US-1 Multimodal Corridor Study

CONNECTING COMMUNITIES

In Palm Beach County

PALM BEACH
Transportation
Planning Agency

The US-1 Multimodal Corridor Study is a Palm Beach Transportation Planning Agency (TPA) Priority Project that was conducted in 2017-2018 to identify multimodal improvements along US-1 in Palm Beach County from Camino Real in the City of Boca Raton to Indiantown Road in the Town of Jupiter. This report contains an overview of the findings and recommendations of this study. More information can be found on the project website or the Palm Beach TPA's website.

Project Website: www.us1pbcorridorstudy.com

Palm Beach TPA's Website: www.palmbeachtpa.org/us1

Adopted May 17, 2018 by the Palm Beach TPA Governing Board

Acknowledgments

We extend our sincere appreciation and gratitude to the residents, business owners, elected officials, local government staff, partner agencies, Health Impact Assessment (HIA) Working Group, and stakeholders who participated in the planning process and guided the development of the US-1 Multimodal Corridor Study.

Project Committee Team

Palm Beach Transportation Planning Agency (TPA)
Florida Department of Transportation (FDOT) - District Four
Palm Tran

Consultant Team

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Everyone's time, input and energy are greatly appreciated.

Acronyms

AMI	Area Median Income
APC	Automated Passenger Counter
BCT	Broward County Transit
BMI	Body Mass Index
BRFSS	Behavioral Risk Factor Surveillance System
BRT	Bus Rapid Transit
CDC	Centers for Disease Control and Prevention
CEI	Construction, Engineering and Inspection
CIG	Capital Investment Grants
CST	Construction
ENV	Environment
FDM	FDOT Design Manual
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
FY	Fiscal Year
HIA	Health Impact Assessment
MOD	Mobility on Demand
MOS	Minimum Operating Segment
MPH	miles per hour
NTSP	New Starts Transit Program
OD	Origin-Destination
PE	Preliminary Engineering
PTX	Palm Tran Express
QTY	Quantity
ROW	Right-of-Way
RPM	Route Performance Maximization
STP	Surface Transportation Program
TCRPC	Treasure Coast Regional Planning Council
TDP	Transit Development Plan
TDSP	Transportation Disadvantaged Service Plan
TIGER	Transportation Investments Generating Economic Recovery
TIP	Transportation Improvement Program
TOD	Transit Oriented Development
TPA	Transportation Planning Agency
TRIP	Transportation Regional Incentive Program
VPHPD	Vehicles per hour per direction
WPB ITC	West Palm Beach Intermodal Transfer Center

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Chapter 1.

Project Overview

Introduction

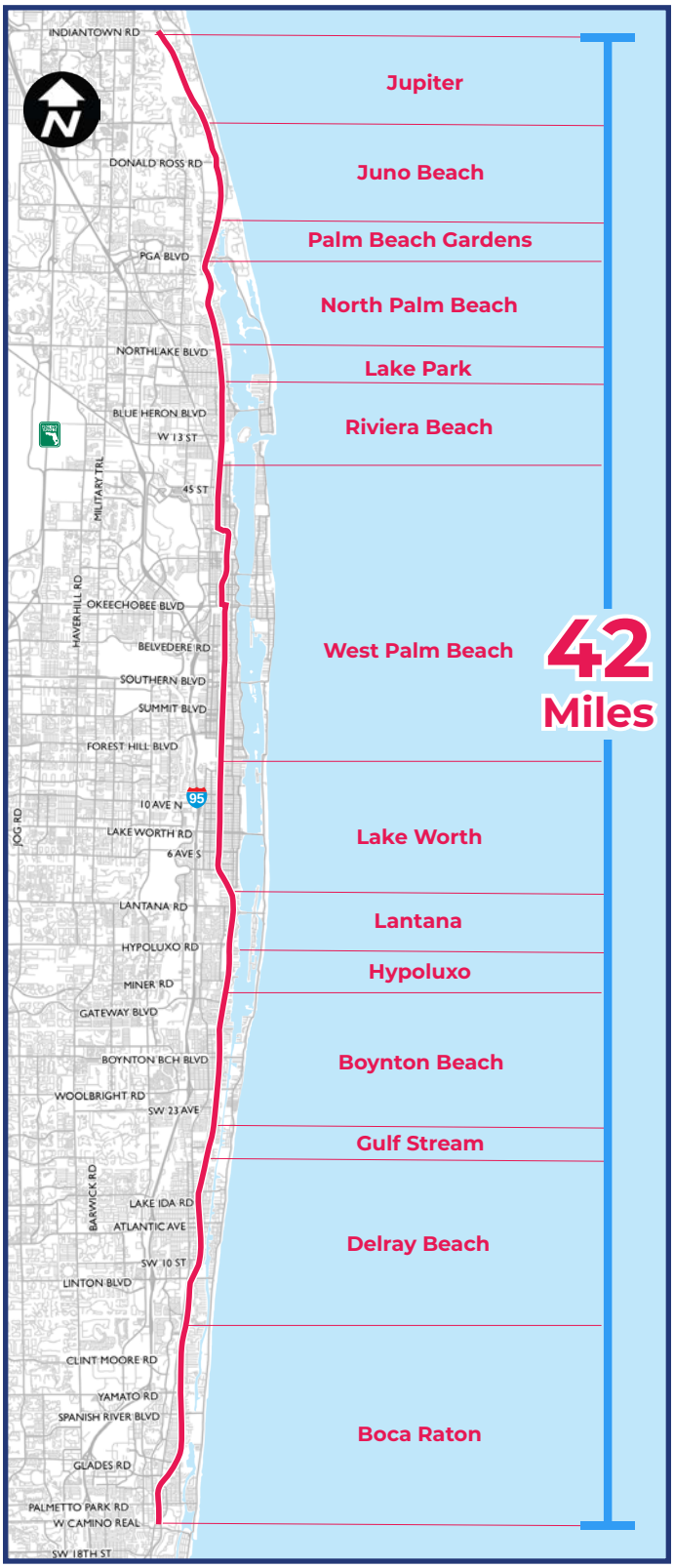
The US-1 Multimodal Corridor Study encompasses the US-1 corridor in Palm Beach County from Camino Real in the City of Boca Raton to Indiantown Road in the Town of Jupiter, a length of approximately 42 miles. US-1 is a major north-south travel corridor that traverses 14 of the county's eastern communities. The corridor serves approximately 102,000 workers and 68,000 residents. This stretch of corridor was divided into six sections.

Palm Tran's highest ridership bus Route 1 and "The Bolt" limited stop service operate along US-1 and provide access to employment destinations such as Downtown West Palm Beach, education destinations such as Florida Atlantic University, and retail and entertainment destinations such as Downtown Delray Beach. The population is diverse, with both very low and very high-income concentrations located along it. Significant redevelopment occurring all along the corridor reflects and contributes to changing needs and desires of both existing users and those occupying these new places.

The purpose of the US-1 Multimodal Corridor Study is to develop a comprehensive plan to upgrade the existing Palm Tran limited stop service to a corridor-based bus rapid transit (BRT) service as well as implement multimodal facilities that improve safety and access for all users, connecting communities along the corridor. As part of this study, a Health Impact Assessment (HIA) was conducted to understand how bicycle, pedestrian and transit improvements could increase access to jobs, education, health and community services, pedestrian and bicycle safety, and development and redevelopment along the corridor of the adjacent communities.

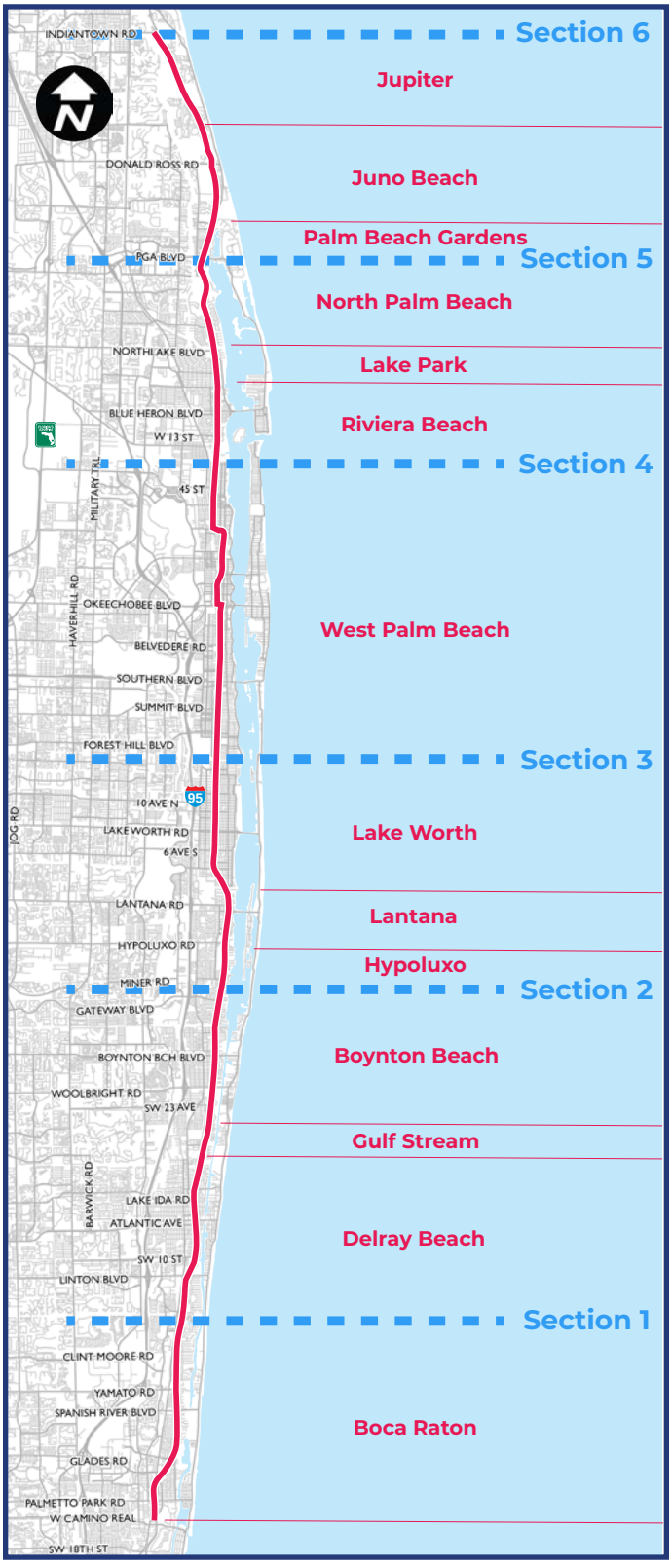
Multimodal facilities include a variety of complete street improvements such as bicycle lanes, shared use paths, bus stops, furnishing zones, street trees, crosswalks, pedestrian median refuge, and streetlights. These components work together to create a street with more mobility options that have been demonstrated to result in safer outcomes for all users. More general information on complete streets and be found in the Palm Beach TPA Complete Streets Design Guidelines.

www.palmbeachtpa.org/CompleteStreets



STUDY AREA

Study Corridor
Municipality



STUDY AREA

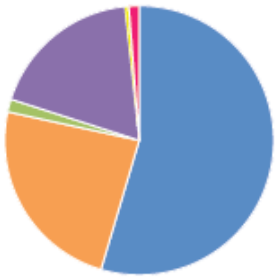
- Section #
- Municipality

Study Area Demographics

68,000 Residents
(13% of Palm Beach County's Residents)
102,000 Workers
(19% of Palm Beach County's Jobs)

RACE + ETHNICITY

WHITE 54.6%	ASIAN 1.5%
BLACK 23.8%	MULTI-RACIAL 1.2%
HISPANIC 18.4%	OTHER 0.5%



Source: U.S. Census Bureau 2011-2015 5-Year Estimates

INCOME & POVERTY

There are concentrations of income and poverty Lake Worth, West Palm Beach, & Riviera Beach

The Median Household Income in Palm Beach County is $58,970

PEDESTRIAN & BICYCLE SAFETY IS A CONCERN ALONG US-1

15 Fatalities, which All Occurred in Dark or Dusk
(Between 2011-2016)

82% of Bicycle Crashes Occurred in Locations with No Bicycle Lane

US-1 History

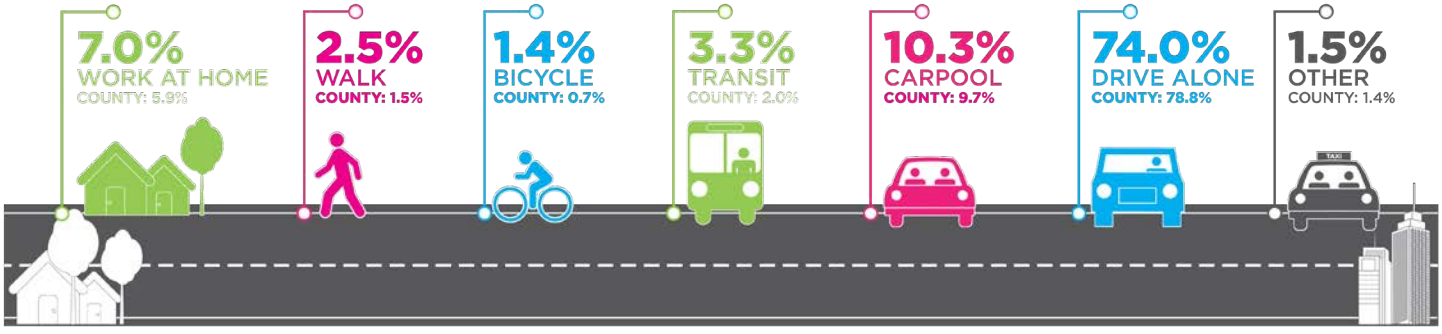
Historically, US-1 has provided mobility for north-south trips through Palm Beach County. US-1 was designated in 1926 as "The Dixie Highway," which was one of several trans-continental roads envisioned in the early days of the automobile. Development catered to the motoring public with motels, restaurants and other services designed for patrons arriving by car. Because of its transportation role, it was widened over the years to meet growing traffic demand reinforcing its auto-orientation.

The role of US-1 began to change in the 1970's with the construction of Interstate 95, when it was the main road to get to and through Palm Beach County for long distance trips along the eastern seaboard and within Florida. The high number of destinations that have grown along the corridor have also increased use by pedestrians, bicyclists and transit riders.

Some of the corridor's municipal leaders have started to pursue Complete Streets policies, preparing studies, redesigning networks and even reconstructing portions of US-1 that traverse their communities. The fragmented nature of these prior actions have resulted in varying approaches for accommodating walking and bicycling. Consequently, this has contributed to an inconsistent environment for active transportation and transit users.

Today, US-1 is a "Main Connector" serving downtown areas in the eastern core of Palm Beach County.

HOW DO RESIDENTS WITHIN 1/2 MILE OF US-1 GET TO WORK?



From then until now

1926

- Eastern Division of “The Dixie Highway”
- “The Atlantic Highway”
- US-1 designated November 11, 1926

1970

- US-1 (Federal Highway) expanded and relocated following World War II to its current alignment
- Construction of I-95 in the 1970s removed most long-distance trips

Today

- US-1 is a “Main Connector” serving downtown areas in the eastern core of Palm Beach County
- US-1 distributes people to businesses, neighborhoods, and important community destinations

Our Process

The US-1 Multimodal Corridor Study was conducted by the Palm Beach Transportation Planning Agency (TPA) and it is a Priority Project in the agency's Transportation Improvement Program (TIP). The TPA values the importance of implementing the recommendations of this project and design funds have been set aside for this corridor in Fiscal Year (FY) 2020- 2021 to move forward with the improvements identified in this Study. The US-1 Multimodal Corridor Study is consistent with the goals, objectives, and values of the TPA's adopted Long Range Transportation Plan and further the TPA vision of creating a Safe, Efficient, and Connected Multimodal Transportation System.

The Vision for US-1

To fully understand the opportunities and issues in connecting pedestrian and bicycle facilities as well as upgrading and expanding the existing transit service along US-1, the study team met with over 100 stakeholders and hosted a series of six workshops and six three-day charrettes over six months in each of the corridor's sub-segments. During the charrettes, community members were invited to review baseline data, study findings, walk the corridor with the study team and discuss their ideas and desires. The charrettes helped to engage a broad range of community members in the study process. The information received also served as a baseline for the study team's analysis and identification of issues and initial ideas that would respond to specific needs and reflect the context and priorities of surrounding communities.

A specific aspect of the study was designed to assess and quantify the benefits of changes along the corridor. This HIA identified parts of the study area with the most acute active transportation needs and uses data to demonstrate how various solutions are likely to affect the well-being of residents, effectively incorporating health considerations into the transportation planning decision-making process.

Health Impact Assessment (HIA)

A Health Impact Assessment (HIA) is a formal evaluation process that incorporates location-specific scientific data, health expertise, and public input to assess a proposed project or policy's impact on the health of a population and the distribution of those effects within the population. The primary goal of a HIA is to identify the potential health impacts of a project or policy and encourage informed decisions related to the project that will positively influence a population's health. A HIA was conducted as part of this Study and more detailed information is available in Appendix A.

A HIA outlines potential consequences for decision-makers and concludes with a set of policy and design/planning recommendations intended to minimize health risks and maximize health benefits. HIA's are based on the best available evidence, both quantitative (such as health surveys and data) and qualitative (such as interviews with stakeholders).

HIA's are a useful way to ensure that health needs and opportunities are considered in policy decision-making processes. The HIA process can vary depending on the subject matter, study time that is available, and stakeholders involved. The process is generally comprised of six key stages as shown in the table below.

Why Conduct the HIA on US-1?

The TPA and Palm Tran were interested to know how transit, bicycle, and pedestrian improvements on the US-1 corridor could enhance the health of the adjacent communities. The timing of the US-1 HIA was advantageous and allowed the findings to directly influence not only the multimodal improvements, but also the opportunities for premium transit throughout the US-1 corridor.

6-Step HIA Process

1 Screening	Determine whether a HIA is feasible, timely, and would add value to the decision-making process.
2 Scoping	Identify the health indicators that the project will likely impact, identify the study area and affected populations, prioritize research questions, identify evidence and research methods, establish stakeholder roles, and establish a timeline for the process.
3 Assessment	Create an existing conditions profile for the study area in order to understand baseline conditions and to be able to predict change. Assess potential health impacts, including the magnitude and direction of impacts, using quantitative and qualitative research methods and data.
4 Recommendations	Develop recommendations to improve the project, plan or policy's health benefits and/or to mitigate any negative health impacts.
5 Reporting	Create a written or visual documentation of the HIA results and recommendations, which take many forms including written reports, presentations, and comment letters. Communicate the results within the decision-making process. A communications plan can include media outreach and public input.
6 Monitoring and Evaluation	Track the impacts of the HIA on the decision-making process, the implementation of the decision, and the impacts of the decision on health indicators. Evaluate the HIA process.

HIA Study Goals

The primary goal of the US-1 HIA was to better understand the impacts of potential improvements proposed by the US-1 Multimodal Corridor Study on the overall health of the communities served by these improvements. This would include potential impacts of improvements on:

- **Access to Jobs and Education**
- **Access to Health and Community Services**
- **Pedestrian and Bicycle Safety**
- **Development and Redevelopment Along the Corridor**

Health Indicators and Pathway Diagram

In order to best understand the health impacts of the proposed transportation improvements on the study area, indicators were chosen to track changes in community health. A pathway diagram was used to select and refine these indicators. This exercise connected the project goals with immediate, intermediate, and long-term health outcomes.

A large variety of indicators were considered initially to be included in this list through the pathway diagram exercise. Among these were transit ridership, vehicle miles traveled, air quality, and obesity rates, as well as some less common measures such as school absenteeism, insurance rates, and noise pollution.

The initial list of indicators was refined into a short list based on the correlation between the indicator and the study goals and this short list was further refined into the following six primary health indicators, as shown below:

- Access to health care and healthy food
- Mental health and depression
- Chronic illness such as diabetes, hypertension, and asthma
- Obesity
- Bicycle and pedestrian crash rates
- Taxable land value

HIA Assessment

A growing body of scientific evidence has shown that the built environment can have significant effects on both physical and mental health, particularly among minority and low-income populations already burdened with disproportionate rates of illness and morbidity. The combination of lack of sufficient infrastructure (e.g., sidewalks, bicycle paths, and parks), affordable housing, and stores with access to healthy food increases the risks of both physical and mental illnesses.[1]

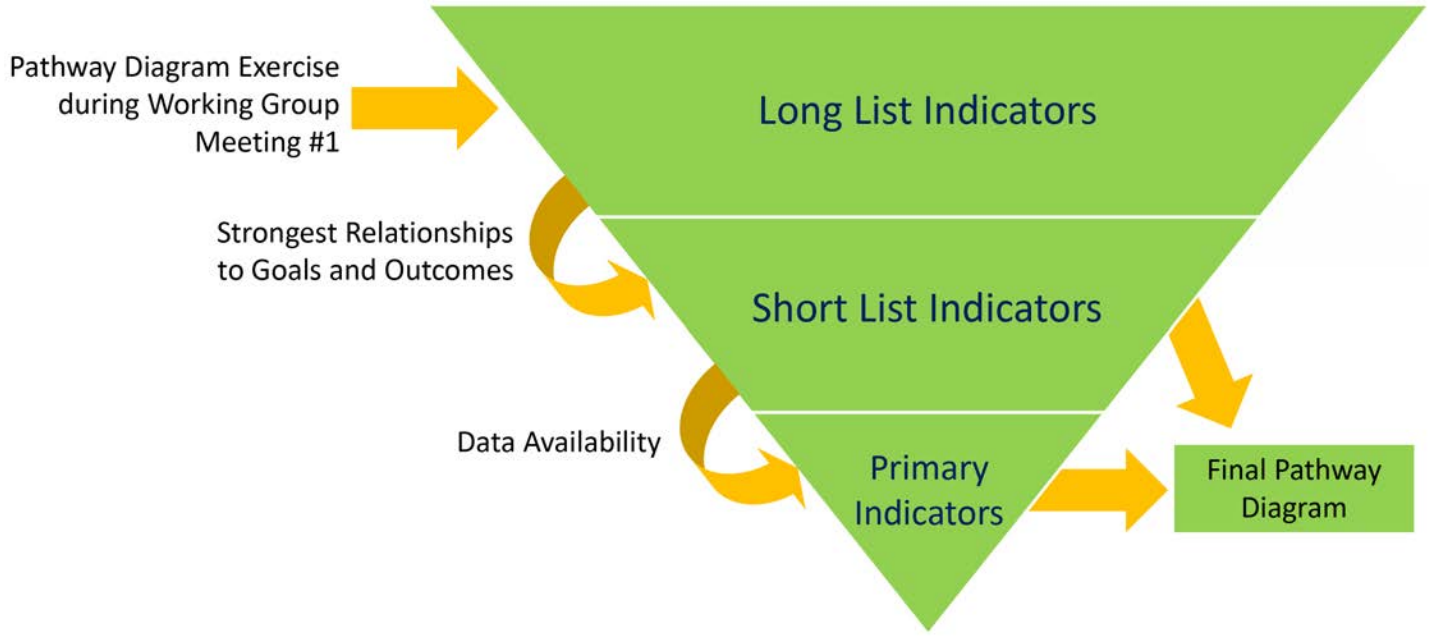
The HIA process is driven by evidence published in the scientific and medical literature that link transportation design and operations to direct, indirect, or cumulative health impacts and benefits. The primary health indicators, identified by the HIA Working Group through the Pathway Diagram described previously, were evaluated based on the availability of data and information related to each indicator.

THE HEALTH INDICATOR REFINEMENT PROCESS WAS BASED ON THE RELATIONSHIP OF INDICATORS TO THE STUDY GOALS

Many items not included as primary indicators were still considered throughout the study as secondary indicators. These indicators include access to jobs and education, transit ridership and mode split, and general quality of life.

With the help of the HIA Working Group, the study team created a final pathway diagram showing the immediate, intermediate, and long-term health outcomes of the proposed project improvements, shown below.

US-1 HIA Pathway Diagram



1 Hood, 2005

How Transit and Complete Streets Can Influence Physical Activity

In partnership with the HIA Working Group, physical health indicator was obtained from the Centers for Disease Control and Prevention (CDC) 2013 Behavioral Risk Favor Surveillance System (BRFSS). This information was available on the census tract level, through a log of self-reported surveys. In order to get down to a manageable geographic segmentation, the analysis used a weighted average for the section/city along the corridor.

The HIA survey reported that approximately 88% of respondents consider themselves to be in "good" current health, with 9% in "fair" current health, and 3% in "poor" current health. Specific physical health indicators are evaluated in the following sections.

Obesity and Obesity-Related Chronic Illness

Obesity is a condition in which an individual has excess body fat, quantified as a Body Mass Index or BMI of 30 or greater.[2] This body composition can be harmful to an individual's health and is often caused by social and environmental factors and/or genetic disposition. Obesity-related health conditions include diabetes, asthma and certain types of cancer — some of which were also selected as primary health indicators as part of this study.[3+4]

The prevalence of obesity has reached epidemic proportions in the United States with the national obesity rate doubling over the past 35 years – over one-third of American adults and 17% of youth in the U.S. are obese. The average American is 24 pounds heavier today than in 1960.[5] The direct and indirect economic costs of obesity total between $190 and $215 billion annually in the U.S.[6+7] This equates to approximately 21% of healthcare costs nationwide.

The obesity rate on the US-1 corridor is approximately 30%, estimated to affect approximately 75,000 adults in the study corridor. This prevalence of obesity is higher than county, state, and national averages. Some sections of the corridor, including Riviera Beach (34%) and Lake Park (33%), are shown to have higher obesity rates.

PERCENTAGE OF ADULTS REPORTING TO BE OBESE (A BODY MASS INDEX OF 30 OR GREATER)

US-1 corridor	Palm Beach County	Florida	U.S.
30%	20%	26%	29%

The diabetes rate on the US-1 corridor is approximately 14%, affecting approximately 35,000 adults in the study corridor. This prevalence of diabetes is higher than county, state, and national averages. Some sections of the corridor, including Boynton Beach, Riviera Beach, Lake Park, and Juno Beach have a higher than 14% diabetes rate.

PERCENTAGE OF ADULTS EVER DIAGNOSED WITH DIABETES

US-1 corridor	Palm Beach County	Florida	U.S.
14%	11%	13%	11%

[2] Division of Nutrition, Physical Activity, and Obesity, National Center for Chronic Disease Prevention and Health Promotion, June 2016.

[3] Ogden, "Prevalence of Childhood and Adult Obesity in the United States, 2011-2012," 2014.

[4] Shore, "Obesity and Asthma: Location, Location, Location," 2013.

[5] APTA, "Millennials & Mobility: Understanding the Millennial Mindset," 2013.

[6] Hammond, "The Economic Impact of Obesity in the United States," 2010.

[7] Cawley, "The Medical Care Costs of Obesity: An Instrumental Variables Approach," 2012.

The relationship between asthma and auto-oriented communities has been well documented. Motor vehicles contribute to more than 50% of air pollution in urban areas and reducing automobile trips by increasing mass transit use, carpooling, walking, and bicycling can help reduce air pollution, especially in urban areas.[8]

The asthma rate on the US-1 corridor is approximately 8%, estimated to affect approximately 20,000 adults. This prevalence of asthma is higher than the county average but at or below state, and national averages. Some sections of the corridor, including Riviera Beach and Lake Park (+9%) have higher asthma rates.

PERCENTAGE OF ADULTS REPORTING TO HAVE ASTHMA

US-1 corridor	Palm Beach County	Florida	U.S.
8%	6%	8%	9%

Enhanced Public Transit, Walking, and Biking Facilities are a Tool that can be Used to Reduce Obesity and Obesity-Related Illnesses.

Health care professionals attribute a lack of physical activity, in addition to poor nutrition, as a major cause of obesity in adults. As a result, obesity rates tend to be inversely related to use of alternative modes (walking, cycling, public transit).[9] Auto-dependency in many urban areas similar to Palm Beach County has led to a decrease in the amount of walking and/or biking an individual does on a daily basis.

Most Americans report an average of six minutes of walking per day, while public transit riders report an average of nineteen minutes of walking per day. Some research shows that transit availability can encourage an extra twenty blocks walked per month.[10] Physical activity such as walking or biking can help physically inactive populations attain the recommended level of daily physical activity and can begin to reverse the upward trend of obesity. People with safe places to walk within ten minutes of home are twice as likely to meet physical activity targets.[11]

In the HIA survey, most respondents (55%) indicated that they walk less than once per week along US-1. There is much potential for improvement for the prevalence of obesity along the US-1 corridor. In order to make walking and biking more pleasant along US-1, respondents most commonly (over 50% of respondents) suggested safer pedestrian crossings, wider sidewalks, shade, separated bicycle facilities, and street furniture.

[8] Friedman, "Impact of Changes in Transportation and Commuting Behaviors During the 1996 Summer Olympic Games in Atlanta on Air Quality and Childhood Asthma," 2001.

[9] Litman, "If Health Matters," 2014.

[10] University of Cambridge, "Lack of Exercise Responsible for Twice as Many Early Deaths as Obesity," 2015.

[11] Day, "Does Bus Rapid Transit Promote Walking? An Examination of New York City's Select Bus Service," 2014.

Mental Health and Hypertension

Well-connected bicycling, walking, and transit safety and comfort features (including connected bicycle lanes, sidewalks, pedestrian crossing treatments, branded transit shelters, real-time route information boards, off-board ticketing, etc.) can contibute to increased rates of physical activity which can, in turn, contribute to lower rates of depression and anxiety issues.[12] Physical activity has also been shown to prevent mental disorders from occurring in the onset. A 2001 study showed that women who partook in little to no physical activity were twice as likely to have depressive symptoms than women with moderate to high levels.[13]

The depression rate on the US-1 corridor is approximately 17% estimated to affect approximately 42,500 adults. This prevalence of depression is higher than the county average but at or below state, and national averages.

Researchers have found that, compared with those who drove to work, participants who used public transportation are:

- 4% less likely to be overweight
- 34% less likely to have diabetes, and
- 27% less likely to have high blood pressure

A 2015 study suggests that moving from a low- to high-walkability neighborhood could result in a 42% lower risk of hypertension.[14]

The hypertension rate on the US-1 corridor is approximately 43% which affects 107,500 adults in the corridor. This prevalence of depression is much higher than the county, state, and national averages and serves as one of the most severe physical health issues along the corridor. Some sections of the corridor experience significantly higher hypertension rates including Delray Beach, Boynton Beach, Gulf Stream, Riviera Beach, North Palm Beach, and Juno Beach at nearly 45%.

PERCENTAGE OF ADULTS EVER DIAGNOSED WITH DEPRESSION

US-1 corridor	Palm Beach County	Florida	U.S.
17%	14%	17%	19%

PERCENTAGE OF ADULTS EVER DIAGNOSED WITH HIGH BLOOD PRESSURE (HYPERTENSION)

US-1 corridor	Palm Beach County	Florida	U.S.
43%	34%	35%	31%

CHRONIC ILLNESSES, OBESITY, & PREVENTATIVE CARE

Transit availability **encourages** an extra **20 blocks walked** per month.

Source: "Lack of Exercise Responsible for Twice as Many Early Deaths or Obesity," University of Cambridge, 2015.

Longer walking distances are associated **with riding the BRT** versus the local bus.

Source: "Does Bus Rapid Transit Promote Walking?," Journal of Physical Activity and Health, 2014.

A daily brisk **20-minute walk can reduce the risk of early death** by 16-30%.

Source: "Lack of Exercise Responsible for Twice as Many Early Deaths or Obesity," University of Cambridge, 2015.

Bicycling has been linked to **increased cognitive function** and lower chances of developing depression and mental illness.

Source: "The Brain Science of Biking," Shape, 2015.

People who walk or bicycle a **less likely to develop cancer and heart disease**.

Source: "Association between active commuting and incident cardiovascular disease, cancer, and mortality: prospective cohort study,' British Medical Journal, 2017.

[12] Atkinson, "The Mental Health Benefits of Walking," 2008.

[13] Kawachi, "Social Ties and Mental Health," 2001.

[14] Chiu, "Moving to a Highly Walkable Neighborhood and Incidence of Hypertension," 2015.

Quality of Life

Quality of life is defined by the World Health Organization as “an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns.”[15] Quality of life is affected by the degree that people have access to employment, health care, food sources, and educational facilities and that access influences the quality and quantity of lifestyle choices made.

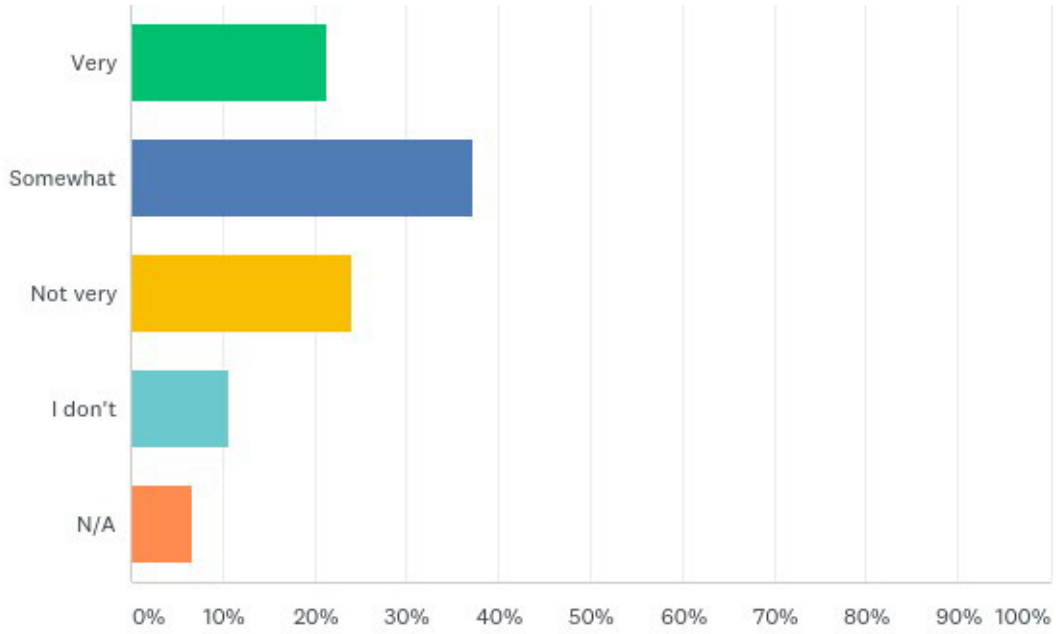
Increasing transportation choices help residents participate in the communities and gives them essential and equitable access to goods, services, education, and employment. In addition, financial prosperity affects the emotional and mental well-being of individuals.[16] Aside from providing increased mobility to the transit-dependent population along the corridor, the improvements proposed in the US-1 Multimodal Corridor Study could also provide a valuable alternative to automobile use for residents and workers which can consequently improve the quality of life in a community.

The Transit and Quality of Life Survey showed that approximately 35% individuals do not feel connected to their community and neighbors. In addition, 20% of respondents have been “sometimes” or “often” unable to get to work or health care services along the US-1 corridor due to public transportation issues.

These results indicate a need for respondents to have multimodal options. Research shows that high quality public transit can reduce emotional stress by improving access to education and employment activities, improving community cohesion, improving access to social and recreational activities, and reduce stress levels of commuters that no longer need to drive.[17]

Researchers observed a **42% lower risk of hypertension** among those who moved from low- to high-**walkability** neighborhood.[23]

How connected do respondents feel to their community and neighbors along US-1?



[15] World Health Organization, WHOQOL Instruments Description, 2018

[16] Litman, Victoria Policy Institute), " Evaluating Public Transportation Health Benefits," 2010

[17] Chiu, "Moving to a Highly Walkable Neighborhood and Incidence of Hypertension: A Propensity-Score Matched Cohort Study," 2015

How Transit and Complete Streets Can Influence Economic Health

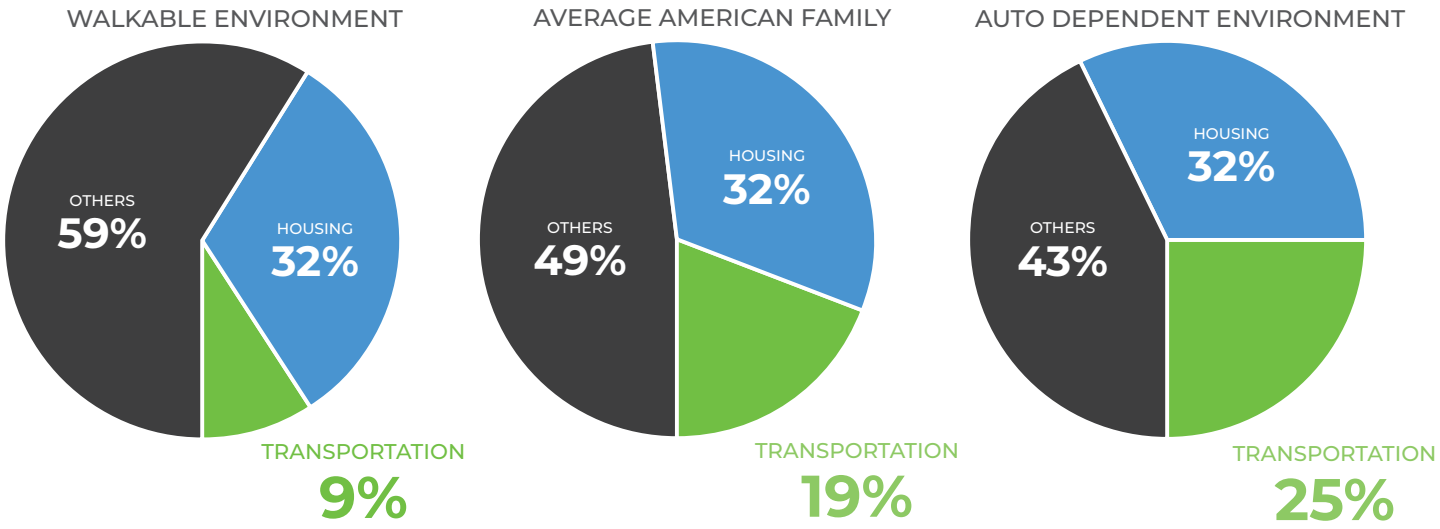
Transportation and land use are related at their roots. Development patterns can affect a person's travel to/from commercial and employment centers, encourage physical activity, facilitate access to services, and provide recreational opportunities. It can also present obstacles to improved health, or even contribute to negative outcomes by subjecting individuals to unsafe streets and limiting access to goods and amenities. Zoning and land use policies can help either support or inhibit healthy lifestyles within a community. Furthermore, a successful public transit system requires well-developed areas with mixed land uses and significant population density.

An enhanced transit system can be a catalyst for redevelopment along the US-1 corridor. Several studies have demonstrated the ability of premium transit projects in promoting economic development all across the county.

The reductions in travel time and the improvements in quality of service associated with implementation of a new enhanced transit line often get capitalized into land value, as residents and businesses are willing to pay a premium to be closer to transit stations.[18] In fact, when comparing BRT investment versus light rail, per dollar of transit investment and under similar conditions, BRT has resulted in more transit oriented development (TOD) than light rail transit or streetcars.[19] The Cleveland HealthLine BRT has catalyzed $4.3 billion in development. The tax base along the Boston Silver Line has grown by 250 percent compared to 150 percent citywide since 2008.[20] Complete streets improvements can ensure that these station areas are walkable. This directly improves foot traffic and creates a vibrancy of place that continues to drive up land values.

On an individual level, research out of the Center for Transit Oriented Development[21] suggests that the level of walkability of a neighborhood causes transportation to be more affordable. In an auto dependent environment, families spend an average of 25% of their budget on transportation. In a walkable environment, families spend an average of 9% of their budget on transportation.

How Neighborhood Features Influence Transportation Costs



[18] Carrigan, "Social, Environmental, and Economic Impacts of BRT Systems," 2013.

[19] Hook, "More Development for Your Transit Dollar: An Analysis of 21 North American Transit Corridors. New York: Institute for Transportation and Development," 2013.

[20] Petrie,"Bus Rapid Transit Means Rapid Economic Growth," *Mass Transit*, 2013.

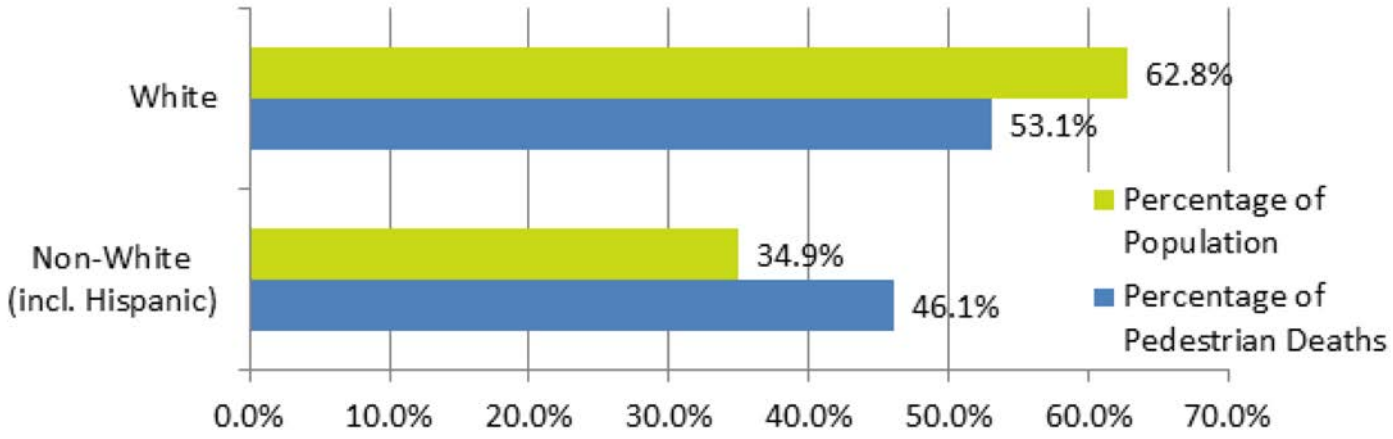
[21] Center for Transit Oriented Development, "The Affordability Index Toolbox," 2008.

How Transit and Complete Streets Can Influence Bicycle and Pedestrian Safety

Transit and complete streets improvements can lead to better pedestrian and bicycle safety outcomes. Complete street practices include implementation of protected bicycle lanes, wider sidewalks, and generally more comfortable environments for active transportation. In a Portland State University before and after study, 79% of bicyclists stated that protected bicycle lanes increased the perception of safety on the street.[22]

In addition to making it safer, these changes also lead to more pedestrians and bicyclists. When it's safe, convenient, and comfortable, more people decide to walk or bicycle. This, in and of itself, has been seen to lead to safer bicycling and walking. When more multimodal users are on the transportation system, motorists tend to pay more attention to them and adjust their behavior, making multimodal transportation safer.[23]

Historically underserved communities often face worse pedestrian safety outcomes compared to the entire population. A national study shows that non-white ethnicities experience a disproportionate amount of pedestrian deaths each year. Historically underserved communities often do not have the necessary complete streets infrastructure to enable safe walking and bicycling. Additionally, residents of these communities often do not have access to personal vehicles, making walking, bicycling, and transit their only means of transportation. When multimodal transportation is a necessity for everyday life, ensuring its safety is of paramount importance.



Dangerous by Design Report (2016) shows that non-white ethnicity pedestrian fatality rates are a disproportionate share of fatalities when compared to population

[22] Monsere, "Lessons from the Green Lanes: Evaluating Protected Bike Lanes in the U.S.," 2014.

[25] Jacobsen, "Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling," 2004.

US-1 Community

To understand significant transportation improvements to all modes of travel in palm Beach County and specifically US-1, the Palm Beach TPA Transportation Improvement Program (TIP) (FY 2018-2022) was reviewed and incorporated into the analysis.

US-1 TIP Projects

Project #	Limits	Length (miles)	Jurisdiction	Funding	Description
4398411	Eve Street to S. of Harborside Drive	0.5	Delray Beach	PE FY18: $275,000 CST FY20: $1,300,403	Resurfacing
4378341	North of George Bush Boulevard to North of (Canal) Murano Bay Drive	4.6	Delray Beach – Boynton Beach	CST FY19: $7,005,000	Resurfacing
2017R507	US-1 at SE 23rd Avenue	--	Boynton Beach	CST FY18: $650,000	Intersection Improvement
4378351	N of Hypoluxo Road to Waterway Drive	1.4	Lake Worth-Lantana	CST FY19: $2,804,768	Resurfacing
4400421	Albemarle Road and Okeechobee Boulevard	1.0	West Palm Beach	PE FY19: $759,000 ENV FY20: $309,000 CST FY21: $5,311,000	Convert 4L to 3L & associated multimodal improvements
4394041 & 4394042	25th Street to 42nd Street	1.0	West Palm Beach	PE FY18: $1,280,000	Convert 4 lane roadway to 3-lane roadway with dedicated bicycle lanes and a shared-use nonmotorized trail on the west side
2297444	11th Street to Silver Beach Road	1.4	Riviera Beach	PE FY18: $360,000 CST FY20: $834,830	Lighting
4428911	US-1 over Earman River (C-17) Bridge 930003	0.2	North Palm	TBD	Bridge Replacement

FY 2018

THROUGH

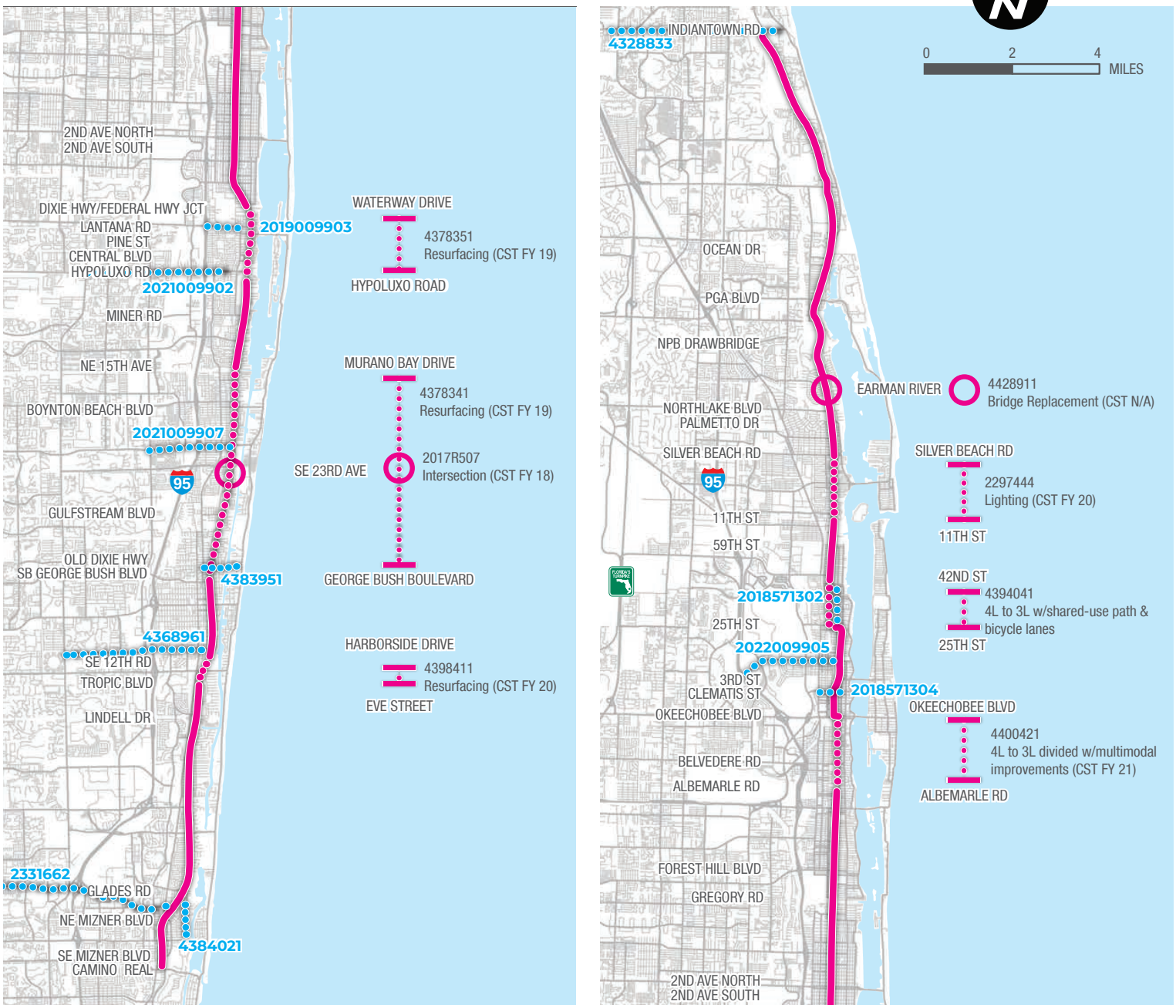
2022

TIP Projects

Other TIP Projects Adjacent to US-1

Project #	Road	Limits	Jurisdiction	Funding	Description
4384021	5th Avenue	Boca Raton Road to NE 20th Street	Boca Raton	PE FY19: $260,000 CST FY20: $464,022	Sidewalk
2331662	Glades Road/ SR 808	SR 7 to US-1	Boca Raton	CST FY 17: $8,200,000	Various Intersection Improvements
4368961	Lowson Boulevard/ SW 10th Street	Military Trail to SE 6th Avenue	Delray Beach	PE FY18: $5,000 CST FY20: $4,786,978	Bicycle Lanes/ Sidewalk
4383951	George Bush Boulevard	NE 2nd Avenue to SR A1A (excluding Intracoastal Waterway Bridge)	Delray Beach	PE FY19: $510,000 CST FT21: $3,203,356	Bicycle Lanes/ Sidewalk
2021009907	Woolbright Road	Congress Avenue to US-1	Boynton Beach	CST FY21: $221,000	Resurfacing
2021009902	Hypoluxo Road	Military Trail to US-1	Hypoluxo	CST FY21: $1,400,000	Resurfacing
2019009903	Lantana Road	I-95 to US-1	Lantana	CST FY19: $500,000	Resurfacing
2018571304	Banyan Boulevard	Tamarind Avenue to Olive Street	West Palm Beach	CST FY18: 1,770,000	Resurfacing
2022009905	Palm Beach Lakes Boulevard	I-95 to US-1	West Palm Beach	--	Resurfacing
2018571302	Spruce Street	25th Street to 40th Street	West Palm Beach	CST FY 18: 1,070,000	Urban Corridor Improvements
4328833	Indiantown Road	Florida Turnpike to US-1	Jupiter	RRU/CST FY 19: 5,986,129	Arterial Traffic Management Systems

US-1 Community Projects (FY 2018-2022)



Chapter 2. Understanding

the US-1 Corridor

Introduction

The US-1 corridor's diversity is reflected by its residential composition, user base, and land use patterns and types.

Socioeconomic Context

The US-1 corridor is diverse in its residents, users, and land uses. To better understand the users of the US-1 corridor, demographic and socioeconomic background research was conducted for the communities in the study corridor.

The US-1 corridor is a key employment corridor

Over 250,000 residents live in the study area and over 100,000 employees work in it. In total, the corridor makes up 13% of Palm Beach County residents and 19% of Palm Beach County jobs. Approximately 88,400 employees commute to a job inside the US-1 corridor, 54,200 employees commute to a job outside the US-1 corridor, and 13,600 employees live and work within the US-1 corridor. Transit and Complete Streets improvements have the potential to provide better access to jobs.[24]

Bus Rapid Transit improvements enhance job access by shortening journey times

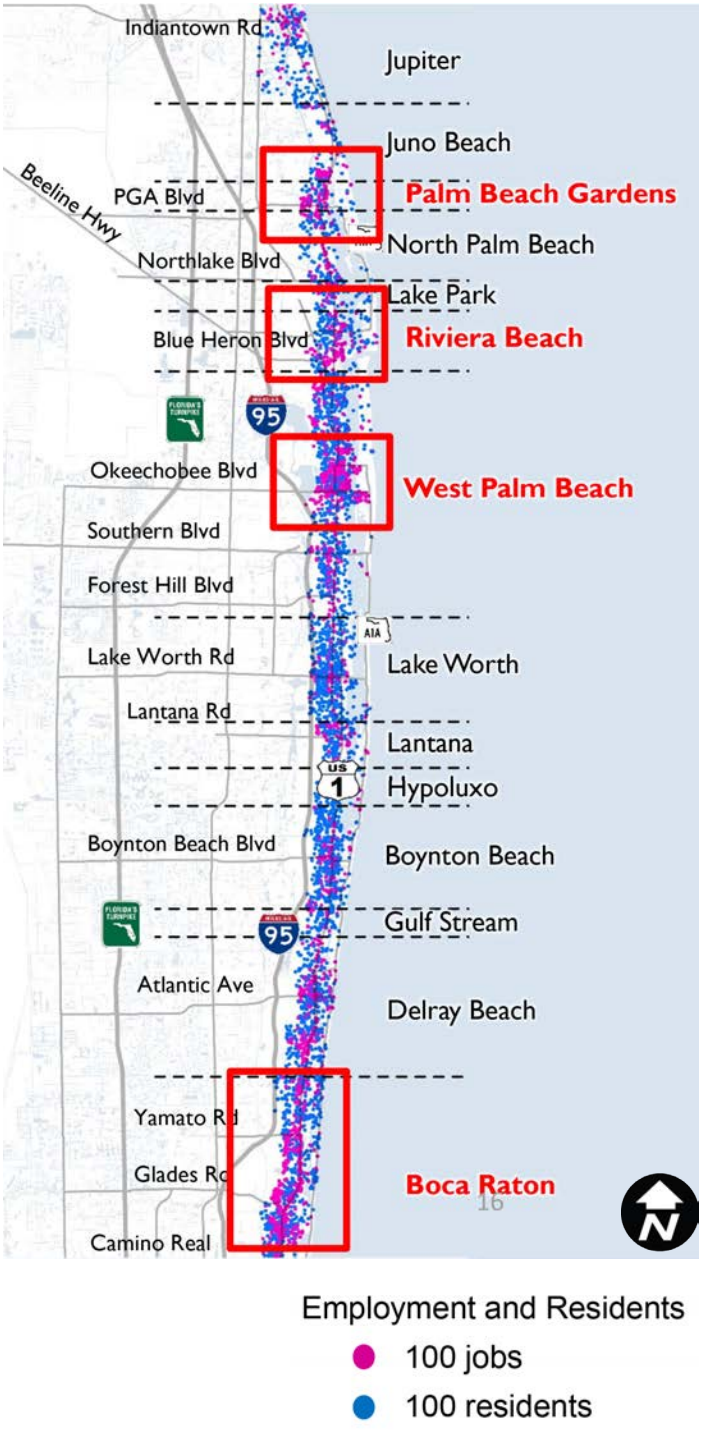
WORK INFLOW / OUTFLOW
1/2 Mile of Study Corridor

88,400
Employees Coming into the Study Area to Work

13,600
Residents Live & Work in the Study Area

54,200
Residents Leaving the Study Area to Work

Employment Inflow and Outflow



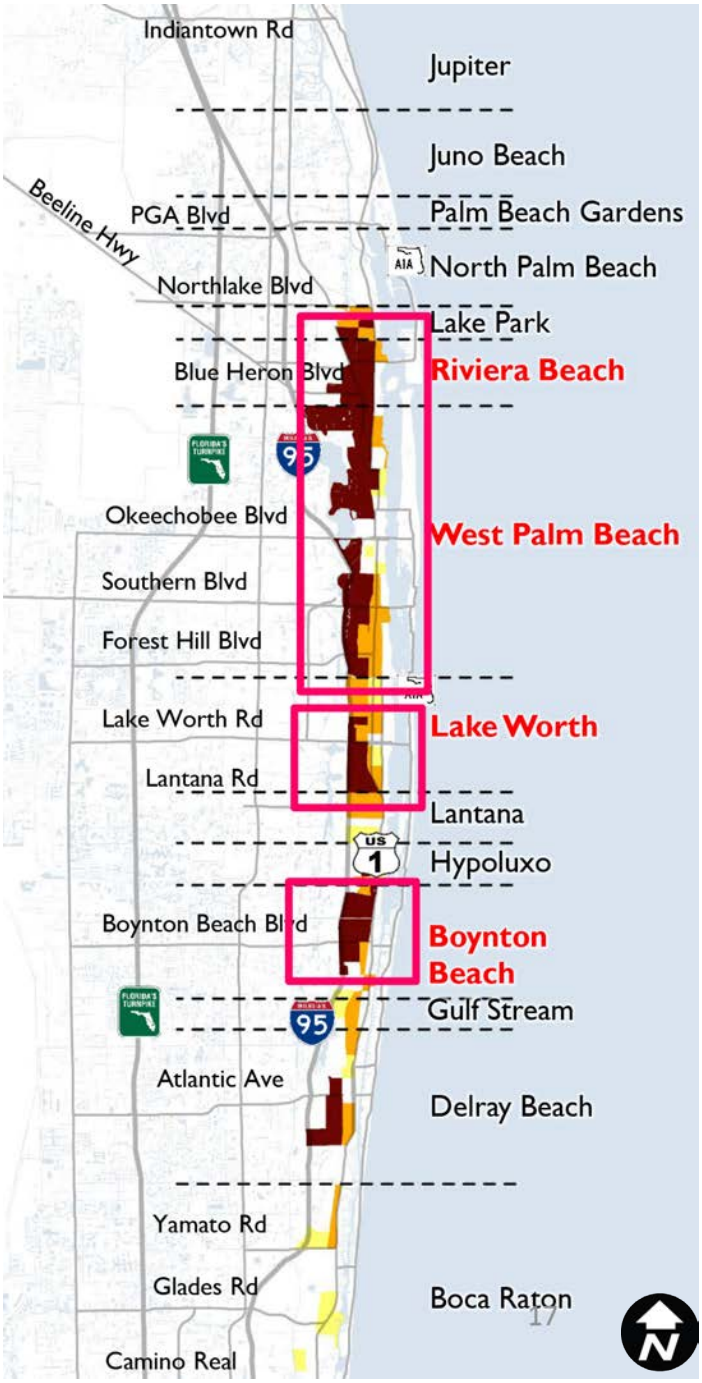
[24] Andrew Guthrie, "Economic Development Impacts of Bus Rapid Transit," (January 2016).

The US-1 corridor is racially and ethnically diverse

The US-1 corridor is a racially and ethnically diverse area. Understanding this distribution ensures that planning and design alternatives consider impacts and benefits to the populations that have historically been impacted or under served.

According to the US Census Bureau (2011-2015 5-Year Estimates) approximately 45% of the study corridor residents report they are non-White. This percentage is higher than the national average of 39%. The communities with the highest concentrations of non-White ethnicities are Riviera Beach, West Palm Beach, Lake Worth, and Boynton Beach, with some census blocks showing more than a 76% racial and ethnic minority population.

Racial and Ethnic Minorities



The US-1 corridor is home to many residents that have limited mobility choices

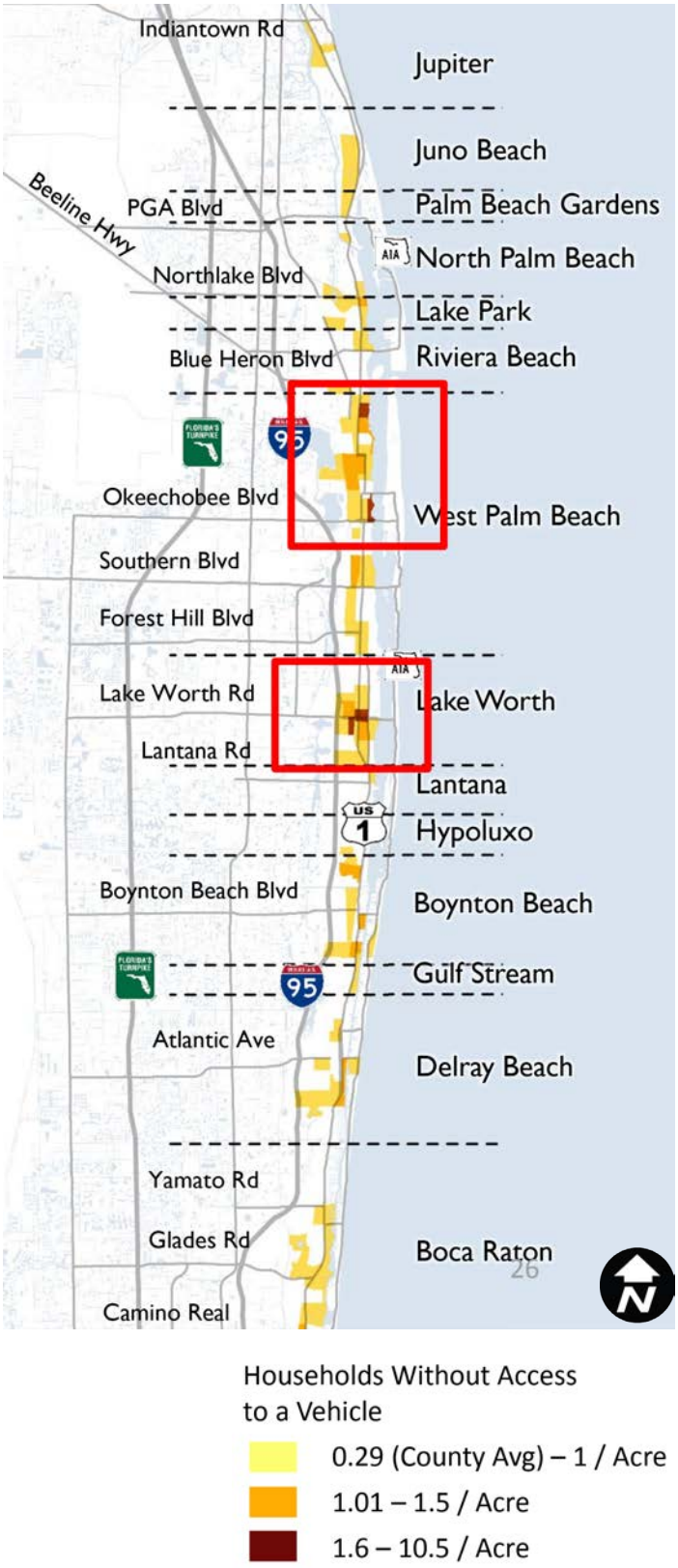
Transit-dependent populations often include people that live below the poverty line and those that do not have access to a vehicle. Given the employment barriers for those unable to drive, race and poverty play an intricate role in reliance on transit. In the study corridor, approximately 33% of low income African Americans, 25% of low income Latinos, and 12% of low income Whites lack automobile access. A relatively high portion of the population does not have vehicle access.

The Davises in Boynton Beach

Mr. Davis (who was permanently injured in an accident 20 years ago) and his wife, who is also disabled, are grateful for their degree of independence. Because they do not own a personal vehicle, the Davises can be seen traversing the corridor with their automatic wheel chairs. They rely on Palm Tran Transit for nearly all of their daily trips: playing bingo, visiting the beach, shopping, medical appointments, and visiting nearby parks to feed the ducks.

They live just two blocks from the Palm Tran stop at US-1 and 6th Avenue, however, Mr. Davis noted that they both need to ride their wheelchairs in the bicycle lane because of the lack of continuous sidewalks and those inconsistencies create physical problems for their wheelchairs. Mr. Davis also noted that, while he is riding in the street, he has been told by local authorities to use the sidewalk or face getting a ticket. There is no sidewalk.

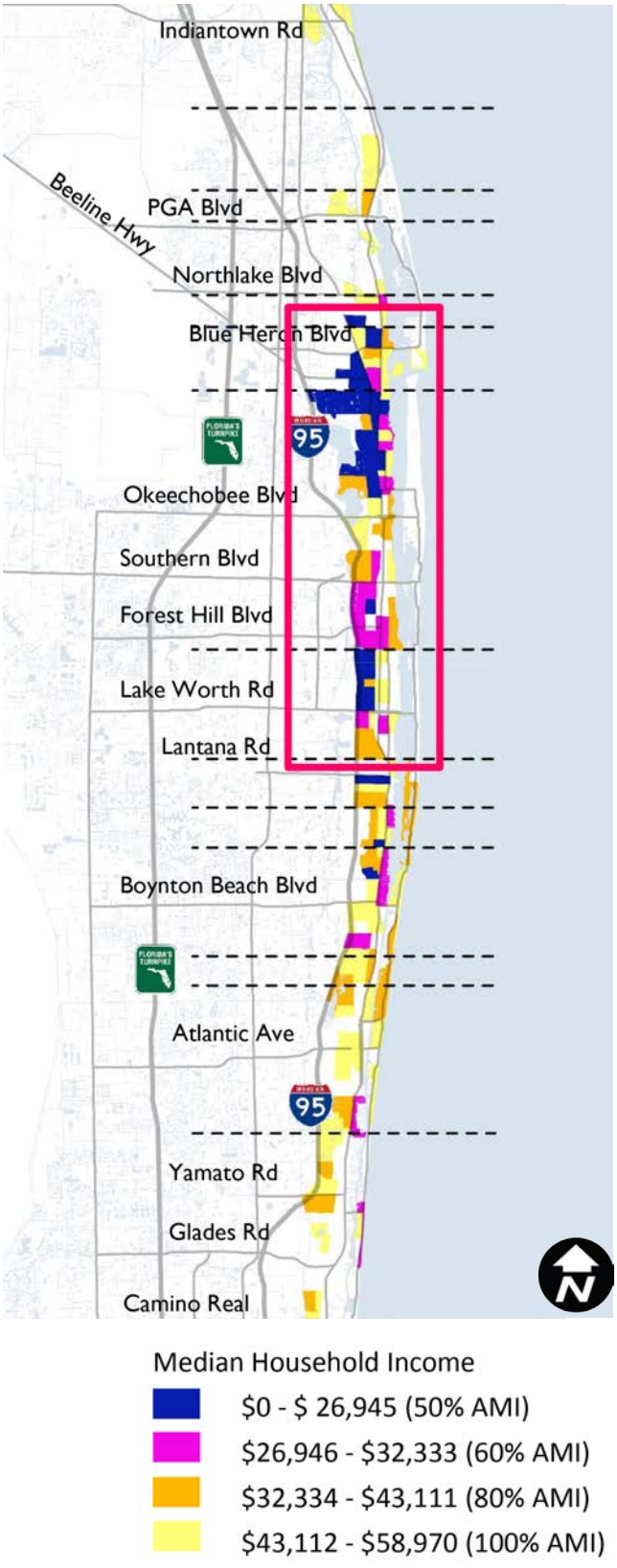
Households without Access to a Vehicle



Low-income households can also be an indicator of the level of potentially transit-dependent population that would benefit from improved service in the Corridor. Lake Worth, Riviera Beach, and West Palm Beach experienced the lowest incomes and have the most households under the poverty line, with some showing median household income less than 50% of the Area Median Income (AMI). Based on an analysis of these trends as well as other topics such as education and number of households without access to personal vehicles, the communities of Riviera Beach, West Palm Beach, Lake Worth, and Boynton Beach were identified as vulnerable populations.[25]

Many physically and economically **disadvantaged** people **depend on public transportation** to **access medical services** and to **obtain healthy**, affordable **food**.

Median Household Income

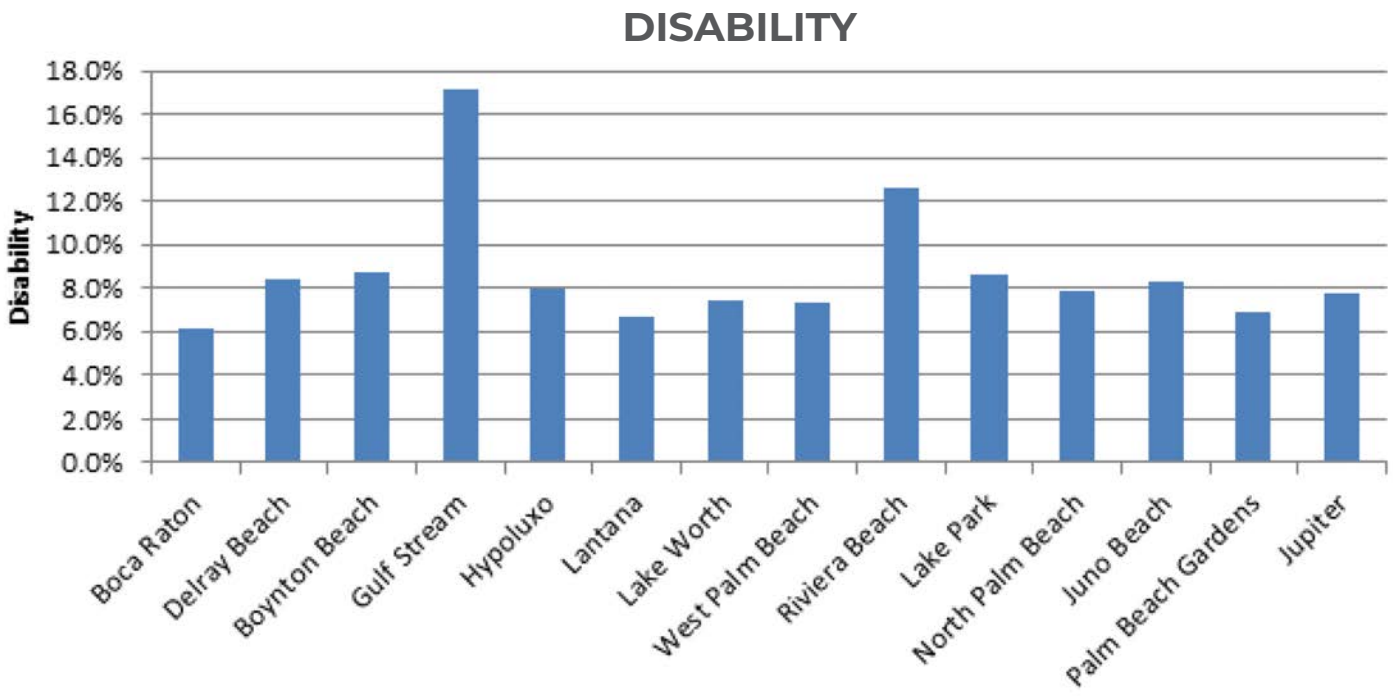


[25] Todd Litman, "Evaluating Public Transportation Health Benefits," (June 2010).

A community with more direct limitation in mobility are persons with disabilities. This population has unique access and mobility needs when it comes to planning transit and pedestrian infrastructure. On average, approximately 8% of the US-1 corridor has a disability of some kind. Gulf Stream and Riviera Beach show higher than average disability populations of 17% and 12%, respectively. Enhanced transit can open up access to education, employment, health care, and healthy foods for this unique population.

GULFSTREAM & RIVIERA BEACH

Percentage of Disabled Population



The US-1 corridor includes predominantly middle-aged population, with concentrations of high percentages of population with a high school degree or less

Various sections along the US-1 corridor experience a median age above 65. Adults over the age of 65 often have less transportation options than younger adults, as one in five Americans over the age of 65 do not drive.[26] Populations such as Jupiter, Palm Beach Gardens, and Boynton Beach may thus be especially reliant upon transit to get to their destinations.

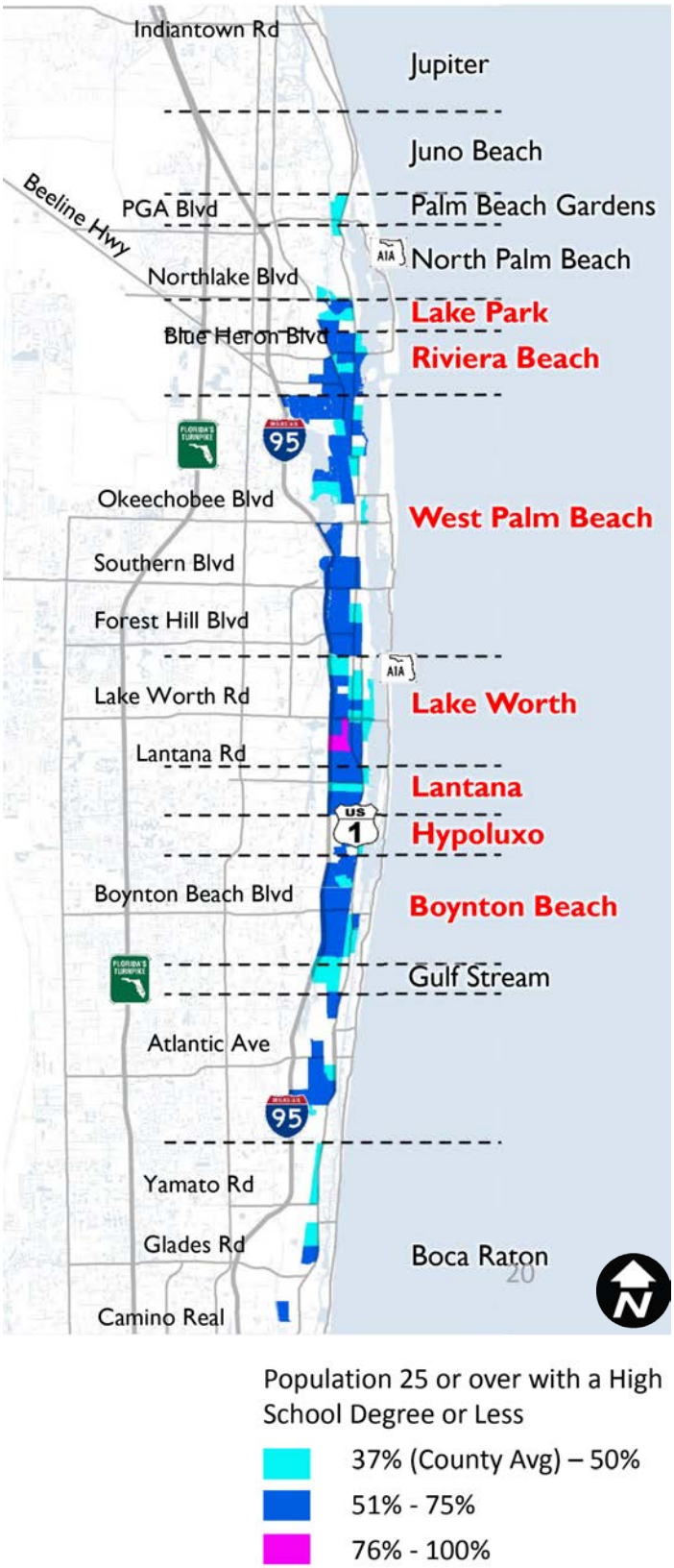
One in five Americans **over** the age of **65** do **not drive**.

Median Age

[26] Judith Bell, "The Transportation Prescription," (July 2009).

Many areas along the study corridor see adverse educational outcomes. Lake Worth, Riviera Beach, West Palm Beach, and Boynton Beach especially see large percentages of residents over the age of 25 without a high school degree. These populations also have a high number of households without access to a vehicle. In a similar way that transit and complete streets improvements improve access to employment, they also improve access to educational opportunities for those without access to a personal vehicle.

Educational Outcomes



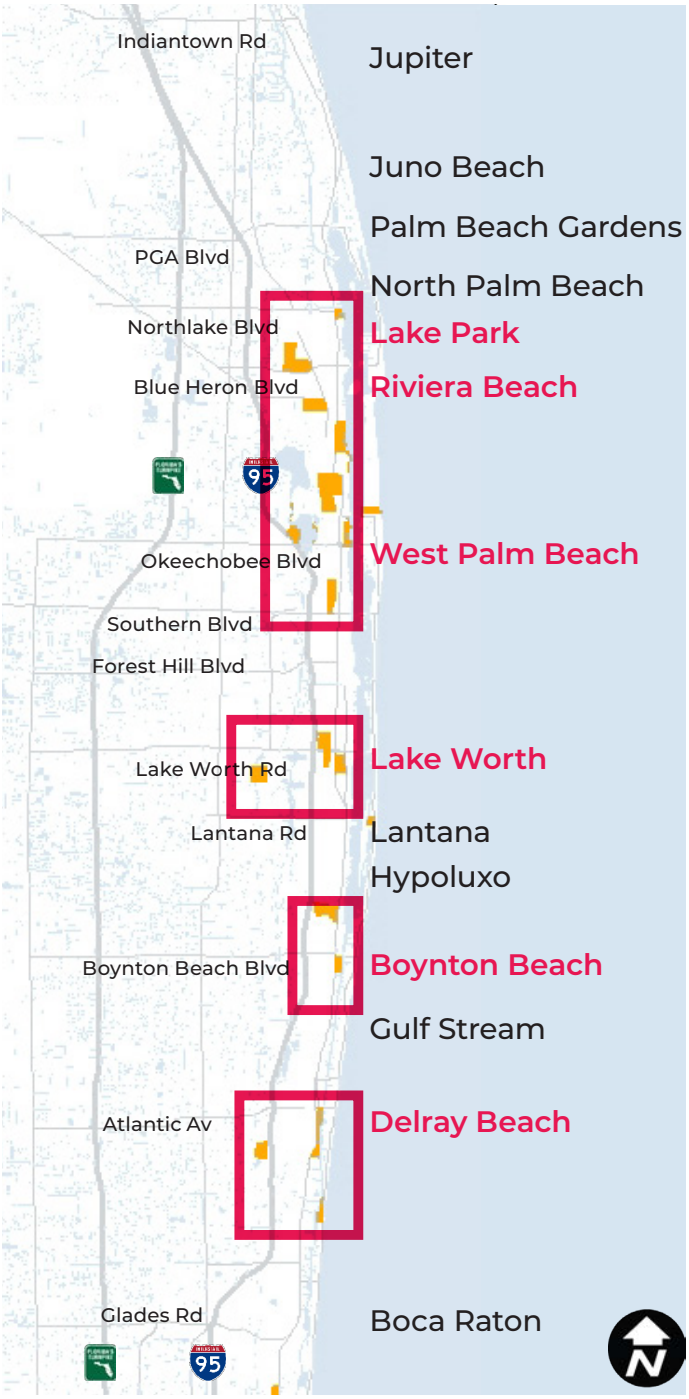
Vulnerable Populations

This overall lack of multimodal options isolate many disadvantaged residents within a community from jobs and educational opportunities. The increased distances between housing and jobs, as well as educational opportunities, has created barriers for those disadvantaged groups. As defined in Appendix A, US-1 Multimodal Corridor Health Impact Assessment Study, those disadvantaged groups were clarified as vulnerable populations defined as those who:

- **Live in Households without Access to Automobiles**
- **Are in Poverty**
- **Are Age 65 or Older**
- **Are Disabled**

*Vulnerable populations are **far more dependent** on transit services and **far more affected** by the lack of pedestrian and bicycle connectivity, the spacing of stops or stations, and the overall availability and reliability of a transit service*

Vulnerable Populations



Transportation

As noted, the US-1 corridor is a major population and employment corridor in Palm Beach County with a diverse population and a high need for accessible, convenient, safe, and comfortable transportation options. In order to understand the quality and quantity of the transportation system as well as how people are using it, this section describes the existing transportation conditions. It describes the system by looking at the Street Network Characteristics and Transit Conditions.

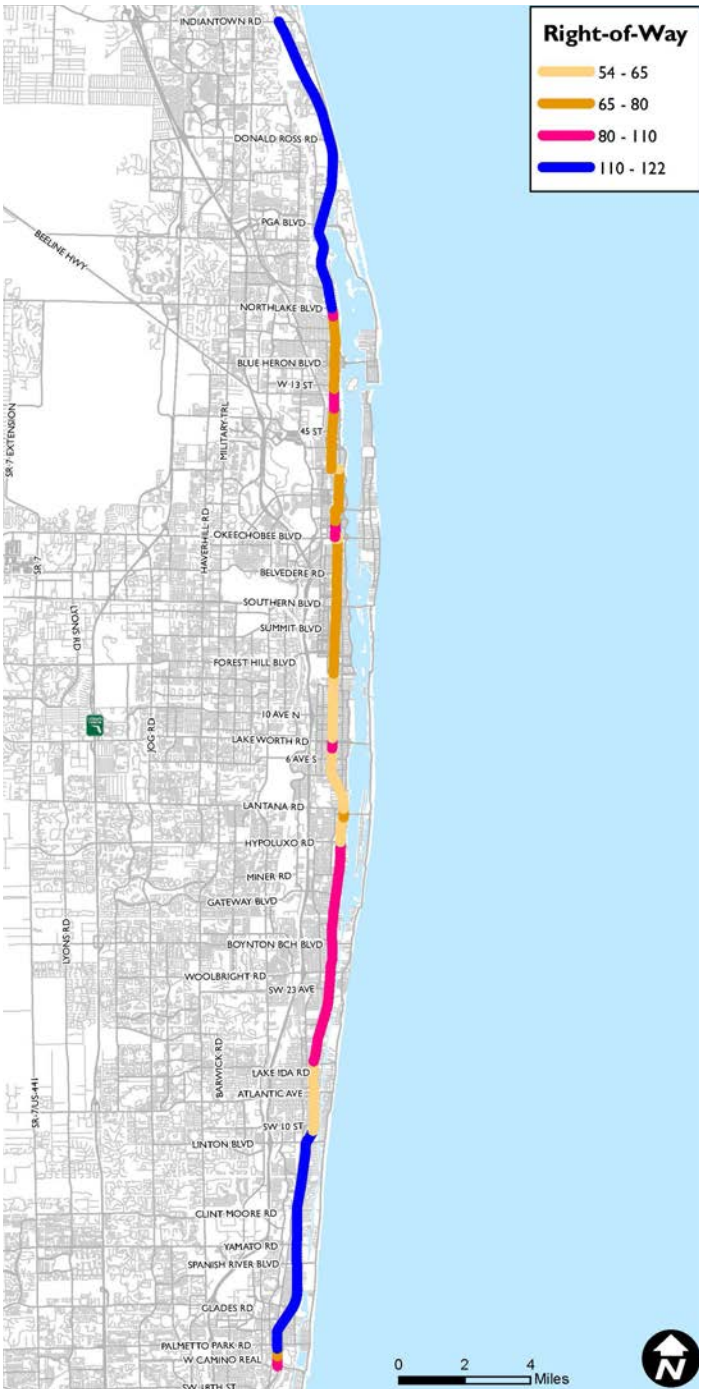
Street Network Characteristics

The street network facilitates the traveling characteristics along US-1 which considers vehicular, walking, and bicycling conditions along the road.

Right-of-Way

The right-of-way through the project corridor ranges from 54 feet to 122 feet. There are some segments that typically provide very limited space within the right-of-way to accommodate the needs of pedestrians, bicyclists, transit, cars, landscaping, utilities, and parking. The purpose of the US-1 Multimodal Corridor Study is to implement continuous multimodal facilities that connect the communities along the corridor so when dealt with limited space within the right-of-way, the need for connectivity is a priority.

Right-of-Way

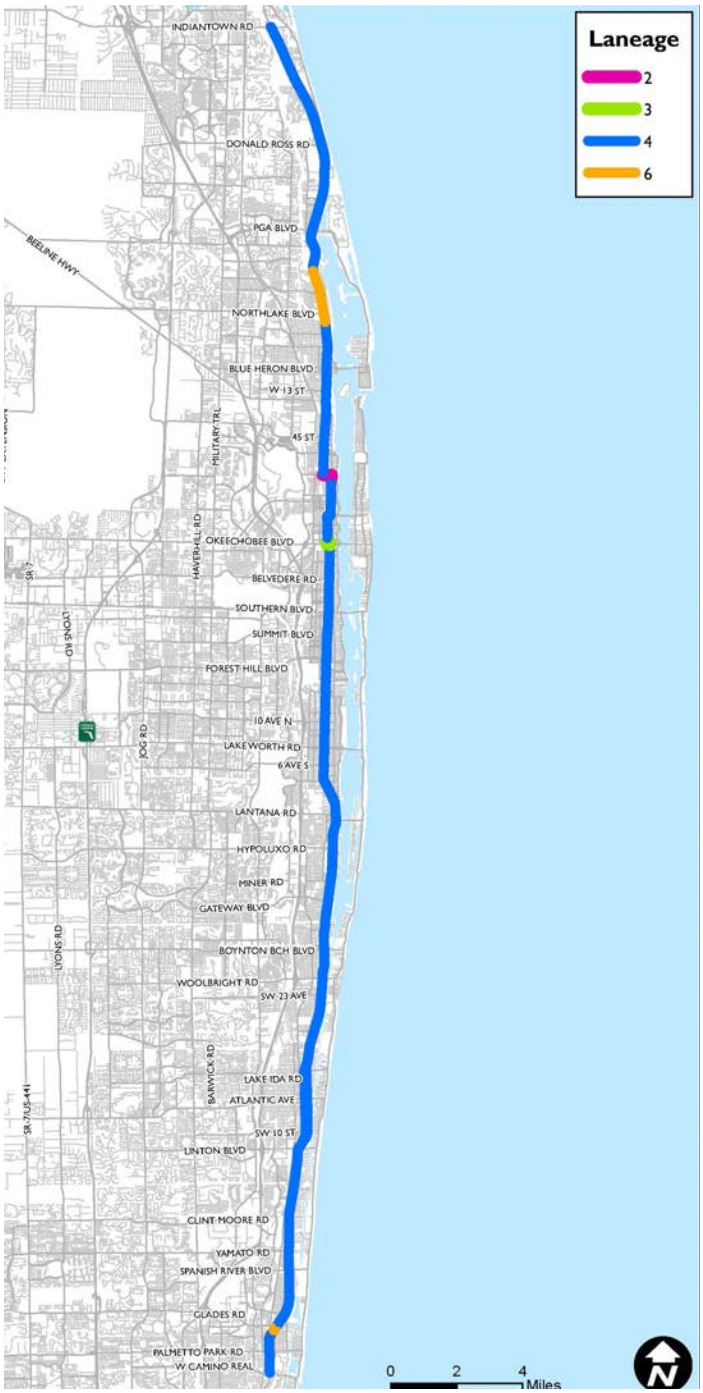


Laneage

The laneage through the corridor is mostly a four-lane road with a few outliers.

- Six-lane section from NE Mizner Boulevard to Glades Road
- Four-lane one-way pair section along Okeechobee Boulevard and Lakeview Avenue
- Two-lane section along 25th Street and Poinsettia Avenue from 24th Street to 25th Street
- Six-lane section from Palmetto Drive to Yacht Club Drive in North Palm Beach.

Laneage



Vehicular Speed

Posted speeds vary throughout the corridor from 30 to 45 miles per hour. Areas with rural and suburban contexts tend to see higher posted speed limits, while areas with urban contexts, such as downtown cores, tend to see lower speed limits. The latter typically allows better bicycle and pedestrian access and encourages development of land uses such as shops and multifamily residential. The former tends to discourage bicycle and pedestrian access and encourages development of auto-oriented land uses.

Posted Speed Limits

Vehicular Volumes

The average daily traffic along the corridor varies as well. Some areas, especially in the southern part of the County, see high average daily traffic. Parts of Boca Raton see over 40,000 trips per day. Most parts of the US-1 corridor, however, see moderate traffic volumes throughout the day.

Annual Average Daily Traffic

Annual Average Daily Traffic (AADT)

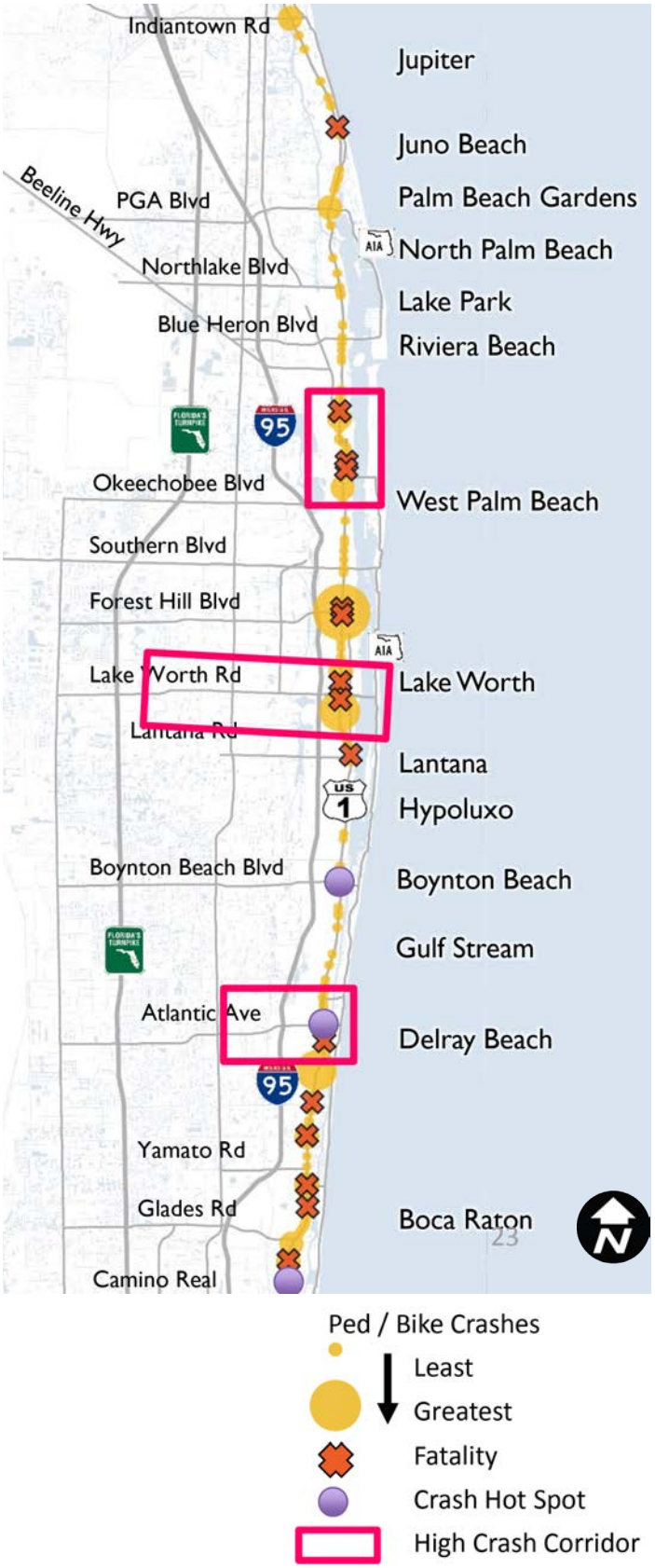
- 9,800 – 10,000
- 10,000 – 20,000
- 20,001 – 30,000
- 30,001 – 40,000

Pedestrian and Bicycle Conditions

There were 321 bicycle and pedestrian crashes along the corridor between 2011 and 2016, 15 of which involved fatalities. All fatalities occurred in dark-lighted conditions and over 80% of bicycle crashes occurred in locations without a bicycle lane. 12 of the 15 fatalities were pedestrians, with concentrations of pedestrian fatalities occurring in Lake Worth and West Palm Beach. All three bicycle fatalities occurred in Boca Raton between Glades Road and Hidden Valley Boulevard. These outcomes contributed to Palm Beach County (along with the rest of South Florida) being rated as the 11th most dangerous metro area in the United States for pedestrians.[27]

Dedicated bicycle and pedestrian infrastructure is not continuous throughout the study area

Pedestrian and Bicycle Crashes



[27] Smart Growth America, "Dangerous by Design 2016," January 2017

Walking and Bicycling Facility Gaps

The walking and bicycling facility gaps in the corridor. It highlights where there are no sidewalks or bicycle lanes. In general, most of the corridor has sidewalks, although their quality may be inconsistent. However, there is a section between Boynton Beach and Lantana where there is no sidewalk on the west side of the road. This area has several heavily utilized transit stops, forcing transit riders to walk in the dirt on the side of the road. It also has very few locations for pedestrians to cross the street, encouraging people to take their changes in running across the street at an unsignalized location to reach their destinations.

Regarding bicycling facilities, there are no bicycle lanes between Lantana and North Palm Beach along most of US-1. This creates an uncomfortable situation for bicyclists attempting to reach destinations along the corridor. During field reviews, bicyclists were observed riding along the sidewalk in many parts of the corridor, which can be dangerous for both bicyclists and pedestrians due to a lack of sufficient space to accommodate both.

The US-1 corridor has pedestrian and bicyclist mobility and safety challenges

While both bicycle lanes and sidewalks are provided along some segments of the corridor, neither are provided continuously. There are gaps in pedestrian and bicycle facilities along the length of the corridor. These gaps can make trips along the corridor inefficient and unsafe for bicyclists and pedestrians.

Pedestrian and Bicycling Facilities

Transit Conditions

Existing Service Types

Palm Tran currently uses US-1 with local bus Route 1 and a limited-stop bus service designated as "The Bolt." The transit service characteristics are summarized below.

Route 1 runs 42 miles from Camino Real in Boca Raton to the Gardens Mall Terminal in Palm Beach Gardens. The Bolt overlay service runs 28 miles between Camino Real in Boca Raton to the West Palm Beach Intermodal Transfer Center (WPB ITC). The two services provide access to many employment centers and residential areas. There is direct service or connection to major institutional uses including Florida Atlantic University, Palm Beach Atlantic University, Palm Beach State College, Good Samaritan Medical Center, St. Mary's Hospital, and numerous city government centers. The distribution of boardings and alightings throughout the US-1 corridor is shown graphically and summarized.

Local municipalites operate a series of transit services including the Boca Raton Shuttles, the Delray Beach Trolley, and the Downtown West Palm Beach Trolley the last two of which offer direct access to US-1.

Palm Tran Connection provides paratransit services along the entire US-1 corridor. While this study did not analyze paratransit service, extension of service north of the Gardens Mall could require extensions of complementary paratransit services.

In addition to Route 1, Palm Tran has 17 other routes that travel along or intersect with US-1 including the Broward County Transit (BCT) Route 10 at Camino Real in Boca Raton and the Martin County Public Transit, Marty Route 20X, a limited stop service at the Garden Mall Terminal in Palm Beach Gardens.

Rail in the study area includes the existing Tri-Rail Commuter Rail Service and the South Florida Regional Brightline Station in Downtown West Palm Beach. The proposed Tri-Rail Coastal Link would also have stations along the US-1 study corridor. National transit connectivity includes direct access to the Amtrak Train and Greyhound Bus service.

50%
ARE Transit Dependent[28]

65%

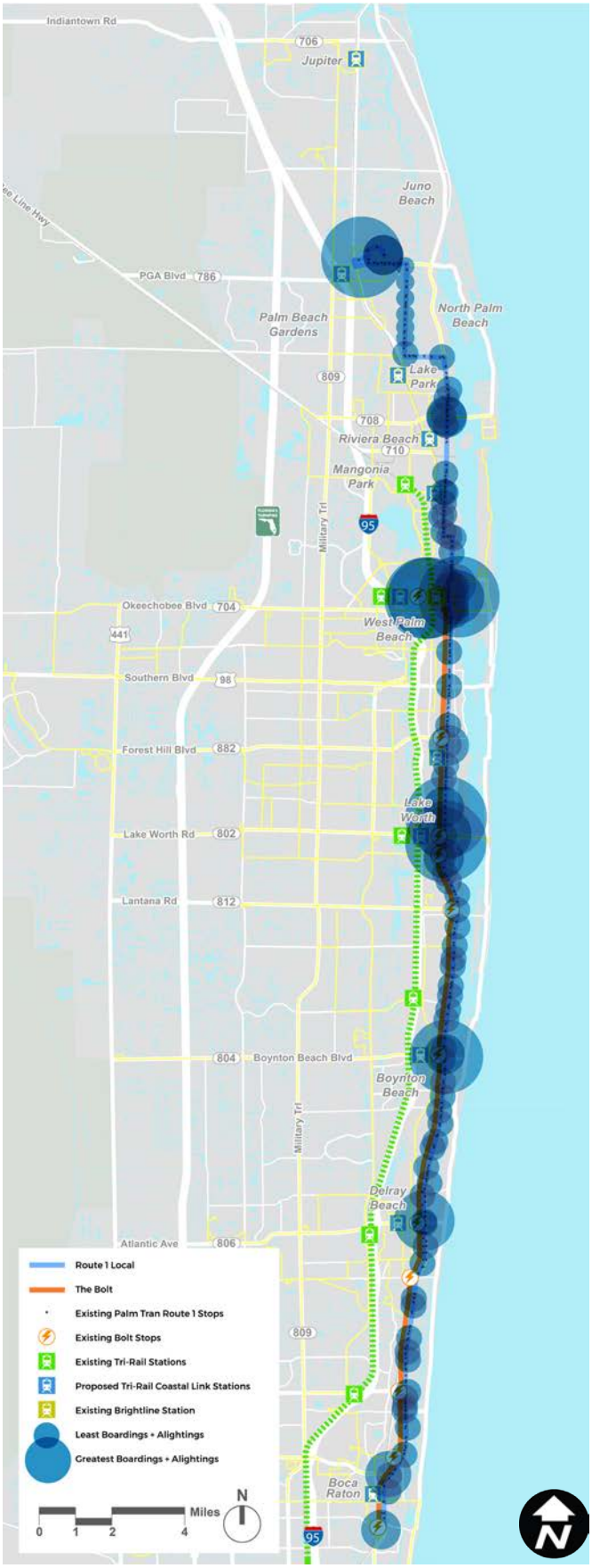
of Route 1 riders do NOT transfer buses[28]

US-1 Study Area Transit Service Characteristics

	ROUTE 1	THE BOLT	TRI-RAIL
Hours of Operation	5:20 AM - 10:00 PM (Weekday) 6:20 AM - 10:00 PM (Saturday) 8:20 AM - 6:30 PM (Sunday)	7:00 AM - 9:00 AM (Weekday Morning) 3:00 PM - 5:00 PM (Weekday Afternoon) NO WEEKEND SERVICE	4:00 AM - 11:30 PM (Weekday) 5:30 AM - 11:45 PM (Weekend)
End Points	Boca Raton to Palm Beach Gardens	Boca Raton to West Palm Beach	Boca Raton Station to Mangonia Park Station
No. of Stops	443 Stops (5.5 Stops/Mile)	22 Stops (0.4 Stops/Mile)	6 Stations
Frequency	20 Minutes (Weekdays/Saturday) 30 Minutes (Sunday)	**10 Minutes*** ***Includes Route 1 Overlap Service**	**20-60 Minutes (Weekday)** **60 Minutes (Weekend)**

[28] FDOT & Palm Tran, "Origin-Destination Survey," 2015.

Existing Transit Conditions



90%

of Route 1 riders WALK to their Stop[2]

Top Ten Route 1 Stops

	HIGHEST RIDERSHIP STOPS	AVERAGE WEEKDAY BOARDINGS
1	West Palm Beach Intermodal Transfer Center	885
2	Downtown Lake Worth *(Dixie Hwy @ Lucerne Ave)*	236
3	Downtown Lake Worth *(Dixie Hwy @ 2nd Avenue N)*	219
4	Downtown Boynton Beach *(Federal Hwy @ Boynton Beach Blvd)*	173
5	Downtown West Palm Beach *(Quadrille Blvd @ Evernia St)*	163
6	Downtown Boca Raton *(Dixie Hwy @ E Camino Real)*	151
7	The Gardens Mall	137
8	Riviera Beach @ Blue Heron	126
9	Downtown West Palm Beach *(Quadrille Blvd @ Banyan Blvd)*	98
10	Downtown Delray Beach *(Federal Hwy @ SE 1st St)*	91

Origin and Destinations

In 2015, FDOT conducted an on-board survey on behalf of Palm Tran. Part of this included an Origin Destination (OD) Survey where participants where asked for the addresses of the locations they were coming from and going to. Using the zip codes provided, the Study Team identified origin destination pairs. Based on the survey participants, the top origin-destination pairs were:

1. West Palm Beach – Lake Worth
2. West Palm Beach – West Palm Beach (internal)
3. West Palm Beach – Palm Beach Gardens
4. West Palm Beach – Riviera Beach
5. Boca Raton – Delray Beach

From the OD study, the Study Team was able to determine the length of transit trips on Route 1. Based on survey responses, most trips on Route 1 are 15 miles or less, indicating very few users are traveling from end to end on Route 1.

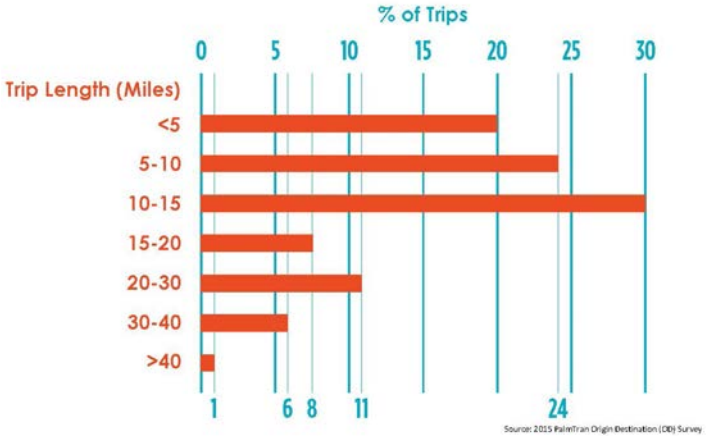
Ridership & Passenger Load Factors

Route 1, including The Bolt, carries the most passengers in the Palm Tran system. According to Palm Tran's recently adopted TDP for Fiscal Years (FY) 2017 – 2026, ridership on Route 1 accounts for 24% of the total system users. Route 1 also connects to five of the other top ten routes in the system.

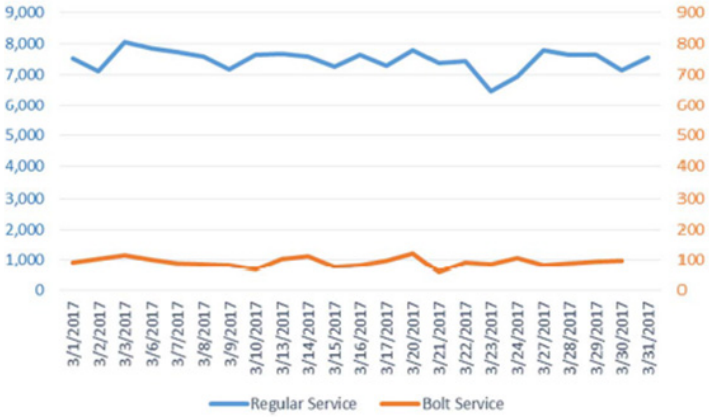
Palm Tran provided Automated Passenger Counter (APC) data for March 2017. From that dataset, ridership was shown to be stable and Route 1 averaged more than 7,400 boardings per weekday and The Bolt averaged 90 boardings per weekday.

The data also suggested that ridership is similar during the weekdays and the weekends.

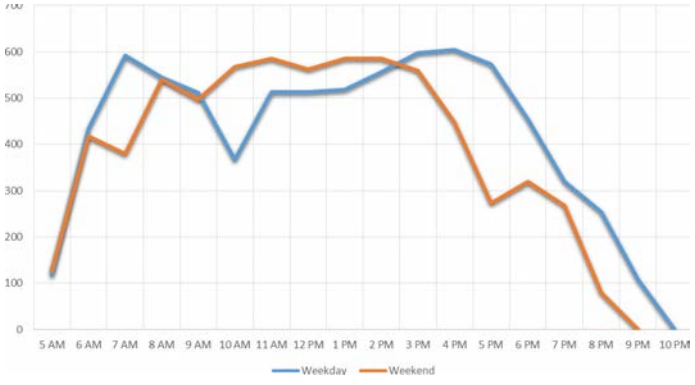
Average Trip Length



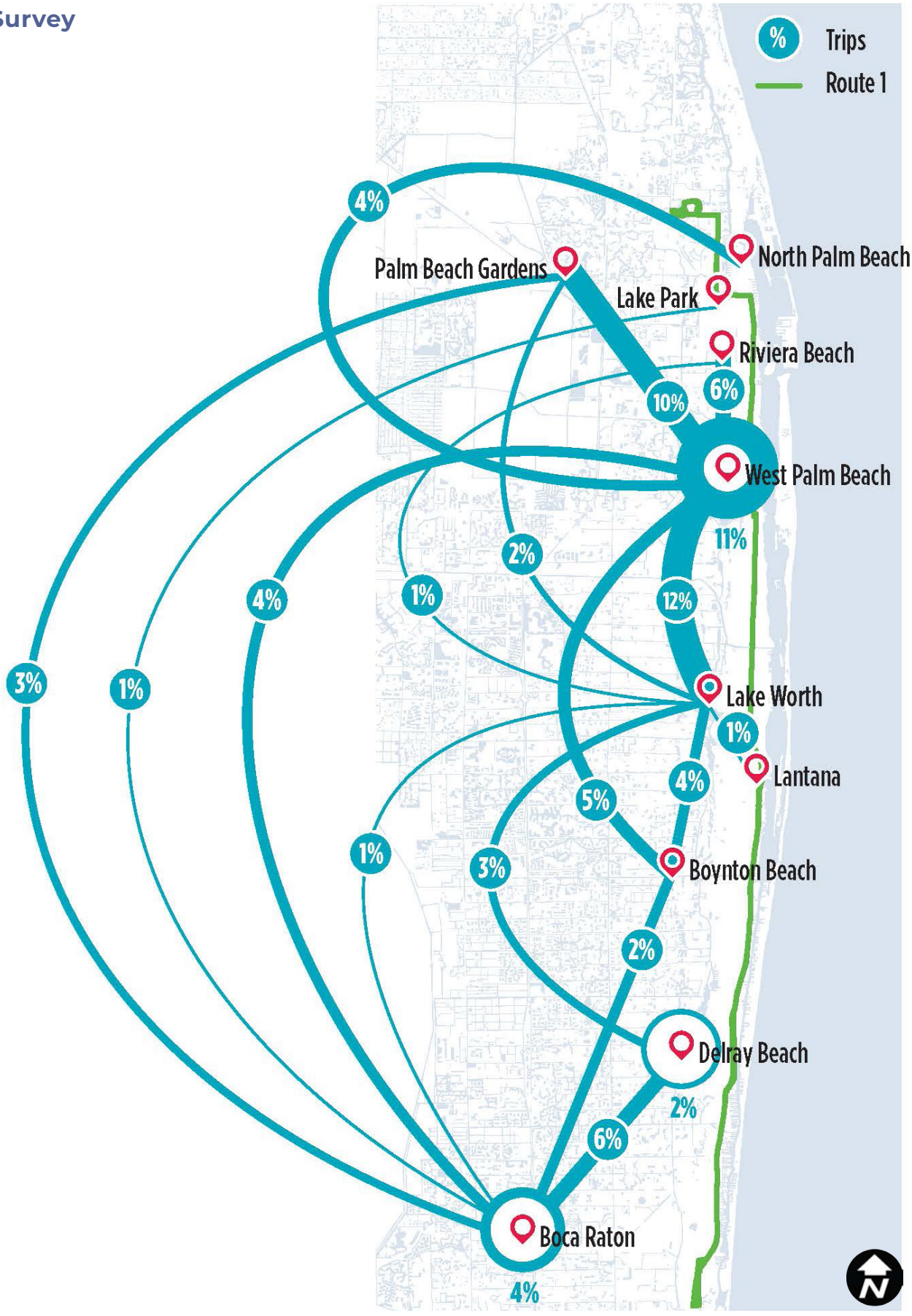
Weekday Ridership - March 2017



Average Boardings by Hour - Weekday vs. Weekend



Origin-Destination Pairs from 2015 Palm Tran Survey



Chapter 3. Public

Engagement Process

Introduction

The US-1 Multimodal Corridor Study began with an open streets public outreach kick-off event in May 2017 at Sanborn Square in Boca Raton that was used as an opportunity for public awareness of the project and consensus-building. The existing conditions for the project corridor related to socioeconomics and street network characteristics and transit conditions was presented to increase the project corridor for healthy community development. Workshops and open studio charrettes were conducted for more detailed engagement with the public.

Key Interest Groups targeted and invited to participate in public engagement process:

- Elected officials
- City staff
- Residents
- Business owners
- Agency representatives
- Economic development officials
- Neighborhood advocates
- Multimodal advocates
- Educators

2017

April

- Health Impact Assessment Working Group Kick-Off Meeting

May

- Open Streets Public Outreach
- Kick-Off Event Comment Map

June — October

- Public Survey
- Stakeholder/Personal Interviews
- Workshops
- Open Studio Charrettes
- Health Impact Assessment Working Group Meetings

2018

May

- Technical Advisory Committee (TAC) Meeting
- Citizens Advisory Committee (CAC) Meeting
- Bicycle/Trailways/Pedestrian Advisory Committee (BTPAC) Meeting
- TPA Governing Board Meeting

450+ attendees at Workshops, Open Studio Charrettes and Open Streets Event

18 Open Studio Charrette Days

6 Workshops

1 Open Streets Event

100+ interactive Priority Pyramid Responses

9 comments to info@US1PBCorridorStudy.com

260+ likes and **130+** comments on online Comment Map

100+ Stakeholder Interviews

100+ survey responses

16+ personal interviews

Social Media included Project Facebook Page and Instagram

Workshops & Open Studio Charrettes

Workshops were held on Saturdays and the open studio charrettes were held on Monday through Wednesday of the following week. The workshops included an overview presentation, group walking audit to assess the corridor and a group street design exercise. Some basic questions were asked:

- What are the corridor needs and opportunities?
- Who are the users? Who should be the users?
- What is the role of the roadway? What should it be?

The three-day open studio charrettes consisted of different activities as listed below to capture the participants' desired vision for the US-1 corridor and a closing presentation on the third day.

- Build-a-Street
- Priority Pyramid
- Intersection Designs
- Transit Characteristics
- Conceptual "Opportunity Area" Analysis

MON — WED

3

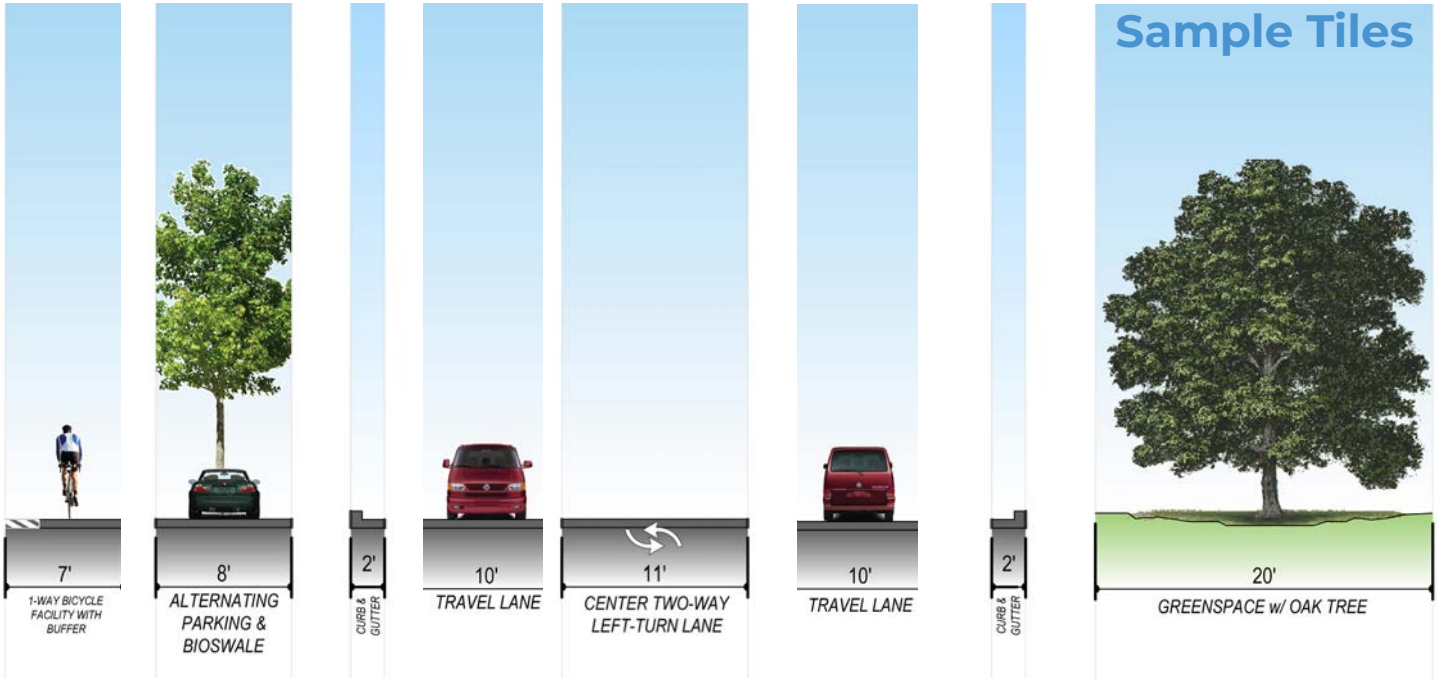
DAY

Open Studio Charrettes

SAT = WORK SHOPS

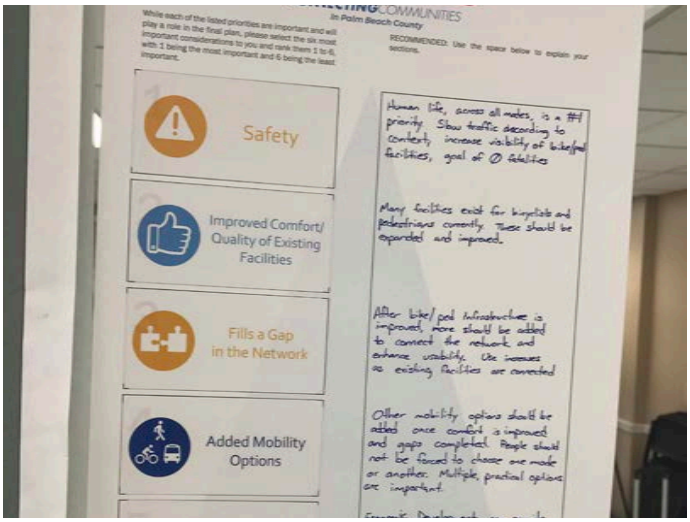
Build-a-Street

The Build-a-Street activity offered participants an understanding of the tradeoffs between right-of-way versus roadway features as well as a means to identify cross-section vision for critical corridors in the community. Participants created their ideal typical roadway section for specific corridors that included features they believed were most desirable.



Priority Pyramid

This activity asked participants to rank their top six themes out of a total of eleven. The top three themes that were consistently ranked highest based on frequency were safety, economic development/"placemaking" and added mobility options. Over 120 responses were received.



TOP 3 THEMES

Safety

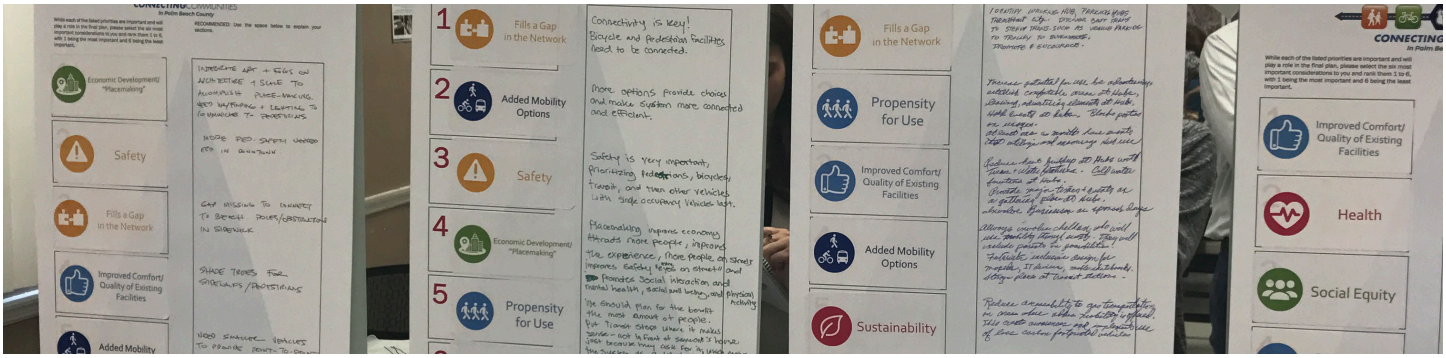
Increases safety for all users

Economic Development/ "Placemaking"

Creates a sense of place and allows opportunities for economic growth

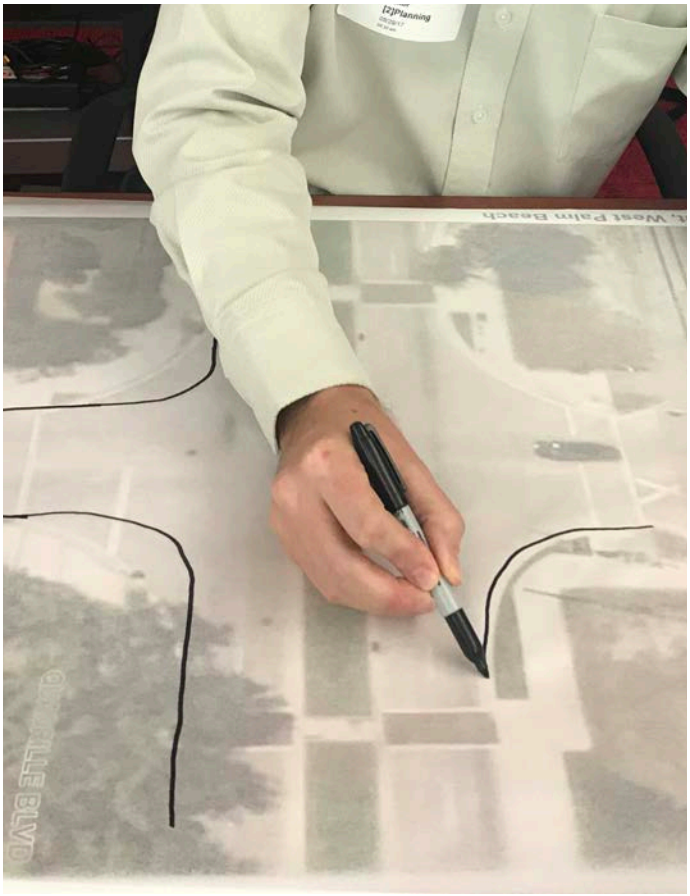
Added Mobility Options

Creates a sense of place and allows opportunities for economic growth



Intersection Designs

The intersection designs offered participants to share ideas on how they would like to reimagine key intersections along US-1. Tracing paper and writing materials were put on the tables with aerials of the intersections.



Station Amenities

Transit Characteristics

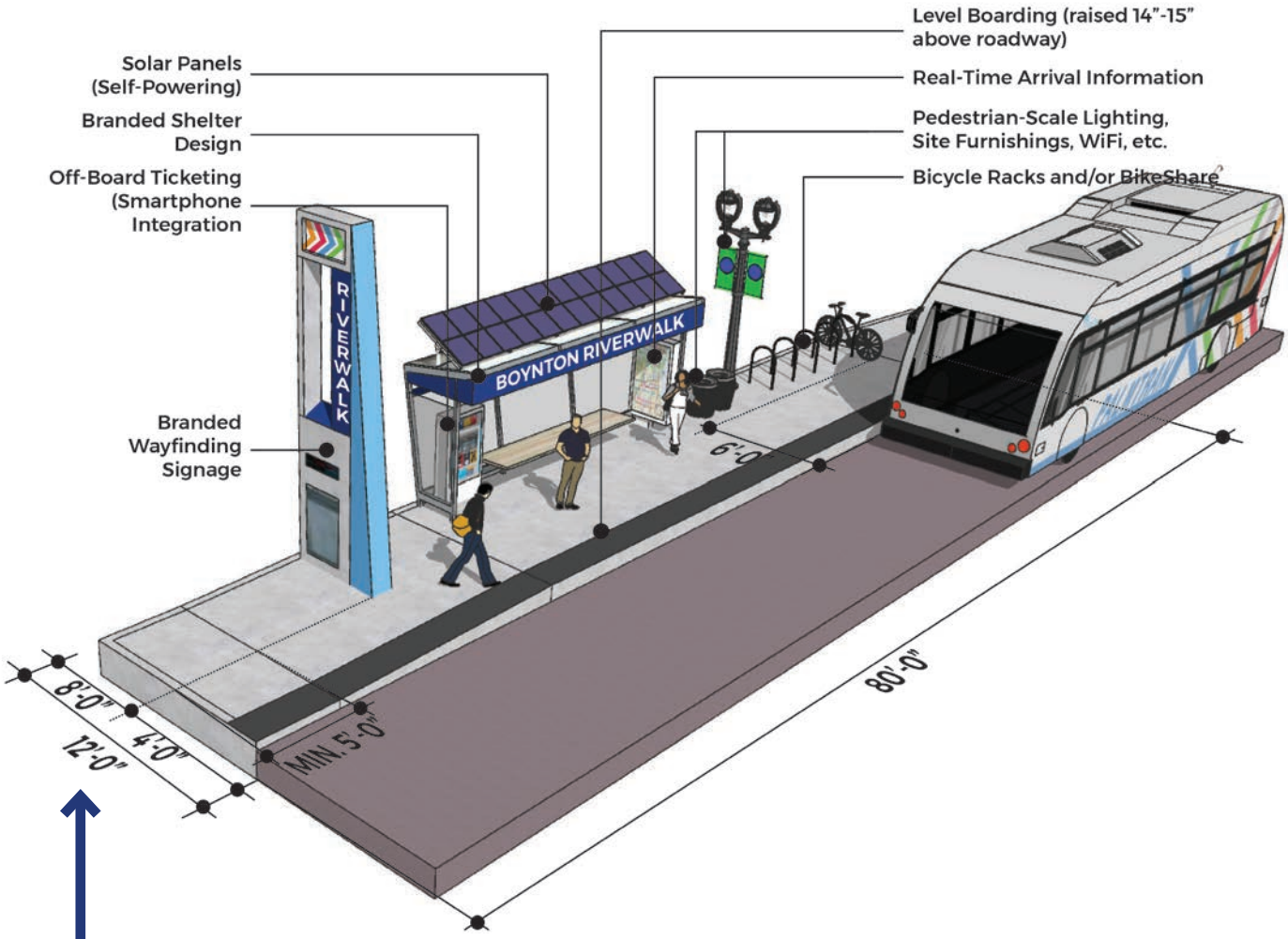
This activity asked participants to rank their preference for various transit characteristics. The highest preference was for the ability to bicycle or walk safely and comfortably to a given transit location. Attendees felt strongly that a station need to be well-lit and clean with seating and shade. The dependability and speed of the transit service was also preferred. Finally, attendees felt they would be more likely to use transit if the service was well branded and included technologic aspects like real time tracking and payment methods available through their smartphone.

Based on this input, the preferred amenities were combined and formed to create the typical **PTX Station Module** and the "narrow" PTX Station Module.

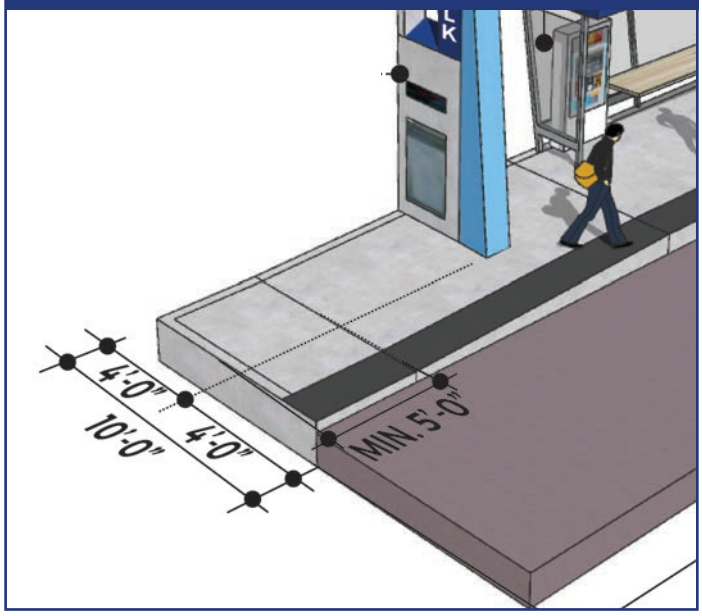
TRANSIT CHARACTERISTIC PREFERENCES

CHARACTERISTICS	SECTION 1	SECTION 2	SECTION 3	SECTION 4	SECTION 5	SECTION 6	TOTAL
WALKING/BIKING TO TRANSIT STOP	23	6	9	9	4	5	56
SAFE, WELL-LIT TRANSIT STOP	11	10	8	15	4	2	50
CONSISTENT ARRIVAL TIME	10	12	5	15	2	1	45
TIME/SPEED OF SERVICE	10	9	4	15	3	3	44
BRANDED BUS AND STATIONS	8	5	8	5	4	3	33
REAL-TIME TRACKING	4	5	4	12	4	3	32
APP-BASED PAYMENT METHOD	8	5	2	8	2	1	24
NUMBER OF TRANSFERS	6	7	1	5	2	0	21
VEHICLE BOARDING AND SEATING	1	3	0	4	2	0	10
STOP LOCATIONS	1	5	2	0	1	0	9

Typical PTX Transit Station Module



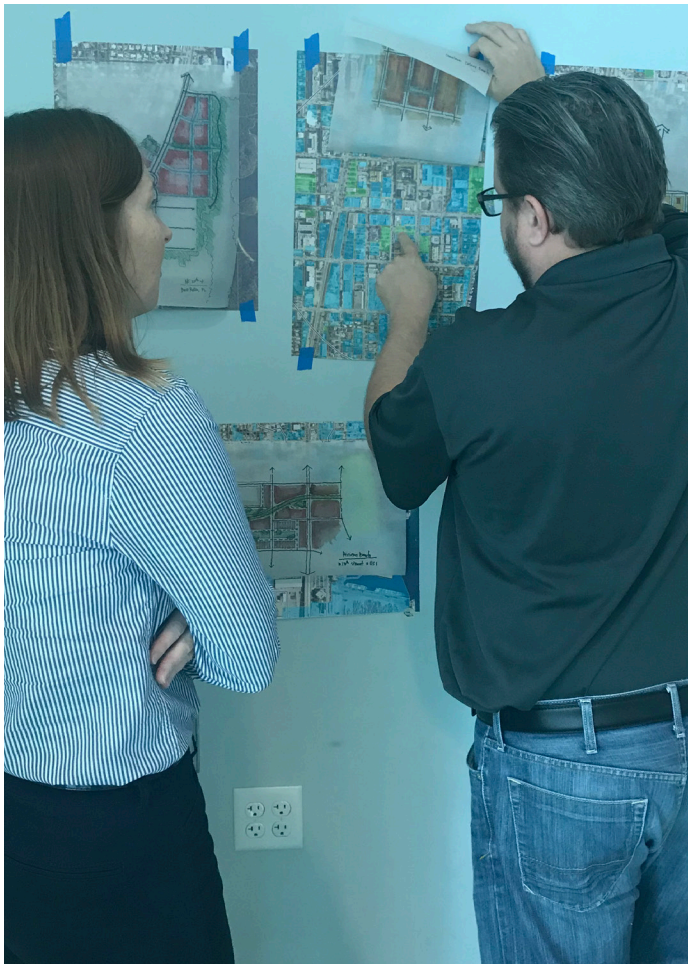
Alternative Width for Narrow Right-of-Way

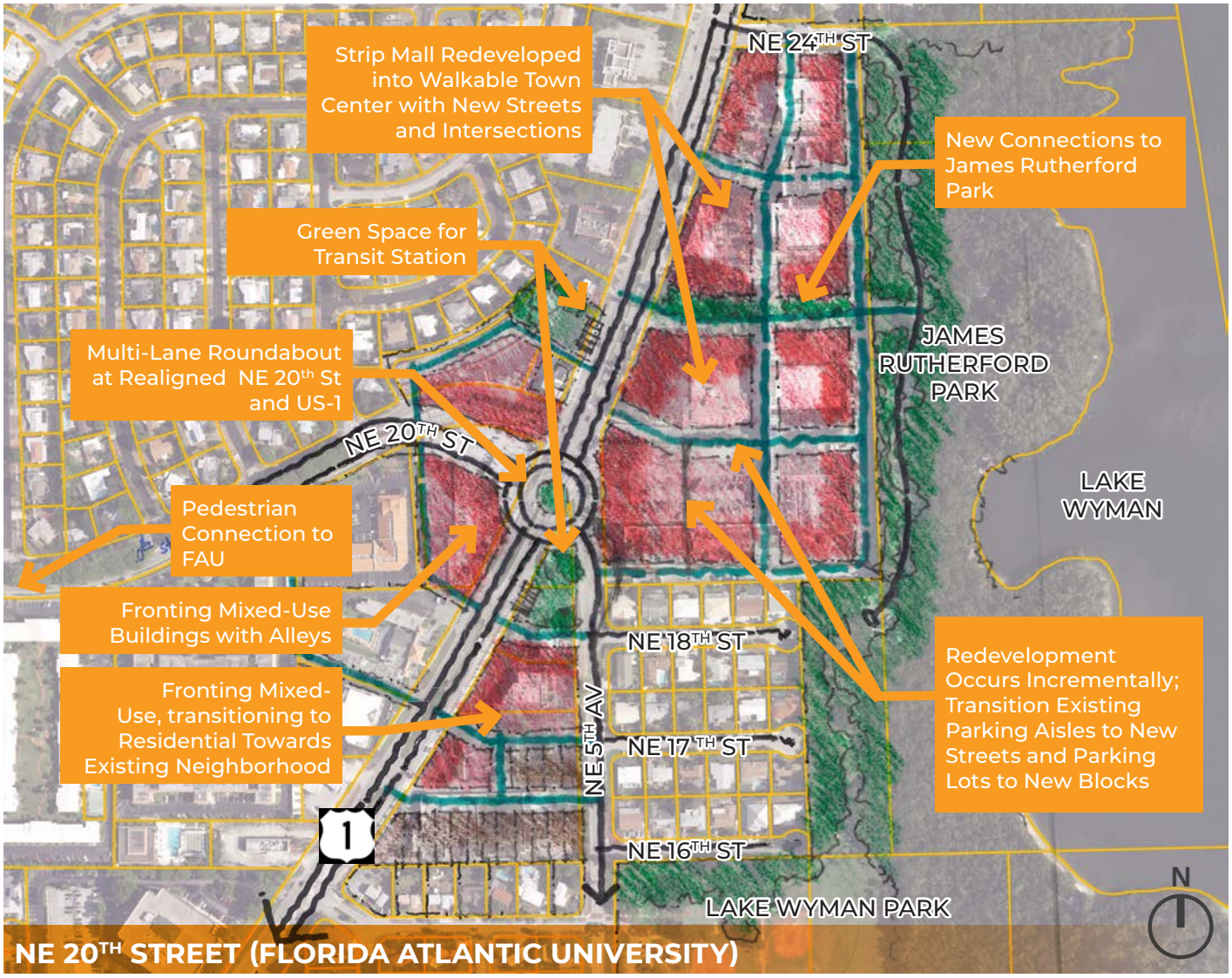


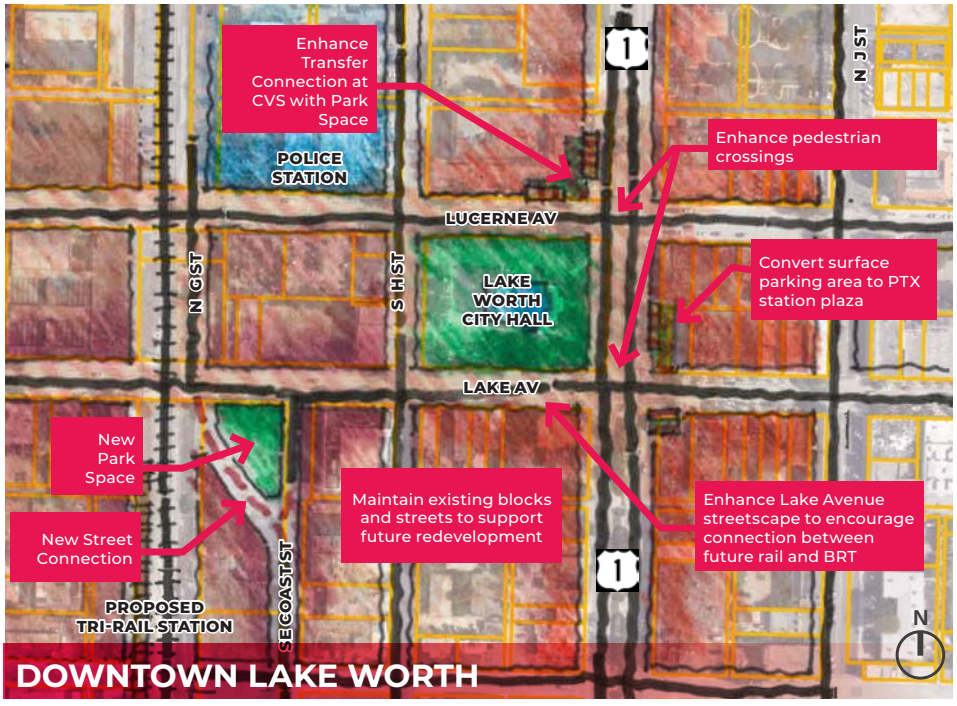
Opportunity Areas Analysis

Conceptual “opportunity sites” were generated for each opportunity area in a given section that was also identified as a potential “PTX” station location. For each opportunity area, the Study Team conducted a review of existing land use conditions, along with transit and demographic makeup. Local agency partners were interviewed and provided general input on the direction of each plan. The final concept drawings developed illustrative urban design concepts of potential future land use scenarios within roughly a half-mile area of the potential station and were presented to the public at the closing meeting.

Conceptual-level TOD scenarios were generated for each PTX station location along US-1. These scenarios are not meant to indicate any approved or proposed plans but to illustrate a possible and hypothetical development scenario and to understand how transit (both existing service and proposed service) and transit-supportive development interacts with land use planning and the Complete Streets investment.




Strip Mall Redeveloped into Walkable Town Center with New Streets and Intersections
NE 24TH ST
New Connections to James Rutherford Park
Green Space for Transit Station
JAMES RUTHERFORD PARK
Multi-Lane Roundabout at Realigned NE 20th St and US-1
NE 20TH ST
LAKE WYMAN
Pedestrian Connection to FAU
Fronting Mixed-Use Buildings with Alleys
NE 18TH ST
Fronting Mixed-Use, transitioning to Residential Towards Existing Neighborhood
NE 5TH AV
NE 17TH ST
Redevelopment Occurs Incrementally; Transition Existing Parking Aisles to New Streets and Parking Lots to New Blocks
1
NE 16TH ST
N
LAKE WYMAN PARK
NE 20TH STREET (FLORIDA ATLANTIC UNIVERSITY)


Enhance Transfer Connection at CVS with Park Space
1
N J ST
Enhance pedestrian crossings
POLICE STATION
LUCERNE AV
N G ST
S H ST
LAKE WORTH CITY HALL
Convert surface parking area to PTX station plaza
LAKE AV
New Park Space
Maintain existing blocks and streets to support future redevelopment
Enhance Lake Avenue streetscape to encourage connection between future rail and BRT
New Street Connection
1
SEACOAST ST
PROPOSED TRI-RAIL STATION
N
DOWNTOWN LAKE WORTH

Stakeholder Interviews

Creating a community vision is a planning step that should not be taken lightly. It requires a thoughtful approach to engaging the community and empowering stakeholders. Over 100 stakeholder interviews were held to encourage aspirational planning while understanding why decisions were made. Some basic questions were asked.

- What are the major attractions along the corridor?
- How would you like to see US-1 improved?
- What are the major issues along the corridor?
- Who is using transit? Bicycling or walking?
- Where are the areas that you see the most current transit/pedestrian/ bicycle use? Where do you see this use increasing in the future?
- What other issues/challenges do we need to address to encourage better multimodal mobility and access? Are these issues/opportunities specific to certain areas/segments?

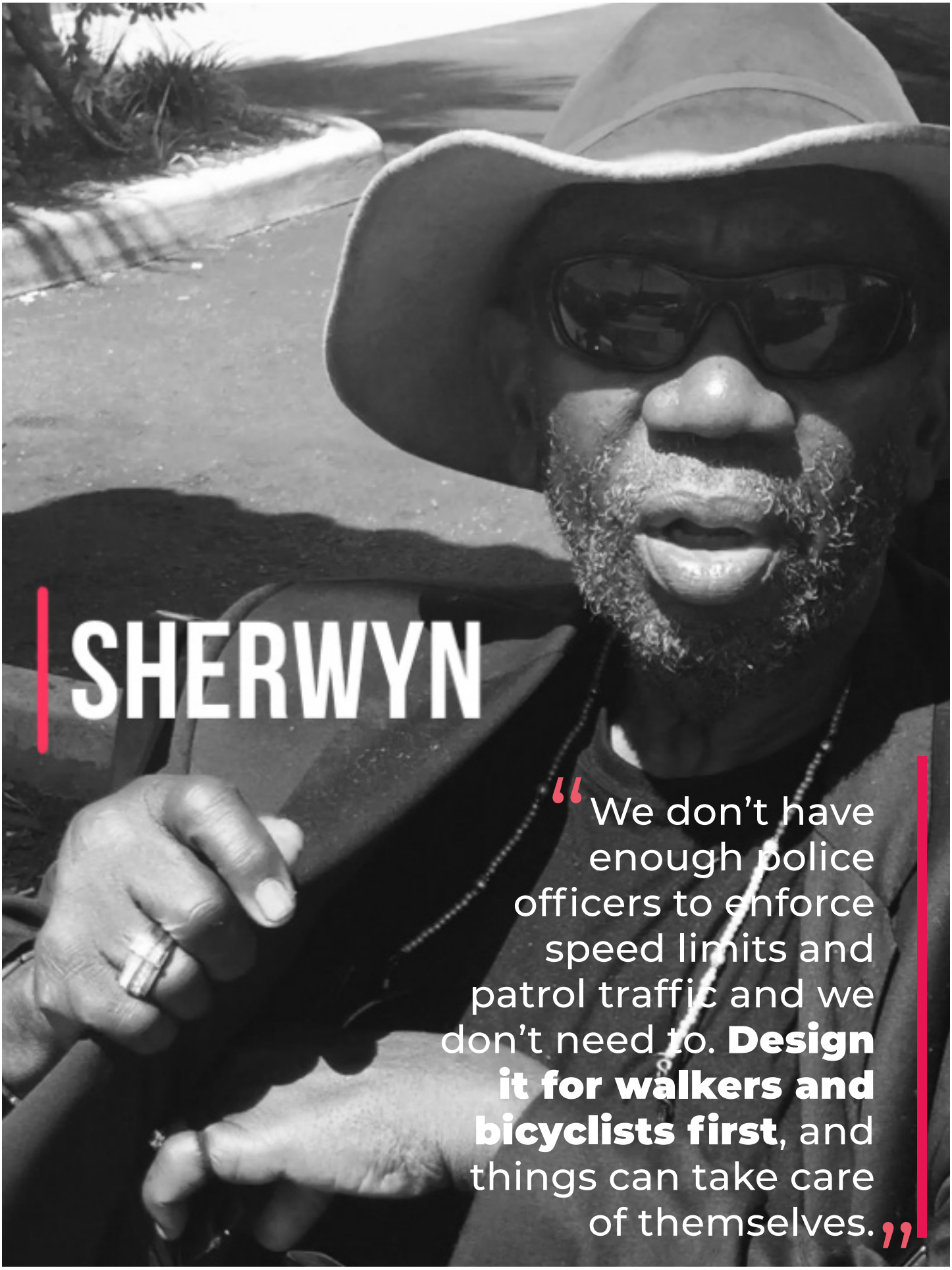
Beethoven is a driven entrepreneur confident in the potential of Riviera Beach. Relocating a few years ago from Connecticut to open a popular coffee shop and restaurant, he is committed to being part of a future renaissance in Riviera Beach and notes the interest of other businesses, such as leading yacht services firm Rybovich, similarly relocating to Riviera. For Beethoven, US-1 is the gateway and an opportunity to enhance business development. He dreams of more on street parking opportunities and a roundabout on 20th street to support the walkable access to local businesses fronting the corridor.

> *"We need more people to come to Riviera Beach not through."*

100

100 INTERVIEWS


BEETHOVEN


SHERWYN
"We don't have enough police officers to enforce speed limits and patrol traffic and we don't need to. **Design it for walkers and bicyclists first**, and things can take care of themselves."

Heather is very much interested in using public art to enhance community and public spaces. She feels that US-1 could be a canvass to express community identity beyond just a corridor to carry vehicular traffic. “We also need more accessible options for lower-income families with kids in the adjacent neighborhoods and more inclusivity for the diverse populations in the area....Ultimately, Riviera Beach should have the same features that are found in Boca or West Palm.”

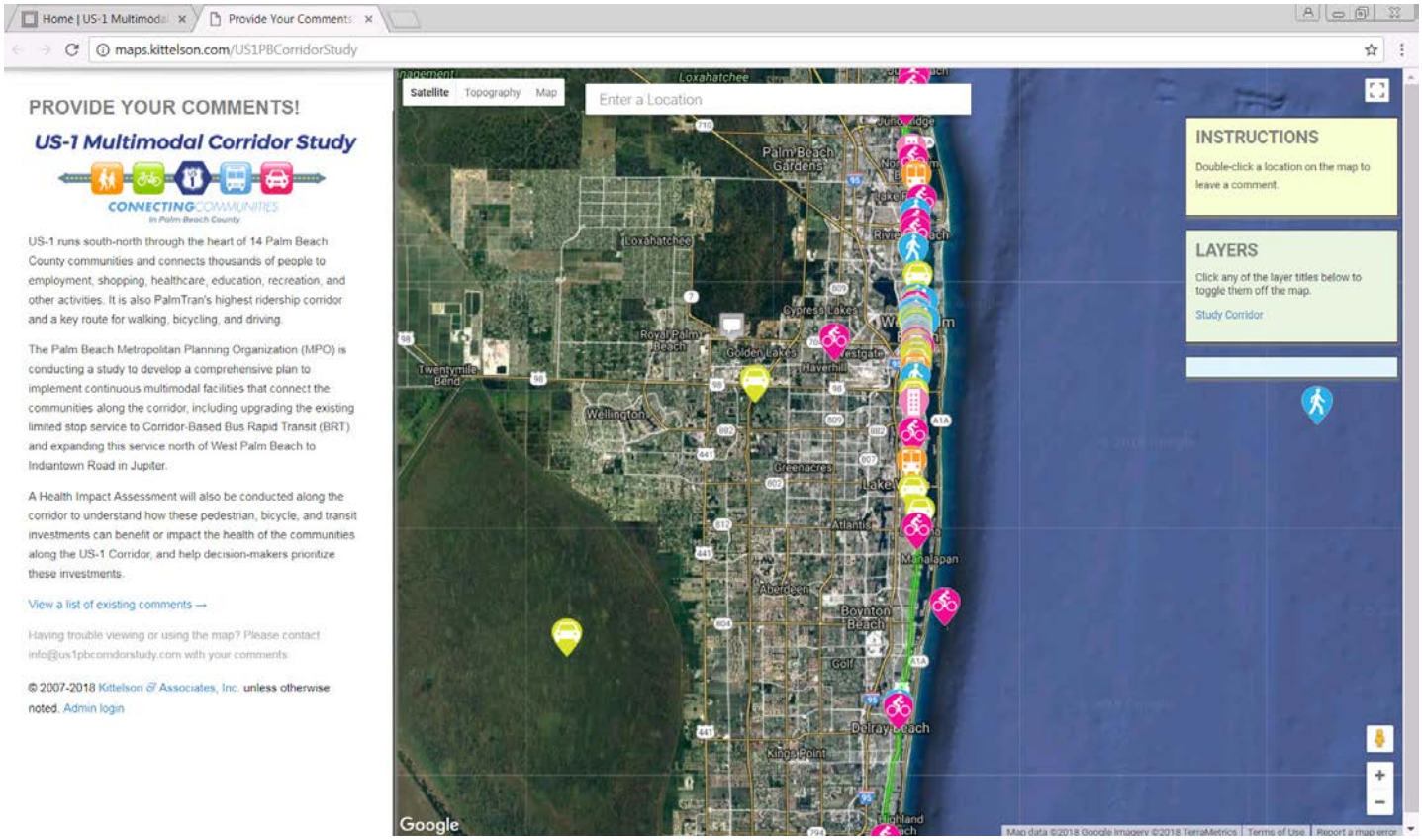
Joe is a regular patron of the businesses along Clematis Street. He would prefer to ride a bicycle if it were easier and that he knew he would have dedicated, protected lanes and not have to traverse parking lots and sidewalks to arrive.

Interactive Comment Map

Through the project website, an interactive comment map was provided for respondents to provide spatial input on where they saw issues and opportunities for the US-1 corridor. Because a given respondent could drop their note on a specific location or address, these comments were generally very specific about a place, intersection, segment of roadway, or desire for some new aspect. There were over 130 notes and comments placed on the map and an average of two likes per comment – meaning many other respondents were supportive of those comments – whether or not they left their own comment.

130

RESPONSES

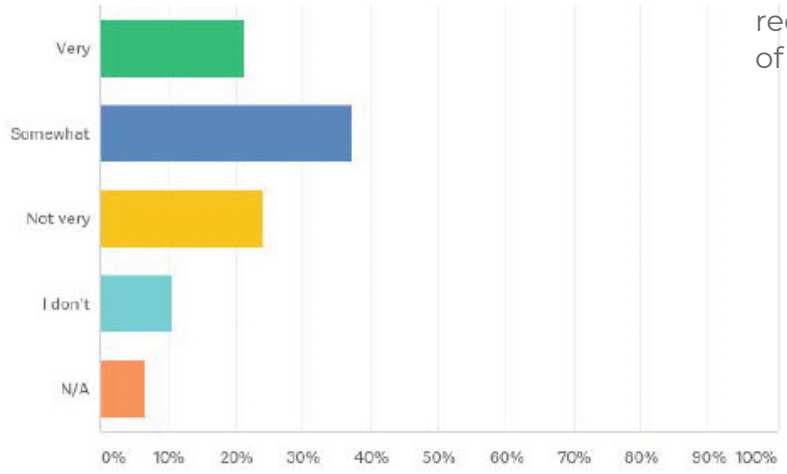


Quality of Life and Transit Survey

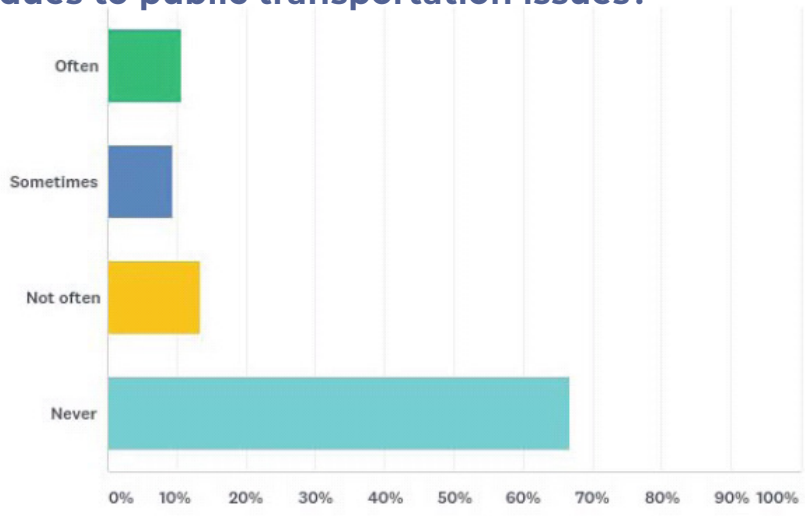
Quality of life is defined by the World Health Organization as "an individual's personal satisfaction with the cultural or intellectual conditions under which they live." Quality of life is affected by the degree that people have access to employment, health care, food sources, and educational facilities and that access influences the quality and quantity of lifestyle choices made.

In an effort to gauge the population in the study area, a "Quality of Life and Transit" Survey was conducted. This was available via the project website, as well as through impromptu discussions and filling out the survey via an iPad with random transit riders on the bus in the various sections of the US-1 corridor. The Quality of Life and Transit Survey showed that approximately 35% individuals do not feel connected to their community and neighbors. In addition, 20% of respondents have been "sometimes" or "often" unable to get to work or health care services along the US-1 corridor due to public transportation issues. These results indicate a need for respondents to have multimodal options. Research shows that high quality public transit can reduce emotional stress by improving access to education and employment activities, improving community cohesion, improving access to social and recreational activities, and reduce stress levels of commuters that no longer need to drive.

How Connected Do Respondents Feel To Their Community And Neighbors Along US-1?



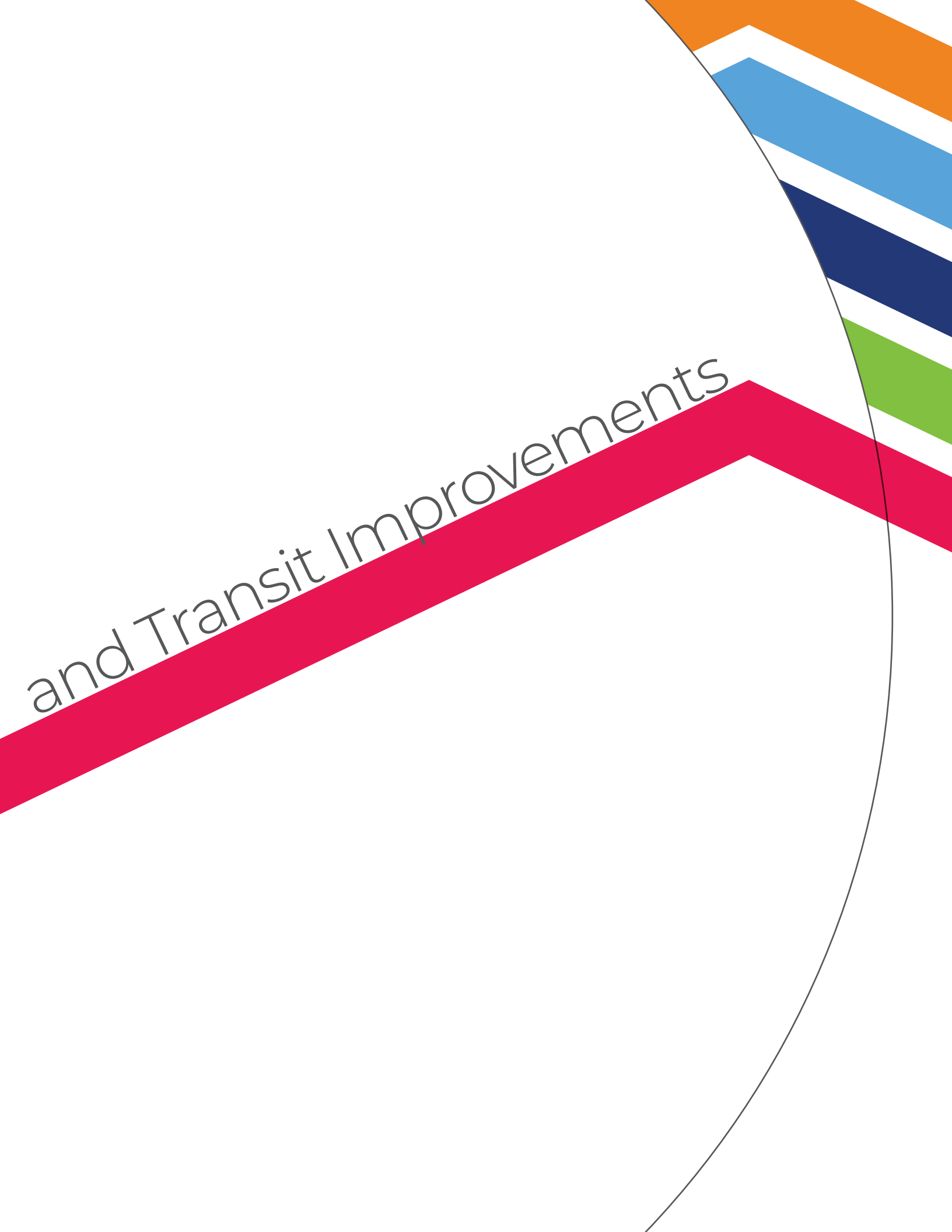
How often have you been unable to get to work or health care services along US-1 dues to public transportation issues?



Pat in Lake Worth

Pat offers support and outreach to transit riders at the Palm Tran Route 1 Bus Stop adjacent to the CVS at North Dixie Highway and Lucerne Avenue in downtown Lake Worth. She noted that the accumulation of garbage and the percieved lack of stewardship at many bus stops gives a negative impression of "her" community. She and her friend, Eileen, bring trash bags to clean up the debris at various bus stops when they are out and about.

Chapter 4. Complete Streets


and Transit Improvements

Introduction

The proposed improvements include bicycle and pedestrian facilities, travel lanes, and on-street parking, if applicable. Understanding the context classification will determine key design criteria elements for US-1. The chapter is organized by the six sections. Appendix B includes the in-depth Transit Analysis and Appendix C for the roadway improvements.

Context Classification

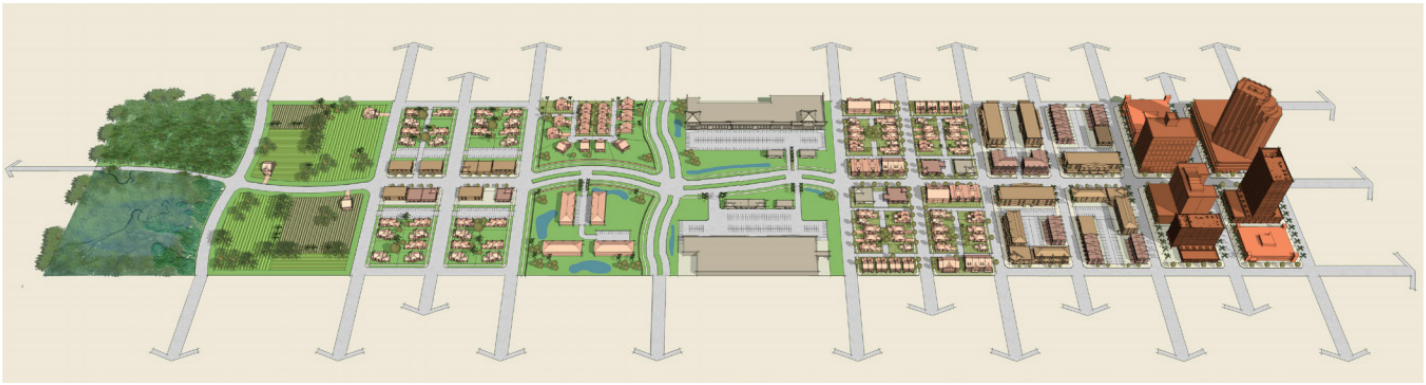
When considering the existing roadway conditions, character and land uses, trends begin to emerge that tell the story of the corridor and its intended use. While the corridor has varying characteristics, some areas are more residential and others are clearly commercial cores. In order to facilitate the definition of areas based on their context, needs, and desires, FDOT has developed a Context Classification system that defines eight different character types.

FDOT's context classification system broadly identifies the various built environments in Florida, based on existing or future land use characteristics, development patterns, and roadway connectivity of an area. The eight context classifications provide cues as to the types of uses and user groups that will likely utilize the roadway. In FDOT projects, the roadway will be assigned a context classification(s). The context classification system is used to determine criteria in the FDOT Design Manual (FDM).

8

CONTEXT CLASSIFICATIONS

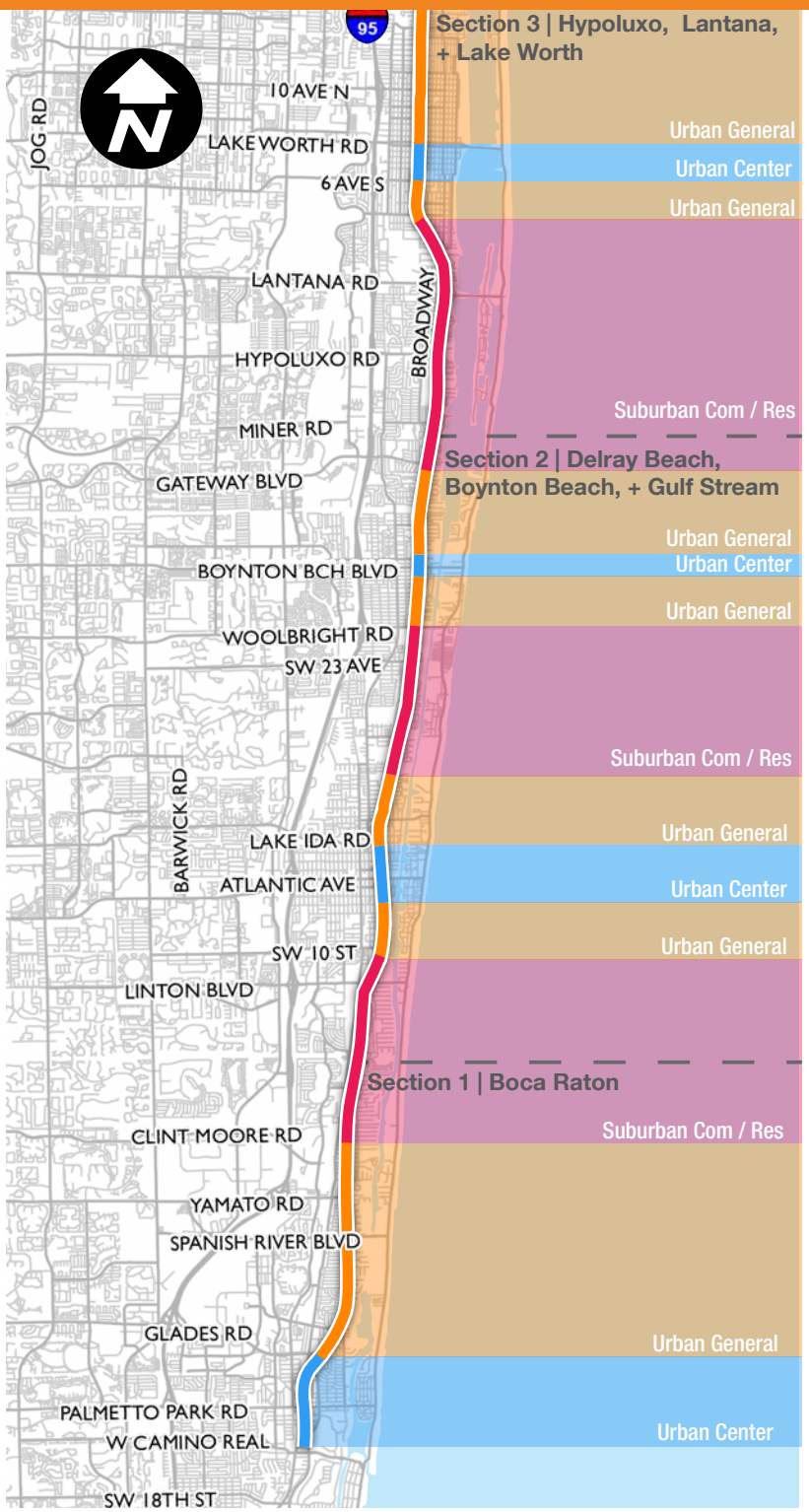
C1-Natural	Lands preserved in a natural or wilderness condition, including lands unsuitable for settlement due to natural conditions.
C2-Rural	Sparsely settled lands; may include agricultural land, grassland, woodland, and wetlands.
C2T-Rural Town	Small concentrations of developed areas immediately surrounded by rural and natural areas; includes many historic towns.
C3R-Suburban Residential	Mostly residential uses within large blocks and a disconnected or sparse roadway network.
C3C-Suburban Commercial	Mostly non-residential uses with large building footprints and large parking lots within large blocks and a disconnected or sparse roadway network.
C4-Urban General	Mix of uses set within small blocks with a well-connected roadway network. May extend long distances. The roadway network usually connects to residential neighborhoods immediately along the corridor or behind the uses fronting the roadway.
C5-Urban Center	Mix of uses set within small blocks with a well-connected roadway network. Typically concentrated around a few blocks and identified as part of a civic or economic center or a community, town, or city.
C6-Urban Core	Areas with the highest densities and building heights, and within FDOT classified Large Urbanized Areas (population>1,000,000). Many are regional centers and destinations. Buildings have mixed uses, are built up to the roadway, and are within a well-connected roadway network.

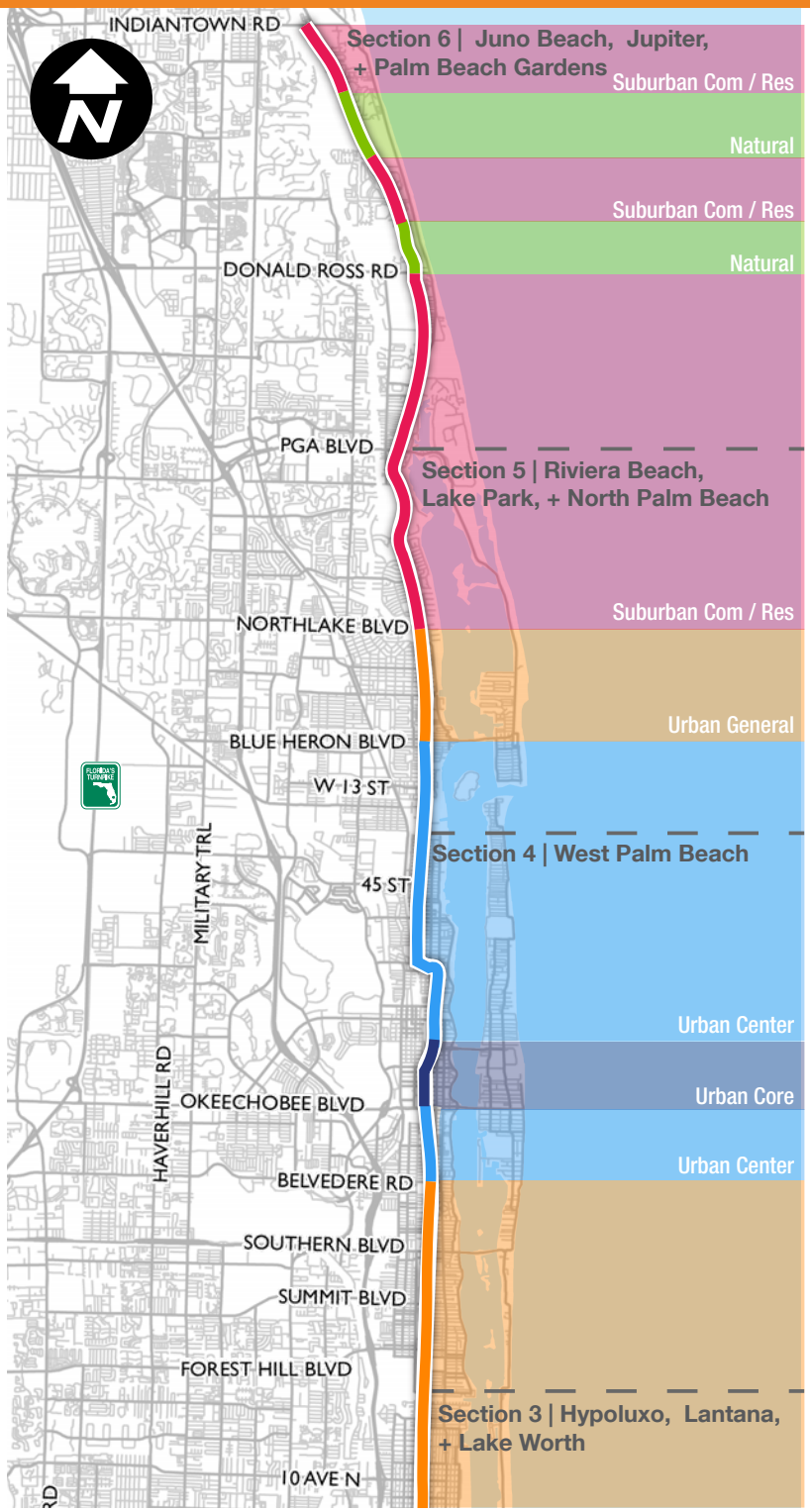


In support of FDOT's context classification guidance, the Palm Beach TPA developed a Complete Streets Design Guidelines to provide guidance to local practitioners on how to plan and design Complete Streets elements into all types of transportation and land development projects. The guide connects with FDOT's Complete Streets Initiative, which includes the Context Classification Guide. The TPA's context classification is flexible to incorporate the identified context classification for the corridor and will help ensure consistency and connectivity between state and local roads. The Complete Streets Design Guidelines includes pedestrian realm/streetside design guidance.

www.palmbeachtpa.org/CompleteStreets

US-1 Corridor Context Classification




INDIANTOWN RD
Section 6 | Juno Beach, Jupiter, + Palm Beach Gardens
Suburban Com / Res
Natural
Suburban Com / Res
Natural
DONALD ROSS RD
PGA BLVD
Section 5 | Riviera Beach, Lake Park, + North Palm Beach
Suburban Com / Res
NORTHLAKE BLVD
Urban General
BLUE HERON BLVD
W 13 ST
Section 4 | West Palm Beach
MILITARY TRL
45 ST
Urban Center
Urban Core
HAVERHILL RD
OKEECHOBEE BLVD
Urban Center
BELVEDERE RD
SOUTHERN BLVD
SUMMIT BLVD
FOREST HILL BLVD
Section 3 | Hypoluxo, Lantana, + Lake Worth
10 AVE N

Transit Assessment Methodology

Alignments were developed for different aspects of the proposed US-1 premium transit service, designated the **Palm Tran Express (PTX)**, for the purposes of the US-1 Multimodal Corridor Study. The PTX service is envisioned to run in mixed-traffic and supplement the existing Route 1 with modified headways and is planned to operate in place of the current limited stop service, The Bolt. The Bolt currently serves 12 stop pairs with three runs during each of the weekday peak travel periods.

The travel market for the PTX service is expected to attract both reliant and choice transit riders with more efficient and reliable travel times due to focus on the high demand US-1 corridor location (which is not currently served by Tri-Rail) and transit priority operating conditions proposed in cooperation with Palm Tran and FDOT. This new branded service is planned to include additional rider amenities (such as on-board WiFi, real time tracking, etc.) that will further attract ridership.

For the purposes of estimating service demand, this planning level alternatives analysis included:

- **Station Locations**
- **Route Alignments:** Connections between stations
- **Service Plans:** Frequency, span of service, time of day, days of week, adjustments to local service
- **Operating Segment** – alignment sub-segment(s) that benefit the most from premium transit

The alternatives screening took a three-tiered approach, each with a more detailed analysis. The analysis tiers are summarized in the table below and explained in more detail in the subsequent appendices.

Transit Analysis Tier Matrix

	TIER 0	TIER 1	TIER 2
Stations	Identify preliminary station locations based on: major cross streets, major transfers, high ridership locations, existing The Bolt stations, and proximity to existing/ proposed rail stations and major destinations	Refine station locations based on: underutilized/ vacant properties, area access, stakeholder input, stop spacing (1/4 – 1 mile), and agency input related to destination access and operating conditions	Refine station location based on pedestrian and bicycle accessibility to concentrations of employment and 0-car households
Alignments	Identify potential connections between station locations and existing transfer nodes based on current ridership levels, surveyed origin-destination pairs, and US-1 corridor trip generators	Route-level ridership of alternative alignments	
Operating Plan		Test alignments with 8-hour service, existing Bolt headways, revised travel time including additional stations	Model different headways and service hours; select preferred operating plan based on route-level ridership and operating cost
Operating Segment			Review stop level ridership to determine most productive combination of local and premium segments

Station Locations

Based on the Federal Transit Authority's (FTA)[29] spacing characteristics' for BRT, the studt team identified stop pairs along the US-1 corridor with the goal of a stop every mile to one and a half miles. Stops were located on the far side of the intersection to improve operating conditions.

Preliminary station locations were identified based on the following criteria:

- Major cross streets
- Major bus transfer locations
- Existing Route 1 stops with more than 60 boardings per day in a single direction
- Existing stops for The Bolt service
- Connections to rail including the existing Tri-Rail, Brightline, and the proposed Tri-Rail Coastal Link
- Proximity/connection to major destinations (e.g. beaches, colleges, universities, medical centers, and major employers)

Locations were refined based on additional information received including improved proximity and station spacing related to destination access, walking and waiting conditions, proximity to near term redevelopment and a proposed relocation of transfer activity in West Palm Beach.

Based on the input received, all proposed station locations were located within the study corridor, except where Route 1 deviates to serve the West Palm Beach Intermodal Transfer Center and The Gardens Mall and where an additional route deviation was proposed to serve the Bethesda Hospital East (at 26th Ave & South Seacrest Blvd), a major employer and health care provider adjacent to the study corridor.

Proposed PTX Station Locations

[29] Federal Transit Administration (FTA), "Planning for Transit-Supportive Development: A Practitioner's Guide," 2014.

Station Typologies

Typical Site Conditions

Throughout the US-1 corridor there are four (4) typical site conditions for station areas:

- **Urban Section (curb/gutter)** - 10' and 12' wide PTX stations *completely* within the existing US-1 ROW
- **Urban Section (curb/gutter)** - 10' wide PTX stations *partially* within Right-of-Way, Partially on Requiring an Easement
- **Rural Section (no curb/gutter)** - 12' wide PTX station *completely* within Right-of-Way
- **Internal Stations** - PTX stations internal to a given public or private property (i.e. West Palm Beach "Tent Site," Transfer Center at The Gardens Mall, Harbourside Place, etc.)

The distribution of these station types are shown in the table below, organized by each proposed PTX alignment.

Station Area Types

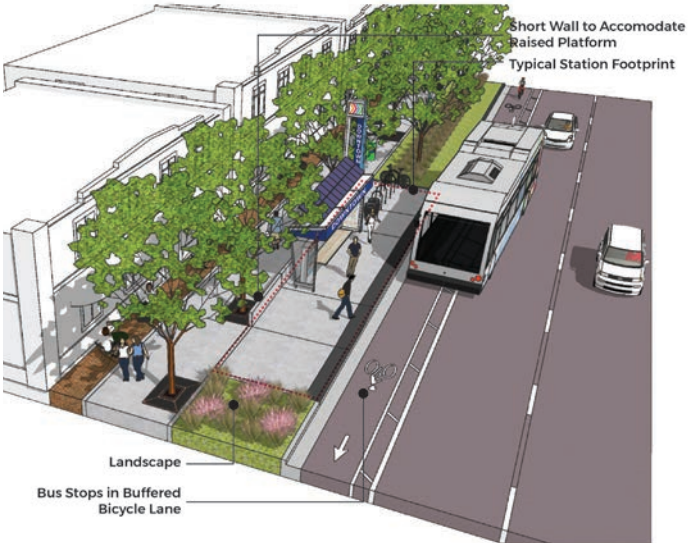
There are also two types of bicycle lane configurations along the US-1 corridor - a separated and protected facility and a buffered bicycle lane. The typical site conditions were aligned with the bicycle configurations and a series of typical station typologies were generated specifically for all station locations for the PTX transit service.

Silver Line - Grand Rapids, MI

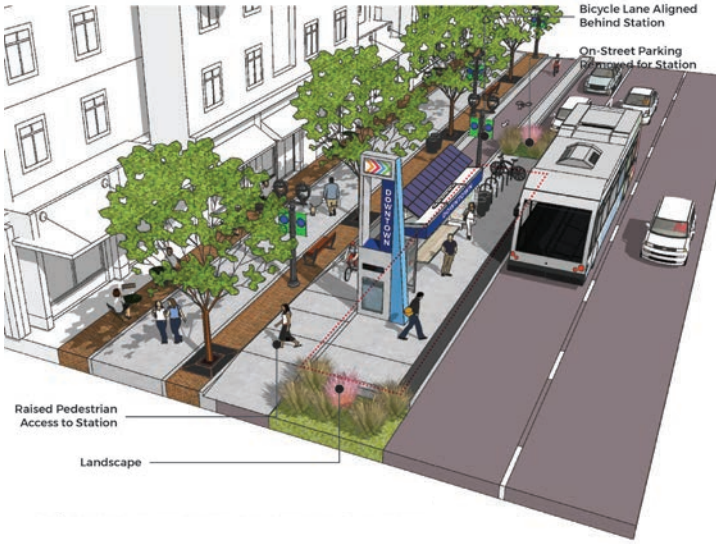
NORTHBOUND AND SOUTHBOUND PTX STATION TYPES					
	10' WIDE STATIONS	10' WIDE STATION REQUIRING EASEMENTS	12' WIDE STATIONS	INTERNAL STATIONS	TOTAL STATION PAIRS
PTX YELLOW ALIGNMENT	21	8	7	2	38
PTX BLUE ALIGNMENT	2	3	17	2	24
PTX GREEN ALIGNMENT	8	0	12	2	22
TOTAL	**31**	**11**	**26**	**6**	**84**

Typical PTX Station Area

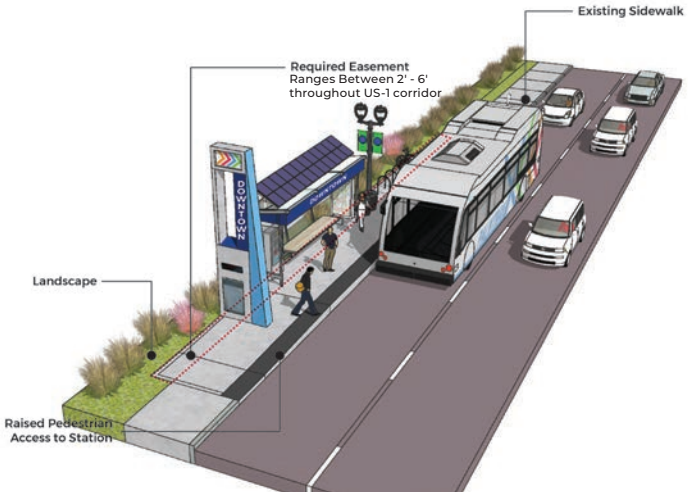
Urban Section with Buffered Bicycle Lane



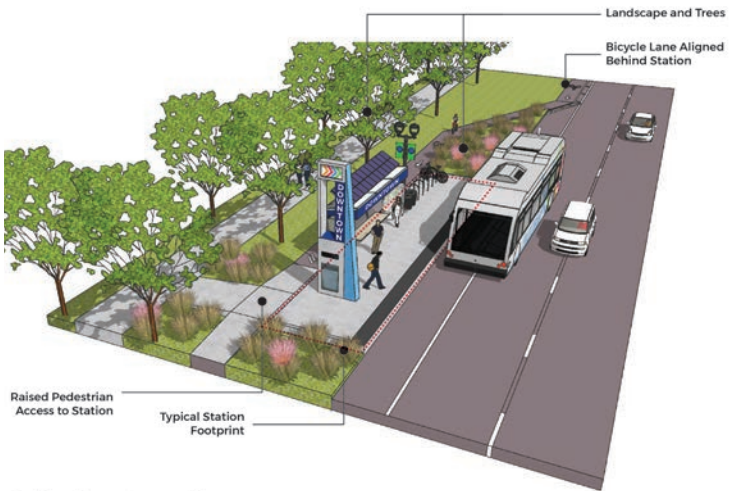
Urban Section with Separated Bicycle Lane



Urban Section with Requiring Easement



Rural Section with Separated Bicycle Lane



Operating Segment Plans

The Study Team identified the minimum operating segment (MOS) to determine the portion of the study corridor that would most benefit from premium transit relative to the operating cost of providing service over various distances. Based on a review of existing Route 1 ridership, origin, and destination information, the MOS from Boynton Beach to Riviera Beach would benefit the most from premium transit.

Three operating segments were created to serve the US-1 corridor:

Yellow Line – Boynton Beach to Riviera Beach (no mid-route layover)

Blue Line – Boca Raton to Riviera Beach with a mid-route layover in Boynton Beach

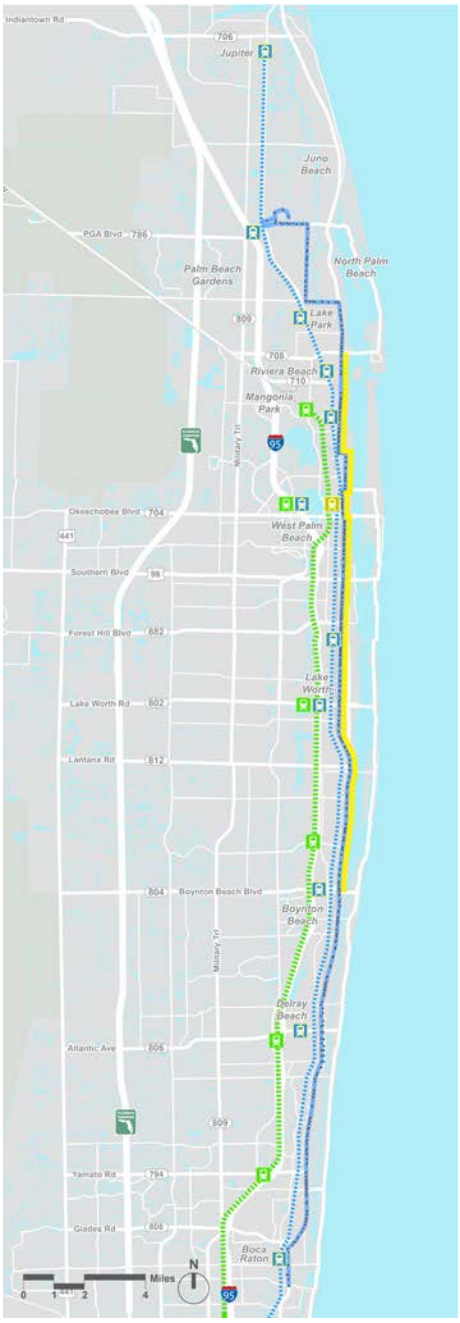
Green Line – Boynton Beach to Jupiter with a mid-route layover in Riviera Beach

A series of alternatives were created by combining these operating segments with different service plans. In each alternative, the current local Route 1 service continues between Boca Raton and The Gardens Mall.

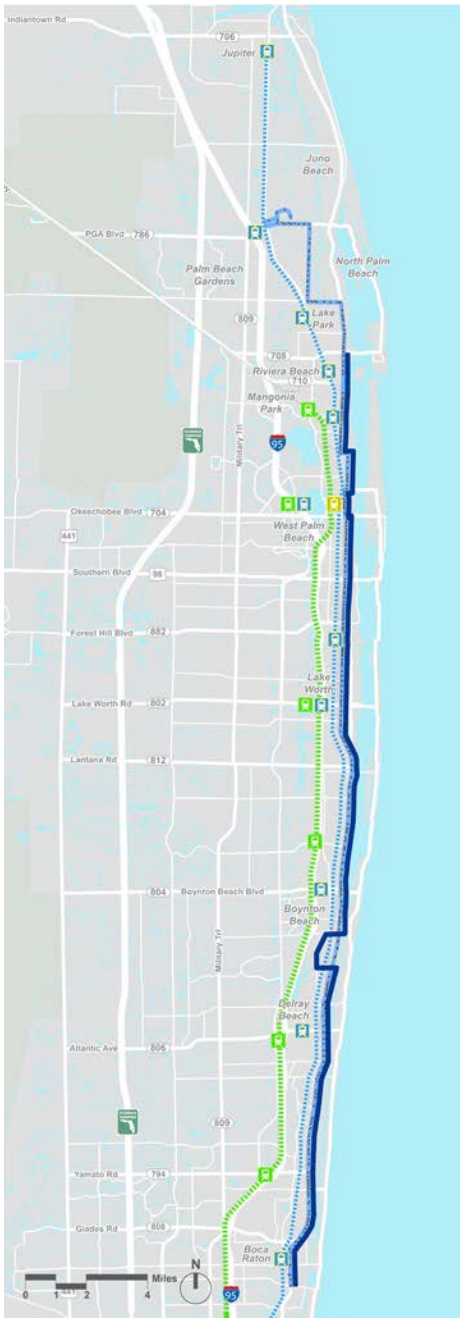
The Study Team explored **increasing the Route 1 headway from 20-minutes to 30-minutes** to provide a budgetary portion of the service hours/ operating cost to operate the proposed PTX service.

The following pages should the overall alignments, and some alternatives generated for each alignment.

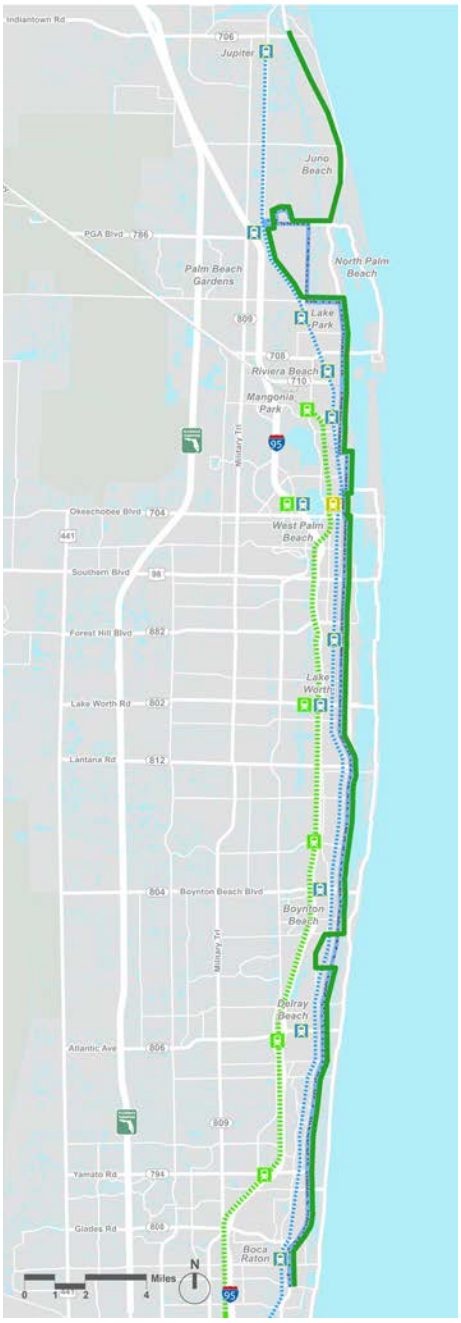
Proposed PTX Operating Segments



PTX YELLOW LINE



PTX BLUE LINE



PTX GREEN LINE

CONCEPTUAL PTX ALIGNMENTS

	EXISTING		PTX YELLOW (ALT 1)		PTX YELLOW (ALT 2)		PTX YELLOW (ALT 3)	
	ROUTE 1	THE BOLT	ROUTE 1	"PTX"	ROUTE 1	"PTX"	ROUTE 1	"PTX"
ROUTE ASSUMPTIONS								
ALIGNMENT	Boca Raton to Gardens Mall	Boca Raton to WPB ITC	-	Boynton Beach to Riviera Beach[A]	-	Boynton Beach to Riviera Beach[A]	-	Boynton Beach to Riviera Beach[A]
ROUTE LENGTH	42 mi	28 mi	-	19 mi[B]	-	19 mi[B]	-	19 mi[B]
STOP PAIRS	172 stops	12 stops	-	19 stops[C]	-	19 stops[C]	-	19 stops[C]
HEADWAY	20 min	20 min	30 min[D]	20 min[E]	30 min[D]	10 min[F]	30 min[D]	20 min[E]
SPAN OF SERVICE (AM/PM/ NIGHT)	17 hrs	2 hrs (1/1/0)	-	9 hrs (4/4/1)[G]	-	9 hrs (4/4/1)[G]	-	17 hrs[H]
SERVICE OUTCOMES								
DAILY BOARDINGS	7,560		+ 111 Riders per Day		+ 304 Riders per Day		+ 505 Riders per Day	
ANNUAL BOARDINGS	1,922,272		+ 26,162 Riders per Year		+ 75,184 Riders per Year		+ 126,238 Riders per Year	
SUMMARY OF CHANGES			[A]New Premium Transit Route Alignment					
			[B]Lower Premium Transit Route Length					
			[C]Additional Premium Transit Stop Pairs					
			[D]Reduced Headways on Route 1					
			[E]Same Headway on Premium Transit					
			[F]More Frequent Headway on Premium Transit					
			[G]7-hour increase to Span of Service					
			[H]15-hour increase to Span of Service					

Proposed PTX Yellow Segment with Stop Locations

PTX ALIGNMENTS								
	EXISTING		PTX BLUE (ALT 1)		PTX BLUE (ALT 2)		PTX GREEN	
	ROUTE 1	THE BOLT	ROUTE 1	"PTX"	ROUTE 1	"PTX"	ROUTE 1	"PTX"
ROUTE ASSUMPTIONS								
ALIGNMENT	Boca Raton to Gardens Mall	Boca Raton to WPB ITC	-	Boca Raton to Riviera Beach[A]	-	Boca Raton to Riviera Beach[A]	-	Boca Raton to Jupiter[A]
ROUTE LENGTH	42 mi	28 mi	-	33 mi[B]	-	33 mi[B]	-	42 mi[B]
STOP PAIRS	172 stops	12 stops	-	30 stops[C]	-	30 stops[C]	-	42 stops[C]
HEADWAY	20 min	20 min	30 min[D]	20 min[E]	30 min[D]	20 min[E]	30 min[D]	20 min[E]
SPAN OF SERVICE (AM/PM/ NIGHT)	17 hrs	2 hrs (1/1/0)	-	9 hrs (4/4/1)[E]	-	13 hrs[F]	-	9 hrs (4/4/1)[E]
SERVICE OUTCOMES								
DAILY BOARDINGS	7,560		+ 559 Riders per Day		+ 807 Riders per Day		+ 1,205 Riders per Day	
ANNUAL BOARDINGS	1,922,272		+ 140,501 Riders per Year		+ 202,946 Riders per Year		+ 304,038 Riders per Year	
SUMMARY OF CHANGES			[A]New Premium Transit Route Alignment					
			[B]Increased Premium Transit Route Length					
			[C]Additional Premium Transit Stop Pairs					
			[D]Reduced Headways on Route 1					
			[E]Same Headway on Premium Transit, 10-Minute Headways on PTX Yellow Alignment					
			[E]7-hour increase to Span of Service					
			[F]11-hour increase to Span of Service					

Proposed PTX Blue and PTX Green Segments with Stop Locations

Transit Case Study Examples

ORANGE LINE

LA METRO
LOS ANGELES, CA

The Orange Line is a Bus Rapid Transit route built and operated by the Los Angeles County Metropolitan Transportation Authority (Metro). The Orange Line began operating in 2005 in the San Fernando Valley of Los Angeles. In the planning phase, Metro projected 5,000 to 7,500 average weekday boardings in the first year of operation, growing to 22,000 average daily boardings by the year 2020. Within seven month of opening, the Orange Line met its 2020 goal of 22,000 average daily boardings. Ridership continued to increase to 28,000 average daily boardings in 2008 and has remained steady ever since.

In addition to the Orange Line specific ridership achievements, the entire east-west corridor between Canoga Avenue and Tujunga Avenue has showed growth in ridership following the opening of the Orange Line. According to a 2011 project evaluation by the Federal Transit Administration, prior to construction of the Orange Line, the corridor averaged 41,580 daily boardings. Two years after opening, the corridor was transporting 62,597 average daily boardings, an increase of 51%.

In 2012, a northern extension to the Orange Line was opened serving Chatsworth Station, an Amtrak intercity rail and Metrolink commuter rail station. The current system now covers 18-miles and has 18 stations, with every station connecting to perpendicularly-oriented local bus service. Eight of the stations provide Park & Ride lots, all the stations have bicycle lockers, and all the stations provide direct pedestrian access to surrounding neighborhood businesses and households.

KEY FEATURES

ROUTE/OPERATIONS

18-Mile Route in Dedicated Right-of-Way

15-Minute Headways

Full Corridor Runtime: 42-minutes (20.7mph)

39% Faster than Local Bus
Only 16% Slower than Personal Car

STATIONS

Stations every 1-Mile

Desgined and Branded Stations

Off-Board Ticketing, Proof-of-Payment

MULTIMODAL CONNECTIONS

Park & Rides, Commuter Rail, Heavy Rail, etc.

Perpendicular Feeder Routes at Every Station

Parallel Running Bicycle/Pedestrian Path

Photo: Mariana Gill/EMBRAQ Brasil

VELOCIRFTA
RFTA
ASPEN-GLENWOOD SPRINGS, CO

VelociRFTA is a unique, rural Bus Rapid Transit system in Pitkin County, Colorado. It is built and operated by the Roaring Fork Transportation Authority (RFTA) which provides transit services along the US-82 Highway Corridor between Aspen and Glenwood Springs. The VelociRFTA line runs from the West Glenwood Park & Ride off Interstate 70 to the Rubey Park Transit Center in Downtown Aspen.

While the alignment mostly utilizes rural roadways with few traffic concerns, 18 miles of HOV lanes were established along US-82 for use by RFTA vehicles to maintain on-time performance during peak ski season, when roads have the potential to become congested. In addition, ***traffic signal priority*** was added at select intersections prone to delays.

The operations of VelociRFTA are funded by a 4/10th cent regional sales tax approved by referendum in 2008. The design was completed and construction commenced in 2012 funded through a Federal Transit Administration Very Small Starts grant. The total cost of the project was $46.2 million, opening to the public on September 3, 2013.

In the first year following the line's opening, RFTA saw an increase of 16% in system-wide ridership adding an additional 650,000 annual trips. In 2016, the system-total ridership increased an additional 5% reaching 5.1 million trips. Much of the success of the system is credited to multimodal access. Stations were placed and designed to accommodate access to the paralleling Rio Grande Trail which is also owned and maintained by RFTA. Additionally, Park & Rides, real-time information, heated and sheltered waiting areas, and clear signage makes the VelociRFTA an attractive alternative to local car owners.

KEY FEATURES

ROUTE/OPERATIONS

43-Mile Route in Peak Direction HOV Lanes

15-Minute Headways

Full Corridor Runtime: 80-minutes (32.5 mph)

33% Faster than Local Bus
33% Slower than Personal Car

STATIONS

Stations every 2.25 Miles

Desgined and Branded Stations

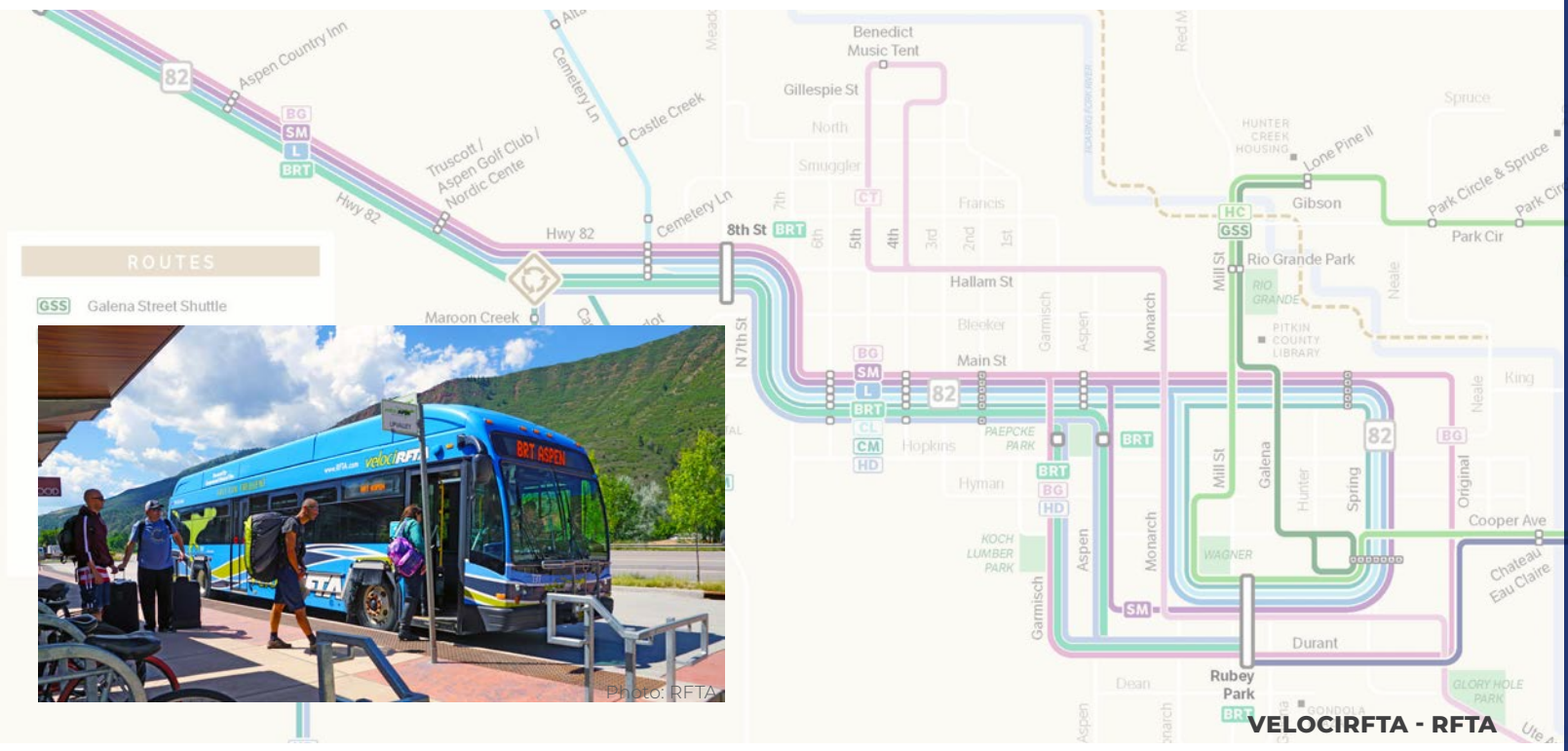
Off-Board Ticketing, Proof-of-Payment

Low-Floor Platforms (Local Service Routes)

MULTIMODAL CONNECTIONS

Park & Rides, Ski Lifts, Amtrak, etc.

Parallel Running Bicycle/Pedestrian Path



VELOCIRFTA - RFTA

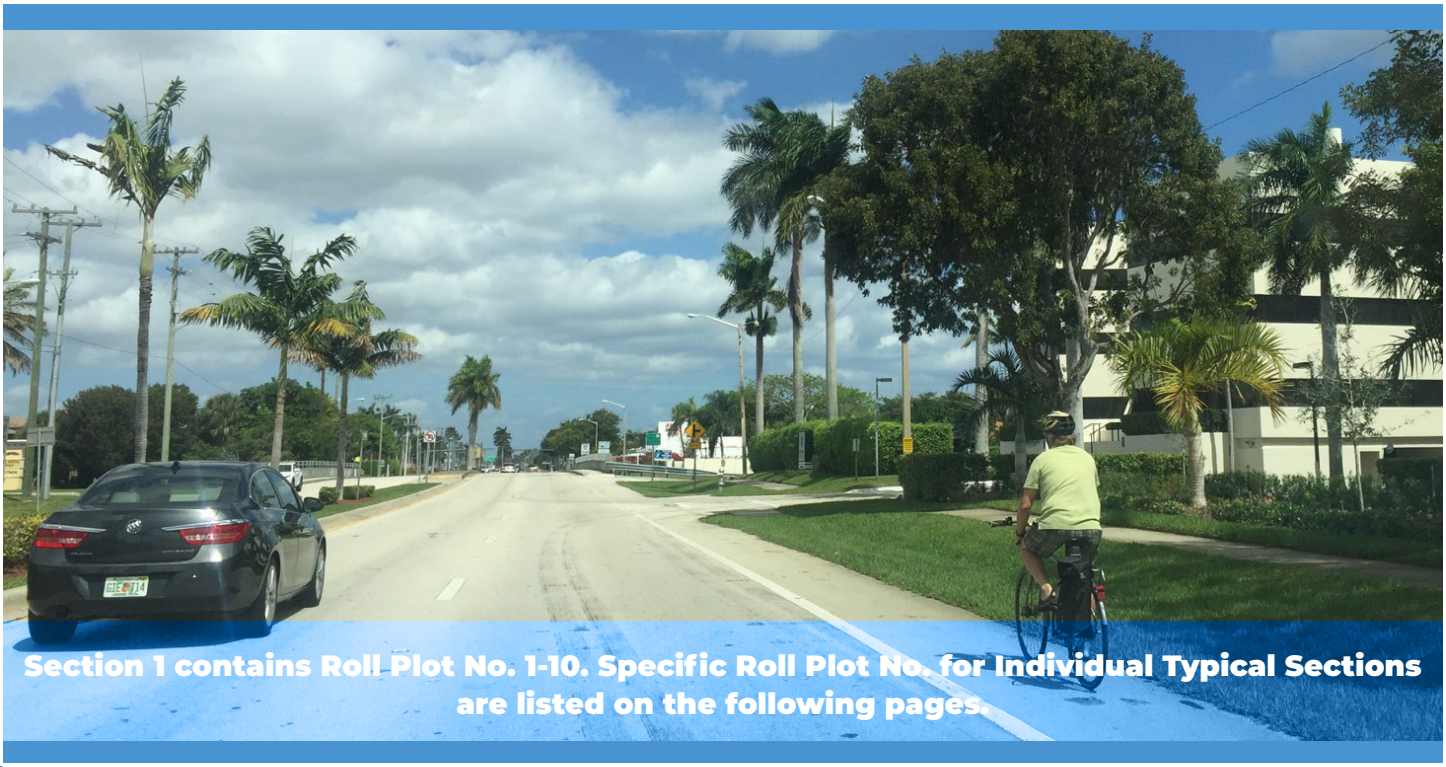
Section 1: Boca Raton

Existing Conditions

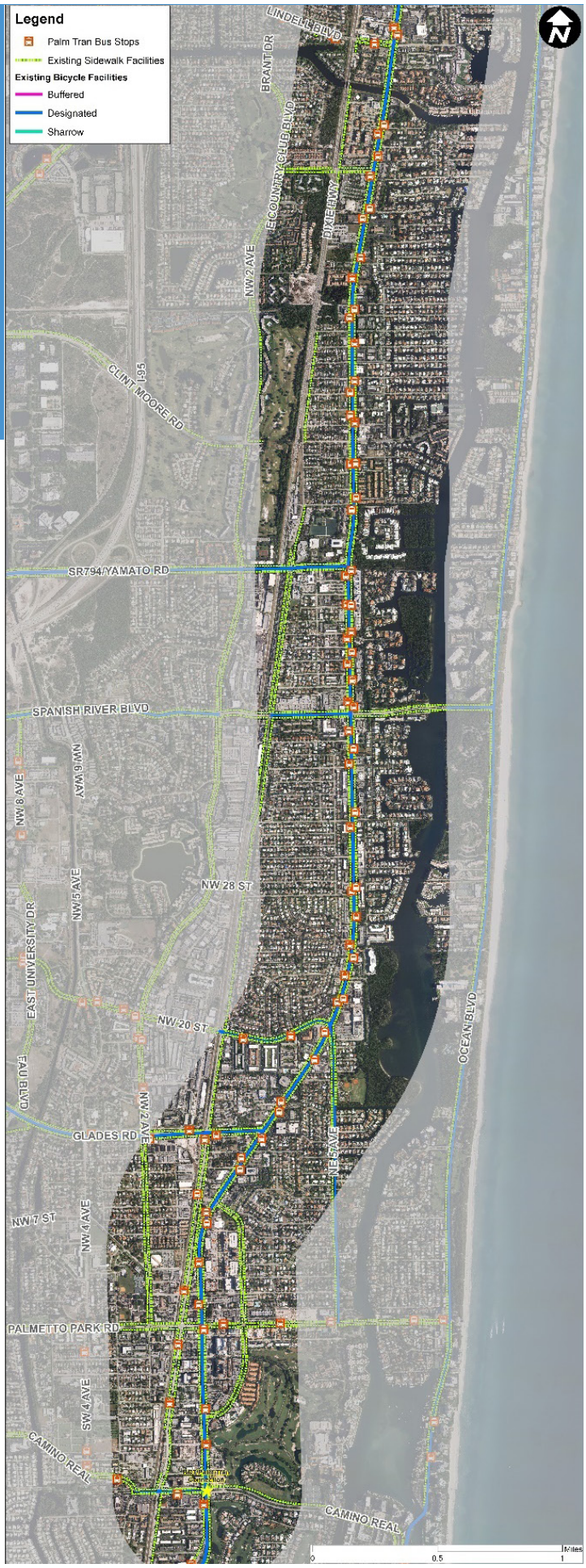
- Continuous sidewalk/bicycle facilities
- Transitions from 6-lane to 4-lane
- US-1 bridge across the canal at the Boca Raton/Delray Beach city limits has no bicycle lanes

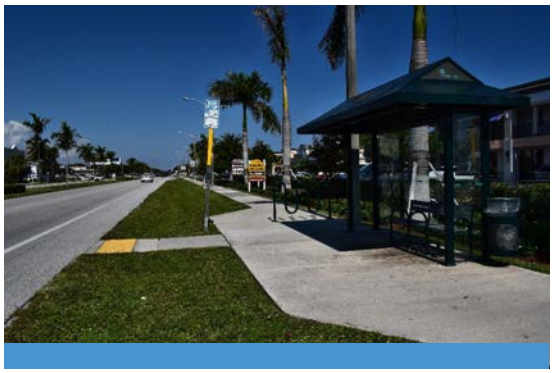
HIA FAST FACTS

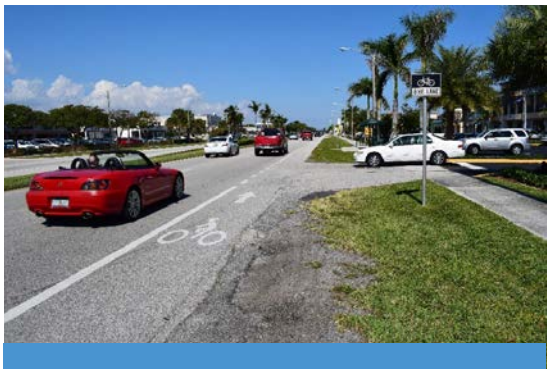
- Boca Raton Population within Corridor: 63,450
- 13% are diagnosed with diabetes
- 27% are diagnosed with obesity
- 8% are diagnosed with asthma



Section 1 contains Roll Plot No. 1-10. Specific Roll Plot No. for Individual Typical Sections are listed on the following pages.


Legend
Palm Tran Bus Stops
Existing Sidewalk Facilities
Existing Bicycle Facilities
Buffered
Designated
Sharrow
LINDELL BLVD
BRANT DR
E COUNTRY CLUB BLVD
DIXIE HWY
NW 2 AVE
I-95
CLINT MOORE RD
SR794/YAMATO RD
SPANISH RIVER BLVD
NW 8 AVE
NW 6 WAY
NW 5 AVE
NW 28 ST
EAST UNIVERSITY DR
FAU BLVD
NW 20 ST
OCEAN BLVD
NW 2 AVE
GLADES RD
NE 5 AVE
NW 7 ST
NW 4 AVE
PALMETTO PARK RD
SW 4 AVE
CAMINO REAL
CAMINO REAL
0
0.5
1
Miles





CITY OF BOCA RATON

CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

SPANISH RIVER BLVD

- Town Center redevelopment with new, pedestrian-scaled streets, street-fronting buildings, and a mix of land uses including higher density residential
- Green/Park space as focus of redevelopment, green space should also function for stormwater management

GLADES RD

- Realign intersection for pedestrian safety
- Celebrate adjacent historic neighborhood
- A mix of land uses including higher density residential with new street-fronting buildings

DOWNTOWN BOCA

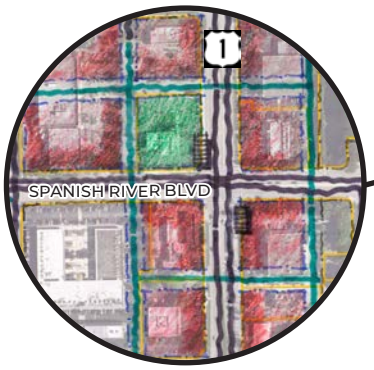
- A mix of land uses including higher density residential with street-fronting buildings
- Green/Park space as focus of redevelopment, green space should also function for stormwater management
- Connect to future rail with pedestrian bridge over railroad and Dixie Hwy

CAMINO REAL HUB

- Convert surface parking area to parking garage and new park space - parking to serve the City needs and a Southern Hub for PTX.
- Street-fronting, mixed-use new buildings
- Pedestrian connection to Boca Raton Train Station along Dixie Highway
- Focus on intersection crossing improvements

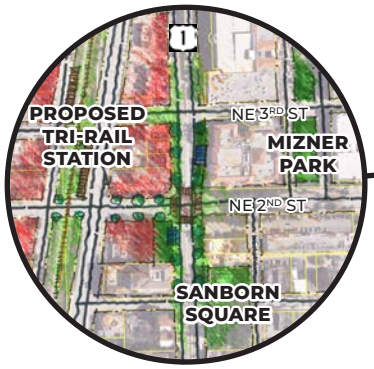
LEGEND

- New Street
- Pedestrian Connection
- Proposed PTX Location
- New Park Space
- New Mixed-Use
- New Residential
- New Parking Garage

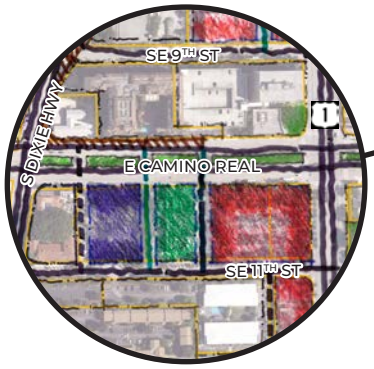


SPANISH RIVER BLVD

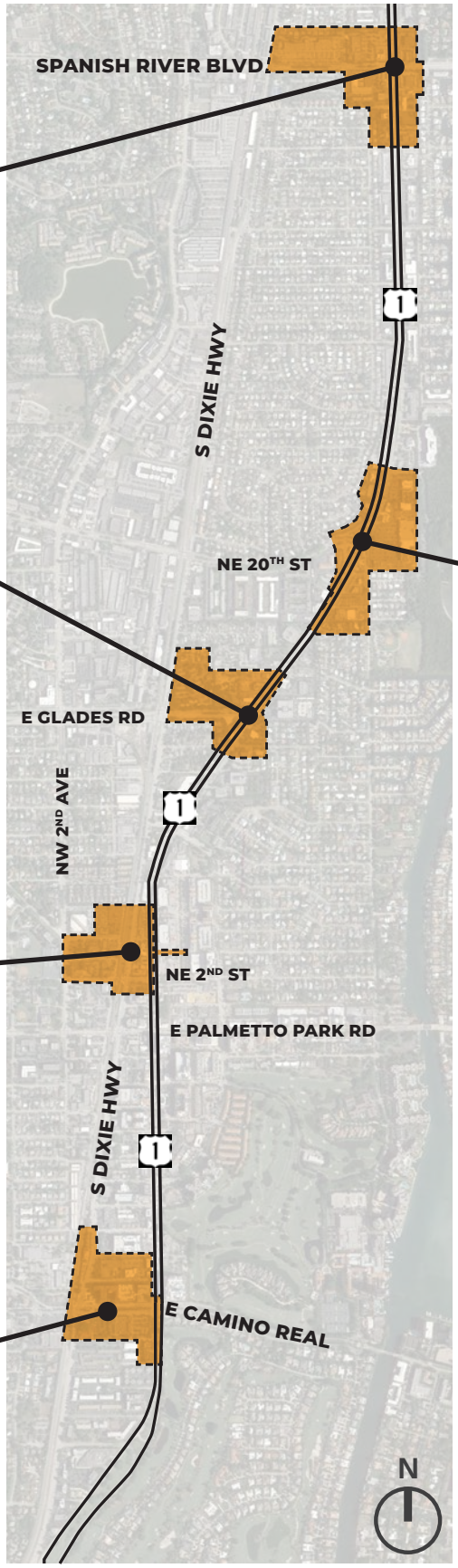
GLADES RD

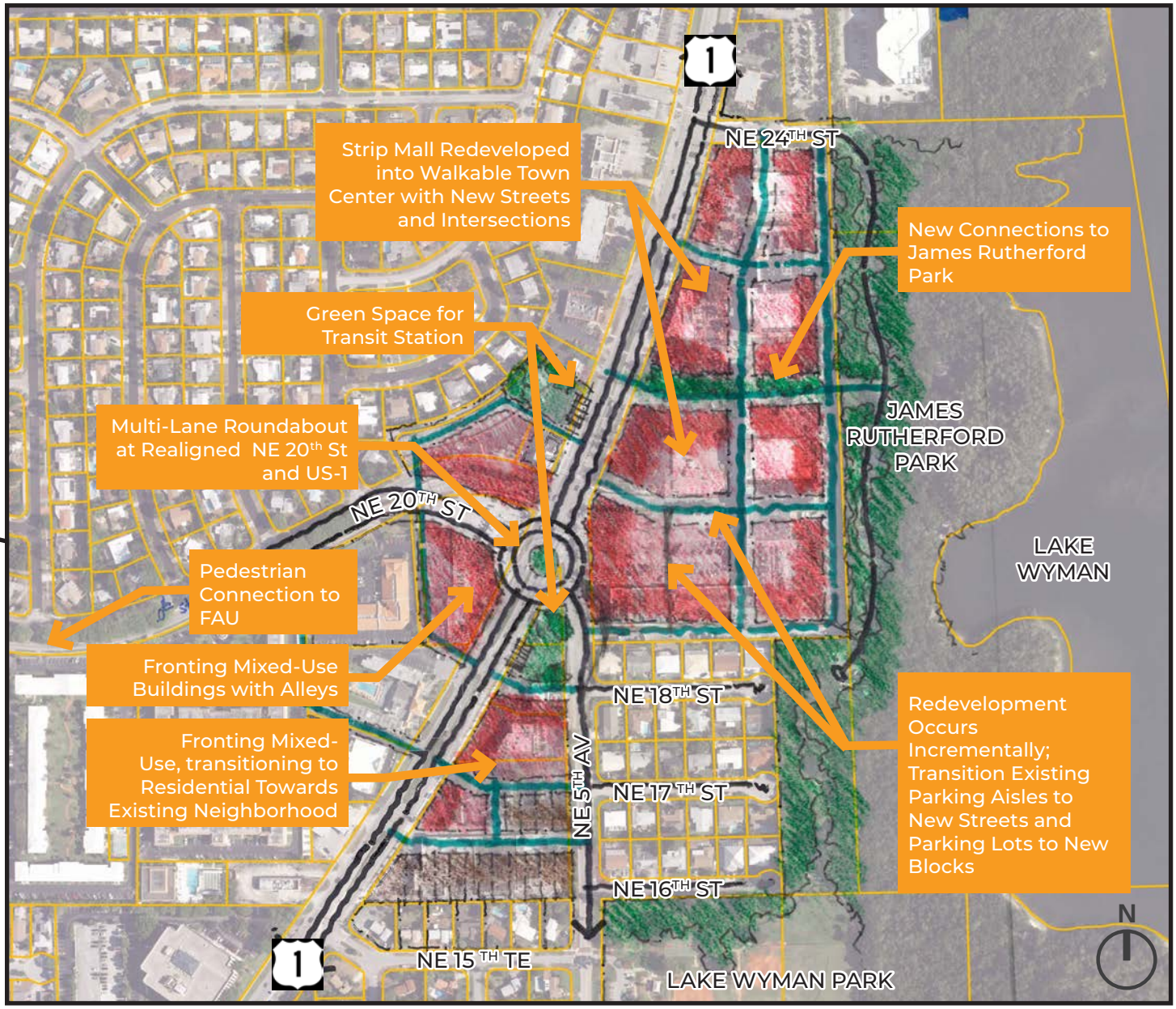


DOWNTOWN BOCA



CAMINO REAL HUB



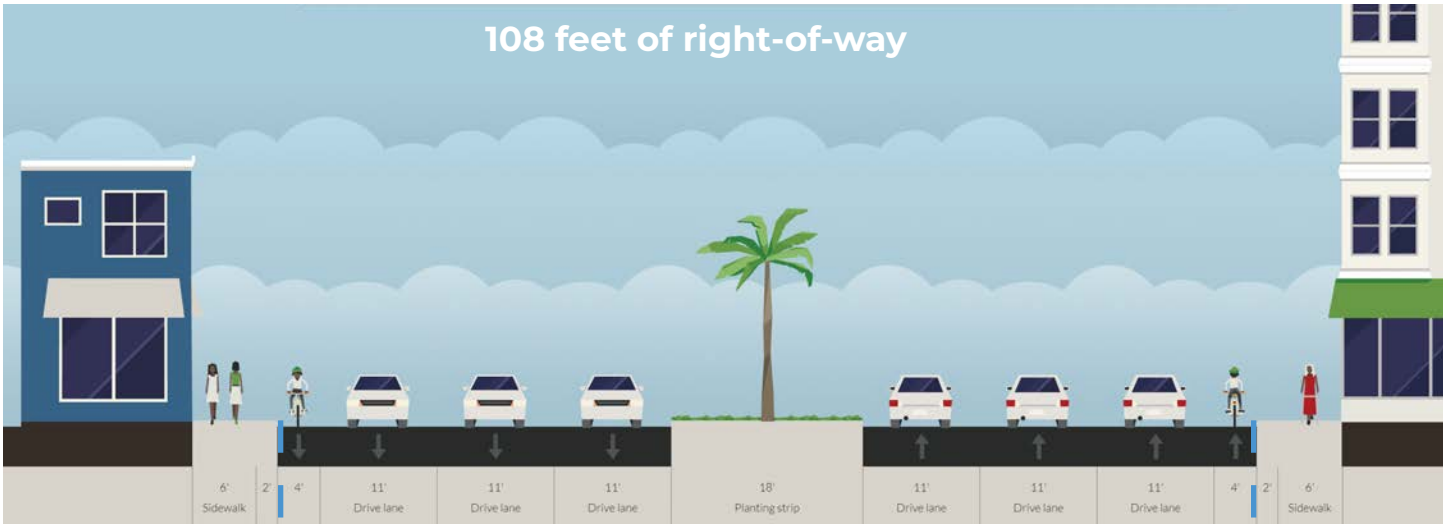


NE 20TH STREET (FLORIDA ATLANTIC UNIVERSITY)

Camino Real to SE Mizner Boulevard

Roll Plot No. 1

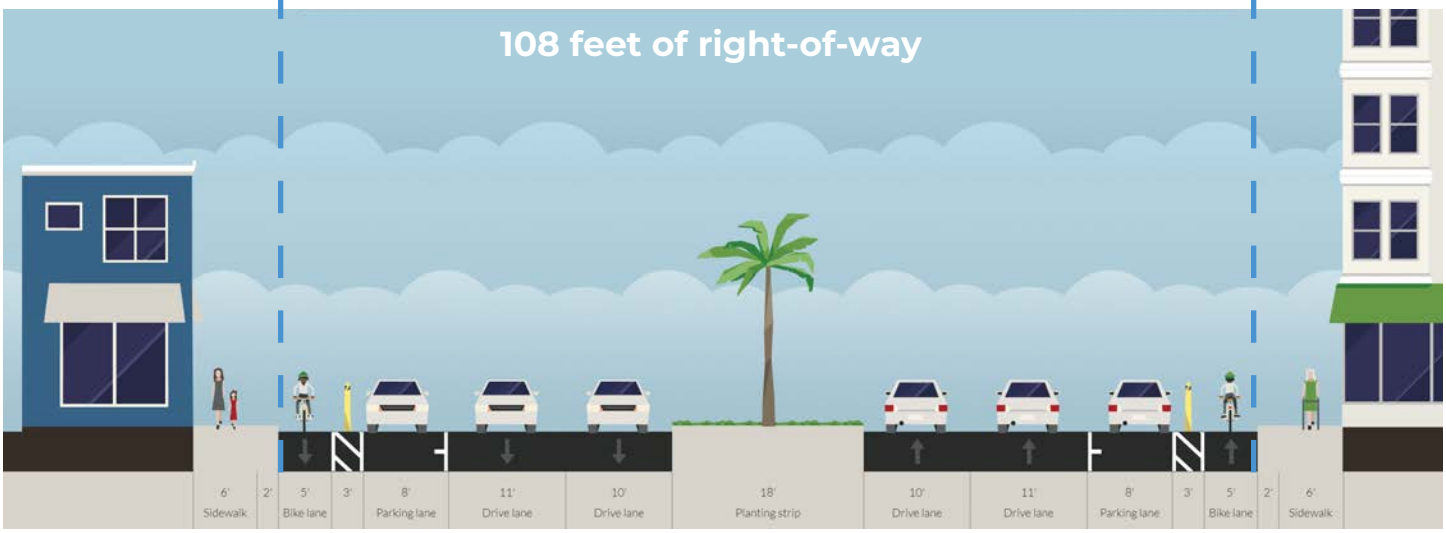
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C5-Urban Center

Existing Speed Limit: 35 mph

Length: 0.3 miles

Projected 2040 Max Peak Hour Traffic Volume: 1,400 vehicles per hour per direction (vphpd)

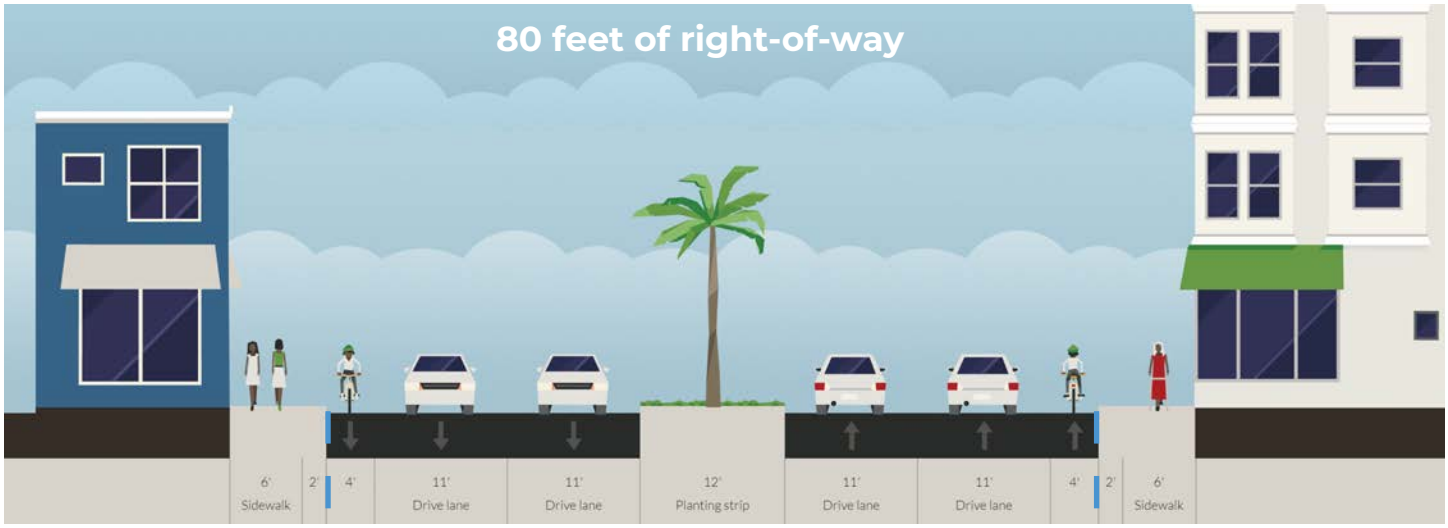
Proposed Recommendations: Partial reconstruction and lane repurposing from 6L to 4L; add on-street parking and separated bicycle lanes

Ongoing Efforts: The City of Boca Raton has expressed a preference for an alternate mobility strategy of converting US-1 and Dixie Highway through Downtown Boca Raton to a one-way pair concept from SW 18th Street/Royal Palm Way to NE 8th Street/NE Mizner Boulevard. Implementation would require conversion of the existing US-1 right-of-way into the northbound lanes of the one-way pair concept while using the County's Dixie Highway right-of-way for the southbound lanes.

SE Mizner Boulevard to NE Mizner Boulevard

Roll Plot No. 1-2

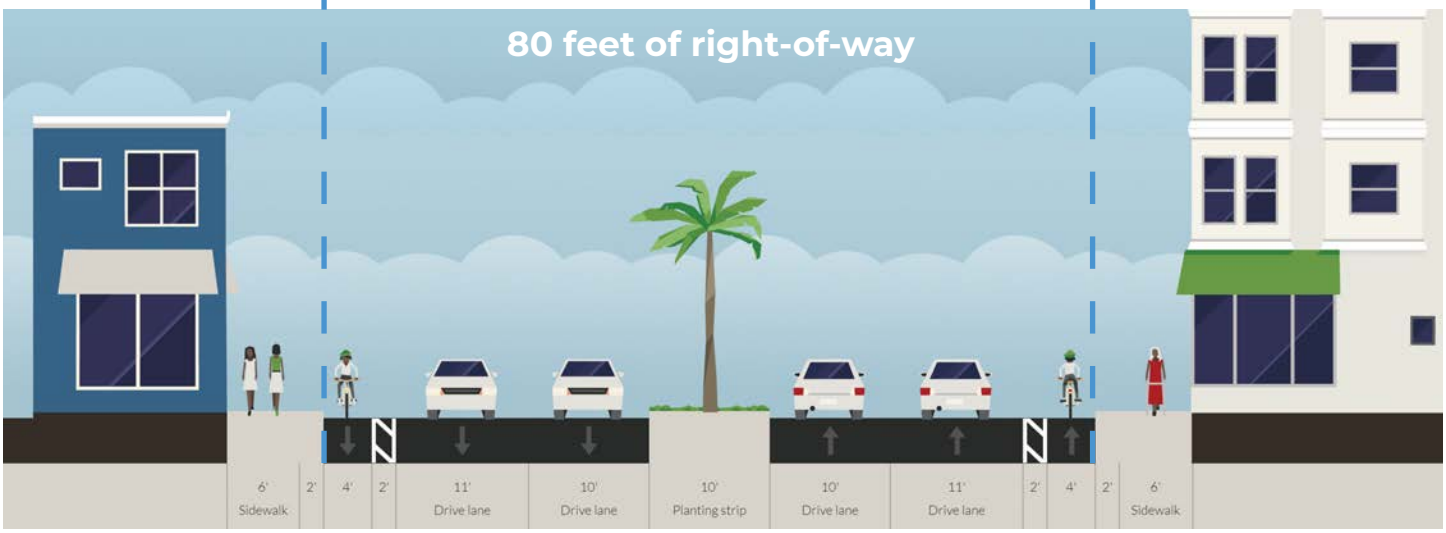
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C5-Urban Center

Existing Speed Limit: 35 mph

Length: 0.9 miles

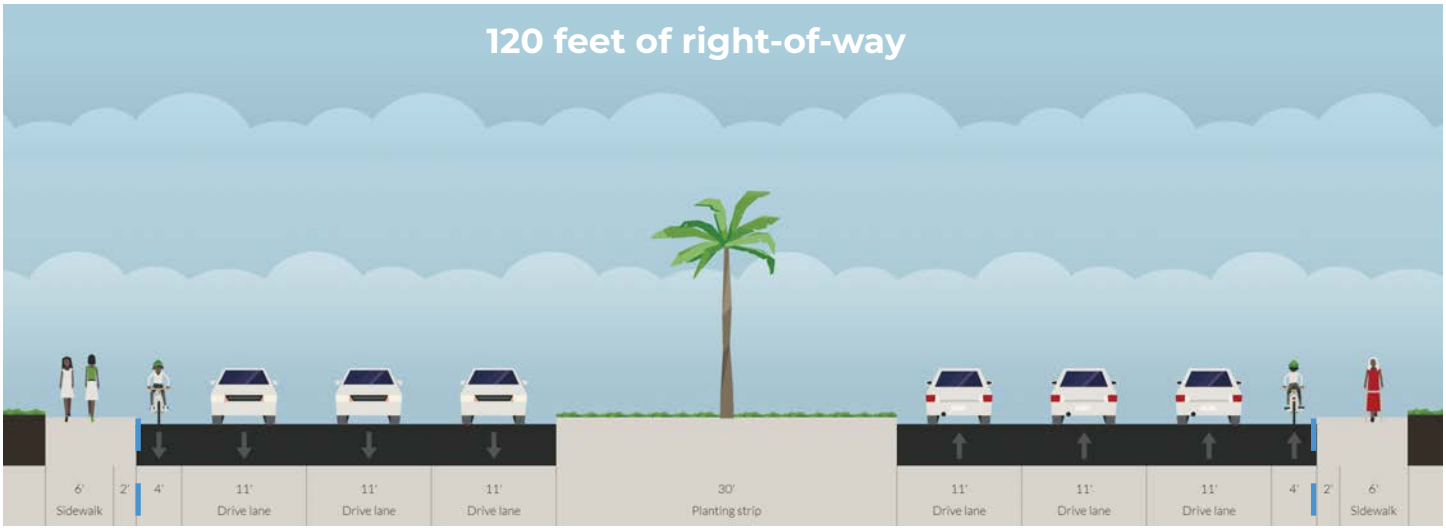
Proposed Recommendations: Partial reconstruction (inside widening); add buffered bicycle lanes

Ongoing Efforts: The City of Boca Raton has expressed a preference for an alternate mobility strategy of converting US-1 and Dixie Highway through Downtown Boca Raton to a one-way pair concept from SW 18th Street/Royal Palm Way to NE 8th Street/NE Mizner Boulevard. Implementation would require conversion of the existing US-1 right-of-way into the northbound lanes of the one-way pair concept while using the County's Dixie Highway right-of-way for the southbound lanes.

NE Mizner Boulevard to Glades Road

Roll Plot No. 2-3

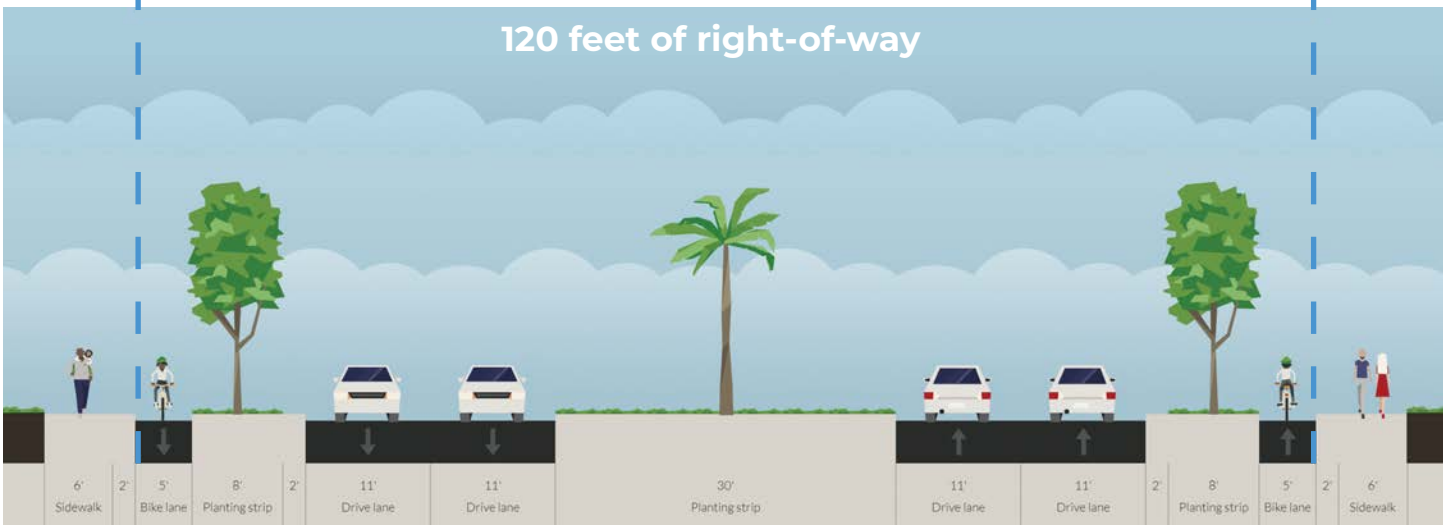
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C5-Urban Center

Existing Speed Limit: 35 mph

Length: 0.4 mile

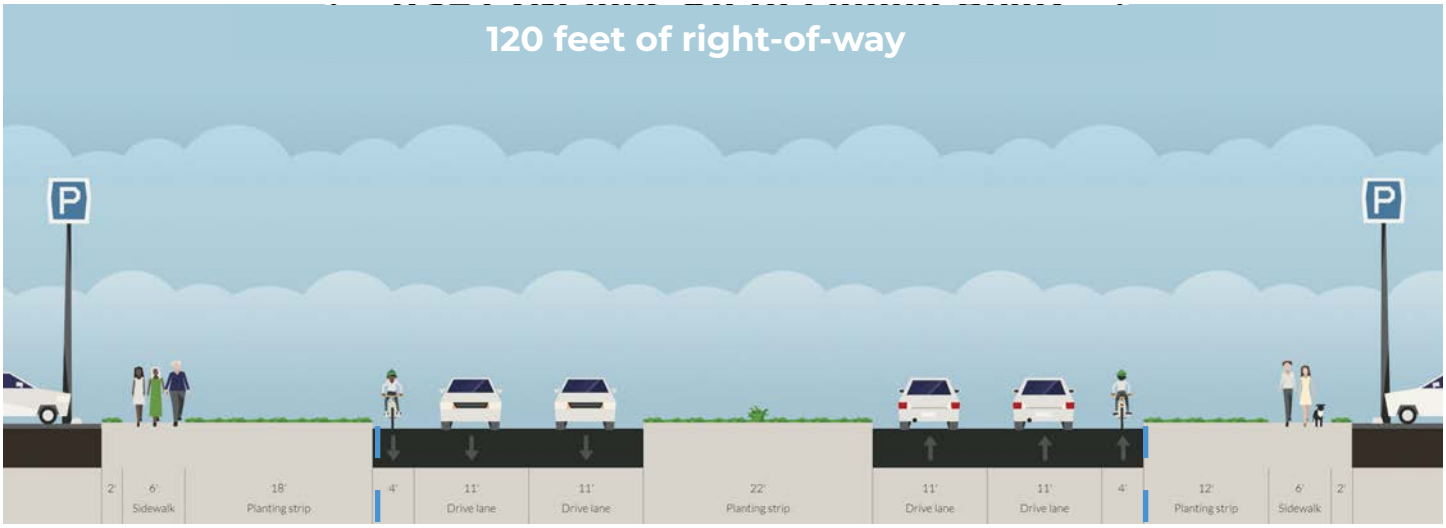
Projected 2040 Max Peak Hour Traffic Volume: 1,500 vphpd

Proposed Recommendations: Partial reconstruction and lane repurposing from 6L to 4L; add separated bicycle lanes and furnishing zones with street trees

Glades Road to Lindell Boulevard

Roll Plot No. 3-10

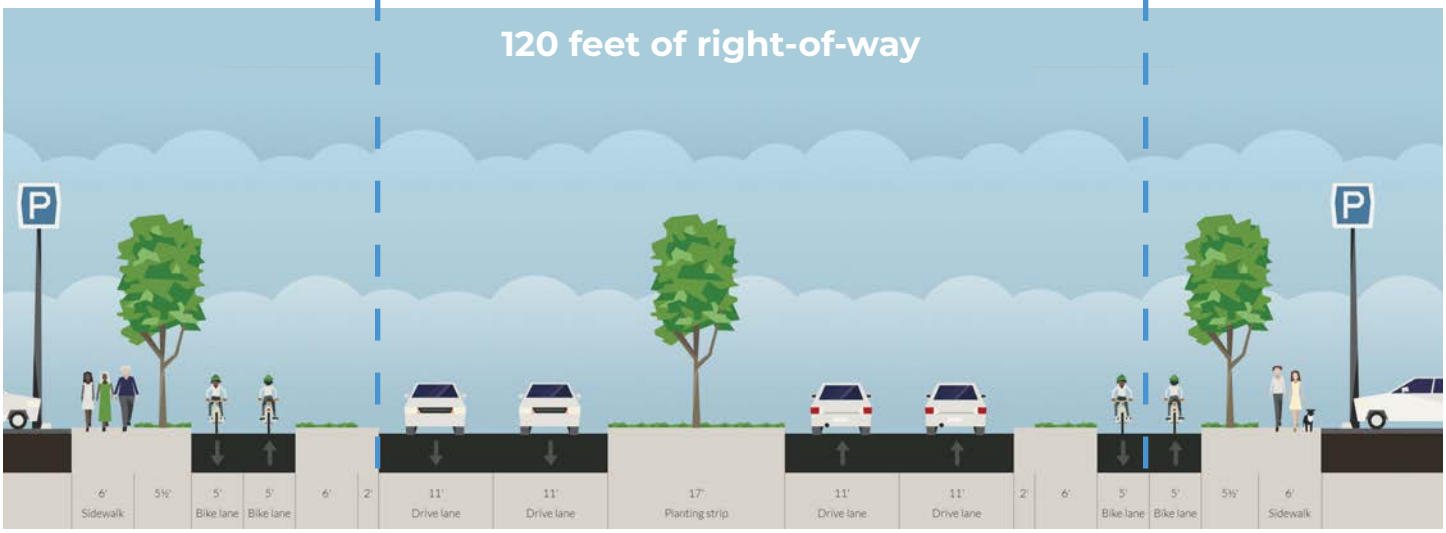
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C3-Suburban & C4-Urban General

Existing Speed Limit: 45 mph

Length: 4.6 miles

Proposed Recommendations: Full reconstruction with two-way separated bicycle lanes on both sides and furnishing zones with street trees

Section 2: Delray Beach, Boynton Beach and Gulf Stream

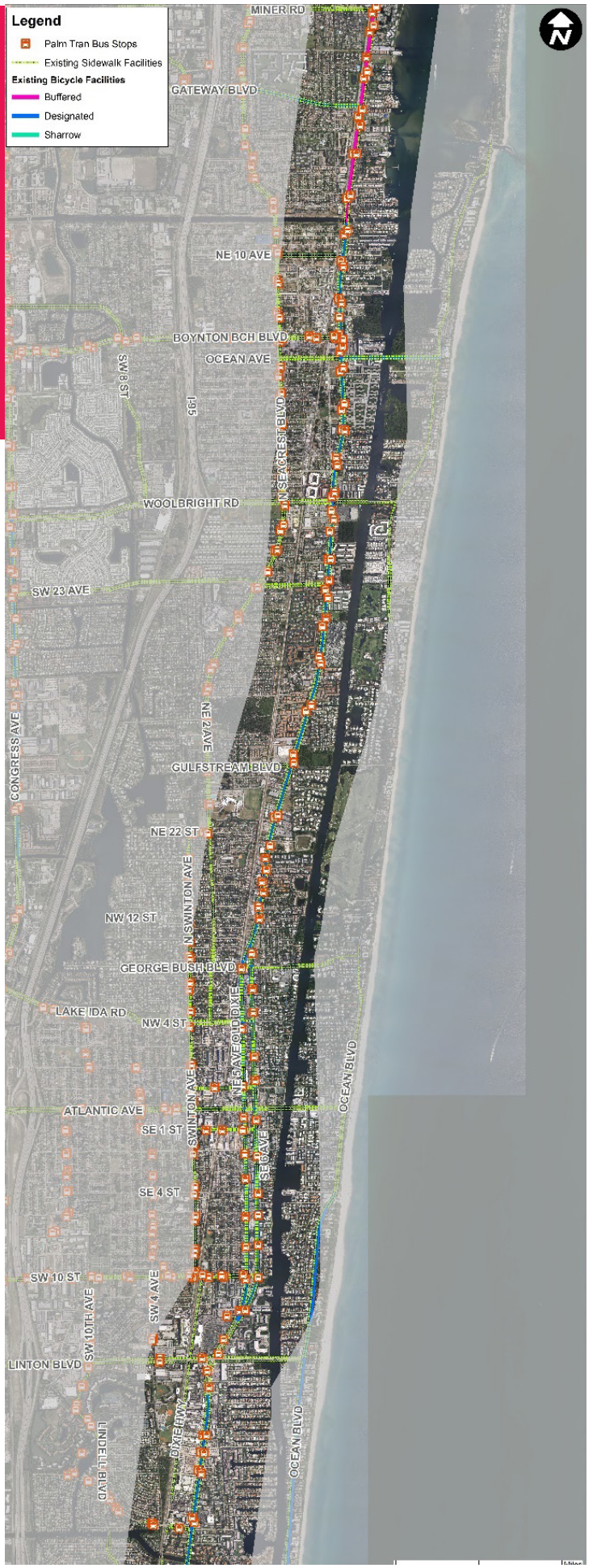
Existing Conditions

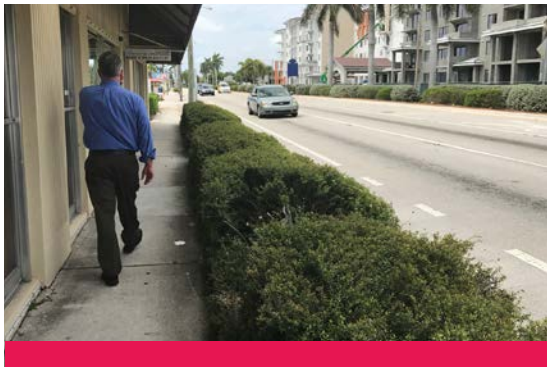
- Four-lane divided corridor with a one-way pair through Downtown Delray Beach
- Buffered bicycle lanes from north of the Stanley Weaver Canal bridge to Gateway Boulevard
- On-street parking in some places, but it is not consistent
- Bicycle facility gap from Tropic Boulevard to Harbourside Drive
- Sidewalk gap on the west side from George Bush Boulevard to Old Dixie Highway and NE 15th Avenue to Pine Street

HIA FAST FACTS

- Boynton Beach Population: 34,400 Residents
- 18% is in poverty
- 46% have high hypertension
- High percentage of racial and ethnic minorities
- High percentage of residents over 65 years of age
- Relatively high percentage of people with disabilities.

Section 2 contains Roll Plot No. 10-25. Specific Roll Plot No. for Individual Typical Sections are listed on the following pages.


Legend
Palm Tran Bus Stops
Existing Sidewalk Facilities
Existing Bicycle Facilities
Buffered
Designated
Sharrow
MINER RD
GATEWAY BLVD
NE 10 AVE
BOYNTON BCH BLVD
OCEAN AVE
SW 8 ST
I 95
N SEACREST BLVD
WOOLBRIGHT RD
SW 23 AVE
CONGRESS AVE
NE 2 AVE
GULFSTREAM BLVD
NE 22 ST
N SWINTON AVE
NW 12 ST
GEORGE BUSH BLVD
LAKE IDA RD
NW 4 ST
NE 4 AVE/OLD DIXIE
OCEAN BLVD
ATLANTIC AVE
SE 1 ST
SE 4 ST
SW 10 ST
SW 4 AVE
SW 10TH AVE
LINTON BLVD
LINDELL BLVD
OCEAN BLVD



CITY OF DELRAY BEACH

CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

DOWNTOWN DELRAY

- New PTX stations located within US-1 ROW on each direction
- Convert existing parking lot into “pocket park” to facilitate connections between stations and context-sensitive design for Downtown Delray Beach
- Green space should also function for stormwater management
- Examine potential for mid-block crossings at PTX station locations

LINTON BLVD

- Focus on intersection crossings
- Align crosswalks perpendicular to crossing street where appropriate
- Add street trees and landscape for pedestrian comfort

LINDELL BLVD

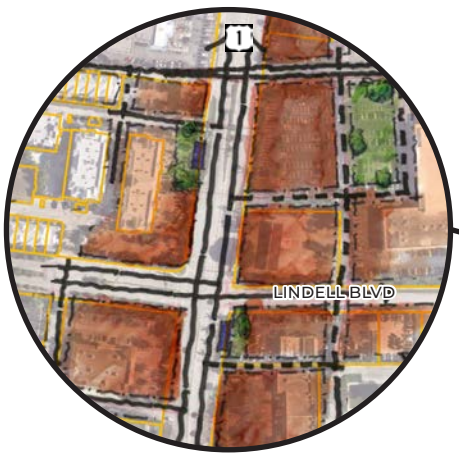
- Town Center redevelopment with new, pedestrian-scaled streets with a mix of land uses including higher density residential and streeting-fronting buildings.
- Green/Park space as focus of PTX stations, green space should also function for stormwater management

LEGEND

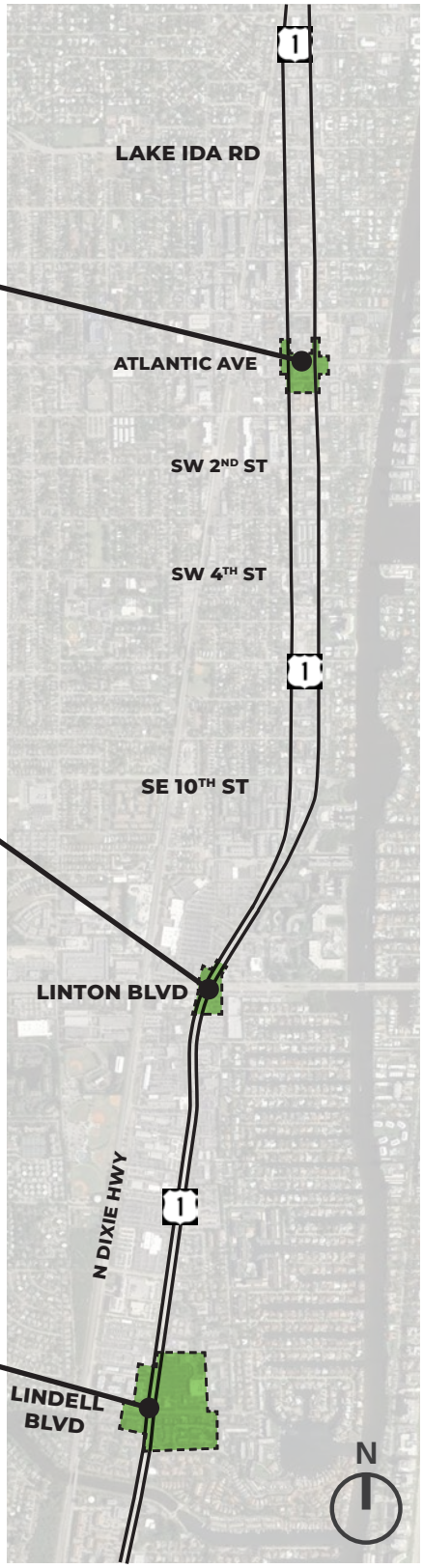
- New Street
- Pedestrian Connection
- Proposed PTX Location
- New Park Space
- New Mixed-Use
- New Residential

DOWNTOWN DELRAY BEACH

LINTON BLVD



LINDELL BLVD



TOWN OF GULF STREAM

CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

GULFSTREAM BLVD

- New PTX station located on Gulfstream Boulevard (PTX shift here to serve Bethesda Hospital on Seacrest Boulevard)
- PTX should connect to existing pedestrian walk from Walmart Super Center to Gulfstream Boulevard
- Enhance intersection crossings at Gulfstream Boulevard and US-1

GULFSTREAM BLVD

CITY OF BOYNTON BEACH

CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

GATEWAY BLVD

- Utilize portion of Intracoastal Park for new affordable housing
- Connect a new street parallel to US-1 on the east side
- Enhance crossing at Gateway Boulevard to facilitate pedestrians from retail area to park and PTX stations

BOYNTON RIVERWALK

- Continue to breakup large parcels into walkable block sizes
- Enhance existing pedestrian crossing on US-1 (just south of Woolbright Rd)
- Redevelop shopping center as new Town Center mixed-use project with higher density residential units and street-fronting buildings
- Connect new park space across US-1 to Boynton Riverwalk

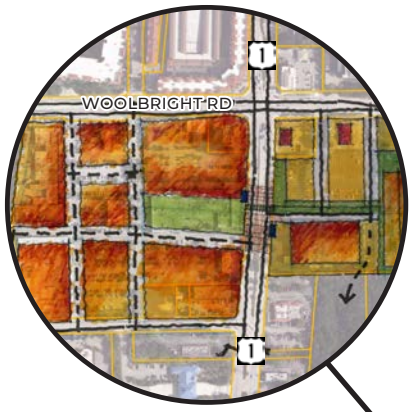
BESTHESDA HOSPITAL

- Leverage existing hospital surface parking areas for new mixed-use (inc. medical with garage parking adjacent to PTX station
- Enhance pedestrian crossing at SE 26th Avenue and S Seacrest Boulevard
- Green/Park space as focus of PTX stations, green space should also function for stormwater management

LEGEND

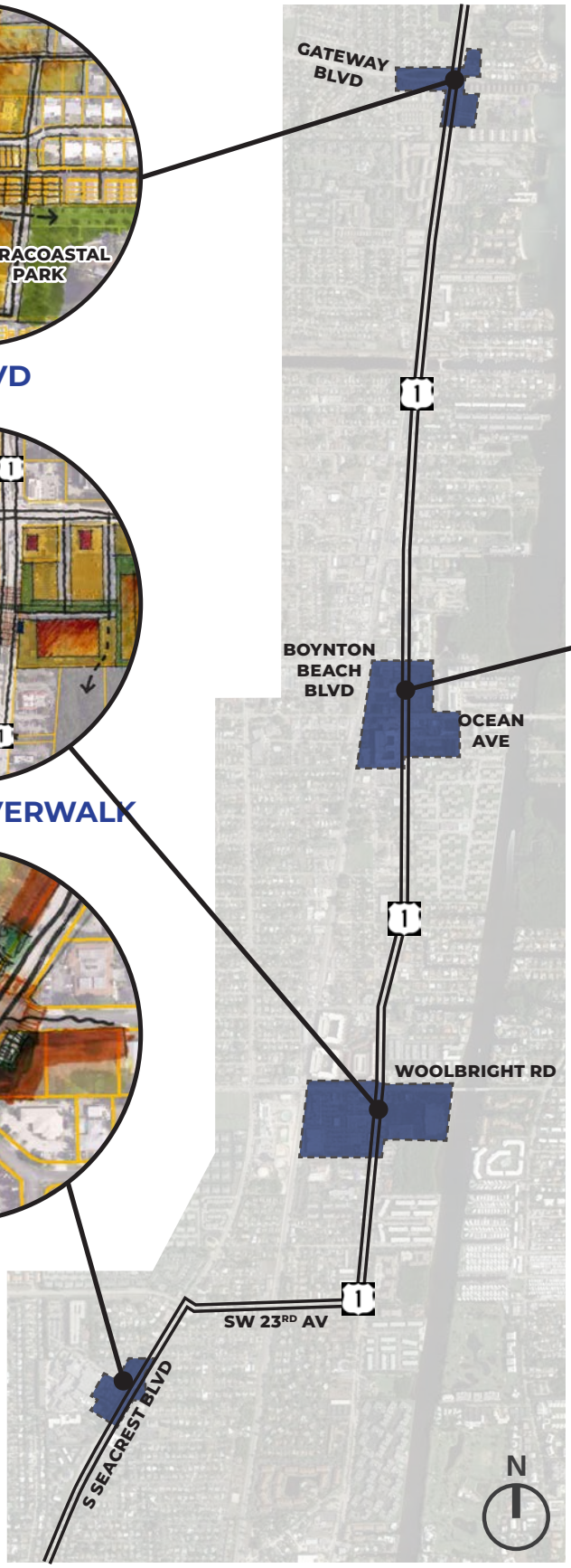
- New Street
- Pedestrian Connection
- Proposed PTX Location
- New Park Space
- New Mixed-Use
- New Residential

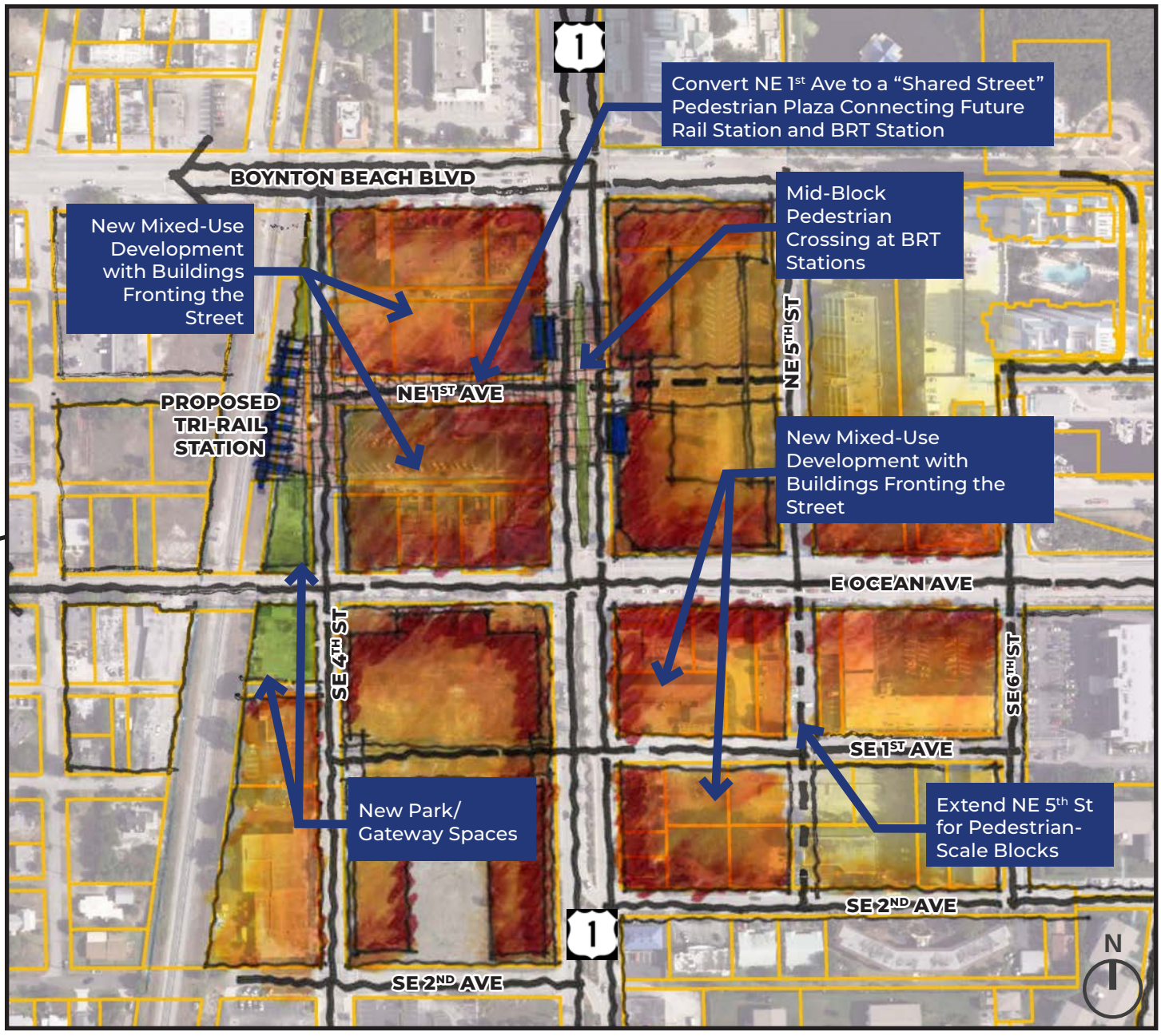
GATEWAY BLVD



BOYNTON RIVERWALK

BETHESDA HOSPITAL



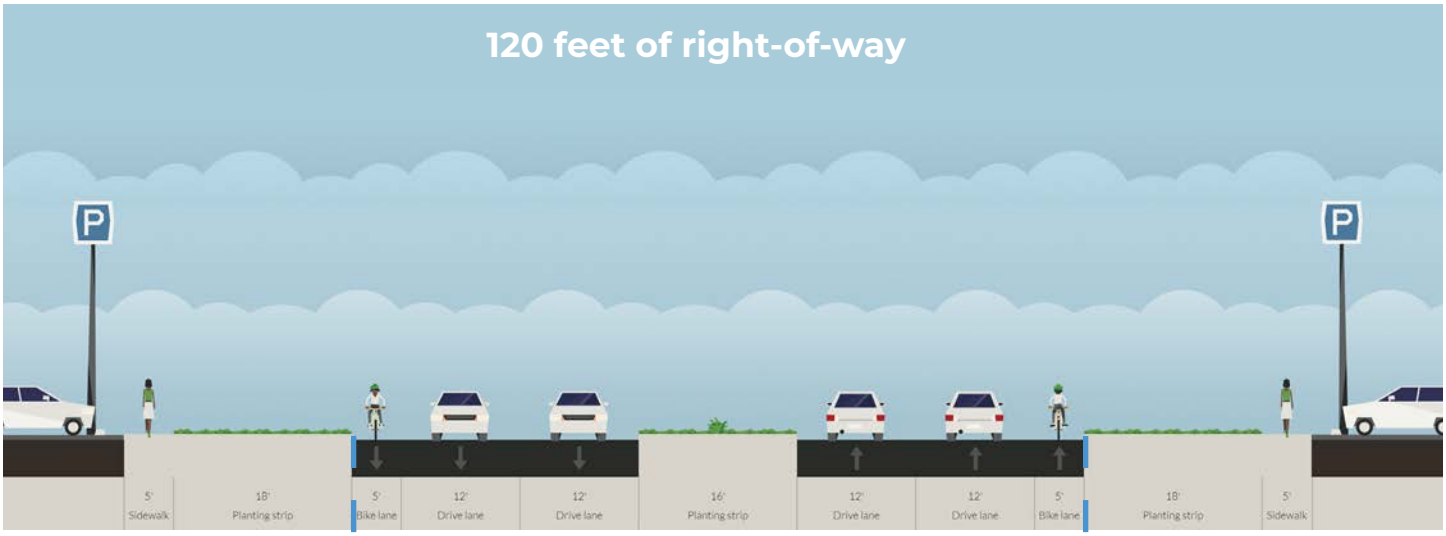


DOWNTOWN BOYNTON

Lindell Boulevard to Tropic Boulevard

Roll Plot No. 10-11

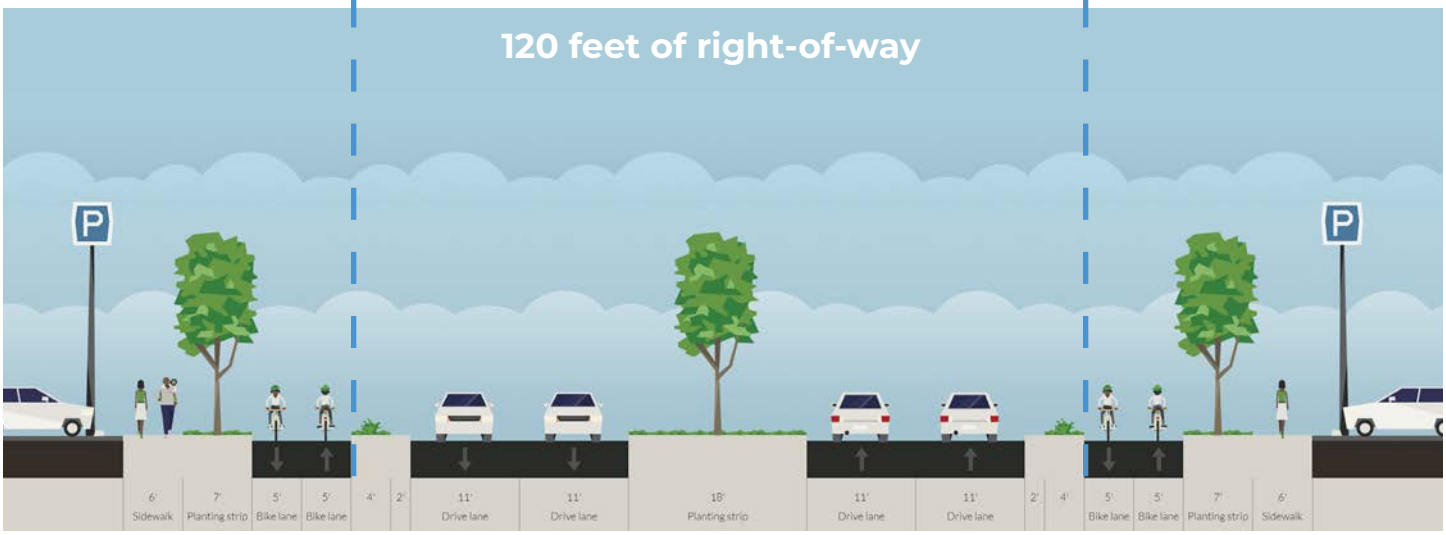
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C3-Suburban

Existing Speed Limit: 45 mph

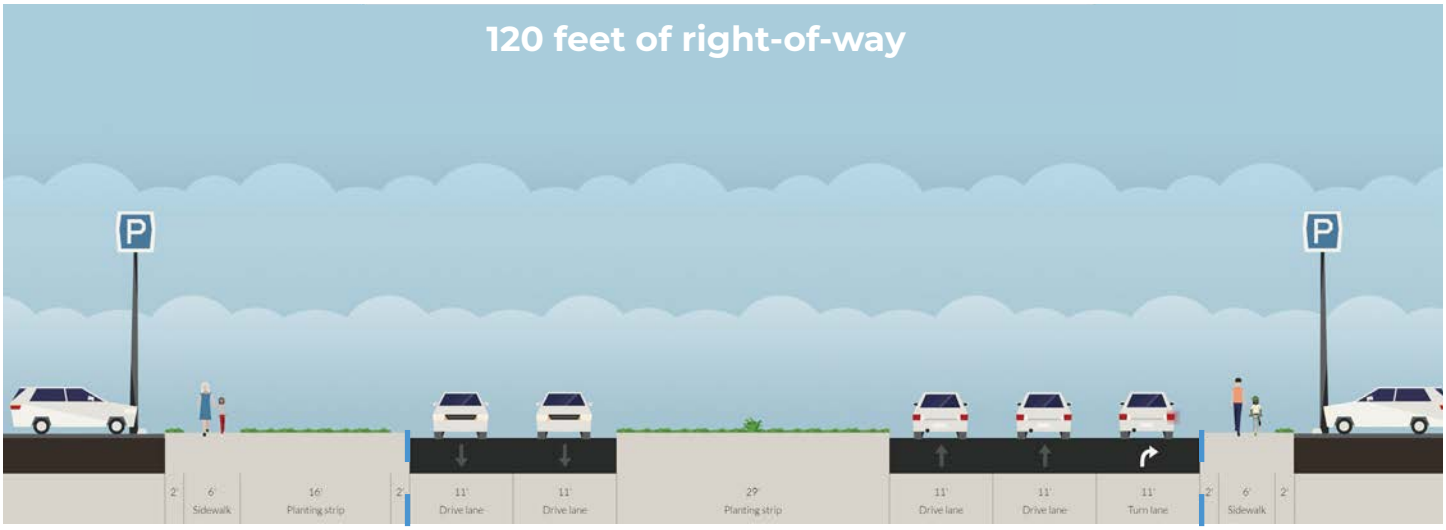
Length: 0.8 miles

Proposed Recommendations: Full reconstruction with two-way separated bicycle lanes on both sides and furnishing zones with street trees

Tropic Boulevard to SE 12th Road

Roll Plot No. 11-12

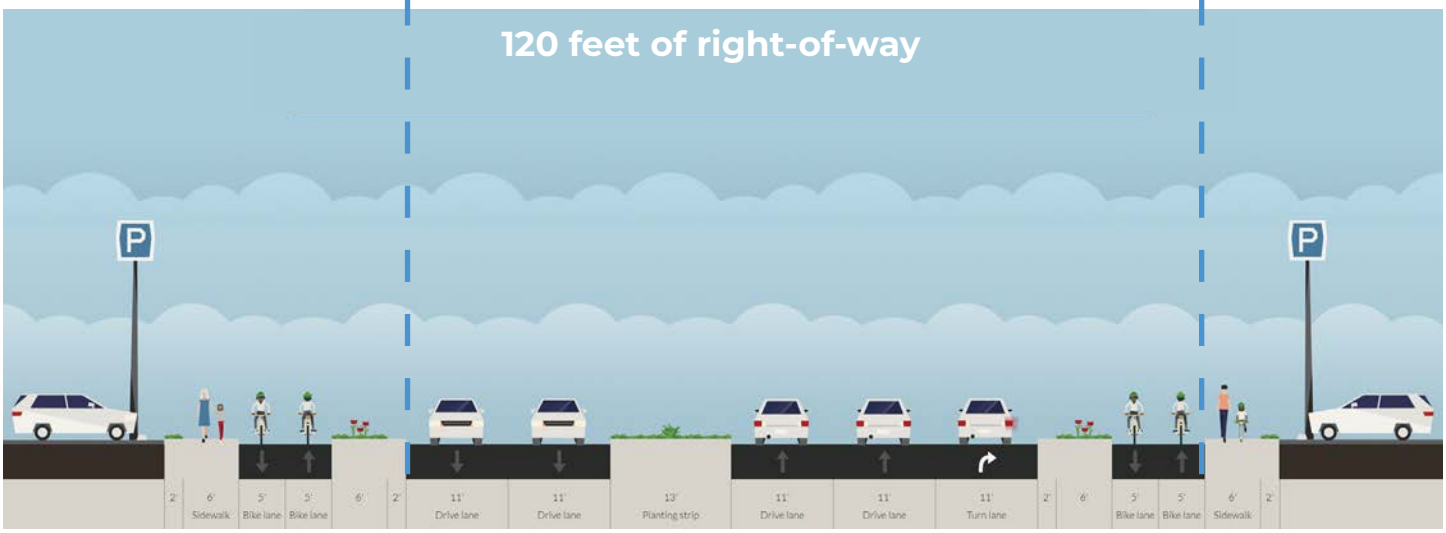
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C3-Suburban

Existing Speed Limit: 45 mph

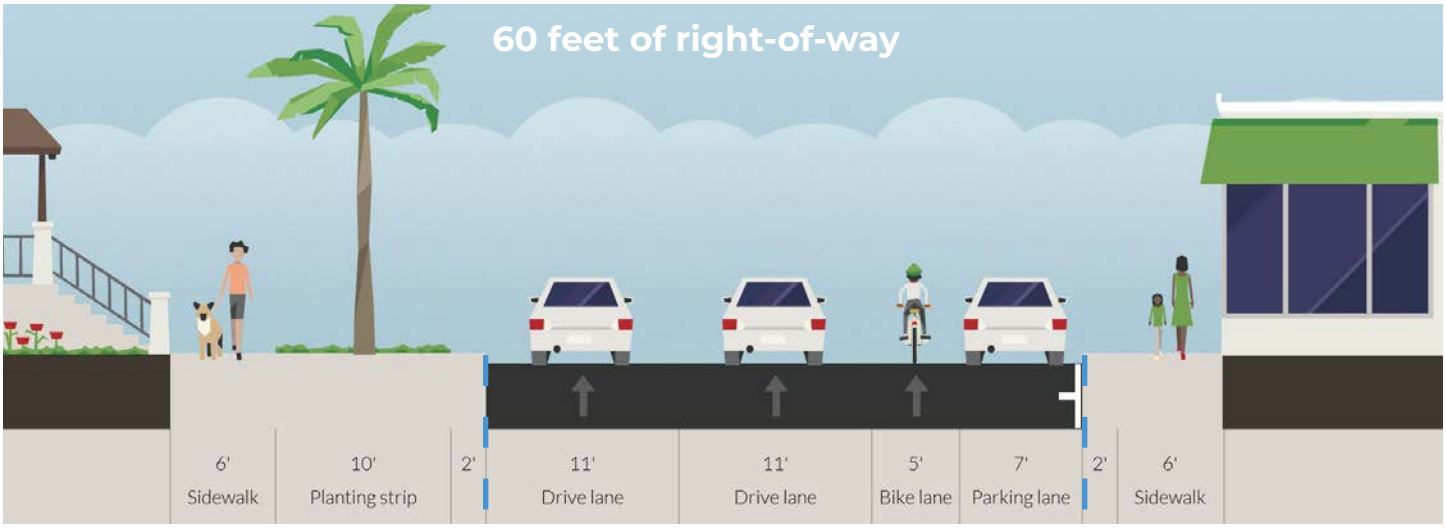
Length: 0.6 miles

Proposed Recommendations: Full reconstruction with two-way separated bicycle lanes

US-1 NB SE 12th Road to George Bush Boulevard

Roll Plot No. 12-16

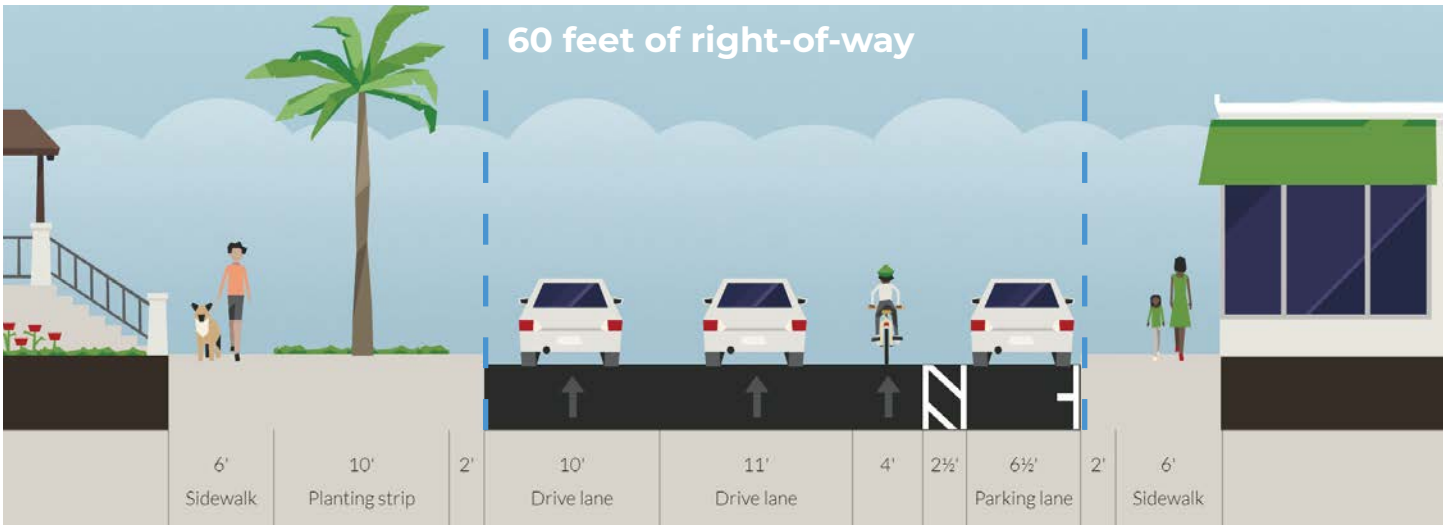
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C4-Urban General & C5-Urban Center

Existing Speed Limit: 35 mph

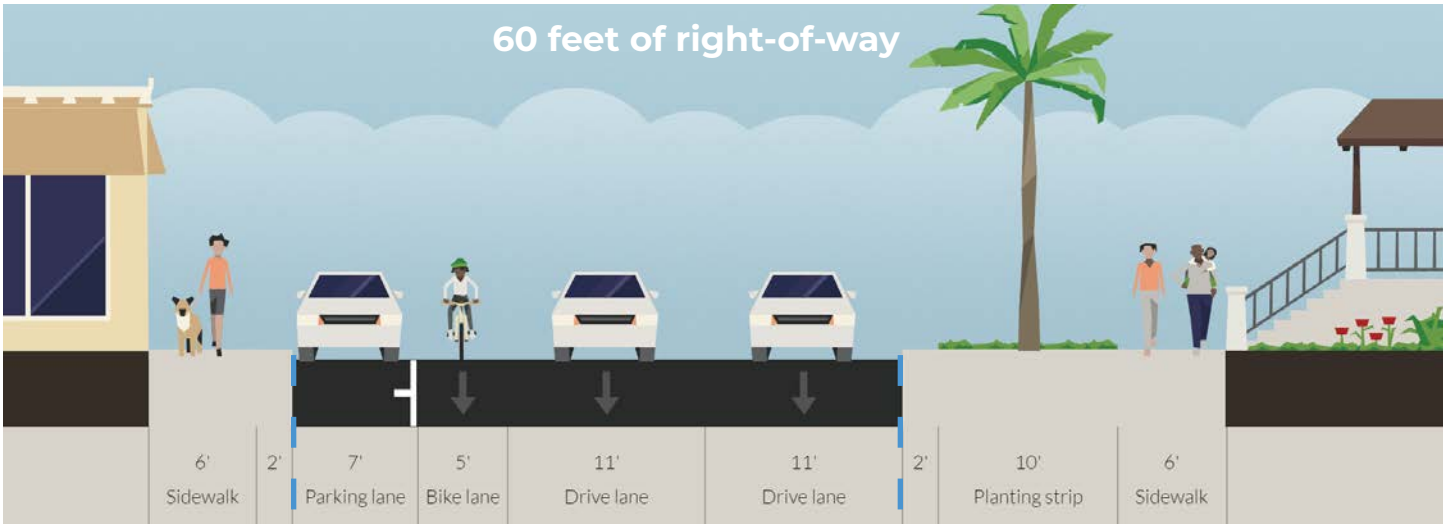
Length: 2.0 miles

Proposed Recommendations: Resurfacing with buffered bicycle lanes

US-1 SB SE 12th Road to George Bush Boulevard

Roll Plot No. 12-16

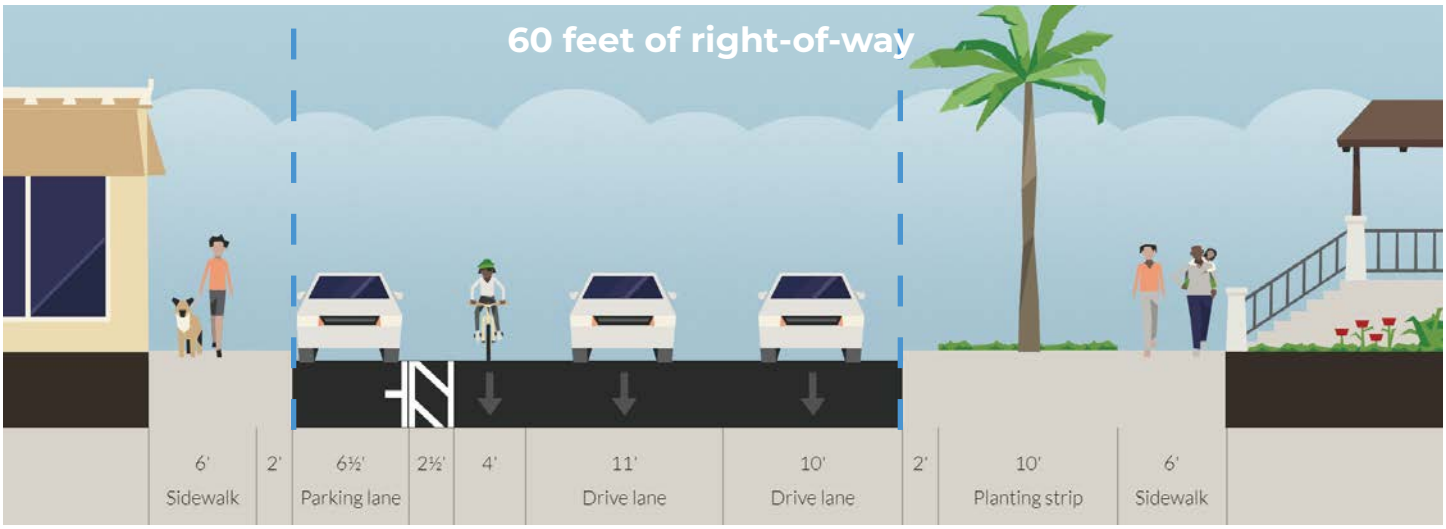
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C4-Urban General & C5-Urban Center

Existing Speed Limit: 35 mph

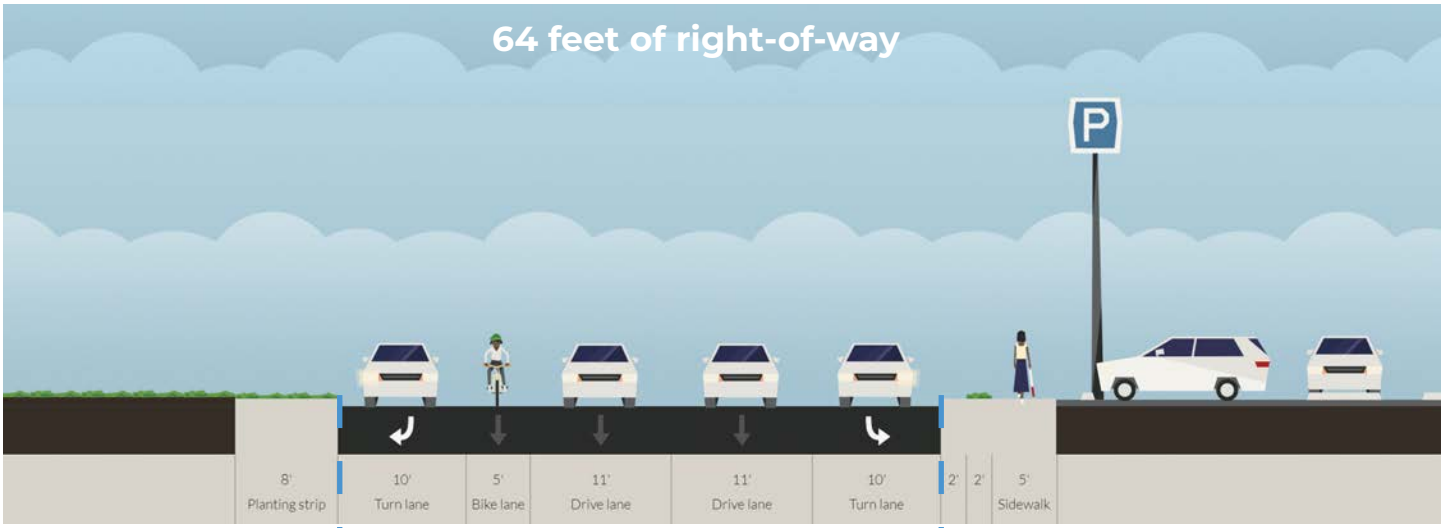
Length: 2.0 miles

Proposed Recommendations: Resurfacing with buffered bicycle lanes

US-1 SB George Bush Boulevard to Old Dixie Highway

Roll Plot No. 16

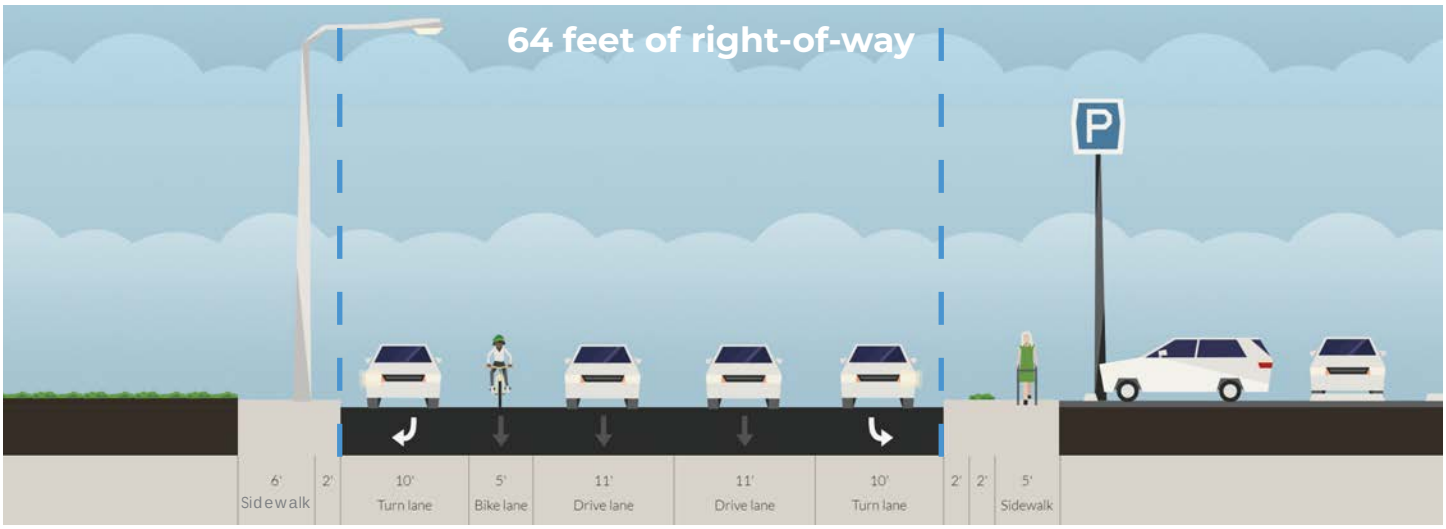
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C4-Urban General

Existing Speed Limit: 35 mph

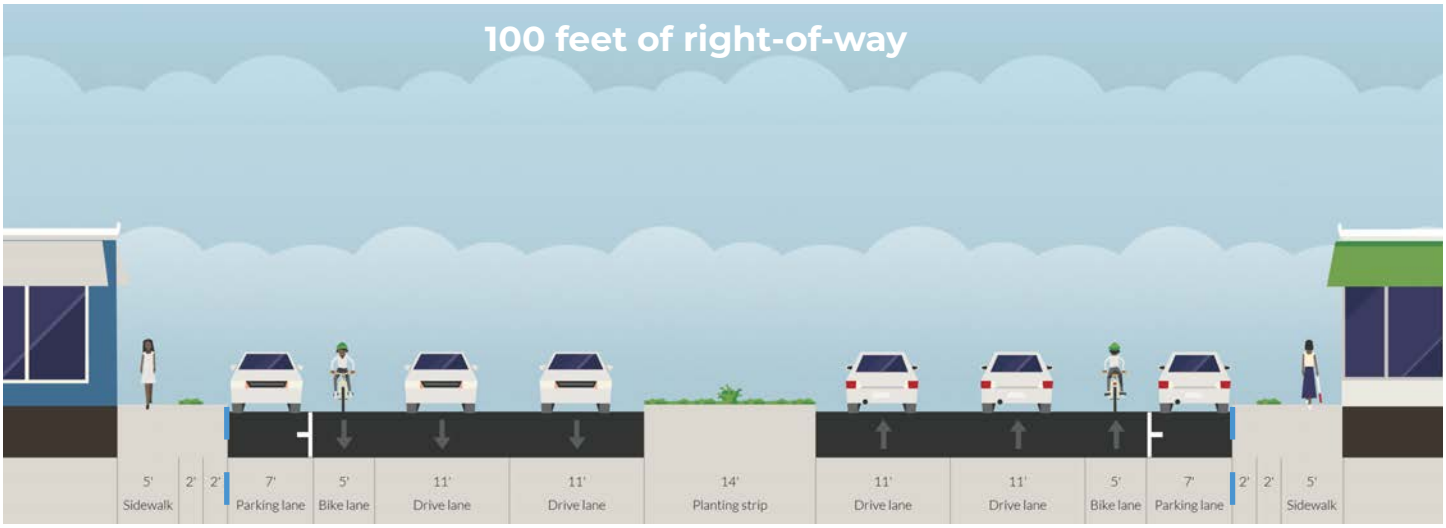
Length: 0.1 miles

Proposed Recommendations: Partial reconstruction (moving the curbs in); add separated bicycle lanes, furnishing zones with street trees and removal of parking

Old Dixie Highway to Gulfstream Boulevard

Roll Plot No. 16-18

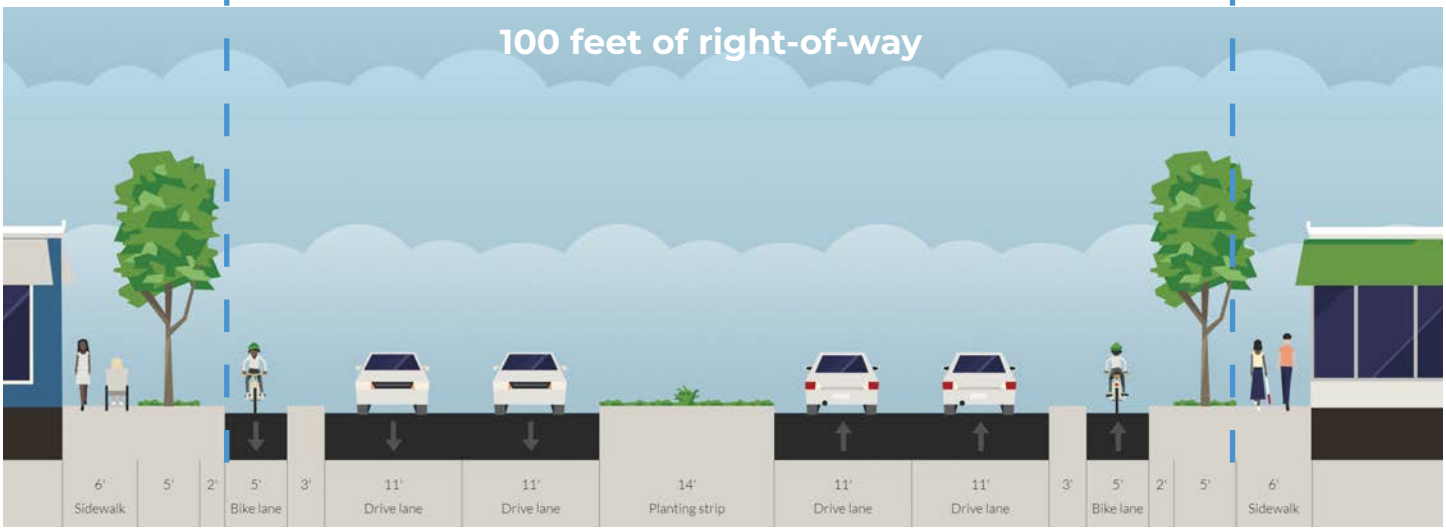
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C4-Urban General

Existing Speed Limit: 35-40 mph

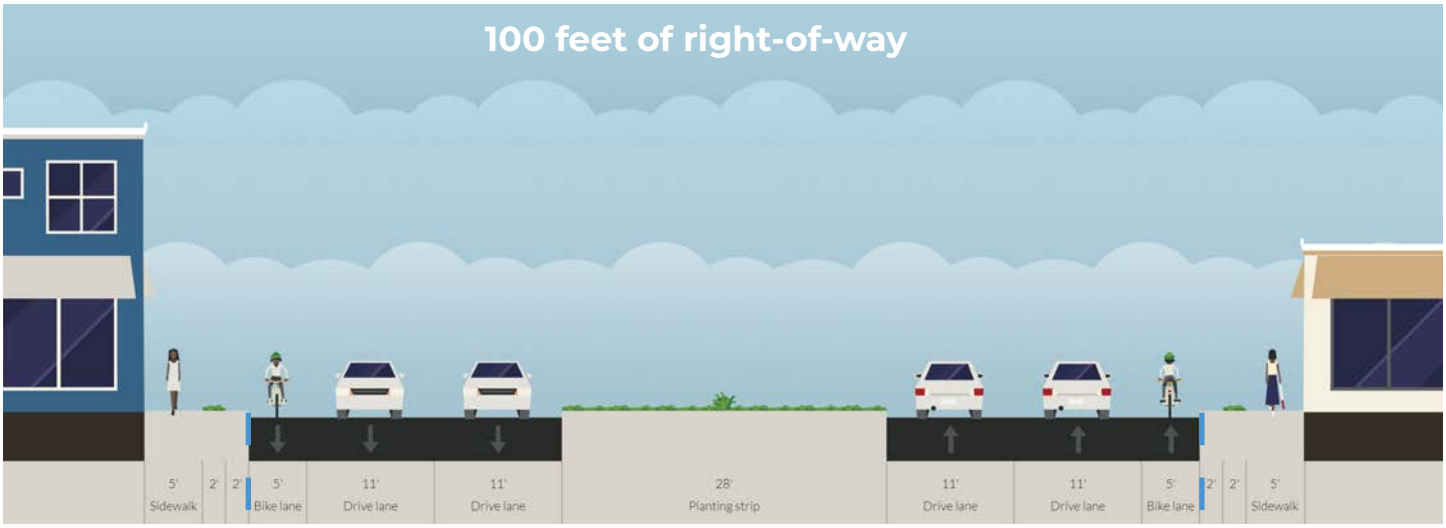
Length: 1.2 miles

Proposed Recommendations: Partial reconstruction (moving the curbs in); add separated bicycle lanes, furnishing zones with street trees and removal of parking

Gulfstream Boulevard to Boynton Beach Boulevard

Roll Plot No. 18-22

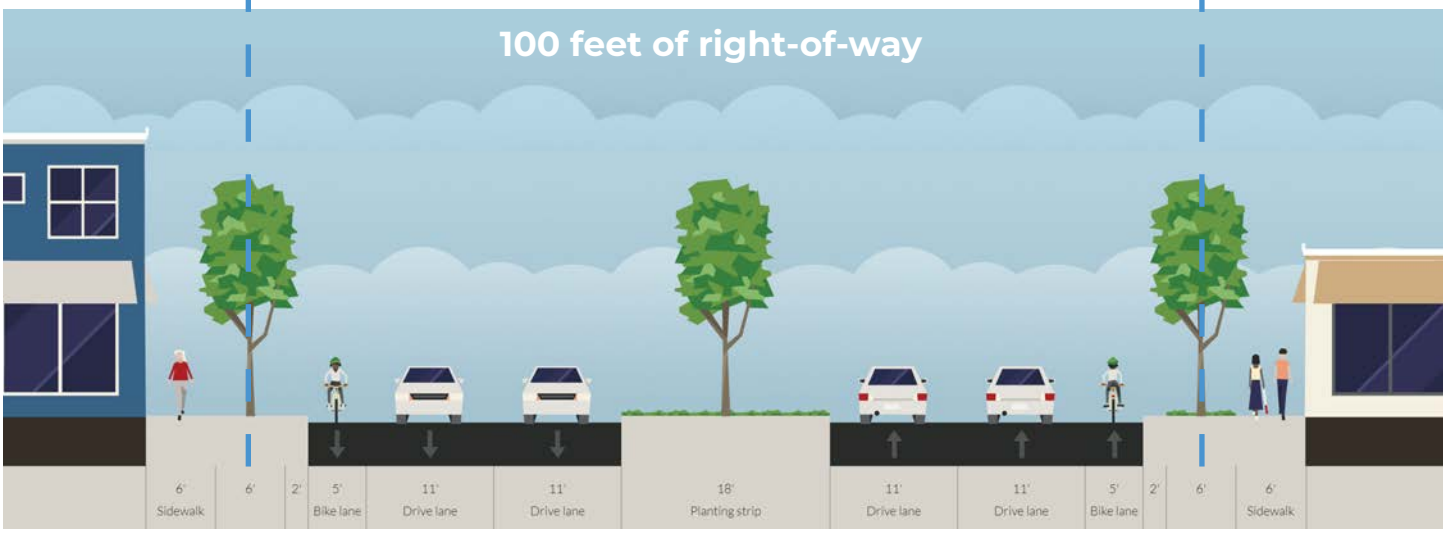
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C4-Urban General & C5-Urban Center

Existing Speed Limit: 35-40 mph

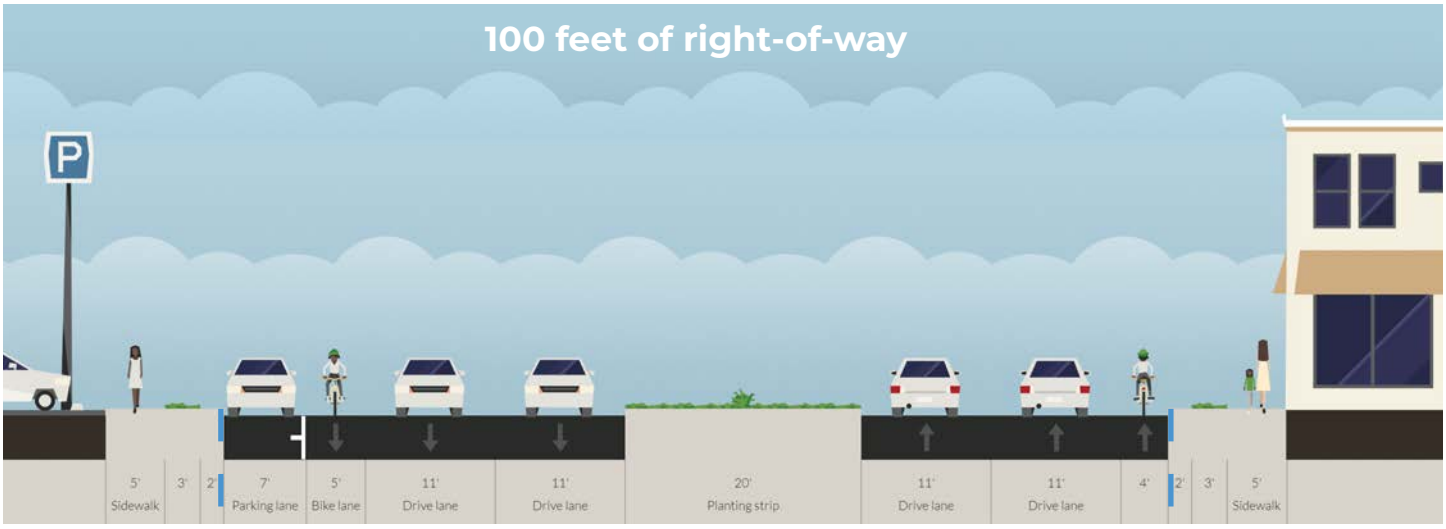
Length: 2.6 miles

Proposed Recommendations: Full reconstruction with furnishing zones with street trees

Boynton Beach Boulevard to NE 15th Avenue

Roll Plot No. 22-23

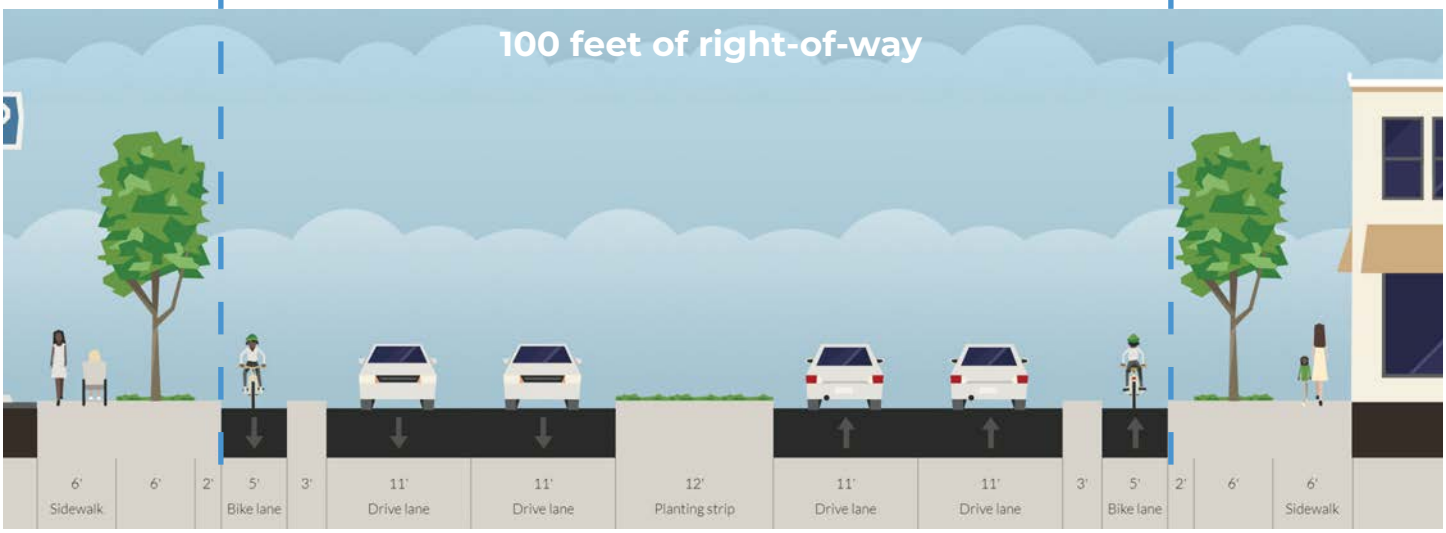
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C4-Urban General & C5-Urban Center

Existing Speed Limit: 35 mph

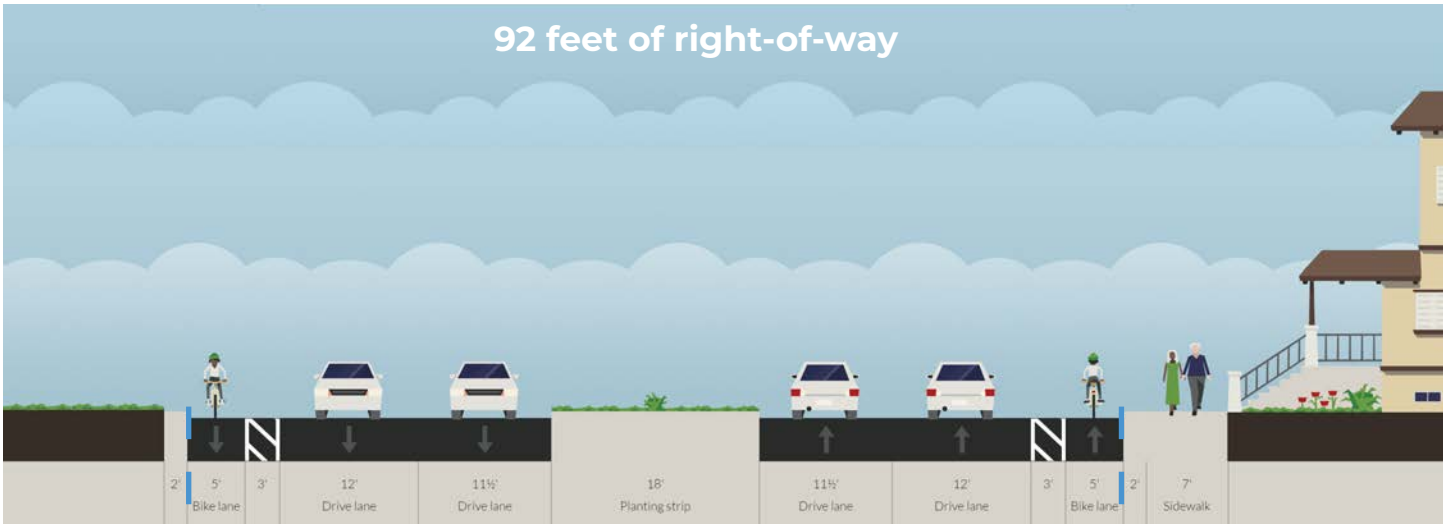
Length: 0.9 miles

Proposed Recommendations: Full reconstruction with separated bicycle lanes, furnishing zones with street trees and removal of parking

NE 15th Avenue to Miner Road

Roll Plot No. 23-25

Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed

FDOT Context Classification: C3-Suburban

Existing Speed Limit: 45 mph

Length: 1.1 miles

Proposed Recommendations: Convert buffered bicycle lanes to separated bicycle lanes; obtain 10-foot easement for sidewalk on the west side

Section 3: Hypoluxo, Lantana and Lake Worth

Existing Conditions

- Primarily four-lane undivided roadway with no median refuge
- Significant amount of pedestrian/bicyclist activity in Downtown Lake Worth
- Buffered bicycle lanes in Hypoluxo
- No designated bicycle lanes in Lantana or Lake Worth
- Sidewalk gap on the west side
- NE 15th Avenue to Pine Street (Boynton Beach, Hypoluxo, and Lantana)
- Lantana Road to Federal Highway (Lantana)
- Missing crosswalks at signalized intersections
- Poor access to transit stops.

HIA FAST FACTS

- Lake Worth Population: 43,200 Residents
- Lowest average land values in corridor ($155,000)
- 21% is in poverty
- 19% are diagnosed with depression
- 31% are diagnosed with obesity
- 14% are diagnosed with diabetes
- High percentage of racial and ethnic minorities
- High frequency of bicycle and pedestrian fatalities (3.8/mile)

Section 3 contains Roll Plot No. 25-35. Specific Roll Plot No. for Individual Typical Sections are listed on the following pages.


Legend
Palm Tran Bus Stops
Existing Sidewalk Facilities
Existing Bicycle Facilities
Buffered
Designated
Sharrow
GREGORY RD
22 AVE N
FORDHAM DR
WELLESLEY DR
16 AVE N
13 AVE N
N PALM WAY
10 AVE N
7 AVE N
5 AVE N
ND ST
LAKESIDE WAY
BOUTWELL RD
LAKE WORTH RD
LUCERNE AVE
LAKE AVE
NA ST
6 AVE S
SD ST
SA ST
10 AVE S
12TH AVE S
S LAKESIDE DR
I-95
18 AVE S
OCEAN BLVD
LANTANA RD
OCEAN AVE
BROADWAY
W DREW ST
HYPOLUXO RD
OVERLOOK DR
HIGH RIDGE RD
N SEACREST BLVD
MINER RD
Miles
0
0.25
0.5

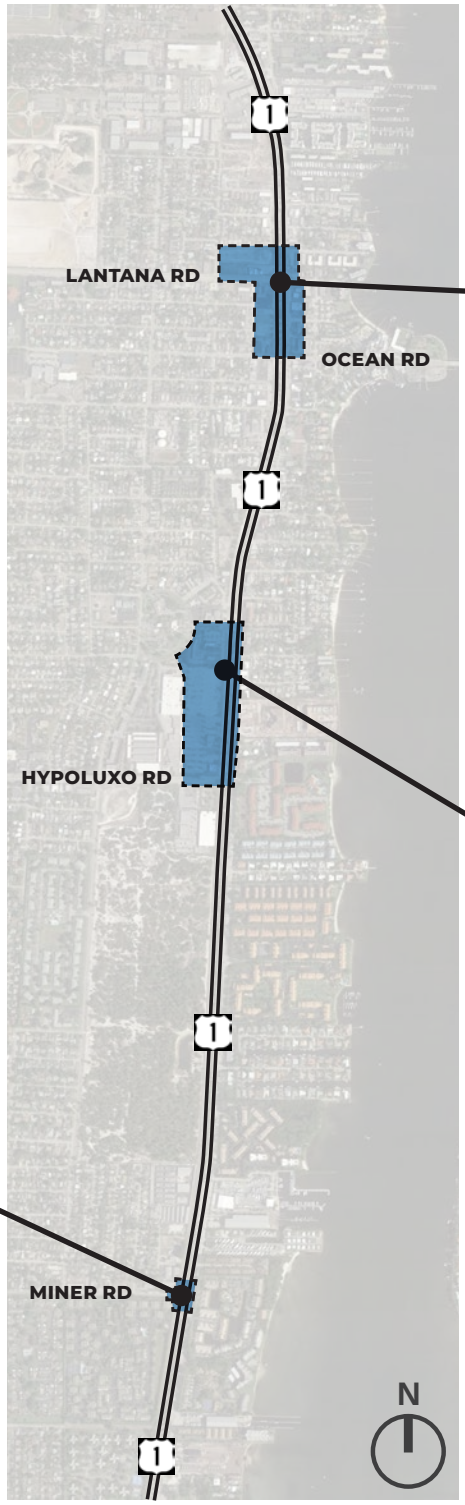
TOWN OF HYPOLUXO

CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

MINER RD

- Enhance pedestrian crossings at Miner Road
- Connect to local grocery and residential areas

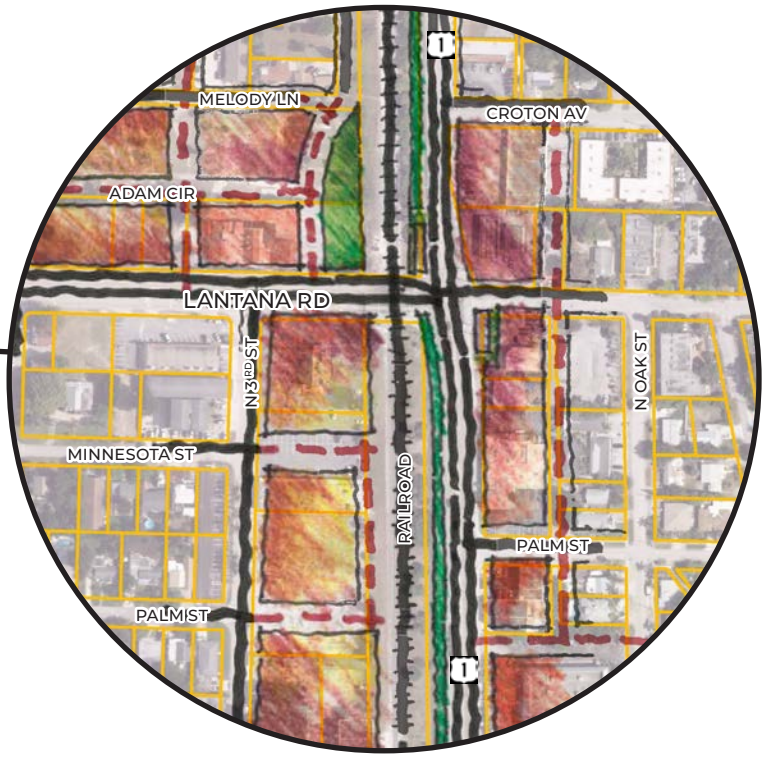
MINER RD



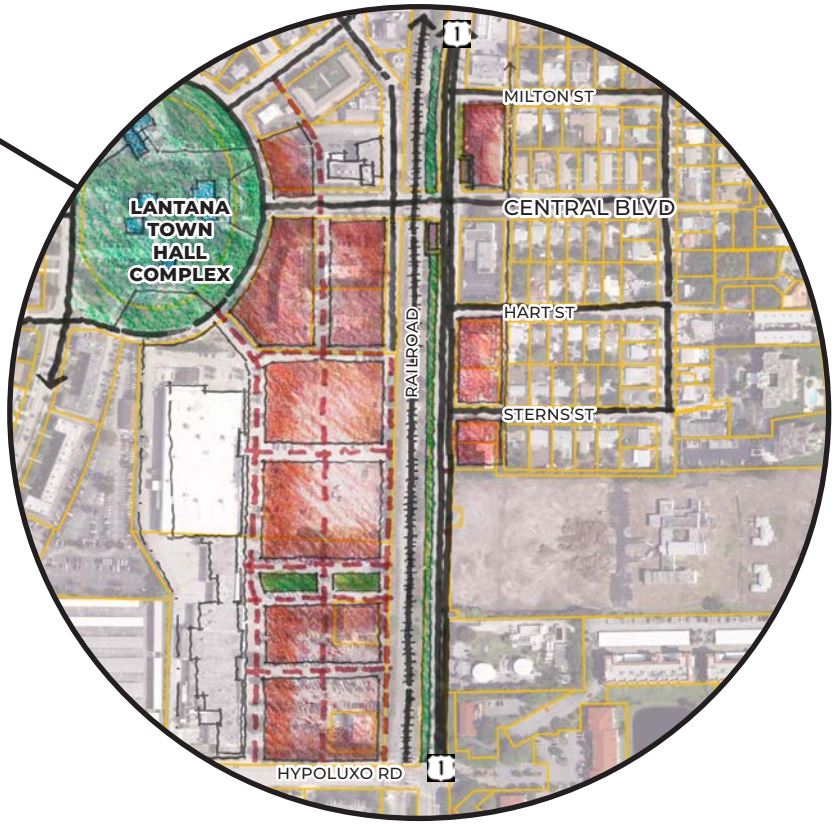
LEGEND

- New Street
- Pedestrian Connection
- Proposed PTX Location
- New Park Space
- New Mixed-Use
- New Residential

TOWN OF LANTANA



LANTANA RD



DOWNTOWN LANTANA

CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

LANTANA RD

- Connect and add new streets and alleys to support redevelopment of existing sites and vacant properties
- Create new park spaces adjacent to PTX stations and along buffer between railroad and US-1
- New redevelopment should be a mix of uses, including higher density residential with street-facing buildings

DOWNTOWN LANTANA

- Redevelop large surface parking lots incrementally as mixed-use, residential buildings with pedestrian-scale block network
- Connect PTX station to Lantana Town Hall Complex
- Incorporate green space as park and stormwater

CITY OF LAKE WORTH

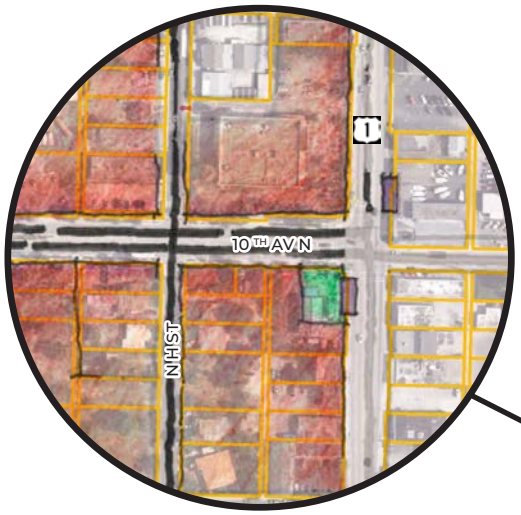
CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

10TH AVENUE NORTH

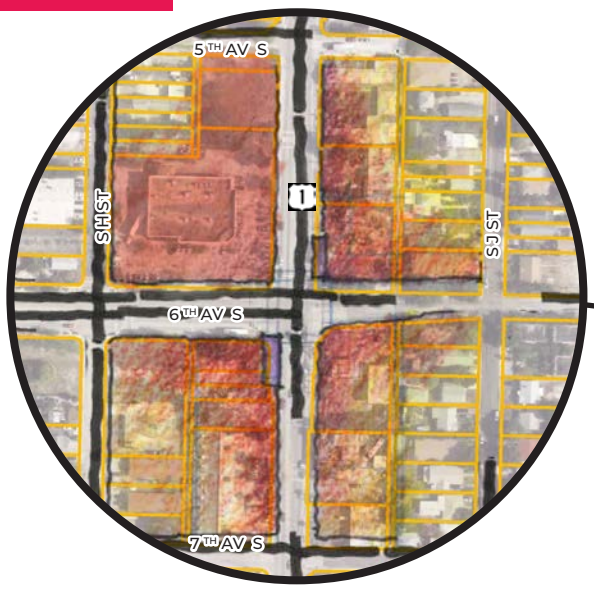
- Enhance pedestrian crossings at 10th Avenue North
- Create park space adjacent to southbound PTX station
- Maintain existing street network

6TH AVENUE SOUTH

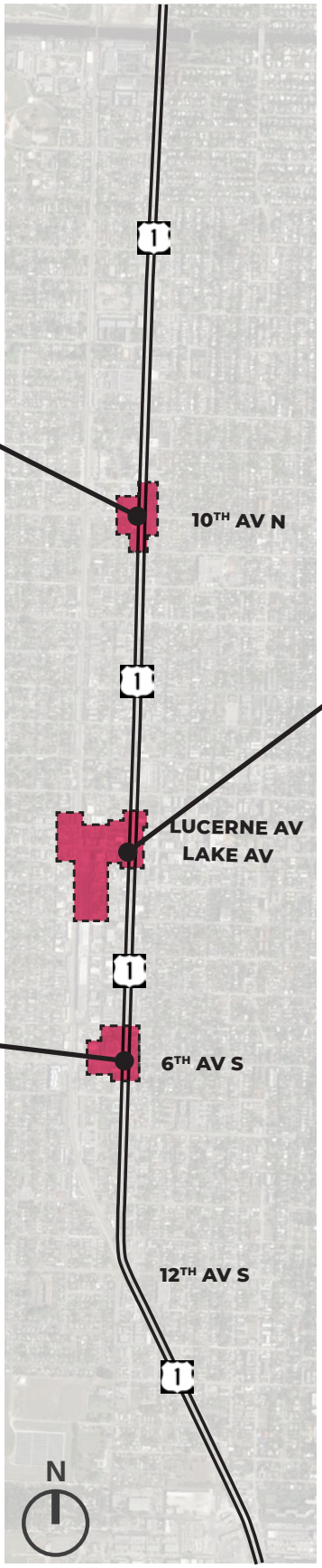
- Enhance pedestrian crossings at 6th Avenue South
- Maintain existing street network
- Focus any new redevelopment towards PTX station areas



10TH AVENUE NORTH

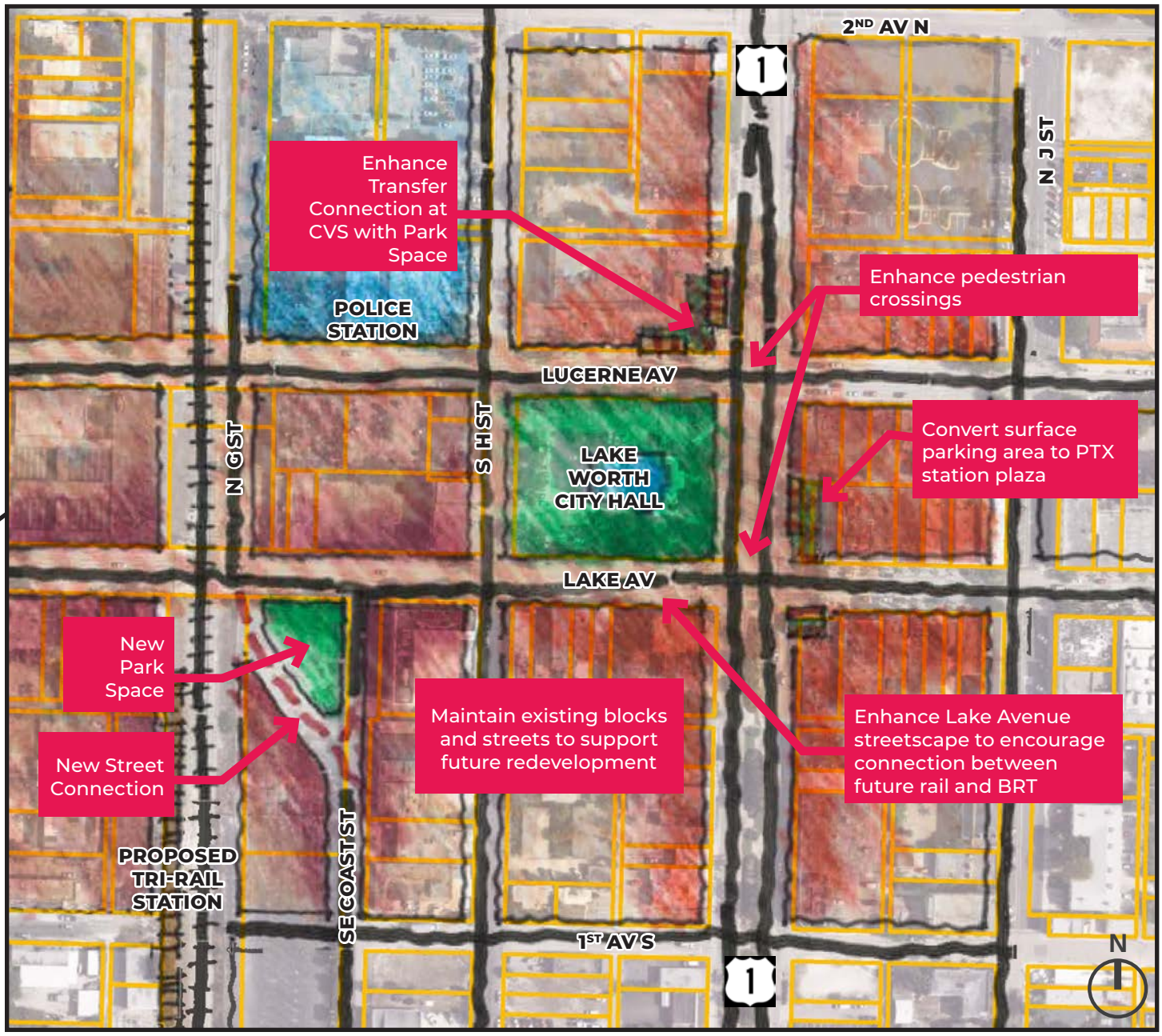


6TH AVENUE SOUTH



LEGEND

- New Street
- Proposed PTX Location
- New Park Space
- New Mixed-Use
- New Residential

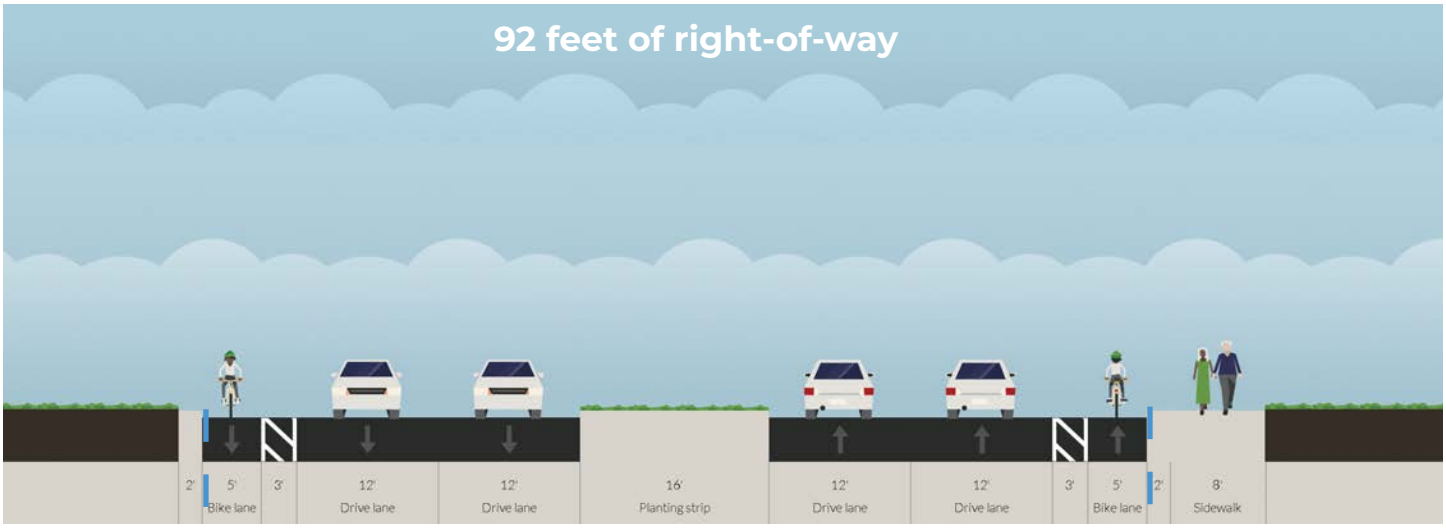


DOWNTOWN LAKE WORTH

Miner Road to Hypoluxo Road

Roll Plot No. 25-27

Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed

FDOT Context Classification: C3-Suburban

Existing Speed Limit: 40-45 mph

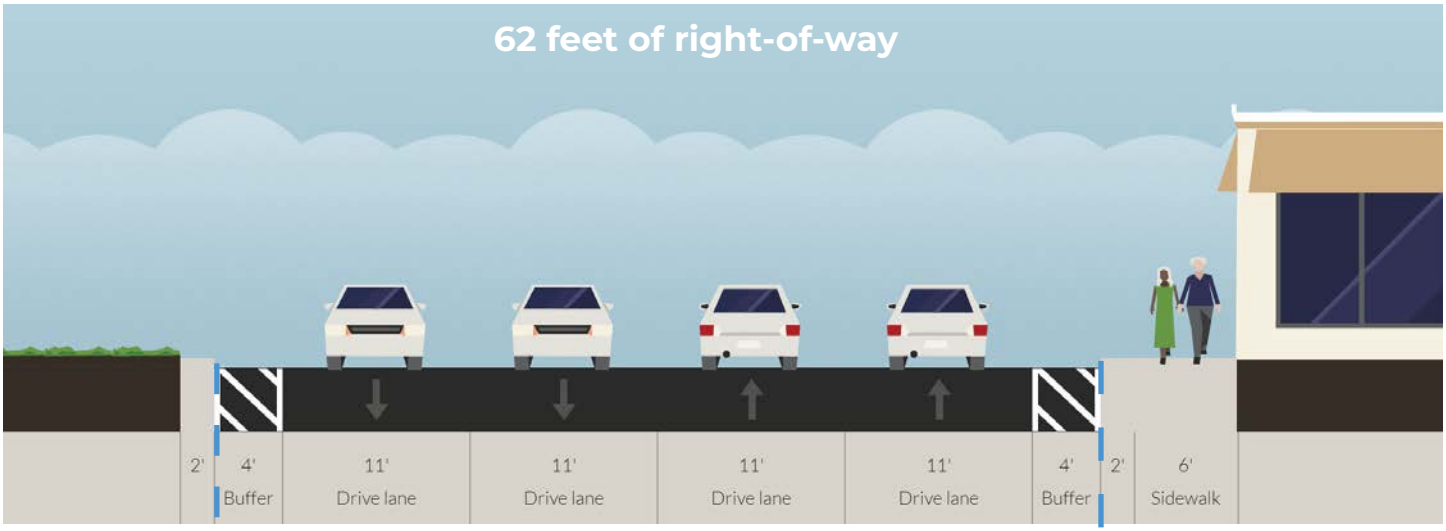
Length: 1.0 mile

Proposed Recommendations: Convert buffered bicycle lanes to separated bicycle lanes; obtain 10-foot easement for sidewalk on the west side

Hypoluxo Road to Central Boulevard

Roll Plot No. 27

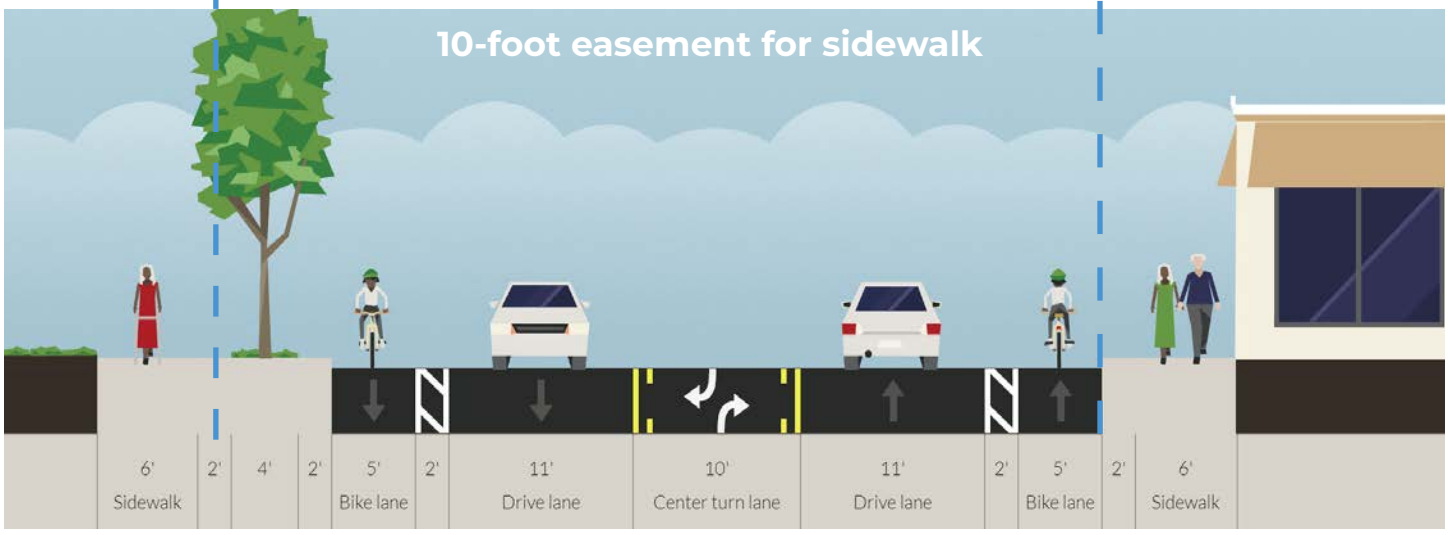
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C3-Suburban

Existing Speed Limit: 40 mph

Length: 0.3 miles

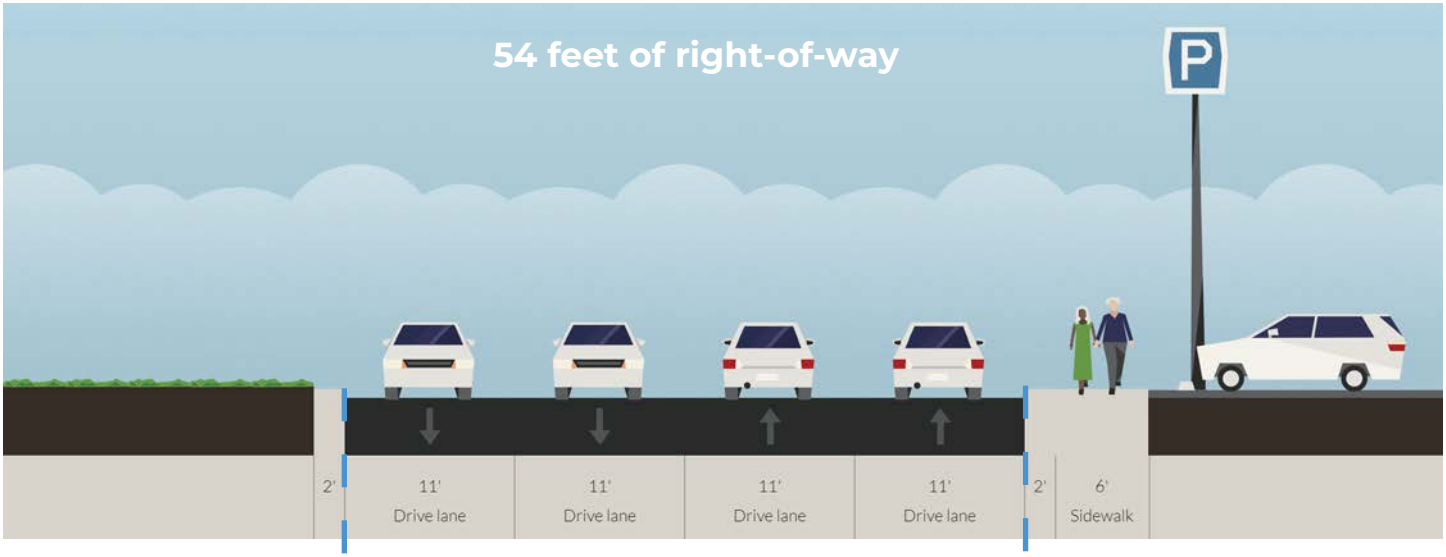
Projected 2040 Max Peak Hour Traffic Volume: 1,400 vphpd

Proposed Recommendations: Partial reconstruction and lane repurposing from 4L to 3L; add buffered bicycle lanes, obtain 10-foot easement for sidewalk on the west side and furnishing zone with street trees

Central Boulevard to Pine Street

Roll Plot No. 27-28

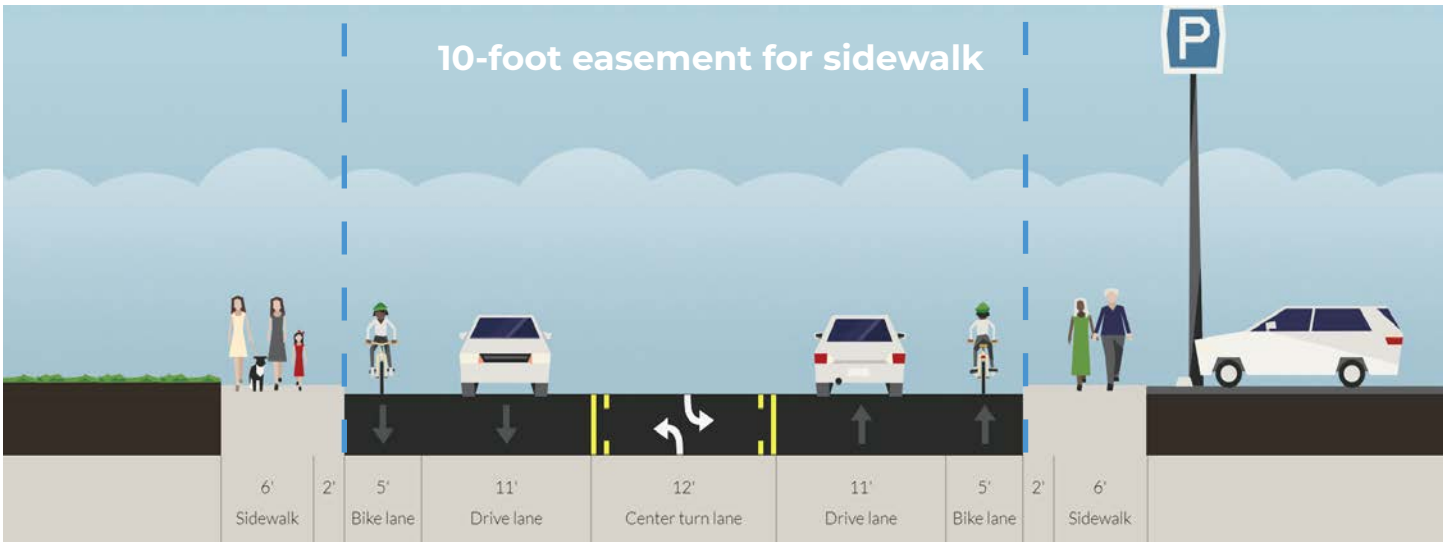
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C3-Suburban

Existing Speed Limit: 30-40 mph

Length: 0.5 miles

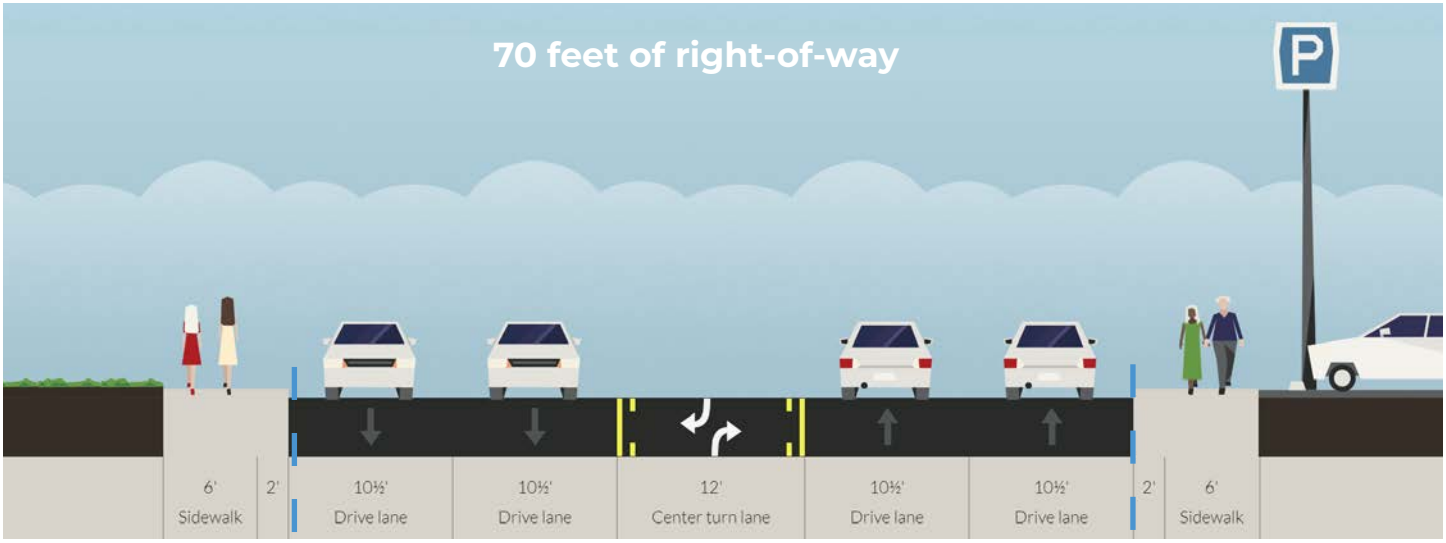
Projected 2040 Max Peak Hour Traffic Volume: 1,400 vphpd

Proposed Recommendations: Resurfacing and lane repurposing from 4L to 3L; add conventional bicycle lanes and obtain 10-foot easement for sidewalk on the west side

Pine Street to Lantana Road

Roll Plot No. 28

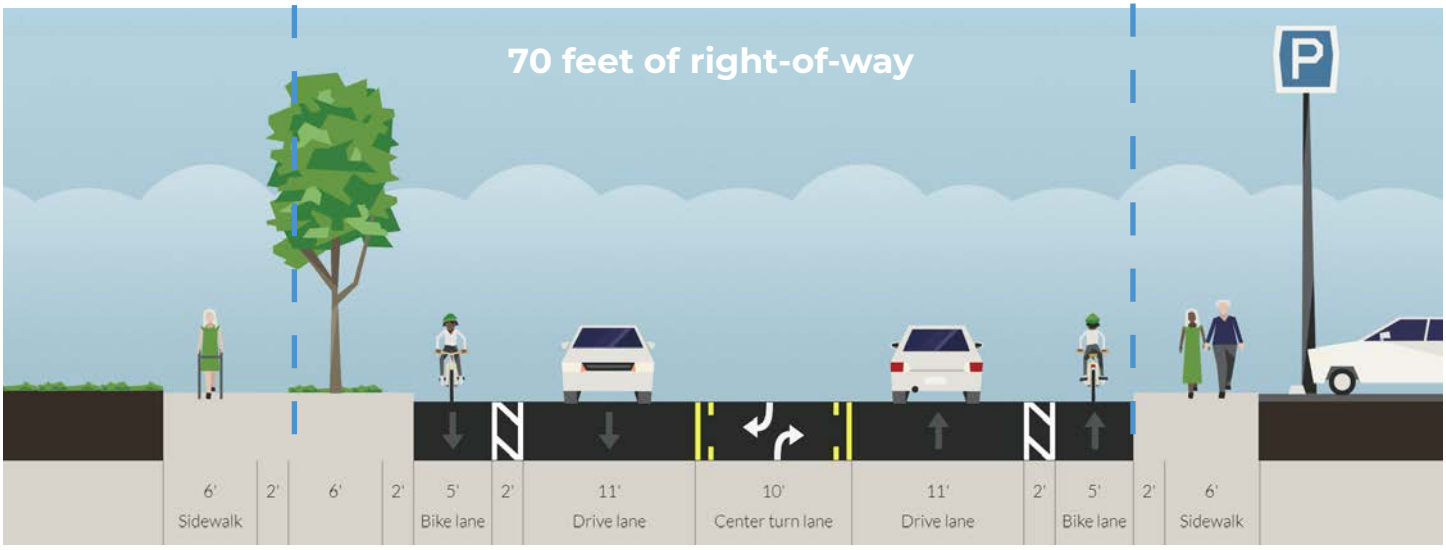
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C3-Suburban

Existing Speed Limit: 30 mph

Length: 0.3 miles

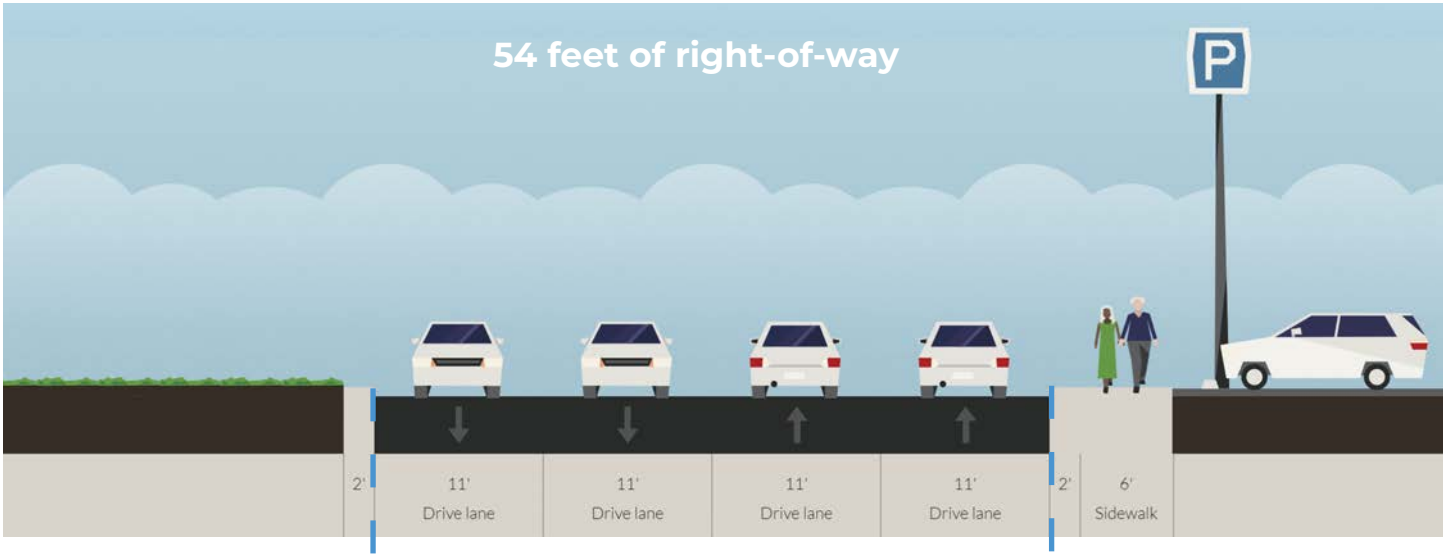
Projected 2040 Max Peak Hour Traffic Volume: 1,400 vphpd

Proposed Recommendations: Resurfacing and lane repurposing from 4L to 3L; add buffered bicycle lanes and furnishing zone with street trees

Lantana Road to Dixie Highway/Federal Highway Junction

Roll Plot No. 28-29

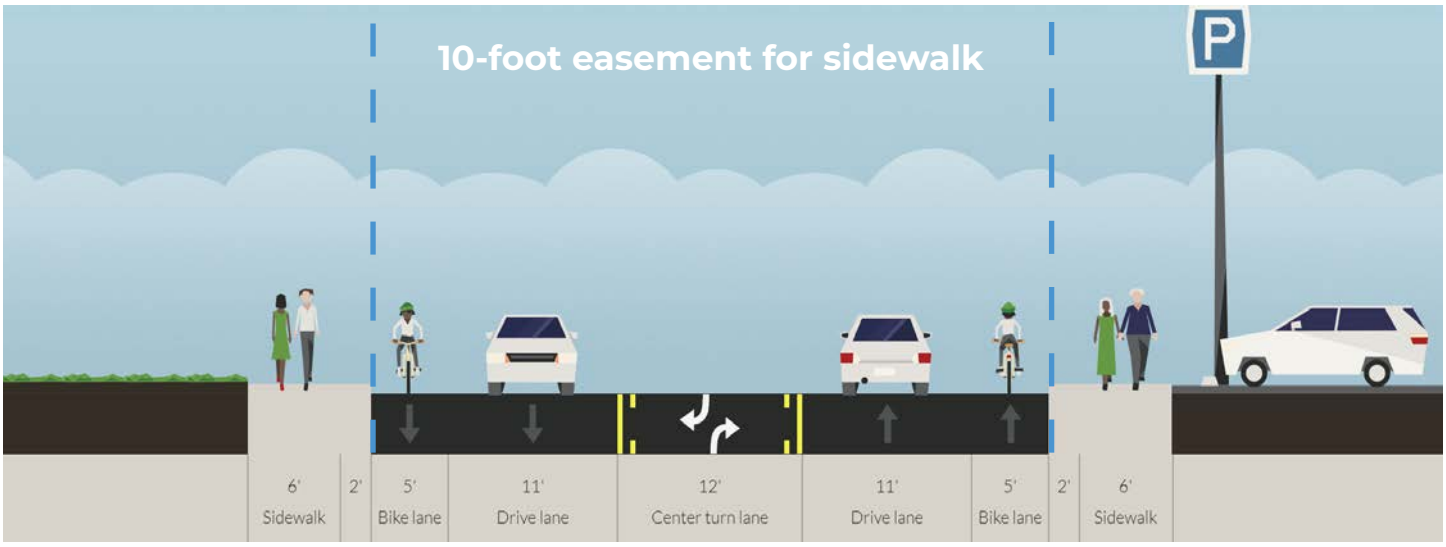
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C3-Suburban

Existing Speed Limit: 30 mph

Length: 0.4 miles

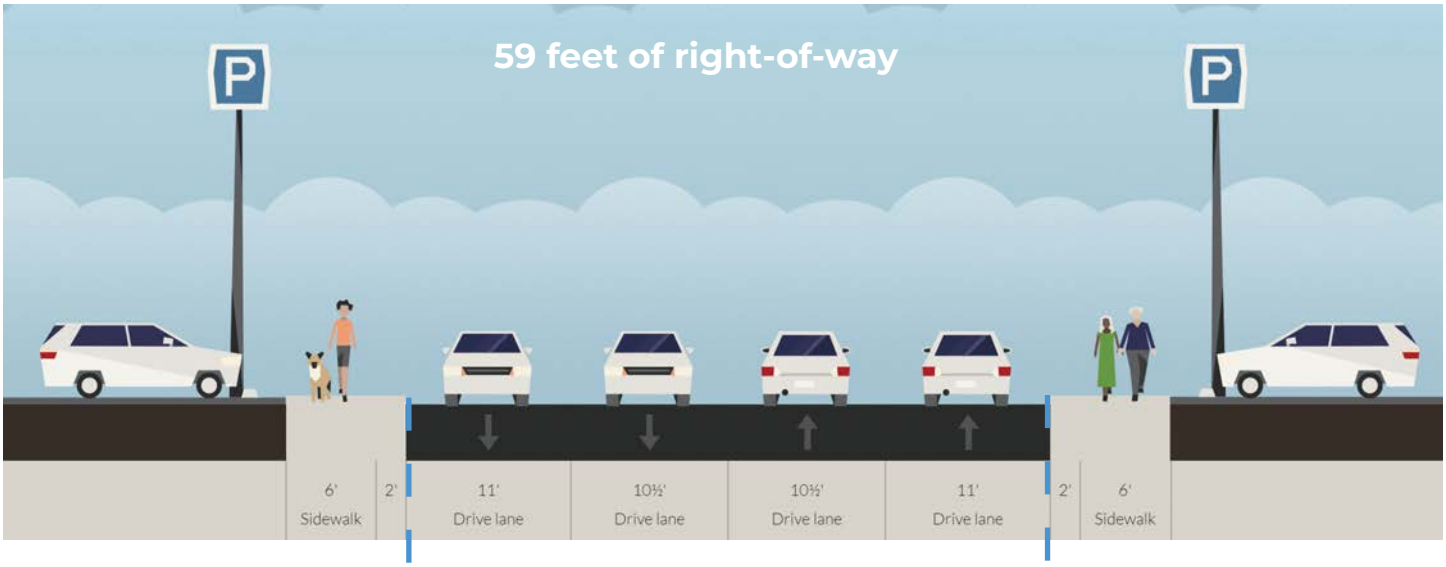
Projected 2040 Max Peak Hour Traffic Volume: 1,400 vphpd

Proposed Recommendations: Resurfacing and lane repurposing from 4L to 3L; add conventional bicycle lanes and obtain 10-foot easement for sidewalk on the west side

Dixie Highway/Federal Highway Junction to 2nd Avenue South

Roll Plot No. 29-31

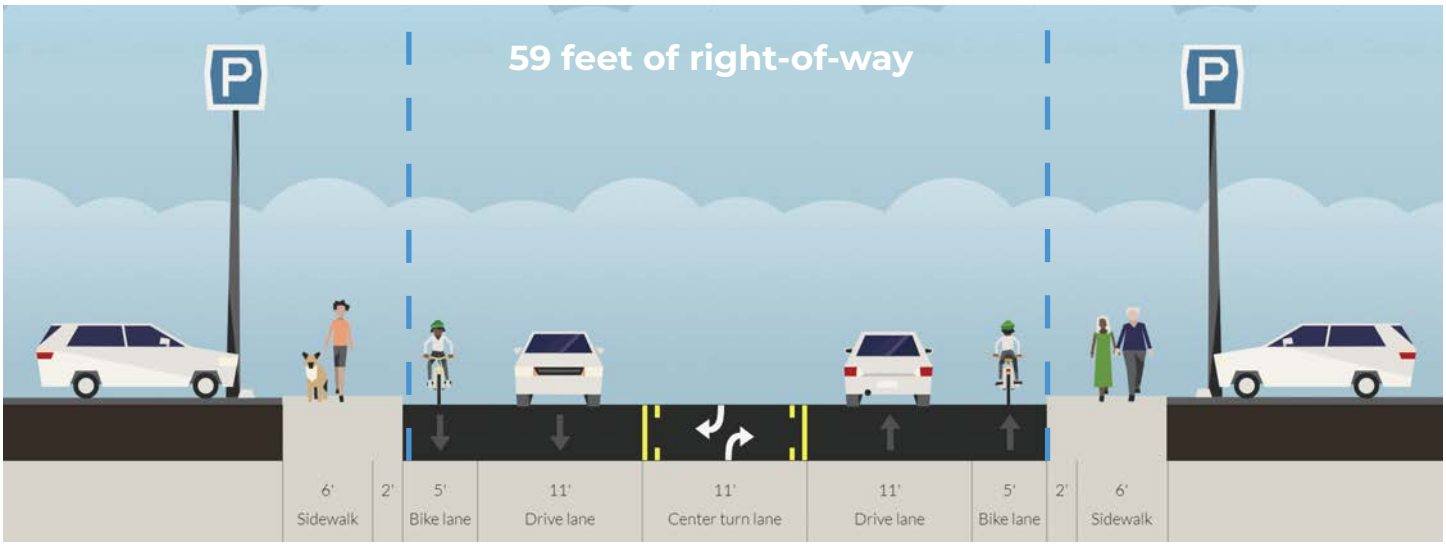
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C4-Urban General

Existing Speed Limit: 35 mph

Length: 1.5 miles

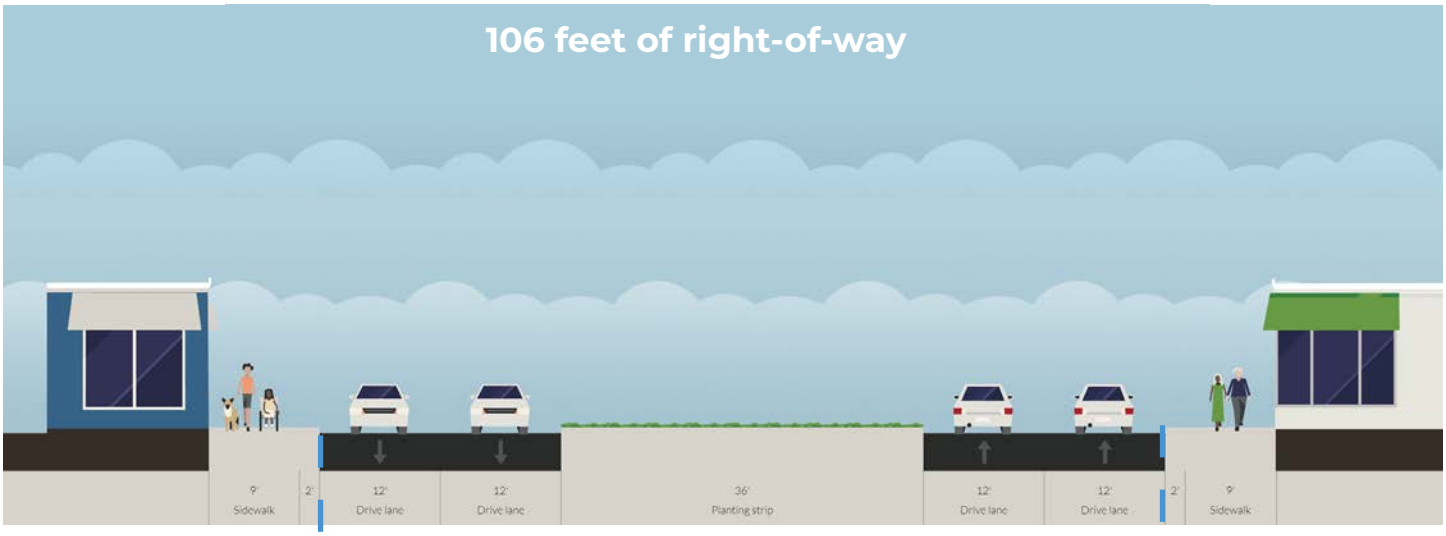
Projected 2040 Max Peak Hour Traffic Volume: 1,200 vphpd

Proposed Recommendations: Resurfacing and lane repurposing from 4L to 3L; add conventional bicycle lanes

2nd Avenue South to 2nd Avenue North

Roll Plot No. 31-32

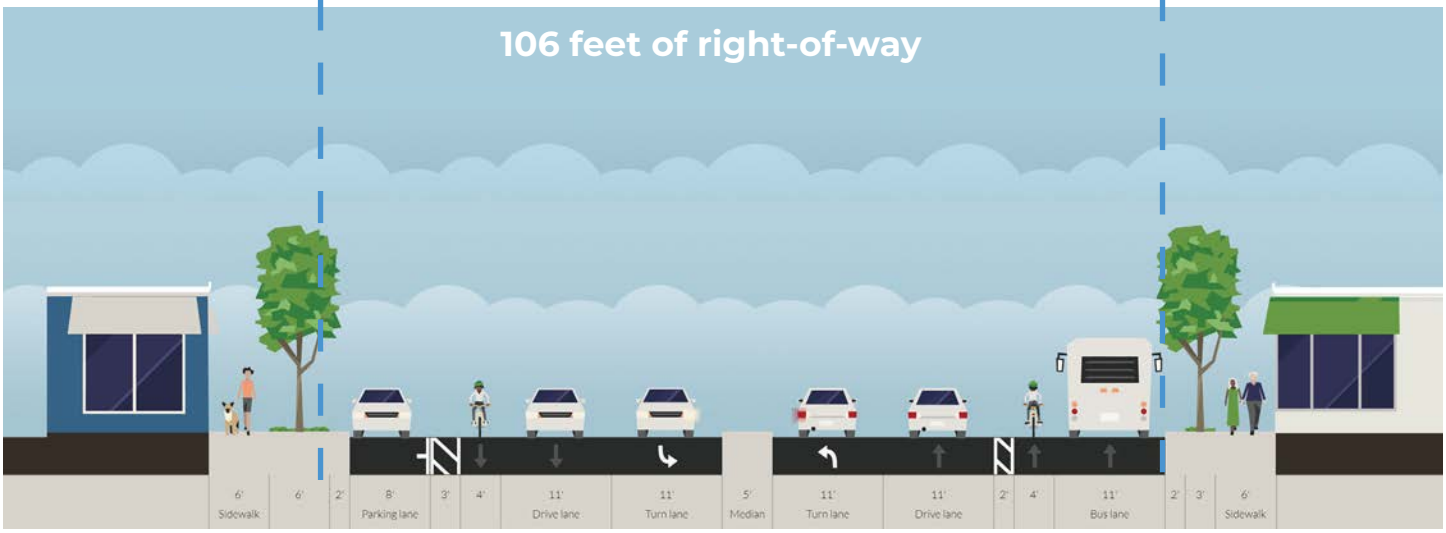
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C5-Urban Center

Existing Speed Limit: 35 mph

Length: 0.3 miles

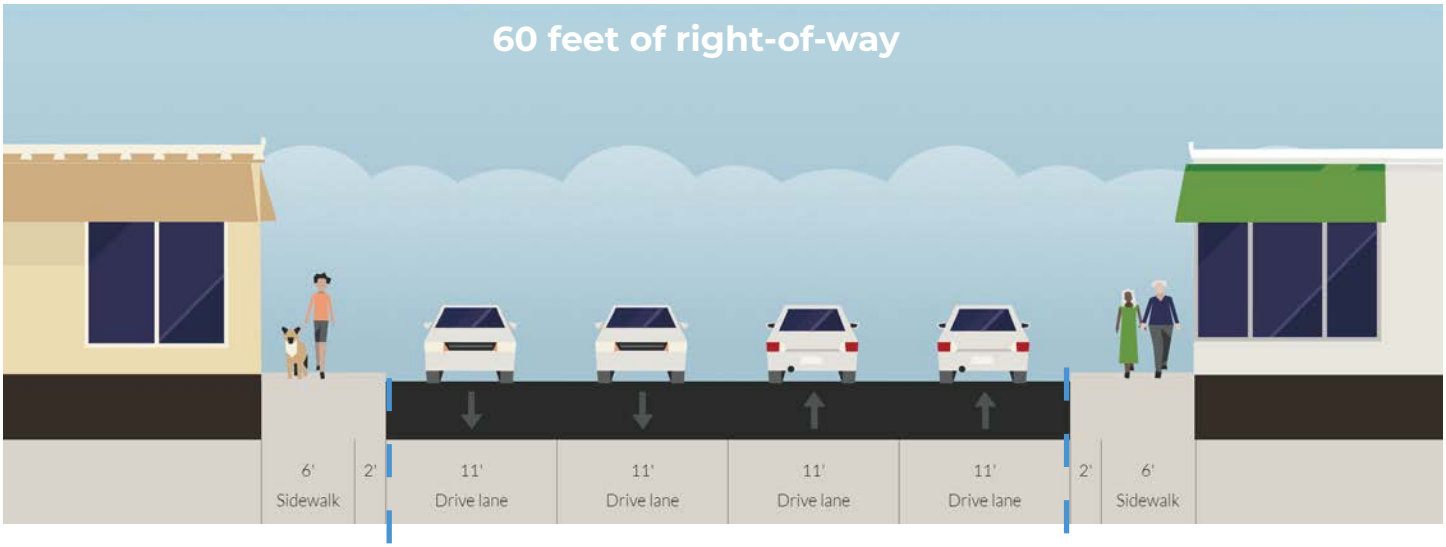
Projected 2040 Max Peak Hour Traffic Volume: 1,100-1,400 vphpd

Proposed Recommendations: Partial reconstruction (inside widening) and lane repurposing from 4L to 2L plus dedicated left-turn lanes and right-turn lanes; add bus queue jump lanes, buffered bicycle lanes, on-street parking and furnishing zones with street trees

2nd Avenue North to Gregory Road

Roll Plot No. 32-35

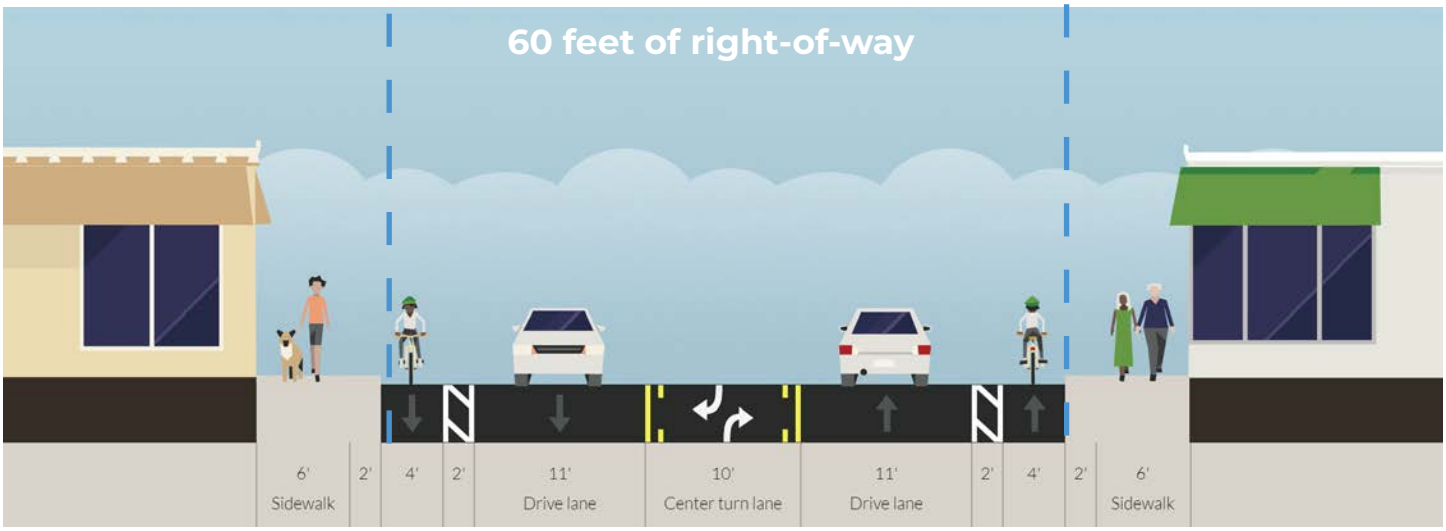
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C4-Urban General

Existing Speed Limit: 35 mph

Length: 2.0 miles

Projected 2040 Max Peak Hour Traffic Volume: 1,300-1,400 vphpd

Proposed Recommendations: Resurfacing and lane repurposing from 4L to 3L; add buffered bicycle lanes

Section 4: West Palm Beach

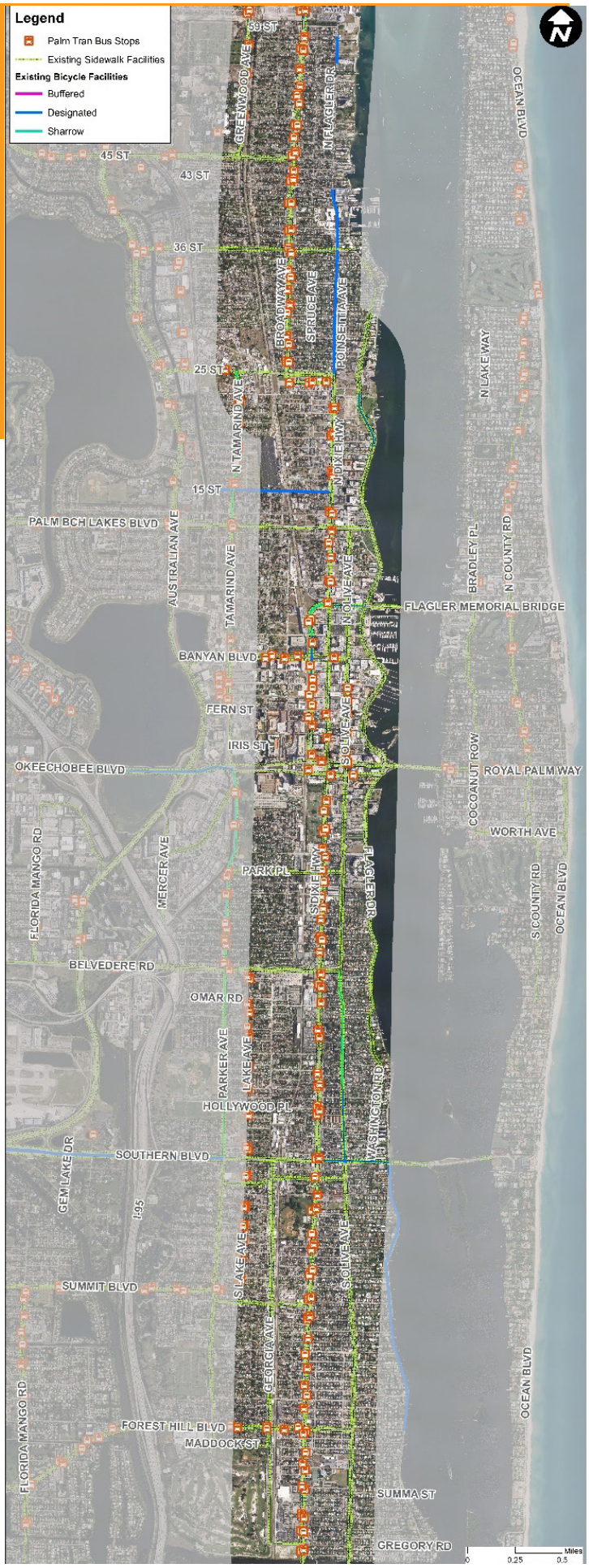
Existing Conditions

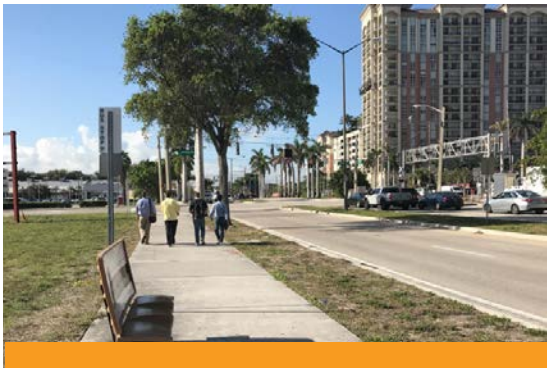
- Generally 4-lane or 5-lane undivided roadway with sidewalks and mostly no bicycle facilities.
- Frequent bus stops but very few have shelters, shade, or lighting.
- Frequent driveways and street crossings
- West Palm Beach Brightline Station
- “The Tent Site”

HIA FAST FACTS

- West Palm Beach Population: 67,400 Residents
- Highest multimodal split on the corridor (10%)
- 21% is in poverty
- 42% have high hypertension
- High percentage of racial and ethnic minorities
- High percentage of transit dependent households
- High frequency of bicycle and pedestrian fatalities (3.1/mile)

Section 4 contains Roll Plot No. 35-48. Specific Roll Plot No. for Individual Typical Sections are listed on the following pages.


Legend
Palm Tran Bus Stops
Existing Sidewalk Facilities
Existing Bicycle Facilities
Buffered
Designated
Sharrow
59 ST
45 ST
43 ST
36 ST
25 ST
15 ST
GREENWOOD AVE
N FLAGLER DR
OCEAN BLVD
BROADWAY AVE
SPRUCE AVE
POINSETTIA AVE
N LAKE WAY
N TAMARIND AVE
N DIXIE HWY
PALM BCH LAKES BLVD
AUSTRALIAN AVE
TAMARIND AVE
N OLIVE AVE
BRADLEY PL
N COUNTY RD
FLAGLER MEMORIAL BRIDGE
BANYAN BLVD
FERN ST
IRIS ST
S OLIVE AVE
OKEECHOBEE BLVD
ROYAL PALM WAY
COCOANUT ROW
WORTH AVE
FLORIDA MANGO RD
MERCER AVE
PARK PL
SDIXIE HWY
FLAGLER DR
S COUNTY RD
OCEAN BLVD
BELVEDERE RD
OMAR RD
PARKER AVE
LAKE AVE
HOLLYWOOD PL
WASHINGTON RD
SOUTHERN BLVD
GEM LAKE DR
I-95
S LAKE AVE
SOLIVE AVE
SUMMIT BLVD
GEORGIA AVE
OCEAN BLVD
FLORIDA MANGO RD
FOREST HILL BLVD
MADDOCK ST
SUMMA ST
GREGORY RD
0
0.25
0.5
Miles




MAY USE
FULL LANE

CITY OF WEST PALM BEACH

CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

BELVEDERE RD

- Town Center redevelopment with pedestrian-scaled streets with mix of land uses including higher density residential with street-facing buildings
- Green/Park space at US-1 and Belvedere as gateway into local neighborhoods, green space should also function for stormwater management

SOUTHERN BLVD

- Green/Park space as focus of PTX stations and areas for stormwater management
- Encourage a mix of land uses including higher density residential with street-fronting buildings
- Incorporate alleys to offset access from US-1

FOREST HILL BLVD

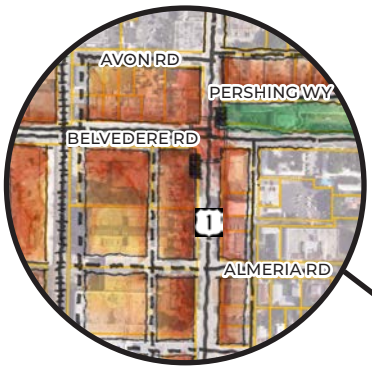
- Focus on pedestrian crossing improvements at Forest Hill Boulevard and US-1
- Connect PTX stations to school with a shared-use trail on Brevard Avenue

GREGORY RD / ALHAMBRA PL

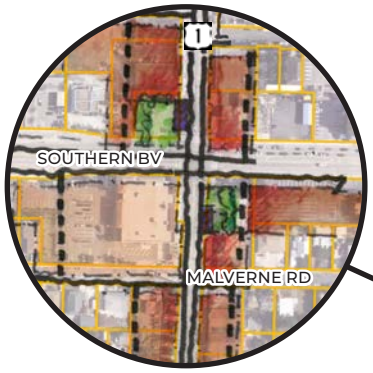
- Town Center redevelopment with new, pedestrian-scaled streets with mix of land uses including higher density residential and street-fronting buildings
- Green/Park space as focus of BRT station
- Connect to future rail through "greenways" in the Town Center redevelopment

LEGEND

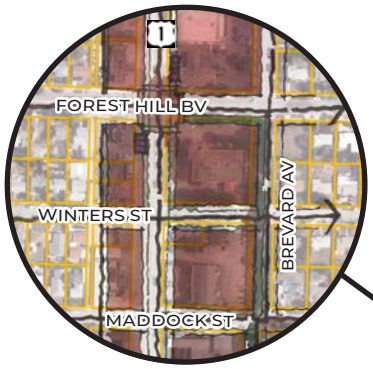
- New Street
- Pedestrian Connection
- Proposed PTX Location
- New Park Space
- New Mixed-Use
- New Residential



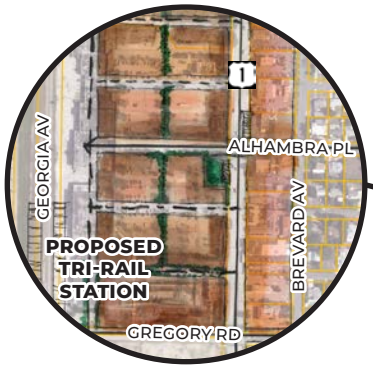
BELVEDERE RD



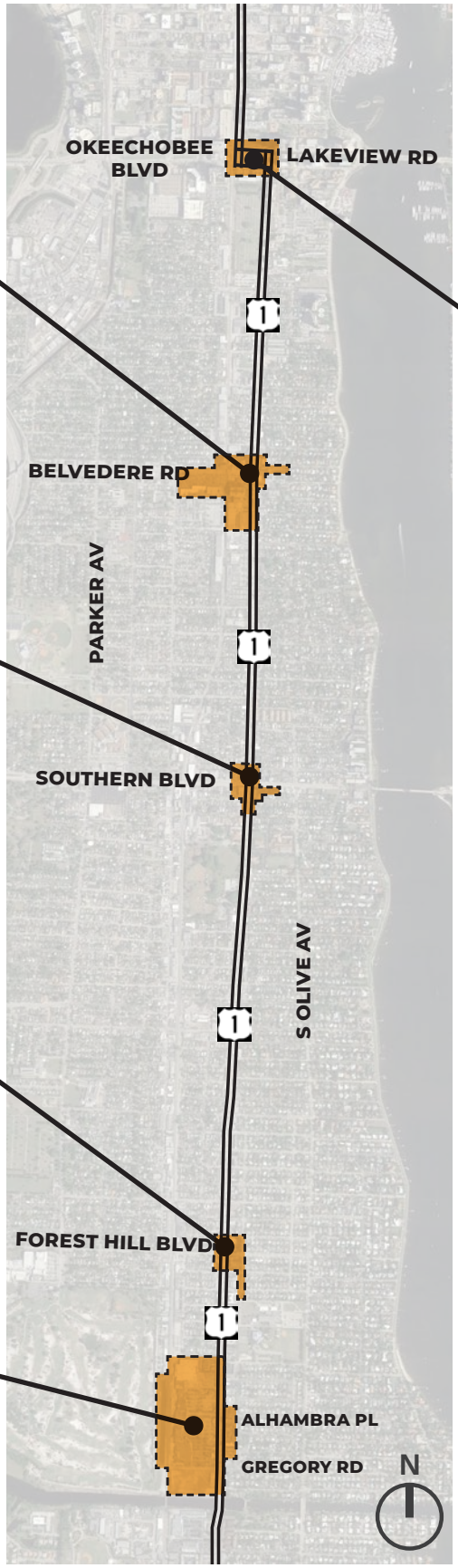
SOUTHERN BLVD

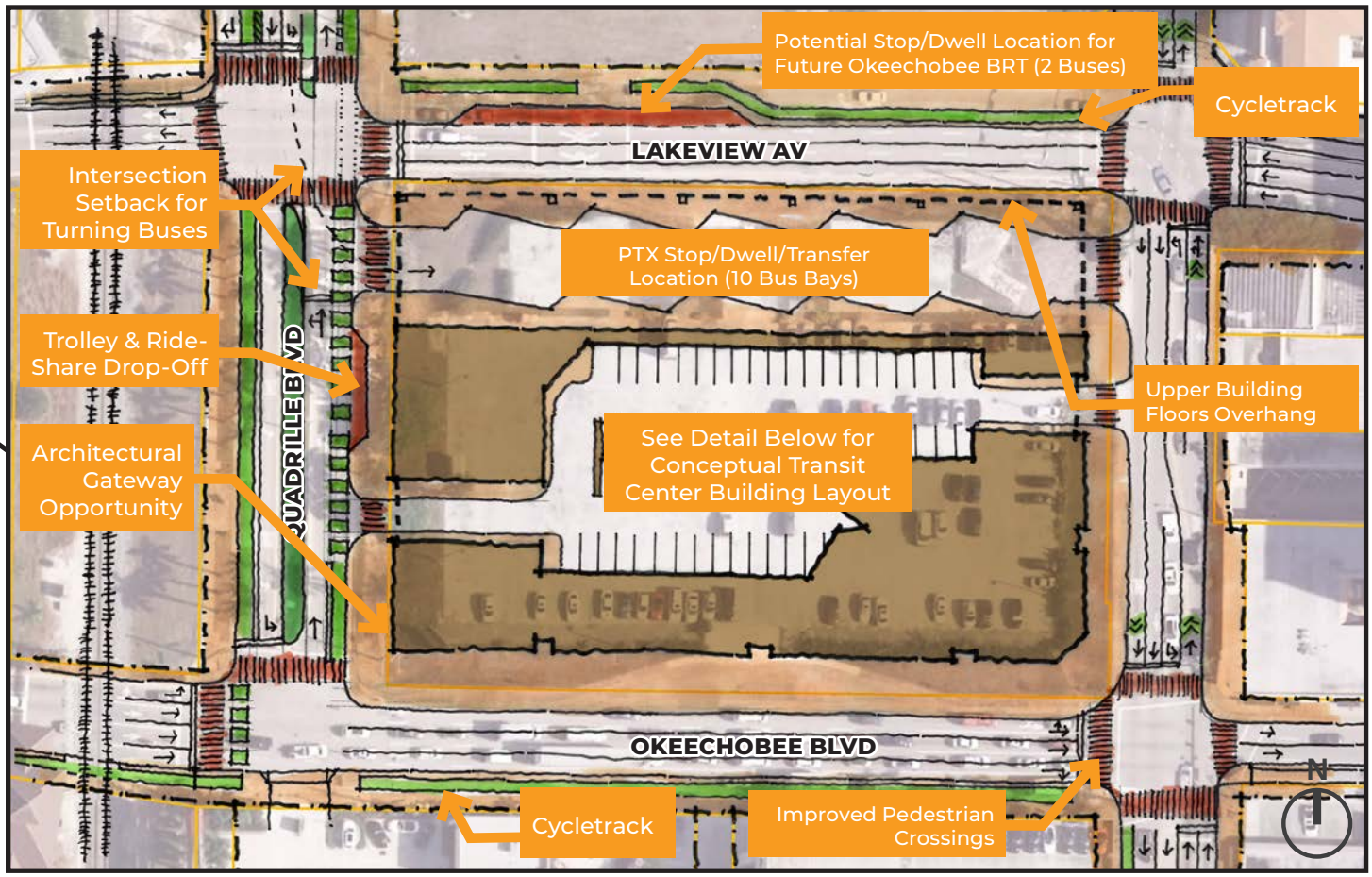


FOREST HILL BLVD

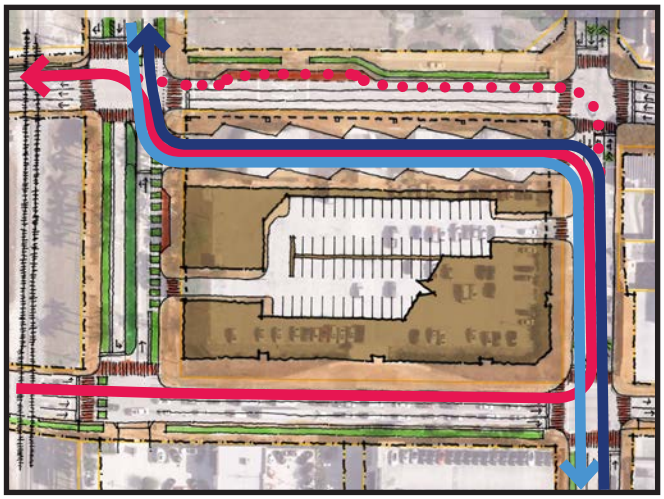


GREGORY RD / ALHAMBRA PL



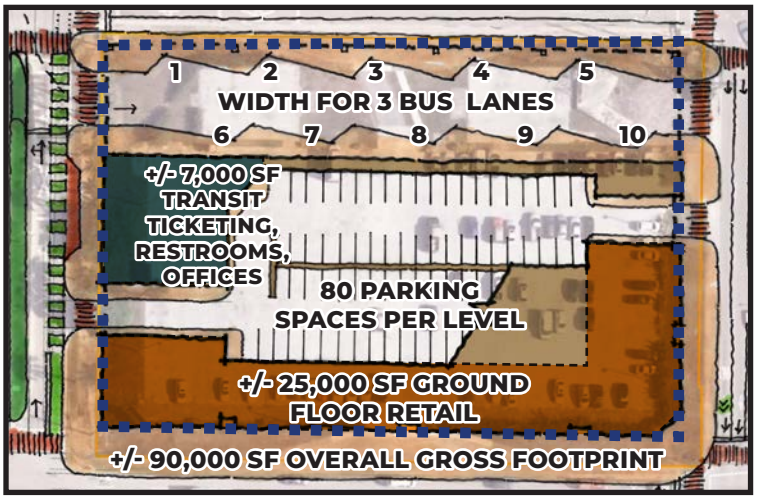


OKEECHOBEE BLVD, US-1, LAKEVIEW AVE, AND QUADRILLE BLVD: THE "TENT SITE"



PROPOSED ROUTING OPTIONS

- NORTHBOUND PTX ROUTE
- SOUTHBOUND PTX ROUTE
- WEST/EASTBOUND FUTURE OKEECHOBEE BRT
- ALTERNATE OKEECHOBEE BRT DWELL/STOP



TRANSIT CENTER + MIXED-USE/HOTEL CONCEPTUAL LAYOUT

CITY OF WEST PALM BEACH

CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

45TH ST

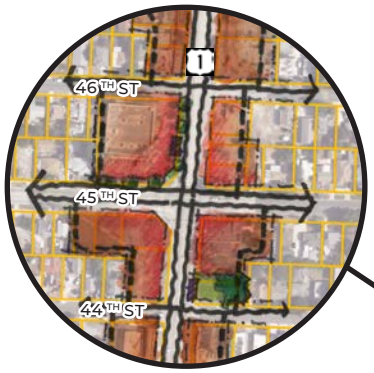
- New mixed-use on vacant corner including higher density residential and street-fronting buildings
- Green/Park space adjacent to PTX station
- Pedestrian improvements at crosswalk to connect both PTX stations

NORTHWOOD

- Existing park space as focus of PTX stations
- Maintain existing redevelopment efforts - buildings fronting the street
- Examine 24th Street and/or Northwood Rd extension east of US-1

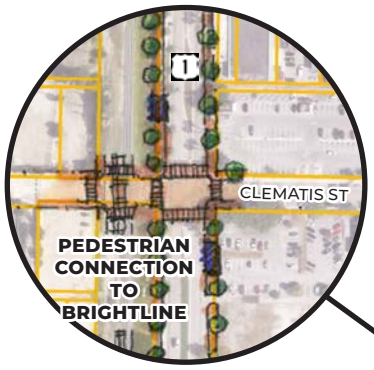
DOWNTOWN WEST PALM BEACH

- Well-designed (considering safety and urban art/ design) intersection crossings at Clematis Street and Railroad Crossing *AND* Clematis St and Quadrille Blvd
- Pedestrian and bicycle connections from PTX stations to Brightline Station

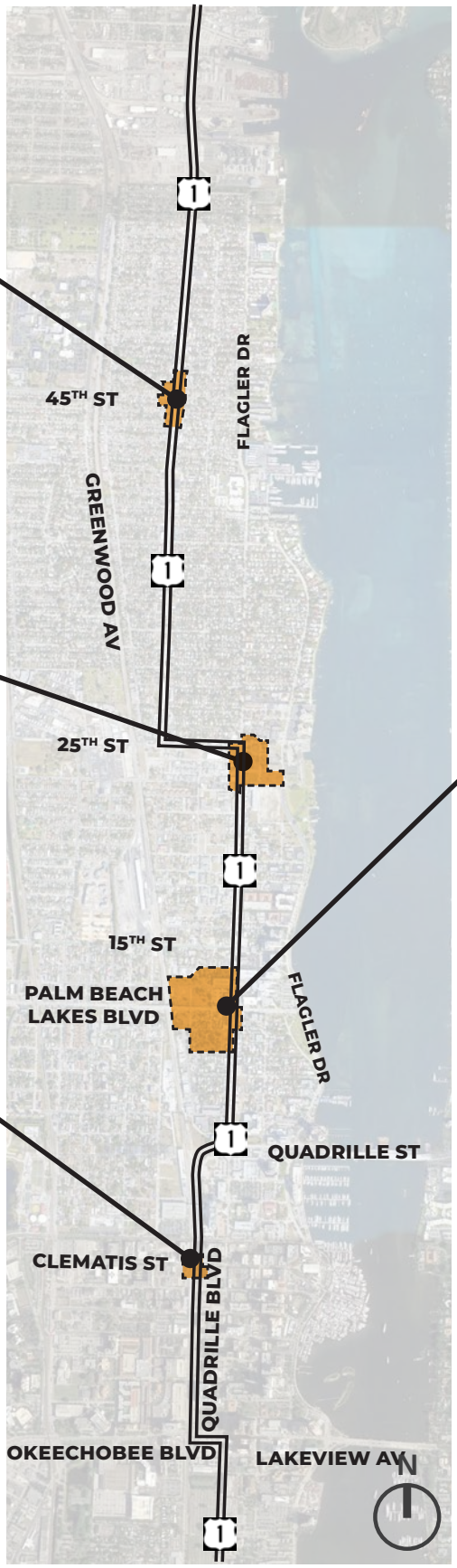


45TH ST

NORTHWOOD

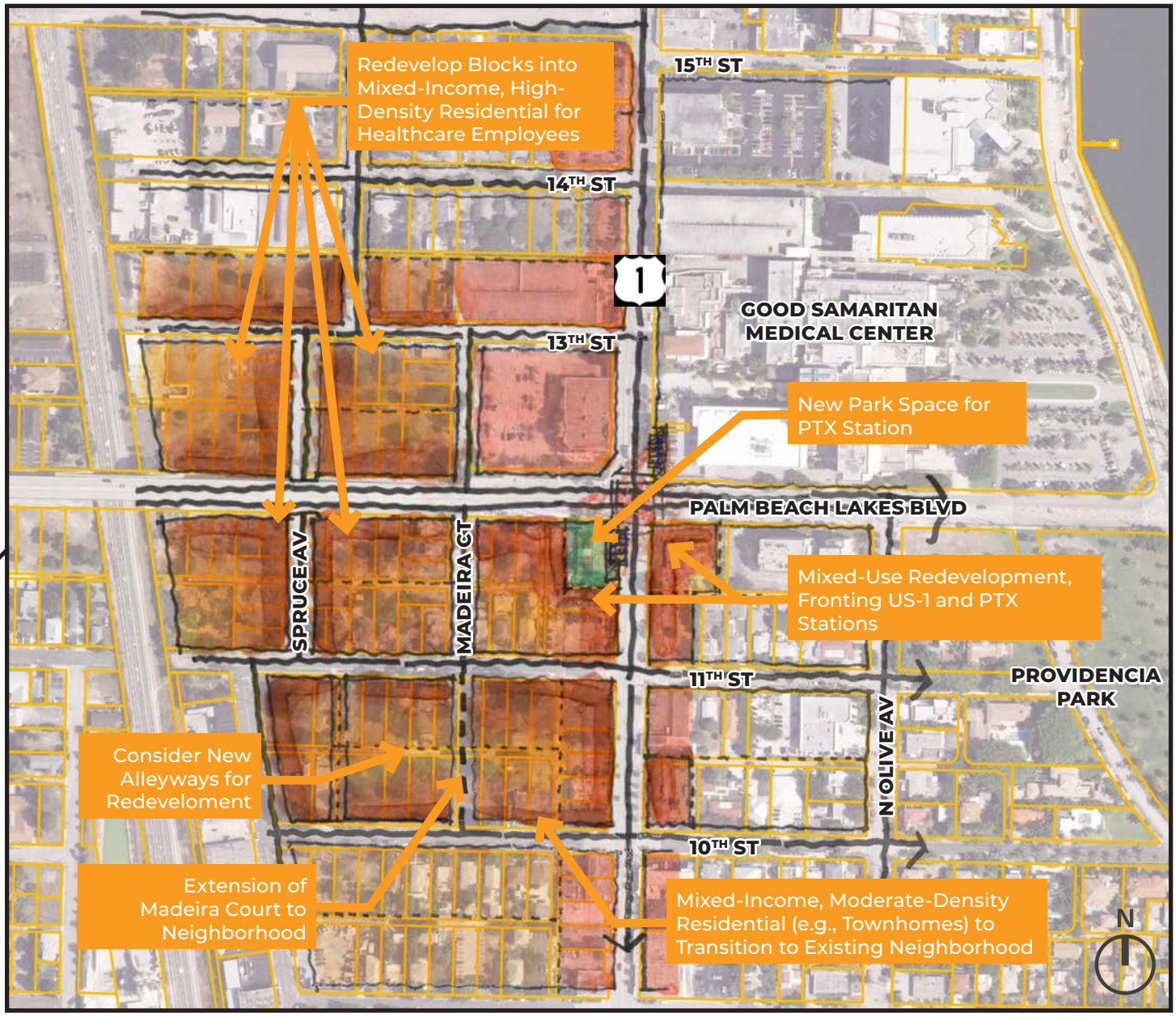


DOWNTOWN WEST PALM BEACH



LEGEND

- New Street
- Pedestrian Connection
- Proposed PTX Location
- New Park Space
- New Mixed-Use
- New Residential

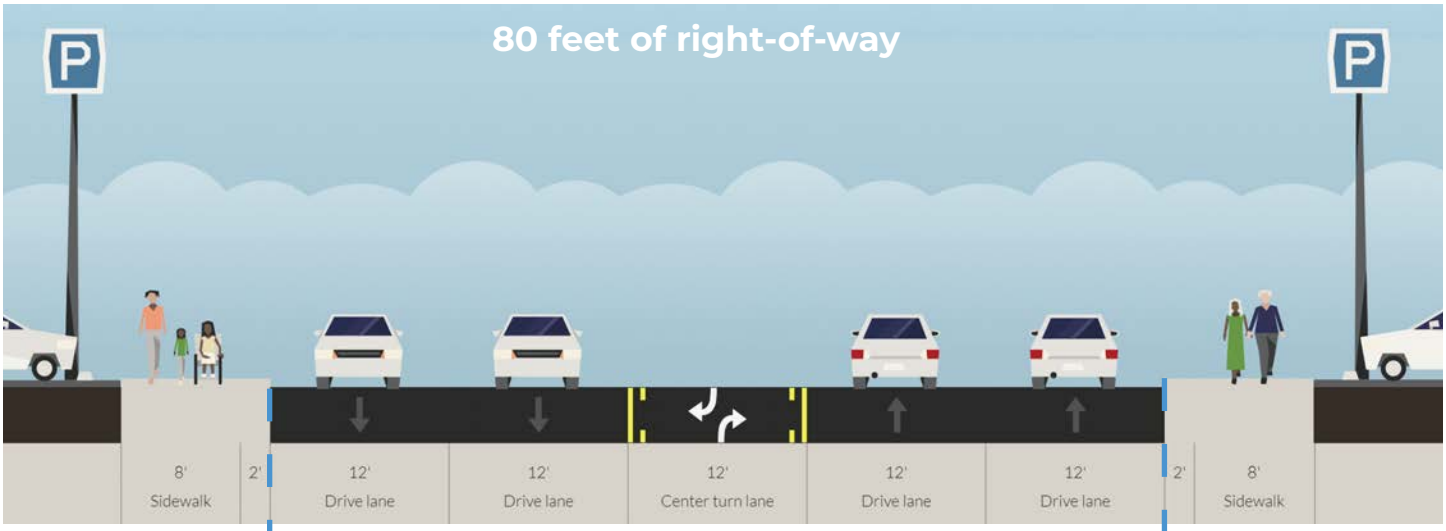


PALM BEACH LAKES BLVD / GOOD SAMARITAN MEDICAL CENTER

Gregory Road to Forest Hill Boulevard

Roll Plot No. 32-36

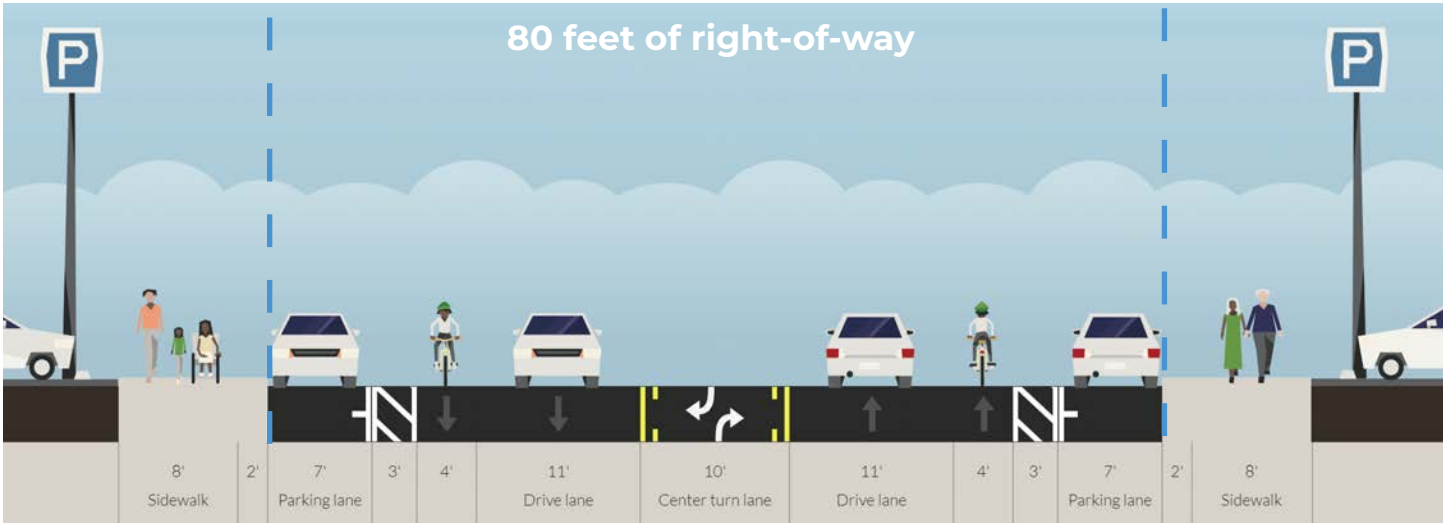
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C4-Urban General

Existing Speed Limit: 35 mph

Length: 0.6 miles

Projected 2040 Max Peak Hour Traffic Volume: 1,000-1,100 vphpd

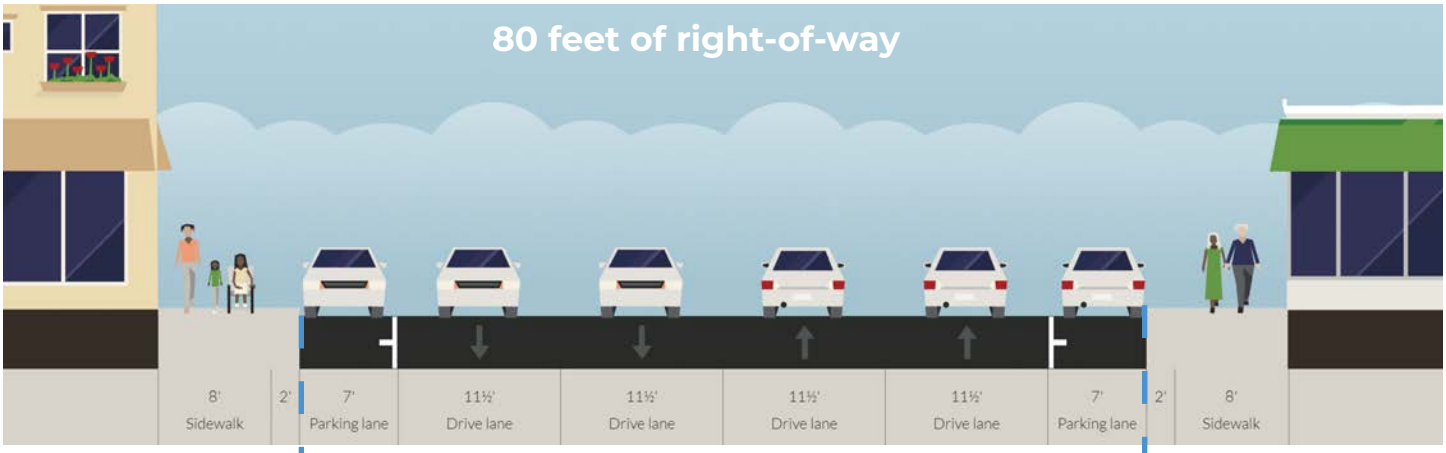
Proposed Recommendations: Resurfacing and lane repurposing from 4L to 3L; add buffered bicycle lanes and parking

Ongoing Efforts: TCRPC is conducting a Forest Hill Boulevard Complete Streets Corridor Plan from I-95 to US-1.

Forest Hill Boulevard to Belvedere Road

Roll Plot No. 36-40

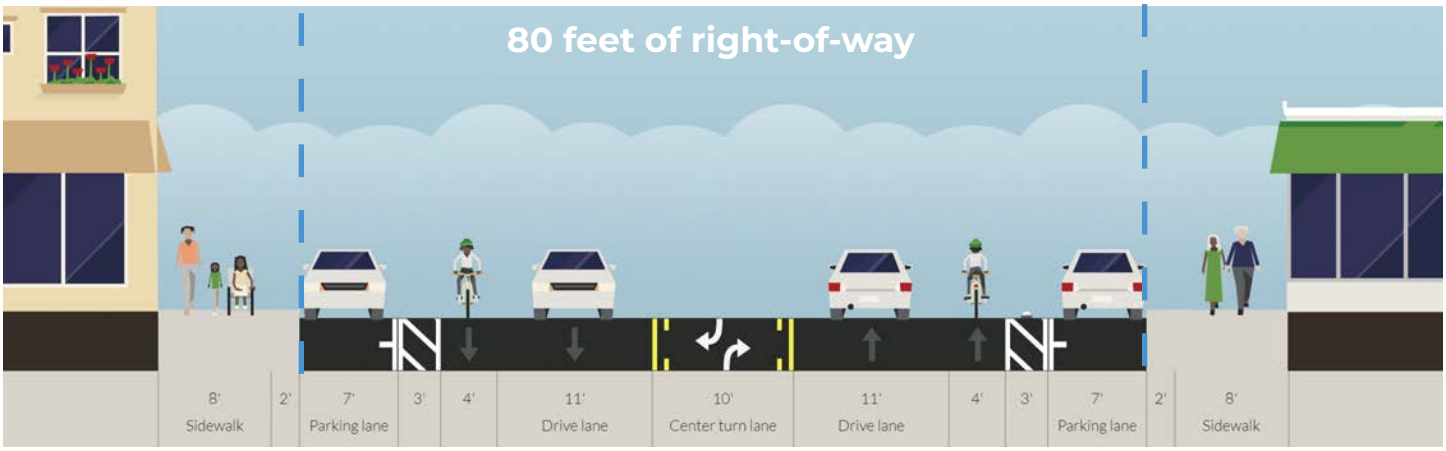
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C4-Urban General

Existing Speed Limit: 35 mph

Length: 2.4 miles

Projected 2040 Max Peak Hour Traffic Volume: 1,000-1,100 vphpd

Proposed Recommendations: Resurfacing and lane repurposing from 4L to 3L; add buffered bicycle lanes

Proposed Speed Limit: 30 mph

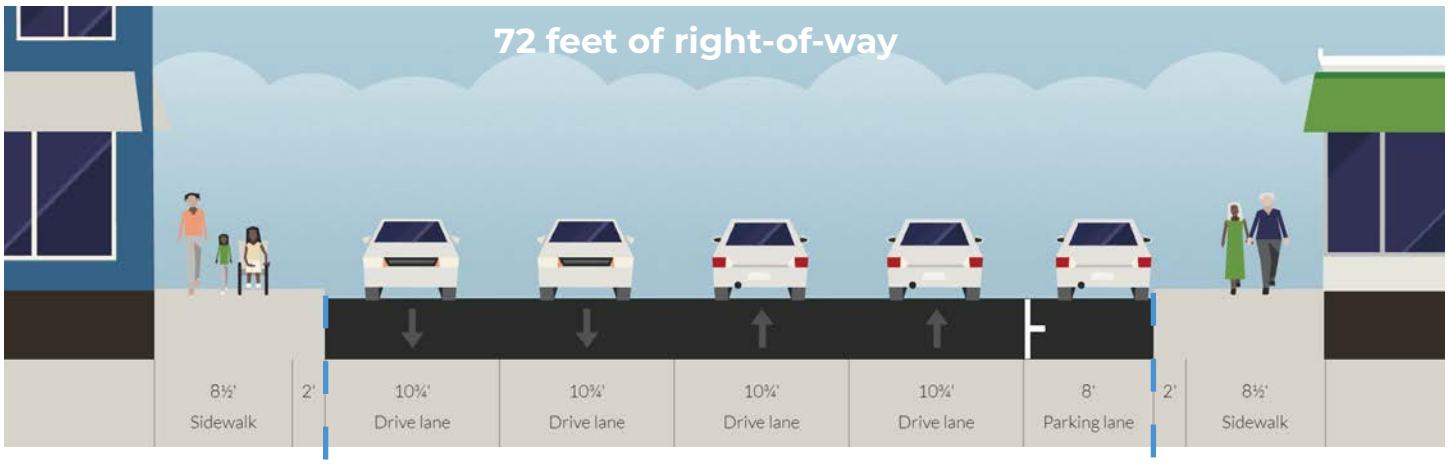
Ongoing Efforts: TCRPC is conducting a Forest Hill Boulevard Complete Streets Corridor Plan. The City of West Palm Beach is conducting a South Dixie Corridor Master Plan from Albemarle Road to Okeechobee Boulevard to incorporate complete street improvements.

Local Preference: The City of West Palm Beach is working with FDOT to implement a complete street project from Albemarle Road to Okeechobee Road that will provide wider sidewalks, lower vehicle speeds and sharrows to promote bicycle visibility in lieu of the proposed recommendations.

Belvedere Road to Okeechobee Boulevard

Roll Plot No. 40-41

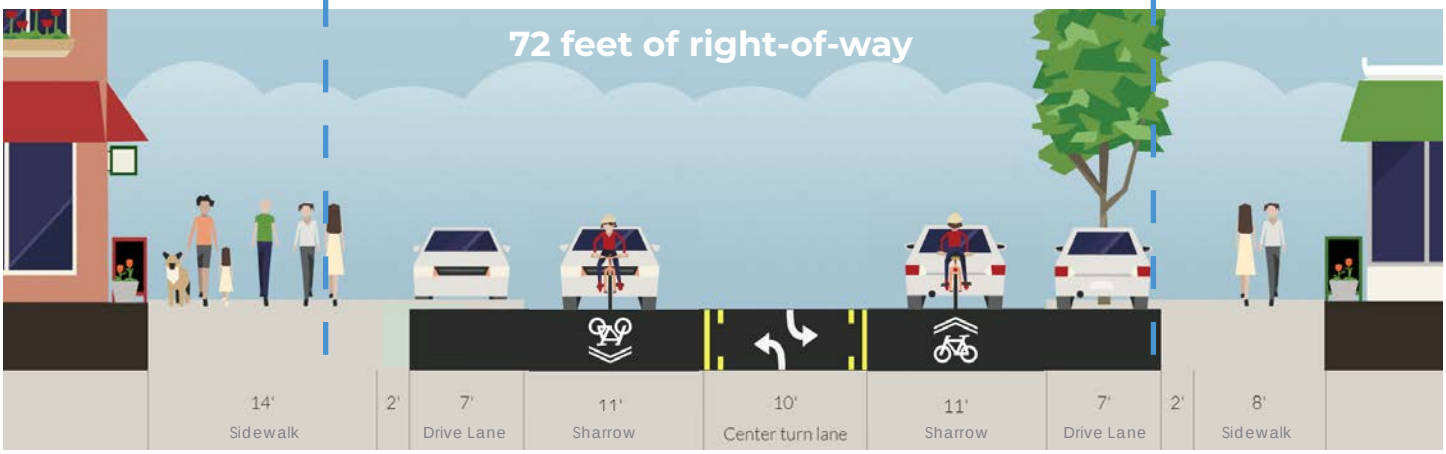
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C5-Urban Center

Existing Speed Limit: 35 mph

Length: 1.0 mile

Projected 2040 Max Peak Hour Traffic Volume: 1,300 vphpd

Proposed Recommendations: Full reconstruction and lane repurposing from 4L to 3L; add sharrows; add wider sidewalks on west side, add on-street parking on the east side alternating with landscape bulb-outs/street trees

Proposed Speed Limit: 25 mph

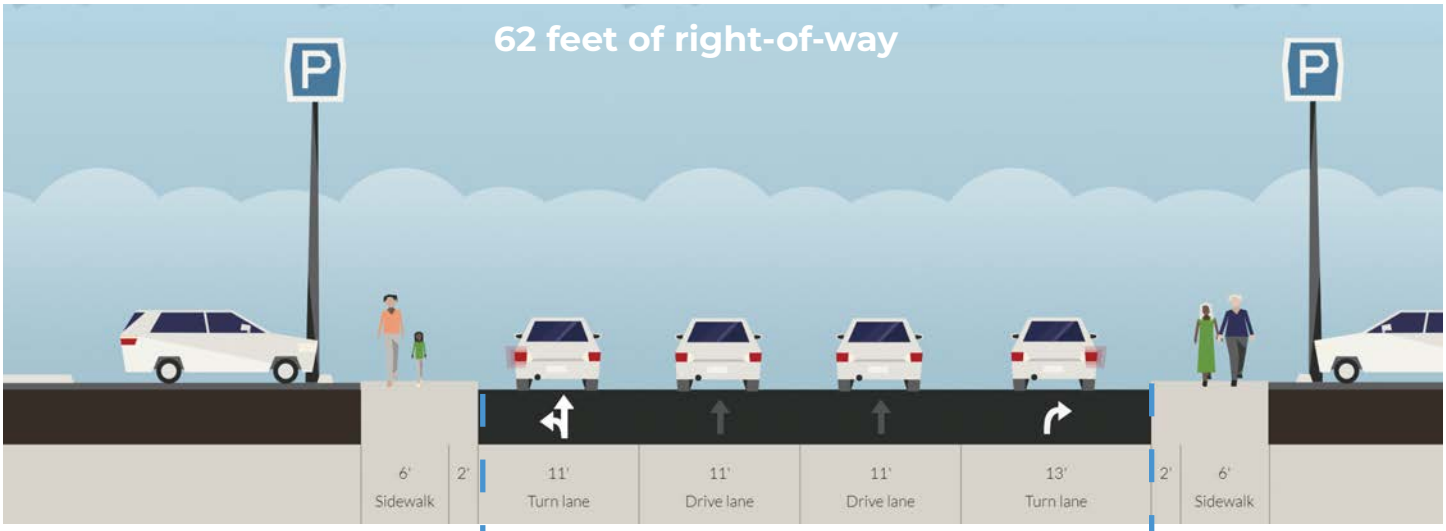
Ongoing Efforts: The City of West Palm Beach is conducting a South Dixie Corridor Master Plan from Albemarle Road to Okeechobee Road to incorporate complete street improvements.

Local Preference: The City of West Palm Beach is working with FDOT to implement a complete street project from Albemarle Road to Okeechobee Road that will provide wider sidewalks, lower vehicle speeds and sharrows to promote bicycle visibility in lieu of the proposed recommendations.

Okeechobee Boulevard/Lakeview Avenue pair

Roll Plot No. 41

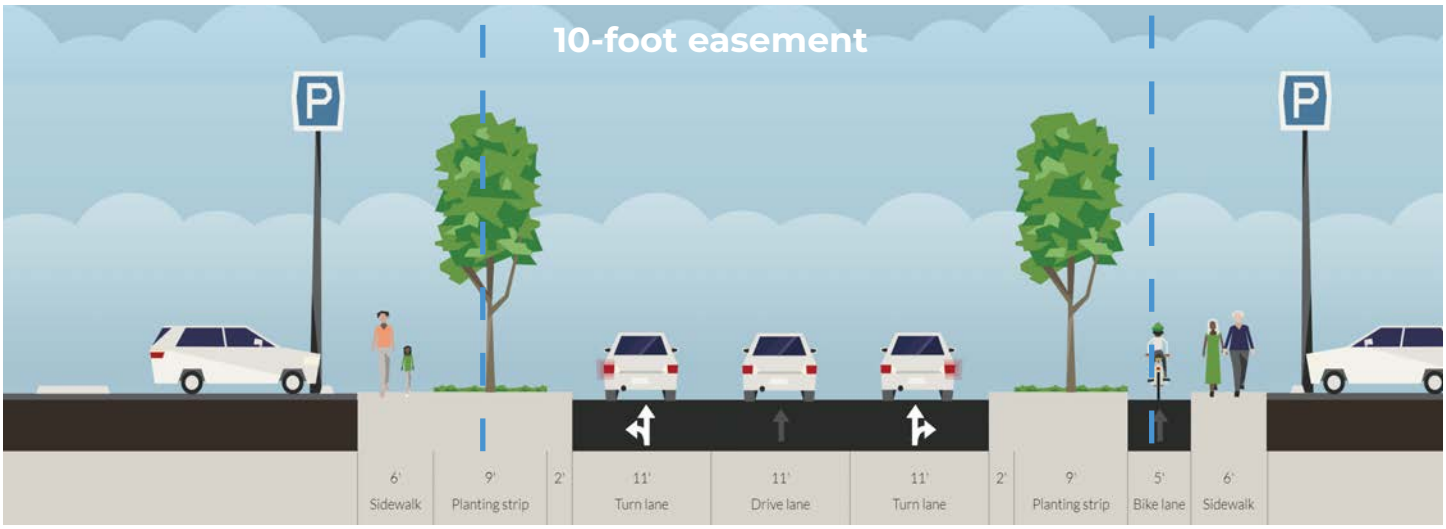
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C6-Urban Core

Existing Speed Limit: 35 mph

Length: 0.1 miles

Projected 2040 Max Peak Hour Traffic Volume: 1,700 vphpd

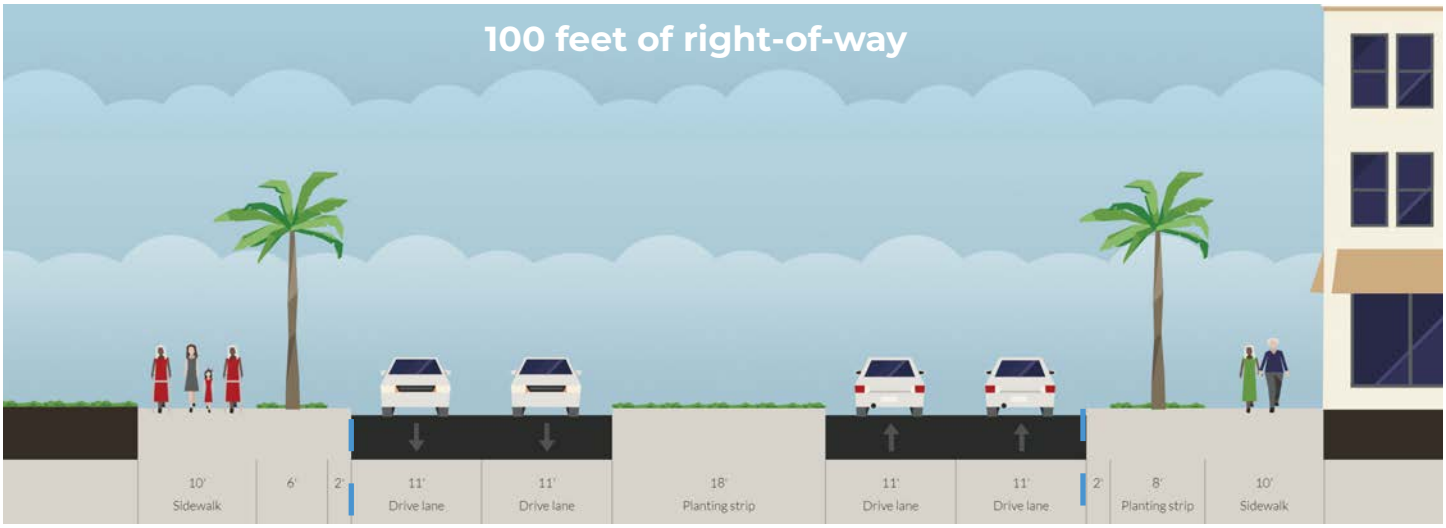
Ongoing Efforts: The City of West Palm Beach is conducting a Mobility Plan. There is the potential for private redevelopment of "The Tent Site," which is anticipated to include a multimodal terminal.

Proposed Recommendations: Partial reconstruction and lane repurposing from 4L to 3L with separated bicycle lanes; obtain 10-foot easement for sidewalk and furnishing zone with street trees adjacent to redevelopment site with proposed multimodal terminal

Okeechobee Boulevard to Clematis Street

Roll Plot No. 41-42

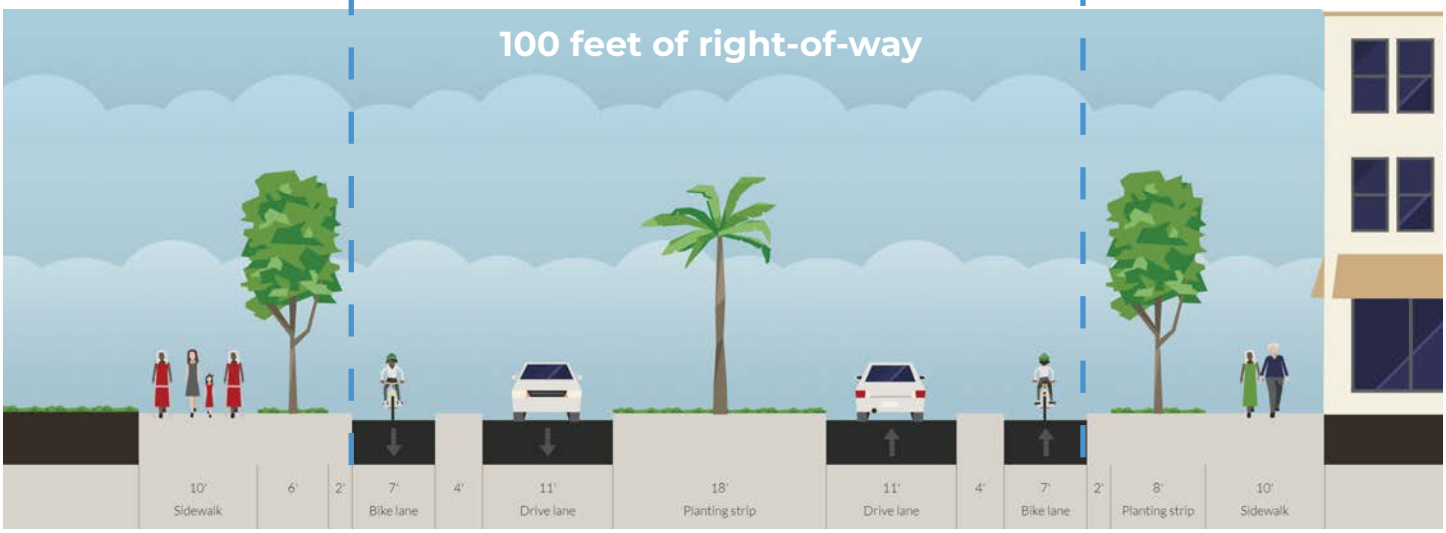
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C5-Urban Center & C6-Urban Core

Existing Speed Limit: 30 mph

Length: 0.5 miles

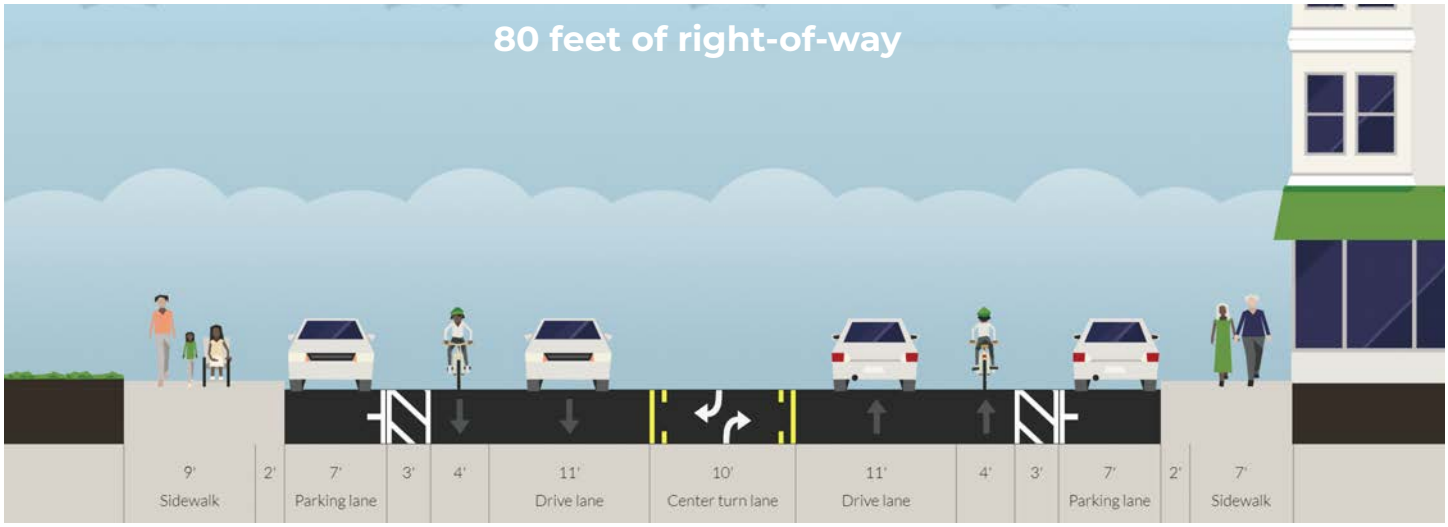
Projected 2040 Max Peak Hour Traffic Volume: 1,100 vphpd

Proposed Recommendations: Partial reconstruction and lane repurposing from 4L to 2L with left-turn lanes at intersections; add separated bicycle lanes

Clematis Street to 3rd Street

Roll Plot No. 42-43

Existing/Proposed



FDOT Context Classification: C6-Urban Core

Length: 0.2 miles

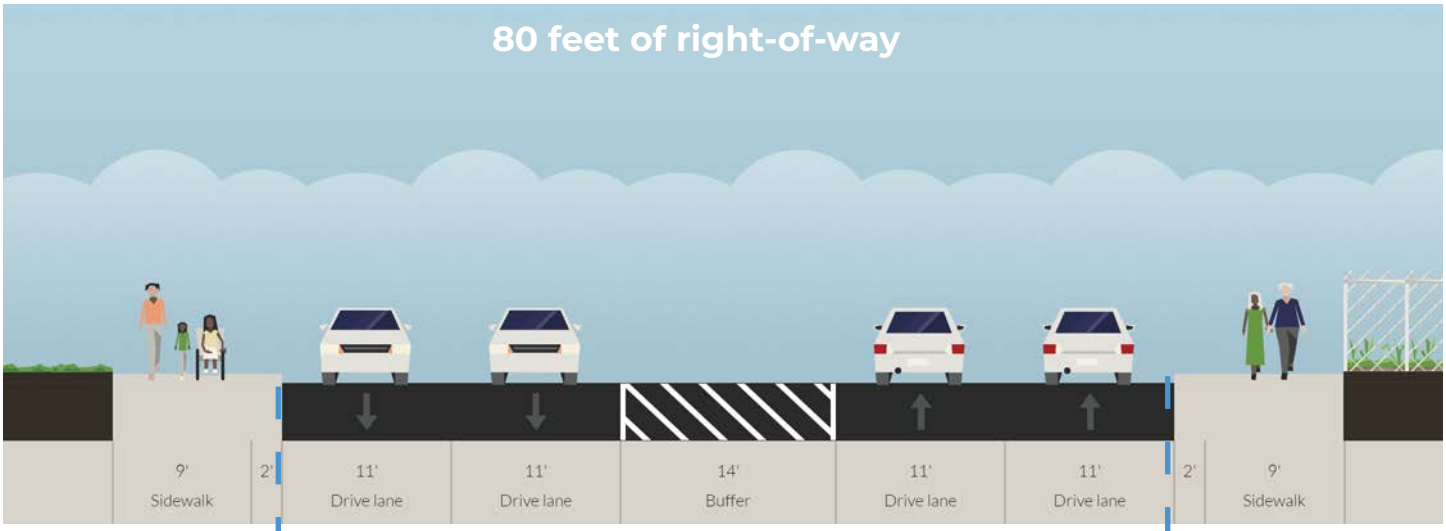
Existing Speed Limit: 30 mph

The proposed typical section has no recommended changes.

3rd Street to N Dixie Highway/Quadrille Street

Roll Plot No. 43

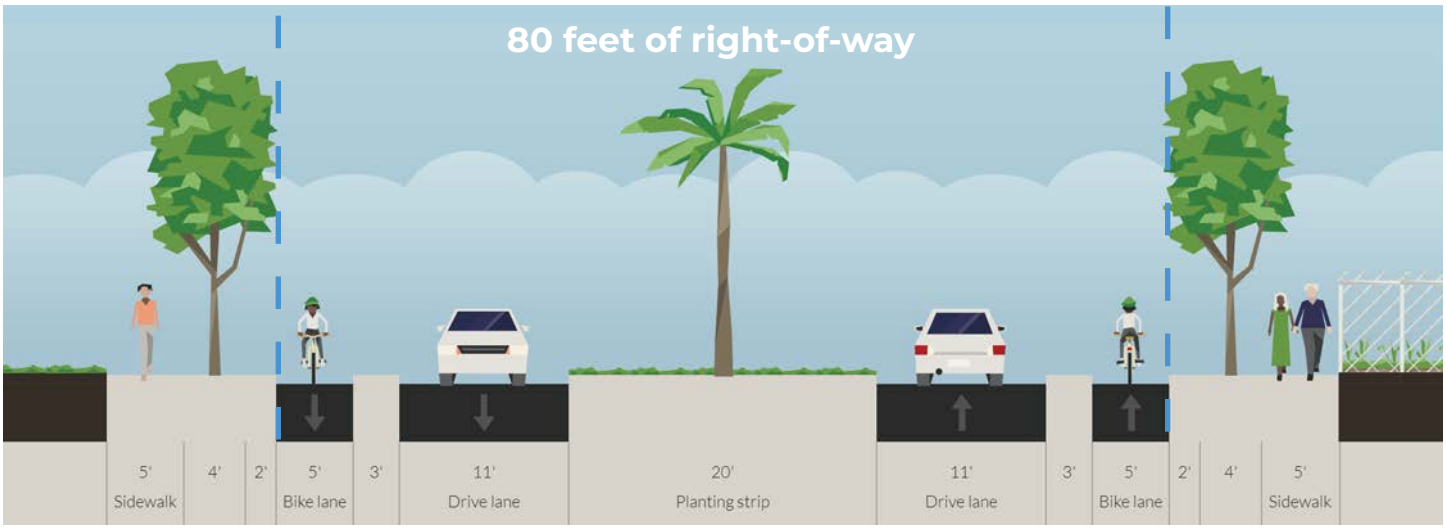
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C5-Urban Center

Existing Speed Limit: 30 mph

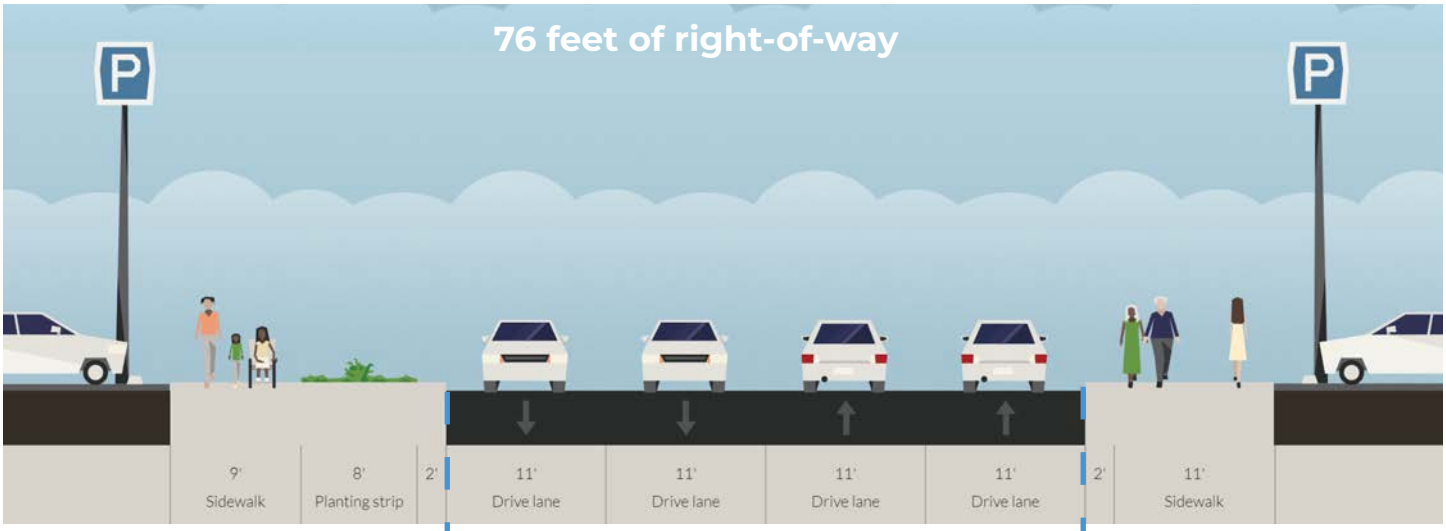
Length: 0.2 miles

Proposed Recommendations: Lane repurposing from 4L to 2L; add separated bicycle lanes and furnishing zones with street trees.

N Dixie Highway/Quadrille Street to 25th Street

Roll Plot No. 43-45

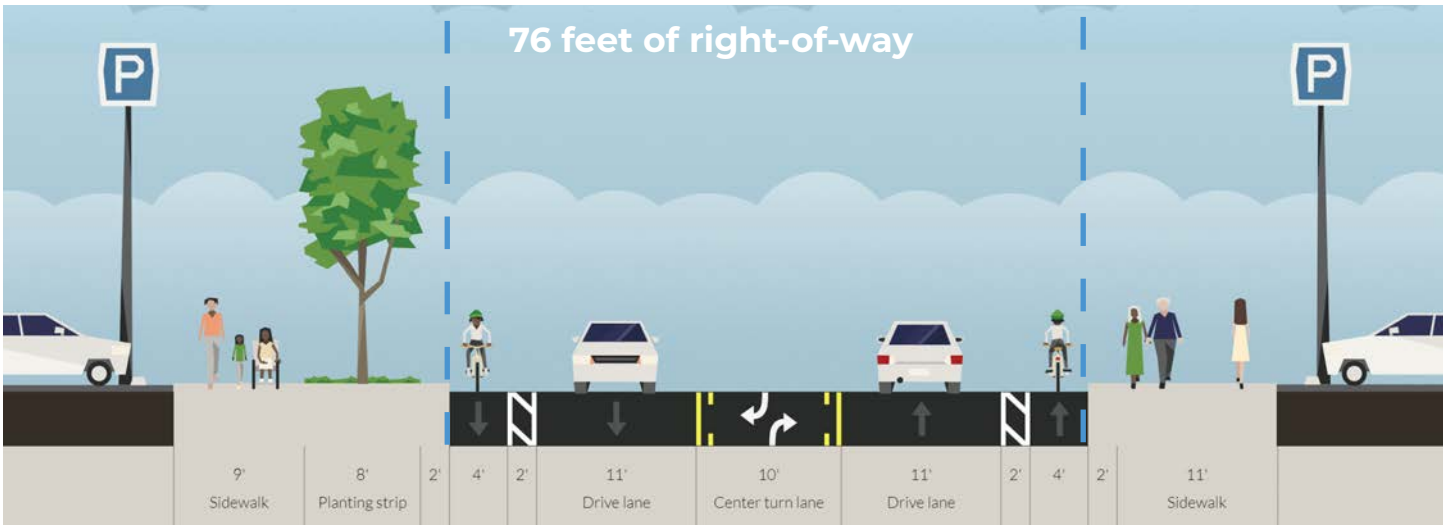
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C5-Urban Center

Existing Speed Limit: 30 mph

Length: 1.2 miles

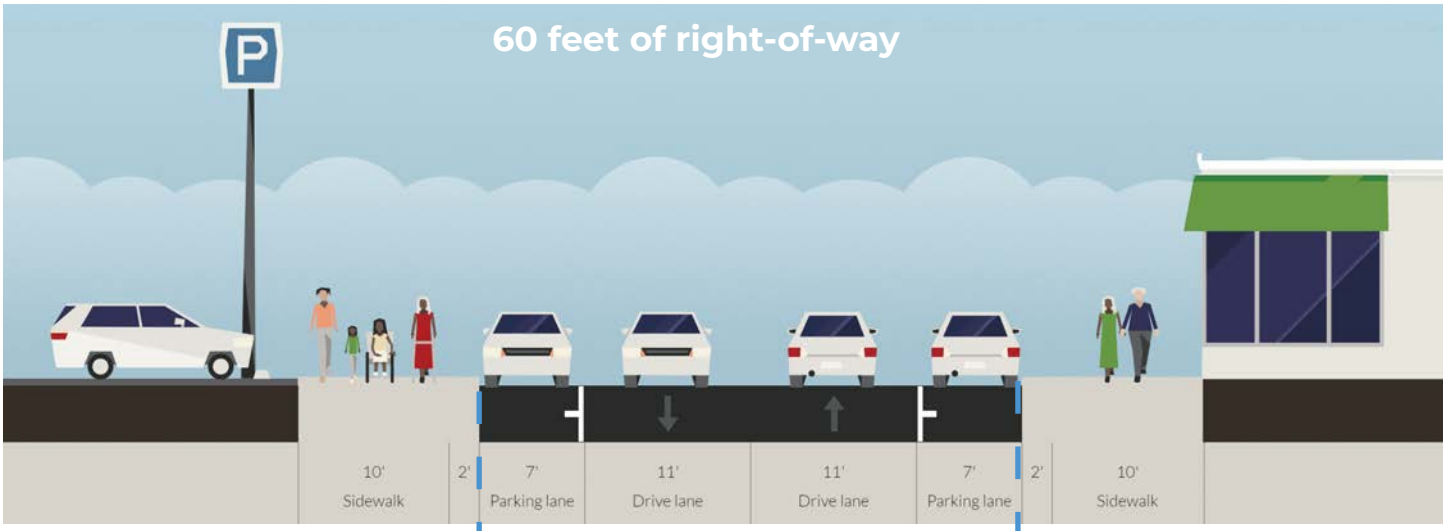
Projected 2040 Max Peak Hour Traffic Volume: 1,000-1,100 vphpd

Proposed Recommendations: Resurfacing and lane repurposing from 4L to 3L; add buffered bicycle lanes and street trees

24th/25th Street from Poinsettia Avenue to Broadway Avenue

Roll Plot No. 45

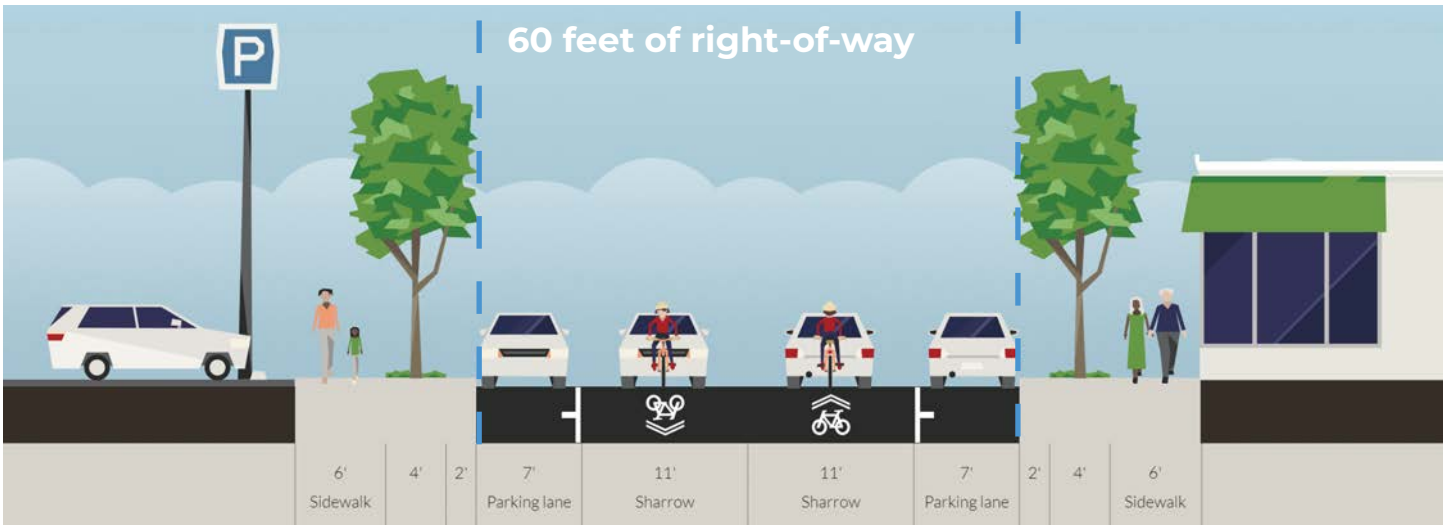
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C5-Urban Center

Existing Speed Limit: 30 mph

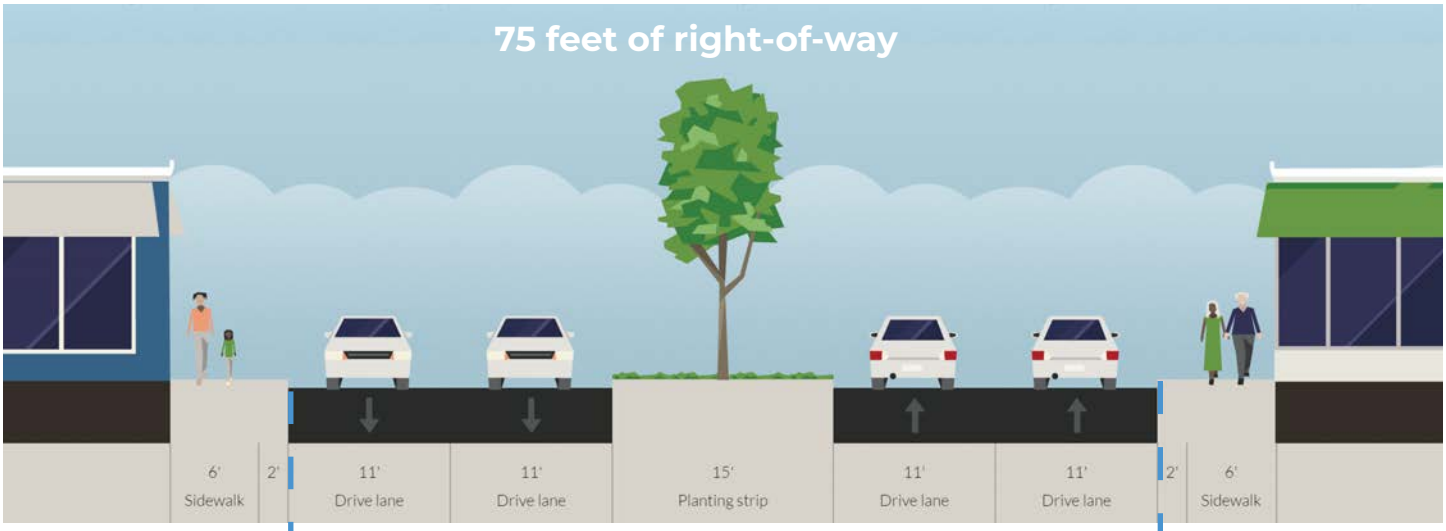
Length: 0.3 miles

Proposed Recommendations: Shared-lane markings and street trees

25th Street to 59th Street

Roll Plot No. 45-48

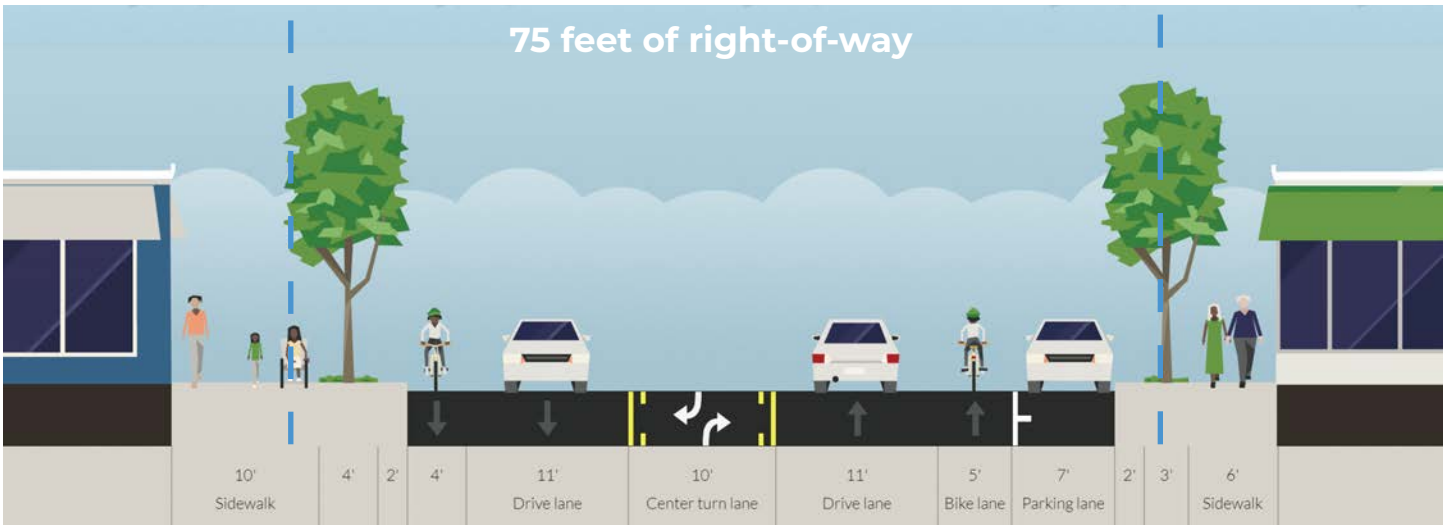
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C5-Urban Center

Existing Speed Limit: 35 mph

Length: 1.9 miles

Projected 2040 Max Peak Hour Traffic Volume: 1,300 vphpd

Proposed Recommendations: Full reconstruction and lane repurposing from 4L to 3L; add shared-use path on the west side, furnishing zones, conventional bicycle lanes, and on-street parking

Ongoing Efforts: The City of West Palm Beach is preparing a Broadway Lane Elimination Study from 25th Street to 42nd Street to incorporate complete streets improvements. The City has received a partially-funded SUN Trail grant for a shared use path.

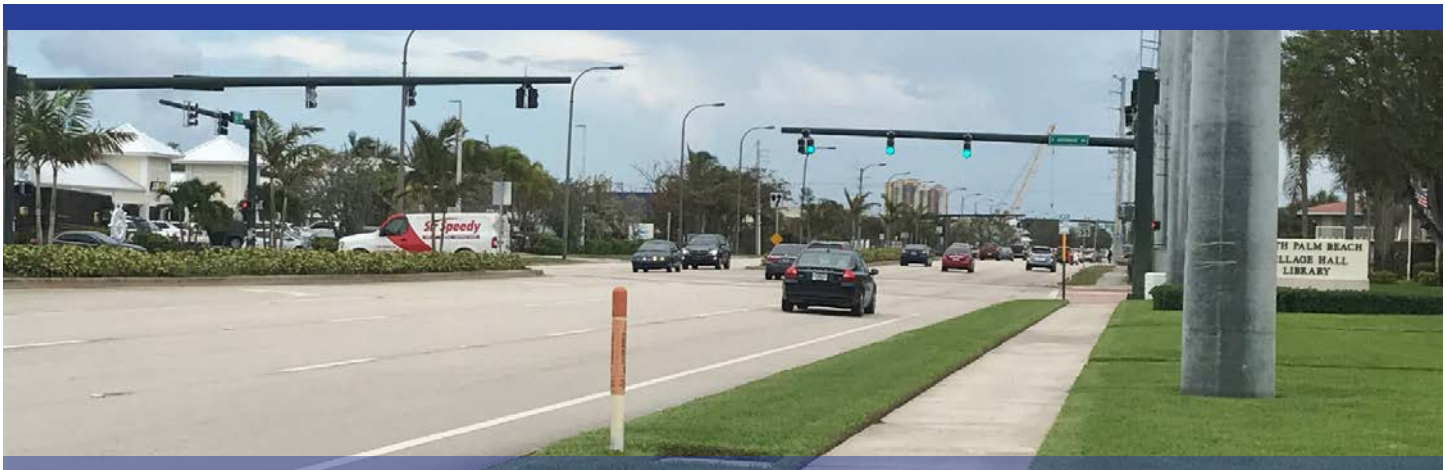
Section 5: Riviera Beach, Lake Park, and North Palm Beach

Existing Conditions

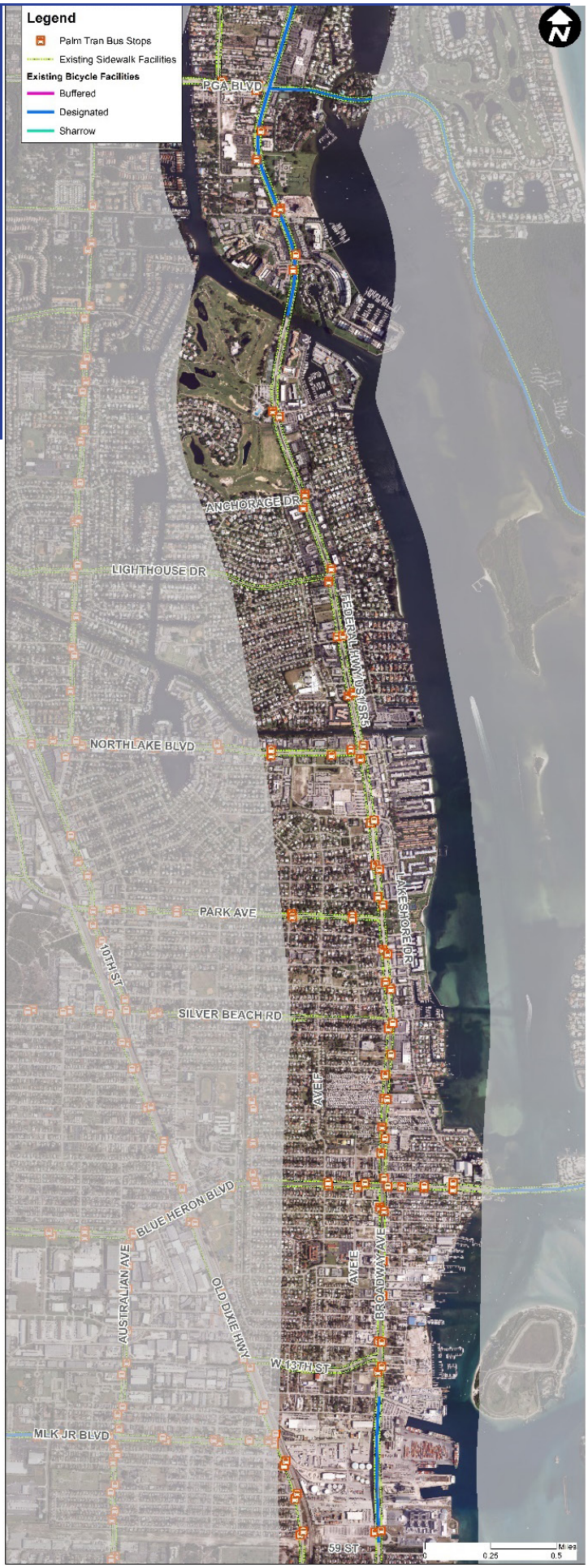
- Riviera Beach – 4-lane divided roadway
- Lake Park – 4-lane undivided roadway with center turns
- North Palm Beach – 6-lane divided roadway (south)
- North Palm Beach – 4-lane divided roadway (north)
- Continuous sidewalks
- Mostly no bicycle facilities
- Little shade on the sidewalks
- Sidewalk improvements have been made through Riviera Beach which includes textured crosswalks and periodic brick improvements in sidewalk

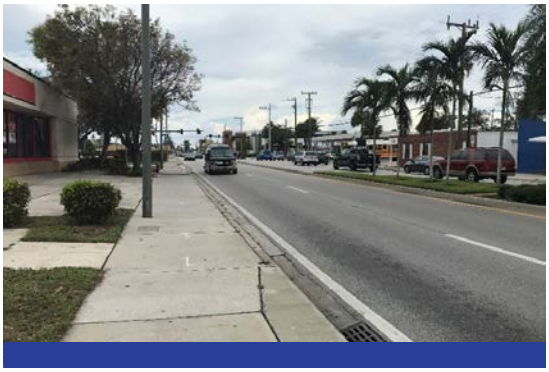
HIA FAST FACTS

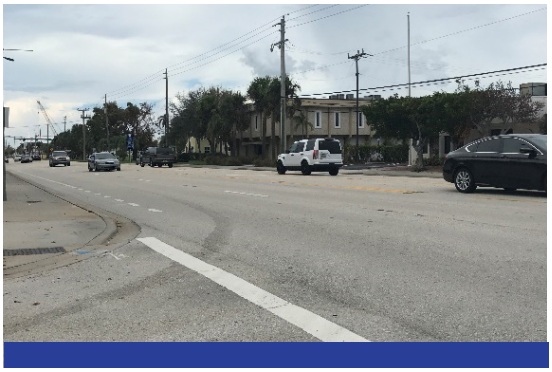
- Riviera Beach Population: 15,600 Residents
- 20% is in poverty
- 46% have high hypertension
- 34% are diagnosed with obesity
- 10% are diagnosed with asthma
- High percentage of disabled residents
- Lake Park Population: 7,400 Residents
- 33% are diagnosed with obesity
- 9% are diagnosed with asthma
- High percentage of disabled residents

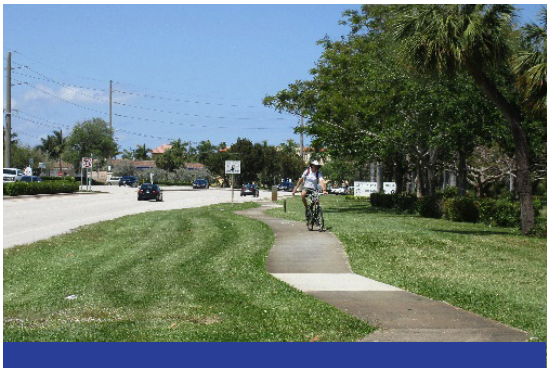


Section 5 contains Roll Plot No. 49-57. Specific Roll Plot No. for Individual Typical Sections are listed on the following pages.


Legend
Palm Tran Bus Stops
Existing Sidewalk Facilities
Existing Bicycle Facilities
Buffered
Designated
Sharrow
PGA BLVD
ANCHORAGE DR
LIGHTHOUSE DR
FEDERAL HWY/US1/SR3
NORTHLAKE BLVD
PARK AVE
LAKESHORE DR
10TH ST
SILVER BEACH RD
AVE F
BLUE HERON BLVD
AUSTRALIAN AVE
OLD DIXIE HWY
AVE E
BROADWAY AVE
W 13TH ST
MLK JR BLVD
59 ST
Miles
0
0.25
0.5





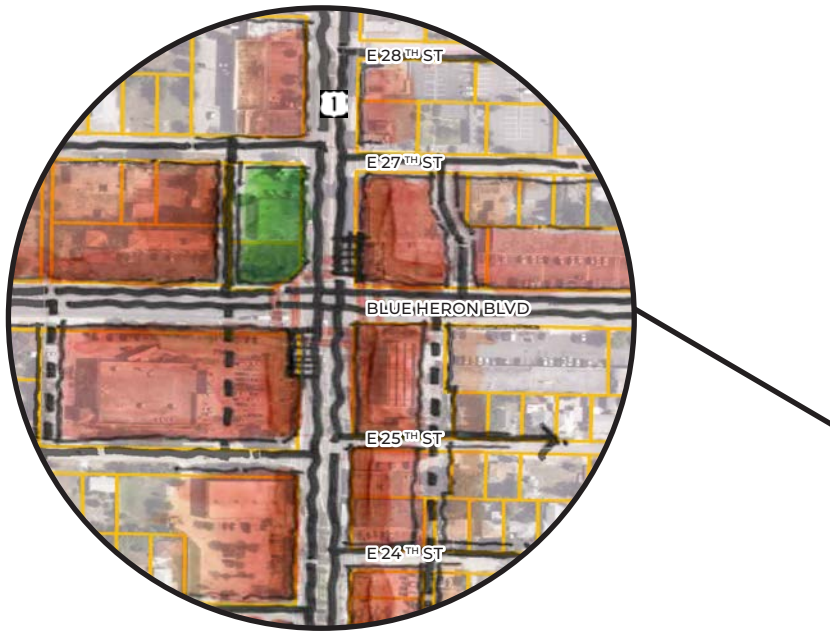


CITY OF RIVIERA BEACH

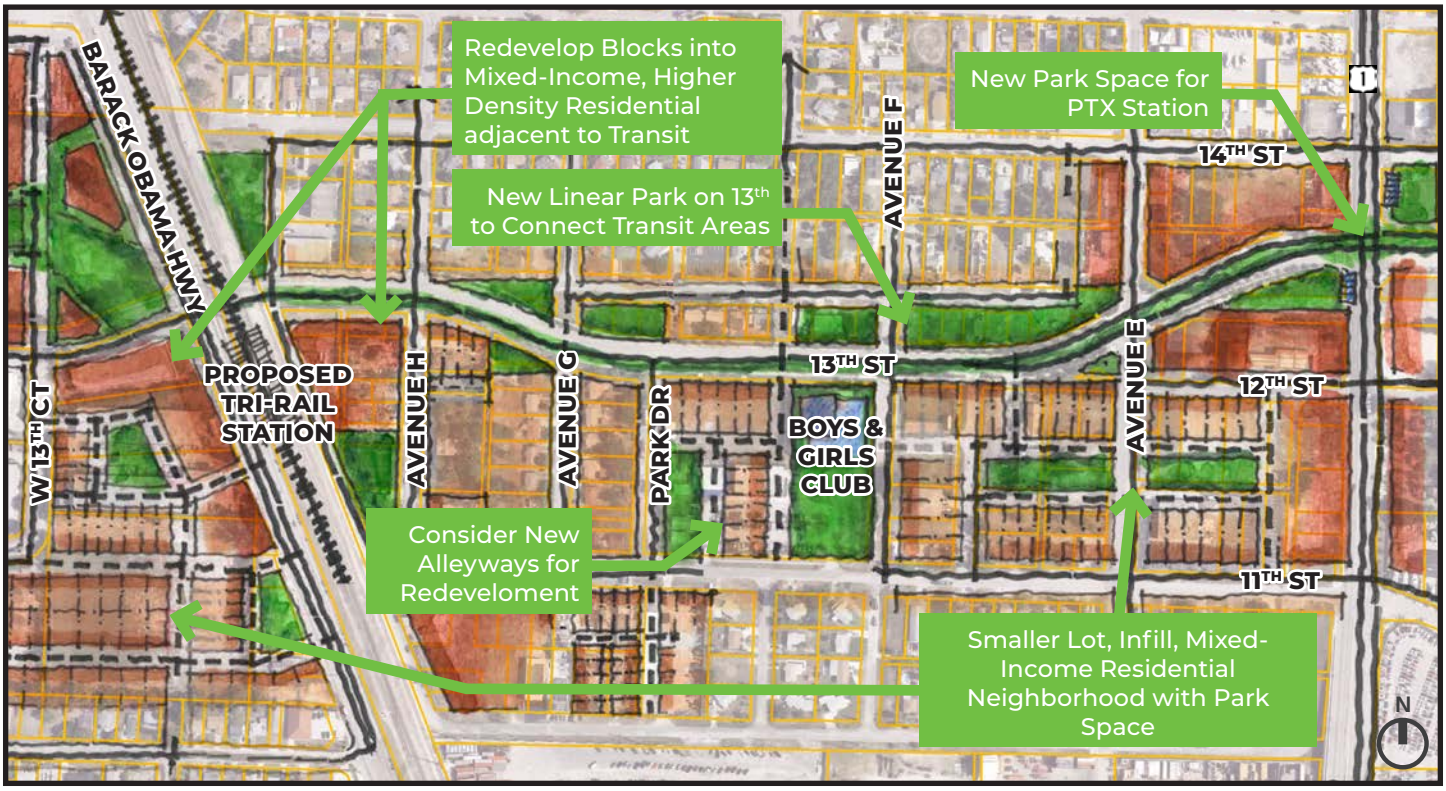
CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

BLUE HERON BLVD

- New PTX stations located within US-1 ROW on each direction
- Create new park in northwest corner as gateway and stormwater management
- New mixed-use fronting proposed park
- Focus on pedestrian crossings between PTX station locations
- Examine new alley parallel to US-1 for loading and access management



BLUE HERON BLVD



13TH STREET

TOWN OF LAKE PARK

PARK AVE

LEGEND

- New Street
- Pedestrian Connection
- Proposed PTX Location
- New Park Space
- New Mixed-Use
- New Residential

CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

PARK AVE

- New redevelopment, as per Lake Park's Master Plan, should be a mix of uses, including higher density residential
- PTX stations at Kelsey Park and adjacent historic properties
- Examine adding a parallel street between US-1 and Lake Shore Drive for traffic distribution and walkability
- Examine adding an alley west of US-1 for fronting properties to assist with the block transition into existing neighborhoods

VILLAGE OF NORTH PALM BEACH

CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

ALT A1A

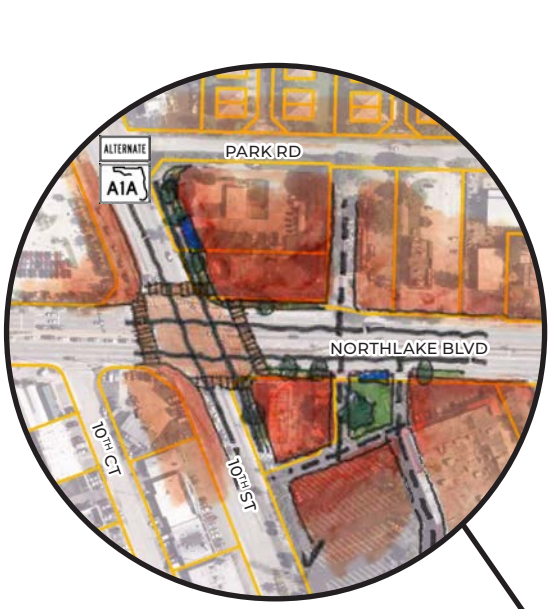
- Utilize portion of parking areas for new park/green space at PTX station
- Redevelop northeast block into mixed-use, residential fronting PTX park area
- Enhance pedestrian crossings

NORTHLAKE BLVD

- Redevelop shopping center as new Town Center mixed-use project with higher density residential units and walkable block sizes
- Build on Olmsted Brothers legacy in Lake Park with connected park/green spaces that also function as stormwater areas.
- Connect to adjacent neighborhoods to the south and west

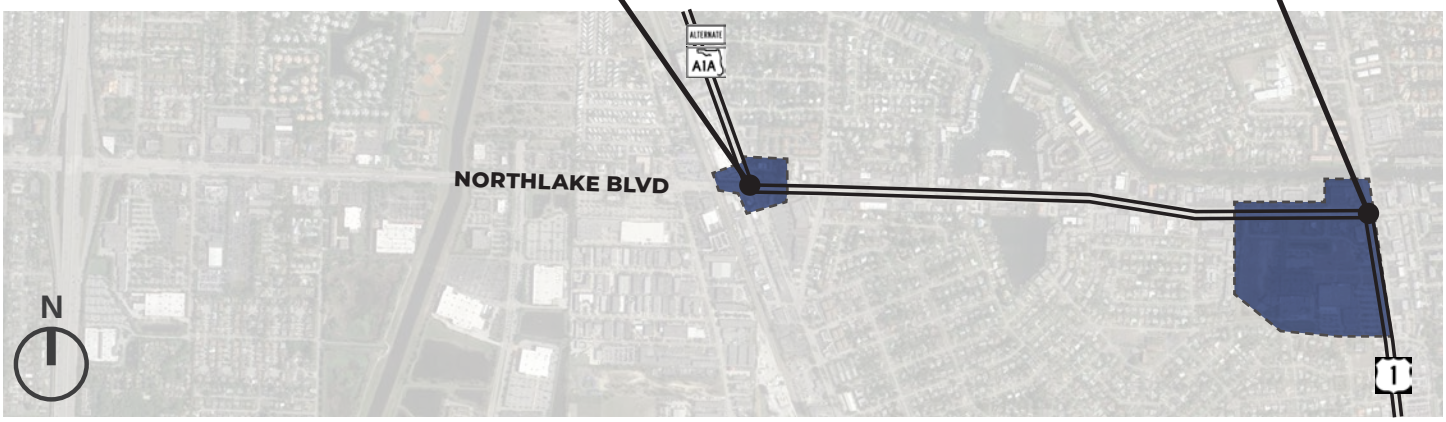
LEGEND

- New Street
- Pedestrian Connection
- Proposed PTX Location
- New Park Space
- New Mixed-Use
- New Residential



ALT A1A

NORTHLAKE BLVD



CITY OF PALM BEACH GARDENS

CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

BURNS RD

- Enhance pedestrian crossings

LAKE VICTORIA GARDENS BLVD

- Enhance pedestrian crossing

PALM BEACH STATE COLLEGE

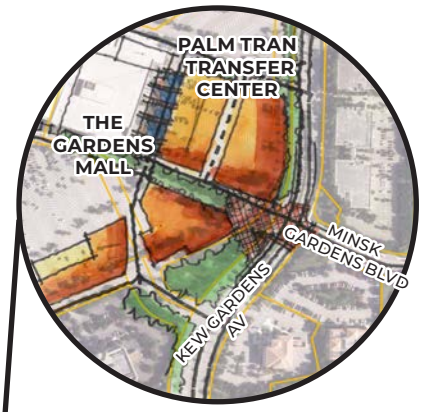
- Enhance pedestrian crossings
- Connect to campus buildings from PTX station

THE GARDENS MALL TRANSFER CENTER

- Utilize portions of existing parking lot for new connection to Minsk Gardens Blvd
- Redevelop portions of existing parking lot for mixed-use, residential blocks with street-fronting buildings
- Incorporate transfer center into redevelopment

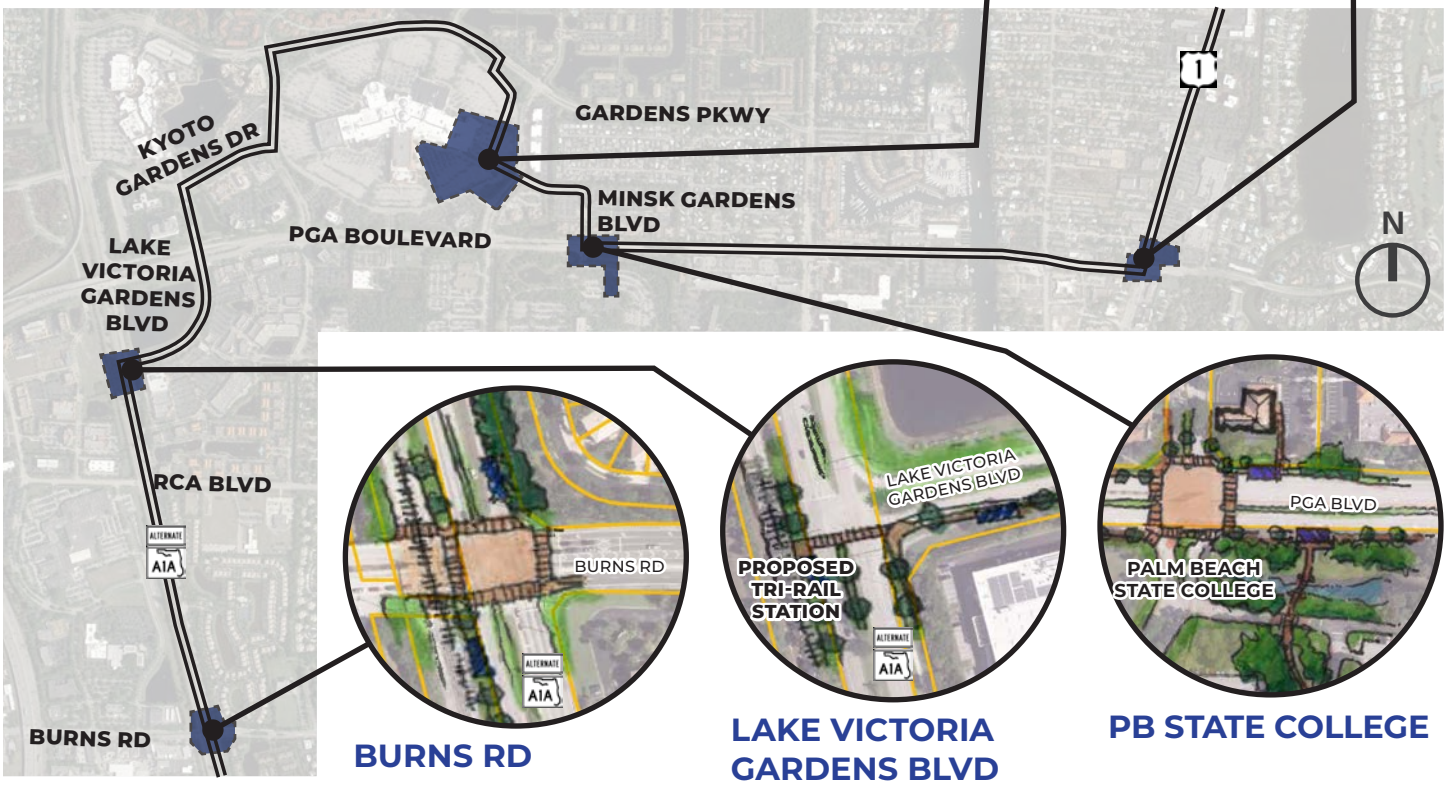
PGA BLVD

- Enhance pedestrian crossings
- Add park/green space at PTX stations
- Utilize portion of Publix parking area for mixed-use redevelopment fronting on PTX park area



THE GARDENS MALL TRANSFER CENTER

PGA BLVD



BURNS RD

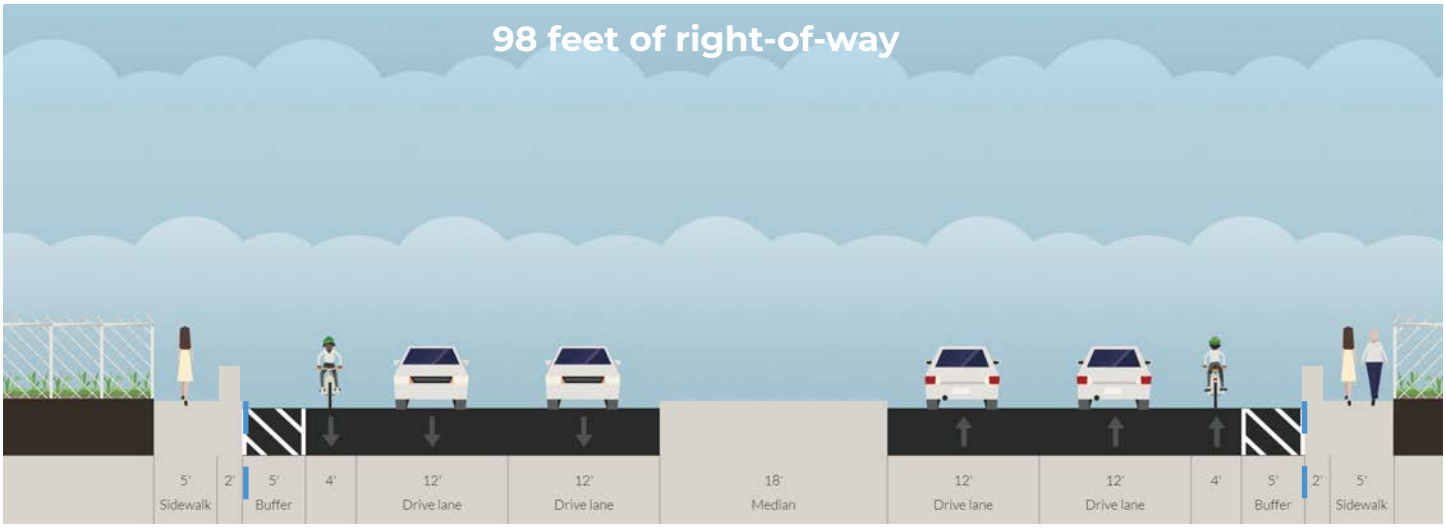
LAKE VICTORIA GARDENS BLVD

PB STATE COLLEGE

59th Street to 11th Street

Roll Plot No. 49

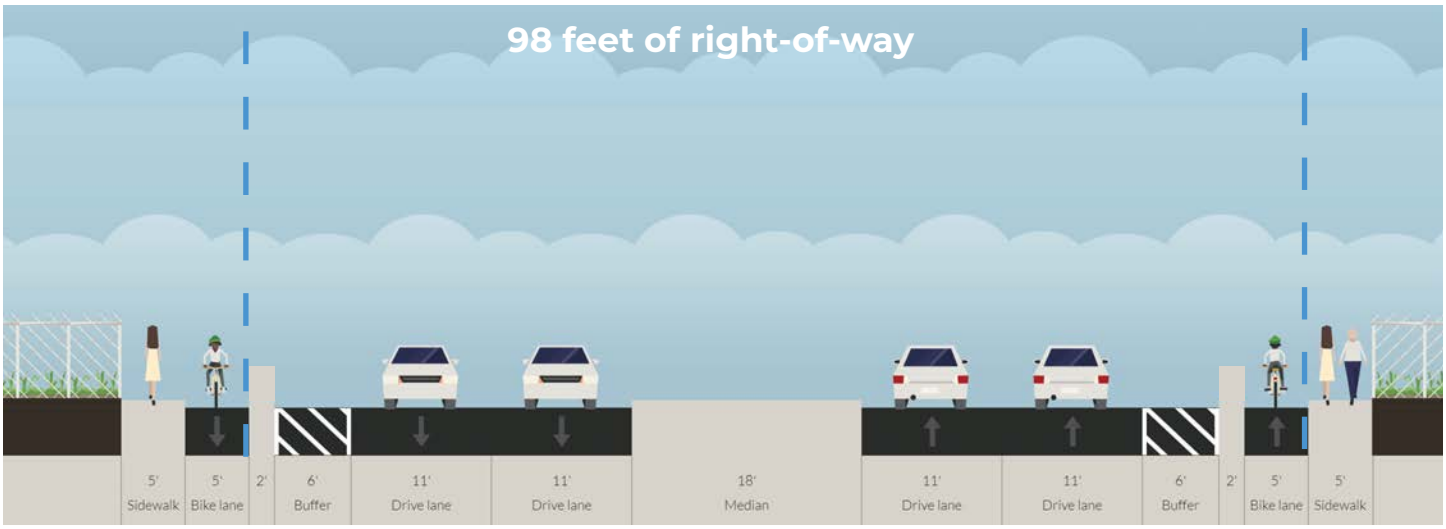
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C4-Urban General

Existing Speed Limit: 35 mph

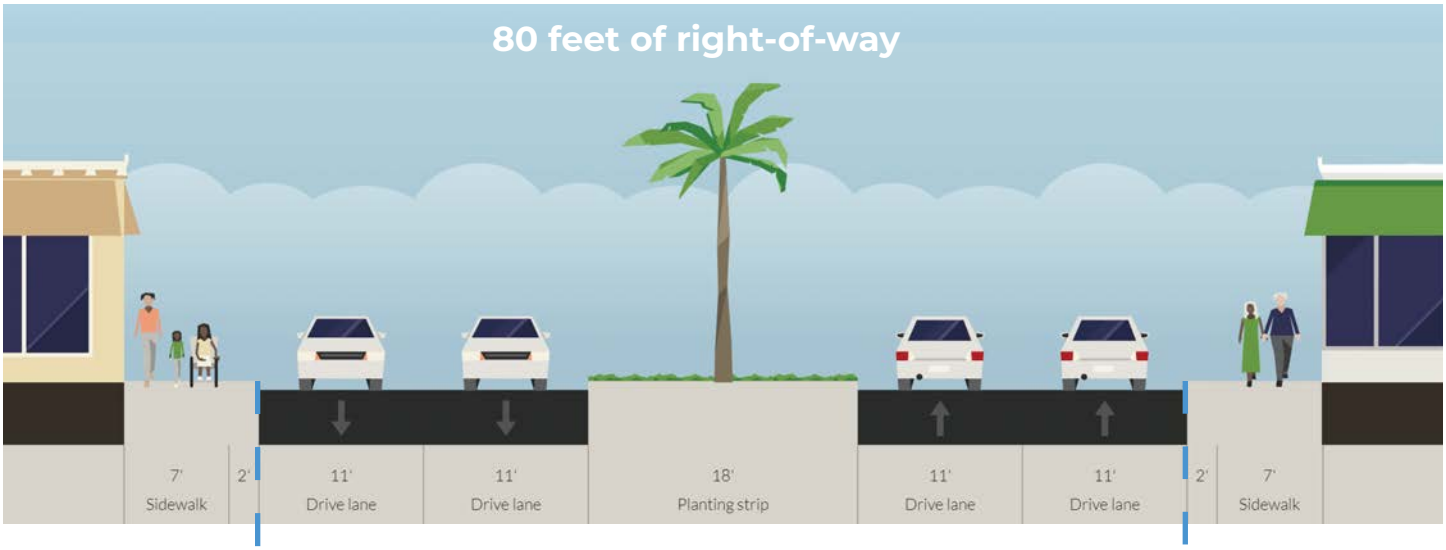
Length: 0.6 miles

Proposed Recommendations: Add separated bicycle lanes

11th Street to Silver Beach Road

Roll Plot No. 49-52

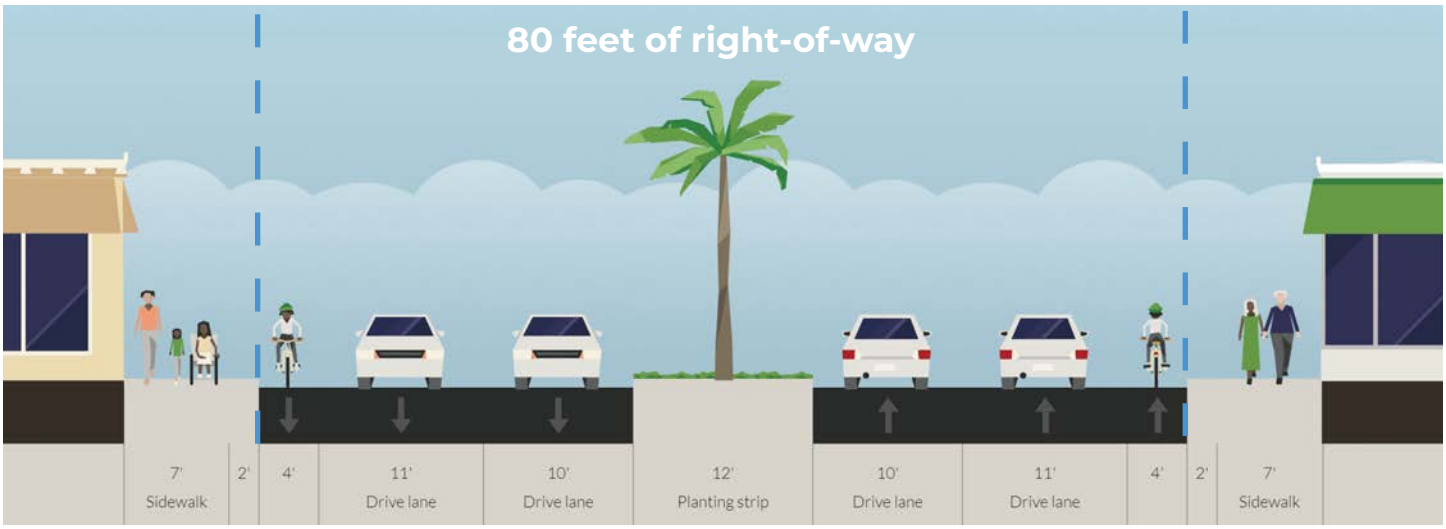
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C4-Urban General

Existing Speed Limit: 35 mph

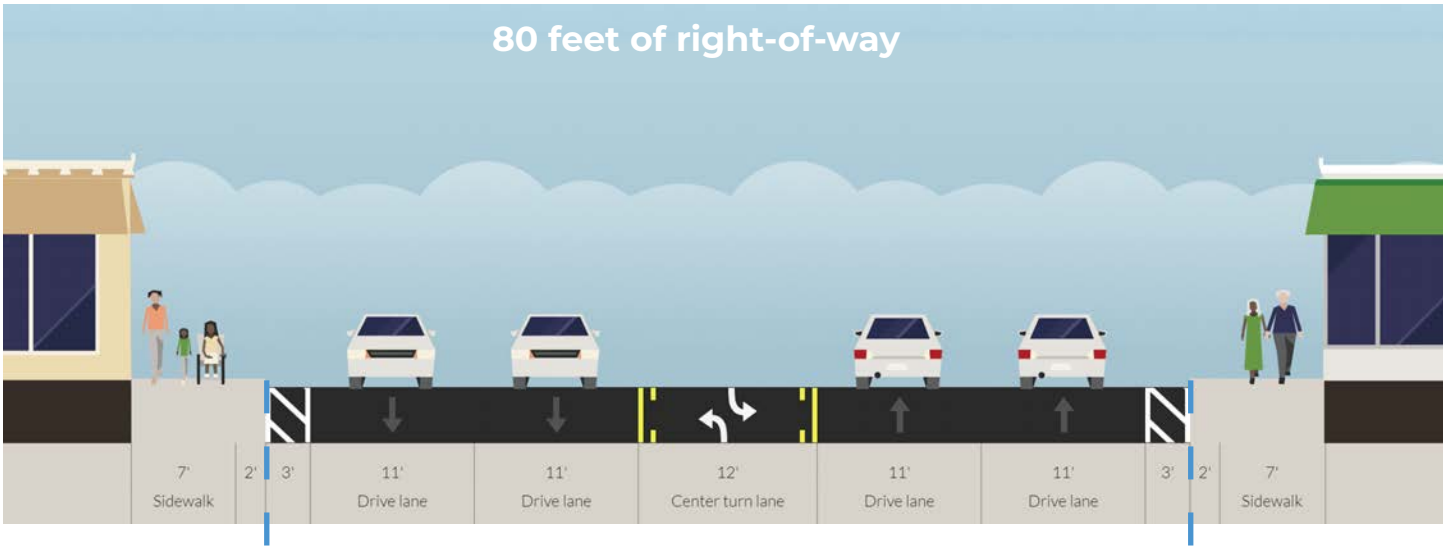
Length: 1.4 miles

Proposed Recommendations: Partial reconstruction (inside widening); add conventional bicycle lanes

Silver Beach Road to Palmetto Drive

Roll Plot No. 52-53

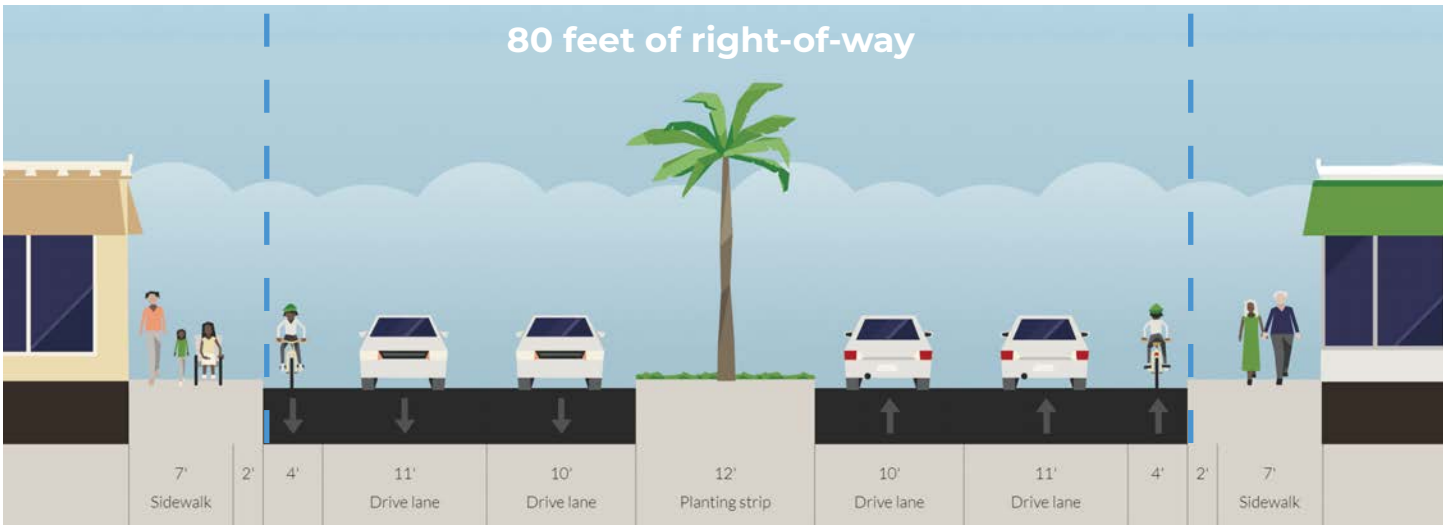
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C4-Urban General

Existing Speed Limit: 35 mph

Length: 0.8 miles

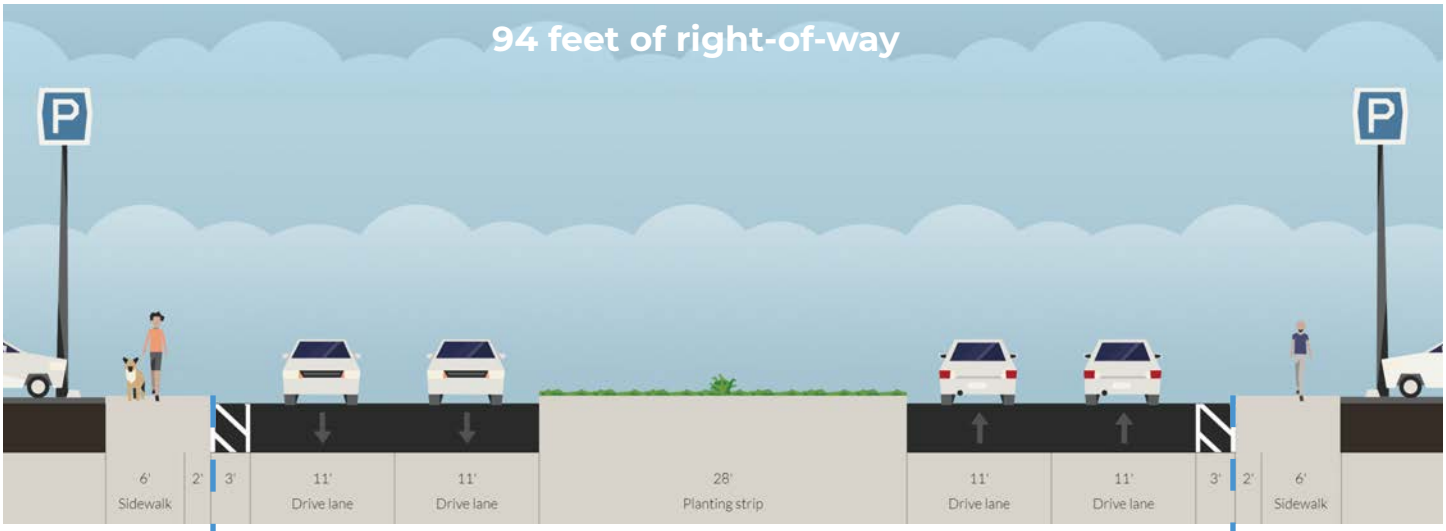
Ongoing Efforts: The Town of Lake Park is considering options for a mixed-use corridor that will enhance pedestrian, bicycle, and vehicular accessibility and connectivity. Recent proposed modifications include pedestrian and on-street parking improvements that may occur in setbacks as properties redevelop.

Proposed Recommendations: Partial reconstruction with conventional bicycle lanes

Palmetto Drive to Northlake Boulevard

Roll Plot No. 53

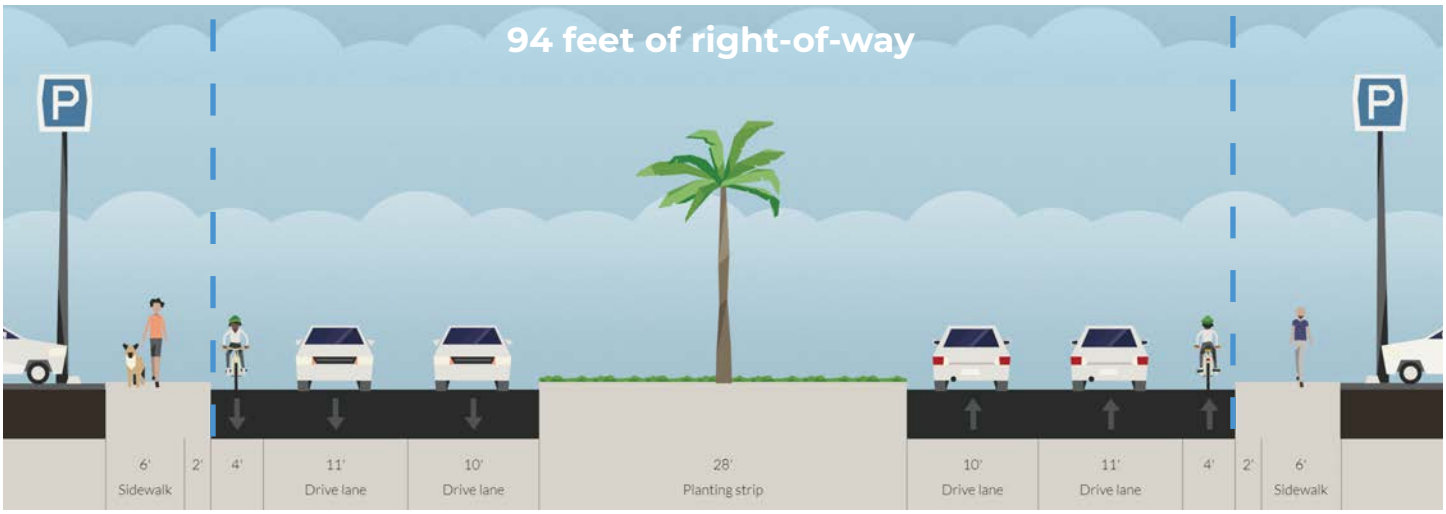
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C4-Urban General

Existing Speed Limit: 35 mph

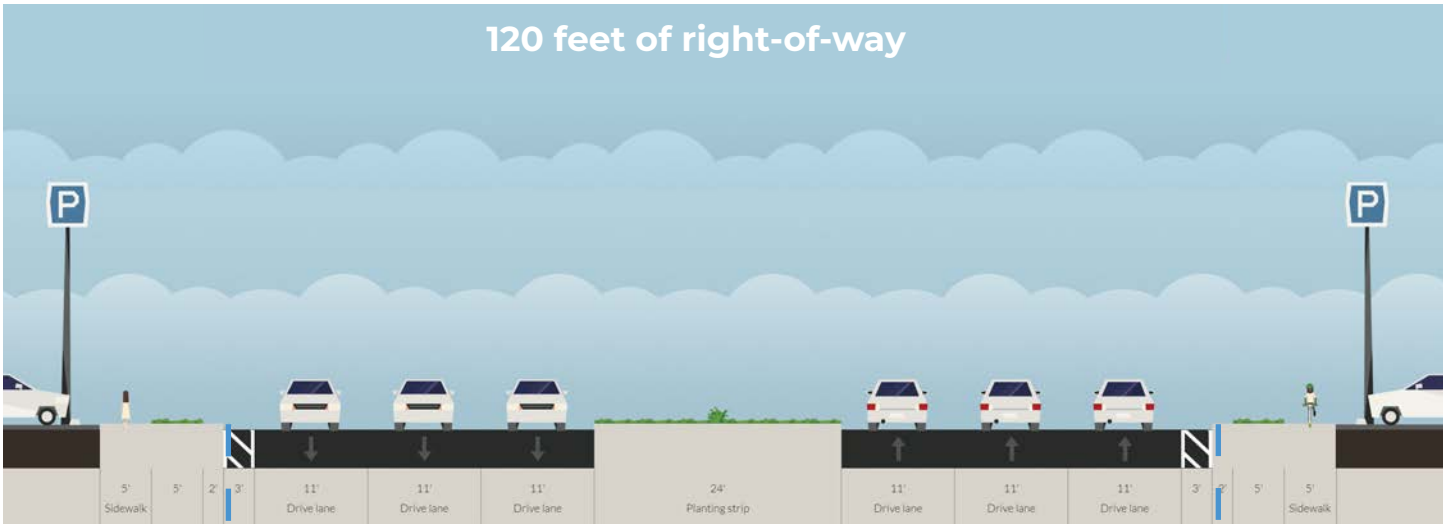
Length: 0.3 miles

Proposed Recommendations: Resurfacing with conventional bicycle lanes added through lane width narrowing

Northlake Boulevard to NPB Drawbridge

Roll Plot No. 53-56

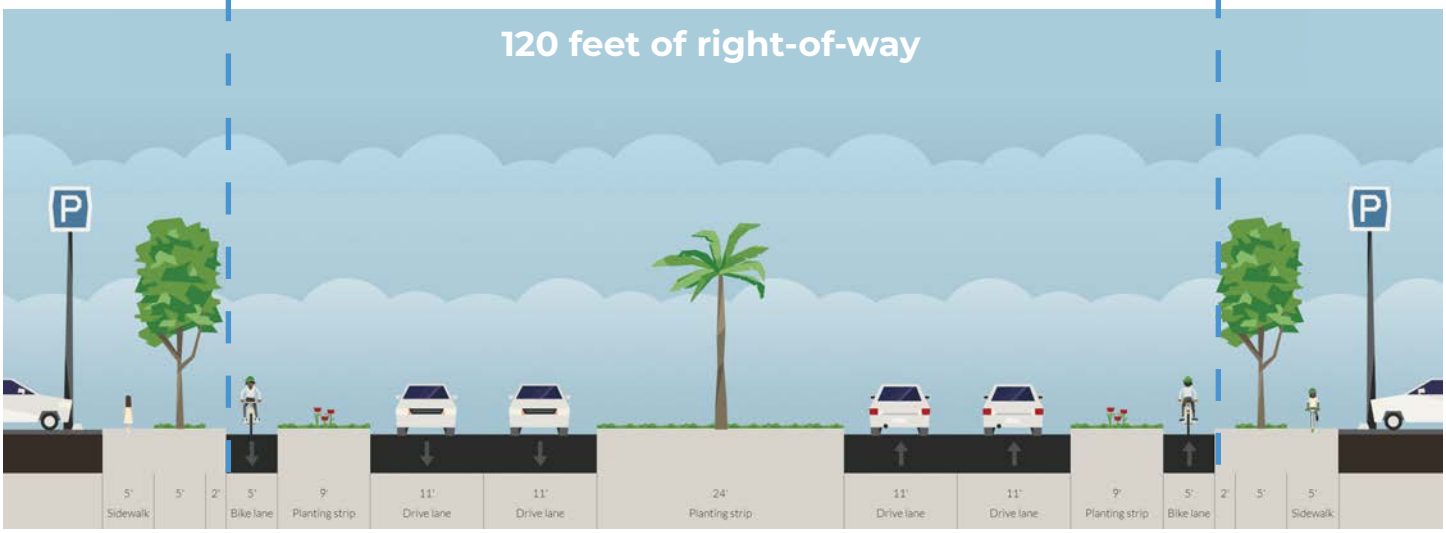
Existing



Existing Edge of Pavement

Existing Edge of Pavement

Proposed



FDOT Context Classification: C3-Suburban

Existing Speed Limit: 35-40 mph

Length: 1.7 miles

Projected 2040 Max Peak Hour Traffic Volume: 1,700 vphpd

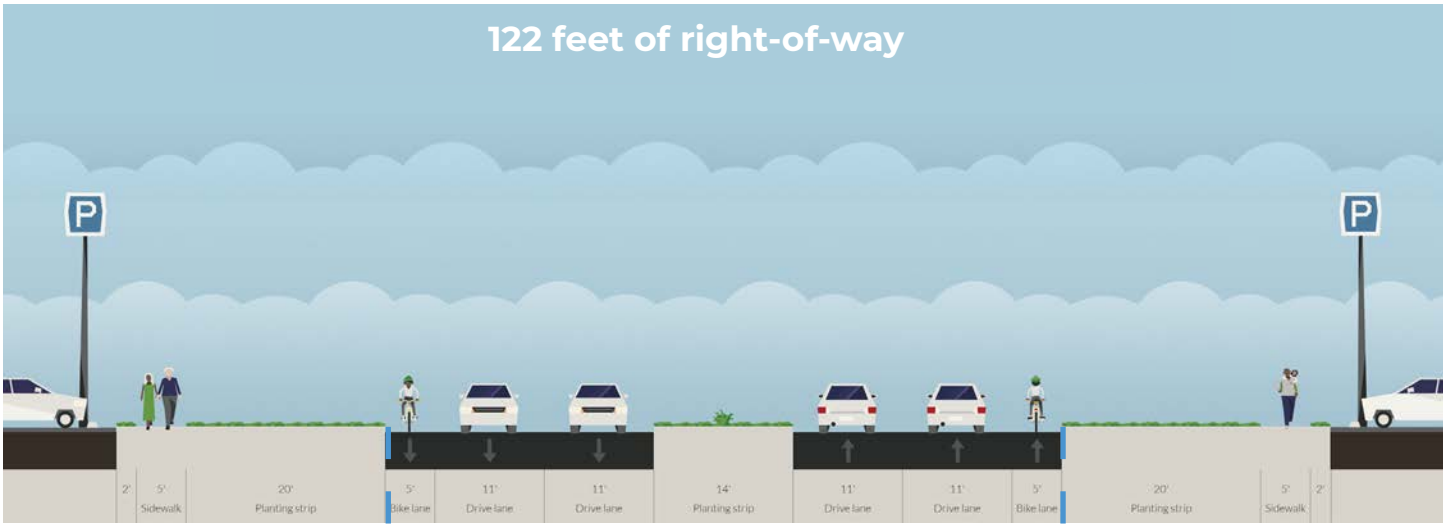
Ongoing Efforts: The Village of North Palm Beach is reviewing implementation strategies related to the Village of North Palm Beach Master Plan, which includes recommendations to reduce the lane width of US-1 from six to four lanes and add buffered bicycle lanes. The Village is also developing a zoning code to implement the Master Plan recommendations.

Proposed Recommendations: Resurfacing with lane repurposing from 6L to 4L; add separated bicycle facilities and furnishing zones with street trees

NPB Drawbridge to PGA Boulevard

Roll Plot No. 56-57

Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement

FDOT Context Classification: C3-Suburban

Existing Speed Limit: 40-45 mph

Length: 0.9 miles

Ongoing Efforts: The Village of North Palm Beach is reviewing implementation strategies related to the Village of North Palm Beach Master Plan, which includes recommendations to reduce the lane width of US-1 from six to four lanes and add buffered bicycle lanes. The Village is also developing a zoning code to implement the Master Plan recommendations.

Proposed Recommendations: Shoulder widening to add separated bicycle lanes; add furnishing zones with street trees

Section 6: Juno Beach, Jupiter, and Palm Beach Gardens

Existing Conditions

- No existing Palm Tran service on US-1 north of PGA Boulevard
- Continuous sidewalks
- Conventional bicycle lanes
- Passes through Jupiter Dunes Natural Area and Jupiter Ridge Natural Area
- Long turn lanes
- Lower density of driveways than other sections of US-1

HIA FAST FACTS

- Juno Beach Population within Corridor: 4,736
- 52% have high hypertension
- Palm Beach Gardens Population within Corridor: 8,259
- 27% are diagnosed with obesity
- High percentage of residents over the age of 65
- Jupiter Population within Corridor: 17,533
- 25% have had a stroke
- High percentage of residents over the age of 65

Section 6 contains Roll Plot No. 57-68. Specific Roll Plot No. for Individual Typical Sections are listed on the following pages.


INDIANTOWN RD
OCEAN WAY
FREDERICK SMALL RD
OCEAN DR
PALMWOOD RD
DONALD ROSS RD
ELLISON WILSON RD
HOOD RD/FLAMINGO RD
US HIGHWAY 1
UNIVERSE BLVD
PLEASANT DR
GARDENS PKWY
PGA BLVD
Legend
Palm Tran Bus Stops
Existing Sidewalk Facilities
Existing Bicycle Facilities
Buffered
Designated
Sharrow
Miles

TOWN OF JUNO BEACH

CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

DONALD ROSS RD

- Redevelop shopping center as new Town Center mixed-use project with higher density residential units, walkable block sizes, and street-fronting buildings
- Incorporate green/ park space, green space should also function for stormwater management
- Connect to adjacent neighborhoods to the west
- Locate PTX station adjacent to the Loggerhead Marinelife Center and connect to new Town Center with mid-block crossing or signalize crossing

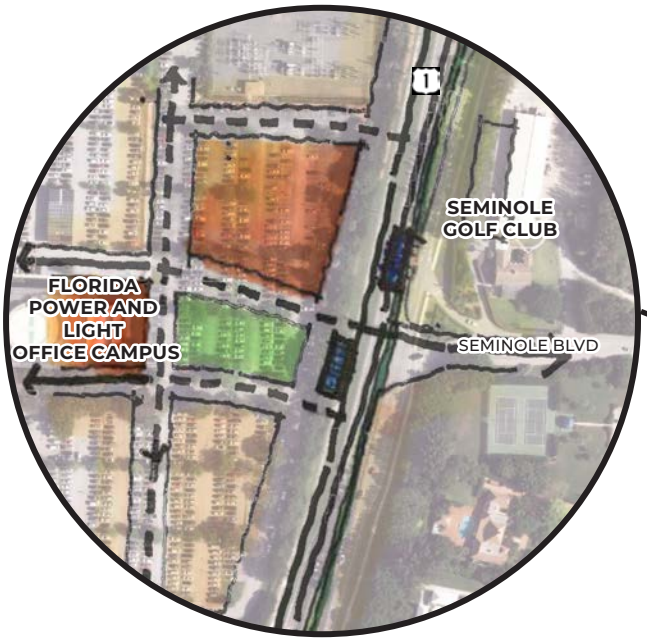
SEMINOLE TOD

- New PTX station adjacent to Seminole Boulevard with mid-block crossing
- PTX station should connect to pedestrian walk/open space to FPL office campus
- Consider new mixed-use with garage parking on existing parking lots with street-fronting buildings
- Green/Park space as "gateway" to FPL campus

LEGEND

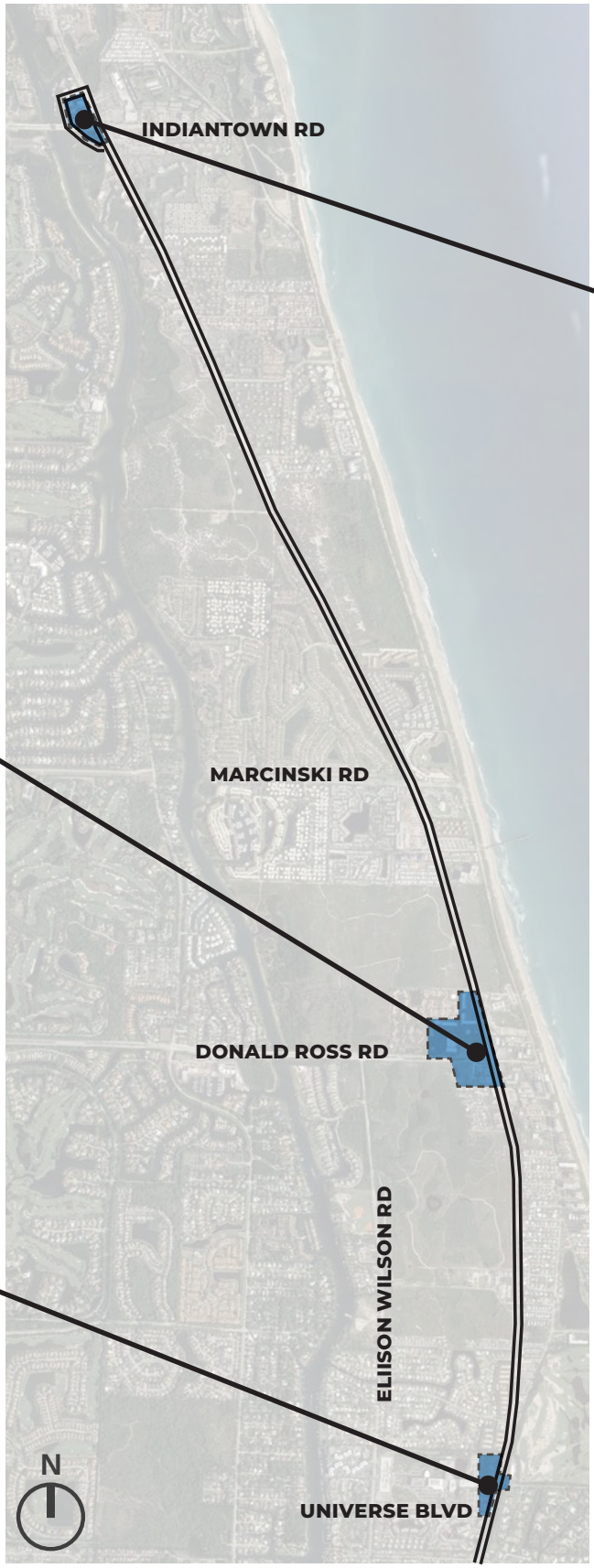
- New Street
- Pedestrian Connection
- Proposed PTX Location
- New Park Space
- New Mixed-Use
- New Residential

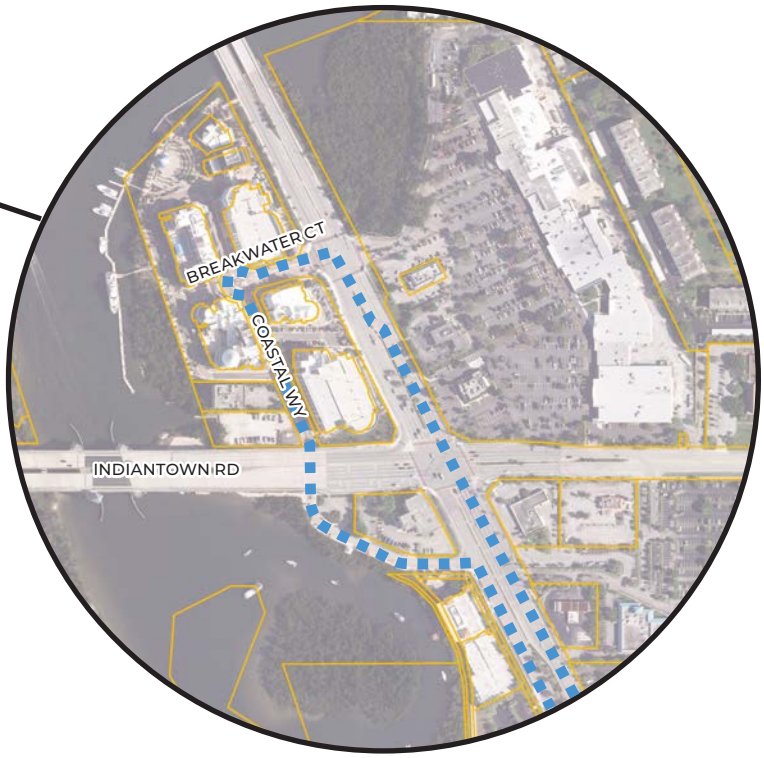
DONALD ROSS RD/MARINELIFE CENTER



SEMINOLE/FPL

TOWN OF JUPITER





JUPITER/HARBOURSIDE PLACE

CONCEPTUAL OPPORTUNITY AREAS AT A GLANCE:

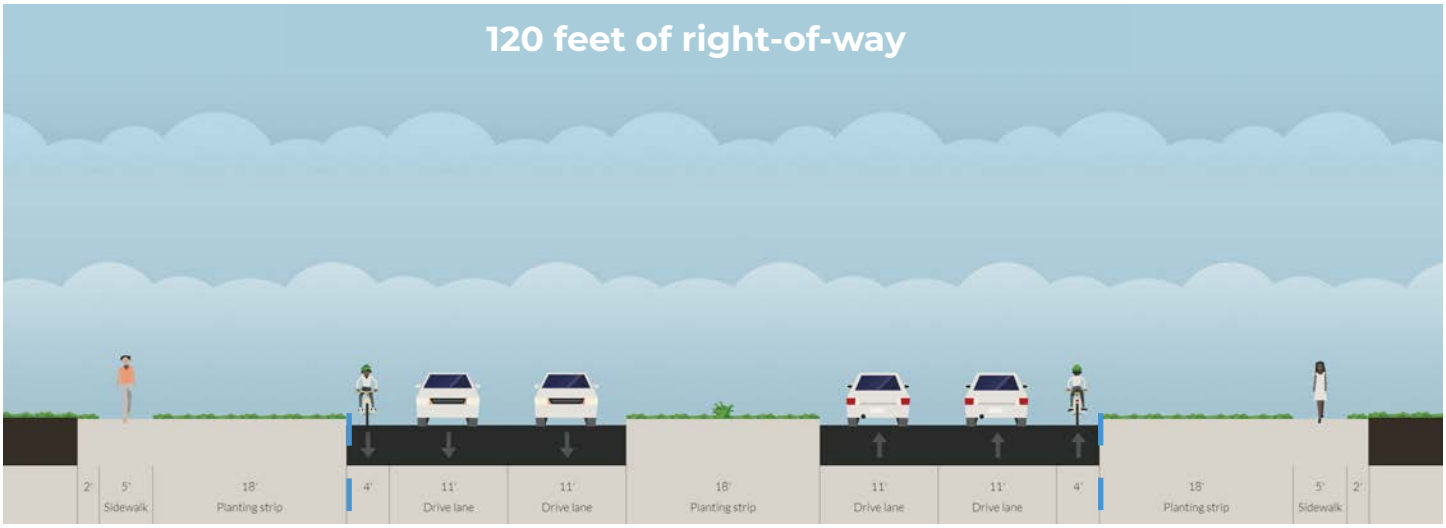
HARBOURSIDE PLACE

- Route new PTX path to circle through existing development, under Indiantown Road, and back onto US-1

PGA Boulevard to Ocean Drive

Roll Plot No. 57-60

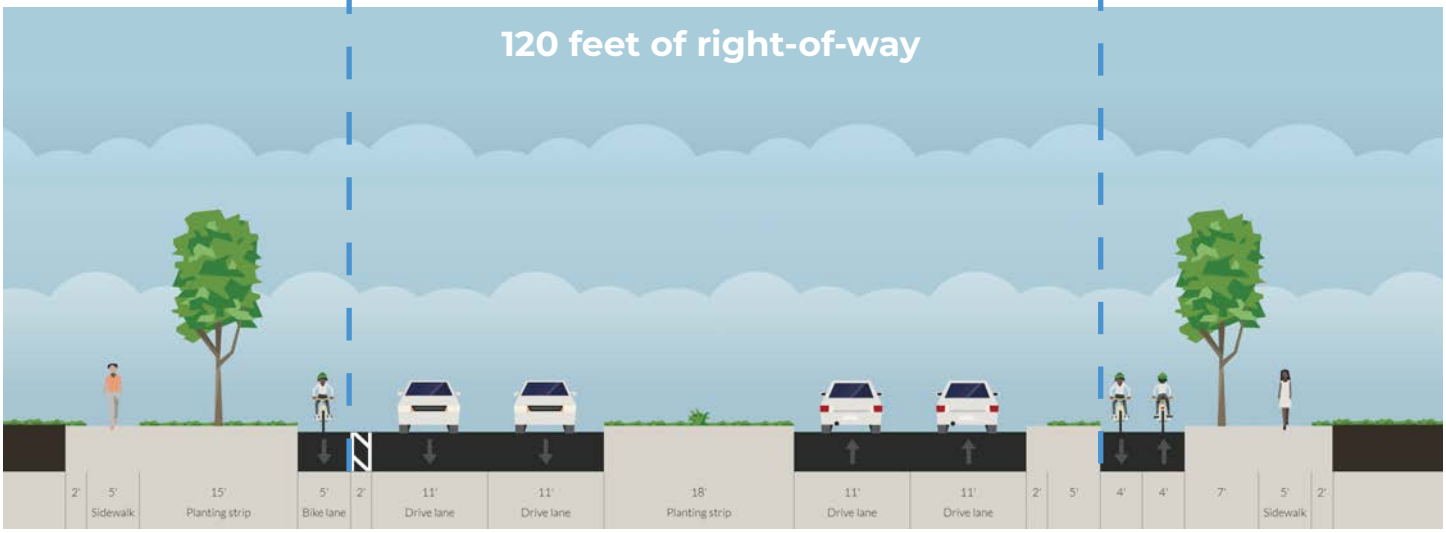
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C1-Natural & C3-Suburban

Existing Speed Limit: 45 mph

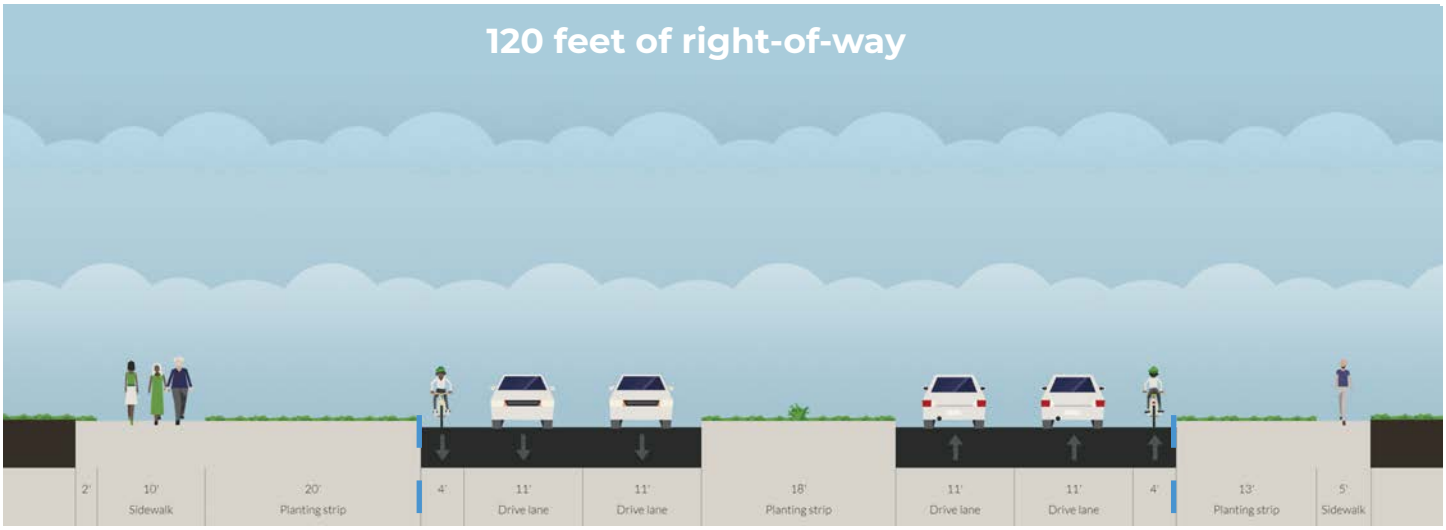
Length: 1.2 miles

Proposed Recommendations: Partial reconstruction on the east side with two-way separated bicycle lanes on the east side only; shoulder widening on the west side to add buffered bicycle lane; add furnishing zones with street trees

Ocean Drive to Indiantown Road

Roll Plot No. 60-68

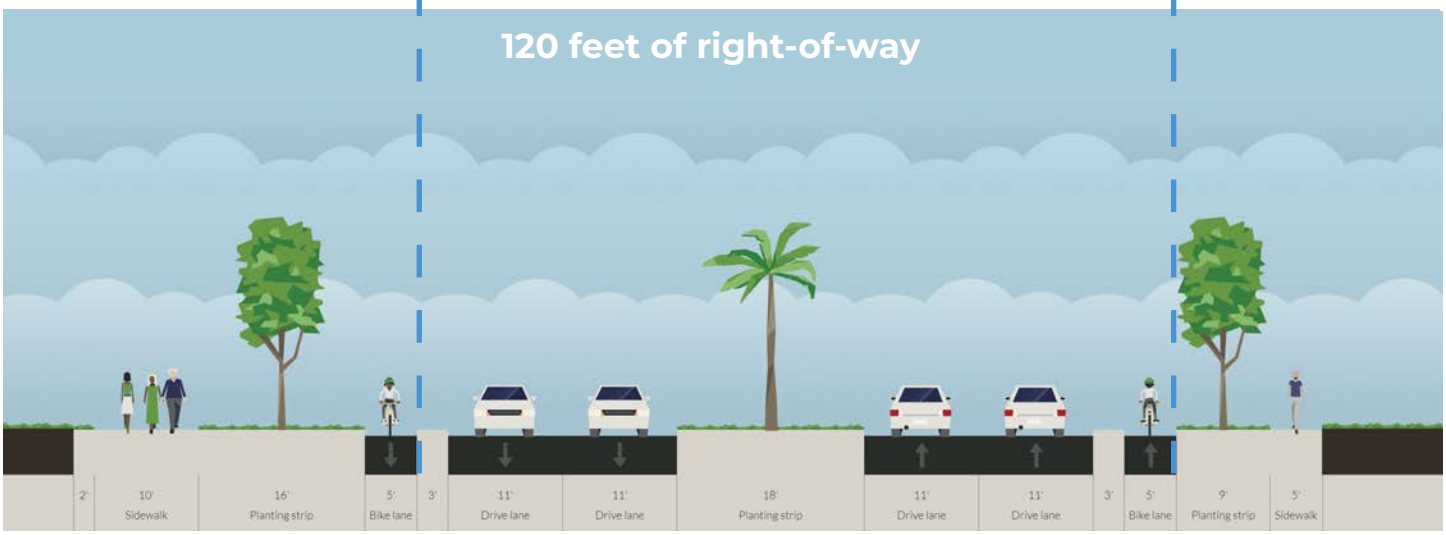
Existing



Existing Edge of Pavement

Proposed

Existing Edge of Pavement



FDOT Context Classification: C1-Natural & C3-Suburban

Existing Speed Limit: 45 mph

Length: 5.4 miles

Proposed Recommendations: Shoulder widening with separated bicycle lanes; add furnishing zones with street trees

HIA Recommendations

The proposed US-1 Multimodal Corridor Study improvements could catalyze significant transportation, land use, education/enforcement and policy changes that can help address the access, health, safety, and economic challenges of the corridor.

Two primary actions must take place in coordination with additional secondary recommendations from the HIA. The primary actions are summarized below and the recommended secondary recommendations can be found in Appendix A.

PRIMARY RECOMMENDATIONS

1. Palm Tran, Palm Beach TPA, and other funding partners should advance Bus Rapid Transit along the US-1 corridor to implementation by funding capital and operations for the service

A. Lead agency – Palm Tran
B. Partnering agencies – Palm Beach TPA, municipalities along US-1 corridor

2. The Palm Beach TPA, FDOT, and other partnering agencies should implement Complete Streets enhancements (bicycle and pedestrian improvements) along the US-1 corridor

A. Lead agency – Palm Tran
B. Partnering agencies – FDOT and municipalities along US-1 corridor

WHY?

Opportunity to increase economic development and redevelopment

The reductions in travel time and the improvements in quality of service associated with implementation of a new transit line [such as BRT] often get capitalized into land value, as residents and businesses are willing to pay a premium to be closer to transit stations.[30] In addition, for every dollar invested in public transportation, four dollars are generated in economic returns.[31] There are pockets of the US-1 corridor that contain large clusters of vacant and underutilized land (where building on the land is worth less than 40% of land + building) that represent opportunities to enhance the walkability and economic development around US-1 BRT stations, as demonstrated by the station demonstration area assessments at US-1 and NE 20th Street (in Boca Raton), Palm Beach Lake Boulevard (in West Palm Beach), and W 13th Street (in Riviera Beach). In addition, low-wage households (earning $20,000 to $35,000) living far from employment centers spend 37% of their incomes on transportation. In neighborhoods well served by public transportation, families spend an average of 9%.

[30] Aileen Carrigan, "Social, Environmental, and Economic Impacts of BRT Systems," (2013).

[31] APTA, "Open for Business: The Business Case for Investment in Public Transportation," (2015).

[32] Aileen Carrigan, "Social, Environmental, and Economic Impacts of BRT Systems," (2013).

[33] Todd Litman, Evaluating Public Transportation Health Benefits," (2010).

[34] Irwin Redlener, MD, "The Growing Health Care Access Crisis for American Children," (2006).

Opportunity to increase access to healthy food sources and health care	Residents with greater access to supermarkets or a greater abundance of healthy foods in neighborhood food stores consume more healthy food and have lower rates of diet-related diseases than their counterparts in neighborhoods lacking food access.[32] High quality public transit increases access to healthy foods and goods, especially for physically or economically disadvantaged.[33] The vulnerable populations in Boynton Beach and Riviera Beach could greatly benefit from the addition of a BRT line by providing them faster access to the healthy food sources. Care should be taken to make sure the BRT stations placed in these areas can connect to these low food access tracts. Lack of access to transportation could reduce health care utilization among children, seniors, low-income people, and people with disabilities. In fact, 4% of US children (3.2 million in total) missed a health care visit or did not schedule a visit during the preceding year because of transportation restrictions.[34] As part of the US-1 BRT evaluation, health care access was consider and stations were placed in close proximity to major hospitals and health care clinic clusters along the corridor.
Opportunity to improve health outcomes like depression, chronic illness, and obesity	Premium transit options (such as BRT) and Complete Streets improvements (such as connected sidewalks and bicycle lanes) have a high potential to affect physical activity habits, especially those of auto-oriented communities. As copious amounts of research suggests, increases in physical activity is associated with depression, diabetes, hypertension, and obesity.[35] While most Americans report an average of 6 minutes of walking per day, public transit riders report an average of 19 minutes of walking per day.[36] The enhanced nature of a BRT system also makes a difference, as BRT riders report higher average walking distances than local bus riders.[37] Research suggests that obesity, diabetes, hypertension, and obesity rates tend to be inversely related to use of alternative modes like walking, cycling, and public transit.[38] A 2001 study showed that women who partook in little to no physical activity were twice as likely to have depressive symptoms than women with moderate to high levels. Researchers have also observed a 42 percent lower risk of hypertension among those who moved from low- to high-walkability neighborhood.[39]
Opportunity to improve cyclist and pedestrian safety	BRT and Complete Streets improvements have the potential to decrease cyclist and pedestrian injuries and fatalities. It is assumed that these improvements would results in increased walking and biking activity. Motorists have been seen adjust their behavior in the increased presence of people walking and bicycling.[40] A research report on the SAFETY effects of protected bicycle lanes in multiple locations around the country found that 79% of cyclists found the protected bicycle lanes to increase the safety of bicycling on the street.[41]

[35] Mallory Atkinson, "The Mental Health Benefits of Walking," (June 2008).

[36] Todd Litman, "If Health Matters," (April 2014).

[37] K. Day, "Does Bus Rapid Transit Promote Walking? An Examination of New York City's Select Bus Service," (2014).

[38] Todd Litman, "If Health Matters," (April 2014).

[39] Maria Chiu, "Moving to a Highly Walkable Neighborhood and Incidence of Hypertension," (2015).

[40] P L Jacobsen, "Safety in Numbers: More Walkers and Bicyclists, Safer Walking and Bicycling," (April, 2004).

[41] Chris Monsere, "Lessons from the Green Lanes: Evaluating Protected Bike Lanes in the U.S.," (June 2014).

HIA Demonstration Areas

Analyzing specific target demonstration areas in more detail can help provide insights on how the new transit investment and varying land use patterns can impact community health. The HIA Working Group and Study Team selected three demonstration areas that were previously identified during the US-1 Multimodal Corridor Study as "Opportunity Areas."

For each demonstration area, the Study Team conducted a review of existing land use conditions, along with transit and demographic makeup and developed illustrative concepts of potential future land use scenarios within a half-mile of the potential station. Two future scenarios were developed for each target area: an interim, short-term scenario, and longer-term development scenario. The future scenarios illustrate how access to premium transit may influence development patterns and densities. Each target demonstration area was evaluated based on how well the various health indicators perform compared to current conditions.

All three demonstration areas can be found in Appendix A, the demonstration area in Boca Raton is shown on the following pages.

This scenario are not meant to indicate any approved or proposed plans but to illustrate a possible and hypothetical development scenario and to understand how transit and transit-supportive development can influence the health of the community around the stations.

The intersection of US-1 and NE 20th St has potential for a major transportation infrastructure investment – in the form of a two-lane roundabout on US-1 – that could drastically improve operations (west of the intersection is a major entrance to Florida International University), improve street crossings, and reduce fatal bicycle and vehicular accidents.

US-1 AND NE 20TH STREET BOCA RATON DEMONSTRATION AREA

Existing Conditions

This area has a limited street network with a limited amount of full intersections and through streets. The land uses are primarily single-use commercial with large shopping plaza parking lots facing the roadway. In addition, NE 20th Street creates a non-perpendicular intersection point leading to a challenging configuration of the current developable space. US-1 through this area has a wide cross section, exhibiting four 12' lanes with a wide center median, turn lanes and posted speed of 45 mph

This makes for a difficult and often uncomfortable pedestrian environment through the heart of the station area. Block sizes along this sector are, on average, three times the size of standard blocks sizes with the largest blocks in the area being more than five times the size of a typical city block. This existing street network is limited by historic suburban development and automotive-centric commercial land uses. The limited intersections and an environment that encourages higher vehicular speeds have caused motorists and pedestrians to utilize parking aisles as "streets" to cut through the large blocks.

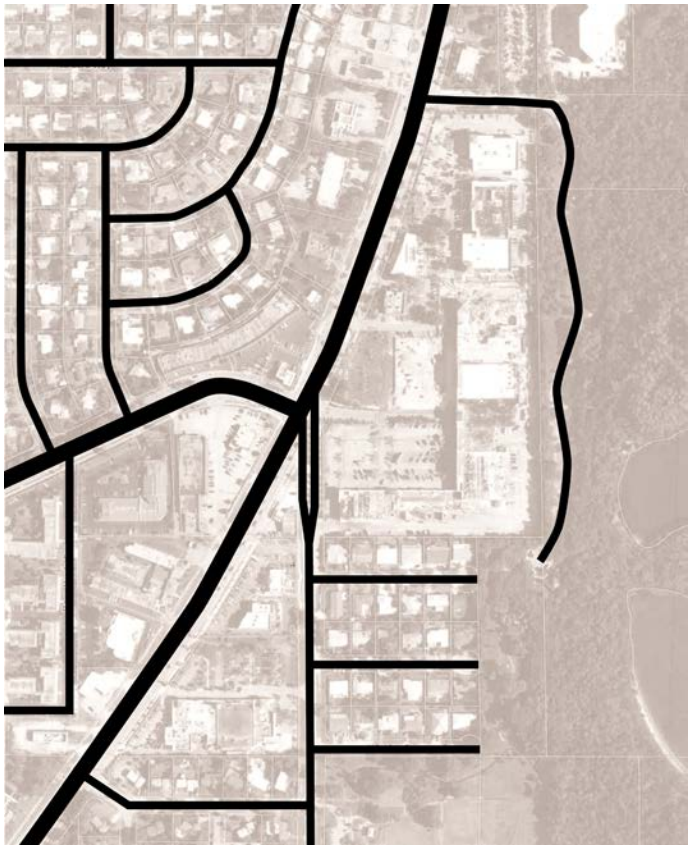
Interim Plan

In the interim scenario, NE 20th Street could be extended through the linear parking areas across the US-1 signalized intersection to the front of the existing shopping plaza. The existing character could be carried through, creating a park in the parcel adjacent to the south of the intersection. The fronting parcels would then be developed in configuration closer to the street. Redevelopment could occur in the short-term as individual infill of properties and likely on the underutilized parcels.

As redevelopment occurs, some of the parking aisles can be rebuilt as streets. This will increase connectivity, break-up the large blocks, and improve overall walkability. The redevelopment could use this opportunity to create new shared community open space areas that could encourage increased physical activity.

US-1 and NE 20th Street: Existing Block Structure

US-1 and NE 20th Street: Existing Street Network



US-1 and NE 20th Street: Interim Block Structure

US-1 and NE 20th Street: Interim Street Network

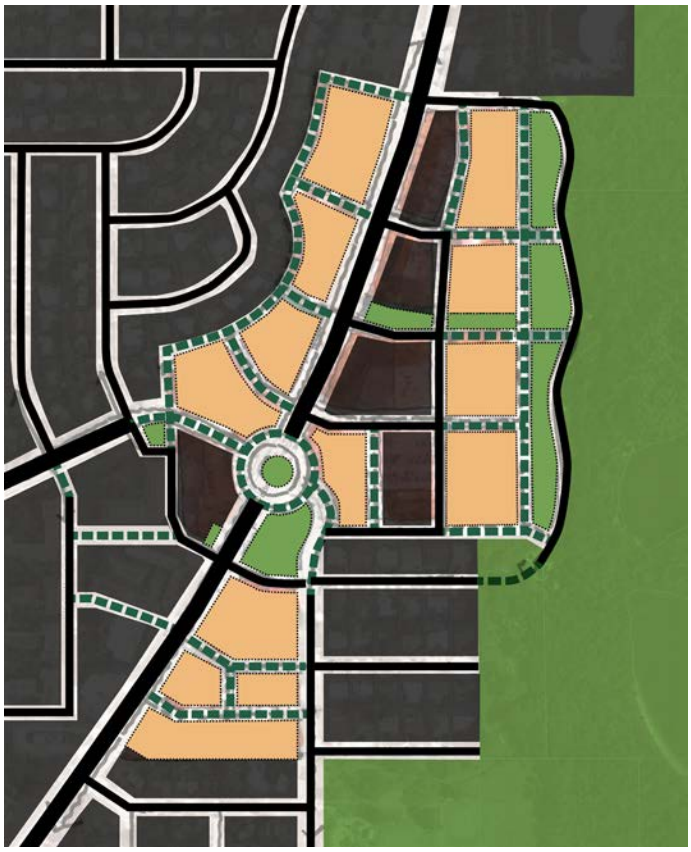
Long-Term Plan

In the long-term, as redevelopment continues, the area may see additional streets connections and new intersections. The NE 20th Street intersection could be connected all the way through the site and reconfigured to have a roundabout to create a safer and more productive intersection. The new development block structure may incorporate shared green spaces of various sizes and may consist of a mix of uses, heights, and densities. Parking could be placed internal to the site, with street alleys serving various land uses.

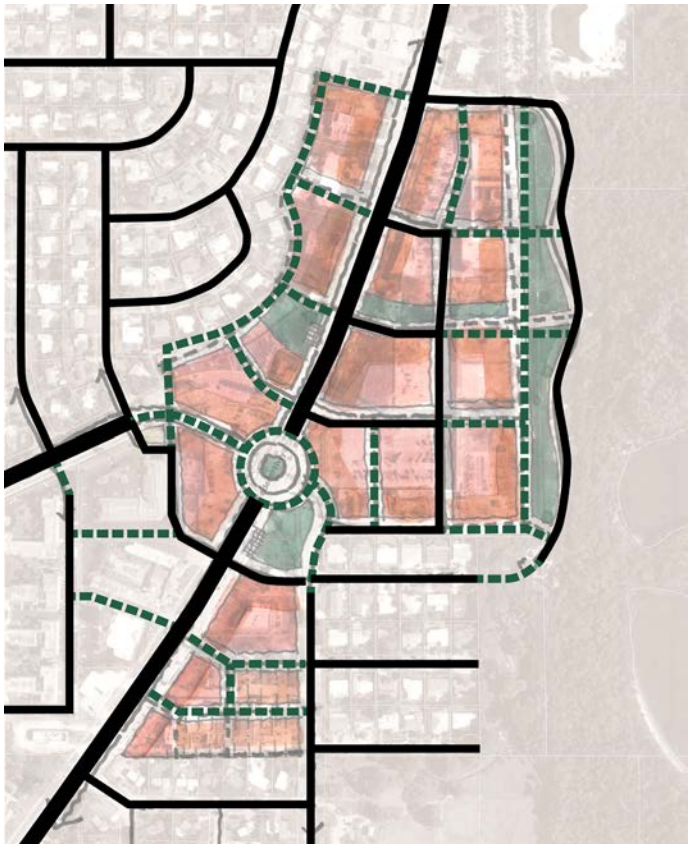
The additional new streets will create significantly smaller sized blocks, more typical of an urban environment, forming a more walkable development pattern.

BRT Elmhurst Redevelopment in New York

US-1 and NE 20th Street: Long-Term Street Network



US-1 and NE 20th Street: Long-Term Street Network



HIA Indicator Matrix

The interim and long-term illustrative scenarios were evaluated to compare how each scenario influences the outcomes of the various health indicators. The table below provides a summary of measures related to each health indicator when comparing the interim and long-term scenarios to the current conditions.

The interim and long-term scenarios resulted in significant increases in housing density, street connectivity, and green space; a significant decrease in average block size, and a modest traffic volume growth compared to the population and tax base added to the community.

The development of a network of slower speed roads can also result in lower potential for bicycle and pedestrian crashes.

INDICATORS	METRIC		SCENARIOS		
	TYPE	UNIT	EXISTING	INTERIM	LONG TERM
Economic Development / Redevelopment	Housing Density	(dwelling unit per acre)	1	7	14
	Employees	(amount)	370	3,400	2,600
	Housing Units	(amount)	65	320	660
	Public streets linking north-south direction	(linear ft)	10,400	11,600	15,100
	Public streets linking east-west direction	(linear ft)	5,400	6,500	9,300
	Peak hour trips generated (traffic volume generated during peak hour)	(trips)	630	4,500	3,100
Quality of Life / Social Cohesion	Overall street connectivity	(amount of intersections)	20	32	53
	Publicly accessible parks and open space	(acres)	2	3	5
	Diversity of land use types per building	(amt)	1	2	3
	Diversity of housing types	(amt)	1	2	3
	Average block size	(acres)	4.8	2.8	1.2
	Ability to allow land-use changes	(amount of blocks)	17	23	38
Obesity Rate	Average block perimeter (walkability)	(linear feet)	2,400	1,800	1,000
	Streets w/ ped bike facilities	(linear feet)	6,500	9,900	12,100
	Streets w/ fronting uses/street trees	(linear feet)	0	3,300	9,400
	Streets w/ 30mph or less	(amount)	8	16	22
Ped / Bike / Fatality / Injury	Percentage of network with high potential for ped/bike incidents (no bike lanes, high speeds)	(percentage)	30%	20%	15%
	Percentage of network with low potential for ped/bike incidents (bicycle lanes, lower speeds)	(percentage)	70%	80%	85%

Roadway Planning-Level Cost Estimate

Based on cost per mile models developed by FDOT, a planning-level cost estimate was developed for roadway improvements recommended in this study. The proposed recommendations for typical sections were analyzed and matched to the most applicable cost model. Since the cost models are generic, the planning-level cost estimate is intended to be used as a budgeting tool. Cost estimates should be refined during later stages of individual project implementation.

FDOT cost per mile models include the construction cost, maintenance of traffic, mobilization, and contingency. The project team added estimates for design at 15% and construction engineering and inspection (CEI) at 10%.

The planning level cost estimate was developed for all 42 miles of the US-1 corridor study limits. The cost estimate for each proposed typical section recommendation was calculated separately and included in Appendix C. Below is a summary of the planning-level cost estimate for each of the six sections.

SECTION #	ESTIMATED CONSTRUCTION COST	ESTIMATED DESIGN COST	ESTIMATED CEI COST	TOTAL COST ESTIMATE
1	$37,035,253.89	$5,555,288.08	$3,703,525.39	$46,294,067.36
2	$35,463,654.25	$5,319,548.14	$3,546,365.43	$44,329,567.81
3	$7,996,804.04	$1,199,520.61	$799,680.40	$9,996,005.05
4	$19,960,555.31	$2,994,083.30	$1,996,055.53	$24,950,694.14
5	$9,662,262.43	$1,449,339.36	$966,226.24	$12,077,828.04
6	$12,511,802.65	$1,876,770.40	$1,251,180.27	$15,639,753.32
TOTAL COST	**$122,630,332.57**	**$18,394,549.89**	**$12,263,033.26**	**$153,287,915.71**

Transit Assessment Planning-Level Cost Estimate

Based on average industry standards, a planning level cost estimate was generated to forecast both the typical station area and amenities cost and the overall cost of all stations and required buses as each PTX phase is implemented.

KCMAX Station – Kansas City

Photo Credit: content.mindmixer.com

TYPICAL STATION AREAS AND AMENITIES COST ESTIMATE

TYPE	UNIT	PRICE	QTY	TOTAL	TYPICAL FEATURES
TYPICAL PTX STATION	1	$200,000	84	$16,800,000	• TRASH/RECYCLE RECEPTACLES • SEATING, BICYCLE RACKS • COVERED SHELTER WITH LIGHTING (SOLAR) • TICKET VENDING MACHINE (OFF-BOARD TICKETING) • REAL-TIME PASSENGER/TRANSIT INFORMATION • MAPS AND INTERACTIVE WAYFINDING • PEDESTRIAN SCALE LIGHTING
TYPICAL ENHANCED BUS (ELECTRIC)	1	$750,000	VARIES	N/A	• EXAMPLE: 40' PROTERRA (ELECTRIC)

PTX ALIGNMENTS COST ESTIMATE

	PTX STATIONS	TOTAL COST	BUSES	TOTAL COST	TOTAL CAPITAL COSTS
PTX YELLOW	38	$7,600,000	18*	$13,500,000	$21,200,000
PTX BLUE EXTENSION	24	$4,800,000	5*	$3,750,000	$8,550,000
PTX GREEN EXTENSION	22	$4,400,000	7*	$5,250,000	$9,650,000
				TOTAL	**$39,400,000**

*ASSUMES 25% SPARE BUS RATIO

Transit Funding Opportunities

The number of traditional federal and state funding sources for fixed route, high-frequency transit service continues to be limited. Most federal funding requires a non-federal match from state or local governments. Due to funding limitations, some transportation needs may be left unmet without dedicated, local funding sources. The use of creative partnerships can enhance funding opportunities and/or financial arrangements. Potential partners may include major local or regional employers directly served by the transit system, human service agencies within the Palm Beach County, and the South Florida Regional Transportation Authority.

During the Route Performance Maximization (RPM) process, Palm Tran may find it necessary to support increasing dedicated revenues to effectively operate an enhanced premium transit service. As details for improving the planned service along US-1 are confirmed, it will be critical to identify sustainable funding opportunities. As transit spending is greatly affected by annual budget and appropriation actions at the federal, state and local levels, dedicated funding will offer Palm Tran increased flexibility to fund multi-modal and flexible transportation options and to keep pace with evolving transportation, market and community trends.

Local discretionary sales taxes are a common source of local tax revenue across the country. Recent increases in the levels of local sales taxes available indicate that Florida's current levels of sales taxation is consistent with other state averages. Additionally, national polling trends indicate a generalized willingness to support increased taxation (nearly 70% national pass rate) if revenues directly support transportation projects that improve mobility and that the benefits are clearly articulated.

Building project champions will be perhaps the most effective way to establish a unified commitment to implement bold, high-frequency transit service development along the US-1 corridor. This effort includes providing leadership, staff support and other resources to overcome potential institutional, financial and technical complexities; discontinuities due to changing political cycles; and to ensure alignment among key stakeholders such Palm Tran, major employers and businesses along the corridor (including the local Chambers of Commerce), affected Community Redevelopment Agencies and elected officials.

Once consensus on a direction to implement the service is achieved, it is highly recommended that Palm Tran establish a reputable project clearinghouse to establish and convey clear priorities, processes and timelines, including project branding, awareness and funding, to advance premium transit through the US-1 corridor. Only through the collective engagement and influence of staff, elected officials, business and industry leaders, chamber of commerce stakeholders, business merchants and the local community, can US-1 redefine itself as a sustainable, multimodal corridor.

The following potential local funding opportunities that can be leveraged to assist with implementation. More detail on each opportunity can be found in Appendix B.

- **Local Option Gas Taxes**
- **Local Option Sales Taxes**
  - **Local Government Infrastructure Surtax**
  - **Charter County and Regional Transportation System Surtax**
- **Ad Valorem Tax Revenues**
- **Mobility Fees**
- **Value Capture**
- **Special Assessment Districts**
- **Joint Use Development/ Participation Agreements**
- **Advertising and Lease Agreements**
- **Farebox Revenues**

In addition to the spectrum of local revenue options, Palm Tran can apply for state and federal transportation grants. Federal transit funding is changing dramatically as part of the most recent transportation reauthorization bill. The table on the following page shows federal and state discretionary (competitive) grant programs that would be most relevant to Palm Beach County. More detail on each opportunity can be found in Appendix B.

FEDERAL AND STATE FUNDING OPTIONS

FEDERAL - BUS & BUS FACILITIES INFRASTRUCTURE INVESTMENT PROGRAM (5339 B AND C)	
ELIGIBLE PURPOSE/ PROJECTS	Provides capital funding to replace, rehabilitate and purchase buses and related equipment and to construct bus related facilities. Funding is available to designated recipients and states that operate or allocate funding to fixed-route bus operators providing service to the public via formula allocations and competitive grants. A sub-program (under Part C) provides competitive grants for bus and bus facility projects that support low and zero-emission transit vehicles, including acquisition, construction and leasing of required supporting facilities.
FEDERAL - FIXED GUIDEWAY CAPITAL INVESTMENT GRANTS (CIG) SMALL STARTS (5309)	
ELIGIBLE PURPOSE/ PROJECTS	**Small Starts represent new fixed guideway projects, extensions to existing fixed guideway systems, or corridor-based BRT projects with a total estimated capital cost of less than $300 million AND that are seeking less than $100 million in 5309 CIG program funds.**
FEDERAL - PILOT PROGRAM FOR TRANSIT ORIENTED DEVELOPMENT PLANNING (5309)	
ELIGIBLE PURPOSE/ PROJECTS	Competitive program that augments CIG specifically around TOD planning to help support improving public transportation for local communities via the effective integration of land use and transportation with a transit capital investment that is seeking or recently received funding via CIG program.
FEDERAL -TRANSPORTATION INVESTMENTS GENERATING ECONOMIC RECOVERY (TIGER)	
ELIGIBLE PURPOSE/ PROJECTS	**Competitive, discretionary funding opportunity for state and local entities to obtain funding for multi-modal, multi-jurisdictional projects that are typically more difficult to support via traditional DOT programs. Since 2009, the program has awarded over $5.5 billion to 463 projects. Examples include roads and bridges, public transportation, ports, passenger and freight rail, and intermodal projects.**
FEDERAL - PUBLIC TRANSPORTATION INNOVATION (5312)	
ELIGIBLE PURPOSE/ PROJECTS	**Discretionary funding opportunity to develop innovative products and services that will assist transit agencies in better meeting the needs of their customers.**
FEDERAL - MOBILITY ON DEMAND (MOD) SANDBOX PROGRAM	
ELIGIBLE PURPOSE/ PROJECTS	**Part of a larger research effort at USDOT designed to support transit agencies and communities as they integrate new mobility tools such as smart phone apps, bike- and car-sharing, and demand-responsive bus and van services. MOD projects help make transportation systems more efficient and accessible, particularly for people who lack access to a car.**
FEDERAL - TRANSFERRING FEDERAL TRANSPORTATION FUNDS (FLEXED STP FUNDS)	
ELIGIBLE PURPOSE/ PROJECTS	Funding from the Federal Highway Administration's (FHWA) Surface Transportation Program (STP) may be used by states and localities for a wide range of projects including highway, transit, intercity bus, bicycle and pedestrian projects. STP funds may be transferred (also referred to as "flexed") to transit agencies and local governments for eligible transit projects.
STATE - PUBLIC TRANSIT SERVICE DEVELOPMENT GRANT PROGRAM	
ELIGIBLE PURPOSE/ PROJECTS	**Provides initial funding for special project involving new or innovative ways to increase service to the riding public, such as new technologies, services, routes or vehicle frequencies. Projects submitted for funding must be justified in the recipient's Transit Development Plan (TDP) or transportation disadvantaged service plan (TDSP), if applicable.**
STATE - COMMUTER ASSISTANCE PROGRAM (CAP)	
ELIGIBLE PURPOSE/ PROJECTS	**Established to encourage public/private partnerships to provide brokerage services to employers and individuals for carpools, van-pools, bus pools, express bus service, subscription transit service, group taxi services,heavy and light rail, and other systems designed to increase vehicle occupancy, particularly during peak travel time periods.**
STATE - TRANSPORTATION REGIONAL INCENTIVE PROGRAM (TRIP)	
ELIGIBLE PURPOSE/ PROJECTS	As part of a major initiative to improve growth management planning and the provision of transportation infrastructure, the program was created in 2005 to improve regionally significant transportation facilities in "regional transportation areas". State funds are available throughout Florida to provide incentives for local governments and the private sector to help pay for critically needed projects that benefit regional travel and commerce. Funds derive from the State Transportation Trust Fund.
STATE - FLORIDA NEW STARTS TRANSIT PROGRAM (NTSP)	
ELIGIBLE PURPOSE/ PROJECTS	Established by the 2005 Legislature to assist local governments in developing and constructing fixed-guideway and BRT projects to accommodate and manage urban growth and development. Additionally, the program leverages state funds to generate local transportation revenues and secure FTA Small/New Starts funding for Florida projects. Funds may be uses for final design, ROW acquisition, and construction projects, following the guidance of FTA's 5309 Program.

Chapter 5.

Implementation

Introduction

The US-1 Multimodal Corridor Study creates a common vision to coordinate efforts and focus on shared priorities.

The prioritization of proposed multimodal improvements is based on a review of the FDOT Work Program; TPA goals/objectives; and three priority tiers that account for complexity, cost, and benefit. The project termini may include multiple typical section termini based on logical groupings.

- **Complexity** rates projects by the level of procedural or administrative tasks that would need to be accomplished to implement a project such as lane elimination studies, parking modifications, and environmental documentation.
- **Cost** rates projects by the level of financial investment that would be required as determined by the types of physical construction that would be required.
- **Benefit** rates projects by the type of modal modifications being made such as adding new modal facilities that do not currently exist along a section of roadway or enhancing modal facilities that already exist, such as by adding a separator to an existing bicycle lane.

The following steps are recommended to move segments into implementation.

1

Coordination

Continue coordination with FDOT, Palm Beach County, Municipalities and Palm Tran to leverage state and federal funding for projects

2

Partnership Identification

Identify partnership opportunities and engage project leads to work towards setting a timeline for completion based on funding

3

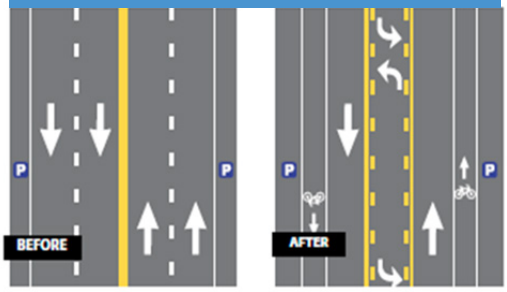
Project Phasing

Identify potential funding schedules and initiate project phasing to create “shovel-ready” projects

Roadway modifications that recommend lane repurposing will require the following.

- Locally funded traffic study to document the impact of this change to vehicular capacity and congestion levels at existing and future peak hours.
- Documentation of targeted outreach to specific stakeholders affected by the modification (area residents and businesses).
- A local community resolution of support endorsing the recommended modification.

Example of lane repurposing.

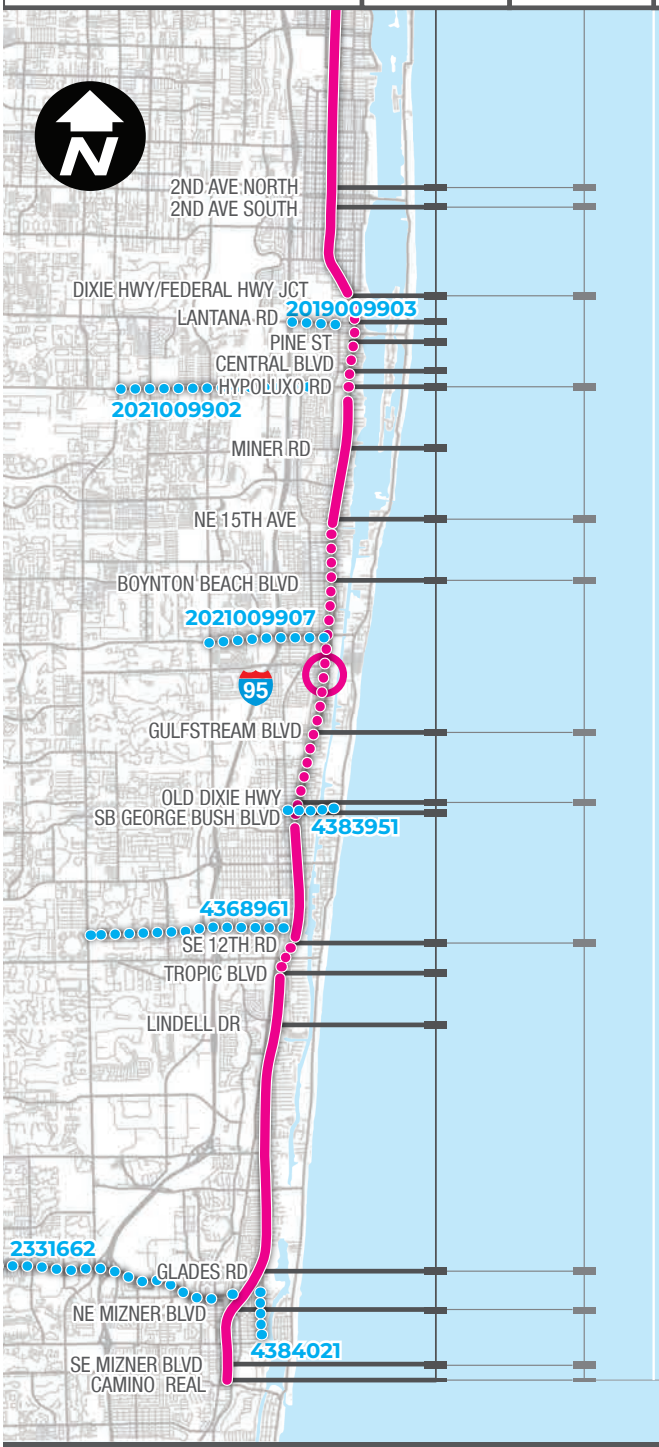


Example of separated bicycle facility and transit stop in St. Petersburg, Florida.

Example of separated bicycle facility in Santa Monica, California.

PRIORITIZATION OF PROPOSED MULTIMODAL IMPROVEMENTS

0 2 4 MILES



US-1 CORRIDOR

US-1 TIP PROJECTS

NEARBY TIP PROJECTS

4378351 Resurfacing (CST FY 19)

4378341 Resurfacing (CST FY 19)

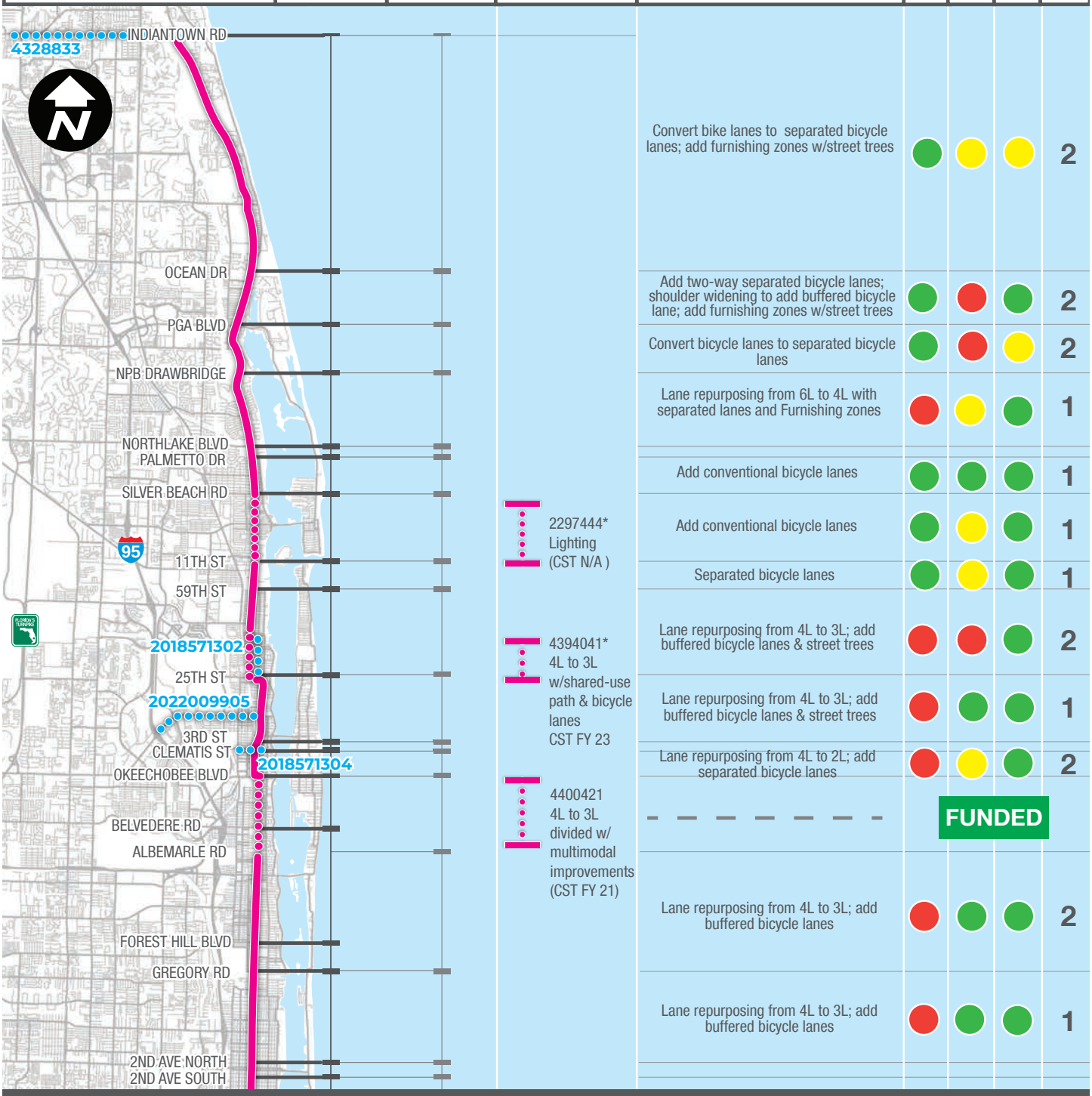
2017R507 Intersection (CST FY 18)

4398411 Resurfacing (CST FY 20)

TYPICAL SECTION TERMINI	PROJECT TERMINI	DESCRIPTION	COMPLEXITY	COST	BENEFIT	PRIORITY TIER
		Lane repurposing from 4L to 2L w/turn lanes, buffered bicycle lanes, parking	🔴	🟡	🟢	1
		Lane repurposing from 4L to 3L; add conventional bicycle lanes	🔴	🟢	🟢	1
		Lane repurposing from 4L to 3L; add buffered/conventional bicycle lanes, obtain 10-foot easement for sidewalk on the west side & furnishing zone w/street trees	🔴	🔴	🟢	3
		Convert buffered bicycle lanes to separated bicycle lanes; obtain 10-foot easement for sidewalk on the west side	🟡	🟡	🟢	2
		Add separated bicycle lanes	🟡	🔴	🟡	3
		Full reconstruction w/furnishing zones with street trees	🟢	🔴	🟡	3
		Add separated bicycle lanes	🟡	🔴	🟢	3
		Convert bicycle lanes to buffered bicycle lanes	🟢	🟢	🟡	3
		Two-way separated bicycle lanes on both sides & furnishing zones w/street trees	🔴	🔴	🟢	2
		Lane repurposing from 6L to 4L; add separated bicycle lanes	🔴	🔴	🟢	2
		Partial reconstruction; add buffered bicycle lanes	🟢	🟡	🟡	1
		Lane repurposing from 6L to 4L; add on-street parking & separated bicycle lanes	🔴	🟡	🟢	1

LEGEND

	COMPLEXITY	COST	BENEFIT
🟢	No change to the number of existing through lanes & parking	No changes to drainage or median	Add new modal facilities
🟡	Turn lane modifications and/or removal of parking	Changes to median and/or minor curb modifications	Improve existing facilities & adding a buffer
🔴	Lane elimination and/or significant additional planning process may be required	Full reconstruction	N/A



PRIORITY TIER		
1 – Build in 5-7 Years	**2** – Build in 7-9 Years	**3** – Build in 10+ years

Source: Palm Beach TPA Draft Fiscal Year 2019-2023 Transportation Improvement Program (TIP)

Next Steps for Transit Implementation

PTX Yellow (Phase 1)

Benefits

- **Transit Ridership -** The PTX Yellow from Boynton Beach to Riviera Beach focuses transit services on the section of the corridor that has the highest existing ridership and contains the greatest concentration of vulnerable households. This service is estimated to add 75,000 additional riders per year over the current Bolt service.
- **Transit Coverage -** The proposed PTX Yellow stations, roughly space 1-mile apart afford a 17% increase in transit access for households and job locations over the existing Bolt.
- **Increased Transit Frequency -** The improved location of PTX stations allows the new service to access more critical locations, like schools and healthcare facilities, as compared to the current limited stop express service The Bolt.

Assumptions

- **Reduced Headway -** PTX Yellow assumes that the Local Route 1 bus route would decrease frequency from 20 minutes to 30 minutes at each stop.
- **Balancing Higher Costs -** With that reduction in frequency, the premium transit service, PTX Yellow would only require an additional $287,274 in annual operating costs.

PTX Blue, PTX Green (Future Phases)

Benefits

- **Transit Ridership -** The PTX Blue Boca Raton to Boynton Beach extends the PTX Yellow to capture an additional high concentration of households and jobs within the southern portion of the corridor. Combine with future phase PTX Green, it is estimated an additional 229,000 riders per year would use this service compared to the existing Bolt.
- **Transit Coverage -** The future PTX Blue and PTX Green stations continue to average the 1-,mile spacing and this would result in a 138% increase in transit access for households and job locations over the existing Bolt.
- **Increased Transit Frequency -** The improved location of PTX stations allows the new service to access more critical locations, like schools and healthcare facilities, as compared to the current limited stop express service The Bolt.

Assumptions

- **Reduced Headway -** PTX Blue and PTX Green assume that the Local Route 1 bus route would decrease frequency from 20 minutes to 30 minutes at each stop.
- **Balancing Higher Costs -** With that reduction in frequency, the premium transit service, the addition of PTX Blue and PTX Yellow would require an additional $1,872,000 in annual operating costs.

CONCEPTUAL PTX PHASING

	EXISTING		PTX YELLOW (PHASE ONE)		PTX BLUE (PHASE TWO)		PTX GREEN (PHASE THREE)	
	ROUTE 1	BOLT	ROUTE 1	"PTX"	ROUTE 1	"PTX"	ROUTE 1	"PTX"
ROUTE ASSUMPTIONS								
ROUTE LENGTH	42 mi	28 mi	-	19 mi	-	+ 14 mi*	-	+ 9 mi*
STOP PAIRS	172 stops	12 stops	-	19 stops	-	+ 11 stops*	-	+11 stops*

*Incremental Additions to PTX Yellow Service

NET SERVICE INCREASE OVER EXISTING ROUTE 1 LOCAL AND THE BOLT SERVICES								
DAILY NET INCREASE	-		+ 304 Riders		+ 559 Riders		+ 1,205 Riders	
ANNUAL BOARDINGS	1,922,272		1,997,456		2,125,218		2,226,310	
NET INCREASE	-		+ 75,184 Riders		+ 140,368 Riders		+ 228,721 Riders	
PREMIUM TRANSIT EQUITY - ELEMENTS WITHIN A 10-MINUTE WALK OF A STATION								
HOUSEHOLDS & JOBS	-	64,870	-	75,764 *(17% Increase)*	-	123,909 *(91% Increase)*	-	154,289 *(138% Increase)*
SCHOOLS (K-12)	-	11	-	+ 13 *(Additional Schools)*	-	+ 22 *(Additional Schools)*	-	+ 34 *(Additional Schools)*
MEDICAL FACILITIES	-	39	-	51 *(Additional Facilities)*	-	114 *(Additional Facilities)*	-	178 *(Additional Facilities)*

Proposed PTX Phasing

Implementation Process

Implementing a premium transit system, like the proposed PTX, is a large and complex project that requires extensive coordination at all levels of government and a concerted effort over many years to implement.

There are two potential ways to implement PTX, (1) pursue a large-scale funding program such as **FTA Small Starts** to complete all elements at once or (2) **phase-in improvements** local, non-federal as funding becomes available.

A key assumption in the implementation a premium transit service is the reduction in frequency of the existing Route 1 service from 20 minutes to 30 minutes. This focuses limited transit funding where it can serve the most people and allows for introduction of PTX Yellow service at a nearly cost-neutral level. Implementation of this service **requires Palm Tran** to further study this assumption, along with frequency and span of service for the PTX service, in order to refine the service to a supportable outcome and subsequently pursue capital funding for implementation.

Small Starts Process

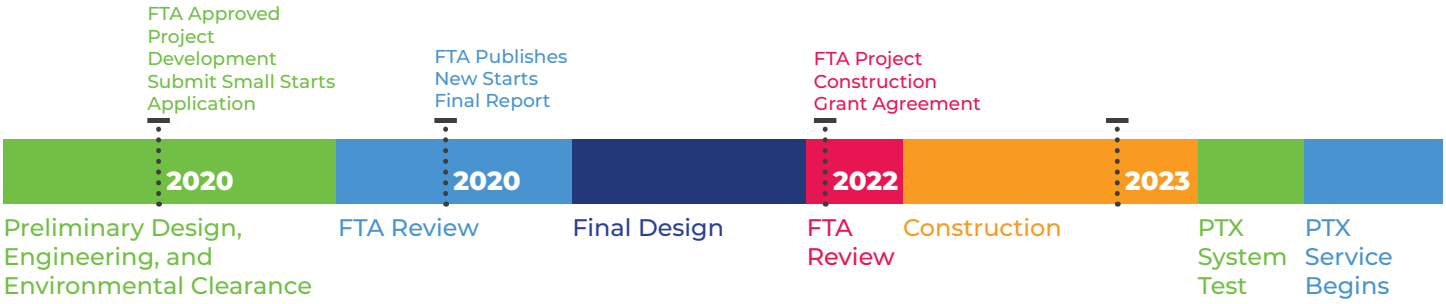
The FTA Small Starts funding program justifies transit projects through an evaluation of mobility, environmental benefits, congestion relief, economic development, and cost effectiveness. The program justification also examines the level of local financial commitment including evidence of stable and dependable financing sources.

It is recommended that Palm Tran pursue the FTA Small Starts for Phase 1 PTX Yellow. The appropriate timeline (based on an "expedited process," due to the work already completed) would follow the steps shown below and summarized in the adjacent graphic.

1. Complete environmental review process including developing and reviewing alternatives, selecting locally preferred alternative (LPA), and adopting it into fiscally constrained long-range transportation plan
2. Gain commitments of all non-5309 funding
3. Complete sufficient engineering and design
4. FTA evaluation, rating, and approval: Construction Grant Agreement
5. Construction

PTX Development Timeline

(assumes expedited process)



HIA Monitoring

Evaluation and Follow-Up

As part of the Palm Beach TPA's ongoing relationships with Palm Tran, the local partners along the US-1 corridor, and the HIA Working Group, the TPA will track and document the impact of the US-1 Multimodal Corridor Study through implementation on the health indicators described in this report.

The Palm Beach TPA can also work with regional and local partners to incorporate priority recommendations from this HIA into decisions related to the Region's enhanced transit system.

It is recommended that the Palm Beach TPA follow a monitoring plan that determines the following:

1. Which recommendations in this HIA have been enacted to promote and improve health along the US-1 corridor?
2. As a direct result of the US-1 HIA's Primary Recommendations, what is the evidence showing change in the overall community health along the US-1 corridor?
3. As a direct result of the US-1 HIA's Secondary Recommendations, what is the evidence showing change in the overall community health along the US-1 corridor?

The following outlines baseline numbers referencing currently-available data. These statistics should be used as a baseline for monitoring the health conditions in the communities along the US- 1 corridor in the future.

1. Access to Health
2. Physical Health Indicators
3. Bicycle and Pedestrian Injuries and Fatalities
4. Economic Health

ACCESS TO HEALTH			
INDICATOR	STATISTICAL AGENCY	TIMING	BASELINE
Transit travel time along US-1 corridor	Palm Tran	2 years	2.5-3 hours from Camino Real (Boca Raton) to The Gardens Mall (Palm Beach Gardens)
Transit travel time from low health care access locations to nearest hospital /health care clusters	Palm Tran	2 years	26-28 minutes (avg. AM/PM peak) from Gateway Boulevard to Bethesda Hospital East in Boynton Beach 39-50 minutes (avg. AM/PM peak) from Gregory Rd to Good Samaritan Medical Center in West Palm Beach 15-19 minutes (avg. AM/PM peak) from West 13th Street in Riviera Beach to Good Samaritan Medical Center in West Palm Beach No transit between Juno Beach and Jupiter
Number of food desert tracts within 1 mile of corridor	Palm Beach TPA	5 years	5 tracts in areas of Riviera Beach and Boynton Beach

PHYSICAL HEALTH INDICATORS

INDICATOR	STATISTICAL AGENCY	TIMING	BASELINE
Percentage of adults with obesity (corridor-wide)	Department of Health	Annual	29.5%
Percentage of adults with diabetes (corridor-wide)	Department of Health	Annual	14.3%
Percentage of adults with hypertension (corridor-wide)	Department of Health	Annual	43.0%
Percentage of adults with asthma (corridor-wide)	Department of Health	Annual	8.4%
Percentage of adults with depression (corridor-wide)	Department of Health	Annual	16.7%

BICYCLE AND PEDESTRIAN SAFETY

INDICATOR	STATISTICAL AGENCY	TIMING	BASELINE
Bicycle crashes (last 5 years)	Palm Beach TPA	3 years	135 crashes (it is recommended that future stats be normalized with bicycle exposure data)
Pedestrian crashes (last 5 years)	Palm Beach TPA	3 years	186 crashes (it is recommended that future stats be normalized with pedestrian exposure data)
Bicycle and pedestrian fatalities (last 5 years)	Palm Beach TPA	3 years	15 fatalities
Bicycle and pedestrian fatalities occurring at night (last 5 years)	Palm Beach TPA	3 years	15 fatalities
Workers commuting by public transportation, walking, or biking	Palm Beach TPA	5 years	6.8%
Pedestrian activity	Palm Beach TPA	2 years	No Baseline
Bicyclist activity	Palm Beach TPA	2 years	No Baseline

ECONOMIC HEALTH

INDICATOR	STATISTICAL AGENCY	TIMING	BASELINE
US-1 corridor population density	Palm Beach TPA	2 years	6.7 persons/acre
Average taxable land value of properties immediately adjacent to the US-1 corridor	Palm Beach TPA	5 years	$752,000/acre
Average taxable land value within one (1) mile of the US-1 corridor (excluding barrier island properties)	Palm Beach TPA	5 years	$725,000/acre
Number of new businesses	Palm Beach TPA and Palm Beach County	Annual	No baseline
Workers commuting by transit, walking, or bicycling	Palm Beach TPA	5 years	3.0% Transit 2.5% Walk 1.3% Bicycle
Household units within inclusionary zoning boundaries or Community Land Trust	Palm Beach County and local Community Land Trust	2 years	XX Units


ONLY
ONLY
ONLY


CAFE
BUS ONLY

US-1 Multimodal Corridor Study

Connecting Communities in Palm Beach County