-street parking does not allow for a multiuse path and/or on-street bicycle lanes.

Existing vegetation along the corridor may need to be removed to accommodate bicycle facilities.

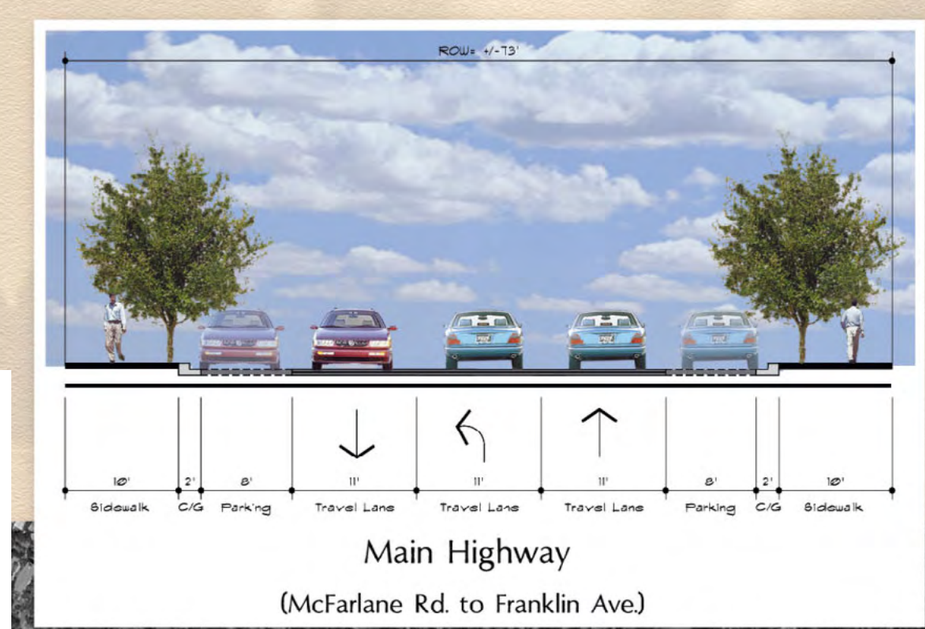
Tier I Evaluation

COMMODORE TRAIL FROM MCFARLANE ROAD TO SW 17TH STREET

Bicycle PROJECT FEASIBILITY EVALUATION

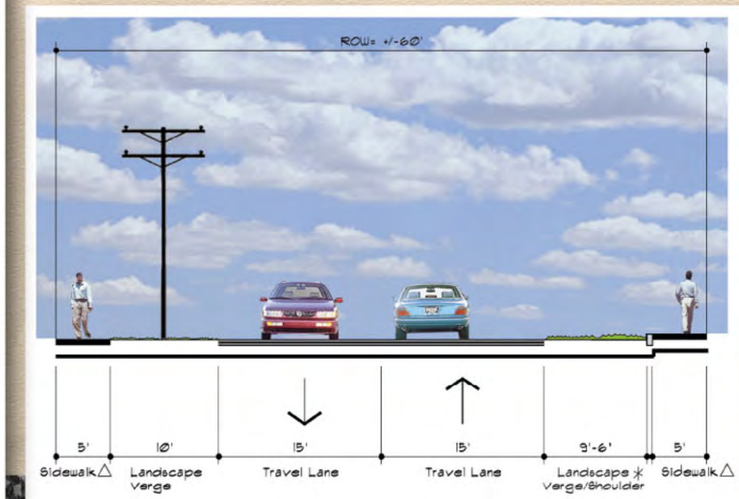
quickfacts

- Ranked 1st in priority list
- On- and off-street facility
- 5.03 miles
- 18,000 - 32,000 AADT
- 30 mph posted speed limit



Main Highway

(McFarlane Rd. to Franklin Ave.)



South Bayshore Drive

(Fair Isle St. to Aviation Dr.)

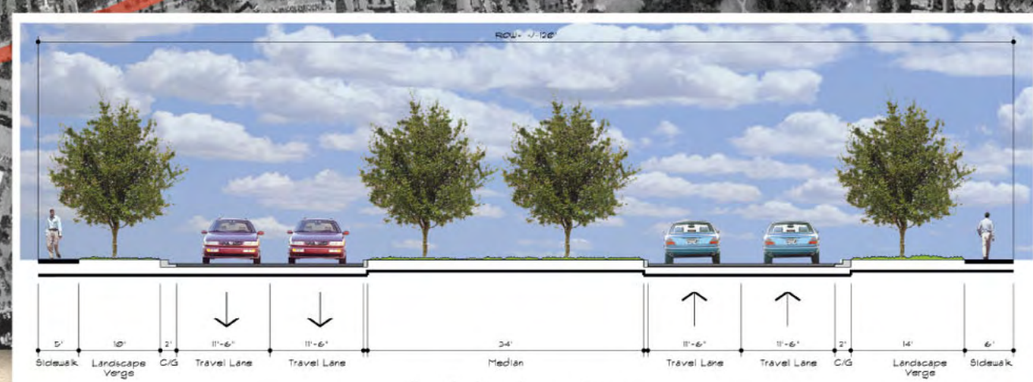
△ Sidewalk only present in limited areas.

✳ Landscape Verge and Paved Shoulder interchangeable along corridor.

Existing Route 1 bicycle facility becomes part of a wide sidewalk in the urban area north of Aviation Blvd.

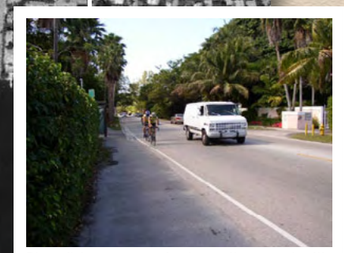
The Siegendorf Bicycle Path already exists in Kennedy Park.

Existing off-street facilities are already enjoyed by the surrounding community.



South Bayshore Drive

(Aviation Ave. to McFarlane Rd.)



Bicyclists commonly share the road with motor vehicles along Bayshore Drive.

Main Highway

McFarlane Road

SW 27th Avenue

Aviation Avenue

S. Bayshore Drive

Fair Isle Street

Tier I Evaluation

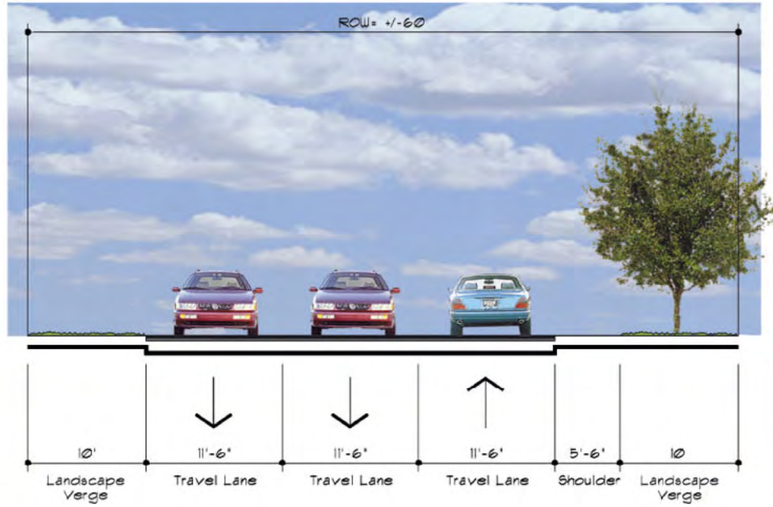
COMMODORE TRAIL SW 17TH AVENUE TO BRICKELL AVENUE

Bicycle PROJECT FEASIBILITY EVALUATION

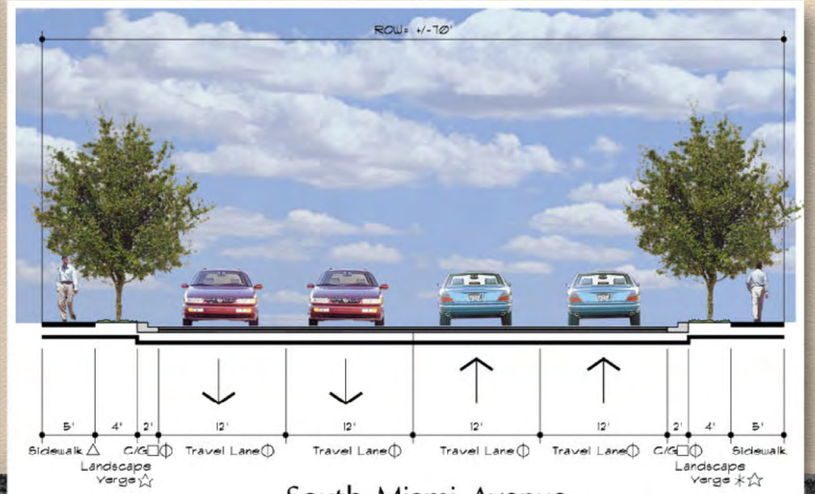
quickfacts

- Ranked 1st in priority list
- On- and off-street facility
- 5.03 miles
- 18,000 - 32,000 AADT
- 30 mph posted speed limit

The Commodore Trail has served as Bicycle Route 1 since the late 1970's.



Mercy Hospital Emergency Entrance to Fair Isle St.



South Miami Avenue

(Brickell Ave. to Mercy Hospital Emergency Entrance)

△ Sidewalk not present south of Samana Drive.

✳ Landscape Verge not present south of Samana Drive.

○ In locations with left turn lanes, through lanes are reduced to 10' & 2' shoulder is not present.

□ South of SW 17th Ave. 2' C/G becomes 2' of shoulder.

☆ Landscape Verge varies over length of corridor.

Local bicyclists know to loop around Mercy Hospital for a great view of Biscayne Bay.

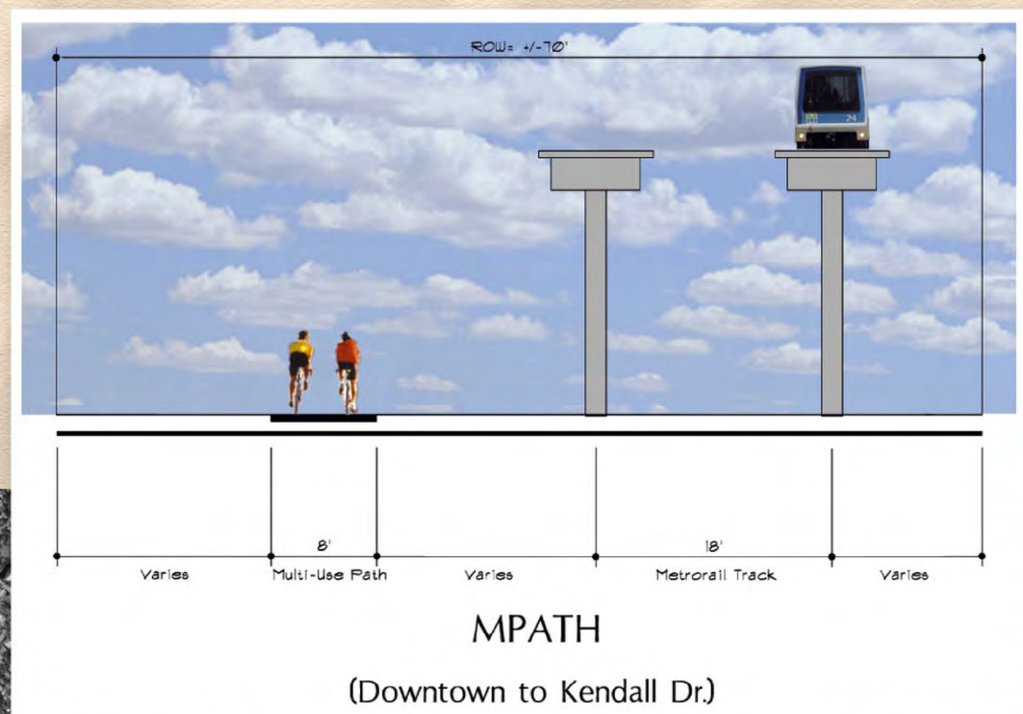
Bicycle facilities will have to be accommodated on-street for certain sections of the corridor.

M-PATH TRAIL FROM 27TH AVENUE TO DOWNTOWN

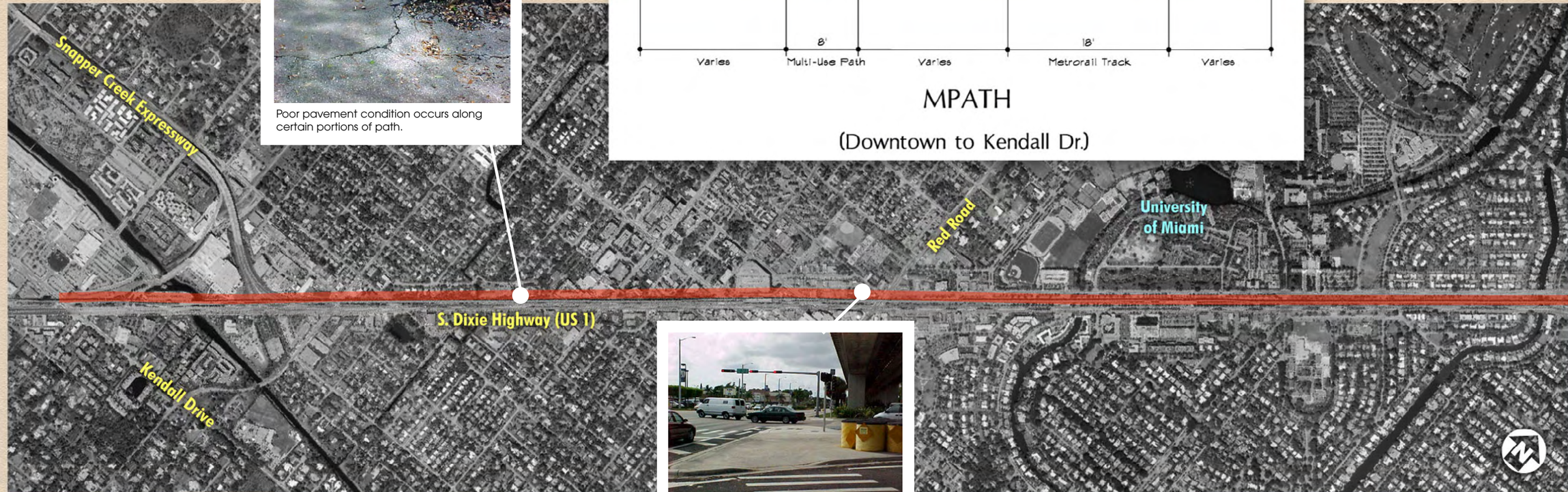
Bicycle PROJECT FEASIBILITY EVALUATION

quickfacts

- Ranked 2nd in priority list
- Off-street facility
- 9.26 miles



Poor pavement condition occurs along certain portions of path.



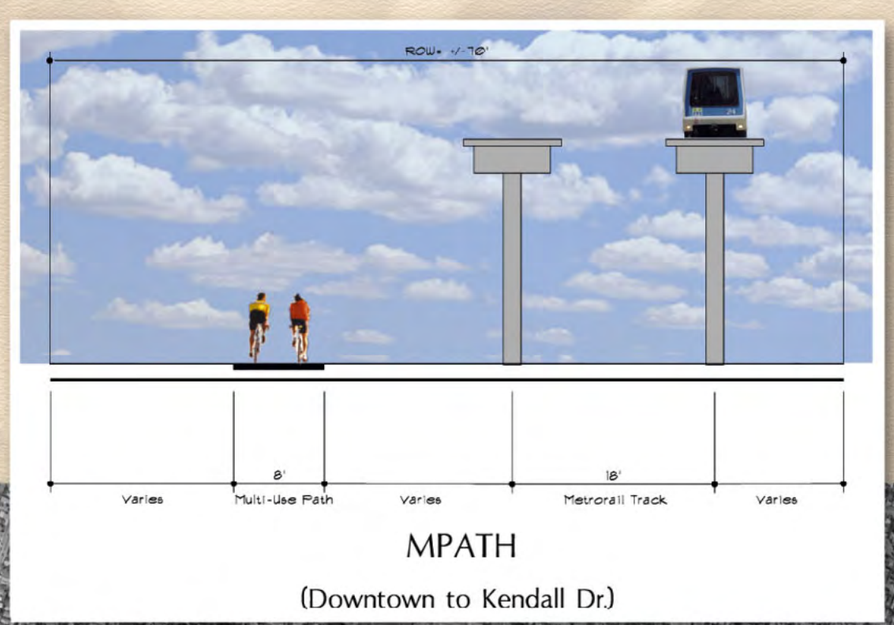
Intersection crossings create dangerous safety concerns for pedestrians and bicyclists all along the corridor.

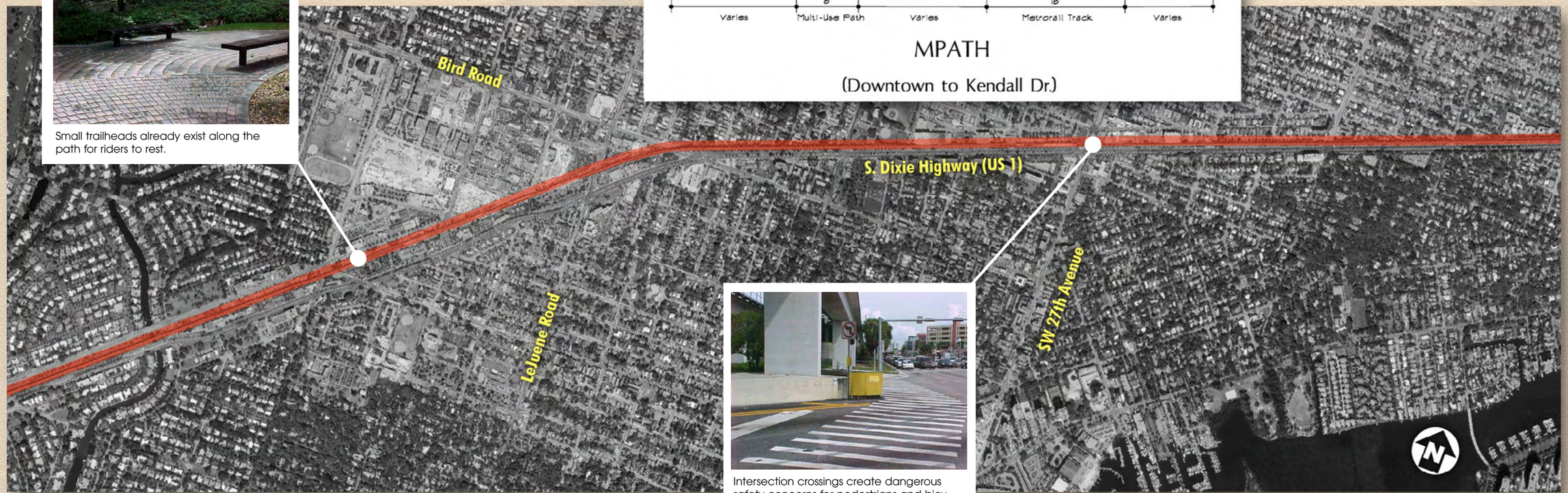
M-PATH TRAIL FROM GRANADA BOULEVARD TO SW 27TH AVENUE

Bicycle PROJECT FEASIBILITY EVALUATION

quickfacts

- Ranked 2nd in priority list
- Off-street facility
- 9.26 miles





Small trailheads already exist along the path for riders to rest.

Intersection crossings create dangerous safety concerns for pedestrians and bicyclists all along the corridor.

Tier I Evaluation

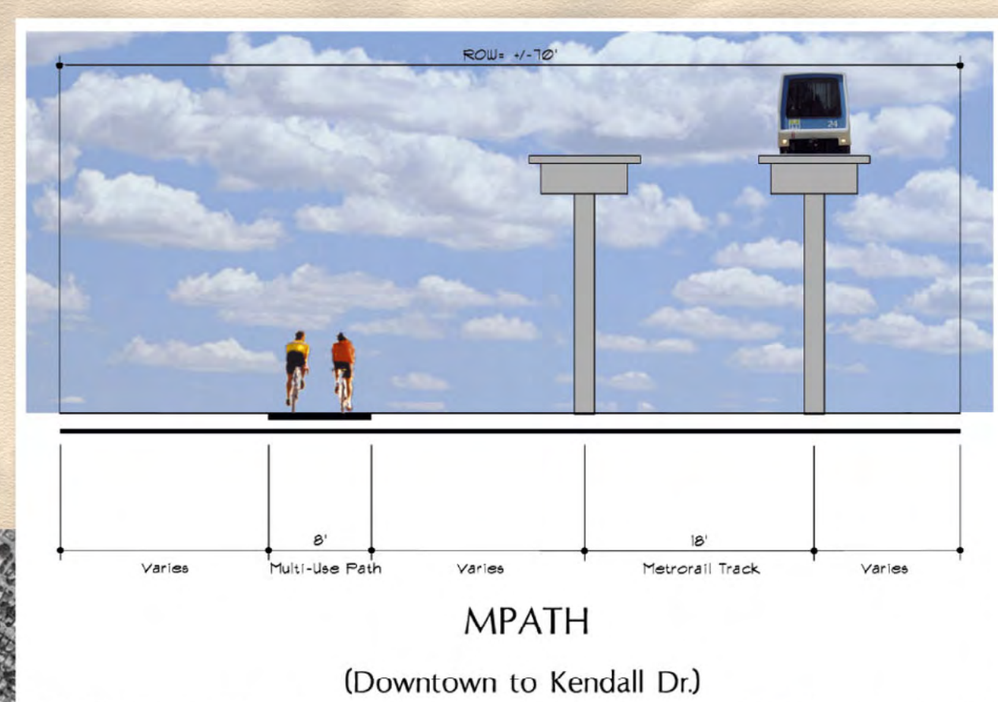
M-PATH TRAIL FROM KENDALL DRIVE TO GRANADA BOULEVARD

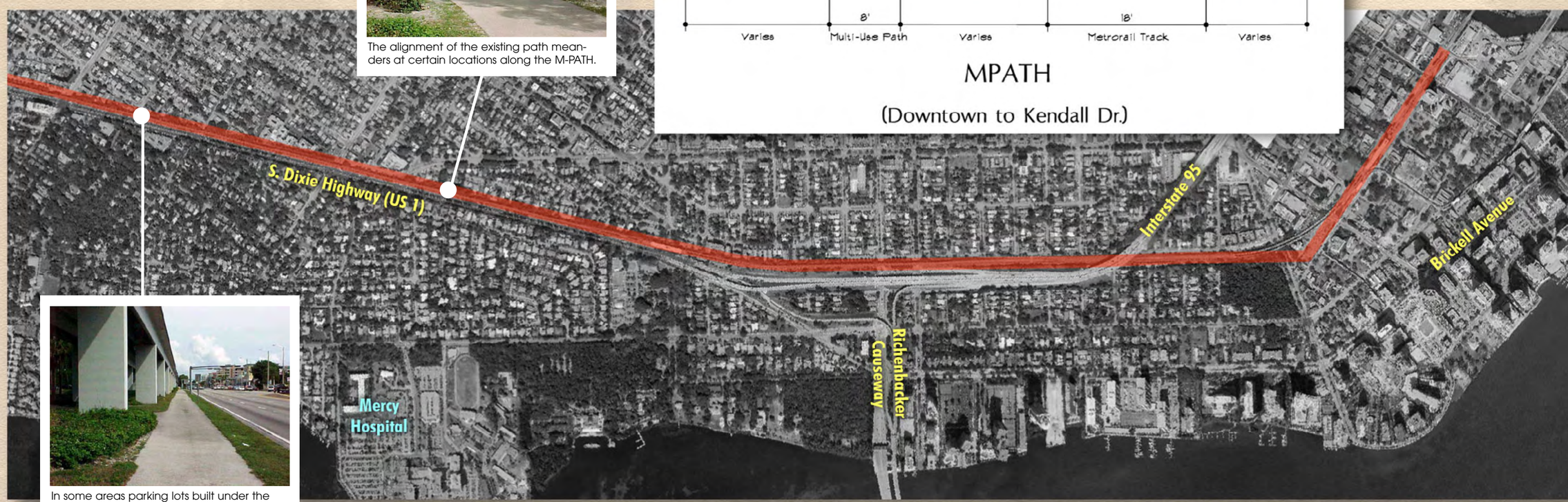
Bicycle PROJECT FEASIBILITY EVALUATION

quickfacts

- Ranked 2nd in priority list
- Off-street facility
- 9.26 miles

The alignment of the existing path meanders at certain locations along the M-PATH.





In some areas parking lots built under the tracks forces the path closer to US 1.

Tier I Evaluation

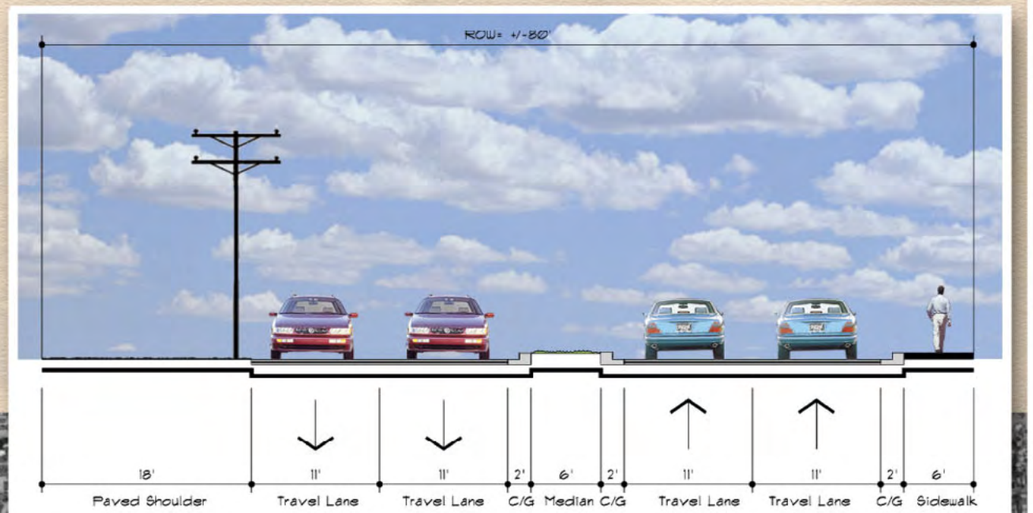
RED ROAD FROM U.S. 1 TO SW 8TH STREET

Bicycle PROJECT FEASIBILITY EVALUATION

quickfacts

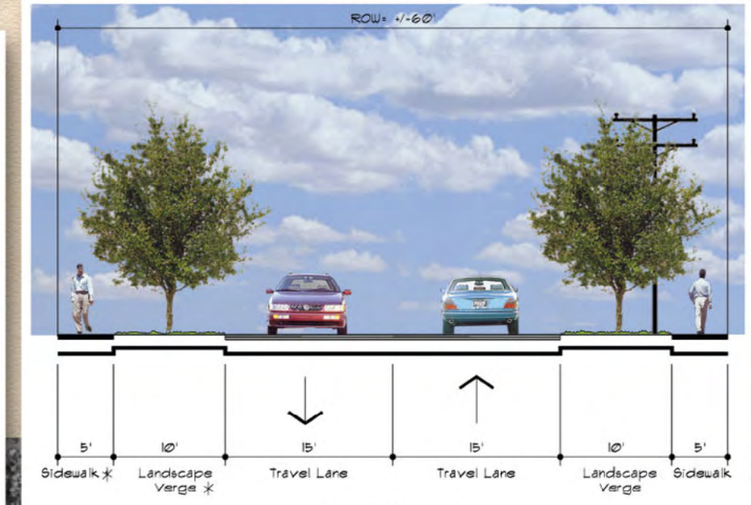
- Ranked 3rd in priority list
- On-street facility
- 3.81 miles
- 23,200 AADT
- 35/40 mph posted speed limits

Above ground utility conflicts exist along the entire corridor.



Red Road

(US1 to SW 64th St.)



Red Road

(SW 64th St. to SW 8th St.)

* Area for sidewalk and landscape verge (15') becomes backout parking between Coral Way and SW 8th St.

The location of the University of Miami along Red Road creates demand for bicycle facilities along the corridor.

Introducing bicycle lanes on Red Road would require bridge modifications over the Coral Gables canal.

Backout parking along Red Road should be a concern to citing bicycle facilities north of Coral Way.

Tier I Evaluation

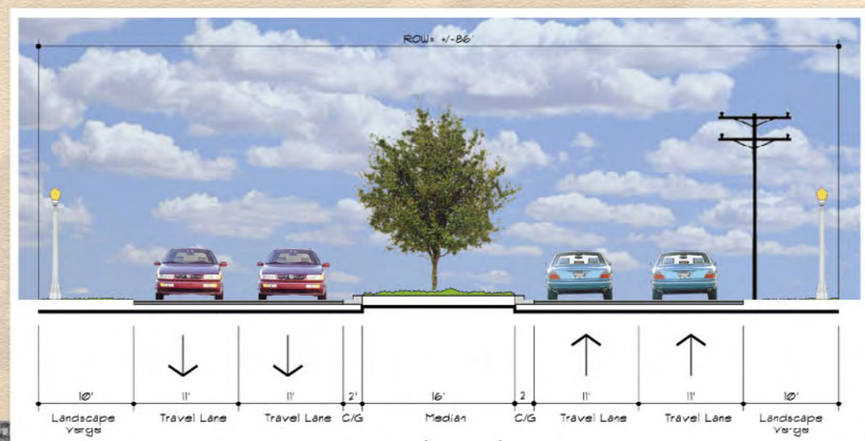
BIRD ROAD FROM SW 67TH AVENUE TO SW 37TH AVENUE

Bicycle PROJECT FEASIBILITY EVALUATION

quickfacts

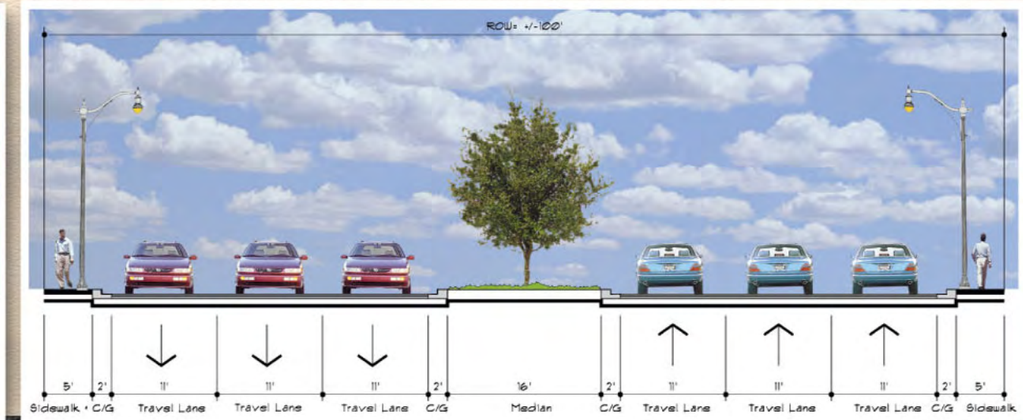
- Ranked 4th in priority list
- On-street facility
- 3.05 miles
- 53,500 AADT
- 40 mph posted speed limit

Moving existing drainage structures to accommodate a bicycle lane would prove costly.



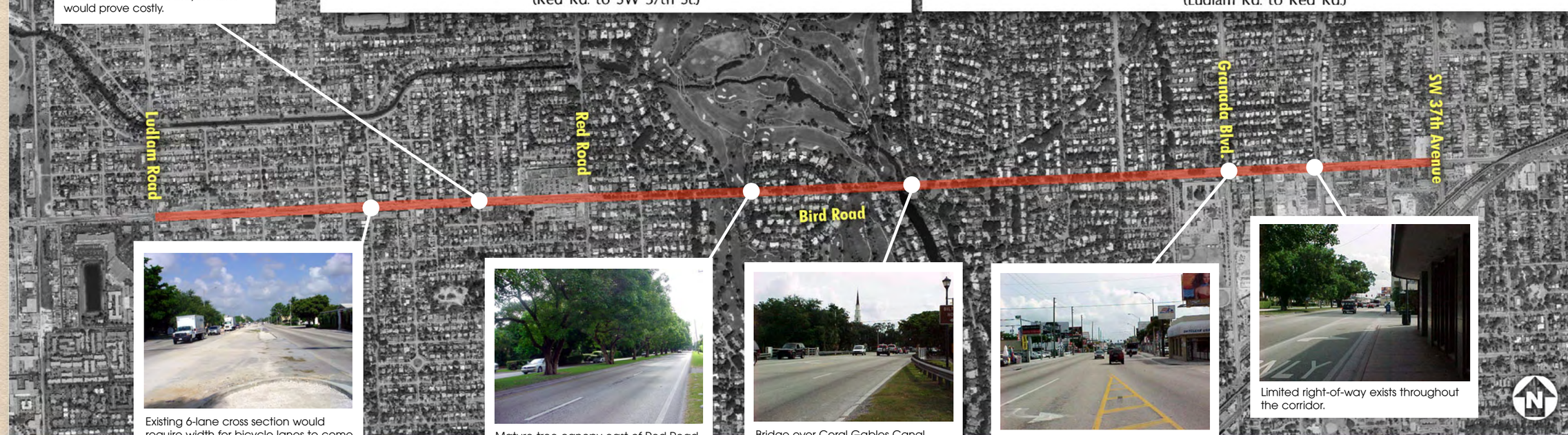
Bird Road

(Red Rd. to SW 37th St.)



Bird Road

(Ludlam Rd. to Red Rd.)



Existing 6-lane cross section would require width for bicycle lanes to come from center medians. This would impact left turn storage lanes along corridor.

Mature tree canopy east of Red Road excludes the use of the center median width to accommodate bicycle lanes.

Bridge over Coral Gables Canal would be costly to expand for bicycle lanes.

Above ground utility conflicts at the curb line exist all along the corridor.

Limited right-of-way exists throughout the corridor.

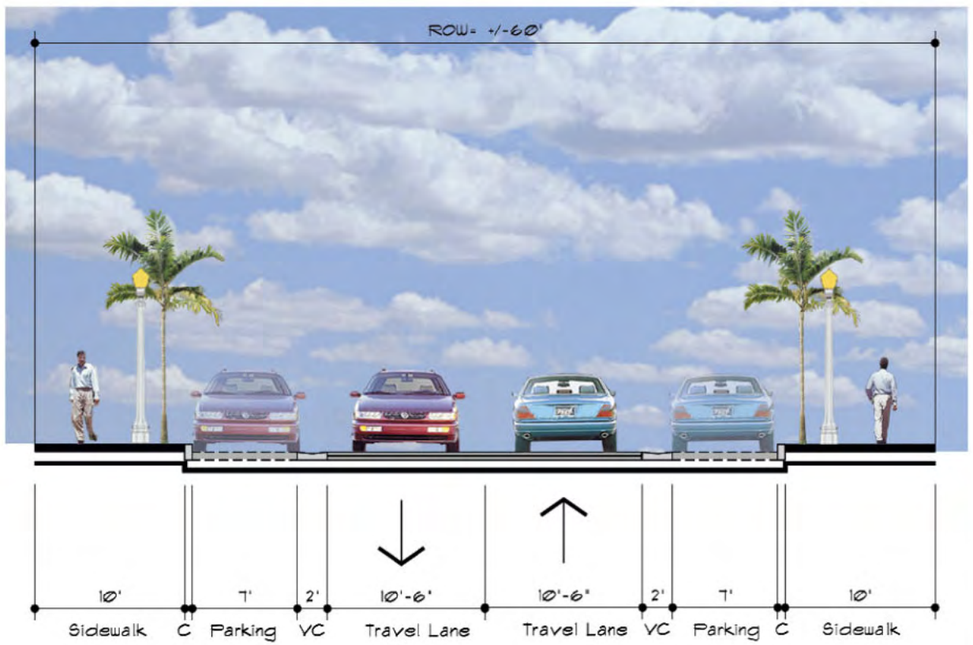
Tier I Evaluation

PALM AVENUE FROM W 9TH STREET TO OKEECHOBEE ROAD

Bicycle PROJECT FEASIBILITY EVALUATION

quickfacts

- Ranked 5th in priority list
- On-street facility
- 0.48 miles
- 14,500 AADT
- 25 mph posted speed limit



Recent streetscape enhancements completed by the City of Hialeah Gardens precludes bicycle lanes on Palm Avenue.

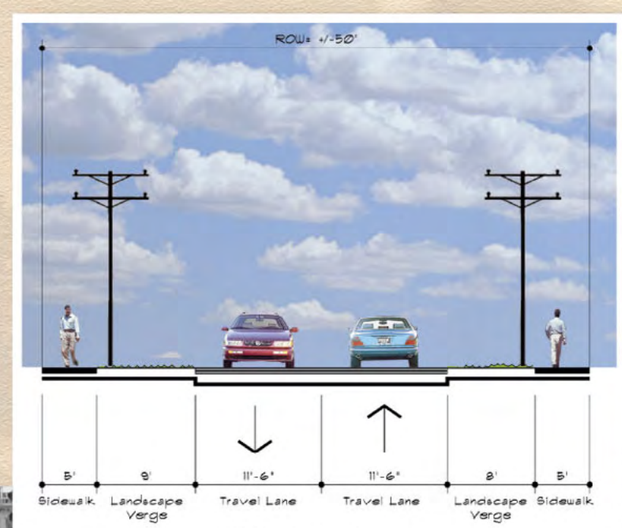
Ten foot travel lanes and 25 mph posted speed limit could allow bicyclists to intermix with vehicles.

NW 11TH STREET FROM NW 32ND AVENUE TO NW 22ND AVENUE

Bicycle PROJECT FEASIBILITY EVALUATION

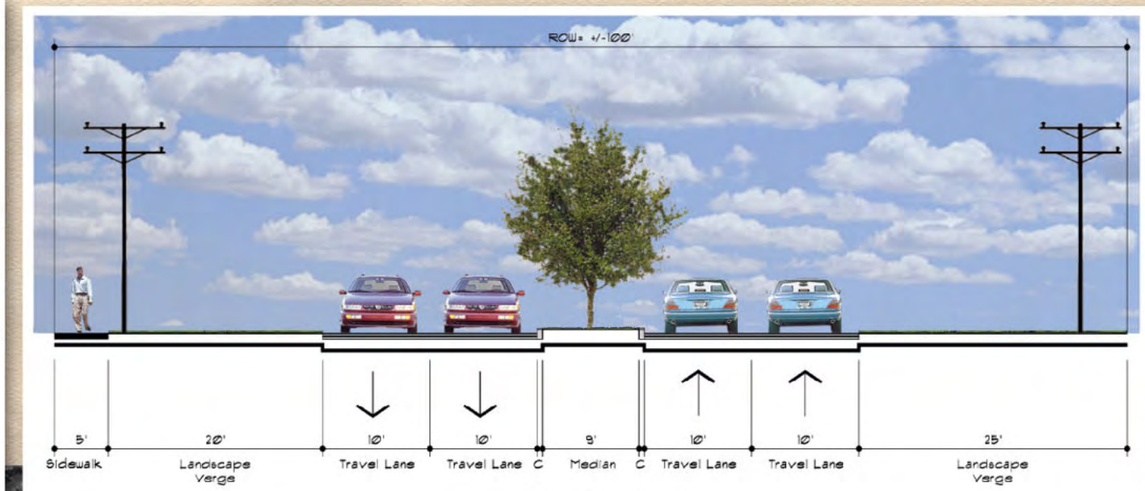
quickfacts

- Ranked 6th in priority list
- On-street facility
- 1.02 miles
- 30 mph posted speed limit



NW 11th Street

(NE 32th St. to NW 27th Ave.)



NW 11th Steet

(NE 27th Ave. to NW 22th Ave.)

Above ground utility conflicts west of SR 9.

Bicycle connection across SR 9 may introduce safety concerns.

Right-of-way for bicycle facilities appears available east of SR 9.

Overpass at SR 836 is a costly obstacle to adding bicycle lanes on NW 11th Street.

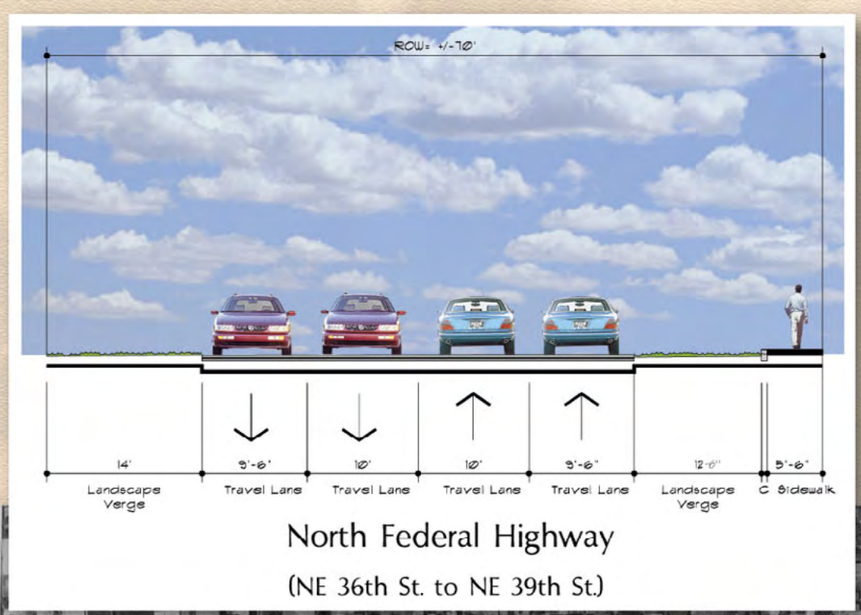
Tier I Evaluation

NORTH FEDERAL HIGHWAY FROM NE 36TH STREET TO NE 54TH STREET

Bicycle PROJECT FEASIBILITY EVALUATION

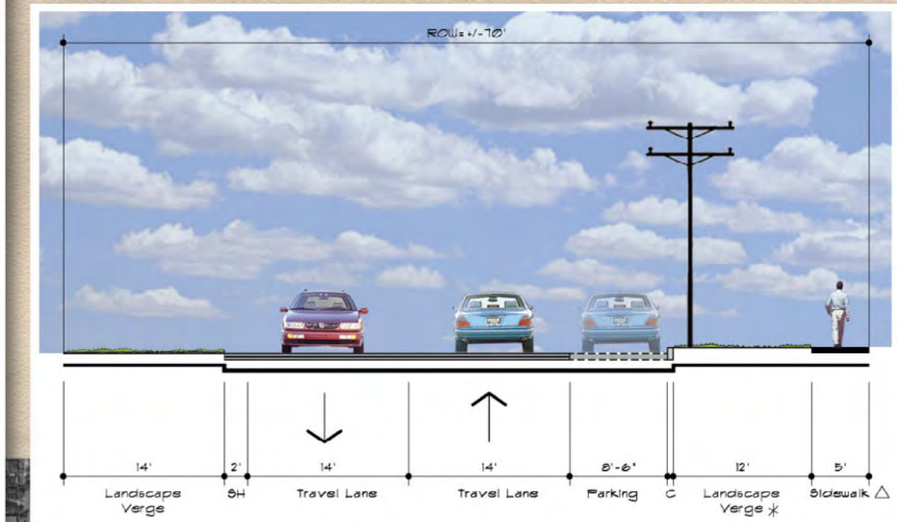
quickfacts

- Ranked 7th in priority list
- On-street facility
- 1.04 miles
- 34,000 AADT
- 35 mph posted speed limit



North Federal Highway

(NE 36th St. to NE 39th St.)



North Federal Highway

(NE 39th St. to NE 54th St.)

△ Sidewalk varies between 5' & 12'

✳ Landscape verge varies between 5' & 12'

Overpass at Interstate 195 would provide challenge in maintaining bicycle connection.

Existing pavement width appears adequate for adding bicycle lanes on both sides.

Above ground utility conflicts at back of curb throughout corridor.

Bicycle PROJECT FEASIBILITY EVALUATION

Tier II Evaluation

Kimley-Horn and Associates, Inc.

Tier II Evaluation

GENERAL DESIGN PRINCIPALS

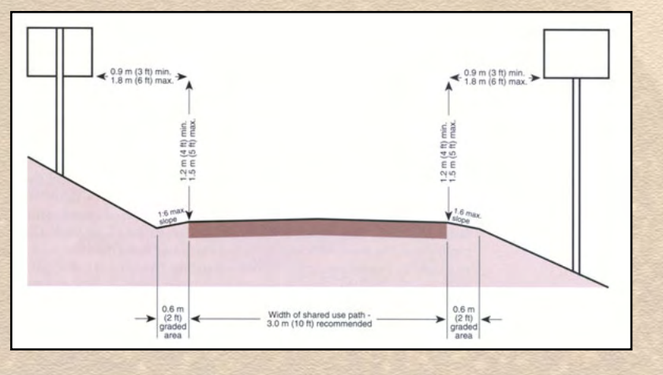
Bicycle PROJECT FEASIBILITY EVALUATION

As the highest ranked corridor, Commodore Trail was selected to complete a more detailed Tier II feasibility evaluation to identify appropriate facility types, a general alignment, and potential design challenges associated with building a trail system from Cocoaplum Circle to Brickell Avenue. Right-of-way maps collected from the City of Miami and Miami-Dade County are superimposed into CADD software with parcel information maintained by the Miami-Dade County GIS Department. This information serves as the most current right-of-way data available at the time of this evaluation; however a corridor specific survey for the entire system should be completed prior to finalizing any official master plan for the corridor. Members of the planning team also visited the area on several occasions to take measurements and locate potential conflicts in the field associated with the proposed trail system. Together, this information serves as the foundation for the proposed trail alignment depicted on the following pages.

The alignment and proposed width for a potential Commodore Trail are based on design criteria for bicycle and pedestrian facilities contained in the AASHTO Guide for the Development of Bicycle Facilities, FDOT Bicycle Facilities Planning and Design Handbook, FDOT Pedestrian Facilities Planning and Design Handbook, and the Manual on Uniform Traffic Control Devices (MUTCD). Representatives for the Miami-Dade County MPO and Public Works Department agree that the guidelines outlined in these reference materials should apply to the evaluation of Commodore Trail. The guiding design principals contained in these reference materials are summarized below as they apply to Commodore Trail.

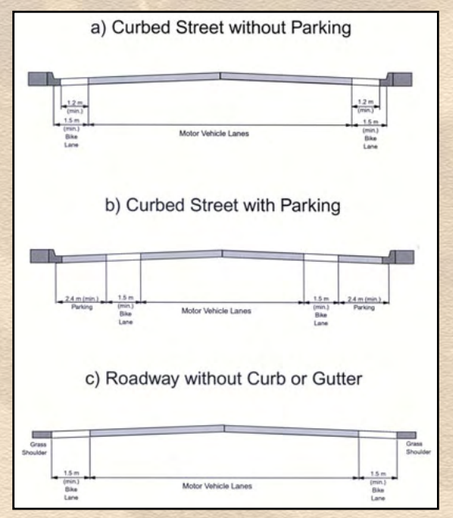
AASHTO Guide for the Development of Bicycle Facilities (1999)

The American Association of State Highway and Transportation Officials (AASHTO) publishes a set of recommended guidelines for designing bicycle facilities to provide detailed information for local, regional, and state transportation officials concerning the development of infrastructure that could enhance and encourage safe bicycle travel. Many of the recommended practices outlined in the AASHTO guidelines are referenced and/or serve as the foundation for local construction specifications related to bicycle facilities. Minimum criteria for the placement, width, and general design of two-way, shared use paths contained within the AASHTO guidelines are used for determining the feasibility of constructing a two-way, multiuse path along portions of Commodore Trail. Specifically, the evaluation assumes an ideal width of 12 feet for a two-way multiuse path that may be reduced to 8 feet for short stretches to avoid potential conflicts. Furthermore, the proposed alignment assumes a minimum 5-foot horizontal separation between the outside travel lane and the multiuse path and when not available acknowledges AASHTO's recommendation for a vertical barrier between vehicles and bicycle/pedestrian traffic.



FDOT Bicycle Facilities Planning and Design Handbook (2000)

The Florida Department of Transportation publishes a Bicycle Facilities Planning and Design Handbook to provide guidelines and criteria to state and local government officials for the planning, design, construction, operation, and maintenance of safe on-street bicycle facilities and shared use paths. The minimum width for urban bicycle lanes enforced by the State for curbed streets without parking is 4 feet, measured from the outside travel lane strip to the edge of pavement. The minimum width for an urban bicycle lane on a curbed street with on-street parking is increased to 5 feet as one means to help minimize the conflict between opening car doors and bicyclists. These design standards are recognized by the Miami-Dade County Public Works Department for on-street bicycle facilities within the County. As such, these guidelines were used in determining the feasibility of incorporating bicycle lanes along portions of Commodore Trail.

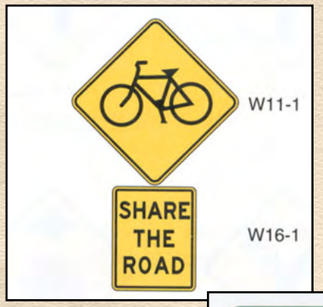


FDOT Pedestrian Planning and Design Handbook (2000)

The Florida Department of Transportation also publishes a Pedestrian Planning and Design Handbook as general guidelines for the development of safe, friendly, and convenient streets, walkways, and public plazas within the State. As part of this handbook, the FDOT recommends minimum width, placement, and crosswalk criteria for safe sidewalks and shared use paths. These criteria were used to the maximum extent possible for recommending sidewalk improvements along Commodore Trail.

Manual on Uniform Traffic Control Devices (Millennium Edition)

The Manual on Uniform Traffic Control Devices (MUTCD) serves as a unified standard for road managers nationwide to install and maintain traffic control devices on all streets and highways within their jurisdiction. As part of this manual, specific rules and guidelines are adopted for traffic control pertaining to bicycle facilities. Accordingly, the detailed evaluation for Commodore Trail recognizes the placement, spacing, and design criteria outlined in the MUTCD for bicycle facilities and recommends that the requirements for signage and pavement markings associated with the proposed trail system be studied further prior to finalizing any official master plan for Commodore Trail and/or beginning the development of construction plans. The level of detail associated with this evaluation assumes general warning signage located at all minor cross streets, signage designating on-street bicycle facilities, and wayfinding signage along the entire corridor. Furthermore, pavement markings for on-street bicycle lanes and lane striping for two-way, multiuse paths are assumed in conformance with minimum MUTCD standards.



The proposed alignment for Commodore Trail runs along six different roadways and traverses through a collection of residential neighborhoods, regional parks, and the heart of Cocoanut Grove. As such, the corridor was divided into six segments to correspond with changing conditions and potential design solutions for implementing a trail network. The current conditions and general bicycle and pedestrian facilities proposed for these segments are summarized below.

Cocoaplum Circle to Franklin Avenue (Sheets 1-19)

The segment from Cocoaplum Circle to Franklin Avenue measures approximately 1.94 miles and includes Edgewater Drive, SW 37th Avenue, and Main Highway. The majority of the segment is a two lane facility with heavy vegetation along both sides of the street. One exception is Edgewater Drive, where heavy vegetation gives way to on-street parallel parking and 4-foot sidewalks along both sides of the street. Limited right-of-way and conflicts all along the west side of the corridor makes a two-way, multiuse path on the east side of the corridor the most appropriate treatment for bicycles and pedestrians traveling in this area. Several design challenges associated with placing a two-way multiuse path along the east side of the street are highlighted in the following pages.

Franklin Avenue to South Bayshore Drive (Sheets 20-23)

The segment from Franklin Avenue to South Bayshore Drive measures approximately 0.41 miles and includes Main Highway and McFarlane Road. This segment travels directly through the heart of downtown Cocoanut Grove as a two lane facility with a center left turn lane, on-street parallel parking, and wide sidewalks. Restaurants in the area commonly use the wide sidewalk for café seating. Limited pavement width between the curb and gutter does not allow for designated 5-foot on-street bicycle lanes, however creative lane restriping and a lower posted speed limit maximizes the area for bicyclists to mix with traffic. This solution assumes implementation of 10-foot travel lanes, reduction in on-street parking lanes to 6 feet, and reconstruction of bulbouts along the corridor. The proposed lane reductions have been allowed by the Miami-Dade County Public Works Department for other County roadways.

McFarlane Road to Aviation Avenue (Sheets 24-29)

The segment from McFarlane Road to Aviation Avenue measures approximately 0.59 miles and runs along South Bayshore Drive. This section operates as a four lane, divided facility with landscaping and sidewalks along both sides. Bicycle facilities are proposed as on-street bicycle lanes and pedestrian facilities are proposed as a combination of monolithic sidewalk and meandering pedestrian paths on the east side of the street. Construction of on-street bicycle lanes would require reconstructing the center median curbs to add 1-foot of additional pavement to both the eastbound and westbound travel lanes.

Aviation Avenue to Fair Isle Street (Sheets 30-36)

The segment from Aviation Avenue to Fair Isle Street measures approximately 0.80 miles and runs along South Bayshore Drive. The entire corridor is a two lane facility with wide, 15-foot travel lanes. A reduction in lane width to 11 feet would accommodate on-street bicycle lanes in both directions and a sidewalk, varying in size from 6 to 12 feet, would serve as the only pedestrian facility along the east side of the street.

Fair Isle Street to Mercy Hospital (Sheets 37-40)

The segment from Fair Isle Street to Mercy Hospital measures approximately 0.49 miles and runs along South Bayshore Drive. The street operates as a three lane facility with a landscape verge on the west side of the street and changing conditions along the east side of the street comprised of a landscape verge, shoulder, and/or sidewalk from block-to-block. Eleven and a half foot travel lanes along the corridor generally allow for 4-foot on-street bicycle lanes along both sides of the street by reducing travel lane width to 10 feet and adding four feet of asphalt to the north side of the street. This application would not be feasible in the area of Mercy Way, where a center left turn lane to serve both the hospital and high school prohibits the presence of on-street bicycle lanes without moving curb lines. Limited right-of-way in the area and conflicts along the west side of the street do not allow for this to occur. Further study in this area is recommended, however bicyclists may have to share the outside travel lane with motorists for this short stretch. The existing 6-foot sidewalk along the east side of the street can not be widened because of a historic wall along private property and street lights located within the 2-foot existing landscape verge.

Mercy Hospital to Brickell Avenue (Sheets 41-47)

The segment from Mercy Hospital to Brickell Avenue measures approximately 0.80 miles in length and includes South Bayshore Drive and South Miami Avenue. This segment operates as a four lane facility with 12-foot travel lanes and a 4-foot landscape verge and 5-foot sidewalk along both sides of the street. Again, on-street bicycle lanes are proposed along both sides of the street by reducing travel lane width. However, this application would not be feasible for the section of roadway between the Miami Science Museum and SE 32nd Road where large shade trees form a canopy over the street. Protecting these trees has reduced the existing lane width to 10 feet in this area. Similar to the section of Commodore Trail near Mercy Hospital, this area should be studied further, but bicyclists may have to share the outside travel lane with motorists for this short stretch. The existing 5-foot sidewalks are proposed to remain for pedestrian travel.

A more detailed evaluation of all six segments comprising the Commodore Trail is provided in the following pages.

General Note:
Alignment and width of the proposed path are based on the best available right-of-way data maintained by the City of Miami and Miami-Dade County. Actual alignment and/or proposed width may vary or be determined unfeasible based upon a corridor specific survey that should be completed prior to finalizing any official master plan for Commodore Trail and/or the beginning of construction plans.

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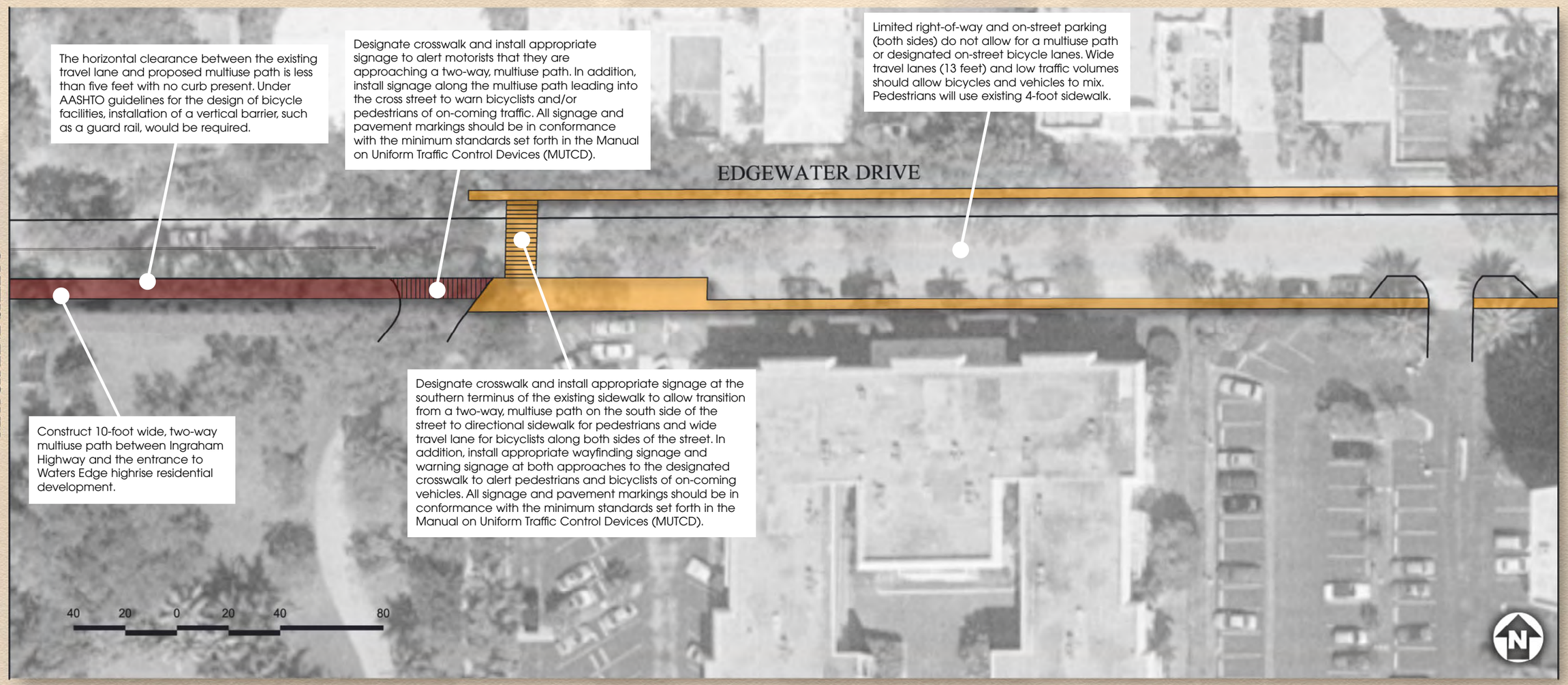
Tier II Evaluation

COMMODORE TRAIL

Bicycle PROJECT FEASIBILITY EVALUATION



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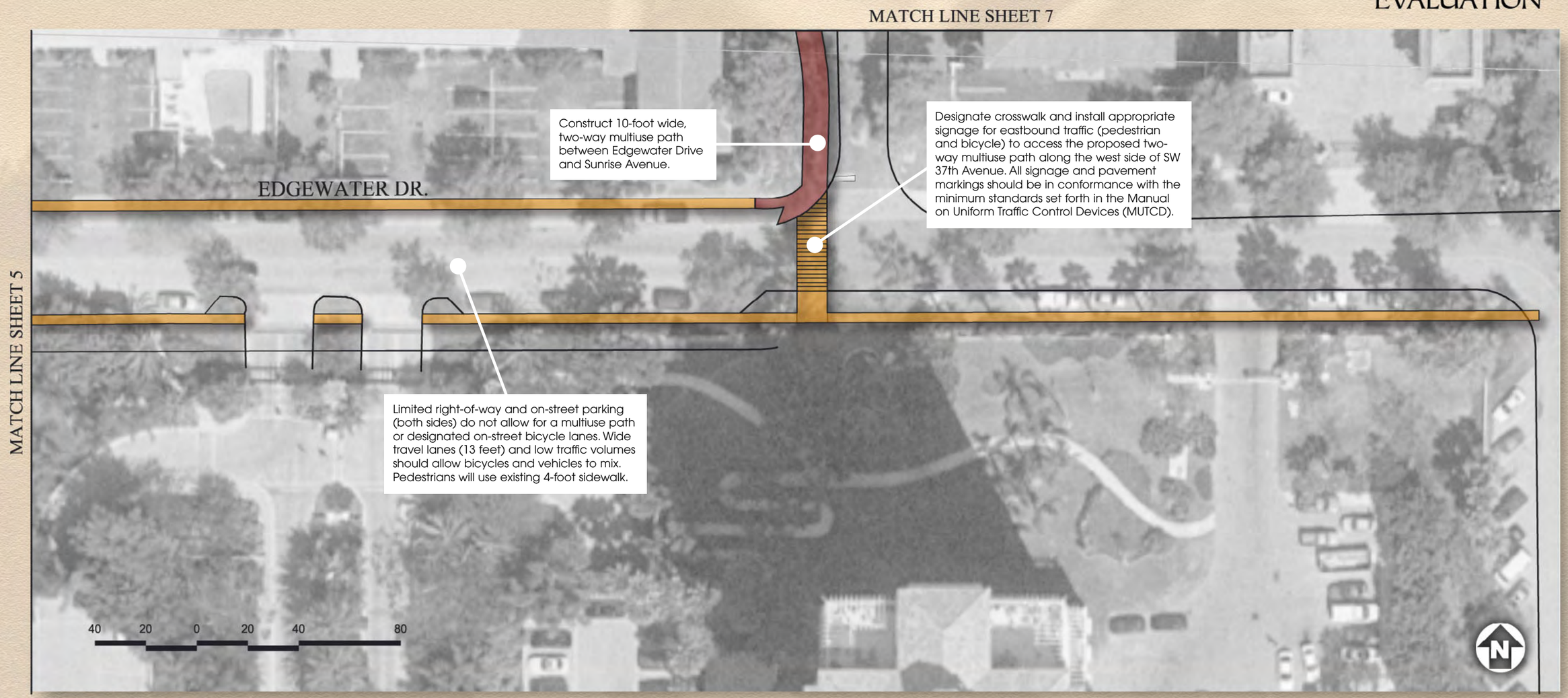

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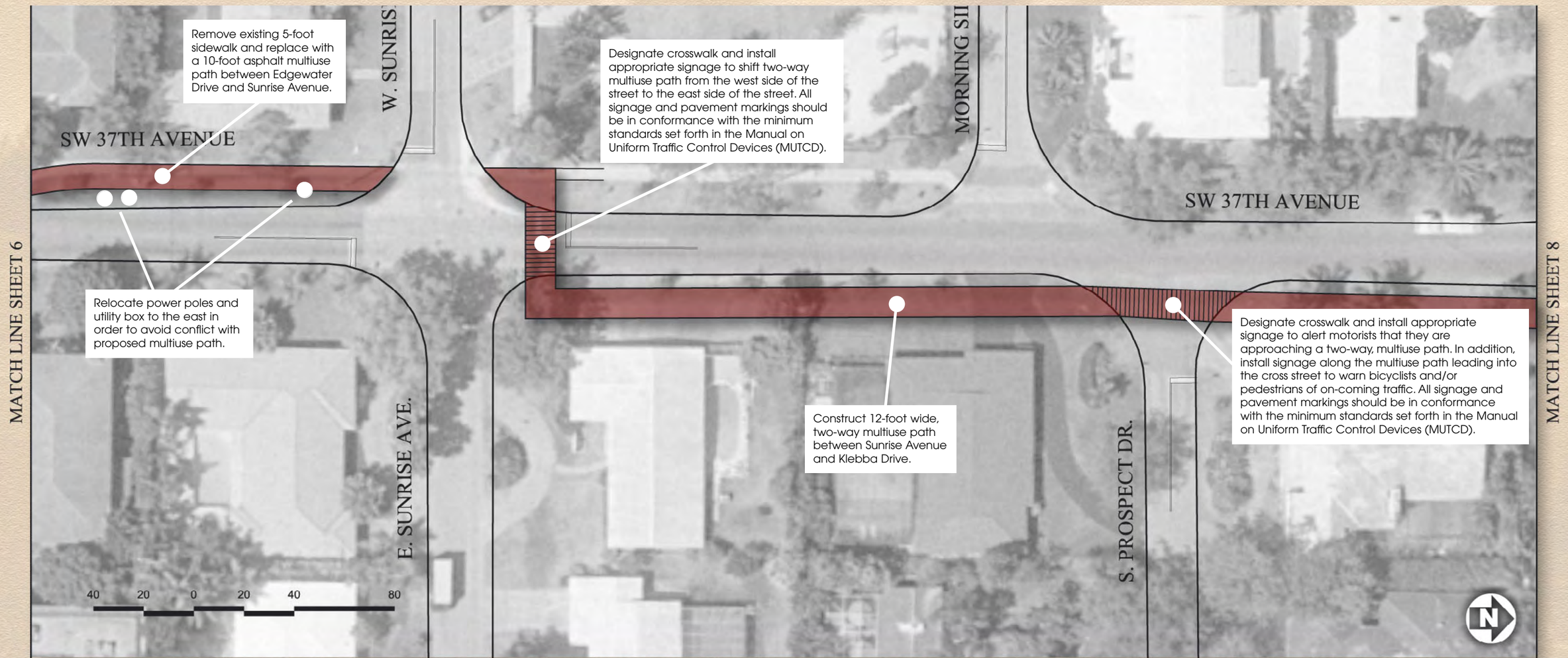
Tier II Evaluation

COMMODORE TRAIL

Bicycle PROJECT FEASIBILITY EVALUATION



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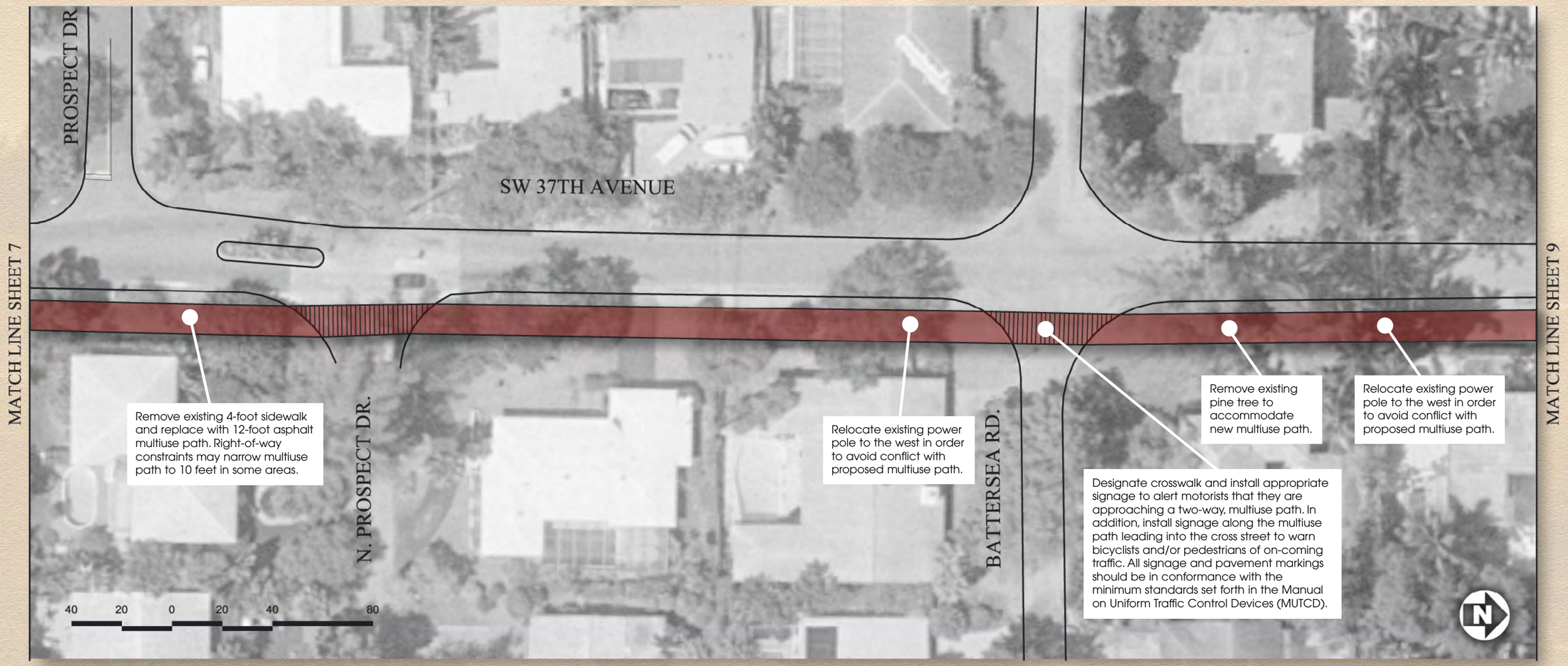

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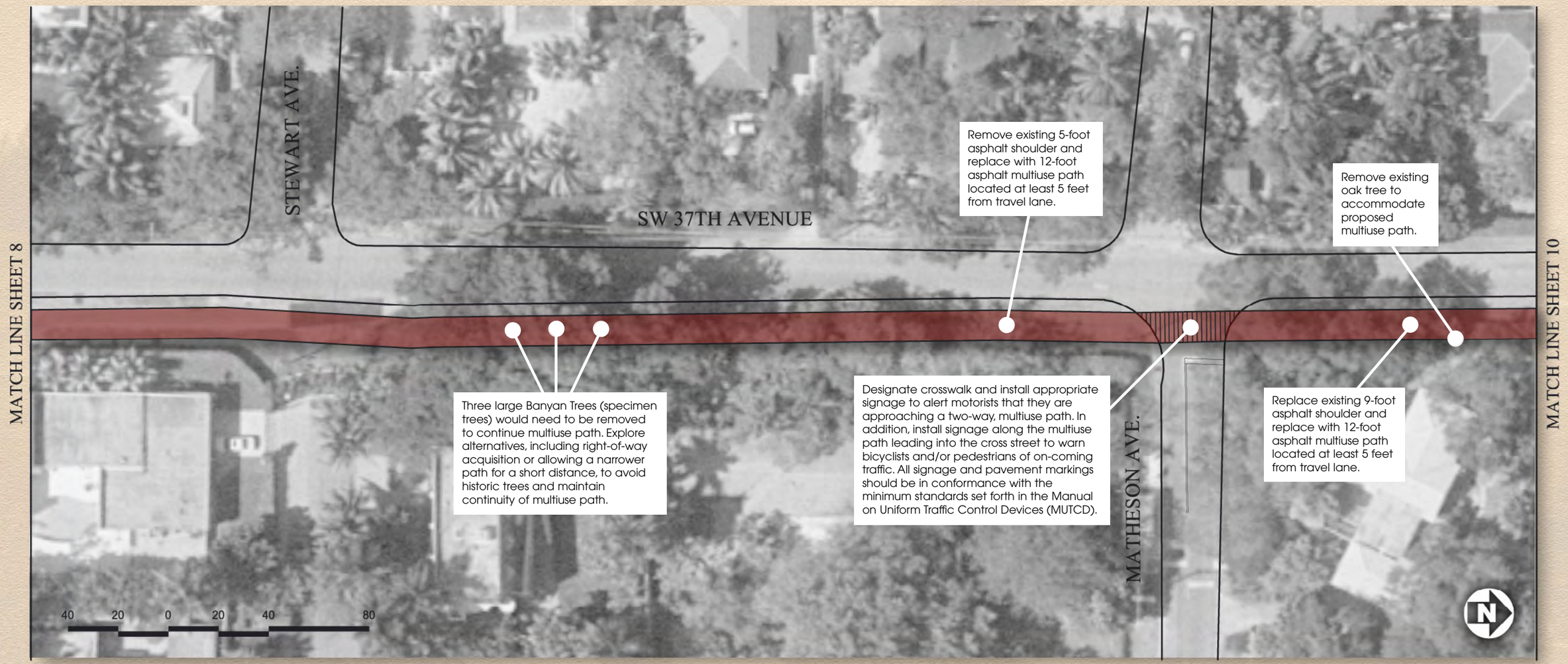

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Tier II Evaluation

COMMODORE TRAIL

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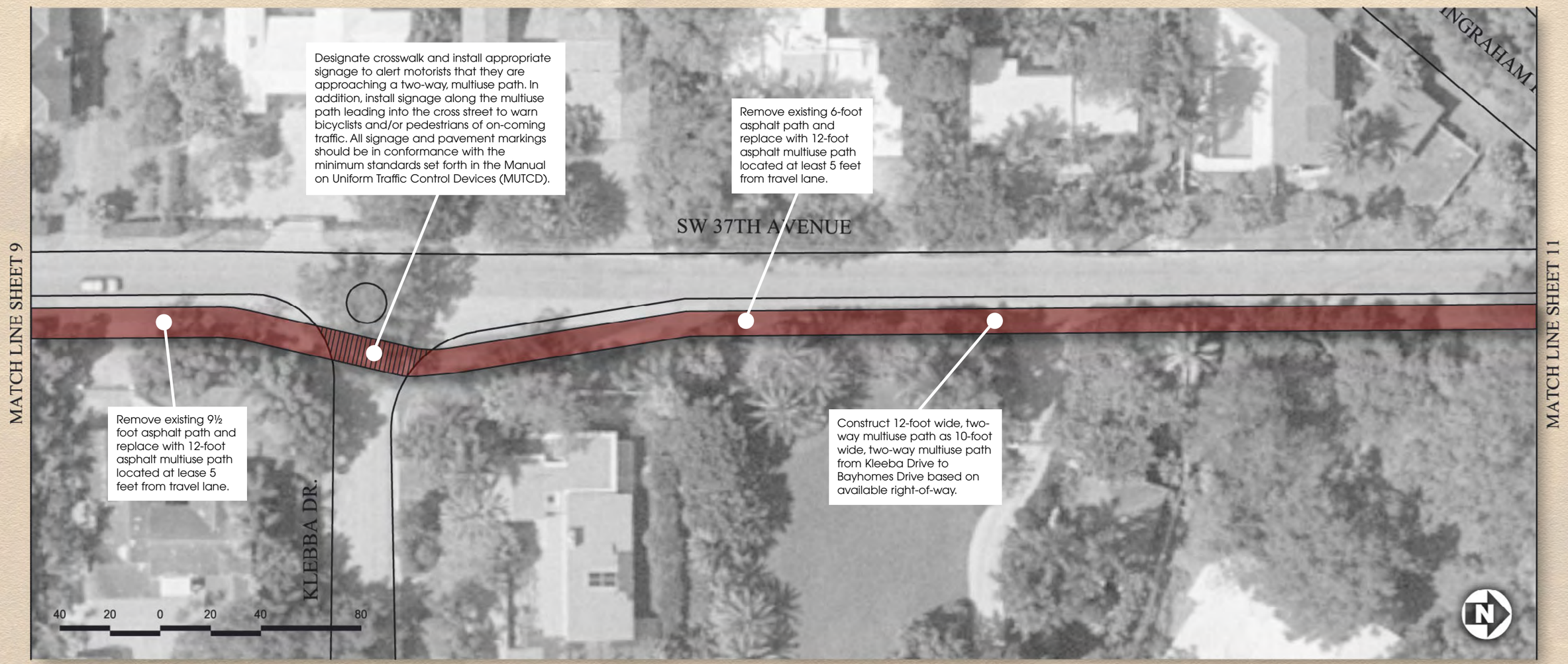

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Tier II Evaluation

COMMODORE TRAIL

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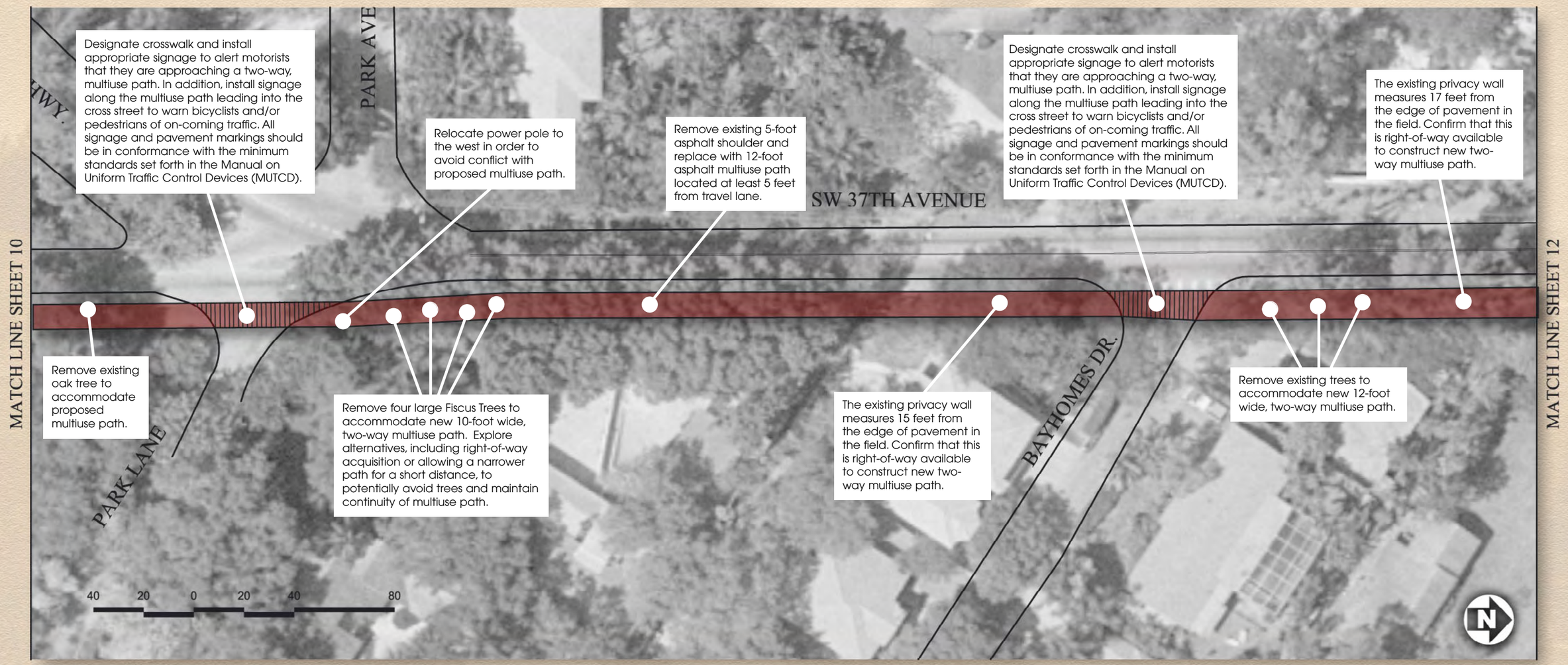

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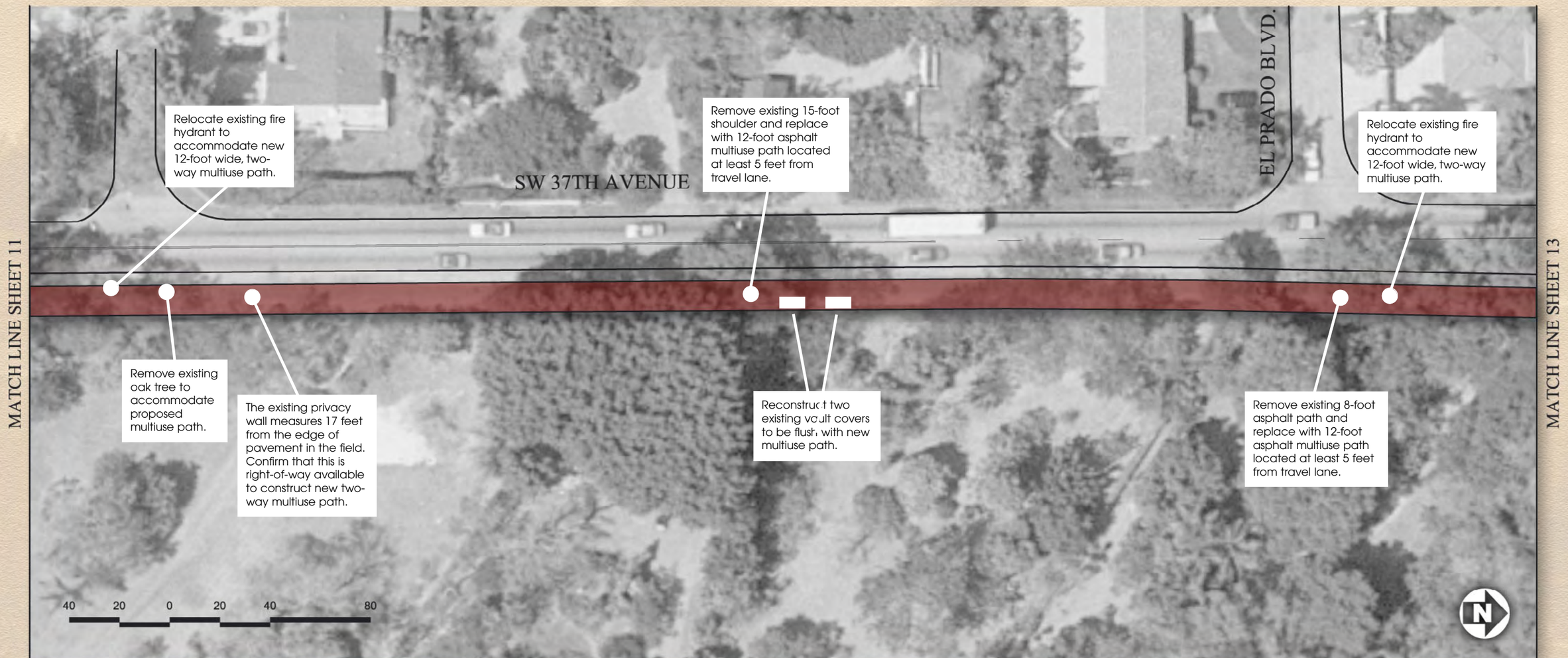

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Tier II Evaluation

COMMODORE TRAIL

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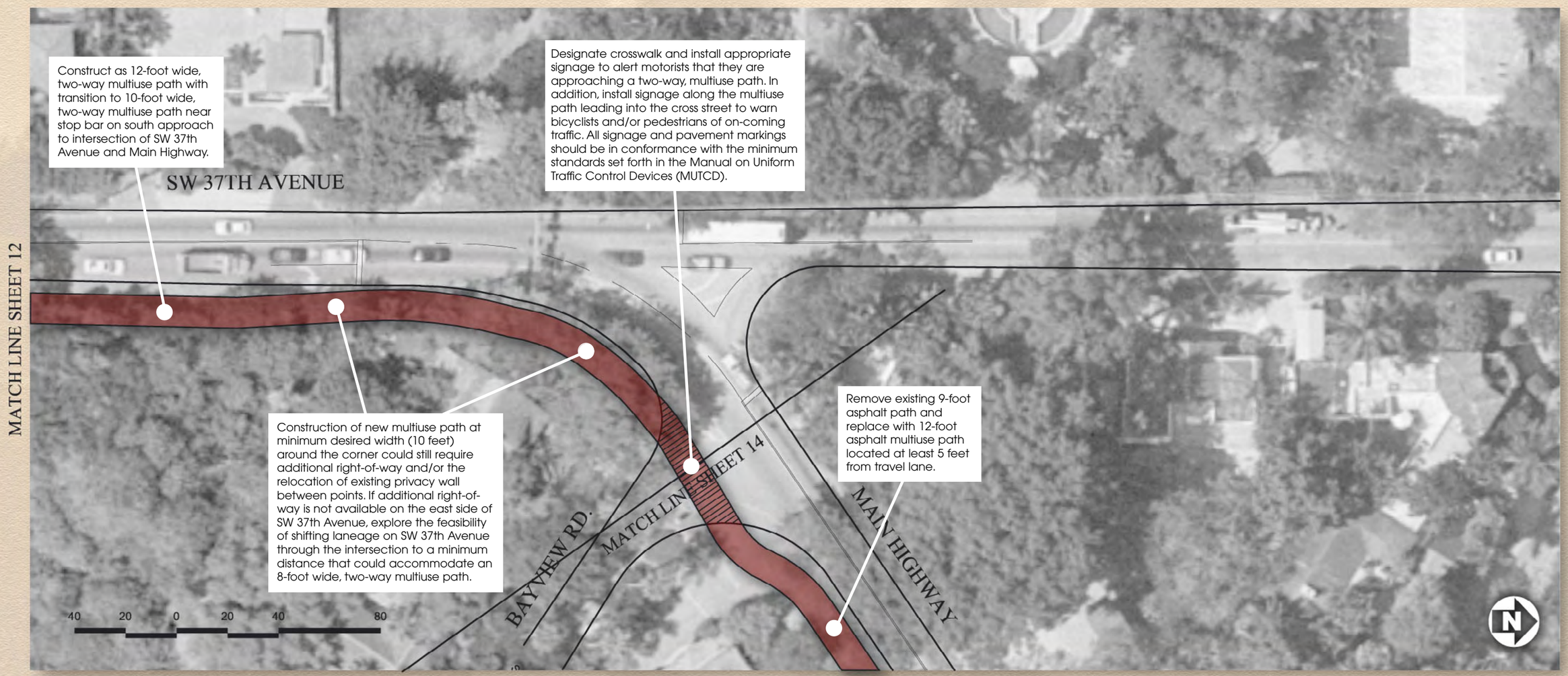

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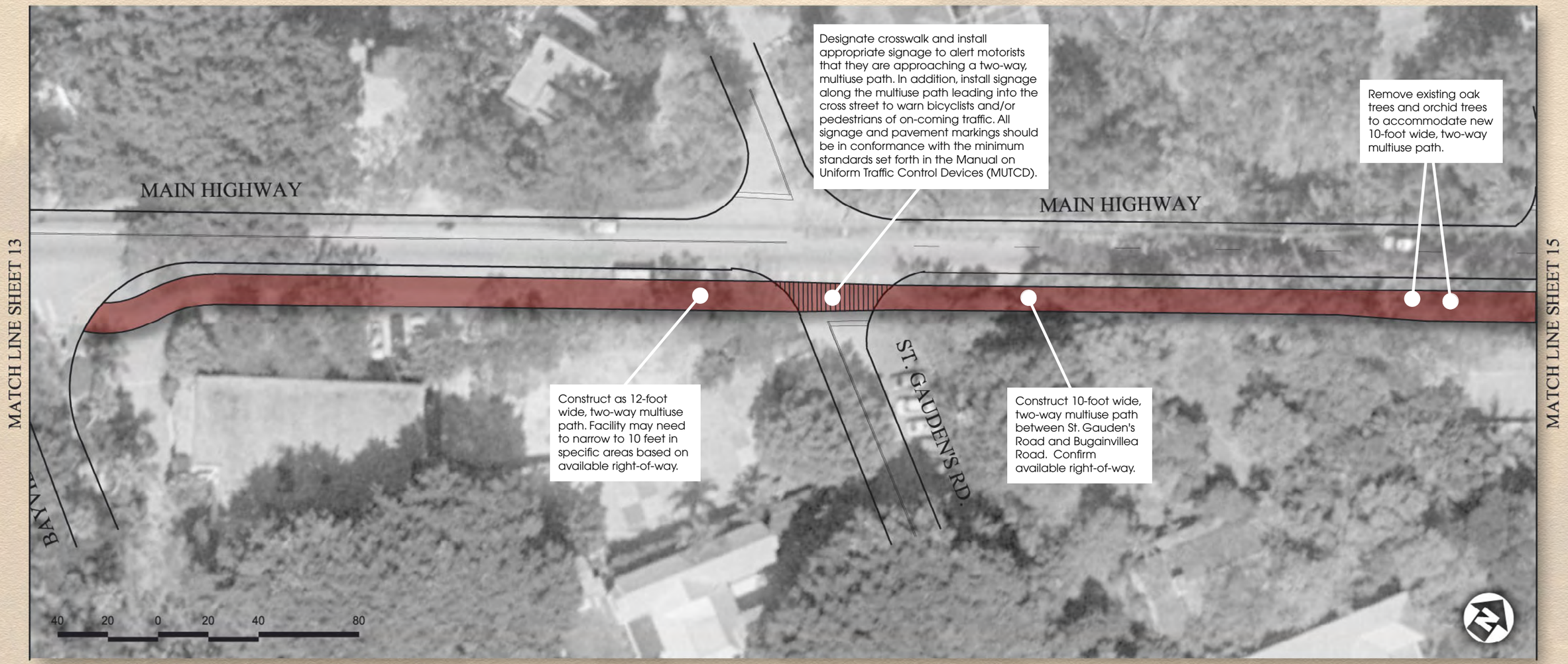

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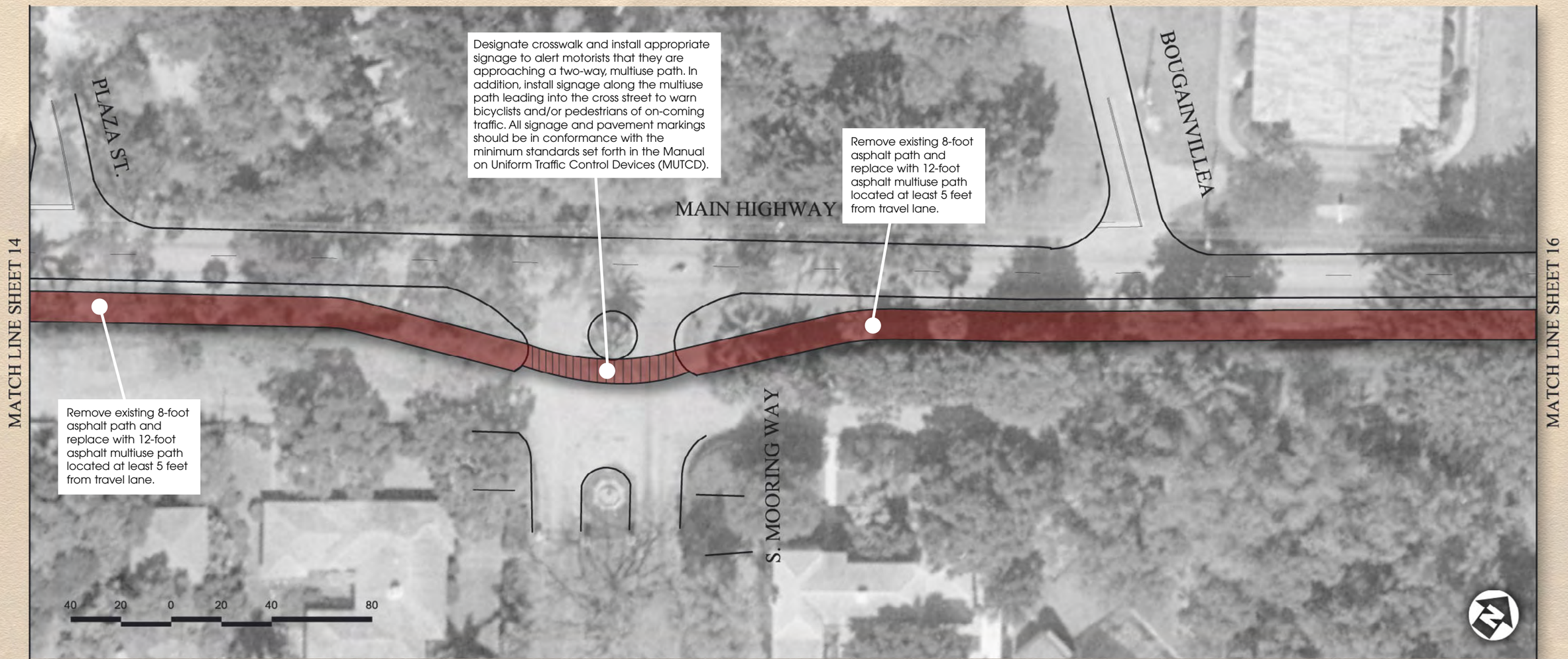

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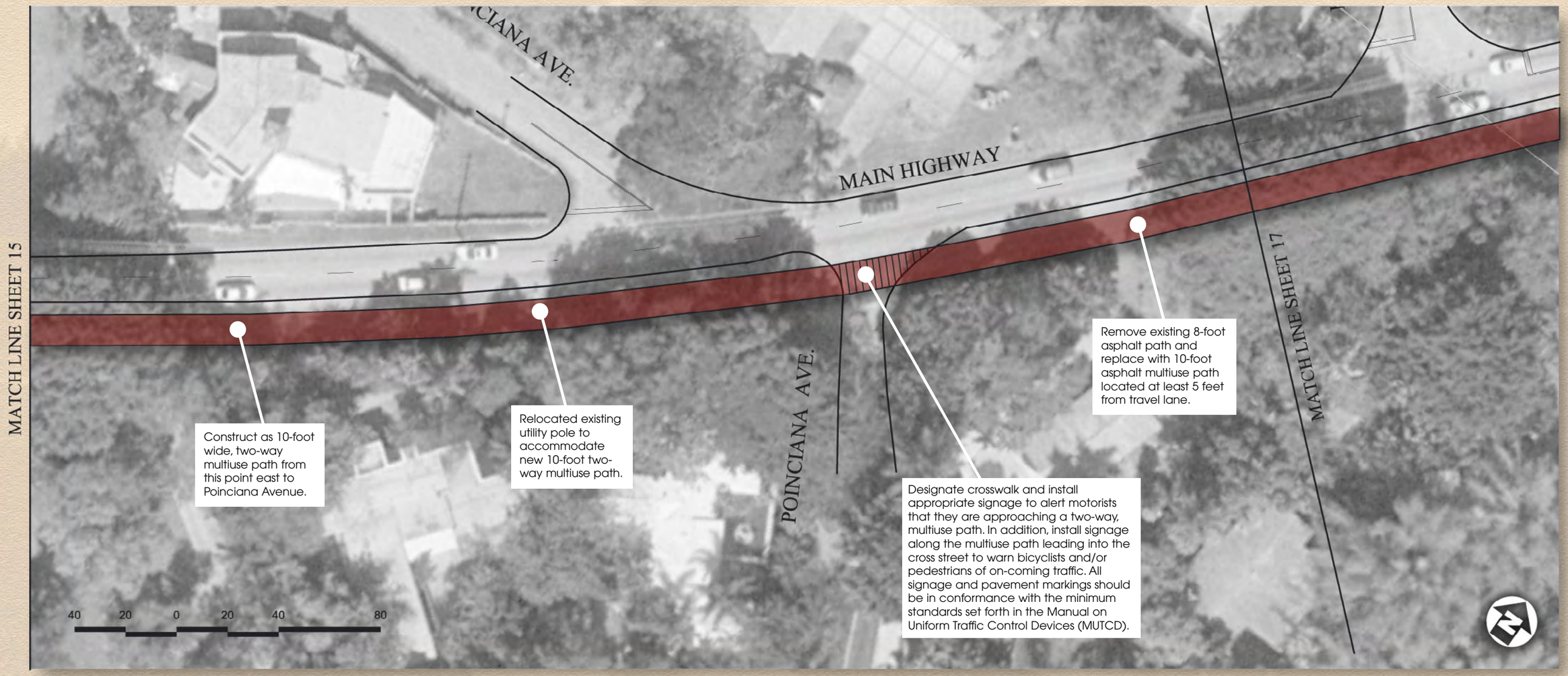

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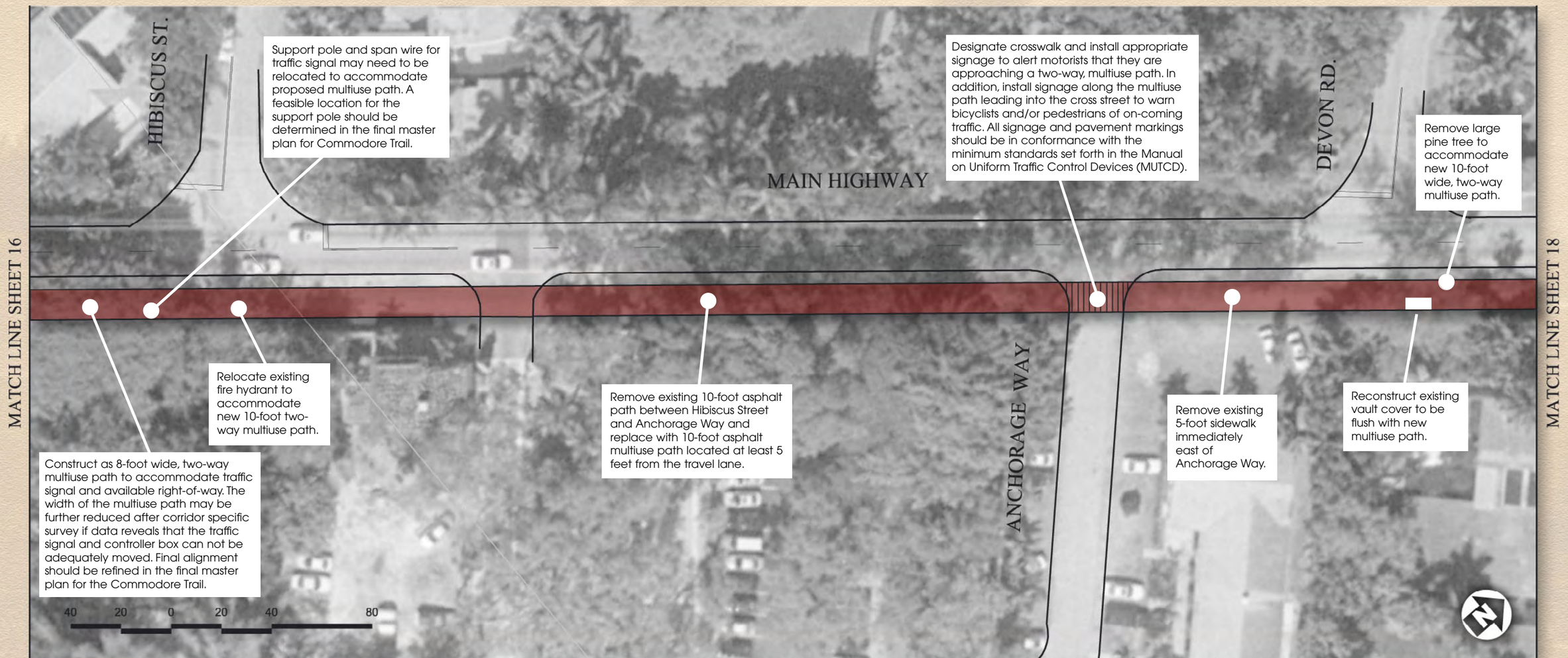

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Tier II Evaluation

COMMODORE TRAIL

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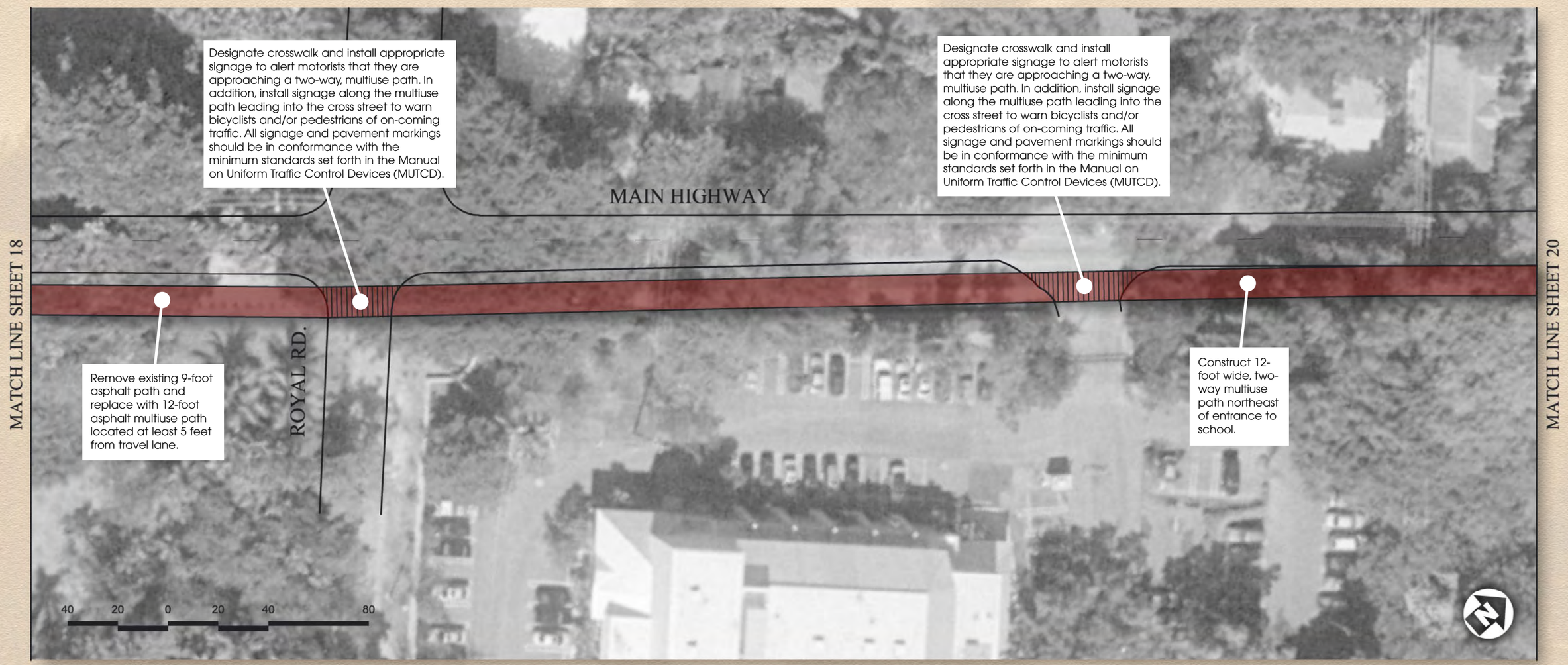

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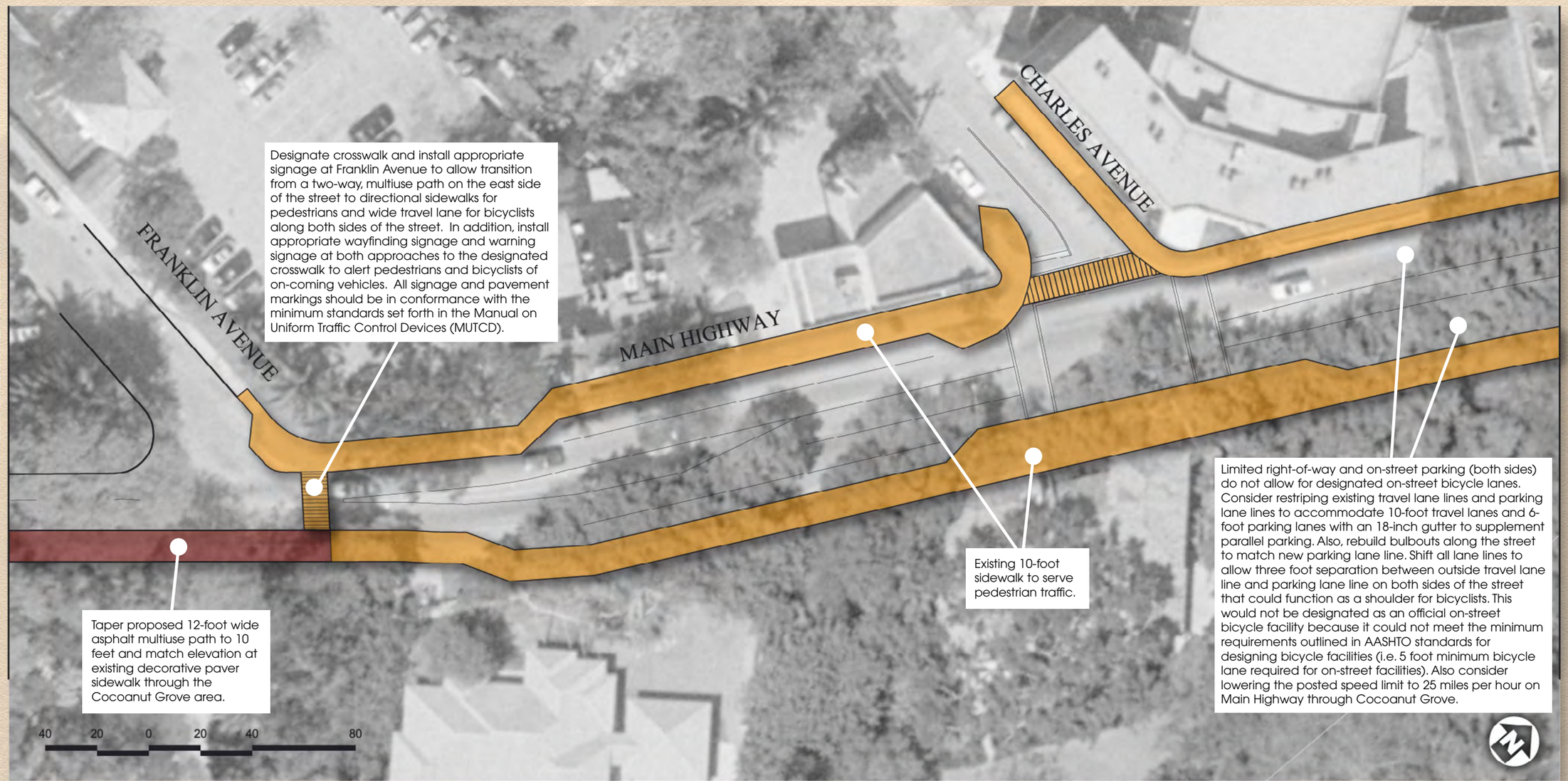

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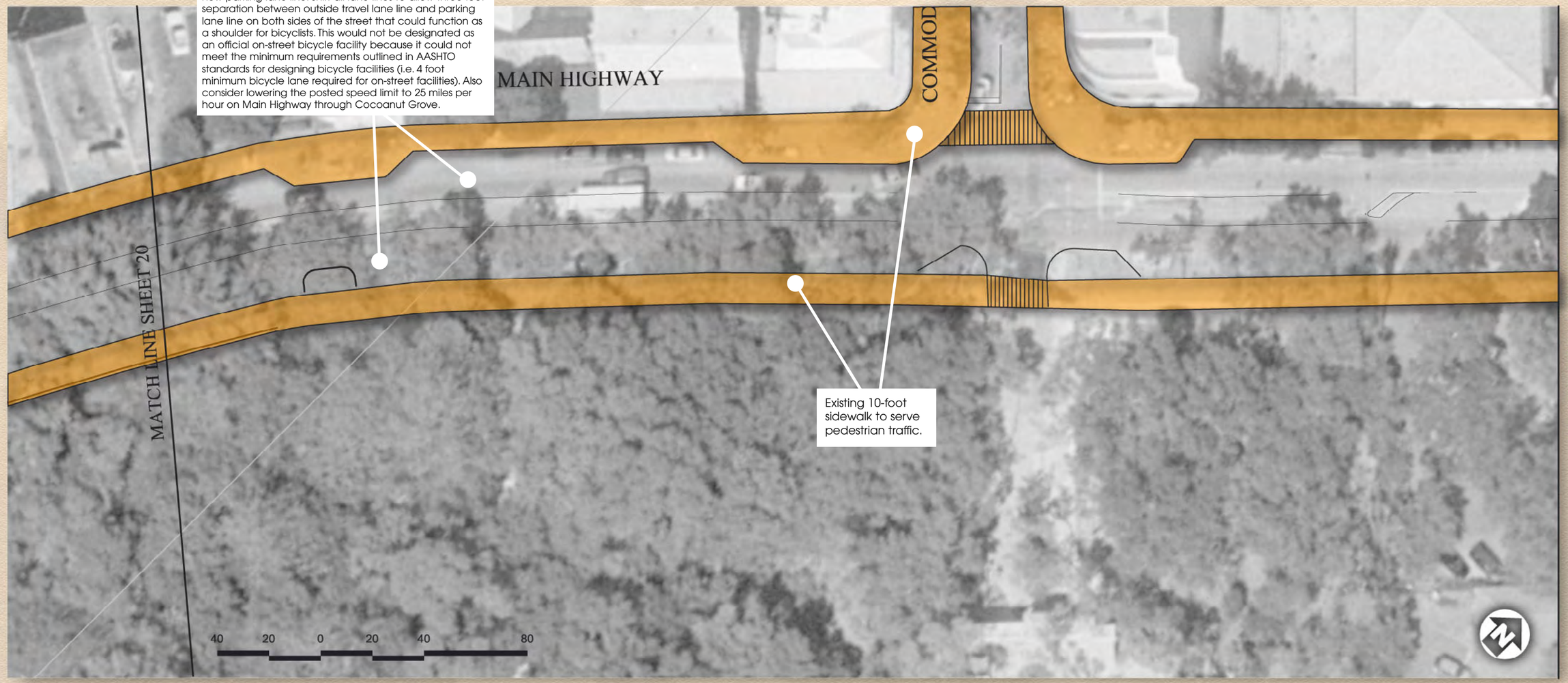
Tier II Evaluation

COMMODORE TRAIL

Bicycle PROJECT FEASIBILITY EVALUATION

Limited right-of-way and on-street parking (both sides) do not allow for designated on-street bicycle lanes. Consider restriping existing travel lane lines and parking lane lines to accommodate 10-foot travel lanes and 6-foot parking lanes with an 18-inch gutter to supplement parallel parking. Also, rebuild bulbouts along the street to match new parking lane line. Shift all lane lines to allow three foot separation between outside travel lane line and parking lane line on both sides of the street that could function as a shoulder for bicyclists. This would not be designated as an official on-street bicycle facility because it could not meet the minimum requirements outlined in AASHTO standards for designing bicycle facilities (i.e. 4 foot minimum bicycle lane required for on-street facilities). Also consider lowering the posted speed limit to 25 miles per hour on Main Highway through Cocoanut Grove.



Existing 10-foot sidewalk to serve pedestrian traffic.

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Tier II Evaluation

COMMODORE TRAIL

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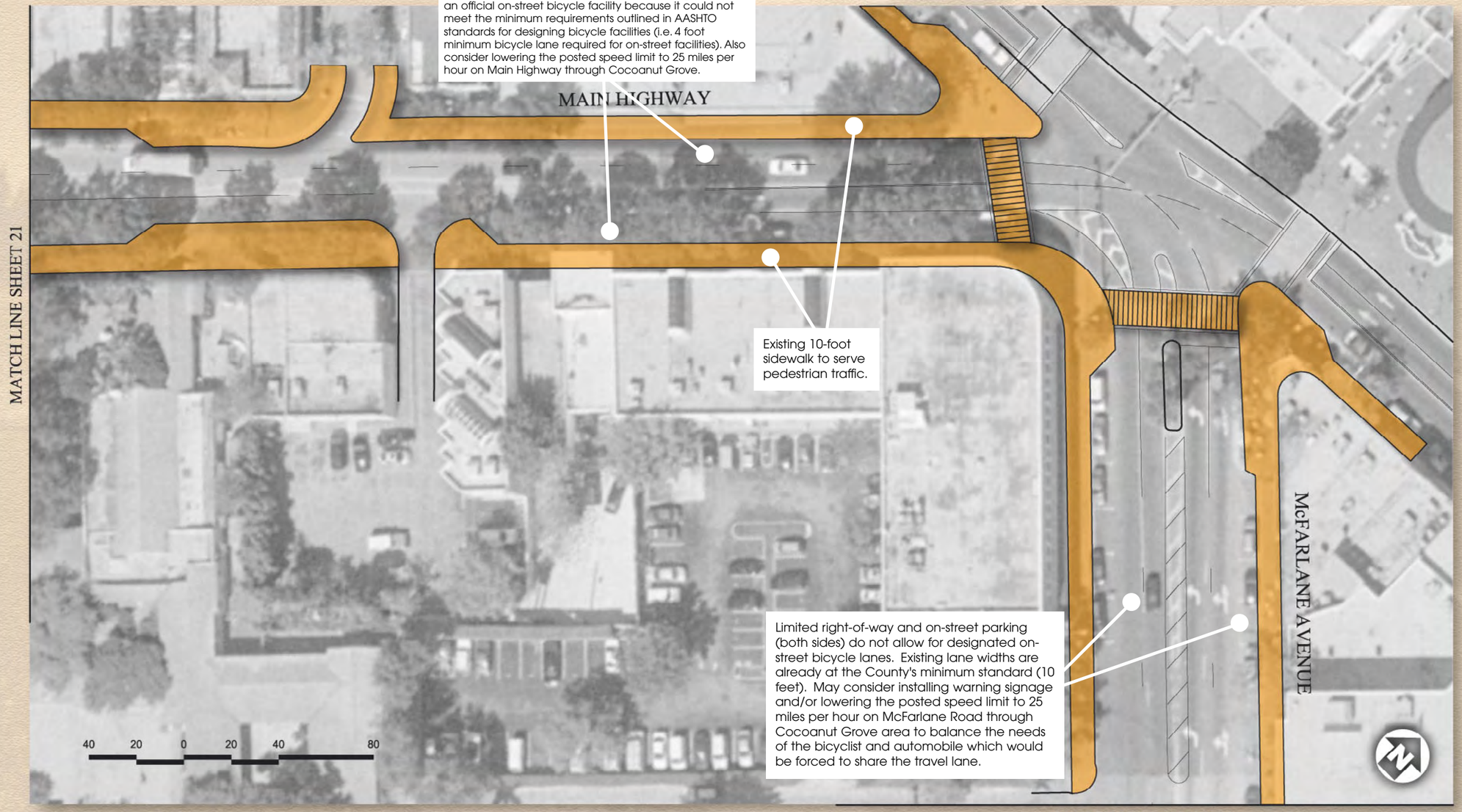

Existing 10-foot sidewalk to serve pedestrian traffic.

Limited right-of-way and on-street parking (both sides) do not allow for designated on-street bicycle lanes. Existing lane widths are already at the County's minimum standard (10 feet). May consider installing warning signage and/or lowering the posted speed limit to 25 miles per hour on McFarlane Road through Cocoanut Grove area to balance the needs of the bicyclist and automobile which would be forced to share the travel lane.

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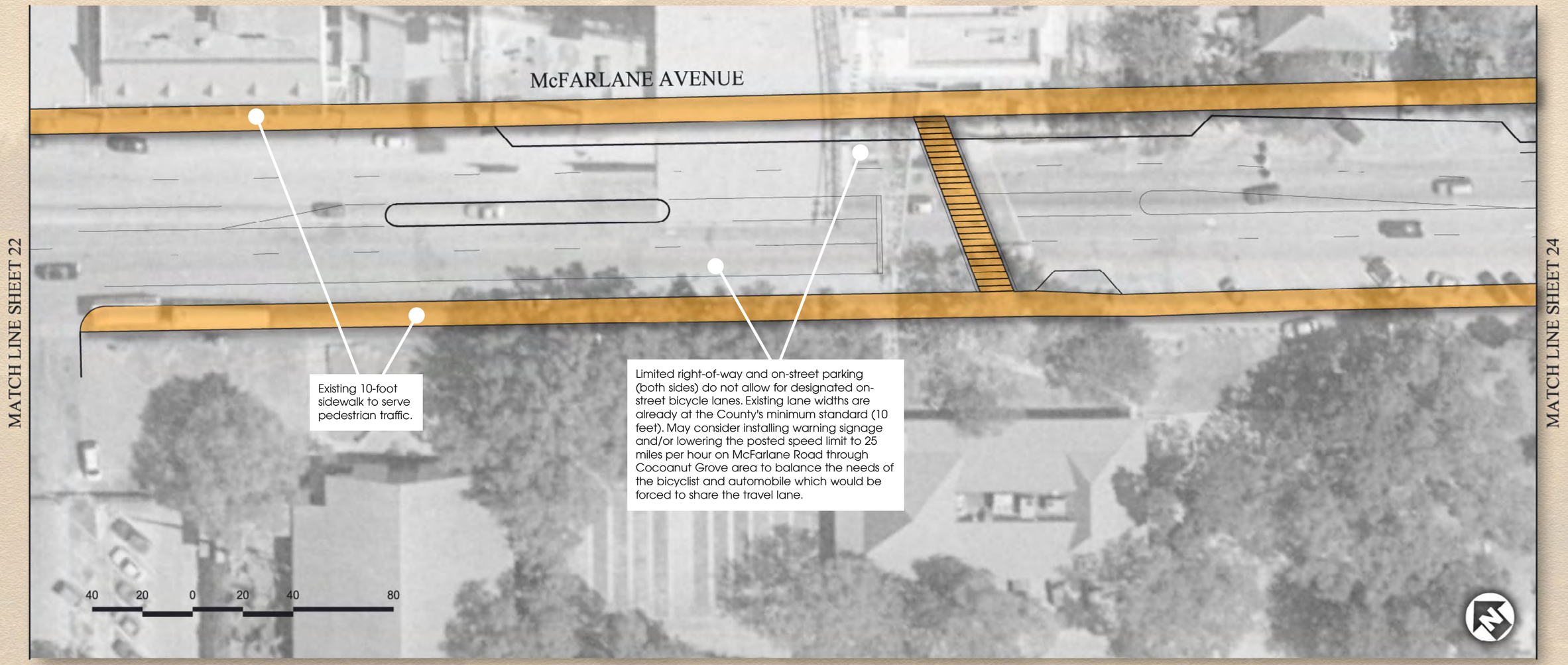

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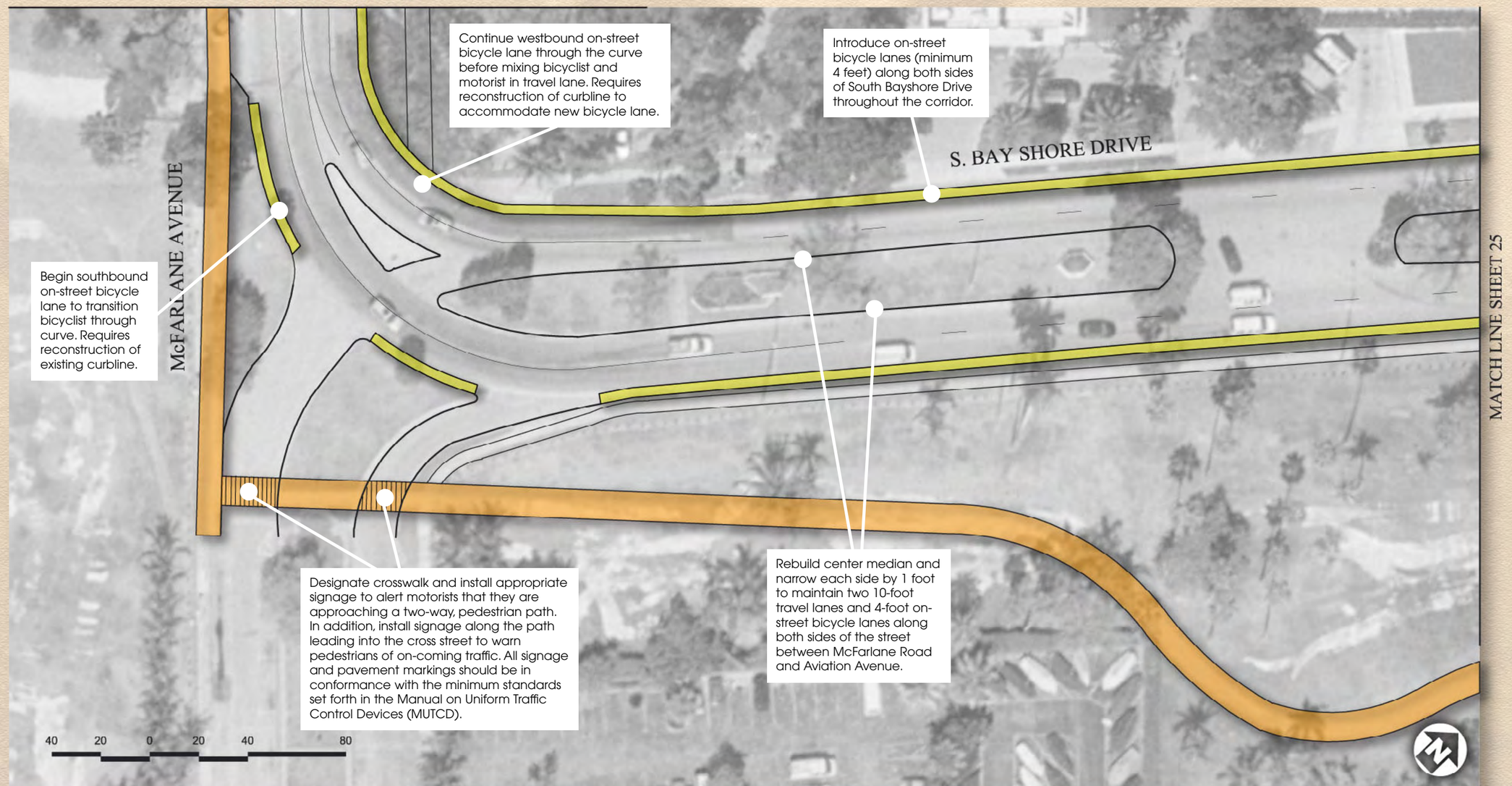

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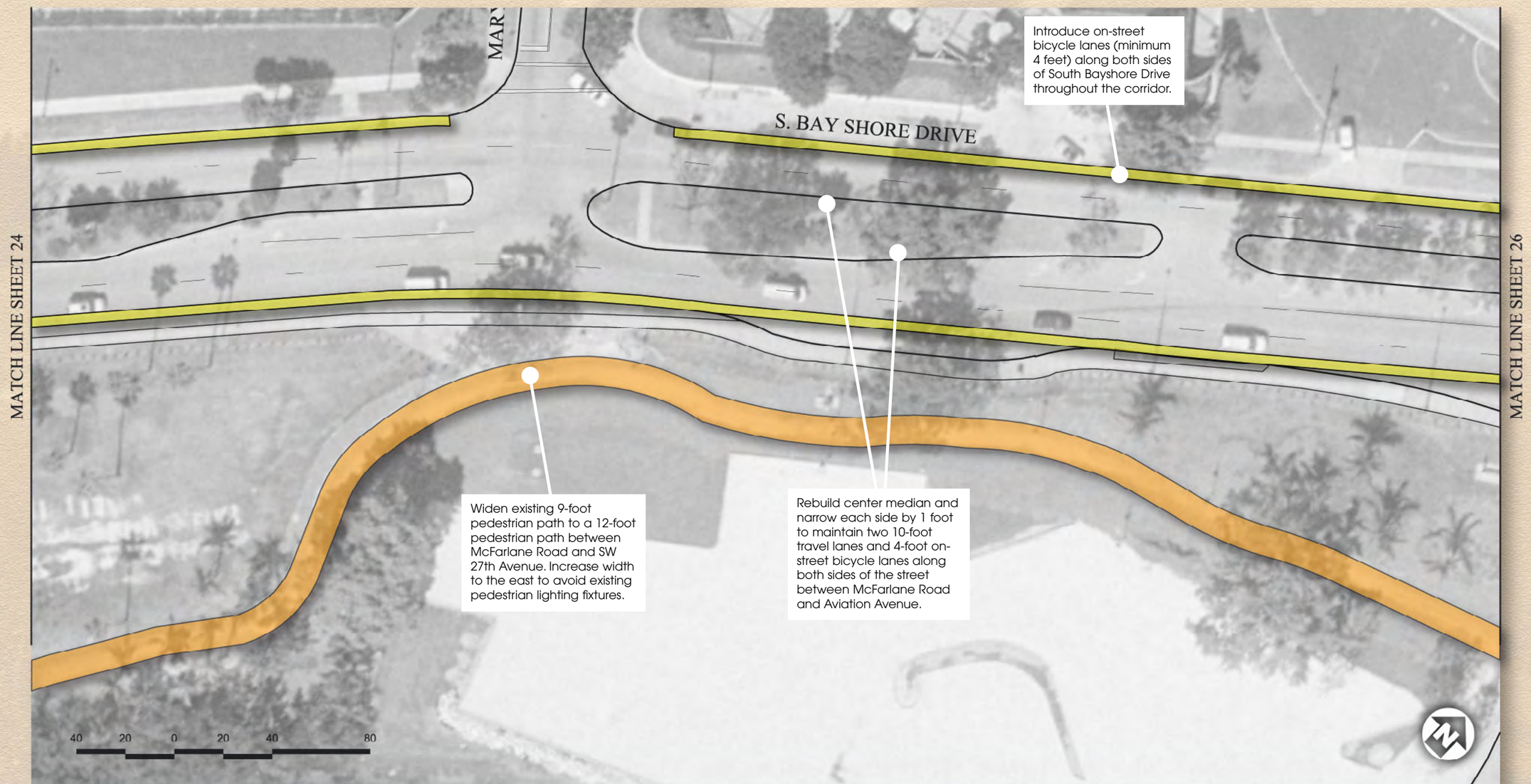

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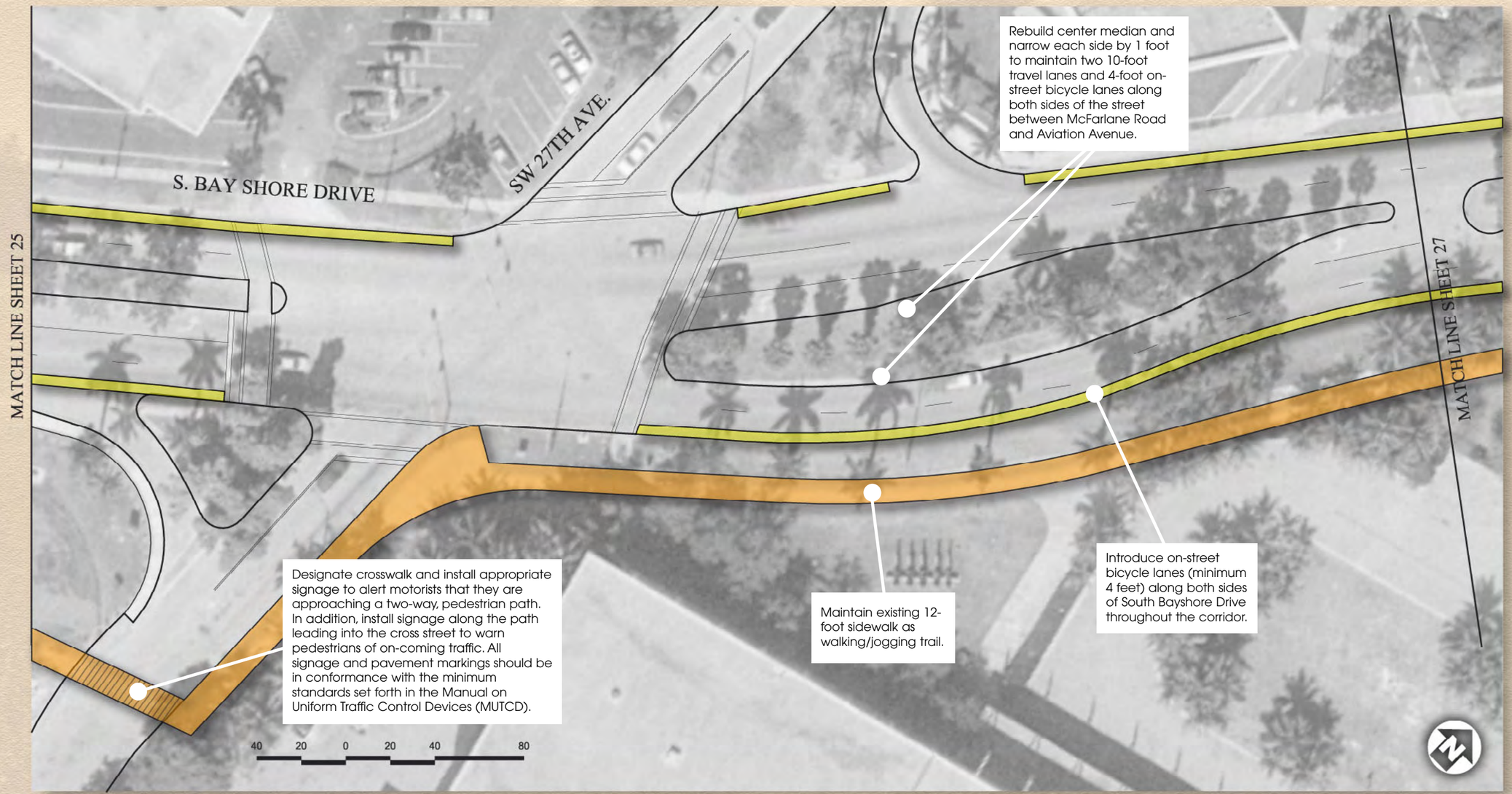

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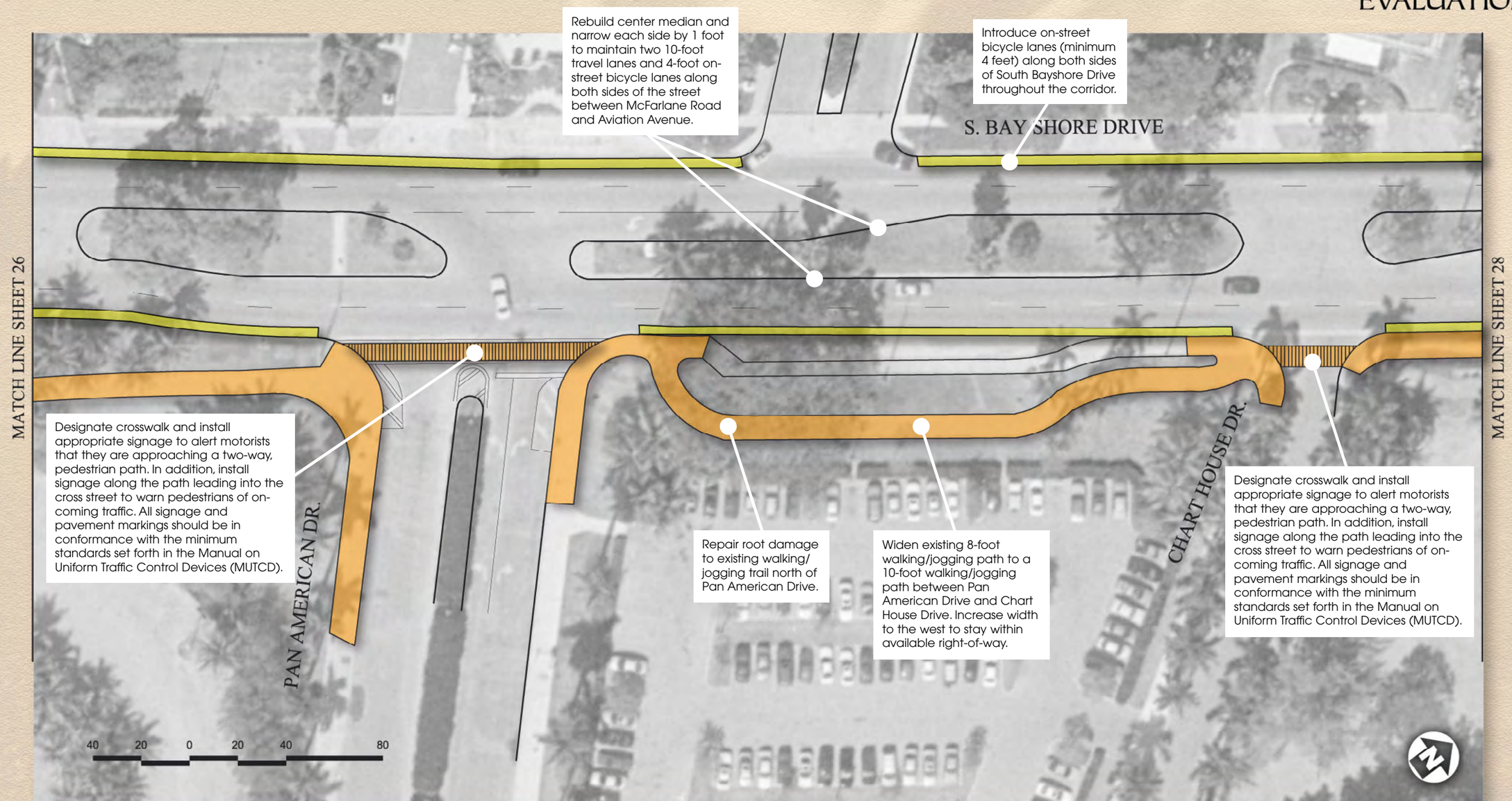

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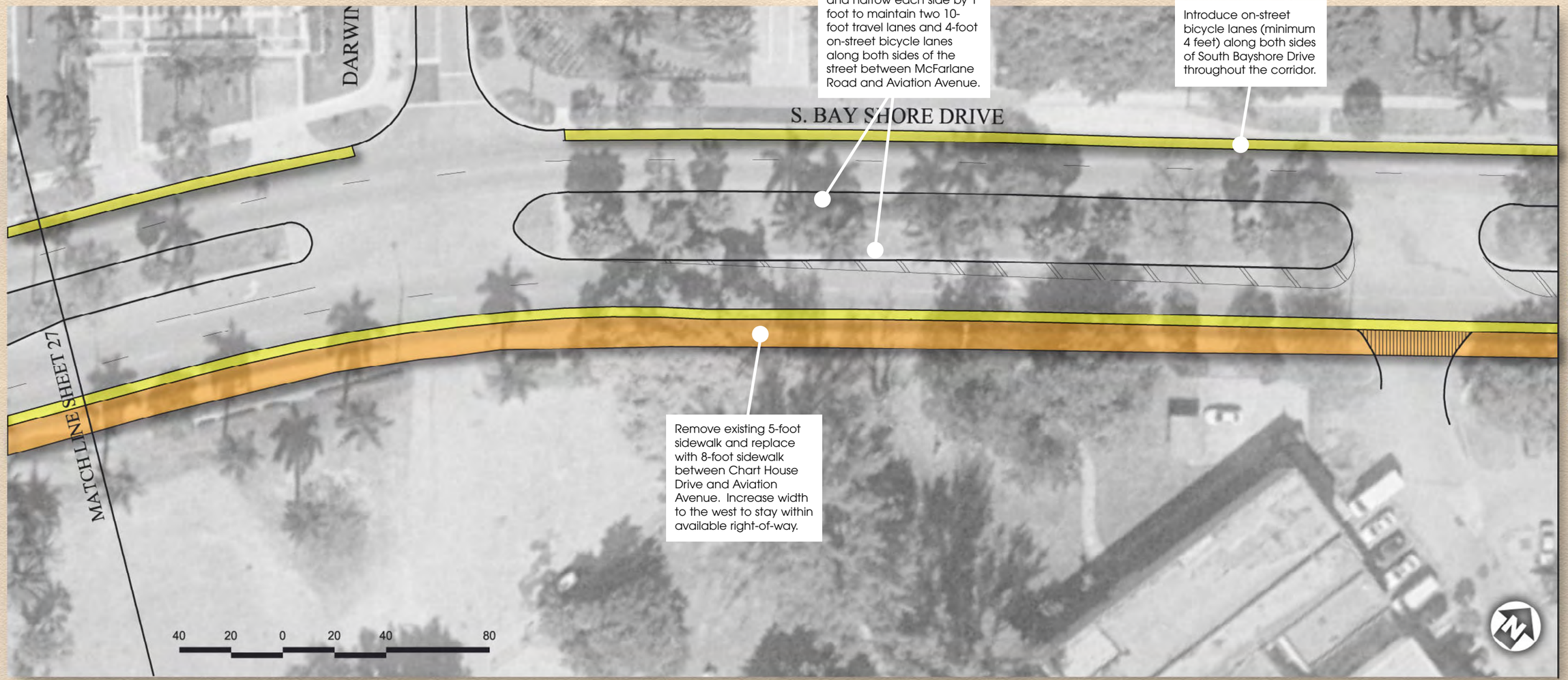

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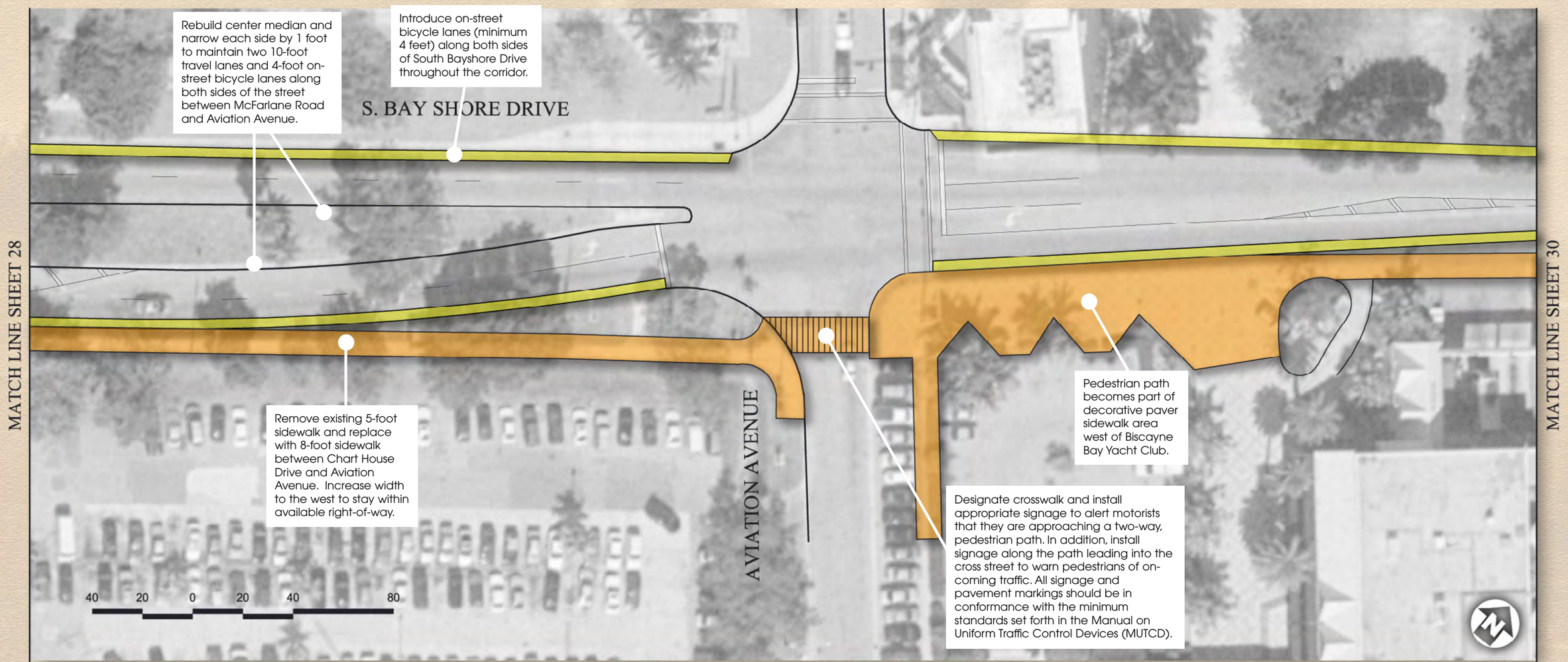

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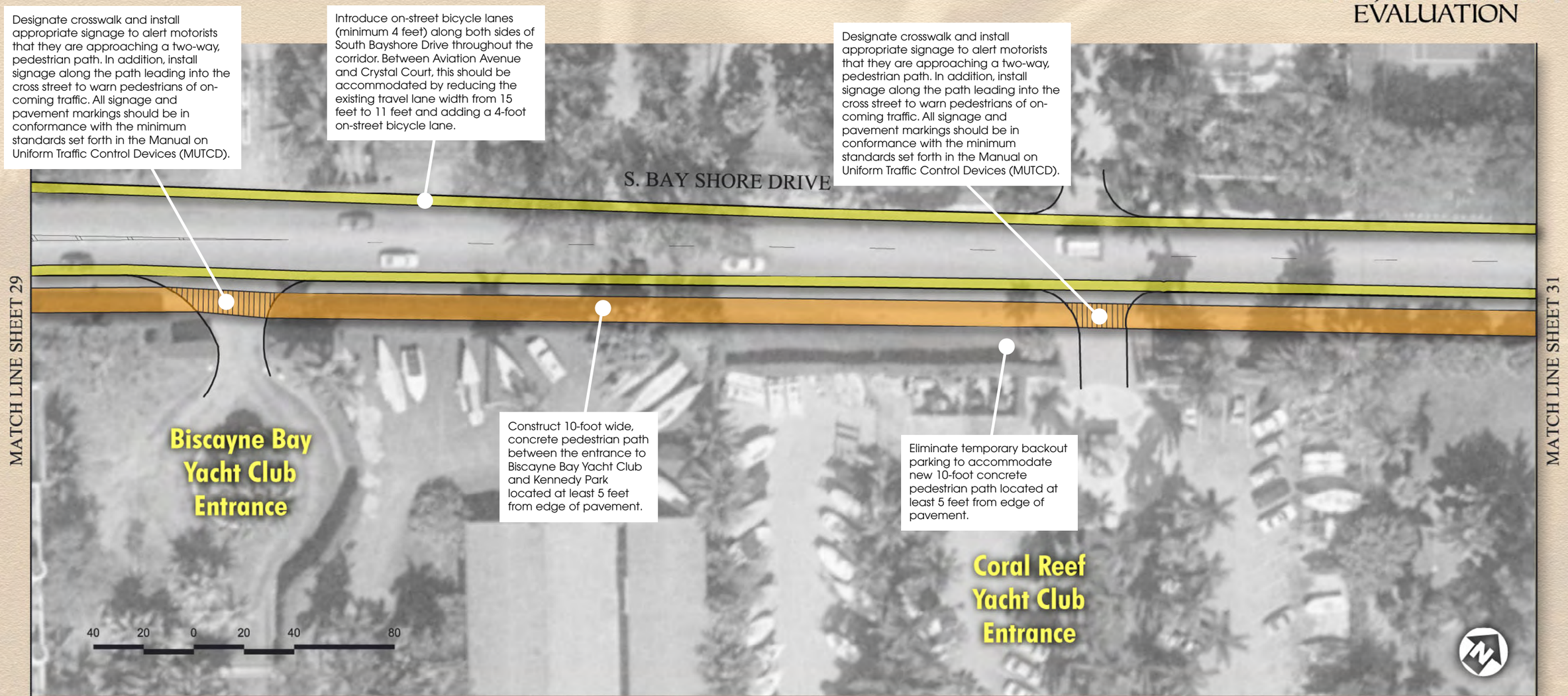
Tier II Evaluation

COMMODORE TRAIL

Bicycle PROJECT FEASIBILITY EVALUATION



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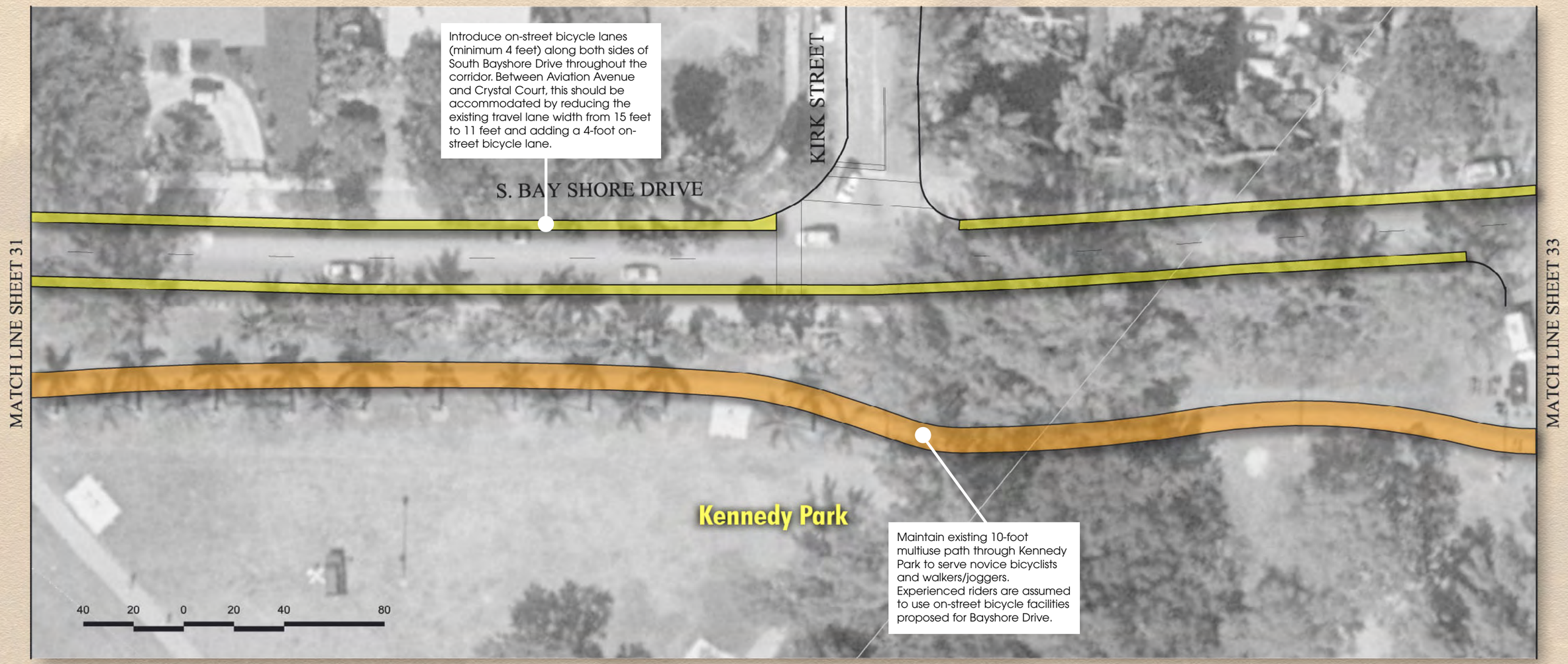

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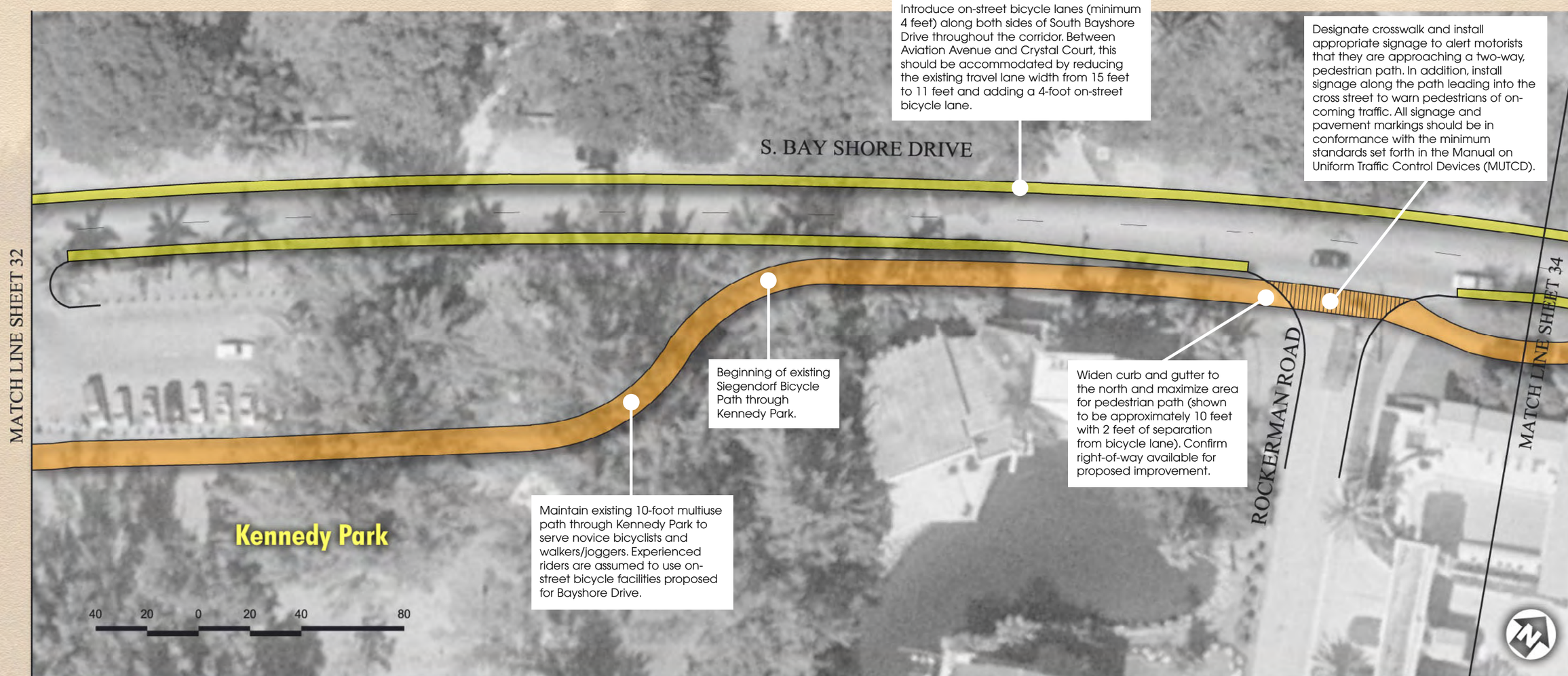

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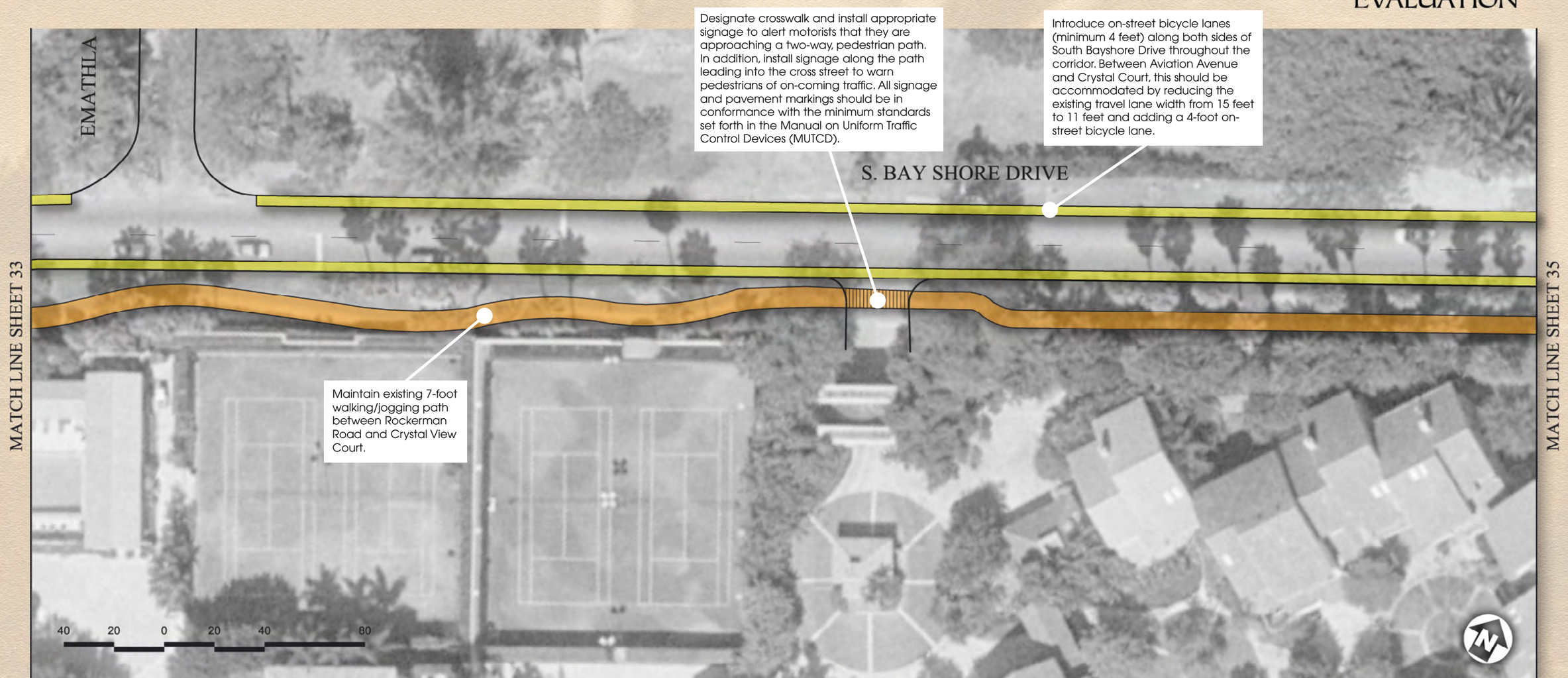

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Tier II Evaluation

COMMODORE TRAIL

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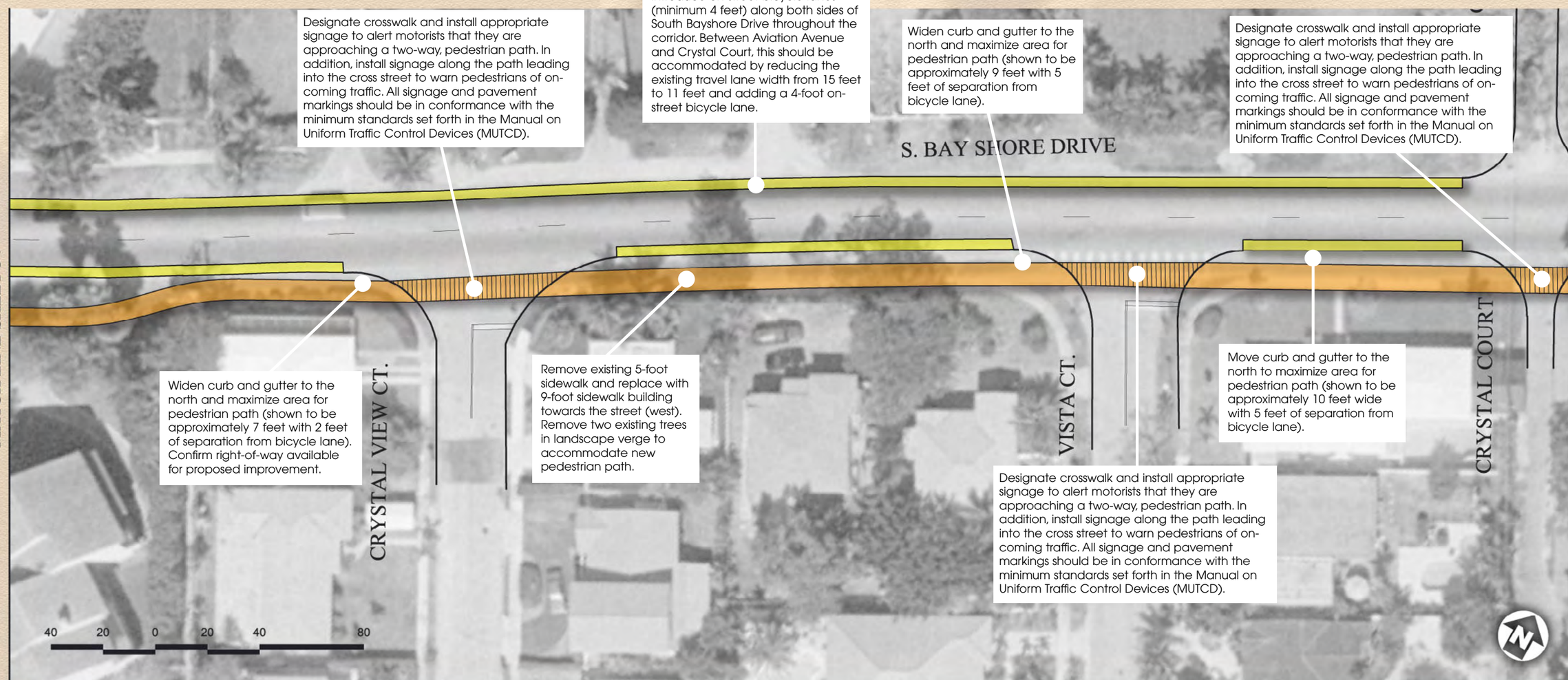

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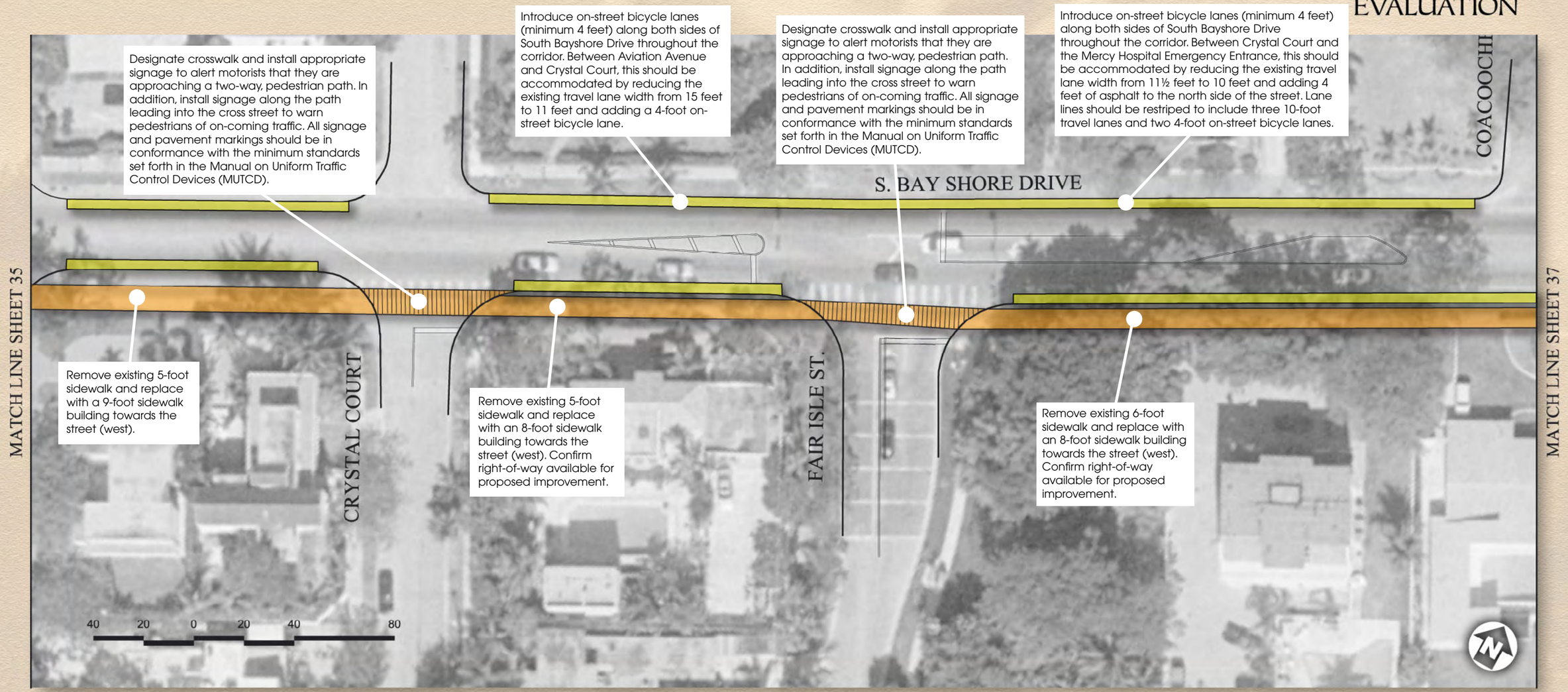
Kimley-Horn and Associates, Inc.

Tier II Evaluation

COMMODORE TRAIL

Bicycle PROJECT FEASIBILITY EVALUATION



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Tier II Evaluation

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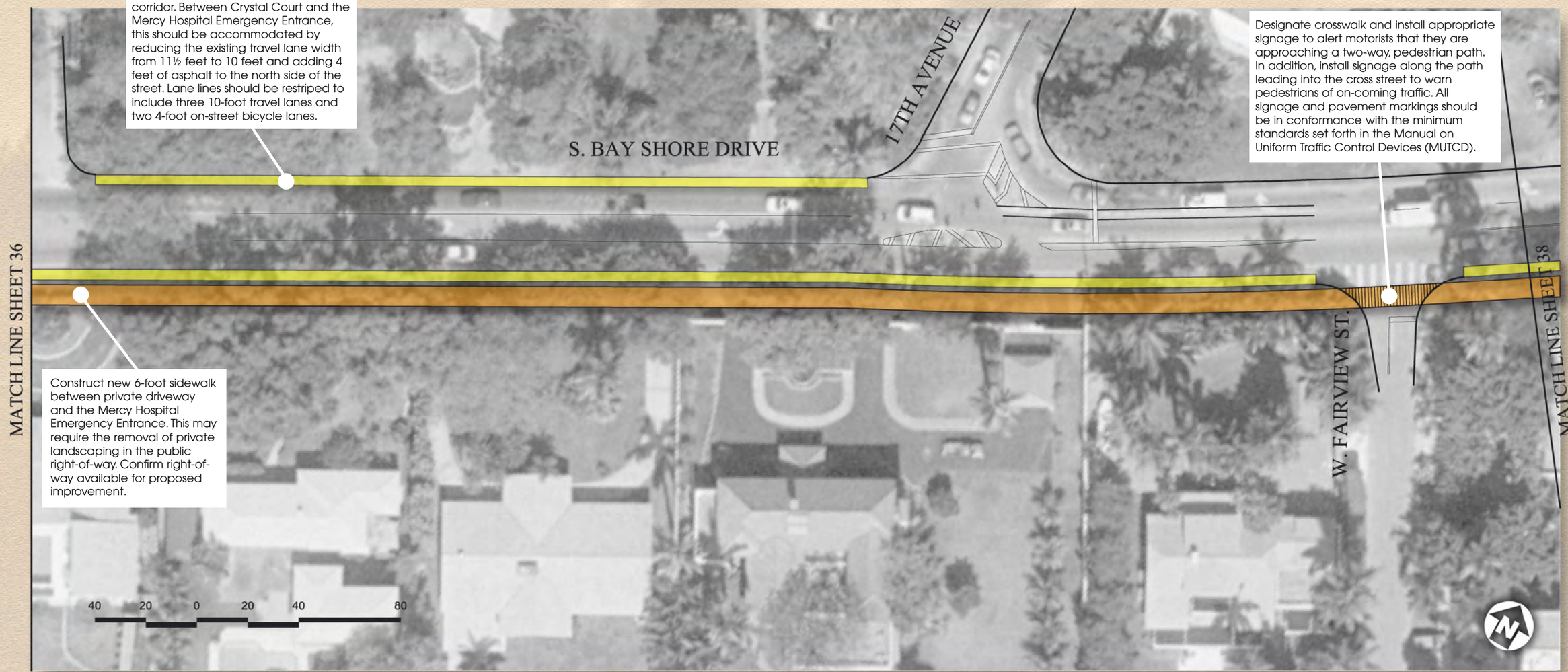

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Tier II Evaluation

COMMODORE TRAIL

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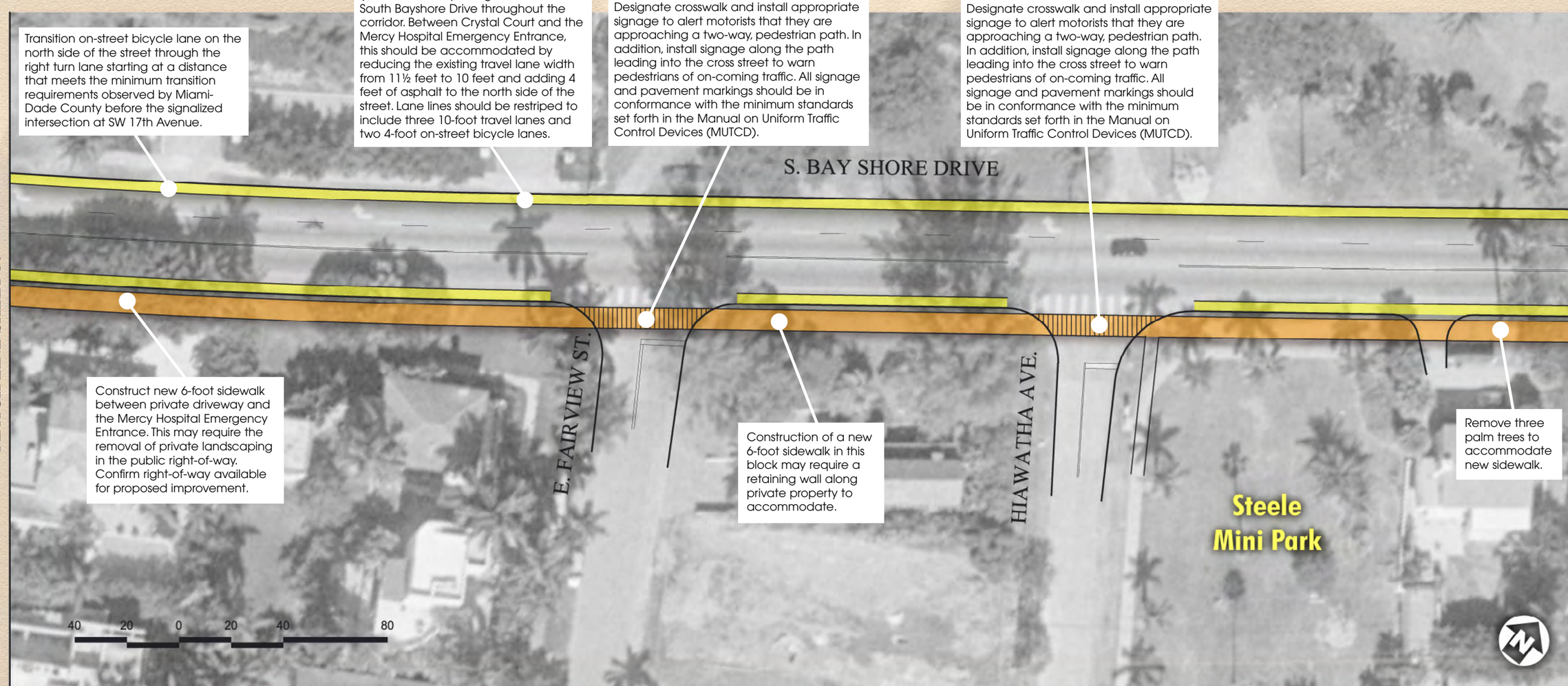

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Tier II Evaluation

COMMODORE TRAIL

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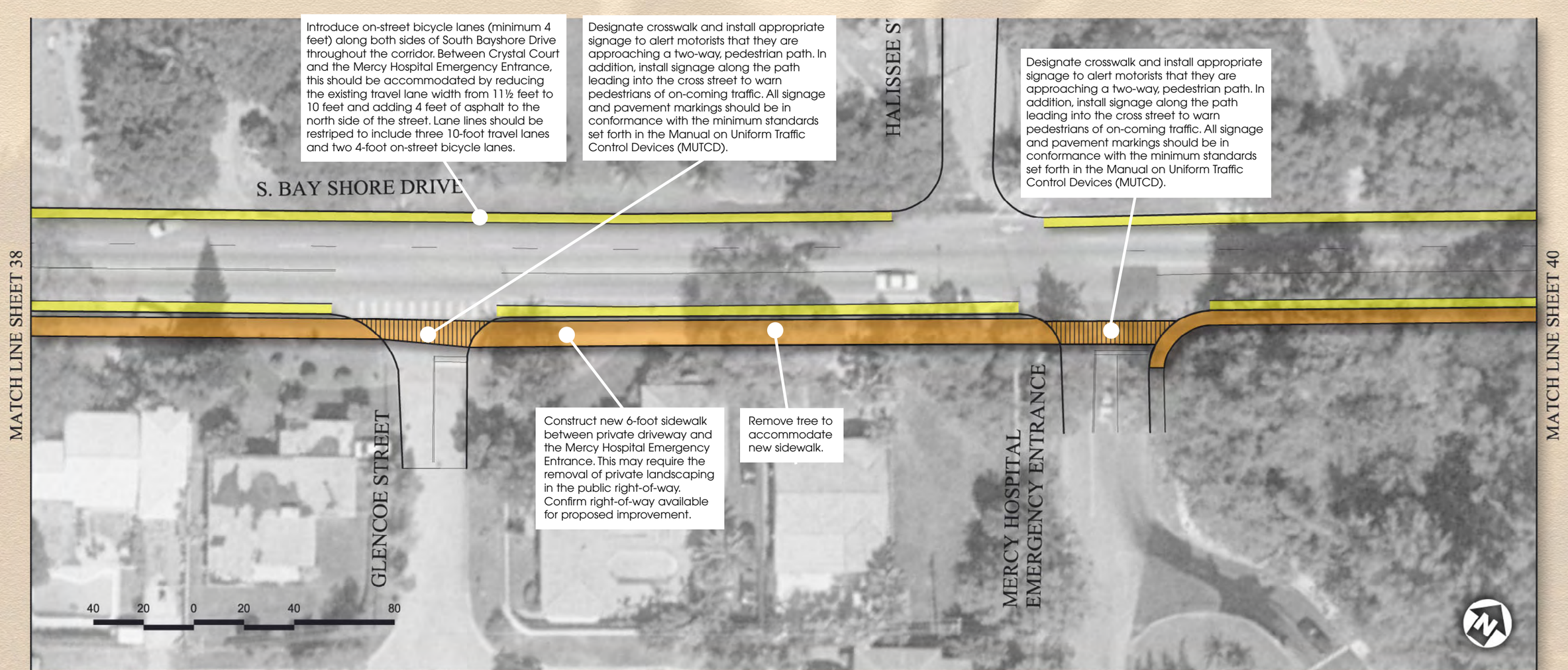

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Tier II Evaluation

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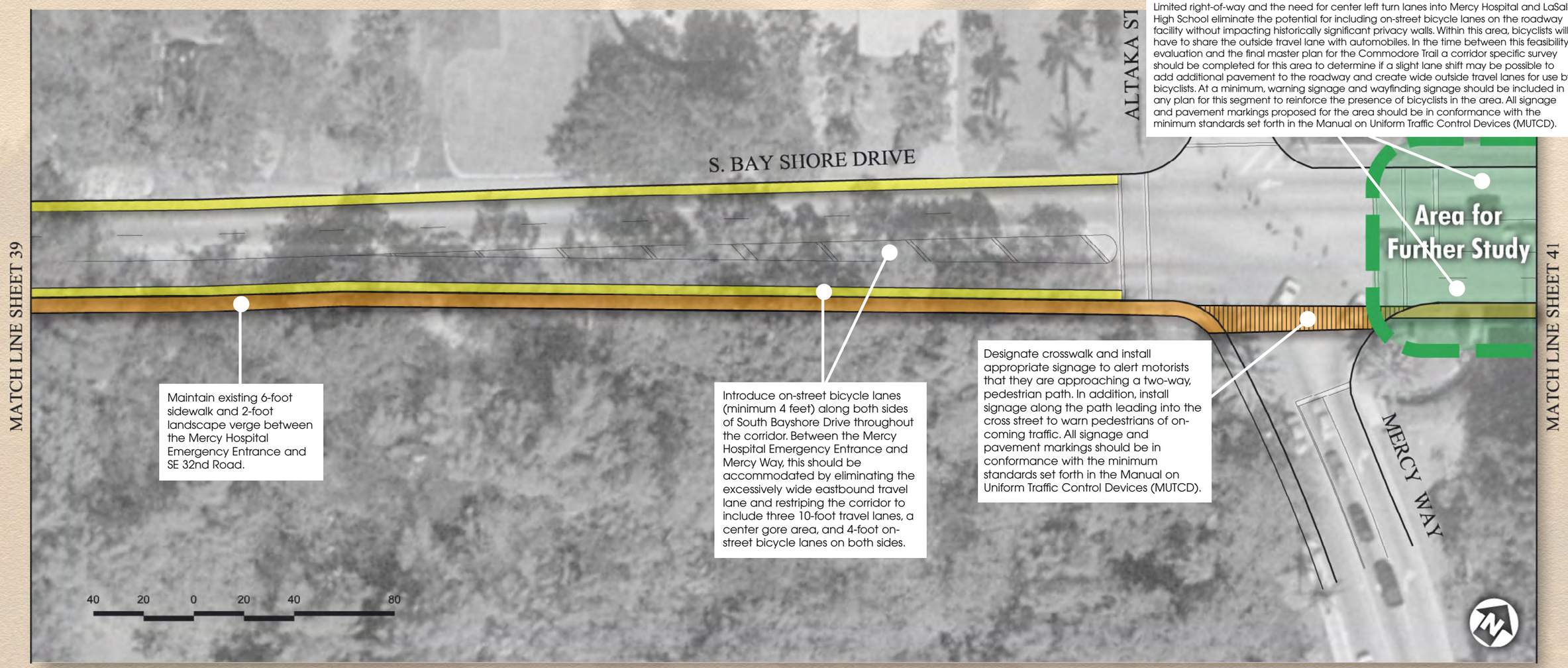


Limited right-of-way and the need for center left turn lanes into Mercy Hospital and LaSalle High School eliminate the potential for including on-street bicycle lanes on the roadway facility without impacting historically significant privacy walls. Within this area, bicyclists will have to share the outside travel lane with automobiles. In the time between this feasibility evaluation and the final master plan for the Commodore Trail a corridor specific survey should be completed for this area to determine if a slight lane shift may be possible to add additional pavement to the roadway and create wide outside travel lanes for use by bicyclists. At a minimum, warning signage and wayfinding signage should be included in any plan for this segment to reinforce the presence of bicyclists in the area. All signage and pavement markings proposed for the area should be in conformance with the minimum standards set forth in the Manual on Uniform Traffic Control Devices (MUTCD).

Maintain existing 6-foot sidewalk and 2-foot landscape verge between the Mercy Hospital Emergency Entrance and SE 32nd Road.

Introduce on-street bicycle lanes (minimum 4 feet) along both sides of South Bayshore Drive throughout the corridor. Between the Mercy Hospital Emergency Entrance and Mercy Way, this should be accommodated by eliminating the excessively wide eastbound travel lane and restriping the corridor to include three 10-foot travel lanes, a center gore area, and 4-foot on-street bicycle lanes on both sides.

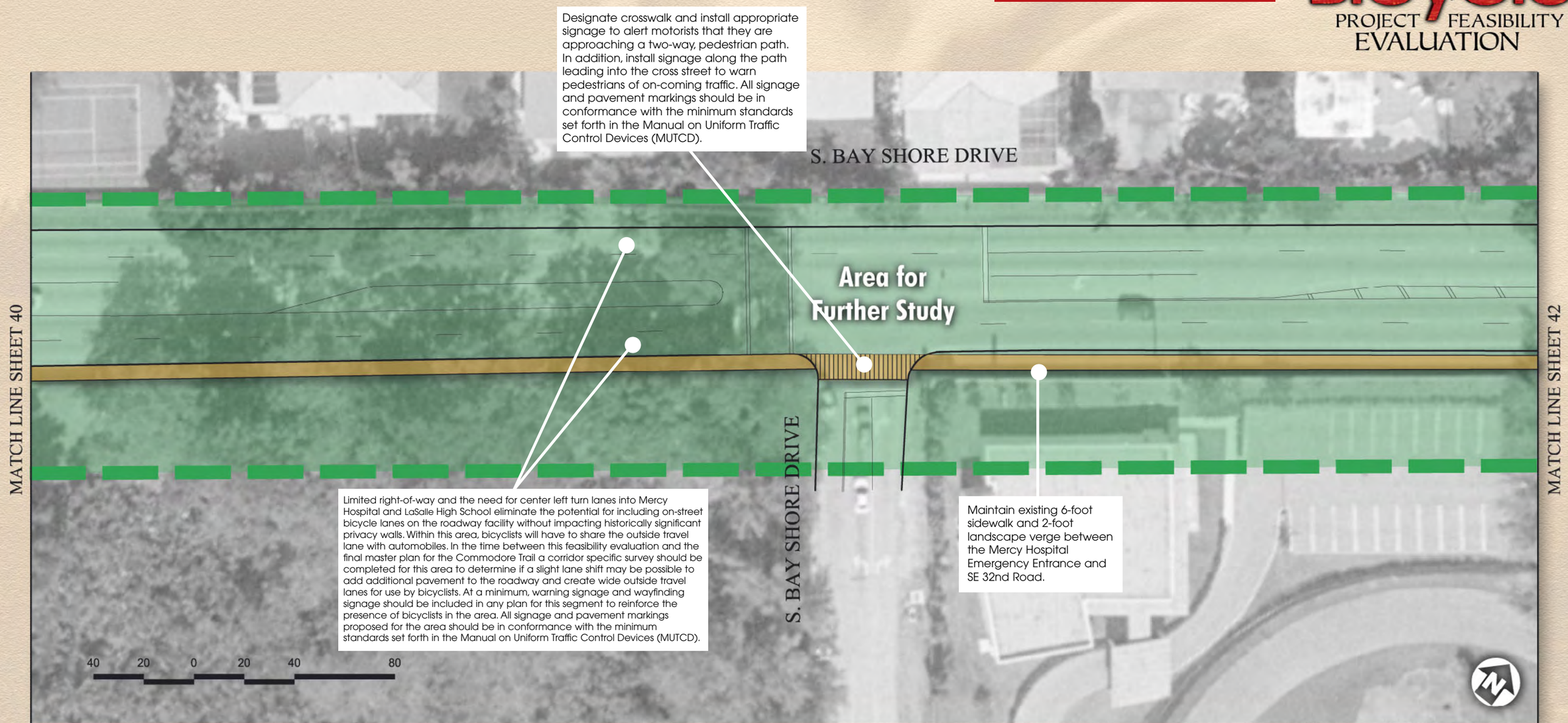
Designate crosswalk and install appropriate signage to alert motorists that they are approaching a two-way, pedestrian path. In addition, install signage along the path leading into the cross street to warn pedestrians of on-coming traffic. All signage and pavement markings should be in conformance with the minimum standards set forth in the Manual on Uniform Traffic Control Devices (MUTCD).

General Note:
Alignment and width of the proposed path are based on the best available right-of-way data maintained by the City of Miami and Miami-Dade County. Actual alignment and/or proposed width may vary or be determined unfeasible based upon a corridor specific survey that should be completed prior to finalizing any official master plan for Commodore Trail and/or the beginning of construction plans.

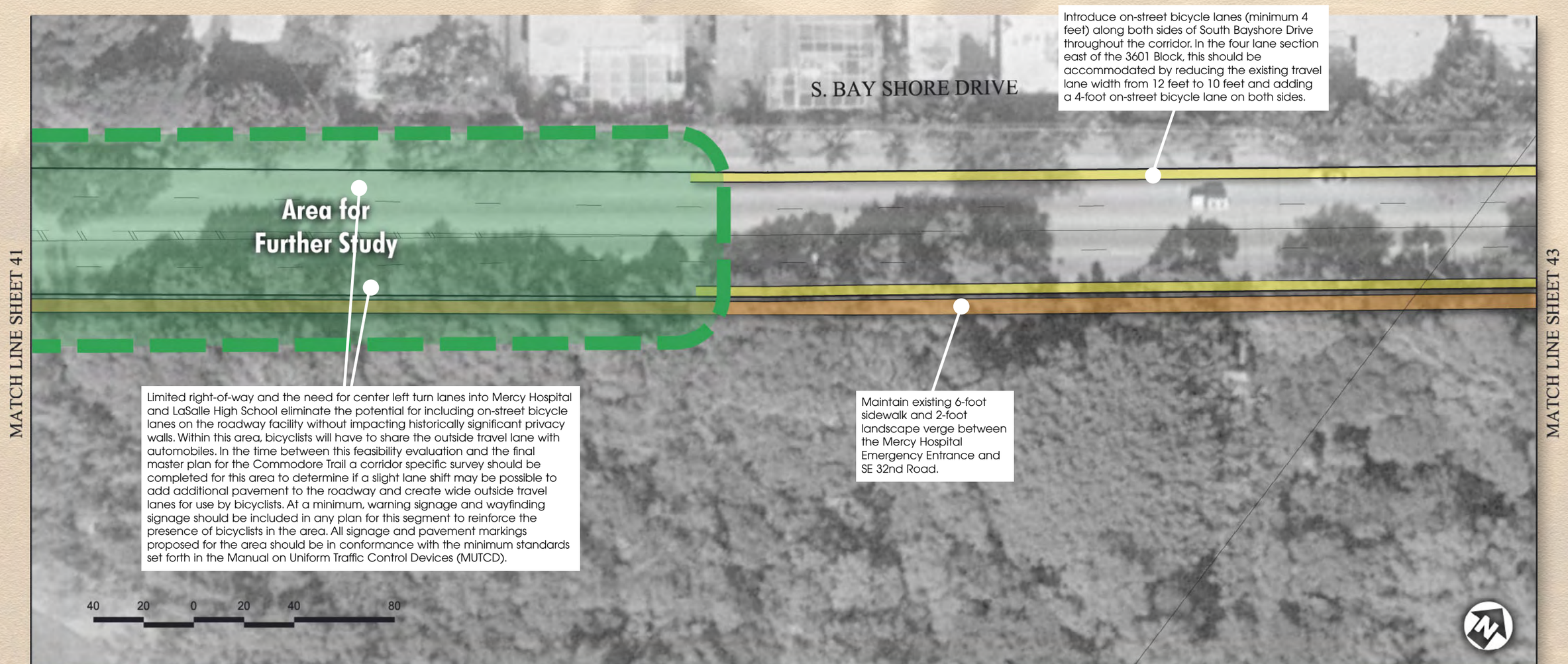
Tier II Evaluation

COMMODORE TRAIL

Bicycle PROJECT FEASIBILITY EVALUATION



General Note:
Alignment and width of the proposed path are based on the best available right-of-way data maintained by the City of Miami and Miami-Dade County. Actual alignment and/or proposed width may vary or be determined unfeasible based upon a corridor specific survey that should be completed prior to finalizing any official master plan for Commodore Trail and/or the beginning of construction plans.



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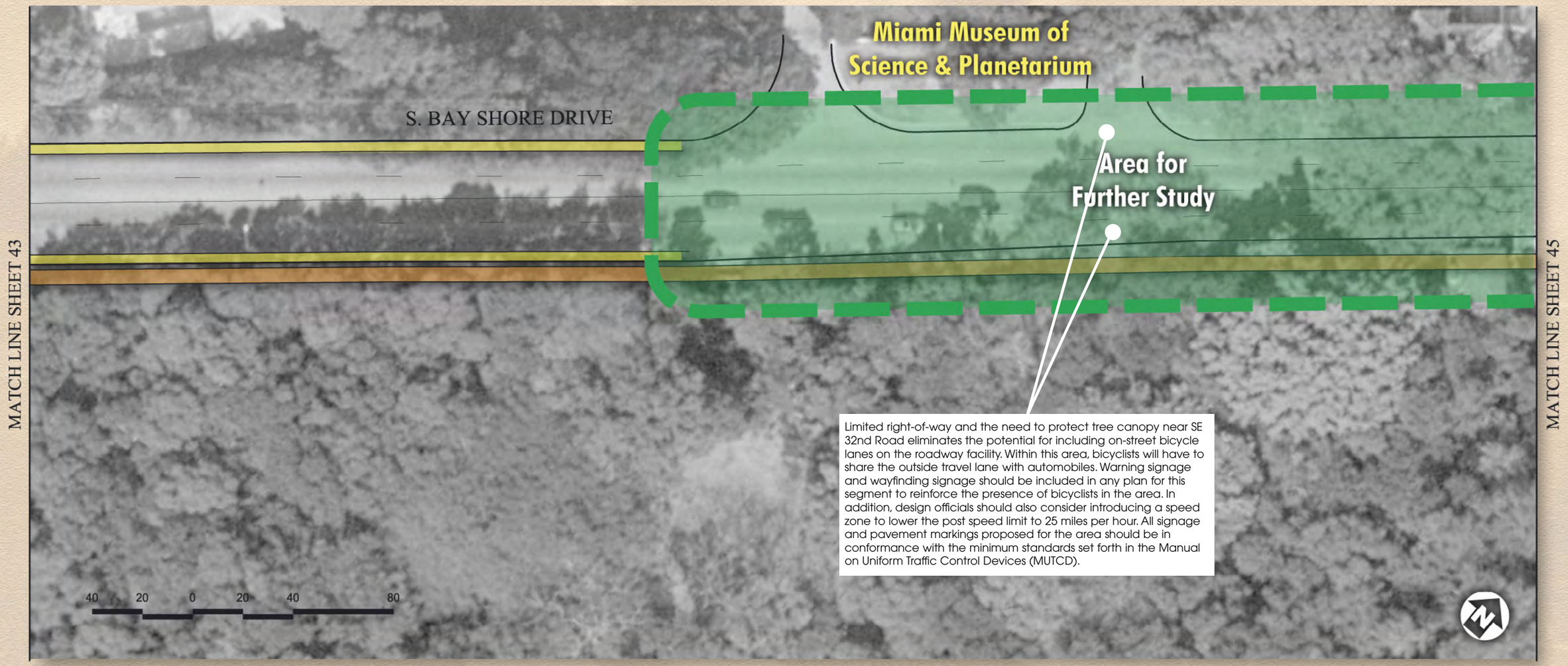
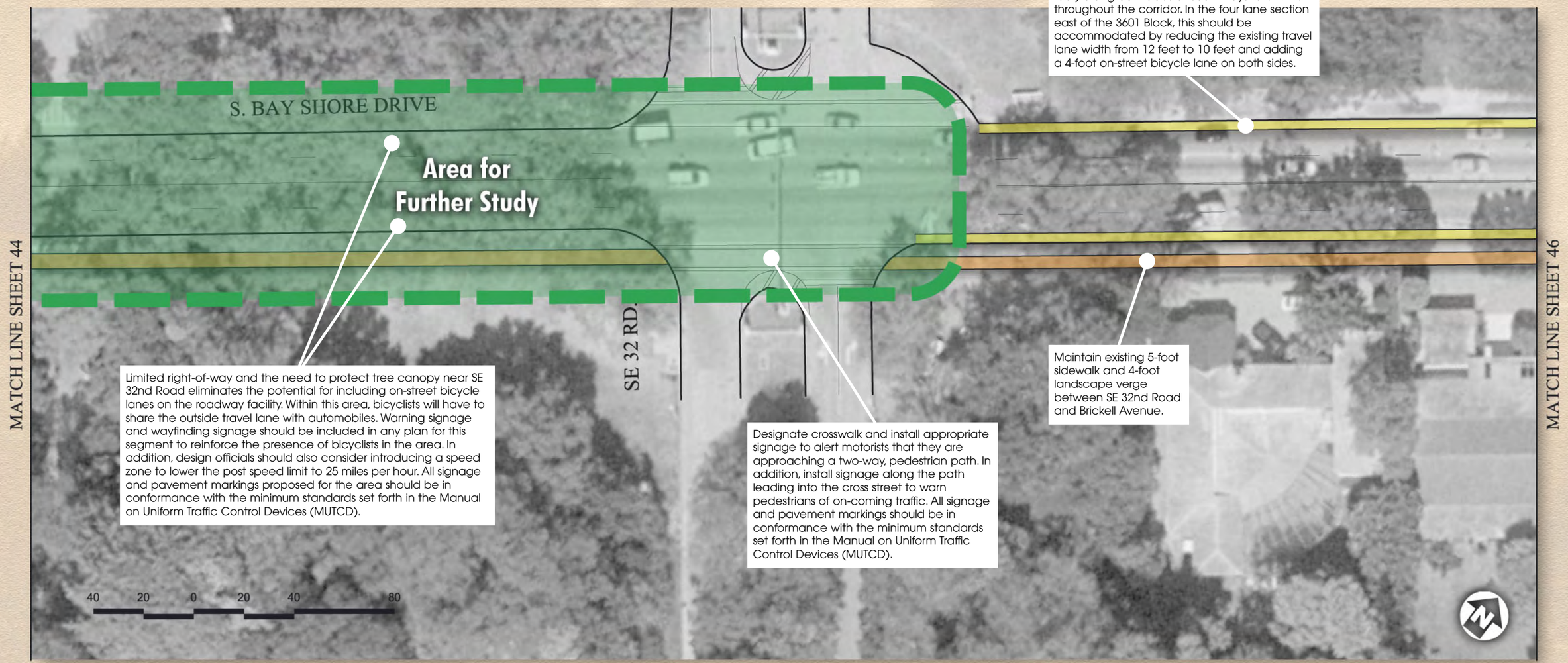


Limited right-of-way and the need to protect tree canopy near SE 32nd Road eliminates the potential for including on-street bicycle lanes on the roadway facility. Within this area, bicyclists will have to share the outside travel lane with automobiles. Warning signage and wayfinding signage should be included in any plan for this segment to reinforce the presence of bicyclists in the area. In addition, design officials should also consider introducing a speed zone to lower the post speed limit to 25 miles per hour. All signage and pavement markings proposed for the area should be in conformance with the minimum standards set forth in the Manual on Uniform Traffic Control Devices (MUTCD).

General Note:
Alignment and width of the proposed path are based on the best available right-of-way data maintained by the City of Miami and Miami-Dade County. Actual alignment and/or proposed width may vary or be determined unfeasible based upon a corridor specific survey that should be completed prior to finalizing any official master plan for Commodore Trail and/or the beginning of construction plans.



Introduce on-street bicycle lanes (minimum 4 feet) along both sides of South Bayshore Drive throughout the corridor. In the four lane section east of the 3601 Block, this should be accommodated by reducing the existing travel lane width from 12 feet to 10 feet and adding a 4-foot on-street bicycle lane on both sides.

Limited right-of-way and the need to protect tree canopy near SE 32nd Road eliminates the potential for including on-street bicycle lanes on the roadway facility. Within this area, bicyclists will have to share the outside travel lane with automobiles. Warning signage and wayfinding signage should be included in any plan for this segment to reinforce the presence of bicyclists in the area. In addition, design officials should also consider introducing a speed zone to lower the post speed limit to 25 miles per hour. All signage and pavement markings proposed for the area should be in conformance with the minimum standards set forth in the Manual on Uniform Traffic Control Devices (MUTCD).

Designate crosswalk and install appropriate signage to alert motorists that they are approaching a two-way, pedestrian path. In addition, install signage along the path leading into the cross street to warn pedestrians of on-coming traffic. All signage and pavement markings should be in conformance with the minimum standards set forth in the Manual on Uniform Traffic Control Devices (MUTCD).

Maintain existing 5-foot sidewalk and 4-foot landscape verge between SE 32nd Road and Brickell Avenue.

General Note:
Alignment and width of the proposed path are based on the best available right-of-way data maintained by the City of Miami and Miami-Dade County. Actual alignment and/or proposed width may vary or be determined unfeasible based upon a corridor specific survey that should be completed prior to finalizing any official master plan for Commodore Trail and/or the beginning of construction plans.

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General Note:
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Tier II Evaluation

PLANNING LEVEL COST ESTIMATES

Planning level cost estimates for all six segments of Commodore Trail are compiled based upon the initial alignment and facility type proposed along the corridor. Preliminary cost estimates prepared for this workbook are intended for budgetary purposes only and will be refined as further studies are initiated by the Miami-Dade County Public Works Department as part of their official master plan for the corridor to be completed prior to preparing design plans. All estimates are based on recommended improvements shown in the detailed evaluation sheets and pricing information published by the Florida Department of Transportation. No cost estimates are provided for potential right-of-way acquisition, utility relocation, removal of large trees, and/or the removal of existing lane striping associated with the proposed alignment.

The total cost for completing the 5.03-mile Commodore Trail is estimated to be $781,000 based on the detailed evaluation sheets, however this estimate is assumed to increase as pricing information for those items omitted from the cost estimate are finalized in further studies. Initial cost estimates for recommended improvements to each segment of the corridor are summarized below:

Cocoaplum Circle to Franklin Avenue. A two-way multiuse path is recommended along the east side of the two lane facilities making up this portion of Commodore Trial with the exception of Edgewater Drive, where limited right-of-way and on-street parking requires bicyclists to share the road with motorists and pedestrians are funneled to 4 foot sidewalks.

Earthwork/Site Preparation	$44,000
Asphalt Path Construction	$125,000
Concrete Sidewalk Construction	$500
Signing and Pavement Markings	$18,500
Landscaping	$12,500
Vertical Barriers (i.e. Guardrail)	$9,000
Other Construction Costs	$29,000
Maintenance of Traffic	$24,000
Mobilization	$26,000
Planning/Design Documents	$28,500
Total	$317,000

Items omitted from the cost estimate above include potential right-of-way acquisition, utility relocation, large tree removal, potential reconstruction of a privacy wall at SW 37th Avenue and Main Highway, removal of existing lane striping, and the bicycle/pedestrian bridge proposed between Cocoaplum Circle and Ingraham Park.

Franklin Avenue to South Bayshore Drive. Wide sidewalks used for outdoor cafes and limited right-of-way through this segment of the corridor forces the two-way multiuse path to terminate west of Franklin Avenue. Ten foot sidewalks along both sides of the street facilitate pedestrian travel through the Cocoanut Grove area. While room does not exist for dedicated on-street bicycle lanes, creative lane restriping and reconstruction of bulbouts through the corridor would maximize the area for bicyclists to mix with traffic.

Earthwork/Site Preparation	$2,500
Asphalt Path Construction	$2,000
Roadway Reconstruction	$13,000
Signing and Pavement Markings	$3,500
Other Construction Costs	$10,000
Maintenance of Traffic	$3,000
Mobilization	$3,500
Planning/Design Documents	$3,500
Total	$41,000

Items omitted from the cost estimate above include potential right-of-way acquisition and the removal of existing lane striping.

McFarlane Road to Aviation Avenue. On-street bicycle lanes and a wide, off-street pedestrian path are recommended through this segment of the trail. The introduction of on-street bicycle lanes requires reconstruction of the center landscaped medians along the corridor and curbline through the curve on McFarlane Road. The proposed alignment of the existing pedestrian path that meanders through Bayside Park does not change, however the path is proposed for widening to 12 feet.

Earthwork/Site Preparation	$34,000
Asphalt Path Construction	$33,000
Roadway Reconstruction	$66,000
Signing and Pavement Markings	$12,000
Landscaping	$5,000
Other Construction Costs	$15,000
Maintenance of Traffic	$16,500
Mobilization	$18,000
Planning/Design Documents	$20,000
Total	$219,500

Items omitted from the cost estimate above include potential right-of-way acquisition and the removal of existing lane striping.

Aviation Avenue to Fair Isle Street. Commodore Trail is proposed to run through this segment of South Bayshore Drive as dedicated on-street bicycle lanes and a pedestrian path located along the east side of the street. Bicycle facilities are accommodated by reducing the existing 15-foot travel lane width to 11 feet. A new sidewalk would be built in the existing shoulder area varying in width from 6 feet to 12 feet.

Earthwork/Site Preparation	$18,000
Asphalt Path Construction	$16,000
Concrete Sidewalk Construction	$15,500
Roadway Reconstruction	$6,000
Signing and Pavement Markings	$12,500
Landscaping	$2,500
Other Construction Costs	$5,000
Maintenance of Traffic	$7,500
Mobilization	$8,000
Planning/Design Documents	$9,000
Total	$100,000

Items omitted from the cost estimate above include potential right-of-way acquisition and the removal of existing lane striping.

Fair Isle Street to Mercy Hospital Emergency Entrance. Twelve foot travel lanes along the corridor generally allow for on-street bicycle lanes on both sides of the street by reducing the travel lane width to 10 feet. However, this application would not be feasible in the area of Mercy Way, where a center left turn lane to serve both Mercy Hospital and LaSalle High School prohibits the presence of on-street bicycle lanes without moving curb lines in an area characterized by limited right-of-way and several existing conflicts. Further study recommended for this portion of the corridor will impact the preliminary cost estimates. The existing 6-foot sidewalk along the east side of the street is maintained.

Earthwork/Site Preparation	$9,000
Concrete Sidewalk Construction	$28,500
Roadway Reconstruction	$15,000
Signing and Pavement Markings	$9,000
Landscaping	$1,500
Other Construction Costs	$5,000
Maintenance of Traffic	$7,000
Mobilization	$7,500
Planning/Design Documents (10%)	$8,000
Total	$90,500

Items omitted from the cost estimate above include potential right-of-way acquisition and the removal of existing lane striping.

Mercy Hospital Emergency Entrance to Brickell Avenue. On-street bicycle lanes are proposed along both sides of the street by reducing the existing travel lane width from 12 feet to 10 feet. Again, this application would not be feasible for the section of roadway between the Miami Science Museum and SE 32nd Road where large shade trees form a canopy over the street. Protecting these trees has already reduced the existing lane width to 10 feet through this area. Further study recommended for this portion of the corridor will impact the preliminary cost estimates. The existing 5-foot sidewalk along the east side of the street is maintained.

Signing and Pavement Markings	$9,500
Maintenance of Traffic	$1,000
Mobilization	$1,000
Planning/Design Documents	$1,500
Total	$13,000

The cost to remove existing lane striping was omitted from the above cost estimate.