Arterial Connectivity Study

along I-595 Corridor

FM#441954-1-12-01

Master Improvement List

Technical Report #3

April 2022

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Master Improvement List
Technical Report #3

Prepared for:

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

1. INTRODUCTION

The Arterial Connectivity Study along I-595 Corridor was conducted to identify and define transportation problems and develop effective solutions to fulfill the goal of providing better connectivity for all modes and to provide congestion relief for travel along the north-south study roadways and their access points with I-595 and SR 84. A wide variety of improvement strategies were considered including land use and policy strategies; geometric modifications to roadways; pedestrian, bicycle, greenway, and transit infrastructure improvements; and technology and traffic signal improvements. The Arterial Connectivity Study along I-595 Corridor consists of four main tasks as listed below.

- Task One – Data Collection, Compilation, Development, and Analysis
- Task Two - Develop Deficiency Mitigation Concepts (MCs) and Mitigation Measures (MMs)
- Task Three - Develop a Master Improvement List and Implementation Packages for Mitigation Measures
- Task Four – Outreach and Meetings

The Master Improvement List report is part of Task Three, and is the seventh and final deliverable to be completed for the Arterial Connectivity Study along I-595 Corridor.

1.1 Study Goal and Objectives

The overall study goal is to provide congestion relief for north-south travel and improve access to and from SR 84 and I-595. The key objectives for the study are:

- Identify deficiencies,
- Collaborate with stakeholders to develop effective solutions, and
- Implement a plan of mitigation measures.

1.2 Purpose of Master Improvement List Report

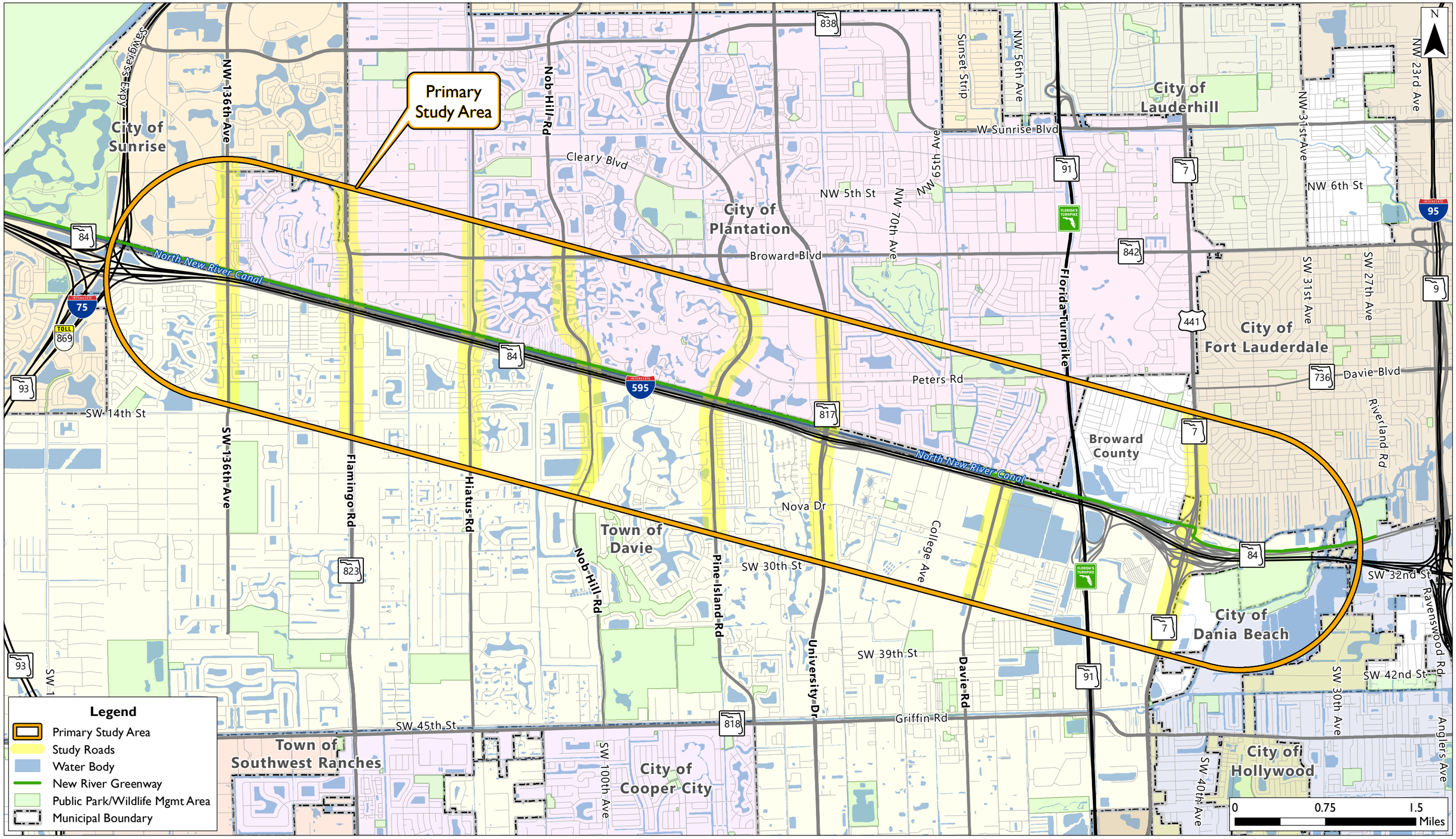
The Master Improvement List report (Technical Report #3) provides a list of mitigation measures projects that were developed based on the data collection and analysis of the transportation facilities within the study area. Recommended improvements along each corridor were divided into individual projects that could be constructed as standalone projects. These mitigation measures projects are documented on the Master Improvement List. A Project Implementation Package (PIP) was prepared for each of the 23 projects on the Master Improvement List.

This report describes the Master Improvement List including the projects and their limits, roadway jurisdiction, needed project phases, cost estimates for each phase, and needed implementation year. Attached PIP documents contain the key information about each project needed for amending the Broward MPO's Metropolitan Transportation Plan (MTP), and for FDOT work program budgeting and programming purposes.

1.3 Study Area

The study area is in central Broward County, Florida along the I-595 and SR 84 corridor between SW 136th Avenue and SR 7/US-441. The study limits included eight north-south arterials that cross I-595 and SR 84, and extended approximately one mile north and one mile south of I-595. The New River Greenway is also included in the study. The primary study area and study roadways and greenway are shown in Figure 1-1. Below is a list of the primary study roadways and approximate study limits on each road.

1. SW 136th Avenue from north of NW 8th Street to north of SW 14th Street
2. Flamingo Road / SR 823 from south of NW 8th Street to south of SW 15th Place
3. Hiatus Road from north of Broward Boulevard to south of SW 16th Street / S Harmony Lake Circle
4. Nob Hill Road from Broward Boulevard to SW 22nd Court
5. Pine Island Road from SW 3rd Street to south of Nova Drive
6. University Drive / SR 817 from Federated Road to SW 30th Street
7. Davie Road from I-595 / SR 84 to Broward College entrance / SW 35th Street
8. US-441 / SR 7 from SW 16th Street to Powells Road
9. SR 84 eastbound and westbound from I-75 to I-95



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Arterial Connectivity Study Along I-595
FM# 441954-1-12-01

Study Area

Figure 1-1

2. MASTER IMPROVEMENT LIST

The following sections summarize the projects on the Master Improvement List, their attributes, and how they were developed. In addition, the projects on the list are summarized by location and implementation timeframe. Potential funding sources are also noted for the various project types. The coordination conducted with stakeholders regarding the list of projects is documented in this section as well.

2.1 Project Development

Recommended improvements were identified along each of the eight north-south study arterials, including at their intersections with SR 84 and the New River Greenway within the study area. These improvements address safety, traffic operations, connectivity, and multimodal deficiencies that were identified through analysis of existing and future 2045 conditions. Various types of improvement strategies and infrastructure alternatives were evaluated, and multimodal infrastructure improvements were recommended for each north-south study roadway depending on the needs. The Deficiency Mitigation Measures Report (Technical Report #1) documents the development, analysis, and evaluation of mitigation concepts, as well as the resulting recommended mitigation measures along each study roadway and the New River Greenway.

Roadway, intersection, sidewalk, bicycle lane, and traffic signal improvements were recommended along each of the study roadways where needed. In addition, roadway crossing improvements were recommended at the New River Greenway, along with an extension of the greenway between University Drive and Davie Road. The locations and types of recommended improvements are shown in Figure 2-1.

Characteristics of the recommended improvements along each north-south study roadway were assessed to identify individual projects that could be funded and constructed as standalone projects. To identify individual projects, the location, extent of the project limits, and type of work was reviewed. In addition, roadway ownership, the next phase needed (PD&E Study or design phase), and the timeframe when each improvement is needed were evaluated.

A total of 23 projects were identified and included on the Master Improvement List. These mitigation measures projects are documented on the Master Improvement List presented as Table 2-1. The project limits and project numbers for projects #1 through 17 are shown geographically on a map of the study area in Figure 2-2. Figure 2-3 shows the project numbers and project limits for projects #18 through 23 (the New River Greenway projects).

All recommended improvements shown on Figure 2-1 are incorporated into the projects on the Master Improvement List, except for some bicycle and pedestrian improvements that extend outside the project limits. These bicycle and pedestrian improvements are graphically depicted on Figure 2-1. They are recommended to be implemented by the local agencies either as standalone projects, or together with other future improvements (such as resurfacing) along these roadways.

The first 17 projects listed in Table 2-1 are interchange and intersection type projects. They are listed in order of geographic location, from west to east within the study area. The last six projects included in Table 2-1 are New River Greenway projects. They are shaded a green color in the table to indicate they are a different type of project. The greenway projects are generally listed in order of geographic location as well, from west to east within the study area. The following sections describe the project information included on the Table 2-1 Master Improvement List.

Figure 2-1: Improvement Locations and Types

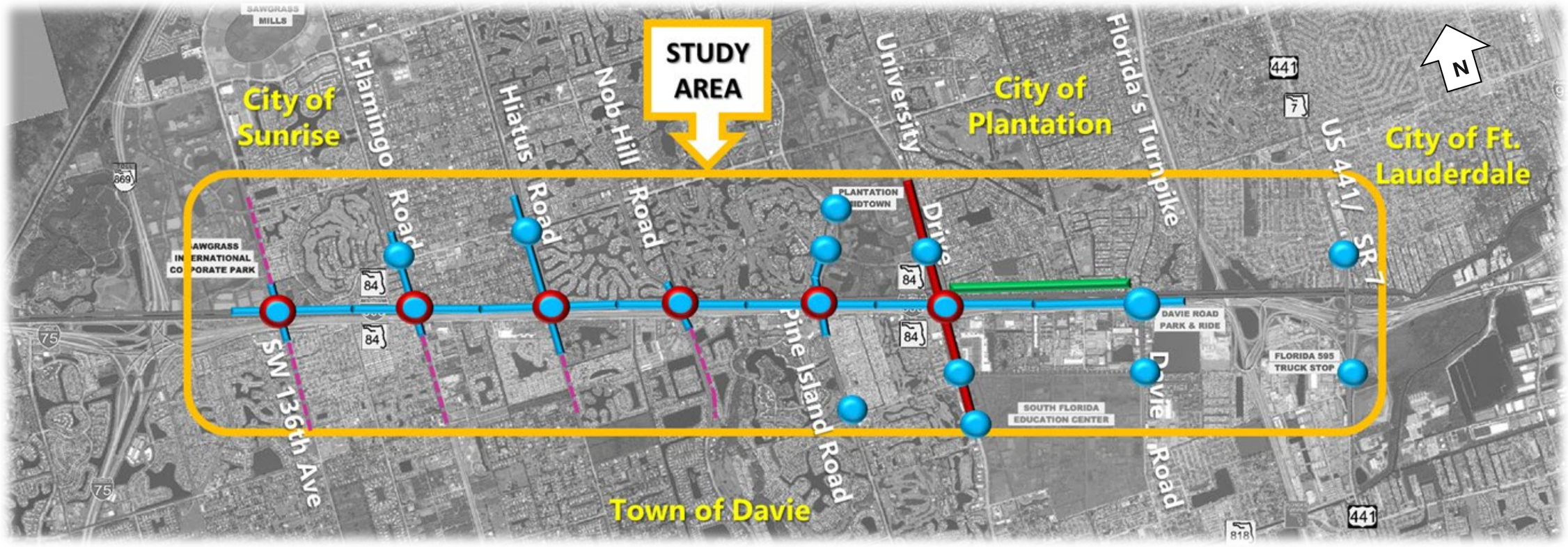


Table 2-1: Master Improvement List

PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]
1	**NW/SW 136 Avenue at SR 84/I-595 Interchange**	Modify Interchange at SR 84/I-595 as follows. - Construct a westbound SR 84 to northbound NW/SW 136th Avenue right-turn lane bypass over canal. - Construct a southbound NW/SW 136th Avenue to eastbound SR 84 flyover - requires shifting eastbound I-595 mainline general-purpose lanes to the south to fit in columns for flyover. - Construct a westbound SR 84 bypass/overpass – includes a new bridge structure and a loop ramp for traffic that needs to go south on NW/SW 136th Avenue. - Construct an eastbound SR 84 bypass/overpass. - Reconfigure I-595 off- and on-ramps along eastbound SR 84 east of NW 136th Avenue to accommodate the new eastbound SR 84 flyover and bypass lane. - Reconfigure westbound SR 84 and NW/SW 136th Avenue signalized intersection as noted below: o Northbound: Add a second exclusive left-turn lane. o Westbound: Reduce to one exclusive right-turn lane and one lane for the Texas U-turn. o Add new eastbound approach and provide two exclusive eastbound right-turn lanes. - Reconfigure eastbound SR 84 and NW/SW 136th Avenue signalized intersection as noted below: o Northbound: Add a second exclusive right-turn lane. o Southbound: Reduce to one exclusive left-turn lane. o Eastbound: Keep two exclusive left-turn lanes and one through lane, convert the second through lane to a shared through/right-turn lane, and eliminate the exclusive right-turn lane. - Construct separated bicycle lanes along northbound and southbound NW/SW 136th Avenue and eastbound SR 84 within the project limits. - Widen the sidewalk along NW/SW 136th Avenue to accommodate both bicyclists and pedestrians within the interchange area and connect to existing or future bicycle and pedestrian facilities along north/south NW/SW 136th Avenue and SR 84. - Construct sidewalk where it is currently missing on the east side of NW/SW 136th Avenue south of SR 84. Replace impacted sidewalk along both sides of NW/SW 136th Avenue and SR 84 within the project limits. - Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.	$2.5M	$6.61M	TBD	$48.97M	$6.12M
LIMITS:		FROM: SW 5th Street TO: NW 2nd Street					
JURISDICTION/OWNERSHIP:		FDOT, Broward County, and Town of Davie					
FUND TYPE:		Seek FDOT SIS Funds. Other federal or state funds possible through MPO process. Local County or City funding could also be provided.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		- Interchange improvements and addition of bicycle lanes along NW 136 Avenue combined into one project. - ROW needed, canal impacts, realignment of I-595, visual impacts, access impacts.					

PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]

2	**Flamingo Road at SR 84/I-595 Interchange**	Modify interchange at SR 84/I-595 as follows.
		- Eastbound SR 84 bypass/overpass– includes a new bridge structure for SR 84 traffic to travel over Flamingo Road.
		- Reconstruct I-595 off-ramp bridge structure to cross over westbound SR 84 lanes, so that westbound I-595 off-ramp traffic merges with westbound SR 84 on the right side (north side).
		- Add turn lanes to the eastbound SR 84 and Flamingo Road signalized intersection as noted below.
		  o Eastbound: Add a second exclusive right-turn lane.
		  o Northbound: Add a second exclusive right-turn lane.
		- Add turn lanes to the westbound SR 84 and Flamingo Road signalized intersection as noted below.
		  o Westbound: The approach will be widened from four lanes to six lanes that will consist of two exclusive right-turn lanes, two exclusive left-turn lanes, a shared through/right-turn lane, and a shared through/left-turn lane.
		  o Southbound: Add a second exclusive right-turn lane
		- Widen sidewalk to accommodate both pedestrians and bicyclists within the interchange influence area and connect to existing or future bicycle and pedestrian facilities along north/south Flamingo Road and eastbound SR 84.
		- Widen Flamingo Road to add separated bicycle lanes along both directions of Flamingo Road approaching the interchange and departing from the interchange.
		- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.
			$2M	$4.47M	TBD	$33.11M	$4.14M

LIMITS:		FROM: NW 8th Street TO: South of Broward Boulevard					
JURISDICTION/OWNERSHIP:		FDOT, and City of Plantation					
FUND TYPE:		Seek FDOT SIS Funds. Other federal or state funds possible through MPO process. Local County or City funding could also be provided.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		Interchange improvements and addition of bicycle lanes along Flamingo Road combined into one project.					
3	**Flamingo Road at Broward Boulevard Intersection**	Intersection improvements consisting of the following. - Add a second westbound Broward Boulevard exclusive right-turn lane at the intersection with Flamingo Road. - Construct buffered bicycle lanes through the intersection by widening along both directions of Flamingo Road north and south of Broward Boulevard, and along both directions of Broward Boulevard east and west of Flamingo Road. - Replace sidewalk where impacted along Flamingo Road and Broward Boulevard.	N/A	$460K	N/A	$2.09M	$387K
LIMITS:		FROM: South of Broward Boulevard TO: North of Broward Boulevard					
JURISDICTION/OWNERSHIP:		City of Plantation and Broward County					
FUND TYPE:		Seek Local Broward County and/or City of Plantation funding. Funding may also be possible through MPO process.					
YEAR NEEDED:		Long Term (by 2045)					
COMMENTS:		Broward Blvd. intersection improvements broken out as a separate project as it can proceed independent of other improvements					

PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]

4	**Hiatus Road at SR 84/I-595 Interchange**	Modify interchange at SR 84/I-595 as follows.
		- Eastbound SR 84 bypass/overpass– includes a new one-lane overpass for traffic to travel over Hiatus Road.
		- Add turn lanes to the eastbound SR 84 and Hiatus Road signalized intersection as noted below.
		  o Eastbound: Widen approach from four lanes to six lanes. Provide three exclusive left-turn lanes, one through lane, one shared through/right-turn lane, and one exclusive right-turn lane.
		- Add turn lanes to the westbound SR 84 and Hiatus Road signalized intersection as noted below.
		  o Northbound: Add a third exclusive through lane, along with existing one exclusive left-turn lane.
		  o Westbound: Widen approach from four lanes to five lanes. Provide two exclusive left-turn lanes, one shared through/right-turn lane, and two exclusive right-turn lanes.
		  o Southbound: Add a second exclusive right-turn lane.
		- Widen the sidewalk along Hiatus Road to accommodate both bicyclists and pedestrians within the interchange area and connect to existing or future bicycle and pedestrian facilities along north/south Hiatus Road and SR 84.
		- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.
			$2M	$4.00M	TBD	$23.97M	$3.71M

LIMITS:		FROM: SW 16th Street TO: South of Broward Boulevard					
JURISDICTION/OWNERSHIP:		FDOT, Broward County, and Town of Davie					
FUND TYPE:		Seek federal or state funds through MPO process. Local County or City funding also an option.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		Interchange improvements and addition of bicycle lanes along Hiatus Road combined into one project					

5	**Hiatus Road at Broward Boulevard Intersection**	Intersection improvements at Broward Boulevard as follows.
		- Add turn lanes to the Broward Boulevard and Hiatus Road signalized intersection as noted below.
		  o Northbound: Add a second exclusive left-turn lane.
		  o Westbound: Add a second exclusive left-turn lane.
		  o Eastbound: Add a second exclusive right-turn lane.
		- Widen the existing 4-foot-wide bicycle lanes along Hiatus Road south of Broward Boulevard to allow for 7-foot-wide separated bicycle lanes northbound and southbound.
		- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.
			N/A	$367K	N/A	$882K	$212K

LIMITS:		FROM: South of Broward Boulevard TO: North of Broward Boulevard					
JURISDICTION/OWNERSHIP:		Broward County					
FUND TYPE:		Seek Local Broward County funding. Funding may also be possible through MPO process.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		For efficient implementation, incorporate improvements into County's planned Broward Boulevard widening project.					

PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]

6	**Nob Hill Road at SR 84/I-595 Interchange**	Modify interchange at SR 84/I-595 as follows.
		- Eastbound SR 84 bypass/overpass– includes a new one-lane overpass for traffic to travel over Nob Hill Road.
		- Add turn lanes to the eastbound SR 84 and Nob Hill Road signalized intersection as noted below.
		  o Eastbound: Provide a second exclusive right-turn lane, in addition to a shared through/left-turn lane and exclusive left-turn lane.
		  o Northbound: Add a second exclusive right-turn lane.
		- Add turn lanes to the westbound SR 84 and Nob Hill Road signalized intersection as noted below.
		  o Westbound: Provide three exclusive right-turn lanes, and one dedicated through lane, in addition to the one exclusive left-turn lane, and one shared through/left-turn lane. Provide three northbound receiving lanes on Nob Hill Road.
		- Add buffered bicycle lanes along Nob Hill Road northbound and southbound from SR 84 to SW 22nd Court.
		- Add or widen the sidewalk to be a shared use path width for both bikes and pedestrians through the interchange area (northbound, southbound, eastbound).
		- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.
			$2M	$3.64M	TBD	$26.99M	$4.18M

LIMITS:		FROM: SW 22nd Court TO: SR 84					
JURISDICTION/OWNERSHIP:		FDOT and Broward County					
FUND TYPE:		Seek federal or state funds through MPO process. Local County or City funding also an option.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		Interchange improvements and addition of bicycle lanes along Nob Hill Road combined into one project					
7	**Pine Island Road at Nova Drive Intersection**	Intersection improvements at Nova Drive as follows. - Add an eastbound exclusive right-turn lane, resulting in one exclusive right-turn lane, one through lane, and an exclusive left-turn lane. - Add a westbound exclusive right-turn lane resulting in one exclusive right-turn lane, one through lane, and an exclusive left-turn lane. - Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements. - Replace any impacted pedestrian or bicycle facilities.	N/A	$618K	TBD	$2.81M	$520K
LIMITS:		FROM: South of Nova Drive TO: North of Nova Drive					
JURISDICTION/OWNERSHIP:		Broward County and Town of Davie					
FUND TYPE:		Seek Local Broward County and/or Town of Davie funding. Funding may also be possible through MPO process.					
YEAR NEEDED:		Long Term (by 2045)					
COMMENTS:		For efficient implementation, incorporate improvements into County's planned Pine Island Road widening project.					

PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]
8	**Pine Island Road at SR 84/I-595 Interchange**	Modify interchange at SR 84/I-595 as follows. - Construct a westbound SR 84 bypass/overpass –new bridge over Pine Island Road - Construct an eastbound SR 84 bypass/overpass –new bridge over Pine Island Road - Reconstruct westbound SR 84 and Pine Island Road signalized intersection as noted below. o Westbound: Widen the approach and provide one exclusive left-turn lane, one shared through/left-turn lane, and three exclusive right-turn lanes. o Southbound: Widen the approach and provide two exclusive left-turn lanes, two through lanes, a shared through/right-turn lane, and an exclusive right-turn lane. o Northbound: Add a third northbound through lane. - Reconstruct eastbound SR 84 and Pine Island Road signalized intersection as noted below. o Eastbound: Widen the approach and provide two exclusive left-turn lanes, one shared through/left-turn lane, and two exclusive right-turn lanes. o Northbound: Widen the approach and provide exclusive two left-turn lanes, three through lanes, and two exclusive right-turn lanes. o Southbound: Add a third through lane. - Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements. - Widen existing bicycle lanes south of SR 84 to provide 7-foot-wide buffered bicycle lanes in both directions along Pine Island Road. - Widen the sidewalk along Pine Island Road and eastbound SR 84 to accommodate both bicyclists and pedestrians within the interchange area and connect to existing or future bicycle and pedestrian facilities along north/south Pine Island Road and SR 84.	$2.5M	$9.40M	TBD	$69.64M	$8.71M
LIMITS:		FROM: North of Nova Drive TO: SR 84					
JURISDICTION/OWNERSHIP:		FDOT and Broward County					
FUND TYPE:		Seek FDOT SIS Funds. Other federal or state funds possible through MPO process. Local County or City funding could also be provided.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		Interchange improvements and addition of bicycle lanes along Pine Island Road combined into one project.					
9	**Pine Island Road at Peters Road Intersection**	Intersection improvements at Peters Road as follows. - Add a third westbound exclusive left-turn lane. - Add a second westbound exclusive right-turn lane. - Add a second northbound exclusive right-turn lane. - Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.	Include with PD&E for interchange	$405K	TBD	$1.84M	$341K
LIMITS:		FROM: South of Peters Road TO: North of Peters Road					
JURISDICTION/OWNERSHIP:		Broward County					
FUND TYPE:		Seek Local Broward County funding. Funding may also be possible through MPO process. Local City of Plantation funding could also be provided.					
YEAR NEEDED:		Long Term (by 2045)					
COMMENTS:		Peters Road intersection improvements broken out as a separate project as it can proceed independent of other improvements					

PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]
10	**Pine Island Road at SW 6th Court Intersection**	Intersection improvements at SW 6th Court as follows. - Add a second westbound exclusive left-turn lane. - Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.	N/A	$251K	TBD	$466K	$173K
LIMITS:		FROM: South of SW 6th Court TO: North of SW 6th Court					
JURISDICTION/OWNERSHIP:		Broward County and private roadway within City of Plantation					
FUND TYPE:		Private funding by roadway owners.					
YEAR NEEDED:		Mid Term (by 2030)					
COMMENTS:		SW 6th Court intersection improvements broken out as a separate project as it can proceed independent of other improvements					
11	**University Drive (south of SR 84/I-595)**	Capacity improvements on University Drive as follows. - Widen University Drive from south of SW 30th Street to eastbound SR 84 to add a fourth northbound and southbound through lane. - Reconstruct University Drive from approximately 1,700 feet south of Nova Drive (at AutoZone driveway) to south of Kolsky Boulevard, to elevate two of the four northbound lanes and two of the southbound lanes over Nova Drive and SW 23rd Street. Two northbound lanes and two southbound lanes would remain at ground level to provide local access. - Construct a one-lane ramp from the elevated University Drive northbound lanes connecting to the existing northbound to westbound I-595 flyover. - Add buffered bicycle lanes along University Drive throughout the project limits. - Widen sidewalk along northbound University Drive for both bicyclists and pedestrians from Nova Drive to SR 84. - Construct two bus shelters at BCT bus stops without a shelter. The first is located on the west side of University Drive just south of Kolsky Boulevard, and the second is located on the east side of University Drive between SW 30th Street and Nova Drive. - Replace the bus bays where they currently exist. - At the University Drive and SW 30th Street intersection construct a second westbound exclusive right-turn lane and overlap phase with signal head. - At the University Drive and Nova Drive intersection construct a second westbound exclusive left-turn lane. - Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.	Include with PD&E for interchange	$8.13M	TBD	$60.22M	$7.53M
LIMITS:		FROM: South of SW 30th Street TO: South of SR 84					
JURISDICTION/OWNERSHIP:		FDOT, Broward County, and Town of Davie					
FUND TYPE:		Seek FDOT SIS Funds. Other federal or state funds possible through MPO process. Local County or City funding could also be provided.					
YEAR NEEDED:		Mid Term (by 2030)					
COMMENTS:		Could go with SR 84 interchange improvements Project #12. Needs PD&E. Includes capacity improvements on University Drive, elevated 2 lanes, 2 lanes at ground level, flyover from elevated lanes to WB flyover, and intersection improvements.					

PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]

12	**University Drive at SR 84/I-595 Interchange**	Modify interchange at SR 84/I-595 Interchange as follows.
		- Construct a westbound SR 84 to northbound University Drive exclusive right-turn lane bridge over the New River Canal to allow for a free-flow right-turn movement.
		- Reconstruct the westbound I-595 off-ramp bridge over westbound SR 84 to allow ramp traffic to merge with SR 84 on the north side.
		- Construct an eastbound SR 84 bypass/overpass bridge over University Drive.
		- At the westbound SR 84 and University Drive signalized intersection reconfigure the turn lanes as noted below.
		  o Southbound: Provide one exclusive right-turn lane.
		  o Westbound to eastbound SR 84 U-turn: Signalize the U-turn movement at eastbound SR 84 and provide two exclusive U-turn lanes.
		- At the eastbound SR 84 and University Drive signalized intersection, widen the eastbound SR 84 approach to provide three exclusive right-turn lanes, one shared through/left-turn lane, and one exclusive left-turn lane.
		- Widen sidewalk to a shared use path width to serve both bicyclists and pedestrians through the interchange area (northbound, southbound, eastbound).
		- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.
			$3M	$6.67M	TBD	$49.41M	$6.18M

LIMITS:		FROM: South of SR 84 TO: North of SR 84					
JURISDICTION/OWNERSHIP:		FDOT					
FUND TYPE:		Seek FDOT SIS Funds. Other federal or state funds possible through MPO process. Local funding could be provided.					
YEAR NEEDED:		Mid Term (by 2025)					
COMMENTS:		Interchange improvements could go together with Project #11 - southern section of University Drive. Includes EB SR 84 overpass, WB ramp braid over SR 84, WB to NB bypass lane, and at-grade intersection improvements. Fourth NB through lane from SR 84 to Peters Road recommended to go with SR 84 interchange project.					

PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]
13	**University Drive (north of SR 84/I-595)**	Capacity improvements on University Drive as follows. University Drive North of SR 84 - Widen University Drive to add a fourth northbound and southbound through lane. - Replace buffered bicycle lanes along University Drive northbound and southbound for the limits. - Add sidewalk where it does not exist along University Drive between Peters Road and Federated Road. - Replace bus bays where they currently exist. - Construct three bus shelters at BCT bus stops without a shelter. The first is located on the west side of University Drive just south of Peters Road, the second is located on the west side of University Drive just north of Peters Road, and the third is located on the west side of University Drive just south of Federated Road. - Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements. University Drive and Peters Road Intersection (Add Lanes At-Grade Concept) - Widen University Drive to add a fourth northbound and southbound through lane through the intersection. - Add a second northbound exclusive right-turn lane & overlap phase with signal head. - Add a third westbound exclusive left-turn lane on Peters Road. - Add an overlap phase with signal head for the eastbound right-turn lanes. - Include sidewalk and bicycle lanes on all approaches where it exists currently. - Replace bus bays where they currently exist.	Include with PD&E for interchange	$1.55M	TBD	$11.46M	$1.78M
LIMITS:		FROM: North of SR 84 TO: Broward Boulevard					
JURISDICTION/OWNERSHIP:		FDOT and Broward County					
FUND TYPE:		Seek federal or state funds through MPO process. Local County funding also an option.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		Northern segment of University Drive broken out as separate project. Different scope than interchange improvements, except for NB 4th lane coming from the WB to NB right turn bypass at interchange. Includes capacity improvements on University Drive and intersection improvements at Peters Road.					
14	**Davie Road at Nova Drive Intersection**	Intersection improvements at Nova Drive as follows. - Add a third northbound through lane. - Add a second northbound exclusive left-turn lane. - Add a second southbound exclusive left-turn lane. - Add a second southbound exclusive right-turn lane. - Replace existing bicycle lanes along Davie Road where they currently exist. - Replace sidewalk along both sides of Davie Road. - Provide shelters for BCT bus stops along Davie Road.	Include with PD&E for interchange	$831K	TBD	$4.08M	$734K
LIMITS:		FROM: South of Nova Drive TO: North of Nova Drive					
JURISDICTION/OWNERSHIP:		Broward County					
FUND TYPE:		Seek Local Broward County funding. Funding may also be possible through MPO process. Local Town of Davie funding could also be provided.					
YEAR NEEDED:		Mid Term (by 2025)					
COMMENTS:		Intersection improvements broken out as a separate project as it can proceed independent of other improvements. Recent Town of Davie Nova Drive roadway improvements were completed, which implemented the ACS recommended second eastbound exclusive left-turn lane.					

PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]

15	**Davie Road at SR 84/I-595 Interchange**	Modify Interchange at SR 84/I-595 as follows.
		- Add new eastbound SR 84 overpass – includes a new bridge structure for traffic to travel over Davie Road.
		- Reconfigure the westbound SR 84 and Davie Road signalized intersection as noted below.
		  o Westbound: Widen approach from four lanes to five lanes and eliminate the one free flowing through lane (turbo lane). Replace with three westbound through lanes and two exclusive left-turn lanes controlled by the signal.
		  o Northbound: Add a third northbound exclusive left-turn lane.
		- Reconfigure the eastbound SR 84 and Davie Road signalized intersection as noted below.
		  o Eastbound: Reconfigure approach to one exclusive left-turn lane, one through lane, one exclusive free-flow right-turn lane.
		  o Northbound: Redesign the existing shared through/right-turn lane as a dedicated through lane, and add a northbound through lane, resulting in three dedicated through lanes. Redesign the one exclusive right-turn lane as a free-flow right-turn lane.
		  o Southbound: Remove the one existing southbound exclusive left-turn lane to use the space for the third northbound exclusive left-turn lane.
		- Widen sidewalk to be a shared use path width for both bikes and pedestrians through the interchange area (northbound, southbound, eastbound).
		- Provide shelters for BCT bus stops along Davie Road.
			$2M	$2.91M	TBD	$21.58M	$3.34M

LIMITS:		FROM: South of SR 84 TO: SR 84					
JURISDICTION/OWNERSHIP:		FDOT and Broward County					
FUND TYPE:		Seek FDOT SIS Funds. Other federal or state funds possible through MPO process. Local County funding could also be provided.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		Proposed improvements will remove existing westbound through Turbo lane.					

PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]

16	**SR 7 / US-441 at Oakes Road Intersection**	Intersection improvements at Oakes Road as follows.
		- New Oakes Road North at SR 7 signalized intersection to consist of:
		  o Eastbound: Two exclusive left-turn lanes.
		  o Northbound: Four northbound through lanes. The outer two lanes must be signed and marked as I-595 / SR 84 on-ramp lanes.
		  o Southbound: One exclusive right-turn lane and three through lanes.
		- Oakes Road South at SR 7 signalized intersection to consist of:
		  o Eastbound: One exclusive right-turn lane.
		  o Northbound: One exclusive left-turn lane and three through lanes.
		  o Southbound: Three through lanes.
		- New Oakes Road South at Oakes Road North unsignalized intersection to consist of:
		  o Two-way stop control on the minor north and south approaches.
		  o Eastbound: One shared through/right-turn lane, and one shared through/left-turn lane.
		  o Northbound: One shared left-turn/ through/ right-turn lane.
		  o Westbound: One shared through/right-turn lane, and one shared through/left-turn lane.
		  o Southbound: One shared left-turn/ through/ right-turn lane.
		- Reconstruct Oakes Road, extending it directly east to intersect SR 7 from the current east-west alignment, and reconstruct the S-curve section of Oakes Road South to intersect at approximately 90 degrees at Oakes Road North.
		- Reconstruct three existing driveways along the north side of Oakes Road, including the Town of Davie fire station driveway.
		- Realign the Turnpike off ramp to southbound SR 7 to create separation between the off-ramp merge point with SR 7 and the new Oakes Road North intersection. This distance would help vehicles coming from the Turnpike ramp merge into southbound SR 7 and get into the correct lane to either turn right at Oakes Road North or continue south on SR 7.
		- Realign the northbound SR 7 on ramp, to Turnpike and eastbound I-595, to create separation and a longer distance between the intersection and the ramp diverge point. This distance would help vehicles turning from North Oakes Road get into the correct lane to either enter Florida's Turnpike/I-595 or continue north on SR 7.
		- Replace any impacted shared use path along SR 7.
		- Replace existing bicycle lane keyholes at the intersection approaches.
		- Provide a bus bench at the one bus stop location without a bench south of Oakes Road and provide shelters at the other three bus stops located at Oakes Road and south of Oakes Road.
		- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.
			$1M	$1.49M	TBD	$11.07M	$1.72M

LIMITS:		FROM: South of Oakes Road TO: North of Oakes Road					
JURISDICTION/OWNERSHIP:		FDOT, Broward County and Town of Davie					
FUND TYPE:		Seek federal or state funds through MPO process. Local Broward County or Town of Davie funding also an option.					
YEAR NEEDED:		Long Term (by 2045)					
COMMENTS:		FDOT intersection improvement project under design will delay need for improvement. Freight / Truck access improvement. New local roadway alignment impacts access to Town of Davie Fire Station. Realignment of ramp required to accommodate modifications at Oakes Road intersection.					

PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]
17	**SR 7 / US-441 at Riverland Road Intersection**	Intersection improvements at Riverland Road as follows. - Add a second northbound exclusive left-turn lane. - Add second southbound exclusive left-turn lane. - Add an eastbound exclusive right-turn lane on SW 20th Street, resulting in an exclusive right-turn lane, one through lane, and one exclusive left-turn lane. - Restripe the westbound Riverland Road approach as two exclusive left-turn lanes and one shared through/right-turn lane. - Add or replace sidewalk along SR 7 and along Riverland Road in all four corners. - Provide high emphasis crosswalks all four legs of intersection since the intersection is a designated school crossing with many pedestrians. - Add a fourth through lane northbound and southbound along SR 7 from the Turnpike/SR 84/I-595 ramps south of Riverland Road through the intersection to approximately 1,600 feet north of Riverland Road. - The Turnpike/SR 84 off-ramp to northbound SR 7 will remain two-lanes and where it merges with northbound SR 7 this ramp will add two lanes to the three northbound SR 7 through lanes. At the intersection one of the five northbound through lanes will end as an exclusive right-turn lane at Riverland Road. - The fourth southbound through lane will extend through the intersection and end as it becomes one of two lanes that make up the Turnpike/westbound SR 84/I-595 on-ramp. - Replace any impacted shared use path along SR 7. - Replace existing bicycle lane keyholes at the intersection approaches. - Provide a bus bench at the three bus stop locations without a bench north of Riverland Road and provide shelters at the four bus stops that do not have shelters north of Riverland Road. - Incorporate TSM&O / ITS devices and signal upgrades with the roadway improvements.	Include with PD&E for Oakes Road	$1.19M	TBD	$8.05M	$1.37M
LIMITS:		FROM: South of Riverland Road TO: North of Riverland Road					
JURISDICTION/OWNERSHIP:		FDOT and Broward County					
FUND TYPE:		Seek federal or state funds through MPO process. Local Broward County funding also an option.					
YEAR NEEDED:		Long Term (by 2045)					
COMMENTS:		FDOT intersection improvement project under design will delay need for improvement.					

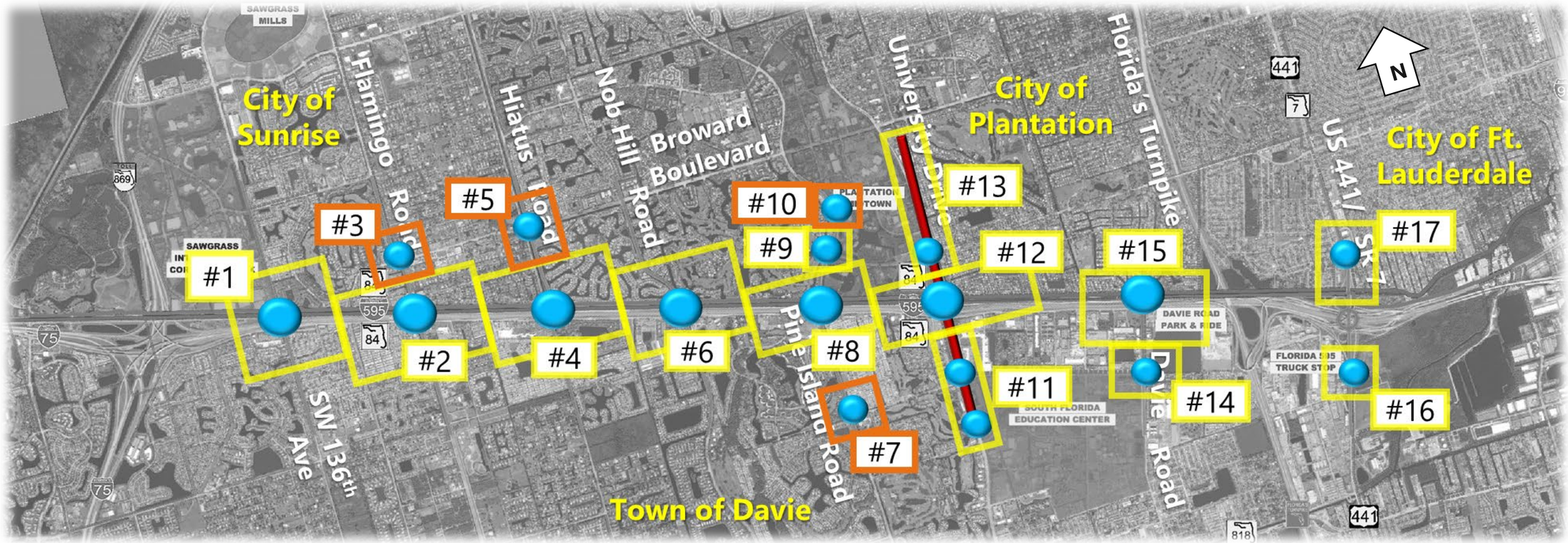
PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]
18	**New River Greenway Crossing at NW/SW 136th Avenue**	New underpass greenway crossing - Construct a New River Greenway underpass crossing below NW 136th Avenue for pedestrians and bicyclists. - Construct a ramp on each side of the underpass that will connect both sides of the New River Greenway and will connect to the existing sidewalk along NW 136th Avenue. - Install lighting fixtures and a drainage pump system. - Consider incorporating stairs in addition to the ramps on both sides of the underpass to encourage pedestrian use. - Consider incorporating gates to close the underpass in certain situations.	TBD	$726K	TBD	$3.3M	$611K
LIMITS:		FROM: New River Greenway west of NW/SW 136th Avenue TO: New River Greenway east of NW/SW 136th Avenue					
JURISDICTION/OWNERSHIP:		Broward County and South Florida Water Management District (SFWMD)					
FUND TYPE:		Seek Local Broward County funding. Federal or state funds through MPO process or FDOT SUN Trail program may be an option.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		Greenway crossing broken out as a separate project as it can proceed independent of other improvements					
19	**New River Greenway Crossing at Flamingo Road**	New overpass greenway crossing - Construct a New River Greenway overpass bridge for pedestrians and bicyclists that spans over top of the crossroad. - Construct a ramp on each side of the overpass that will connect both sides of the New River Greenway and will connect to the existing sidewalk along the north-south crossroad. - Consider incorporating stairs in addition to the ramps on both sides of the overpass to encourage pedestrian use. - Consider incorporating artistic design features such as a gateway sign on the bridge to make it an attractive community feature.	TBD	$635K	TBD	$2.89M	$534K
LIMITS:		FROM: New River Greenway west of Flamingo Road TO: New River Greenway east of Flamingo Road					
JURISDICTION/OWNERSHIP:		Broward County and South Florida Water Management District (SFWMD)					
FUND TYPE:		Seek Local Broward County funding. Federal or state funds through MPO process or FDOT SUN Trail program may be an option.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		Greenway crossing broken out as a separate project as it can proceed independent of other improvements					

PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]
20	**New River Greenway Crossing at Hiatus Road**	New overpass greenway crossing - Construct a New River Greenway overpass bridge for pedestrians and bicyclists that spans over top of the crossroad. - Construct a ramp on each side of the overpass that will connect both sides of the New River Greenway and will connect to the existing sidewalk along the north-south crossroad. - Consider incorporating stairs in addition to the ramps on both sides of the overpass to encourage pedestrian use. - Consider incorporating artistic design features such as a gateway sign on the bridge to make it an attractive community feature.	TBD	$635K	TBD	$2.89M	$534K
LIMITS:		FROM: New River Greenway west of Hiatus Road TO: New River Greenway east of Hiatus Road					
JURISDICTION/OWNERSHIP:		Broward County and South Florida Water Management District (SFWMD)					
FUND TYPE:		Seek Local Broward County funding. Federal or state funds through MPO process or FDOT SUN Trail program may be an option.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		Greenway crossing broken out as a separate project as it can proceed independent of other improvements					
21	**New River Greenway Crossing at Nob Hill Road**	New overpass greenway crossing - Construct a New River Greenway overpass bridge for pedestrians and bicyclists that spans over top of the crossroad. - Construct a ramp on each side of the overpass that will connect both sides of the New River Greenway and will connect to the existing sidewalk along the north-south crossroad. - Consider incorporating stairs in addition to the ramps on both sides of the overpass to encourage pedestrian use. - Consider incorporating artistic design features such as a gateway sign on the bridge to make it an attractive community feature.	TBD	$635K	TBD	$2.89M	$534K
LIMITS:		FROM: New River Greenway west of Nob Hill Road TO: New River Greenway east of Nob Hill Road					
JURISDICTION/OWNERSHIP:		Broward County and South Florida Water Management District (SFWMD)					
FUND TYPE:		Seek Local Broward County funding. Federal or state funds through MPO process or FDOT SUN Trail program may be an option.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		Greenway crossing broken out as a separate project as it can proceed independent of other improvements					

PROJECT	FACILITY	IMPROVEMENT DESCRIPTION	COSTS [1]				
			PD&E PH 22 [2]	Design PH 32 [3]	ROW PH 4X [4]	CON PH 5X [5]	CEI PH 6X [6]
22	**New River Greenway Crossing at Pine Island Road**	New overpass greenway crossing - Construct a New River Greenway overpass bridge for pedestrians and bicyclists that spans over top of the crossroad. - Construct a ramp on each side of the overpass that will connect both sides of the New River Greenway and will connect to the existing sidewalk along the north-south crossroad. - Consider incorporating stairs in addition to the ramps on both sides of the overpass to encourage pedestrian use. - Consider incorporating artistic design features such as a gateway sign on the bridge to make it an attractive community feature.	TBD	$635K	TBD	$2.89M	$534K
LIMITS:		FROM: New River Greenway west of Pine Island Road TO: New River Greenway east of Pine Island Road					
JURISDICTION/OWNERSHIP:		Broward County and South Florida Water Management District (SFWMD)					
FUND TYPE:		Seek Local Broward County funding. Federal or state funds through MPO process or FDOT SUN Trail program may be an option.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		Greenway crossing broken out as a separate project as it can proceed independent of other improvements					
23	**New River Greenway Extension**	Extend New River Greenway from University Drive to Davie Road. - Construct a 12-foot-wide shared use path along the north side of the New River Canal between University Drive and Sewell Lock Park west of Davie Road. - Construct a 12-foot-wide underpass crossing below University Drive for pedestrians, bicyclists, and wheelchair users. - Construct a New River Greenway bridge to cross over the north-south canal situated on the western edge of the Isla del Sol neighborhood. - Modify the existing Sewell Lock structure to utilize it as a pedestrian and bicyclist bridge to cross the New River Canal. If the Sewell Lock structure cannot be modified to serve as a pedestrian and bicyclist bridge, then a new pedestrian and bicyclist bridge would need to be constructed over the New River Canal, west of Sewell Lock Park.	TBD	$1.22M	TBD	$7.32M	$1.26M
LIMITS:		FROM: University Drive TO: Davie Road					
JURISDICTION/OWNERSHIP:		Broward County and South Florida Water Management District (SFWMD) and FDOT					
FUND TYPE:		Seek Local Broward County funding. Federal or state funds through MPO process or FDOT SUN Trail program may be an option.					
YEAR NEEDED:		Immediate Need (current deficiencies)					
COMMENTS:		Close gap in New River Greenway					

NOTES:
1. Costs are in 2021 dollars.
2. PD&E cost estimated based on recent PD&E Study costs. Assumed $1M for small low risk PD&E, $2M for medium complexity & risk, and $3M for high complex large PD&Es with high risk.
3. Design cost estimated as percentage of construction cost, per D4 "Cost as Percentage of Construction Cost" table as of 05-17-19 for Phase 31 and Phase 32.
4. ROW cost estimate not available at this time.
5. Construction cost based on preliminary LRE cost estimates completed for the study June/July 2021.
6. CEI cost estimated as percentage of construction cost, per D4 "Cost as Percentage of Construction Cost" table as of 05-17-19 for Phase 61 and Phase 62.

Figure 2-2: Map of Project Limits (Projects 1 through 17)



●	= Interchange / intersection modifications	▭	= Needs no ROW or minor ROW, no potentially significant impacts
▬	= Roadway capacity improvements	▭	= Needs ROW, potentially significant impacts

Figure 2-3: Map of Project Limits (Projects 18 through 23)

➢ **Overpass** Crossing Project ▪ Flamingo Road ▪ Hiatus Road ▪ Nob Hill Road ▪ Pine Island Road	➢ **Underpass** Crossing Project ▪ NW/SW 136th Avenue ▪ University Drive ➢ Greenway **Extension** from University Drive to Davie Road

2.2 Project Location, Limits and Jurisdiction

As shown in Figure 2-1, projects included on the Master Improvement List are all located along the north-south study arterials, SR 84, I-595, and the New River Greenway. The project limits were determined based on the corridor concept plans provided in the Deficiency Mitigation Measures Report, Technical Report #1. Project limits were selected to incorporate recommended sidewalk, bicycle lane, and bus stop improvements immediately adjacent to the roadway improvements.

The property on which these facilities lie is owned by different agencies, and the roadway jurisdiction for each facility also varies. The project location and extent of the project limits, as well as the jurisdiction and right-of-way ownership of the facilities, was researched and used to identify the lead agency and possible fund types for each project. The location of each improvement was also important to identify if the project could be implemented as part of a planned background project that includes that location. Right-of-way ownership information is based on Broward County Property Appraiser website information available as of August 2021. Roadway jurisdiction information is based on available FDOT and Broward County jurisdiction maps from January 2020, as well as Broward County Property Appraiser website information available as of December 2021.

2.3 Project Phases and Cost Estimates

There are five general FDOT Work Program project phases that typically need to be funded and completed to implement a project. They are:

- Project Development and Environment (PD&E) (Phase 22)
- Design (Phase 32)
- Right-of-Way (Phase 4X)
- Construction (Phase 5X)
- Construction Engineering and Inspection (CEI) (Phase 6X)

To identify the next FDOT work program phases needed for each of the projects on the Master Improvement List, the type of work, potential impacts, and need for additional right-of-way were reviewed. A PD&E phase was identified as the next phase needed for projects that add roadway capacity; have potential environmental impacts that require further assessment and possible mitigation; or require additional right-of-way. The cost for the PD&E phase of a project was estimated based on recent FDOT District Four PD&E Study costs that consider the type of project and its size. The cost estimate for the PD&E phase was estimated as approximately $1 million for small projects or low risk PD&E studies, $2 million for medium complexity and medium risk PD&E studies, and $3 million for more complex, larger PD&E studies with high risk.

Following completion of the PD&E phase, projects then move into the design phase. For projects that do not require a PD&E Study the design phase is the next phase. The design phase cost for each project was estimated as a percentage of the construction cost. The FDOT District Four “Design Costs as Percentage of Construction Cost” table dated May 17, 2019, for Phase 31 and Phase 32 was used as a reference. These percentages are shown in Table 2-2.

For improvement projects that need additional right-of-way, a phase for the acquisition is required. These cost estimates typically are developed by FDOT. For projects that do require a right-of-way phase, the ROW cost column in Table 2-1 identifies that cost as “To Be Determined (TBD).”

Every project typically requires a construction phase. The construction cost estimates reported in the Master Improvement List for each project were based on the cost estimates developed for all recommended improvements along each north-south study arterial. The cost estimates were developed using the FDOT Long Range Estimates (LREs) program and were documented in the Deficiency Mitigation Measures Technical Report #1.

A Construction Engineering and Inspection (CEI) phase is also required for each construction project. The cost estimates for the CEI phase for each project were estimated as percentage of the construction cost. The FDOT District Four "CEI Costs as Percentage of Construction Cost" table dated May 17, 2019, for Phase 61 and Phase 62 was used as a reference. These percentages are summarized in Table 2-2.

Table 2-2: FDOT District Four Design and CEI Costs as Percentage of Construction Cost

Construction Cost/Estimate		Under $500K	$500K to $1.5M	$1.5M to $3.5M	$3.5M to $5M	$5M to $10M	Over $10M
Design Phase 31 Cost	On-System	11.50%	4.00%	1.70%	1.70%	1.80%	1.50%
	Off-System	8.90%	6.60%	3.00%	3.40%	1.70%	1.70%
Design Phase 32 Cost	On-System	40.00%	25.00%	18.00%	16.00%	13.00%	12.00%
	Off-System	45.00%	35.00%	19.00%	17.00%	15.00%	15.00%
Post Design Cost 62-02(Pgm 40)	On-System	8.00%	4.00%	2.50%	1.70%	1.50%	1.50%
	Off-System	9.00%	5.00%	3.50%	2.50%	1.70%	1.50%

Construction Cost/Estimate	Under $500K	$500K to $1.5M	$1.5M to $3.5M	$3.5M to $10M	$10M to $30M	Over $30M
Phase 61 CEI Cost	11.00%	6.00%	4.00%	1.50%	1.00%	0.50%
Phase 62-01 CEI Cost	17.00%	13.00%	11.00%	14.00%	13.00%	10.50%

2.4 Project Timeframes

Different types of deficiencies were identified along each study roadway including safety, traffic operations, and multimodal deficiencies. Deficiencies that are the underlying need for each of the projects were identified either as an immediate need (current deficiencies), mid-term need (needed within next five to ten years), or long-term need (needed by 2045). All six New River Greenway roadway crossing and extension projects were classified as immediately needed projects. This is due to the existing operational and safety conflicts at each of the crossings, as well as the long-standing documented desire for better continuity and connectivity along the greenway for greenway users.

For interchange, intersection, and roadway improvement projects, a project was identified as an immediate need if the level of service (LOS) for an intersection in the project was shown to operate at or near LOS F during one or more of the peak hours under existing conditions. A project was identified as a mid-term need if the location will operate at or near LOS F by 2030. If a location will operate at or near LOS F after 2030, then the project was identified as a long-term need.

As summarized in Table 2-1, eight of the 17 interchange, intersection, and roadway improvement projects on the Master Improvement List are considered immediately needed projects. Four projects are considered mid-term needed improvements, and the remaining five are considered long-term projects.

2.5 Stakeholder Coordination Workshops

Two workshops were held with stakeholders to review the draft Master Improvement List projects and to seek feedback regarding the grouping, phasing, timeframes, and potential funding sources for the projects. The first workshop was held on July 26, 2021 with FDOT and Broward MPO staff. The second workshop was held with the Project Advisory Committee (PAC) on August 5, 2021. Feedback was received from the PAC members, which included representatives from the adjacent municipalities, Broward County, Broward MPO, FDOT, and Florida's Turnpike. The comments and feedback were used to refine the initial improvement list. Following the workshop with the PAC, the Master Improvement List was finalized and subsequently documented in Table 2-1 of this report.

2.6 Project Implementation Packages

To aid stakeholders with implementing the projects from the Arterial Connectivity Study along I-595 Corridor, a Project Implementation Package (PIP) was prepared for each of the 23 projects on the Master Improvement List (Table 2-1). The PIP contains all key information about a project that is needed for amending the Broward MPO's Metropolitan Transportation Plan (MTP), and for budgeting and programming purposes. The information provided in each PIP includes the project location, limits, purpose and need, scope, concept plan, impacts, phases, costs, year when needed, and potential funding sources.

Individual PIPs were prepared for each of the 17 interchange, intersection, and roadway projects on the Master Improvement List. A separate PIP was also prepared for the New River Greenway roadway crossing underpass project at NW 136th Avenue, and for the New River Greenway extension project between University Drive and Davie Road. One joint PIP was prepared for all four of the New River Greenway underpass projects that are recommended at Flamingo Road, Hiatus Road, Nob Hill Road, and Pine Island Road. One PIP was prepared for all four greenway overpasses since the project information is generally the same for all locations.

The Project Implementation Packages for each of the projects on the Master Improvement List are attached to this report as standalone documents. They are provided as Attachments #1 through #20.

3. PROJECT IMPLEMENTATION

3.1 Next Steps for Implementation

The Arterial Connectivity Study along I-595 Corridor is a planning study conducted to gather data, complete preliminary analysis, identify transportation needs, identify preliminary improvement concepts, and identify the next steps for implementation. Project stakeholders will need to take additional steps to implement the projects included on the Master Improvement List (Table 2-1). Figure 3-1 shows the overall project development process and project phases.

Figure 3-1: Project Development Process

Seek Funding and Incorporate Projects into Plans

The projects resulting from the Arterial Connectivity Study have completed the planning phase. Next, stakeholder agencies including FDOT, Broward MPO, and municipalities must seek funding and incorporate desired projects into their funding plans. This starts with incorporating projects into the Broward MPO's Metropolitan Transportation Plan (MTP) either as part of the Needs Plan list of projects or Cost Feasible Plan list of projects. This may be accomplished through amendments or as part of the next MTP five-year update.

Metropolitan Planning Organizations (MPOs) are required by federal law to have a Long Range Transportation Plan (aka Metropolitan Transportation Plan) and to update it every five years. The Broward MPO adopted their latest MTP, *Commitment 2045*, in December 2019. The MTP is used to guide the use of Federal, State, and other funds to implement projects throughout Broward County that are needed through the 2045 horizon year. The Broward MPO has established six (6) funding programs used to guide transportation investments in different funding categories. These are listed below.

- Roadway Program
- Transit Program
- System Management/Safety Program
- Complete Streets and Localized Initiatives Program
- Complete Streets Master Plan Program
- Mobility Hub Program

Federal, State, and local transportation revenues are allocated to these programs based on eligibility requirements and policy direction. A total of $12.8 billion in funding between years 2020 and 2045 is estimated to be available to fund transportation improvements in Broward County. The adopted 2045 Cost Feasible Roadway Plan has 71 projects included.

The adopted MTP may be amended prior to the next five-year update cycle in order to add a transportation project in the Cost Feasible Plan (CFP). This requires public review and redemonstration of fiscal constraint. If a project is added to the CFP without new funds to cover it, then it could result in the need to remove other projects out of the cost feasible plan to keep the funding balanced. Stakeholders should discuss and determine if any of the recommended projects from this study should be amended into the current 2045 MTP, or added into the next MTP update.

For projects to be included in the MTP, each project must be "program-ready." This means that each project must have a clear scope of work, well defined limits, potential right-of-way impacts identified, an engineering cost estimate, documented collaboration and coordination with partners,

and a resolution of support from a project sponsor as appropriate. An annual MTP amendment cycle was established by the Broward MPO. The annual MTP amendment cycle requires that MPO member governments and partner agencies submit formal MTP amendment requests (in writing) to the MPO for any projects to be added, deleted, or modified in the 2045 MTP. Member governments and partner agencies should meet with the MPO as early as possible prior to submitting an MTP amendment request. MTP amendment requests are due to the MPO by November 10th each year, and the timeline for adoption is estimated to be approximately 4 months. Fiscal constraint of the MTP will be reviewed, and performance of the system reviewed. If the amendment looks to be beneficial, the MTP documents will be updated and posted online for review and comment. Then the MPO Board will consider whether to adopt it or not.

For a project to receive funding in the next five years, a project must be included in the MPO's MTP as well as their Transportation Improvement Program (TIP). The TIP is a comprehensive list of federal, state and locally funded transportation projects, which shows how available funding for transportation projects will be spent over the next five years. For a project to be included in the next Broward MPO TIP, it must be included in the MTP, and the Broward MPO must include the project on its annual Multimodal Priorities List. The Multimodal Priorities List is developed by the MPO through coordination and project ranking and guides how available funding should be allocated in the next five years. The Broward MPO TIP is adopted by July 15th each year. In coordination with stakeholders and the public, the MPO should incorporate projects from this study's Master Improvement List into the MTP and eventually the TIP.

It is recommended that FDOT District Four pursue Strategic Intermodal System (SIS) program funding for projects along SR 84 / I-595 that may be deemed eligible. FDOT at the District and State level will review potential SIS projects for eligibility. If a project is eligible, the projects can be incorporated into the next version of the SIS Multimodal Unfunded Needs Plan and/or the Cost Feasible Plan. Once a SIS project is deemed eligible and prioritized, it can move up into the SIS second five-year funding plan, and then into the first five-year SIS funding plan.

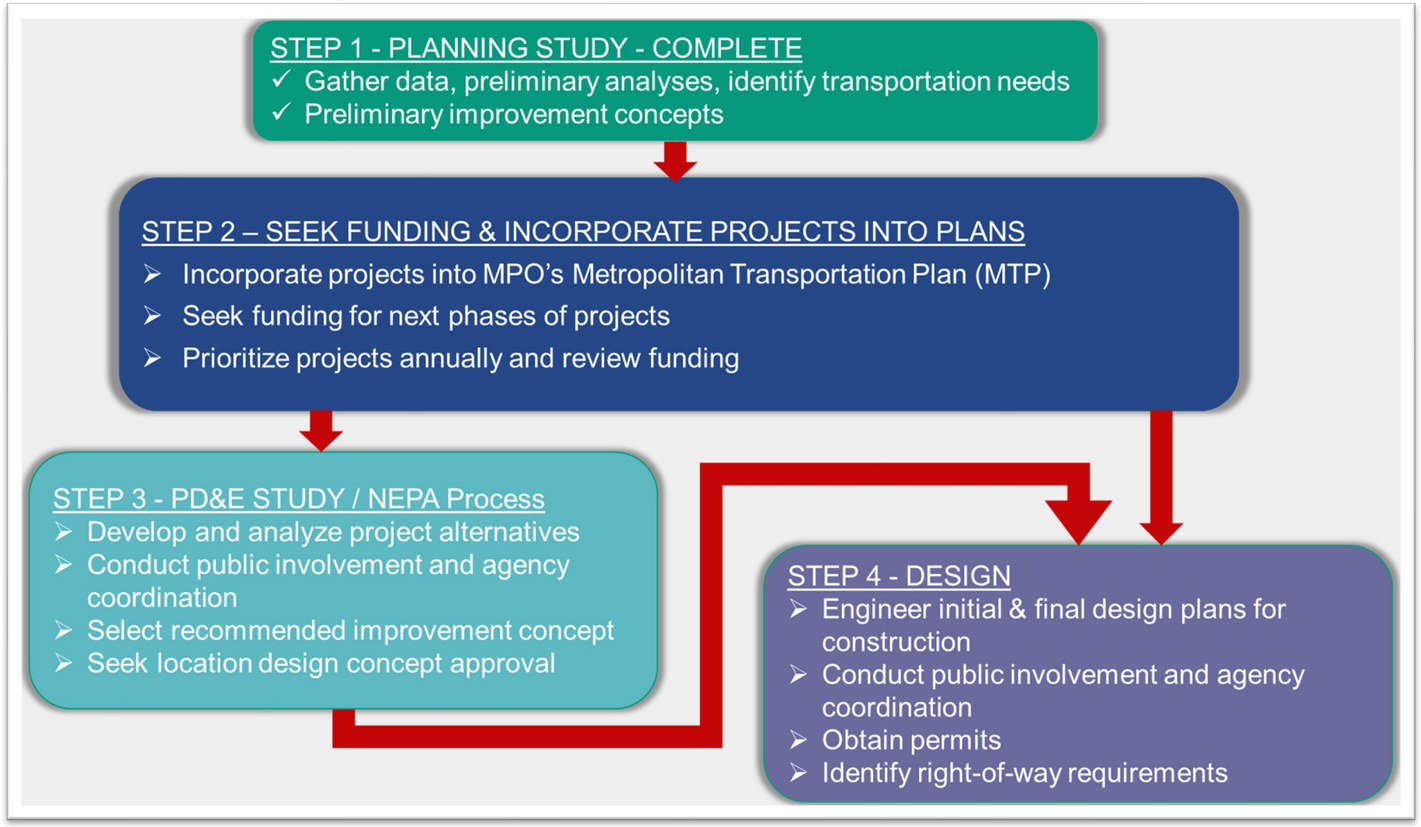
Other funding sources such as state, federal, and/or local funds are expected to be pursued for non-SIS projects on the list. The Broward MPO funding programs are a mechanism for funding the improvements on the list. Projects can be proposed by a project champion (State, County, City, MPO, etc.) and if eligible, the project can then be incorporated into the MTP and then eventually into the TIP. Another mechanism for funding non-state road projects from the improvement list, is for local municipalities and Broward County to use their transportation funds and construct the projects. In 2018, Broward County approved a 30-year one percent surtax for transportation. This discretionary sales surtax is intended to fund eligible Broward County and municipal projects. Projects can be submitted each year by the County or municipalities for funding consideration. This is handled through the Broward County Mobility Advancement Program (MAP).

One additional program that may be considered for potential funding of New River Greenway improvement projects is the FDOT Shared-Use Nonmotorized (SUN) Trail Program. The New River Greenway is part of the SUN Trail statewide network of high-priority paved trails for bicyclists and pedestrians. Although funding for new projects is not currently available in the program, this could become a source of potential funding in the future.

Once funding is secured for the next phase of a project, and the project is included in the MTP, it will then move forward to the PD&E Study or design phase, depending on which phase is needed next. Once the PD&E Study phase is complete and receives location design concept approval, then the project moves into the design phase. If a project does not require a PD&E Study phase, it can go directly into the design phase. Typically projects that do not require a PD&E phase are minor projects with no significant impacts.

Figure 3-2 illustrates the next step process to move projects from the planning study phase into a PD&E Study phase and/or design phase.

Figure 3-2: Implementation Process Next Steps



3.2 Lead Agency

For each of the 23 projects on the Master Improvement List, an agency was recommended to lead the next phases of the project. A lead agency is recommended based on the jurisdiction of the facilities. For projects located primarily on State Highway System (SHS) roadways, it is recommended for FDOT to serve as the lead agency. Eleven (11) projects proposed to be led by FDOT are listed below. For ease of reference, the project numbers shown below correspond to the project numbers on the Master Improvement List (Table 2-1).

- Project #1. NW/SW 136th Avenue and SR 84 / I-595 Interchange Project
- Project #2. Flamingo Road/SR 823 and SR 84 / I-595 Interchange Project
- Project #4. Hiatus Road and SR 84 / I-595 Interchange Project
- Project #6. Nob Hill Road and SR 84 / I-595 Interchange Project
- Project #8. Pine Island Road and SR 84 / I-595 Interchange Project
- Project #11. University Drive/SR 817 from south of SW 30th Street to south of SR 84 eastbound
- Project #12. University Drive/SR 817 and SR 84 / I-595 Interchange Project
- Project #13. University Drive/SR 817 from north of SR 84 westbound to Broward Boulevard
- Project #15. Davie Road and SR 84 / I-595 Interchange Project
- Project #16. SR 7/ US 441 at Oakes Road Intersection Project
- Project #17. SR 7/ US 441 at Riverland Road Intersection Project

It is recommended that Broward County serve as the lead agency to implement projects that are located on locally owned facilities. The 12 projects on the Master Improvement List that are proposed to be led by Broward County are listed below. The project numbers shown below correspond to the project numbers on the Master Improvement List (Table 2-1).

- Project #3. Flamingo Road and Broward Boulevard Intersection Project
- Project #5. Hiatus Road and Broward Boulevard Intersection Project
- Project #7. Pine Island Road and Nova Drive Intersection Project
- Project #9. Pine Island Road and Peters Road Intersection Project
- Project #10. Pine Island Road and SW 6th Court Intersection Project
- Project #14. Davie Road and Nova Drive Intersection Project
- Project #18. New River Greenway Underpass at NW 136th Avenue Project
- Project #19. New River Greenway Overpass at Flamingo Road Project
- Project #20. New River Greenway Overpass at Hiatus Road Project
- Project #21. New River Greenway Overpass at Nob Hill Road Project
- Project #22. New River Greenway Overpass at Pine Island Road Project
- Project #23. New River Greenway Extension from University Drive to Davie Road Project

3.3 Potential Funding Sources

To implement the transportation projects identified as part of the Arterial Connectivity Study along I-595 Corridor, funding for each project and their phases needs to be provided. Transportation project funding can come from a variety of revenue and funding from federal, state, local, and private sources.

Federal funding for transportation projects primarily comes from motor fuel and vehicle taxes, and specific amounts for various types of projects are made available to each region throughout the State. Federal funding for transportation projects and programs is channeled through the MPO planning process. According to the Broward MPO's latest five-year Transportation Improvement Program (TIP) approved July 2021, federal funding will make up approximately 32% of transportation project funding in Broward County. State and local funding provide most of the revenue available for transportation projects. State of Florida funds for transportation projects primarily come from state fuel tax, motor vehicle fees, document stamps, rental car fees, bonds, and tolls. The Broward MPO's TIP shows that toll funds for Turnpike projects constitute approximately 29% of the funds for transportation projects in the county over the next five years. Other state funds make up 32% of the funding, while local funds make up approximately 7% of the total funding.

Local government revenue plays an important role in transportation project funding. Local revenue sources that can be used for transportation project funding include local motor fuel taxes, local option fuel taxes, local option infrastructure sales tax, local fees such as impact fees or permit fees, and general government contributions (such as property tax). In November 2018, Broward County approved a 30-year one percent surtax for transportation. This discretionary sales surtax is intended to fund eligible Broward County and municipal projects. Transportation Surtax proceeds can only be used for transportation and transit purposes. Projects can be submitted each year by the County or municipalities through the Mobility Advancement Program for funding consideration.

Three primary funding programs are recommended to be used to fund projects on the Master Improvement List. They are:

1) Broward MPO's annual Transportation Improvement Program (TIP);
2) Florida Department of Transportation Strategic Intermodal System (SIS) program; and
3) Broward County's Mobility Advancement Program.

Broward MPO TIP

The Broward MPO's TIP is a five-year program that prioritizes and documents the funding of transportation improvement projects within the next five years. Projects include highway, arterial, intersection projects, as well as transit, aviation, port, bicycle, and pedestrian improvements. Projects are first incorporated into the long range MTP. Then they can be advanced from the MTP to the near-term five-year TIP through the Broward MPO's Multimodal Priorities List. Each year, the MPO updates the TIP to decide how to spend federal, state, and local transportation funds for capital projects. This funding program is used to fund transportation projects on State Highway System roadways and other federal aid eligible facilities not designated as part of the SIS.

The MPO TIP can be a potential funding source for all 23 projects on the Master Improvement List. This program is best suited for projects that are not funded through the other two programs. The projects recommended to be included in the Broward MPO TIP funding process are listed below.

- Project #3. Flamingo Road and Broward Boulevard Intersection Project
- Project #4. Hiatus Road and SR 84 / I-595 Interchange Project
- Project #5. Hiatus Road and Broward Boulevard Intersection Project
- Project #6. Nob Hill Road and SR 84 / I-595 Interchange Project
- Project #7. Pine Island Road and Nova Drive Intersection Project
- Project #9. Pine Island Road and Peters Road Intersection Project
- Project #10. Pine Island Road and SW 6th Court Intersection Project
- Project #13. University Drive/SR 817 from north of SR 84 westbound to Broward Boulevard

- Project #14. Davie Road and Nova Drive Intersection Project
- Project #16. SR 7/ US 441 at Oakes Road Intersection Project
- Project #17. SR 7/ US 441 at Riverland Road Intersection Project

FDOT SIS Program

Eligible transportation projects on designated SIS facilities within the State of Florida can compete for SIS funds annually. FDOT Districts submit eligible projects to the FDOT Central Office each year. The projects are prioritized, and funding allocated to the highest priority projects each year throughout the state. Eligible projects must demonstrate that they add capacity or address a capacity issue on a SIS facility. Projects that receive SIS funding are published in the Department's three-part SIS Funding Strategy documents: First Five-Year SIS Plan, Second Five-Year SIS Plan, and SIS Long Range Cost Feasible Plan. Projects that may be eligible but are not yet considered cost feasible may be included in the SIS Multi-Modal Unfunded Needs Plan.

The SIS program is a potential funding source for the six projects on the Master Improvement List that can benefit safety and operations along the I-595 SIS corridor and the SR 84 corridor. These projects are listed below.

- Project #1. NW/SW 136th Avenue and SR 84 / I-595 Interchange Project
- Project #2. Flamingo Road/SR 823 and SR 84 / I-595 Interchange Project
- Project #8. Pine Island Road and SR 84 / I-595 Interchange Project
- Project #11. University Drive/SR 817 from south of SW 30th Street to south of SR 84 eastbound
- Project #12. University Drive/SR 817 and SR 84 / I-595 Interchange Project
- Project #15. Davie Road and SR 84 / I-595 Interchange Project

Broward County MAP

Eligible transportation projects may be submitted annually to the County for review by County staff, the Broward MPO, and the Independent Transportation Surtax Oversight Board. The Oversight Board shall review and approve all proposed expenditures of Transportation Surtax proceeds. For municipal capital projects, municipalities in Broward County may submit written applications to the Broward MPO for Transportation Surtax proceeds to fund statutorily eligible capital projects (i.e. projects that do not involve rehabilitation or maintenance of roads). These include projects for new roads, widening existing roads, traffic calming improvements, transportation-related ADA accommodations, sidewalks, bike paths, and bridges.

The six New River Greenway projects are recommended to be funded through the Broward County MAP process. These projects are listed below.

- Project #18. New River Greenway Underpass at NW 136th Avenue Project
- Project #19. New River Greenway Overpass at Flamingo Road Project
- Project #20. New River Greenway Overpass at Hiatus Road Project
- Project #21. New River Greenway Overpass at Nob Hill Road Project
- Project #22. New River Greenway Overpass at Pine Island Road Project
- Project #23. New River Greenway Extension from University Drive to Davie Road Project

4. SUMMARY OF RECOMMENDATIONS

This Master Improvement List Technical Report documents the list of projects that resulted from recommended improvements to address identified deficiencies on the study roadways. Twenty-three projects are recommended to be advanced for funding and construction. The project limits, jurisdiction, scope, impacts, project phasing costs, and timeframe when needed were identified and evaluated. This information is summarized in this report.

A Project Implementation Package (PIP) was prepared for each of the 23 projects on the Master Improvement List. The PIP contains key information about a project that is needed for amending the Broward MPO's Metropolitan Transportation Plan (MTP), as well as for budgeting and programming purposes. Individual PIPs were prepared for each of the 17 interchange, intersection, and roadway projects on the Master Improvement List. A PIP was also prepared for the New River Greenway roadway crossing underpass project at NW 136th Avenue, for the New River Greenway extension project between University Drive and Davie Road, and one joint PIP was prepared for the four New River Greenway underpass projects. The PIPs are provided as Attachments #1 through #20.

The projects resulting from the Arterial Connectivity Study have completed the planning phase. Next, stakeholder agencies including FDOT, Broward MPO, and municipalities must seek funding and incorporate desired projects into their funding plans. This starts with incorporating projects into the Broward MPO's Metropolitan Transportation Plan. It is also recommended that FDOT District Four pursue Strategic Intermodal System (SIS) program funding for projects along SR 84 / I-595 that may be deemed eligible. Other funding sources such as state, federal, and/or local funds are expected to be pursued for non-SIS projects on the list. This includes Broward County Mobility Advancement Program funding for New River Greenway projects.

In addition, a lead agency and potential funding sources were identified for each of the projects. The information provided is intended to help stakeholders secure funding, and move the projects from planning into the next phase.

ATTACHMENTS

ATTACHMENT 1

Project #1 –Implementation Package for NW/SW 136th Avenue and SR 84 / I-595 Interchange Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 1
NW/SW 136th Avenue and SR 84/I-595 Interchange Improvements

Broward MPO
Metropolitan Planning Organization

FDOT

PROJECT IMPLEMENTATION PACKAGE
NW/SW 136TH AVENUE AND SR 84/I-595 INTERCHANGE IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The NW/SW 136th Avenue and SR 84/I-595 interchange improvement project is located within Broward County, Florida. The portion of the project located north of SR 84 is within the City of Sunrise and City of Plantation, and the portion of the project located south of SR 84 is within the Town of Davie. The limits of the improvements extend along NW/SW 136th Avenue from approximately 1,400 feet north of the westbound SR 84 intersection to approximately 670 feet south of the eastbound SR 84 intersection. The project limits also extend along eastbound and westbound SR 84 from approximately 2,000 feet west of SW 136th Avenue to approximately 4,900 feet east of SW 136th Avenue. The location of the project and limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

NW 136th Avenue between NW 2nd Street and SR 84 is a six-lane divided Broward County arterial. SW 136th Avenue south of SR 84 is a Town of Davie major collector. South of SR 84 it is a four-lane divided roadway between SR 84 and Shenandoah Parkway. NW/SW 136th Avenue has sidewalk along both sides within the limits described above, except for a gap where sidewalk is missing on the east side between SR 84 and Shenandoah Parkway. There are no bicycle lanes on NW/SW 136th Avenue within the study limits.

SR 84 eastbound is a one-way, generally two-lane, roadway within the project limits. SR 84 westbound is also a one-way, generally two-lane, roadway within the project limits. SR 84 (eastbound and westbound) is a minor arterial which is part of the state highway system. Along SR 84 eastbound, sidewalk is present east and west of NW/SW 136th Avenue. Sidewalk is not present along SR 84 westbound east of NW/SW 136th Avenue; however, sidewalk is present west of NW/SW 136th Avenue. A shoulder is present for bicycle traffic along SR 84 eastbound and SR 84 westbound. Bicycle and pedestrian traffic along westbound SR 84 are encouraged to use the adjacent New River Greenway.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to improve safety for all modes of travel through the interchange and provide congestion relief by reducing existing and future motorist delay, travel time and queuing along NW/SW 136th Avenue and at the access points with I-595 and SR 84.

The need for the project consists of accommodating existing and future transportation demand, adding capacity, improving safety for all modes, and enhancing bicycle, pedestrian, and transit facilities.

The need for the project is immediate given the existing year (2019) Level of Service (LOS) analysis results. Both NW/SW 136th Avenue intersections at the I-595/SR 84 interchange are operating at LOS E/F during existing AM peak hour and LOS D/E during the PM peak hour and will become significantly worse by the 2045 planning horizon without any improvements. In addition, this interchange is a location with high crash concentration averaging 27 crashes per year at westbound SR 84, and 28 crashes per year at eastbound SR 84. Improvements will potentially reduce crashes along NW/SW 136th Avenue and SR 84.

4. CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire NW/SW 136th Avenue corridor and along the entire SR 84 corridor within the study area were identified as part of the study. These included improvements to the SR 84/I-595 interchange as well as multimodal sidewalk, bicycle lane, and bus stop improvements. The needed NW/SW 136th Avenue corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

NW/SW 136th Avenue north and south of SR 84

- Add buffered bicycle lanes along NW/SW 136th Avenue northbound and southbound within the study limits.
- Add or widen sidewalk to be a shared use path width for both bicyclists and pedestrians through the interchange area (northbound, southbound, eastbound).
- Add sidewalk along NW/SW 136th Avenue where it does not exist south of SR 84.

NW/SW 136th Avenue at SR 84/I-595 Interchange

- Westbound SR 84 to northbound NW/SW 136th Avenue right-turn lane bypass over canal.
- Southbound NW/SW 136th Avenue to eastbound SR 84 flyover - requires shifting eastbound I-595 mainline general-purpose lanes to the south to fit in columns for flyover.
- Westbound SR 84 bypass/overpass – includes a new bridge structure and a loop ramp for traffic that needs to go south on NW/SW 136th Avenue.
- Eastbound SR 84 bypass/overpass.
- Reconfigure I-595 off- and on-ramps along eastbound SR 84 east of NW 136th Avenue to accommodate the new eastbound SR 84 flyover and bypass lane.
- Reconfigure westbound SR 84 and NW/SW 136th Avenue signalized intersection as noted below:
    - Northbound: Add a second left-turn lane.
    - Westbound: Reduce to one right-turn lane and one lane for the Texas U-turn.
    - Add new eastbound approach and provide two exclusive eastbound right-turn lanes.
- Reconfigure eastbound SR 84 and NW/SW 136th Avenue signalized intersection as noted below:
    - Northbound: Add a second right-turn lane.
    - Southbound: Reduce to one left-turn lane.
    - Eastbound: Keep two left-turn lanes and one through lane, convert the second through lane to a shared through/right-turn lane, and eliminate the exclusive right-turn lane.

5. INTERCHANGE ALTERNATIVES EVALUATED

Multiple alternatives were evaluated for improving the NW/SW 136th Avenue and SR 84/I-595 interchange, since capacity and operational issues were very challenging to address at this location. Addressing the capacity and operational and safety issues at the interchange was difficult at this location due to the large volume conflicting traffic movements, as well as physical design constraints.

The following four interchange configurations were evaluated to determine a recommended mitigation concept.

1. Single Point Urban Interchange (SPUI)
2. Diverging Diamond Interchange (DDI)
3. Displaced Left-turn (DLT) with Bypass Lanes
4. Modified Diamond Interchange with Flyover and Bypass Lanes

To address the SR 84 interchange deficiencies, the modified diamond interchange with flyover and bypass lanes alternative is recommended for further analysis, design, and implementation. The Displaced Left-turn with Bypass Lanes alternative is an interchange alternative that may also be further analyzed for comparison in the next phase of analysis and design.

Table 1 summarizes the advantages and disadvantages of each of the four NW/SW 136th Avenue at SR 84/I-595 interchange concepts.

Table 1: Comparison of Interchange Concept's Advantages and Disadvantages at NW/SW 136th Avenue and SR 84/I-595

Alternatives	Advantages	Disadvantages
1) Single Point Urban Interchange	• Significantly reduces delay • LOS D in 2045 peak hours	• Not feasible due to design requirements, and impacts to I-595 bridges
2) Diverging Diamond Interchange	• Reduces delay • LOS E in 2045 peak hours	• Not feasible due to design requirements
3) Displaced Left-turn with Bypass Lanes	• Reduces delay • Reduces conflicts • Reduces stops • LOS E in 2045 peak hours	• Right-of-way impact • Canal impact • Reroutes EB to WB U-Turns & NB left-turns to Flamingo Rd. Impacts operations at Flamingo Rd. • Requires 3 new structures
4) Modified Diamond Interchange with Flyover & Bypass Lanes	• Significantly reduces delay • Reduces conflicts • Reduces stops • LOS D in 2045 peak hours	• Right-of-way impact • Canal impact • Driveway impact • Visual impacts (view of flyover) • Impacts I-595 eastbound lanes • Requires 4 new structures

NOTE: All alternatives include the following improvements:

1) *New shared use path to improve pedestrian and bicycle facilities through interchange at SR 84.*
2) *Bicycle lanes along NW/SW 136th Avenue northbound and southbound.*
3) *Sidewalk along NW/SW 136th Avenue northbound and southbound.*
4) *Transit bus stop upgrades for benches or shelters.*

6. PROJECT SCOPE / DESCRIPTION

The NW/SW 136th Avenue and SR 84/I-595 modified diamond interchange project scope of work includes the following components listed below. Only NW/SW 136th Avenue corridor improvements that are located within the interchange influence area between Shenandoah Parkway and NW 2nd Street are included in the project scope.

- Westbound SR 84 to northbound NW/SW 136th Avenue right-turn lane bypass over canal.
- Southbound NW/SW 136th Avenue to eastbound SR 84 flyover - requires shifting eastbound I-595 mainline general-purpose lanes to the south to fit in columns for flyover.

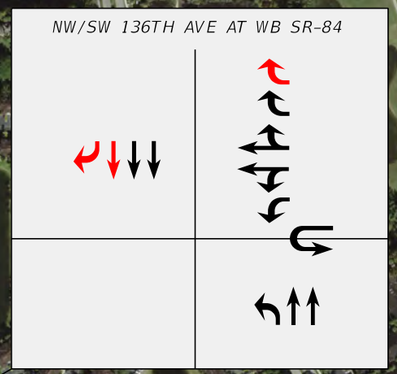
- Westbound SR 84 bypass/overpass – includes a new bridge structure and a loop ramp for traffic that needs to go south on NW/SW 136th Avenue.
- Eastbound SR 84 bypass/overpass.
- Reconfigure I-595 off- and on-ramps along eastbound SR 84 east of NW 136th Avenue to accommodate the new eastbound SR 84 flyover and bypass lane.
- Reconfigure westbound SR 84 and NW/SW 136th Avenue signalized intersection as noted below:
    - Northbound: Add a second left-turn lane.
    - Westbound: Reduce to one right-turn lane and one lane for the Texas U-turn.
- Add new eastbound approach and provide two exclusive eastbound right-turn lanes.
- Reconfigure eastbound SR 84 and NW/SW 136th Avenue signalized intersection as noted below:
    - Northbound: Add a second right-turn lane.
    - Southbound: Reduce to one left-turn lane.
    - Eastbound: Keep two left-turn lanes and one through lane, convert the second through lane to a shared through/right-turn lane, and eliminate the exclusive right-turn lane.
- Construct separated bicycle lanes along northbound and southbound NW/SW 136th Avenue and eastbound SR 84 within the project limits.
- Widen the sidewalk along NW/SW 136th Avenue to accommodate both bicyclists and pedestrians within the interchange area and connect to existing or future bicycle and pedestrian facilities along north/south NW/SW 136th Avenue and SR 84.
- Construct sidewalk where it is currently missing on the east side of NW/SW 136th Avenue south of SR 84. Replace impacted sidewalk along both sides of NW/SW 136th Avenue and SR 84 within the project limits.
- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.

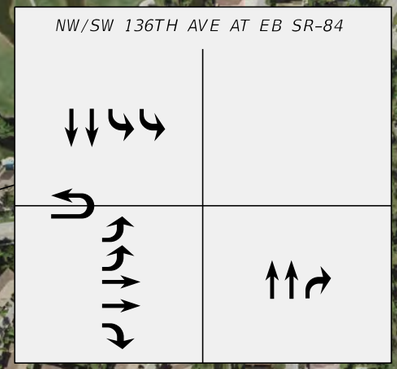
Figure 2 shows the project area without the recommended project improvements.
Figure 3 shows a conceptual plan of the project improvements as well as typical sections.
Figure 4 shows a 3D rendering of the project area with the project improvements superimposed over a 2021 aerial image of the study area.

LEGEND

EXISTING (2019) LANE CONFIGURATION (BLACK)

PLANNED OR PROGRAMMED PROJECTS (RED) (TO BE CONSTRUCTED BEFORE RECOMMENDED IMPROVEMENTS)





WB SR 84

EB SR 84

I-595

SW 136TH AVENUE

Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

NW/SW 136TH AVENUE AT SR 84/I-595 EXISTING CONDITIONS & PLANNED IMPROVEMENTS

FIGURE 2

LEGEND:
- BRIDGE
- ROADWAY PAVEMENT
- SIDEWALK / SHARED USE PATH
- GREEN COLORED PAVEMENT MARKINGS
- BARRIER WALL / RETAINING WALL / CANAL BULKHEAD
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY

N

NOT TO SCALE

Proposed – NW 136th Avenue North of SR 84

I-595

SW 136TH AVENUE

Proposed – NW 136th Avenue South of SR 84

Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY
ALONG I-595 CORRIDOR

NW/SW 136TH AVENUE AND
SR 84/I-595 INTERCHANGE IMPROVEMENTS

FIGURE 3


IKEA
IKEA
Home furnishings

7. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The NW/SW 136th Avenue and SR 84/I-595 interchange improvements will improve safety and reduce congestion for vehicular traffic. In addition, safety will be improved for pedestrians and bicyclists. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 2.

Table 2: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion, does not meet LOS D in 2045 peak hours – operates at LOS F • Does not improve safety for bicyclists, pedestrians, or vehicles • Does not improve connectivity for pedestrians, bicyclists, or vehicles
Build	• 2045 Traffic Operations – Reduces delay, congestion, backups, travel times • Meets LOS D in 2045 peak hours • Improves safety for pedestrians, bicyclists, vehicles • Enhances connectivity for pedestrians & bicyclists	• Right-of-way impact • Canal impact • Driveway impact • Visual impact • I-595 impact • Cost

8. PROJECT CONSIDERATIONS

Based on a conceptual design of the recommended interchange improvements, additional right-of-way would need to be acquired to implement the improvements. In addition, there are anticipated structural and environmental impacts which need to be considered.

The locations listed below describe where additional right-of-way would be needed to implement the recommended concept.

- NW/SW 136th Avenue north of SR 84, along east and west sides from NW 3rd Street to SR 84, potentially impacting a row of parking for the IKEA business on the west side, and Solero Apartments on the east side.
- Westbound SR 84 at NW/SW 136th Avenue, along the north side east and west of NW/SW 136th Avenue, potentially impacting the New River Canal South Florida Water Management District property.

- Eastbound SR 84 at NW/SW 136th Avenue, along the south side, from SW 133rd Avenue to Paradise Way East. This potentially may impact businesses and a residential property.

Two existing roadway structures will be impacted to accommodate the recommended improvements. They are the I-595 eastbound bridge over NW/SW 136th Avenue and the NW/SW 136th Avenue bridge over the New River Canal. In addition, four new roadway structures are required. These include a roadway bridge for: westbound SR 84 right-turning traffic to cross over the New River Canal; westbound SR 84 traffic to cross over NW/SW 136th Avenue; southbound NW/SW 136th Avenue flyover traffic to cross over the New River Canal, westbound SR 84, and I-595; and eastbound SR 84 traffic to cross over NW/SW 136th Avenue.

Impacts attributed to the proposed flyover that should be further evaluated during the next phase of the project include visual impacts to adjacent properties, business access impacts along the west side of NW/SW 136th Avenue and impacts to traffic when reconstructing the eastbound I-595 freeway lanes. In addition, an Interchange Access Request document will be required to document acceptability of the eastbound I-595 on- and off-ramp modifications proposed between NW/SW 136th Avenue and Flamingo Road.

Potential environmental impacts to be further evaluated during the next phase of the project include impacts to wetlands and other surface waters, floodplains, noise sensitive sites, and protected species and habitat.

9. COST AND FUNDING INFORMATION

A Project Development and Environment (PD&E) Study is recommended as the next phase of the improvement project. The purpose of the PD&E Study is to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). The estimated cost for the PD&E phase is $2.5 million. Following the PD&E phase, the project will advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase is $6.6 million. Typically, acquisition of right-of-way occurs concurrent with or just after the design phase before the project moves into construction. A cost estimate for right-of-way acquisition for this project has not yet been determined. The construction cost estimate is $49 million, and cost for construction engineering inspection services during construction is $6.1 million. The total project cost, excluding right-of-way costs, is approximately $64.2 million in year 2021 dollars.

The improvements are proposed along the roadways of NW/SW 136th Avenue, I-595 and SR 84. NW/SW 136th Avenue north of SR 84 is under the jurisdiction of Broward County. NW/SW 136th Avenue south of SR 84 is under the jurisdiction of the Town of Davie. I-595 and SR 84 are under the jurisdiction of the State of Florida.

Much of the roadway modification work is proposed along SR 84. SR 84 is an integral part of the I-595 Strategic Intermodal System (SIS) corridor, and functions as a collector-distributor roadway providing access to and from I-595 via the interchange with NW/SW 136th Avenue. The project will improve NW/SW 136th Avenue, SR 84, and I-595. State of Florida SIS program funds may be sought as a source of funding for the project. However, eligibility for SIS program funding must be evaluated by FDOT. If the project is determined to be eligible, then the project may be proposed for SIS funding and can compete with other eligible projects statewide for SIS funding. If the project is determined not to be eligible for SIS funding, then other federal, state, or local funds would need to be pursued through the standard Broward MPO project prioritization process. There is opportunity for local funding to also be provided for the project from the Town of Davie and/or Broward County.

ATTACHMENT 2

Project #2 - Implementation Package for Flamingo Road and SR 84 / I-595 Interchange Project

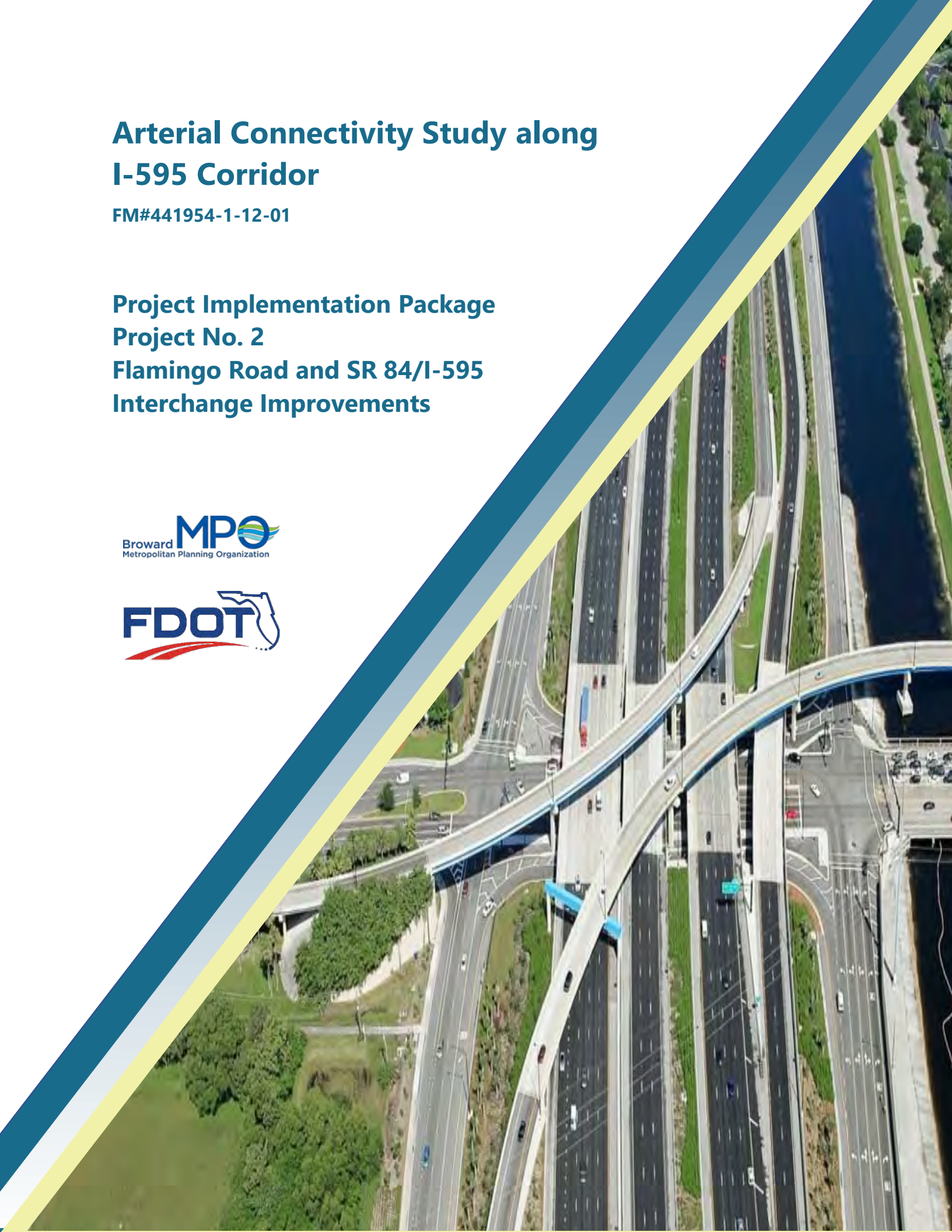
Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 2
Flamingo Road and SR 84/I-595 Interchange Improvements

Broward MPO
Metropolitan Planning Organization

FDOT



PROJECT IMPLEMENTATION PACKAGE
FLAMINGO ROAD/SR 823 AND SR 84/I-595 INTERCHANGE IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The Flamingo Road/SR 823 and SR 84/I-595 interchange improvement project is located within Broward County, Florida. The portion of the project located north of SR 84 is within the City of Plantation, and the portion of the project located south of SR 84 is within the Town of Davie. The limits of the improvements extend along Flamingo Road from approximately 500 feet north of the westbound SR 84 intersection to approximately 400 feet south of the eastbound SR 84 intersection. The project limits also extend along eastbound and westbound SR 84 from approximately 2,800 feet west of Flamingo Road to approximately 2,800 feet east of Flamingo Road. The limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

Flamingo Road between SW 3rd Street and SR 84 is a six-lane divided principal arterial under jurisdiction of Broward County and City of Plantation. Flamingo Road south of SR 84 is a six-lane divided state principal arterial between SW 6th Court and SR 84.

Flamingo Road has sidewalk along both sides within the limits described above, except for a gap where sidewalk is missing on the west side between the New River Greenway and SW 3rd Street. Bicycle lanes are present only on the west side of Flamingo Road between the New River Greenway and SR 84; they are missing from the remaining sections of Flamingo Road.

SR 84 eastbound is a one-way, generally two-lane, roadway within the project limits. SR 84 westbound is also a one-way, generally two-lane, roadway within the project limits. SR 84 (eastbound and westbound) is a minor arterial which is part of the state highway system. Along SR 84 eastbound, sidewalk is present east and west of Flamingo Road. Sidewalk is not present along SR 84 westbound. A designated bicycle lane is present along SR 84 eastbound. A shoulder is present for bicycle traffic along SR 84 westbound. Bicycle and pedestrian traffic along westbound SR 84 are encouraged to use the adjacent New River Greenway.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to improve safety for all modes of travel through the interchange and provide congestion relief by reducing existing and future motorist delay, travel time and queuing along Flamingo Road and at the access points with I-595 and SR 84.

The need for this project is to accommodate existing and future transportation demand, adding capacity, improving safety for all modes, and enhancing bicycle, pedestrian, and transit facilities.

The need for the project is immediate given the existing year (2019) Level of Service (LOS) analysis results. Both Flamingo Road intersections at the I-595/ SR 84 interchange are operating at a Level of Service (LOS) E/F during existing AM peak hour and LOS F during the PM peak hour and will become significantly worse by the 2045 planning horizon without any improvements. In addition, this interchange is a location with high crash concentration averaging 22 crashes per year at westbound SR 84, and 67 crashes per year at eastbound SR 84. Improvements will potentially reduce crashes along Flamingo Road and SR 84.

4. CORRIDOR IMPROVEMENT

Infrastructure improvements needed along the entire Flamingo Road corridor and along the entire SR 84 corridor within the study area were identified as part of the study. These included improvements to the SR 84/I-595 interchange as well as multimodal sidewalk, bicycle lane, and bus stop improvements. The needed Flamingo Road corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

Flamingo Road north and south of SR 84

- Add buffered bicycle lanes along Flamingo Road northbound and southbound throughout the limits.
- Add or widen sidewalk to be a shared use path width for both bikes and pedestrians through the interchange area (northbound, southbound, eastbound).
- Add sidewalk where it does not exist along Flamingo Road north and south of SR 84.
- Construct a shelter at BCT stop #3591 along Flamingo Road.

Flamingo Road at SR 84 / I-595 Interchange

- Eastbound SR 84 bypass/overpass– includes a new bridge structure for traffic to travel over Flamingo Road.
- Reconstruct I-595 off-ramp bridge structure to cross over westbound SR 84 lanes, so that westbound I-595 off-ramp traffic merges with westbound SR 84 on the right side (north side).
- Add turn lanes to the eastbound SR 84 and Flamingo Road signalized intersection as noted below.
    - Eastbound: Add a second exclusive right-turn lane.
    - Northbound: Add a second exclusive right-turn lane.
- Add turn lanes to the westbound SR 84 and Flamingo Road signalized intersection as noted below.
    - Westbound: The approach will be widened from four lanes to six lanes that will consist of two exclusive right-turn lanes, two exclusive left-turn lanes, a shared through/right-turn lane, and a shared through/left-turn lane.
    - Southbound: Add a second exclusive right-turn lane.

Flamingo Road and Broward Boulevard Intersection

- Add a second westbound exclusive right-turn lane.

- Widen for buffered bicycle lanes along both directions of Flamingo Road north and south of Broward Boulevard, and along both directions of Broward Boulevard east and west of Flamingo Road.
- Replace sidewalk where impacted along Flamingo Road and Broward Boulevard.

5. INTERCHANGE ALTERNATIVES EVALUATED

A modified diamond interchange configuration was evaluated. The traffic analysis showed that with one major traffic movement removed from the interchange, no additional major modifications are necessary to allow the interchange to operate at an acceptable level of service through 2045. Therefore, only the one concept was evaluated to improve the Flamingo Road and SR 84/I-595 interchange.

The concept includes an eastbound SR 84 bypass which allows eastbound SR 84 traffic to use an overpass bridge over Flamingo Road. The concept also includes a modification to the westbound I-595 off-ramp to SR 84. The westbound I-595 off-ramp would bridge over top of westbound SR 84 and merge into westbound SR 84 on the right side. This eliminates the existing weaving traffic on westbound SR 84. To address the SR 84 interchange deficiencies, the modified diamond interchange with bypass lane and modified off-ramp is recommended for further analysis, design, and implementation.

6. PROJECT SCOPE / DESCRIPTION

The Flamingo Road and SR 84/I-595 modified diamond interchange project scope of work includes the following components listed below. Only Flamingo Road corridor improvements that are located within the SR 84/I-595 interchange influence area are included in the project scope below.

- Eastbound SR 84 bypass/overpass– includes a new bridge structure for traffic to travel over Flamingo Road.
- Reconstruct I-595 off-ramp bridge structure to cross over westbound SR 84 lanes, so that westbound I-595 off-ramp traffic merges with westbound SR 84 on the right side (north side).
- Add turn lanes to the eastbound SR 84 and Flamingo Road signalized intersection as noted below.
    - Eastbound: Add a second exclusive right-turn lane.
    - Northbound: Add a second exclusive right-turn lane.

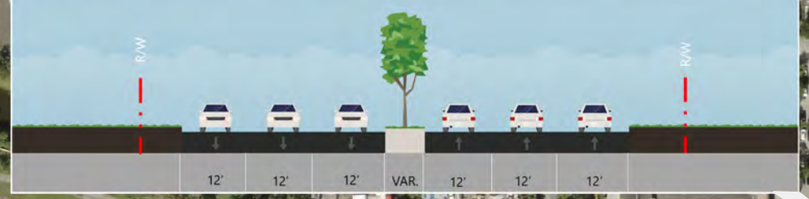
  - Add turn lanes to the westbound SR 84 and Flamingo Road signalized intersection as noted below.
    - Westbound: The approach will be widened from four lanes to six lanes that will consist of two exclusive right-turn lanes, two exclusive left-turn lanes, a shared through/right-turn lane, and a shared through/left-turn lane.
    - Southbound: Add a second exclusive right-turn lane

- Widen sidewalk to accommodate both pedestrians and bicyclists within the interchange influence area and connect to existing or future bicycle and pedestrian facilities along north/south Flamingo Road and eastbound SR 84.
- Widen Flamingo Road to add separated bicycle lanes along both directions of Flamingo Road approaching the interchange and departing from the interchange.
- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.

Figure 2 shows the project area without the recommended project improvements. Figure 3 shows a conceptual plan of the project improvements as well as typical sections.

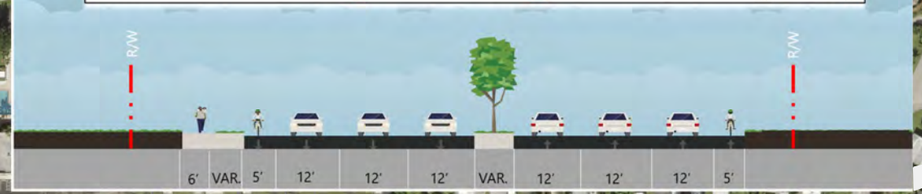
EXISTING- FLAMINGO ROAD NORTH OF SR 84

PROPOSED FEATURES: WIDENING | SIDEWALK / C&G | MILLING & RESURFACING | SOD



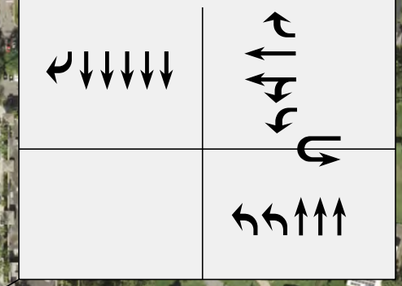
EXISTING- FLAMINGO ROAD SOUTH OF SR 84

PROPOSED FEATURES: WIDENING | SIDEWALK / C&G | MILLING & RESURFACING | SOD

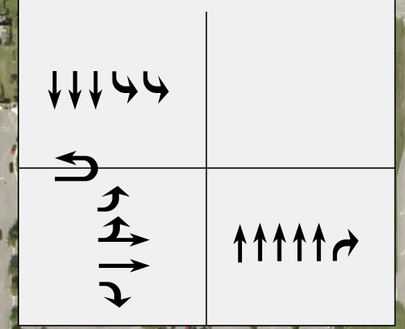


NOT TO SCALE

FLAMINGO RD/SR-823 AT WB SR-84



FLAMINGO RD/SR-823 AT EB SR-84



WB SR 84

EB SR 84

I-595

FLAMINGO ROAD

LEGEND

- EXISTING (2019) LANE CONFIGURATION (BLACK)
- PLANNED OR PROGRAMMED PROJECTS (RED) (TO BE CONSTRUCTED BEFORE RECOMMENDED IMPROVEMENTS)

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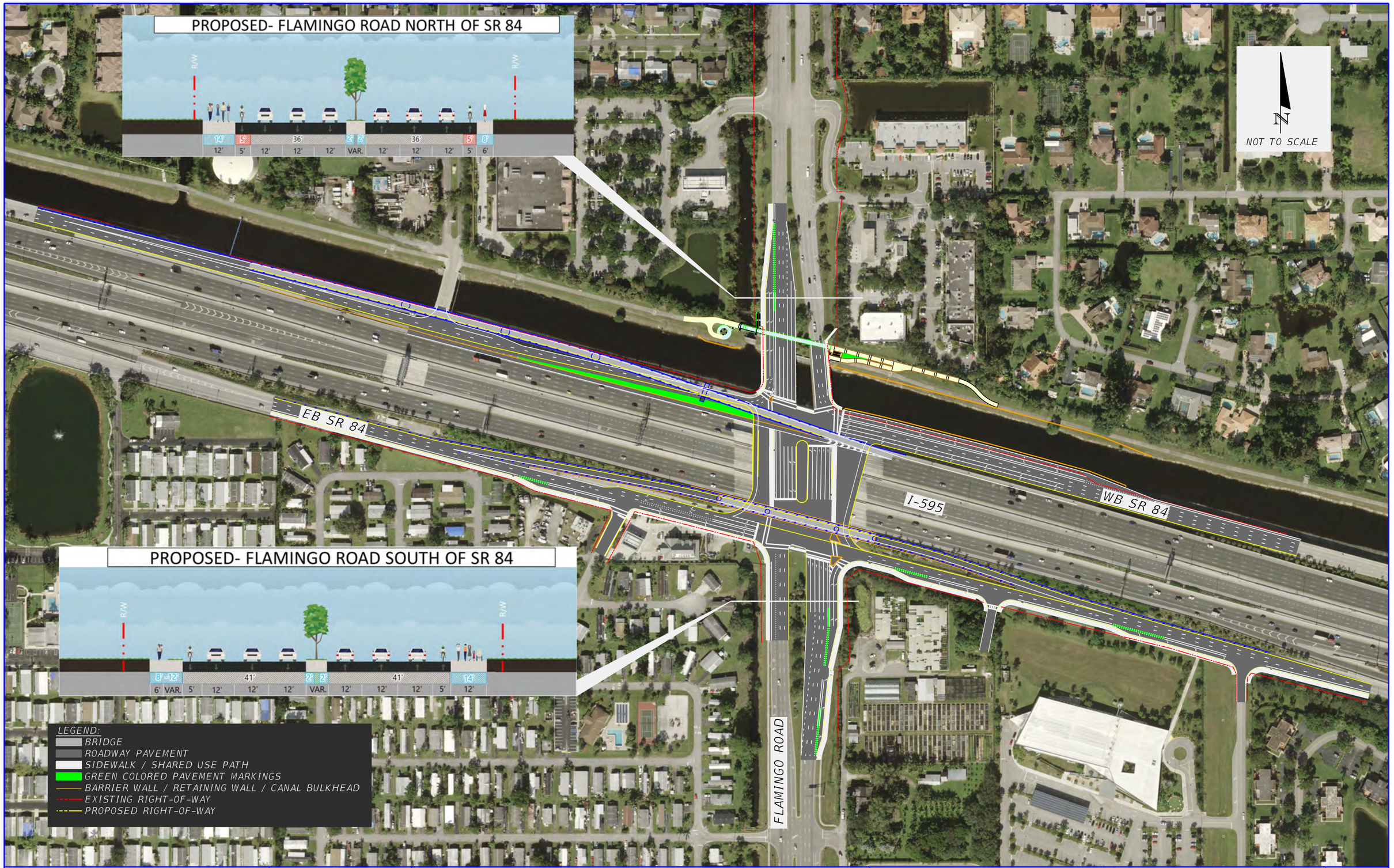
ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

FLAMINGO ROAD/SR 823 AND SR 84/I-595 EXISTING CONDITIONS & PLANNED IMPROVEMENTS

FIGURE 2



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ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

FLAMINGO ROAD/SR 823 AND SR 84/I-595 INTERCHANGE IMPROVEMENTS

FIGURE 3

7. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The Flamingo Road interchange improvements will improve safety and reduce congestion for vehicular traffic. In addition, safety will be improved for pedestrians and bicyclists. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion, does not meet LOS D in 2045 peak hours – operates at LOS F • Does not improve safety for bicyclists, pedestrians, or vehicles • Does not improve connectivity for pedestrians, bicyclists, or vehicles
Build	• 2045 Traffic Operations – Reduces delay, congestion, backups, travel times • Meets LOS D in 2045 peak hours • Improves safety for pedestrians, bicyclists, vehicles • Enhances connectivity for pedestrians & bicyclists	• Right-of-way impact • Canal impact • Visual impact • I-595 off-ramp impact • Cost

8. PROJECT CONSIDERATIONS

Based on a conceptual design of the improvements, additional right-of-way would need to be acquired to implement the improvements. In addition, there are anticipated structural and environmental impacts which need to be considered.

The locations listed below describe where additional right-of-way would be needed to implement the recommended concept.

- Westbound SR 84 along the north side east and west of Flamingo Road, potentially impacting the New River Canal South Florida Water Management District property.
- Eastbound SR 84 along the south side, from SW 125th Avenue to Flamingo Road, and from Flamingo Road to SW 121st Avenue.

One existing structure needs to be replaced to accommodate the improved design of the westbound I-595 off-ramp bridge over Flamingo Road and over westbound SR 84. In addition, a new roadway bridge is required for eastbound SR 84 traffic to cross over Flamingo Road.

Visual impacts from the proposed flyover and modified off-ramp should be further evaluated during the next phase of the project. In addition, an Interchange Access Request document is needed to document acceptability of the westbound I-595 off-ramp modification.

Potential environmental impacts to be further evaluated during the next phase of the project include impacts to wetlands and other surface waters, floodplains, noise sensitive sites, and protected species and habitat.

9. COST AND FUNDING INFORMATION

A Project Development and Environment (PD&E) Study is recommended as the next phase of the improvement project. The purpose of the PD&E Study is to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). The estimated cost for the PD&E phase is $2.0 million. Following the PD&E phase, the project will advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase is $4.5 million. Typically, acquisition of right-of-way occurs concurrent with or just after the design phase before the project moves into construction. A cost estimate for right-of-way acquisition for this project has not yet been determined. The construction cost estimate is $33.1 million, and cost for construction engineering inspection services during construction is $4.1 million. The total project cost, excluding right-of-way costs, is approximately $43.7 million in year 2021 dollars.

The improvements are proposed along the roadways of Flamingo Road and SR 84. Flamingo Road north of SR 84 is under the jurisdiction of City of Plantation and Broward County. Flamingo Road south of SR 84 is under the jurisdiction of the State of Florida. SR 84 is also under the jurisdiction of the State of Florida.

Much of the roadway modification work is proposed along SR 84. SR 84 is an integral part of the I-595 Strategic Intermodal System (SIS) corridor, and functions as a collector-distributor roadway providing access to and from I-595 via the interchange with Flamingo Road. The project will improve Flamingo Road, SR 84, and I-595. State

of Florida SIS program funds may be sought as a source of funding for the project. However, eligibility for SIS program funding must still be evaluated by FDOT. If the project is determined to be eligible, the project may be proposed for SIS funding and can compete with other eligible projects statewide for SIS funding. If the project is determined not to be eligible for SIS funding, other federal, state, or local funds would need to be pursued through the standard Broward MPO project prioritization process. There is opportunity for local funding to also be provided for the project from the City of Plantation, and/or Broward County.

ATTACHMENT 3

Project #3 - Implementation Package for Flamingo Road and Broward Boulevard Intersection Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 3
Flamingo Road/SR 823 and Broward Boulevard Intersection Improvements

Broward MPO
Metropolitan Planning Organization

FDOT

PROJECT IMPLEMENTATION PACKAGE
FLAMINGO ROAD/SR 823 AND BROWARD BOULEVARD INTERSECTION IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The Flamingo Road/SR 823 and Broward Boulevard intersection improvement project is located within the City of Plantation, Florida. The limits of the improvements extend along Flamingo Road from approximately 800 feet north of the Broward Boulevard intersection to approximately 1,100 feet south of the Broward Boulevard intersection. The project limits also extend along Broward Boulevard from approximately 700 feet west of Flamingo Road to approximately 800 feet east of Flamingo Road. The limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

Flamingo Road from approximately 1,100 feet south of Broward Boulevard to approximately 800 feet north of Broward Boulevard is a six-lane divided principal arterial under jurisdiction of Broward County and City of Plantation. There are gaps in sidewalk along Flamingo Road. Sidewalk exists along the west side of Flamingo Road north of Broward Boulevard, and along the east side of Flamingo Road for approximately 500 feet south of Broward Boulevard. Bicycle lanes are not present along Flamingo Road north or south of Broward Boulevard. A Broward County Transit bus stop is provided on the east side of Flamingo Road just north of Broward Boulevard.

Broward Boulevard west of Flamingo Road to NW 125th Avenue is a City of Plantation four-lane divided major collector. Broward Boulevard east of Flamingo Road to NW 122nd Terrace is a four-lane divided Broward County minor arterial. Broward Boulevard has sidewalk present on both sides within the limits described. There are no designated bicycle lanes or bus stops present.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to preserve mobility and improve safety at the intersection of Flamingo Road and Broward Boulevard for all modes of travel through the future year planning horizon.

The need for this project is to accommodate future transportation demand in the study area, add intersection capacity to reduce the likelihood of backups to the Flamingo Road and SR 84/I-595 interchange, and improve safety for all modes by adding dedicated bicycle facilities.

This project is needed by year 2045 to maintain operations at LOS D or better. Therefore, it has been identified as a long-term need. This intersection currently operates at a Level of Service (LOS) D during both the AM and PM peak hours. However, by the 2045 planning horizon the intersection will operate at LOS E during the 2045 AM peak hour and LOS D during the PM peak hour. In addition, this intersection is a location with high crash concentration averaging 32 crashes per year. Improvements will potentially reduce delay and improve safety at the intersection.

4. CORRIDOR IMPROVEMENT

Infrastructure improvements needed along the entire Flamingo Road corridor within the study area were identified as part of the study. These included improvements to the Broward Boulevard intersection, SR 84/I-595 interchange, and multimodal sidewalk, bicycle lane, and bus stop improvements. The needed Flamingo Road corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

Flamingo Road north and south of SR 84

- Add buffered bicycle lanes along Flamingo Road northbound and southbound throughout the limits.
- Add or widen sidewalk to be a shared use path width for both bikes and pedestrians through the interchange area (northbound, southbound, eastbound).
- Add sidewalk where it does not exist along Flamingo Road north and south of SR 84.
- Construct a shelter at BCT stop #3591 along Flamingo Road.

Flamingo Road and Broward Boulevard Intersection

- Add a second westbound exclusive right-turn lane.
- Widen for buffered bicycle lanes along both directions of Flamingo Road north and south of Broward Boulevard, and along both directions of Broward Boulevard east and west of Flamingo Road.
- Replace sidewalk where impacted along Flamingo Road and Broward Boulevard.

Flamingo Road at SR 84 / I-595 Interchange

- Eastbound SR 84 bypass/overpass– includes a new bridge structure for traffic to travel over Flamingo Road.
- Reconstruct I-595 off-ramp bridge structure to cross over westbound SR 84 lanes, so that westbound I-595 off-ramp traffic merges with westbound SR 84 on the right side (north side).
- Add turn lanes to the eastbound SR 84 and Flamingo Road signalized intersection as noted below.
    - Eastbound: Add a second exclusive right-turn lane.
    - Northbound: Add a second exclusive right-turn lane.
- Add turn lanes to the westbound SR 84 and Flamingo Road signalized intersection as noted below.
    - Westbound: The approach will be widened from four lanes to six lanes that will consist of two exclusive right-turn lanes, two exclusive left-turn

lanes, a shared through/right-turn lane, and a shared through/left-turn lane.

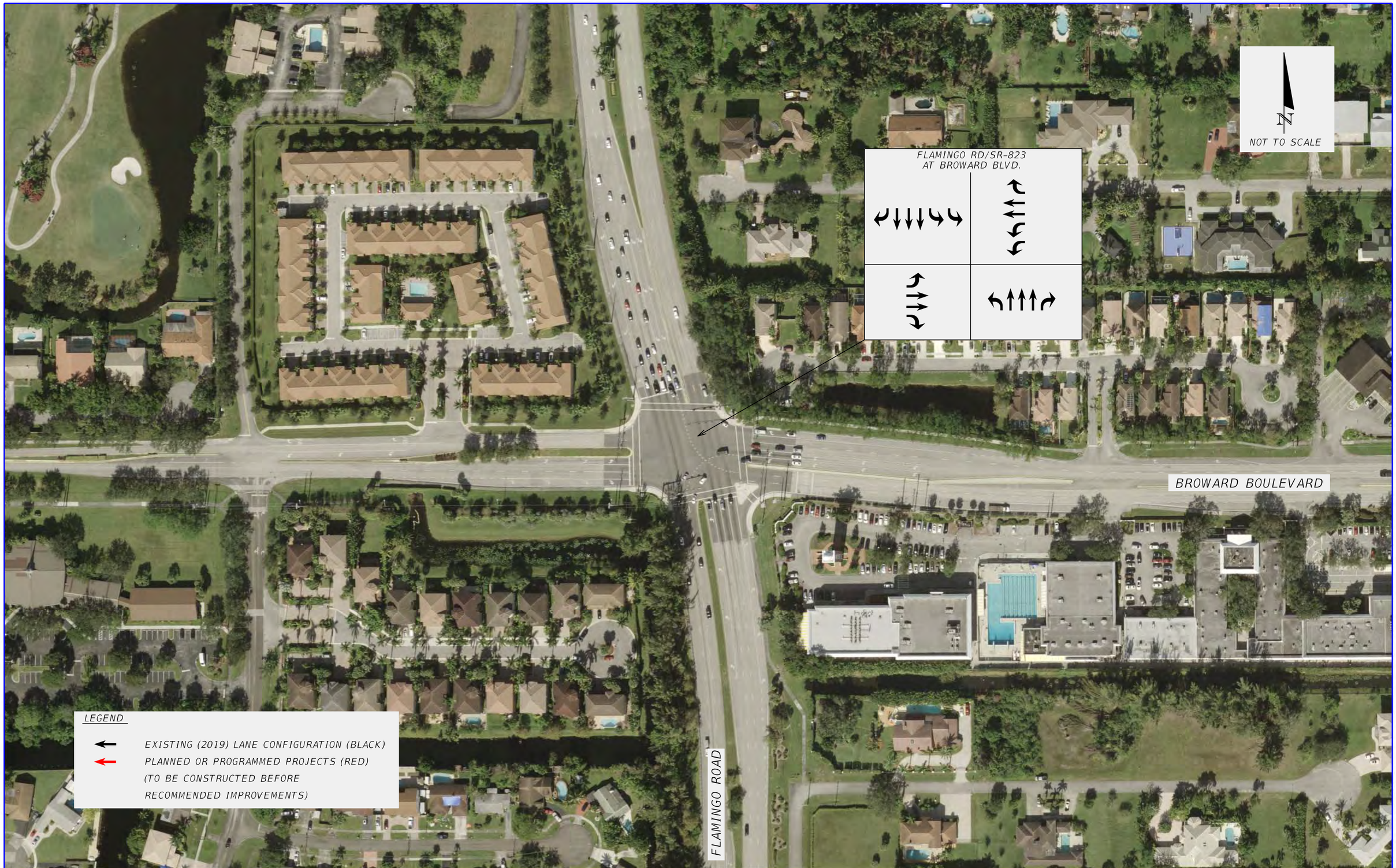
- Southbound: Add a second exclusive right-turn lane.

5. PROJECT SCOPE AND DESCRIPTION

The Flamingo Road and Broward Boulevard intersection project scope of work includes the following components described below. Only Flamingo Road improvements at the Broward Boulevard intersection are included in the project scope.

- Add a second westbound Broward Boulevard exclusive right-turn lane at the intersection with Flamingo Road.
- Construct buffered bicycle lanes through the intersection by widening along both directions of Flamingo Road north and south of Broward Boulevard, and along both directions of Broward Boulevard east and west of Flamingo Road.
- Replace sidewalk where impacted along Flamingo Road and Broward Boulevard.

Figure 2 shows the project area without the recommended project improvements.
Figure 3 shows a conceptual plan of the project improvements.



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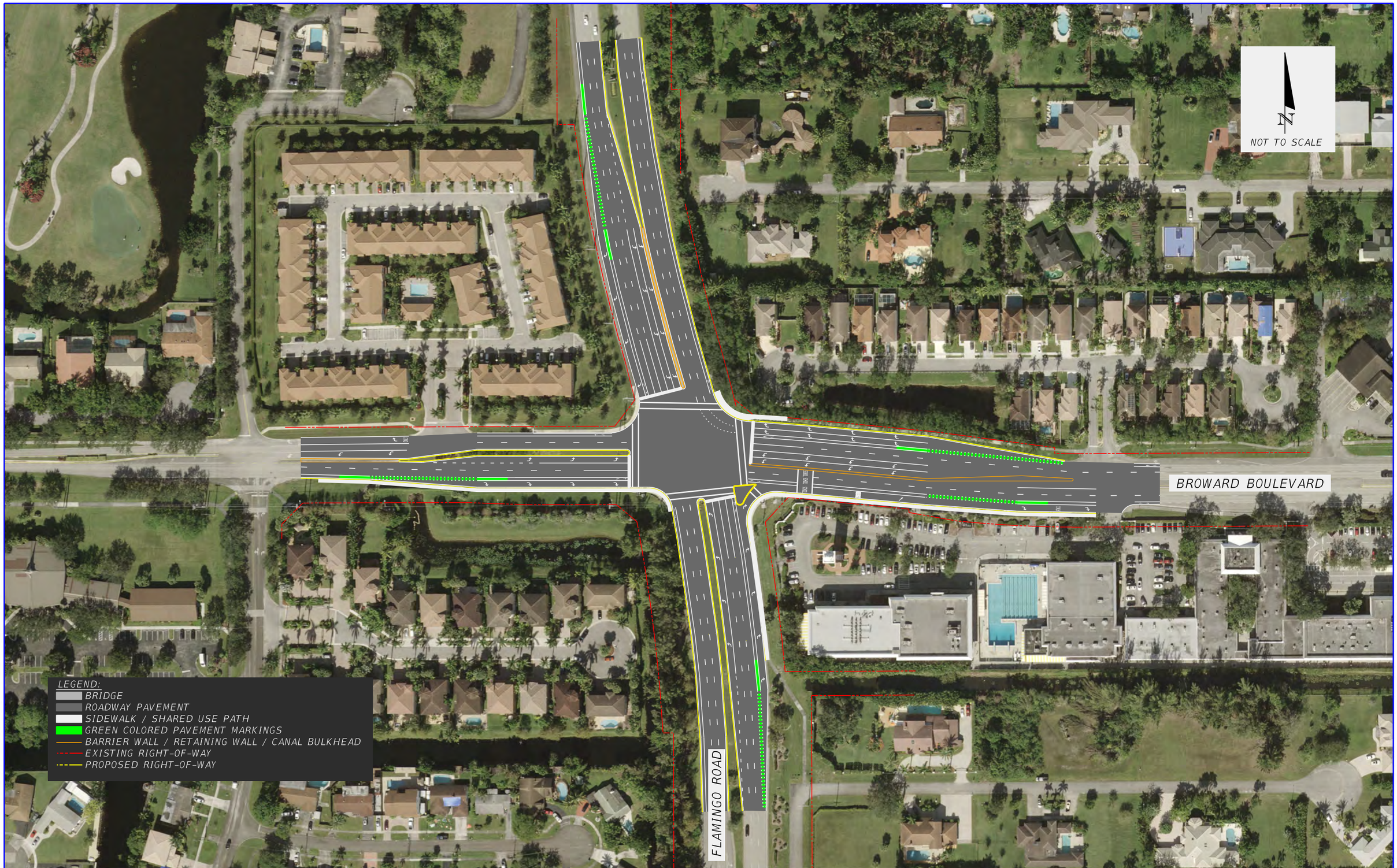
ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

FLAMINGO ROAD/SR 823 AND BROWARD BLVD. EXISTING CONDITIONS & PLANNED IMPROVEMENTS

FIGURE 2



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ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

FLAMINGO ROAD/SR 823 AND BROWARD BLVD. INTERSECTION IMPROVEMENTS

FIGURE 3

6. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The Flamingo Road corridor improvements can provide a more efficient and less congested route for traffic on Flamingo Road and Broward Boulevard. In addition, safety for vehicles, pedestrians, and bicyclists is improved along these corridors. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion, does not meet LOS D in 2045 peak hours – operates at LOS F • Does not improve safety for bicyclists, pedestrians, or vehicles • Does not improve connectivity for pedestrians, bicyclists, or vehicles
Build	• 2045 Traffic Operations – Reduces delay, congestion, backups, travel times • Meets LOS D in 2045 peak hours • Improves safety for pedestrians, bicyclists, vehicles • Enhances connectivity for pedestrians & bicyclists	• Cost

7. PROJECT CONSIDERATIONS

Based on a conceptual design of the improvements, additional right-of-way would not need to be acquired to implement the improvements. There are no structural impacts identified at this intersection.

No environmental issues were identified at this location.

8. COST AND FUNDING INFORMATION

Design is recommended as the next phase of the improvement project. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase is $460,000. The construction cost estimate is $2.1 million, and cost for construction engineering inspection services during construction is $387,000. The total project cost is approximately $2.9 million in year 2021 dollars.

The improvements are proposed along the roadways of Flamingo Road and Broward Boulevard. Flamingo Road south of Broward Boulevard is under the jurisdiction of City of Plantation. Flamingo Road north of Broward Boulevard is under the jurisdiction of Broward County, and Broward Boulevard east and west of Flamingo Road is under the jurisdiction of Broward County.

The improvements are proposed along Flamingo Road and Broward Boulevard which are both local roadways. Funding from the City of Plantation and/or Broward County could be used for the project. Alternatively, federal and/or state funds could be pursued through the standard Broward MPO project prioritization process.

ATTACHMENT 4

Project #4 - Implementation Package for Hiatus Road and SR 84 / I-595 Interchange Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 4
Hiatus Road and SR 84/I-595 Interchange Improvements

Broward MPO
Metropolitan Planning Organization

FDOT

PROJECT IMPLEMENTATION PACKAGE
HIATUS ROAD AND SR 84/I-595 INTERCHANGE IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The Hiatus Road and SR 84/I-595 interchange improvement project is located within Broward County, Florida. The portion of the project located north of SR 84 is within the City of Plantation, and the portion of the project located south of SR 84 is within the Town of Davie. The limits of the improvements extend along Hiatus Road from approximately 1,700 feet north of the westbound SR 84 intersection to approximately 700 feet south of the eastbound SR 84 intersection. The project limits also extend along eastbound and westbound SR 84 from approximately 2,200 feet west of Hiatus Road to approximately 900 feet east of Hiatus Road. The limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

Hiatus Road north of SR 84 is a six-lane divided Broward County minor arterial within the project limits. Sidewalks and bicycle lanes are present on both sides of Hiatus Road north of SR 84.

Hiatus Road south of SR 84 is a four-lane divided Town of Davie major collector roadway. Sidewalks are present on both sides of the Hiatus Road south of SR 84. Bicycle lanes are not present on either side of Hiatus Road south of SR 84.

SR 84 eastbound is a one-way, generally two-lane, roadway within the project limits. SR 84 westbound is also a one-way, generally two-lane, roadway within the project limits. SR 84 (eastbound and westbound) is a minor arterial which is part of the state highway system. Along SR 84 eastbound, sidewalk is present east and west of Hiatus Road. Sidewalk is not present along SR 84 westbound east or west of Hiatus Road. A shoulder is present for bicycle traffic along SR 84 eastbound and SR 84 westbound. Bicycle and pedestrian traffic along westbound SR 84 are encouraged to use the adjacent New River Greenway.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to improve safety for all modes of travel through the interchange and provide congestion relief by reducing existing and future motorist delay, travel time and queuing along Hiatus Road and at the access points with I-595 and SR 84.

The need for the project consists of accommodating existing and future transportation demand, adding capacity, improving safety for all modes, and enhancing bicycle, pedestrian, and transit facilities.

The need for the project is immediate given the existing year (2019) Level of Service (LOS) analysis results. Both Hiatus Road intersections at the I-595/ SR 84 interchange are operating at LOS E/F during the existing AM and PM peak hours and will become significantly worse by the 2045 planning horizon without any improvements. In addition, this interchange is a location with high crash concentration averaging 9 crashes per year at westbound SR 84, and 24 crashes per year at eastbound SR 84. Improvements will potentially reduce crashes related to congestion along Hiatus Road and SR 84.

4. CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire Hiatus Road corridor and along the entire SR 84 corridor within the study area were identified as part of the study. These included improvements to the SR 84/I-595 interchange as well as multimodal sidewalk and bicycle lane improvements. The needed Hiatus Road corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

Hiatus Road north and south of SR 84

- Add buffered bicycle lanes along Hiatus Road northbound and southbound throughout the limits.
- Widen the sidewalk to be a shared use path width for both bikes and pedestrians through the interchange area (northbound, southbound, eastbound).

Hiatus Road at SR 84 / I-595 Interchange

- Eastbound SR 84 bypass/overpass– includes a new one-lane overpass for traffic to travel over Hiatus Road.
- Add turn lanes to the eastbound SR 84 and Hiatus Road signalized intersection as noted below.
    - Eastbound: Widen approach from four lanes to six lanes. Provide three exclusive left-turn lanes, one through lane, one shared through/right-turn lane, and one exclusive right-turn lane.
- Add turn lanes to the westbound SR 84 and Hiatus Road signalized intersection as noted below.
    - Northbound: Add a third exclusive through lane, along with existing one exclusive left-turn lane.
    - Westbound: Widen approach from four lanes to five lanes. Provide two exclusive left-turn lanes, one shared through/right-turn lane, and two exclusive right-turn lanes.
    - Southbound: Add a second exclusive right-turn lane.

Hiatus Road at Broward Boulevard Intersection

- Add turn lanes to the Broward Boulevard and Hiatus Road signalized intersection as noted below.
    - Northbound: Add a second exclusive left-turn lane.
    - Westbound: Add a second exclusive left-turn lane.
    - Eastbound: Add a second exclusive right-turn lane.

5. INTERCHANGE ALTERNATIVES EVALUATED

A modified diamond interchange configuration was evaluated. Traffic analysis showed that additional lanes for high volume movements would allow the interchange to operate at an acceptable Level of Service through 2045. Therefore, only the one concept was evaluated to improve the Hiatus Road and SR 84/I-595 interchange.

The modified diamond concept incudes a second lane for the eastbound bypass that would allow eastbound SR 84 traffic, in addition to the eastbound I-595 off-ramp traffic,

to bypass Hiatus Road. The modified diamond concept includes additional turn lanes at the Hiatus Road intersections with eastbound SR 84 and westbound SR 84.

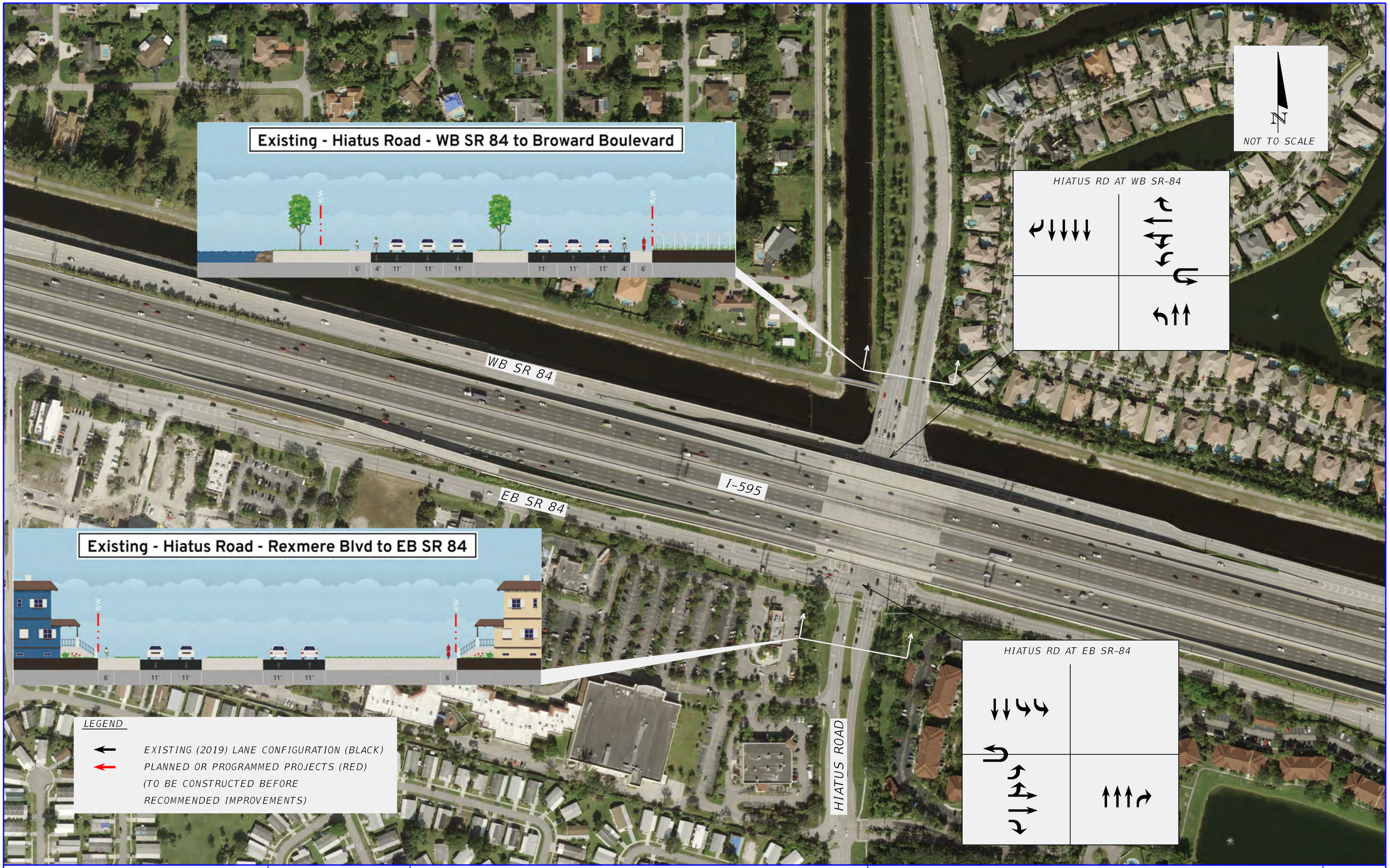
When evaluating the physical feasibility of the improvements, it was determined that the improvements were feasible. The proposed improvements accommodate all interchange movements, and the eastbound SR 84 overpass and added turn lanes allow the SR 84 interchange intersections to operate at LOS D or better through 2045. To address the interchange deficiencies, the modified diamond interchange with bypass lanes and modified intersection lane geometry is recommended for further analysis, design, and implementation.

6. PROJECT SCOPE / DESCRIPTION

The Hiatus Road at SR 84/I-595 modified diamond interchange project scope of work includes the following components listed below. Only Hiatus Road corridor improvements that are located within the interchange influence area are included in the project scope.

- Eastbound SR 84 bypass/overpass– includes a new one-lane overpass for traffic to travel over Hiatus Road.
- Add turn lanes to the eastbound SR 84 and Hiatus Road signalized intersection as noted below.
    - Eastbound: Widen approach from four lanes to six lanes. Provide three exclusive left-turn lanes, one through lane, one shared through/right-turn lane, and one exclusive right-turn lane.
- Add turn lanes to the westbound SR 84 and Hiatus Road signalized intersection as noted below.
    - Northbound: Add a third exclusive through lane, along with existing one exclusive left-turn lane.
    - Westbound: Widen approach from four lanes to five lanes. Provide two exclusive left-turn lanes, one shared through/right-turn lane, and two exclusive right-turn lanes.
    - Southbound: Add a second exclusive right-turn lane.
- Widen the sidewalk along Hiatus Road to accommodate both bicyclists and pedestrians within the interchange area and connect to existing or future bicycle and pedestrian facilities along north/south Hiatus Road and SR 84.
- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.

Figure 2 shows the project area without the recommended project improvements.
Figure 3 shows a conceptual plan of the project improvements as well as typical sections.



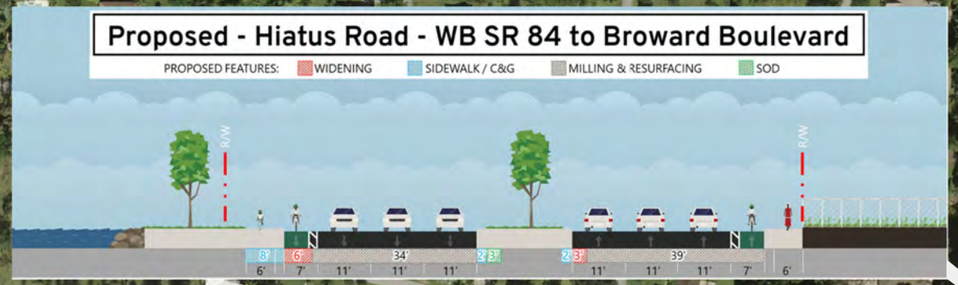
Broward MPO Metropolitan Planning Organization

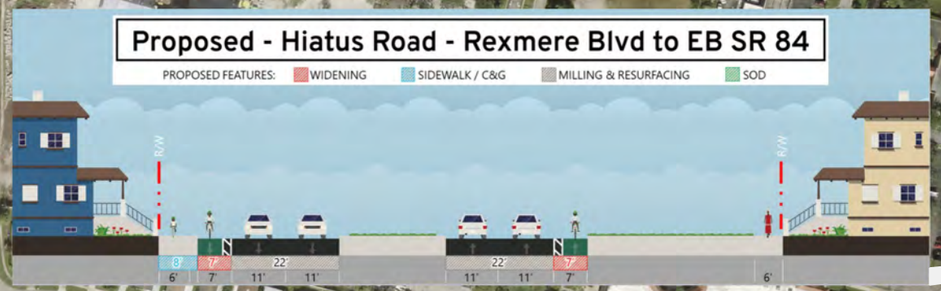
FDOT

ARTERIAL CONNECTIVITY STUDY
ALONG I-595 CORRIDOR

HIATUS ROAD AND SR 84/I-595
EXISTING CONDITIONS &
PLANNED IMPROVEMENTS

FIGURE 2





NOT TO SCALE

I-595

HIATUS ROAD

LEGEND:
- BRIDGE
- ROADWAY PAVEMENT
- SIDEWALK / SHARED USE PATH
- GREEN COLORED PAVEMENT MARKINGS
- BARRIER WALL / RETAINING WALL / CANAL BULKHEAD
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- EXISTING LIMITED ACCESS RIGHT-OF-WAY
- PROPOSED LIMITED ACCESS RIGHT-OF-WAY

Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY
ALONG I-595 CORRIDOR

HIATUS ROAD AND
SR 84/I-595 INTERCHANGE IMPROVEMENTS

FIGURE 3

7. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The Hiatus Road and SR 84/I-595 interchange improvements will provide a more efficient and less congested route for traffic. In addition, safety will be improved for vehicles, pedestrians, and bicyclists. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion, does not meet LOS D in 2045 peak hours – operates at LOS F • Does not improve safety for bicyclists, pedestrians, or vehicles • Does not improve connectivity for pedestrians, bicyclists, or vehicles
Build	• 2045 Traffic Operations – Reduces delay, congestion, backups, travel times • Improves safety for pedestrians, bicyclists, vehicles • Enhances connectivity for bicyclists	• Right-of-way impact • Canal impact • Visual impact • Cost

8. PROJECT CONSIDERATIONS

Based on a conceptual design of the recommended interchange improvements, additional right-of-way would need to be acquired to implement the improvements. The locations listed below describe where additional right-of-way would be needed to implement the recommended concept.

- Eastbound SR 84 along the south side, from east of SW 117th Avenue to Hiatus Road, potentially impacting green space for businesses along the south side.
- Westbound SR 84 along the north side east and west of Hiatus Road, potentially impacting the New River Canal South Florida Water Management District property.

In addition, there are anticipated structural and environmental impacts which need to be considered. Two existing roadway structures need to be replaced or modified to

accommodate the improvements. These structures include the eastbound SR 84 bypass over Hiatus Road and the southbound Hiatus Road bridge over the New River Canal.

Potential environmental impacts to be further evaluated during the next phase of the project include impacts to wetlands and other surface waters, floodplains, noise sensitive sites, and protected species and habitat. These environmental impacts are anticipated to be minimal.

9. COST AND FUNDING INFORMATION

A Project Development and Environment (PD&E) Study is recommended as the next phase of the improvement project. The purpose of the PD&E Study is to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). The estimated cost for the PD&E phase is $2 million. Following the PD&E phase, the project will advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase is $4 million. Typically, acquisition of right-of-way occurs concurrent with or just after the design phase before the project moves into construction. A cost estimate for right-of-way acquisition for this project has not yet been determined. The construction cost estimate is $24 million, and cost for construction engineering inspection services during construction is $3.7 million. The total project cost, excluding right-of-way costs, is approximately $33.7 million in year 2021 dollars.

The improvements are proposed along the roadways of Hiatus Road and SR 84. Hiatus Road north of SR 84 is under the jurisdiction of Broward County. Hiatus Road south of SR 84 is under the jurisdiction of the Town of Davie. SR 84 is under the jurisdiction of the State of Florida.

Much of the roadway modification work is proposed along SR 84. SR 84 is an integral part of the I-595 Strategic Intermodal System (SIS) corridor, and functions as a collector-distributor roadway providing access to and from I-595 via the interchange with Hiatus Road. The project will improve Hiatus Road, SR 84, and I-595.

Projects eligible for State of Florida SIS program funds must be located on a designated SIS facility, be an eligible project type (typically capacity), and be able to demonstrate that they benefit the SIS facility. The Hiatus Road and SR 84 interchange improvements primarily benefit the north-south arterial, with minimal direct benefit to I-595, the SIS facility. Therefore, SIS funding for this project is unlikely unless eligibility criteria for SIS projects is expanded. Another option is to fund the project through the Broward MPO project prioritization process using other federal, state, and/or local funding. There is

opportunity for local funding to also be provided for the project from the Town of Davie and/or Broward County.

ATTACHMENT 5

Project #5 - Implementation Package for Hiatus Road and Broward Boulevard Intersection Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 5
Hiatus Road and Broward Boulevard Intersection Improvements

Broward MPO
Metropolitan Planning Organization

FDOT

PROJECT IMPLEMENTATION PACKAGE
HIATUS ROAD AND BROWARD BOULEVARD INTERSECTION IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The Hiatus Road and Broward Boulevard intersection improvement project is located within the City of Plantation, Florida. The intersection is situated north of I-595/SR 84, east of Flamingo Road, and west of Nob Hill Road. The limits of the improvements extend along Broward Boulevard for approximately 800 feet east and west of Hiatus Road. The project limits also extend along Hiatus Road for approximately 800 feet south of Broward Boulevard. The limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

Hiatus Road south of Broward Boulevard is a six-lane divided Broward County minor arterial roadway within the project limits. Sidewalks and bicycle lanes are present on both sides of the Hiatus Road corridor.

Broward Boulevard is a four-lane divided Broward County minor arterial roadway. Sidewalks are present along Broward Boulevard within the project limits, except for a gap where sidewalk is missing on the south side, east of Hiatus Road. There are no bicycle lanes within the project limits on Broward Boulevard. Broward County Transit bus stops are present on the north and south sides of Broward Boulevard east of Hiatus Road, and on the north side of Hiatus Road west of Hiatus Road.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to improve safety for all modes of travel through the intersection and provide congestion relief by reducing existing and future motorist delay, travel time and queuing along Hiatus Road.

The need for this project is to accommodate existing and future transportation demand in the study area, add intersection capacity to reduce the likelihood of backups to the Hiatus Road and SR 84/I-595 interchange, and improve safety for all modes, by providing space for separated bicycle lanes along Hiatus Road.

The need for the project is immediate given the existing year (2019) Level of Service (LOS) analysis results. The Hiatus Road and Broward Boulevard intersection is currently operating at a Level of Service (LOS) E during AM and PM peak hours and will become significantly worse (LOS F) by the 2045 planning horizon without any improvements. In addition, this intersection is a location with high crash concentration averaging 29 crashes per year. Improvements will potentially reduce delay and improve safety at the intersection.

4. CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire Hiatus Road corridor within the study area were identified as part of the study. These included improvements to the Hiatus Road and SR 84/I-595 interchange, Hiatus Road and Broward Boulevard intersection, and multimodal sidewalk and bicycle lane improvements. The needed Hiatus Road corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

<u>Hiatus Road north and south of SR 84</u>

- Add buffered bicycle lanes along Hiatus Road northbound and southbound throughout the limits.

- Add or widen the sidewalk to be a shared use path width for both bikes and pedestrians through the interchange area (northbound, southbound, eastbound).

Hiatus Road at SR 84 / I-595 Interchange

- Eastbound SR 84 bypass/overpass– includes a new one-lane overpass for traffic to travel over Hiatus Road.
- Add turn lanes to the eastbound SR 84 and Hiatus Road signalized intersection as noted below.
  - Eastbound: Widen approach from four lanes to six lanes. Provide three exclusive left-turn lanes, one through lane, one shared through/right-turn lane, and one exclusive right-turn lane.
- Add turn lanes to the westbound SR 84 and Hiatus Road signalized intersection as noted below.
  - Northbound: Add a third exclusive through lane, along with existing one exclusive left-turn lane.
  - Westbound: Widen approach from four lanes to five lanes. Provide two exclusive left-turn lanes, one shared through/right-turn lane, and two exclusive right-turn lanes.
  - Southbound: Add a second exclusive right-turn lane.

Hiatus Road at Broward Boulevard Intersection

- Add turn lanes to the Broward Boulevard and Hiatus Road signalized intersection as noted below.
  - Northbound: Add a second exclusive left-turn lane.
  - Westbound: Add a second exclusive left-turn lane.
  - Eastbound: Add a second exclusive right-turn lane.

5. PROJECT SCOPE / DESCRIPTION

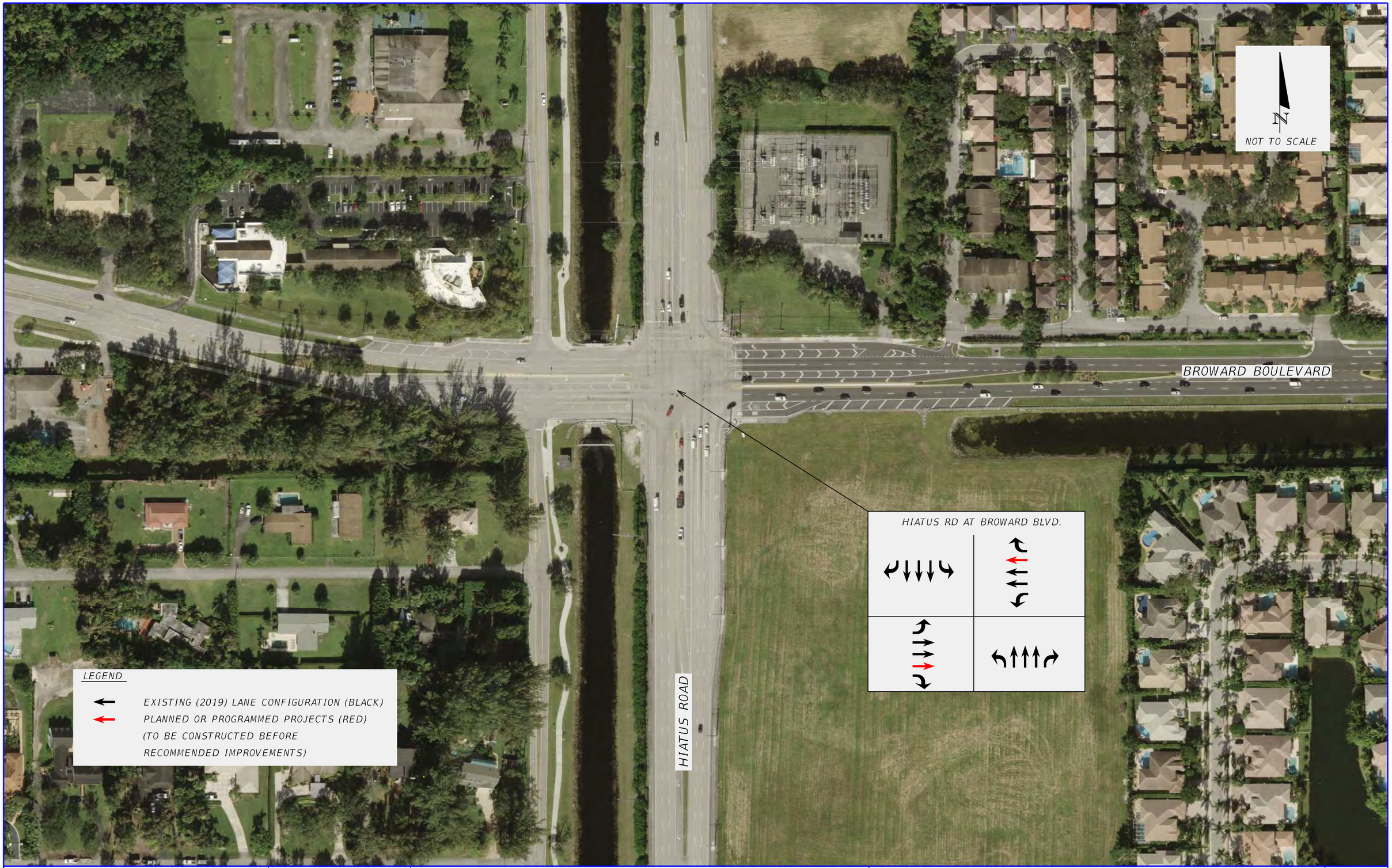
The Hiatus Road and Broward Boulevard intersection project scope of work includes the following components described below. Only Hiatus Road improvements at the Broward Boulevard intersection are included in the project scope.

- Add turn lanes to the Broward Boulevard and Hiatus Road signalized intersection as noted below.
  - Northbound: Add a second exclusive left-turn lane.
  - Westbound: Add a second exclusive left-turn lane.
  - Eastbound: Add a second exclusive right-turn lane.

- Widen the existing 4-foot-wide bicycle lanes along Hiatus Road south of Broward Boulevard to allow for 7-foot-wide separated bicycle lanes northbound and southbound.
- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.

Figure 2 shows the project area without the recommended project improvements. Widening Broward Boulevard from four to six lanes between Hiatus Road and Nob Hill Road is a planned Broward County project. The widening was assumed to be in place by 2045.

Figure 3 shows a conceptual plan of the project improvements.



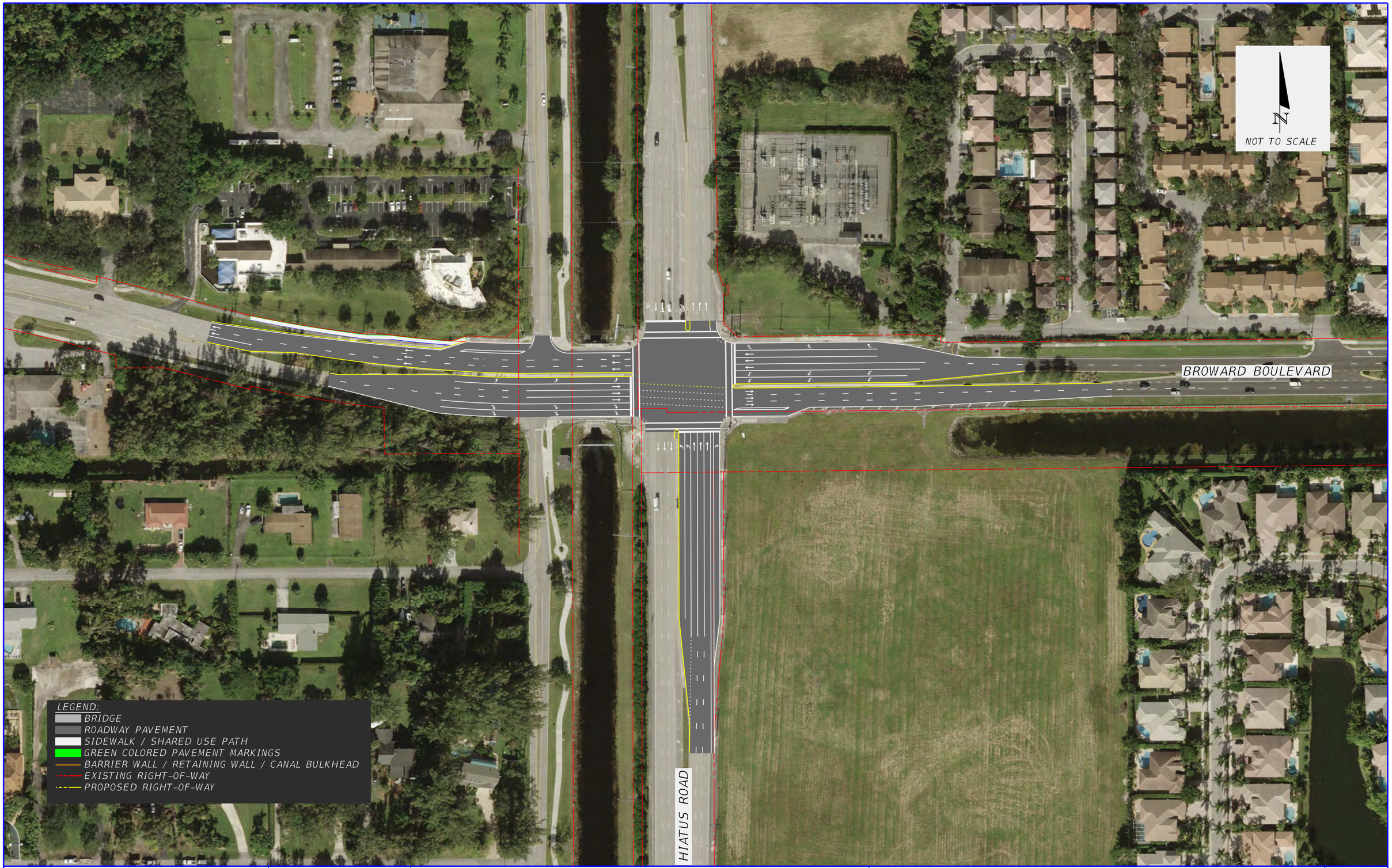
Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

HIATUS ROAD AND BROWARD BOULEVARD EXISTING CONDITIONS & PLANNED IMPROVEMENTS

FIGURE 2



Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY
ALONG I-595 CORRIDOR

HIATUS ROAD AND
BROWARD BLVD. INTERSECTION IMPROVEMENTS

FIGURE 3

6. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The Hiatus Road corridor improvements can provide a more efficient and less congested route for traffic on Hiatus Road and Broward Boulevard. In addition, safety for vehicles, pedestrians, and bicyclists is improved along these corridors. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion, does not meet LOS D in 2045 peak hours – operates at LOS F • Does not improve safety for bicyclists, pedestrians, or vehicles • Does not improve connectivity for pedestrians, bicyclists, or vehicles
Build	• 2045 Traffic Operations – Reduces delay, congestion, backups, travel times • Improves safety for bicyclists • Enhances connectivity for bicyclists	• Cost

7. PROJECT CONSIDERATIONS

Based on a conceptual design of the improvements, there is no additional right-of-way needed at this intersection. In addition, there are no structural impacts anticipated for this intersection, however, there are environmental impacts which need to be considered.

Environmental impacts are expected to be minimal, however, the following should be considered: impacts to drainage and other surface waters, noise sensitive sites, and protected species and habitat.

8. COST AND FUNDING INFORMATION

Design is recommended as the next phase of the improvement project. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase is $367,000. Following completion of the design phase, the project will then advance to the construction phase. The construction cost estimate is $882,000, and cost for construction engineering inspection services during construction is $212,000. The total project cost is approximately $1.5 million in year 2021 dollars.

The improvements are proposed along the roadways of Hiatus Road and Broward Boulevard. Both Hiatus Road and Broward Boulevard are under the jurisdiction of Broward County. Since both roads are local County roadways, local funding from Broward County could be used for the project. For efficient project implementation, Broward County may consider incorporating the recommended intersection improvements into their planned Broward Boulevard widening project. Alternatively, federal and/or state funds could be pursued for this separate intersection project through the standard Broward MPO project prioritization process.

ATTACHMENT 6

Project #6 - Implementation Package for Nob Hill Road and SR 84 / I-595 Interchange Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 6
Nob Hill Road and SR 84/I-595 Interchange Improvements

Broward MPO
Metropolitan Planning Organization

FDOT

PROJECT IMPLEMENTATION PACKAGE
NOB HILL ROAD AND SR 84/I-595 INTERCHANGE IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The Nob Hill Road and SR 84/I-595 interchange improvement project is located within Broward County, Florida. The portion of the project located south of SR 84 is within the Town of Davie, and the portion of the project located north of SR 84 is within the City of Plantation. The limits of the improvements extend along Nob Hill Road from approximately 900 feet north of the westbound SR 84 intersection to approximately 700 feet south of the eastbound SR 84 intersection. The project limits also extend along eastbound and westbound SR 84 from approximately 3,400 feet west of Nob Hill Road to approximately 1,500 feet east of Nob Hill Road. The limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

Nob Hill Road between Torchwood Avenue and SW 101st Road is a four-lane divided Broward County minor arterial. Sidewalk is present along both sides of Nob Hill Road within the limits described above. Bicycle lanes are present on both sides within the limits described above, except for a gap where bicycle lanes are missing on the west side of Nob Hill Road between SR 84 eastbound and SW 101st Road.

SR 84 eastbound is a one-way, generally two-lane, roadway within the project limits. SR 84 westbound is also a one-way, generally two-lane, roadway within the project limits. SR 84 (eastbound and westbound) is a minor arterial which is part of the state

highway system. Along SR 84 eastbound, sidewalk is present east and west of Nob Hill Road. Sidewalk is not present along SR 84 westbound. A shoulder is present for bicycle traffic along SR 84 eastbound and westbound SR 84. A bicycle lane keyhole is also present along westbound SR 84, east of Nob Hill Road. Bicycle and pedestrian traffic along westbound SR 84 are encouraged to use the adjacent New River Greenway.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to improve safety for all modes of travel through the interchange and provide congestion relief by reducing existing and future motorist delay, travel time and queuing along Nob Hill Road and at the access points with I-595 and SR 84.

The need for the project consists of accommodating existing and future transportation demand, adding capacity, improving safety for all modes, and enhancing bicycle, pedestrian, and transit facilities.

The need for the project is immediate given the existing year (2019) Level of Service (LOS) analysis results. Both Nob Hill Road intersections at the I-595/ SR 84 interchange are operating at a Level of Service (LOS) F/E during existing AM and PM peak hours and will become significantly worse by the 2045 planning horizon without any improvements. In addition, this interchange is a location with high crash concentration averaging 14 crashes per year at westbound SR 84, and 37 crashes per year at eastbound SR 84. Improvements will potentially reduce crashes along Nob Hill Road and SR 84.

4. CORRIDOR IMPROVEMENT

Infrastructure improvements needed along the entire Nob Hill Road corridor and along the entire SR 84 corridor within the study area were identified as part of the study. These included improvements to the SR 84/I-595 interchange as well as a shared use path and bicycle lane. The needed Nob Hill Road corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

<u>Nob Hill Road at SR 84 / I-595 Interchange</u>

- Eastbound SR 84 bypass/overpass– includes a new one-lane overpass for traffic to travel over Nob Hill Road.

- Add turn lanes to the eastbound SR 84 and Nob Hill Road signalized intersection as noted below.
    - Eastbound: Provide a second exclusive right-turn lane, in addition to a shared through/left-turn lane and exclusive left-turn lane.
    - Northbound: Add a second exclusive right-turn lane.
- Add turn lanes to the westbound SR 84 and Nob Hill Road signalized intersection as noted below.
    - Westbound: Provide three exclusive right-turn lanes, and one dedicated through lane, in addition to the one exclusive left-turn lane, and one shared through/left-turn lane. Provide three northbound receiving lanes on Nob Hill Road.

Nob Hill Road north and south of SR 84

- Add buffered bicycle lanes along Nob Hill Road northbound and southbound from SR 84 to SW 22nd Court.
- Add or widen the sidewalk to be a shared use path width for both bikes and pedestrians through the interchange area (northbound, southbound, eastbound).

5. INTERCHANGE ALTERNATIVES EVALUATED

A modified diamond interchange configuration was evaluated. Traffic analysis showed that additional lanes for high volume movements would allow the interchange to operate at an acceptable Level of Service through 2045. Therefore, only the one concept was evaluated to improve the Nob Hill Road and SR 84/I-595 interchange.

The modified diamond concept incudes an eastbound SR 84 bypass which allows eastbound SR 84 traffic to use a bridge over Nob Hill Road to bypass the signalized intersection. In addition, the modified diamond concept includes additional turn lanes at the Nob Hill Road intersections with eastbound SR 84 and westbound SR 84. When evaluating the physical feasibility of the improvements, it was determined that all the improvements were feasible. The proposed improvements accommodate all interchange movements, and the eastbound SR 84 overpass and added turn lanes allow the SR 84 interchange intersections to operate at LOS D or better through 2045. To address the interchange deficiencies, the modified diamond interchange with eastbound bypass and modified intersection lane geometry is recommended for further analysis, design, and implementation.

6. PROJECT SCOPE / DESCRIPTION

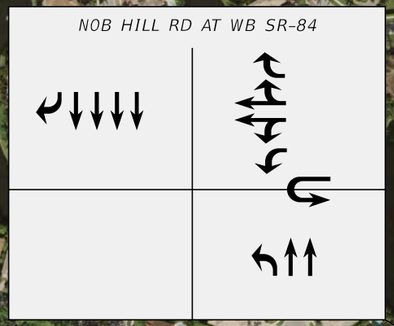
The Nob Hill Road and SR 84/I-595 modified diamond interchange project scope of work includes the following components listed below. Only Nob Hill Road corridor improvements that are located within the interchange influence are included in the project scope.

- Eastbound SR 84 bypass/overpass– includes a new one-lane overpass for traffic to travel over Nob Hill Road.
- Add turn lanes to the eastbound SR 84 and Nob Hill Road signalized intersection as noted below.
  - Eastbound: Provide a second exclusive right-turn lane, in addition to a shared through/left-turn lane and exclusive left-turn lane.
  - Northbound: Add a second exclusive right-turn lane.
- Add turn lanes to the westbound SR 84 and Nob Hill Road signalized intersection as noted below.
  - Westbound: Provide three exclusive right-turn lanes, and one dedicated through lane, in addition to the one exclusive left-turn lane, and one shared through/left-turn lane. Provide three northbound receiving lanes on Nob Hill Road.
- Add buffered bicycle lanes along Nob Hill Road northbound and southbound from SR 84 to SW 22nd Court.
- Add or widen the sidewalk to be a shared use path width for both bikes and pedestrians through the interchange area (northbound, southbound, eastbound).
- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.

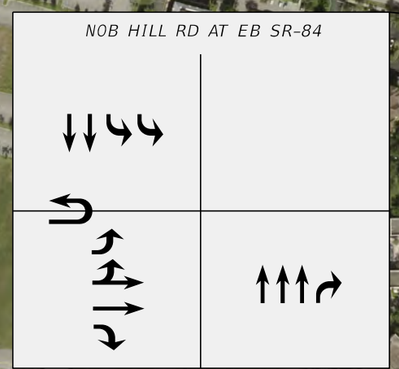
Figure 2 shows the project area without the recommended project improvements. Figure 3 shows a conceptual plan of the project improvements as well as typical sections.

NOT TO SCALE

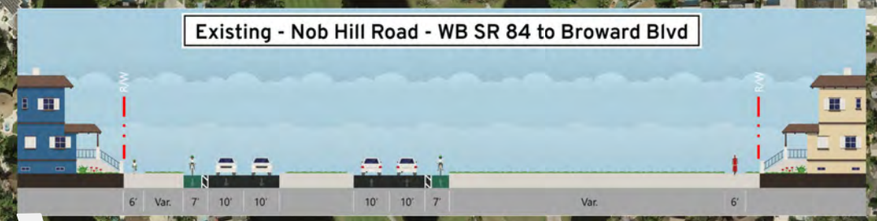
NOB HILL RD AT WB SR-84



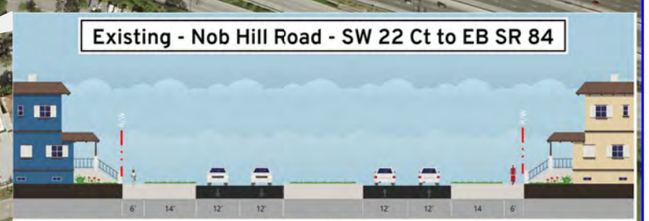
NOB HILL RD AT EB SR-84



Existing - Nob Hill Road - WB SR 84 to Broward Blvd



Existing - Nob Hill Road - SW 22 Ct to EB SR 84



NOB HILL

WB SR 84

I-595

EB SR 84

LEGEND

EXISTING (2019) LANE CONFIGURATION (BLACK)

PLANNED OR PROGRAMMED PROJECTS (RED) (TO BE CONSTRUCTED BEFORE RECOMMENDED IMPROVEMENTS)

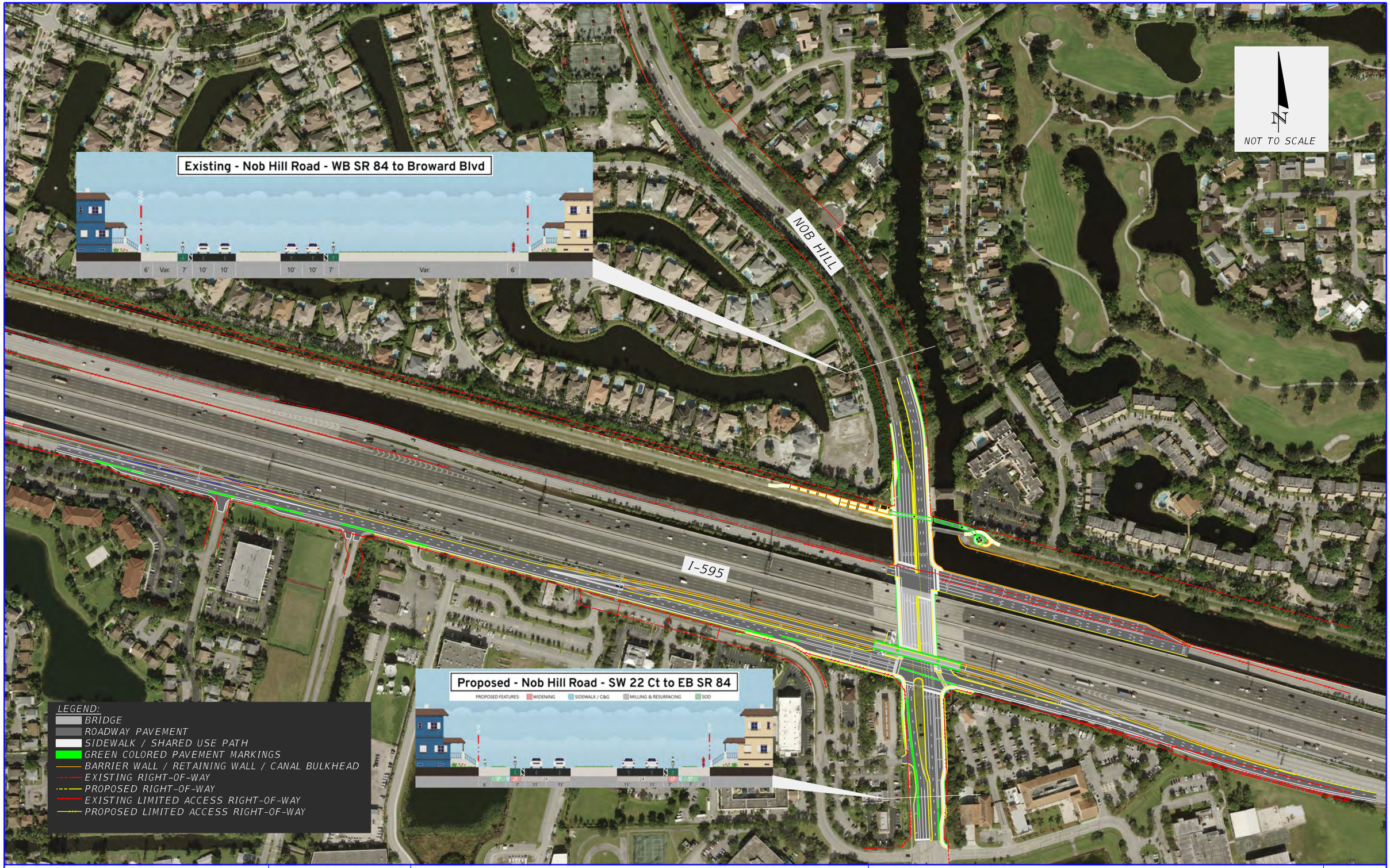
Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

NOB HILL ROAD AND SR 84/I-595 EXISTING CONDITIONS PLANNED IMPROVEMENTS

FIGURE 2



Broward MPO
Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

NOB HILL AND SR 84/I-595 INTERCHANGE IMPROVEMENTS

FIGURE 3

7. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The Nob Hill Road and SR 84/I-595 interchange improvements will improve safety and reduce congestion for vehicular traffic. In addition, safety will be improved for vehicles, pedestrians, and bicyclists. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion, does not meet LOS D in 2045 peak hours – operates at LOS F • Does not improve safety for bicyclists, pedestrians, or vehicles • Does not improve connectivity for pedestrians, bicyclists, or vehicles
Build	• 2045 Traffic Operations – Reduces delay, congestion, backups, travel times • Improves safety for pedestrians, bicyclists, vehicles • Enhances connectivity for bicyclists	• Right-of-way impact • Canal impact • Visual impact • Cost

8. PROJECT CONSIDERATIONS

Based on a conceptual design of the improvements, additional right-of-way would need to be acquired to implement the improvements. The locations listed below describe where additional right-of-way would be needed to implement the recommended concept.

- Northeast corner of Nob Hill Road and westbound SR 84 intersection.
- Eastbound SR 84 along the south side, from west of Nob Hill Road to east of Nob Hill Road.
- Along the east and west sides of Nob Hill Road south of SR 84.

In addition, there are anticipated structural and environmental impacts which need to be considered. One existing structure needs to be replaced or modified to accommodate the improvements. This is the Nob Hill Road bridge over the New River Canal. In addition, one new structure is required: a roadway bridge for eastbound SR 84 traffic to cross over Nob Hill Road.

Potential environmental impacts to be further evaluated during the next phase of the project include impacts to wetlands and other surface waters, floodplains, noise sensitive sites, and protected species and habitat.

9. COST AND FUNDING INFORMATION

A Project Development and Environment (PD&E) Study is recommended as the next phase of the improvement project. The purpose of the PD&E Study is to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). The estimated cost for the PD&E phase is $2.0 million. Following the PD&E phase, the project will advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase is $3.6 million. Typically, acquisition of right-of-way occurs concurrent with or just after the design phase before the project moves into construction. A cost estimate for right-of-way acquisition for this project has not yet been determined. The construction cost estimate is $27.0 million, and cost for construction engineering inspection services during construction is $4.2 million. The total project cost, excluding right-of-way costs, is approximately $36.8 million in year 2021 dollars.

The improvements are proposed along the roadways of Nob Hill Road and SR 84. Nob Hill Road north and south of SR 84 is under the jurisdiction of Broward County. SR 84 is under the jurisdiction of the State of Florida.

Projects eligible for State of Florida SIS program funds must be located on a designated SIS facility, be an eligible project type (typically capacity), and be able to demonstrate that they benefit the SIS facility. The Nob Hill Road and SR 84 interchange improvements primarily benefit the north-south arterial, with minimal direct benefit to I-595, the SIS facility. Therefore, SIS funding for this project is unlikely unless eligibility criteria for SIS projects is expanded. Another option is to fund the project through the Broward MPO project prioritization process using other federal, state, and/or local funding. There is opportunity for local funding to also be provided for the project from Broward County.

ATTACHMENT 7

Project #7 - Implementation Package for Pine Island Road and Nova Drive Intersection Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 7
Pine Island Road and Nova Drive Intersection Improvements

PROJECT IMPLEMENTATION PACKAGE
PINE ISLAND ROAD AND NOVA DRIVE INTERSECTION IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The Pine Island Road and Nova Drive intersection improvement project is located within the Town of Davie, Florida. The intersection is situated south of I-595/SR 84, east of Nob Hill Road, and west of University Drive. The limits of the improvements extend along Pine Island Road from approximately 600 feet north of Nova Drive to approximately 800 feet south of Nova Drive. The project limits also extend along Nova Drive from approximately 700 feet west of Pine Island Road to approximately 600 feet east of Pine Island Road. The limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

Pine Island Road is a Broward County minor arterial with six lanes north of Nova Drive and four lanes south of Nova Drive. Pine Island Road has sidewalk along both sides north of Nova Drive, and south of Nova Drive sidewalk is present on the west side. Sidewalk is not present on the east side of Pine Island Road south of Nova Drive. Bicycle lanes are present along Pine Island Road within the project limits north of Nova Drive; however, bicycle lanes are not present along Pine Island Road south of Nova Drive within the project limits.

Nova Drive west of Pine Island Road is a two-lane undivided Town of Davie local road. Nova Drive east of Pine Island Road is a two-lane undivided Broward County major collector. Nova Drive has sidewalk along both sides within the project limits, except for a gap in sidewalk along the south side of Nova Drive east of Pine Island Road. There are no bicycle lanes on Nova Drive within the study limits.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to preserve mobility and safety at the intersection of Pine Island Road and Nova Drive for all modes of travel through the future year planning horizon.

The need for this project is to accommodate future transportation demand in the study area, add intersection capacity, and maintain safe facilities for all modes, including bicycle, pedestrian, and transit facilities.

The project has been identified as a long-term need based on the future year (2045) Level of Service (LOS) analysis results. Broward County has plans to widen Pine Island Road from four lanes to six lanes through the intersection of Pine Island Road and Nova Drive. The intersection was analyzed assuming the widening was in place, and the need for additional minor improvements was identified. The Pine Island Road and Nova Drive intersection currently operates at a LOS D during both the AM and PM peak hours. By 2045 the intersection operations during both peak hours will degrade to LOS E, even with the widening of Pine Island Road in place.

4. CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire Pine Island Road corridor and along the entire SR 84 corridor within the study area were identified as part of the study. These included improvements to the Pine Island Road and Nova Drive intersection and other intersections, SR 84/I-595 interchange improvements, and multimodal sidewalk, bicycle lane, and bus stop improvements. The needed Pine Island Road corridor

improvements identified in the study and documented in Technical Report 1, are listed below for information.

Pine Island Road north and south of SR 84

- Add buffered bicycle lanes along Pine Island Road where missing between Orange Grove Drive and eastbound SR 84.
- Widen sidewalk to be a shared use path for both bicycles and pedestrians through the interchange area (northbound, southbound, eastbound).
- Construct bus shelters to serve four BCT bus stops located along Pine Island Road between SR 84 and SW 3rd Street.

Pine Island Road and Nova Drive Signalized Intersection

- Add an exclusive eastbound right-turn lane, resulting in one exclusive right-turn lane, one through lane, and an exclusive left-turn lane.
- Add an exclusive westbound right-turn lane, resulting in one exclusive right-turn lane, one through lane, and an exclusive left-turn lane.

Pine Island Road and Peters Road Signalized Intersection

- Add a third westbound left-turn lane.
- Add a second westbound right-turn lane.
- Add a second northbound right-turn lane.

Pine Island Road and SW 6th Court Signalized Intersection

- Add a second westbound left-turn lane.

Pine Island Road and SR 84 / I-595 Interchange

- Westbound SR 84 bypass/overpass –new bridge over Pine Island Road.
- Eastbound SR 84 bypass/overpass –new bridge over Pine Island Road.
- Reconstruct westbound SR 84 and Pine Island Road signalized intersection as noted below.
    - Westbound: Widen the approach and provide one exclusive left-turn lane, one shared through/left-turn lane, and three exclusive right-turn lanes.
    - Southbound: Widen the approach and provide two left-turn lanes, three through lanes, an exclusive right-turn lane, and a shared through/right-turn lane.
    - Northbound: Add a third northbound through lane.
- Reconstruct eastbound SR 84 and Pine Island Road signalized intersection as noted below.
    - Eastbound: Widen the approach and provide two exclusive left-turn lanes, one shared through/left-turn lane, and two exclusive right-turn lanes.

- Northbound: Widen the approach and provide two left-turn lanes, three through lanes, and two exclusive right-turn lanes.
- Southbound: Add a third through lane.

5. PROJECT SCOPE / DESCRIPTION

The Pine Island Road and Nova Drive intersection project scope of work includes the following components described below. Only Pine Island Road corridor improvements within the Nova Drive intersection area are included in the project scope.

- Add an eastbound exclusive right-turn lane, resulting in one exclusive right-turn lane, one through lane, and an exclusive left-turn lane.
- Add a westbound exclusive right-turn lane, resulting in one exclusive right-turn lane, one through lane, and an exclusive left-turn lane.
- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.
- Replace any impacted pedestrian or bicycle facilities.

Figure 2 shows the project area without the recommended project improvements.
Figure 3 shows a conceptual plan of the project improvements.

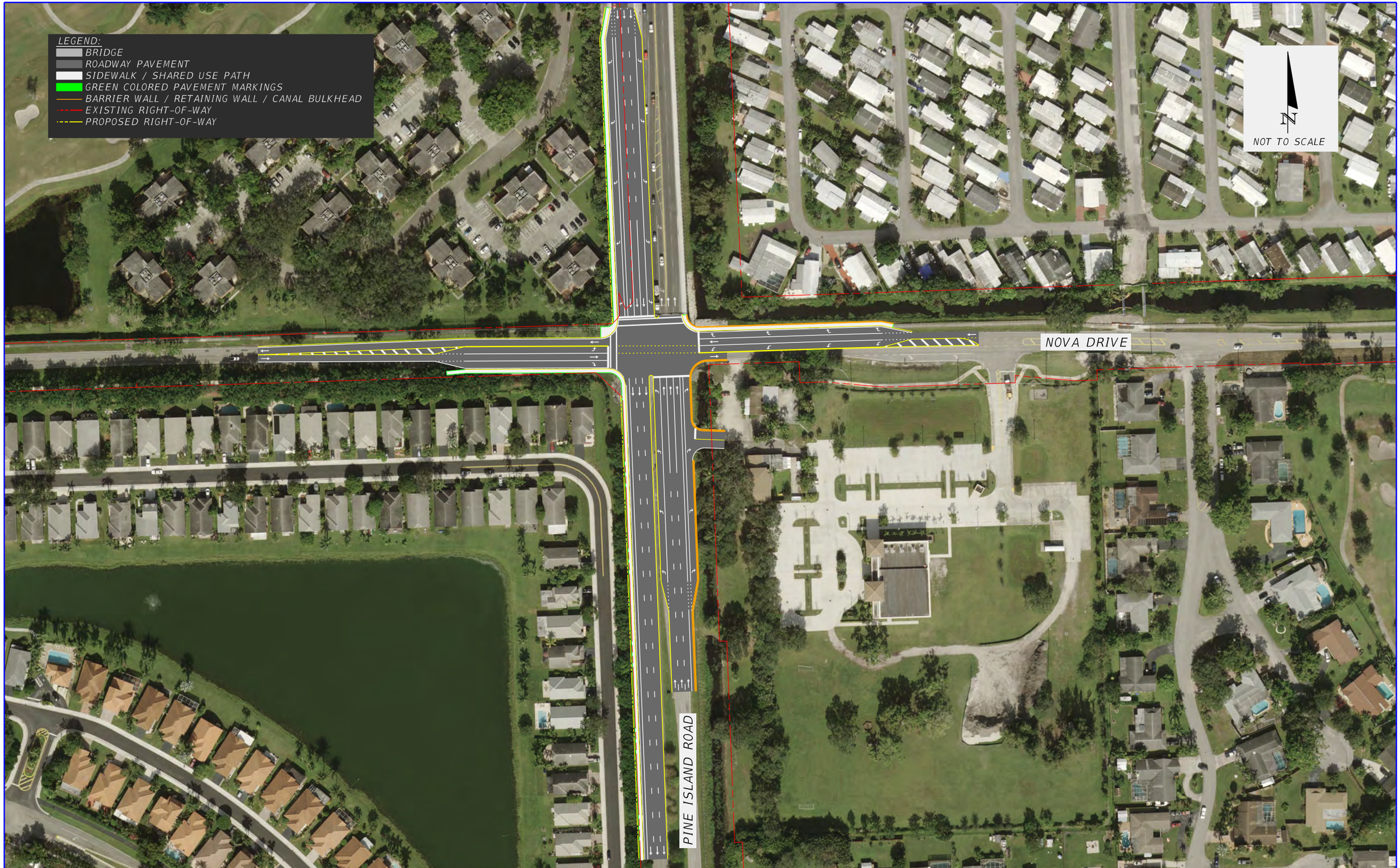
Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

PINE ISLAND ROAD AND NOVA DRIVE EXISTING CONDITIONS & PLANNED IMPROVEMENTS

FIGURE 2



Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY
ALONG I-595 CORRIDOR

PINE ISLAND ROAD AND
NOVA DRIVE INTERSECTION IMPROVEMENTS

FIGURE 3

6. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The Pine Island Road and Nova Drive intersection improvements will provide a more efficient and less congested route for traffic. In addition, it will improve safety for motorist, pedestrians, and bicyclists. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion, does not meet LOS D in 2045 peak hours – operates at LOS E • Does not improve safety for bicyclists, pedestrians, or vehicles • Does not improve connectivity for pedestrians, bicyclists, or vehicles
Build	• 2045 Traffic Operations – Reduces delay, congestion, travel times	• Cost

7. PROJECT CONSIDERATIONS

Based on a conceptual design of the improvements, additional right-of-way is not needed to implement the project improvements.

Potential environmental impacts to be further evaluated during the next phase of the project include impacts to other surface waters and protected species and habitat. These environmental impacts are anticipated to be minimal.

8. COST AND FUNDING INFORMATION

It is recommended that this intersection project be evaluated as a part of a larger PD&E Study for improvements along Pine Island Road. The purpose of the PD&E Study is to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). This intersection improvement project is recommended to be included in a PD&E study for the Pine Island Road and SR 84/I-595 interchange project or with a PD&E Study for the widening of Pine Island Road.

Following the PD&E phase, the project may advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase is $618,000. The construction cost estimate is $2.81 million, and cost for construction engineering inspection services during construction is $520,000. The total project cost for design and construction is approximately $3.95 million in year 2021 dollars.

The improvements are proposed along Nova Drive east and west of Pine Island Road. Nova Drive west of Pine Island Road is under the jurisdiction of Broward County. Nova Drive east of Pine Island Road is owned by the Town of Davie. Pine Island Road is under the jurisdiction of Broward County. Since both roads are local County and municipal roadways, local funding from Broward County and Town of Davie could be used to pay for the project. For efficient project implementation, it is recommended for Broward County to incorporate the Nova Drive turn lanes into the overall Pine Island Road widening project.

ATTACHMENT 8

Project #8 - Implementation Package for Pine Island Road and SR 84 / I-595 Interchange Project

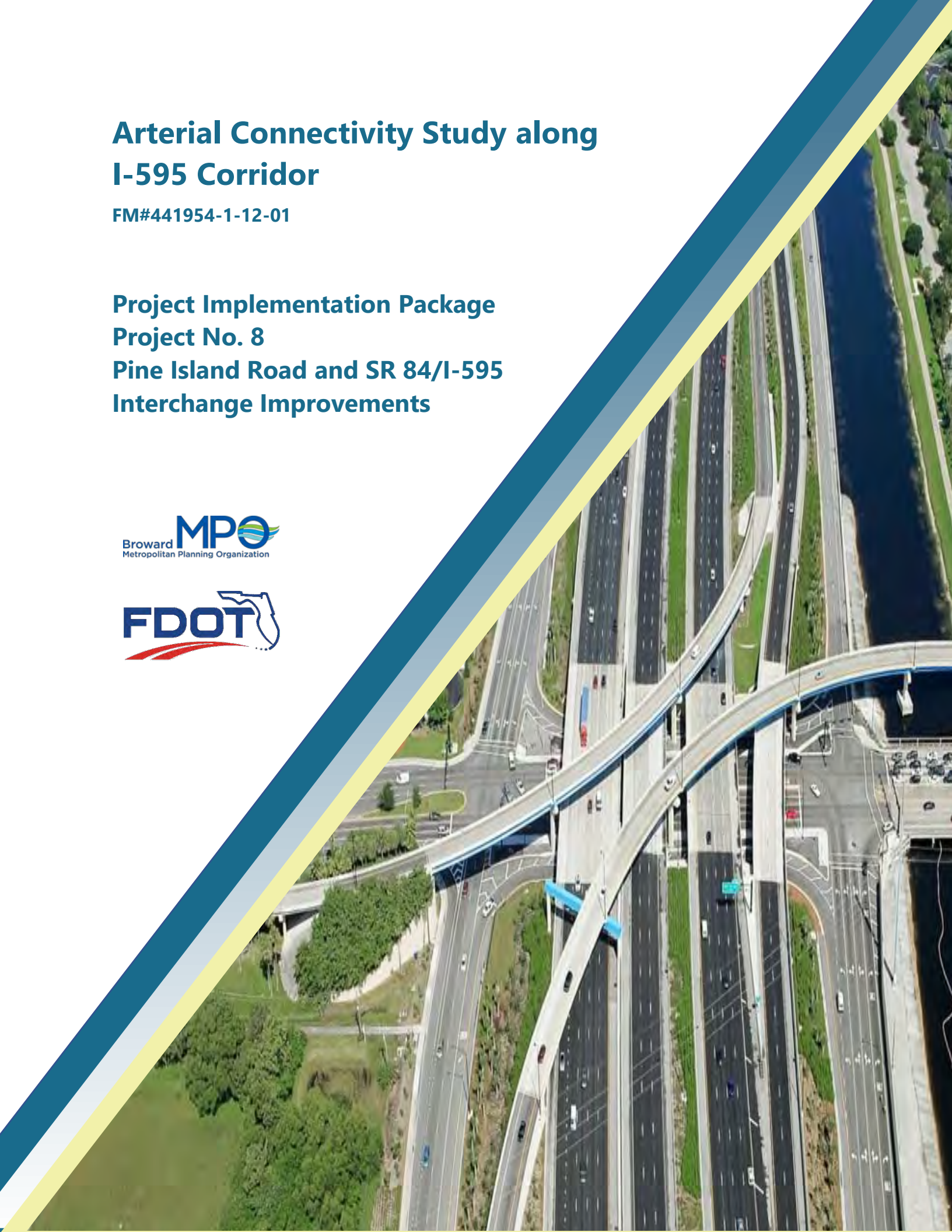
Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 8
Pine Island Road and SR 84/I-595 Interchange Improvements

Broward MPO
Metropolitan Planning Organization

FDOT



PROJECT IMPLEMENTATION PACKAGE
PINE ISLAND ROAD AND SR 84/I-595 INTERCHANGE IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The Pine Island Road and SR 84/I-595 interchange improvement project is located within Broward County, Florida. The portion of the project located north of SR 84 is within the City of Plantation, and the portion of the project located south of SR 84 is within the Town of Davie. The limits of the improvements extend along Pine Island Road from approximately 1,400 feet north of the westbound SR 84 intersection to approximately 800 feet south of the eastbound SR 84 intersection. The project limits also extend along eastbound and westbound SR 84 from approximately 2,800 feet west of Pine Island Road to approximately 2,800 feet east of Pine Island Road. The location and limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISITNG CONDITIONS

Pine Island Road within the project limits is a six-lane divided Broward County minor arterial roadway. Pine Island Road has sidewalk along both sides within the study limits. Designated bicycle lanes are present along both sides of Pine Island Road except for a gap where a bicycle lane is missing on the east side, south of eastbound SR 84.

SR 84 eastbound is a one-way, generally two-lane, roadway within the project limits. SR 84 westbound is also a one-way, generally two-lane, roadway within the project limits. SR 84 (eastbound and westbound) is a minor arterial which is part of the state highway system. Along SR 84 eastbound, sidewalk is present east and west of Pine Island Road. Sidewalk is not present along SR 84 westbound. A designated bicycle lane is present along SR 84 eastbound, and a shoulder is present for bicycle traffic along SR 84 westbound. Bicycle and pedestrian traffic along westbound SR 84 is encouraged to use the adjacent New River Greenway.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to improve safety for all modes of travel through the interchange and provide congestion relief by reducing existing and future motorist delay, travel time and queuing along Pine Island Road, and at the access points with I-595 and SR 84.

The need for the project consists of adding capacity to better accommodate existing and future transportation demand and improving safety for all modes.

The need for the project is immediate given the existing year (2019) Level of Service (LOS) analysis results. Both Pine Island Road intersections at the I-595/SR 84 interchange are operating at a Level of Service (LOS) F during the existing AM peak hour and LOS E/F during the PM peak hour. Traffic operations will become significantly worse by the 2045 planning horizon without any improvements. In addition, this interchange is a location with high crash concentration averaging 33 crashes per year at westbound SR 84, and 64 crashes per year at eastbound SR 84. Improvements will potentially reduce crashes along Pine Island Road and SR 84.

4. CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire Pine Island Road corridor from north of SW 6th Court to south of Nova Drive and along the entire SR 84 corridor within the study area were identified as part of the study. These included improvements to the SR 84/I-595 interchange, three intersections, and multimodal sidewalk, bicycle lane, and bus stop improvements. The needed Pine Island Road corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

Pine Island Road north and south of SR 84

- Add buffered bicycle lanes along Pine Island Road where missing between Orange Grove Drive and eastbound SR 84.
- Widen sidewalk to be a shared use path for both bicycles and pedestrians through the interchange area (northbound, southbound, eastbound).
- Construct bus shelters to serve four BCT bus stops located along Pine Island Road between SR 84 and SW 3rd Street.

Pine Island Road and SR 84 / I-595 Interchange

- Westbound SR 84 bypass/overpass –new bridge over Pine Island Road.
- Eastbound SR 84 bypass/overpass –new bridge over Pine Island Road.
- Reconstruct westbound SR 84 and Pine Island Road signalized intersection as noted below.
    - Westbound: Widen the approach and provide one exclusive left-turn lane, one shared through/left-turn lane, and three exclusive right-turn lanes.
    - Southbound: Widen the approach and provide two exclusive left-turn lanes, two through lanes, a shared through/right-turn lane, and an exclusive right-turn lane.
    - Northbound: Add a third northbound through lane.
- Reconstruct eastbound SR 84 and Pine Island Road signalized intersection as noted below.
    - Eastbound: Widen the approach and provide two exclusive left-turn lanes, one shared through/left-turn lane, and two exclusive right-turn lanes.
    - Northbound: Widen the approach and provide two exclusive left-turn lanes, three through lanes, and two exclusive right-turn lanes.
    - Southbound: Add a third through lane.

Pine Island Road and SW 6th Court Signalized Intersection

- Add a second exclusive westbound left-turn lane.

Pine Island Road and Peters Road Signalized Intersection

- Add a third exclusive westbound left-turn lane.
- Add a second exclusive westbound right-turn lane.
- Add a second exclusive northbound right-turn lane.

Pine Island Road and Nova Drive Signalized Intersection

- Add an exclusive eastbound right-turn lane.
- Add an exclusive westbound right-turn lane.

5. INTERCHANGE ALTERNATIVES EVALUATED

Multiple alternatives were evaluated for improving the Pine Island Road and SR 84/I-595 interchange, since capacity and operational issues were very challenging to address at this location. Addressing the capacity and operational and safety issues at the interchange was difficult at this location due to the large volume conflicting traffic movements, as well as physical design constraints.

The following four interchange configurations were evaluated to determine a recommended mitigation concept.

1. Single Point Urban Interchange (SPUI)
2. Diverging Diamond Interchange (DDI)
3. Modified Diamond Interchange with Overpasses and Flyover
4. Modified Diamond Interchange with Overpasses

To address the SR 84 interchange deficiencies, the modified diamond interchange with overpasses alternative is recommended for further analysis, design, and implementation.

Table 1 summarizes the advantages and disadvantages of each of the four Pine Island Road at SR 84/I-595 interchange concepts.

Table 1: Comparison of Interchange Concept's Advantages and Disadvantages at Pine Island Road and SR 84/I-595

Alternatives	Advantages	Disadvantages
1) Single Point Urban Interchange	• Significantly reduces delay • Achieves LOS D in 2045 peak hours	• Not feasible due to design requirements, and impacts to I-595 bridges
2) Diverging Diamond Interchange	• Reduces delay • Achieves LOS E/F in 2045 peak hours	• Not feasible due to design requirements
3) Modified Diamond Interchange with Overpasses and Flyover	• Significantly reduces delay • Achieves LOS D/E in 2045 peak hours • Reduces conflicts • Reduces stops	• Significant right-of-way impacts • Access impacts to developments • Visual impacts (view of flyovers) • Noise impacts • Canal impact
4) Modified Diamond Interchange with Overpasses	• Reduces delay • Achieves LOS E/F in 2045 peak hours • Reduces conflicts • Reduces stops	• Does not meet LOS D in 2045 peak hours • Right-of-way impact • Canal impact

NOTE: All alternatives include the following improvements:

1) New shared use path to improve pedestrian and bicycle facilities through interchange at SR 84.

2) Bicycle lanes along Pine Island Road.

6. PROJECT SCOPE / DESCRIPTION

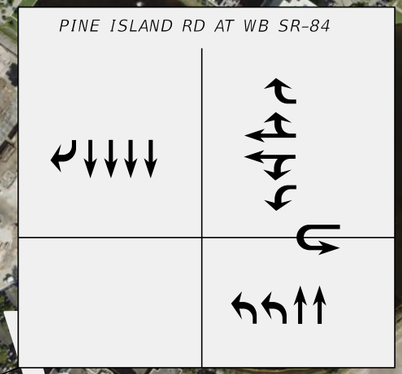
The Pine Island Road and SR 84/I-595 modified diamond interchange with overpass project scope of work includes the following components listed below. Only Pine Island Road corridor improvements that are located within the interchange influence area are included in the project scope.

- Westbound SR 84 bypass/overpass –new bridge over Pine Island Road
- Eastbound SR 84 bypass/overpass –new bridge over Pine Island Road
- Reconstruct westbound SR 84 and Pine Island Road signalized intersection as noted below.
  - Westbound: Widen the approach and provide one exclusive left-turn lane, one shared through/left-turn lane, and three exclusive right-turn lanes.

- Southbound: Widen the approach and provide two exclusive left-turn lanes, two through lanes, a shared through/right-turn lane, and an exclusive right-turn lane.
- Northbound: Add a third northbound through lane.

- Reconstruct eastbound SR 84 and Pine Island Road signalized intersection as noted below.
  - Eastbound: Widen the approach and provide two exclusive left-turn lanes, one shared through/left-turn lane, and two exclusive right-turn lanes.
  - Northbound: Widen the approach and provide two exclusive left-turn lanes, three through lanes, and two exclusive right-turn lanes.
  - Southbound: Add a third through lane.
- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.
- Widen existing bicycle lanes south of SR 84 to provide 7-foot-wide buffered bicycle lanes in both directions along Pine Island Road.
- Widen the sidewalk along Pine Island Road and eastbound SR 84 to accommodate both bicyclists and pedestrians within the interchange area and connect to existing or future bicycle and pedestrian facilities along north/south Pine Island Road and SR 84.

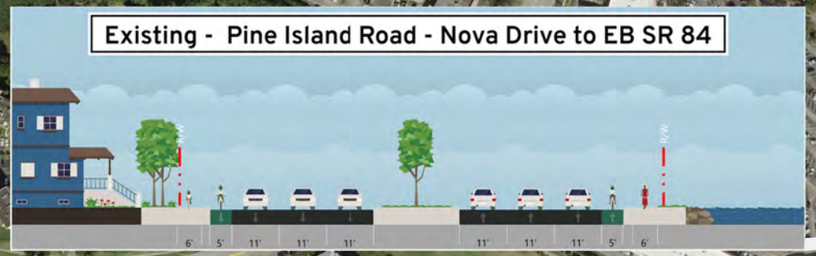
Figure 2 shows the project area without the recommended project improvements. Figure 3 shows a conceptual plan of the project improvements as well as typical sections.



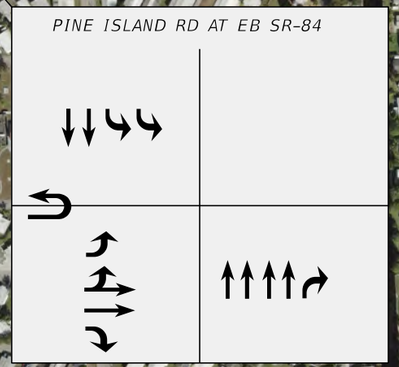
WB SR 84

I-595

EB SR 84



PINE ISLAND ROAD



LEGEND

EXISTING (2019) LANE CONFIGURATION (BLACK)

PLANNED OR PROGRAMMED PROJECTS (RED) (TO BE CONSTRUCTED BEFORE RECOMMENDED IMPROVEMENTS)

Broward MPO Metropolitan Planning Organization

FDOT

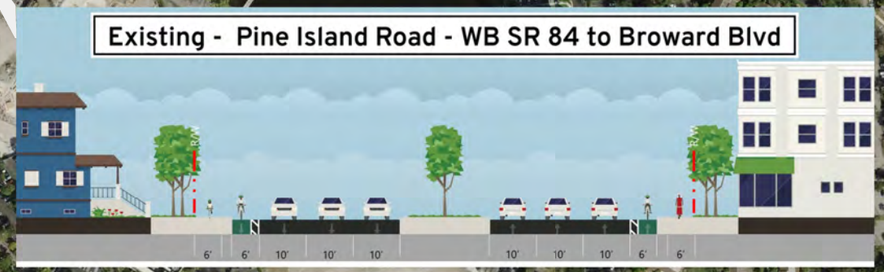
ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

PINE ISLAND ROAD AND SR 84/I-595 EXISTING CONDITIONS & PLANNED IMPROVEMENTS

FIGURE 2

NOT TO SCALE

Existing - Pine Island Road - WB SR 84 to Broward Blvd



Proposed - Pine Island Road - Nova Drive to EB SR 84

PROPOSED FEATURES: WIDENING SIDEWALK / C&G MILLING & RESURFACING SOD

EB SR 84

I-595

WB SR 84

PINE ISLAND ROAD

LEGEND:
- BRIDGE
- ROADWAY PAVEMENT
- SIDEWALK / SHARED USE PATH
- GREEN COLORED PAVEMENT MARKINGS
- BARRIER WALL / RETAINING WALL / CANAL BULKHEAD
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- EXISTING LIMITED ACCESS RIGHT-OF-WAY
- PROPOSED LIMITED ACCESS RIGHT-OF-WAY

Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

PINE ISLAND ROAD AND SR 84/I-595 INTERCHANGE IMPROVEMENTS

FIGURE 3

7. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The Pine Island Road corridor and SR 84/I-595 interchange improvements will provide a more efficient and less congested route for traffic. In addition, it will improve safety for motorist, pedestrians, and bicyclists. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 2.

Table 2: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion, does not meet LOS D in 2045 peak hours – operates at LOS F • Does not improve safety for bicyclists, pedestrians, or vehicles • Does not improve connectivity for pedestrians, bicyclists, or vehicles
Build	• 2045 Traffic Operations – Reduces delay, congestion, backups, travel times • Improves safety for pedestrians, bicyclists, vehicles • Enhances connectivity for pedestrians & bicyclists	• Some delay & congestion remain in 2045 peak hours • Right-of-way impacts • Canal impact • Cost

8. PROJECT CONSIDERATIONS

Based on a conceptual design of the recommended interchange improvements, additional right-of-way would need to be acquired to implement the improvements. In addition, there are anticipated structural and environmental impacts which need to be considered.

The locations listed below describe where additional right-of-way would be needed to implement the recommended concept.

- Pine Island Road south of SR 84, along east and west sides from Orange Grove Drive to SR 84, potentially impacting a residential mobile home property and a gas station on the east side.
- Pine Island Road north of SR 84, along east and west sides from SR 84 to the driveway north of New River Canal Road.

- Westbound SR 84 east of Pine Island Road, along the north side potentially impacting the New River Canal South Florida Water Management District property.
- Eastbound SR 84 west of Pine Island Road, potentially impacting some of the businesses along the south side.

Two existing roadway structures would be impacted. This includes the existing eastbound SR 84 overpass over Pine Island Road, and the westbound I-595 off-ramp bridge, which would need to be widened or replaced. In addition, two existing noise walls would be impacted and would need to be considered for partial or full replacement.

Potential environmental impacts to be further evaluated during the next phase of the project include impacts to wetlands and other surface waters, floodplains, noise sensitive sites, a cultural site, and protected species and habitat.

9. COST AND FUNDING INFORMATION

A Project Development and Environment (PD&E) Study is recommended as the next phase of the improvement project. The purpose of the PD&E Study is to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). As such, the estimated cost for the PD&E phase is $2.5 million. Following the PD&E phase, the project will advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase is $9.4 million. Typically, acquisition of right-of-way occurs concurrent with or just after the design phase before the project moves into construction. A cost estimate for right-of-way acquisition for this project has not yet been determined. The construction cost estimate is $69.6 million, and cost for construction engineering inspection services during construction is $8.7 million. The total project cost, excluding right-of-way costs, is approximately $90.2 million in year 2021 dollars.

The improvements are proposed along the roadways of Pine Island Road, I-595 and SR 84. Pine Island Road north and south of SR 84 is under the jurisdiction of Broward County. I-595 and SR 84 are under the jurisdiction of the State of Florida.

Much of the roadway modification work is proposed along SR 84. SR 84 is an integral part of the I-595 Strategic Intermodal System (SIS) corridor, and functions as a collector-distributor roadway providing access to and from I-595 via the interchange with Pine Island Road. The project will improve Pine Island Road, SR 84, and I-595.

State of Florida SIS program funds may be sought as a source of funding for the project. However, eligibility for SIS program funding must still be evaluated by FDOT. If the project is determined to be eligible, then the project may be proposed for SIS funding and can compete with other eligible projects statewide for SIS funding. If the project is determined not to be eligible for SIS funding, then other federal, state, or local funds would need to be pursued through the standard Broward MPO project prioritization process. There is opportunity for local funding to also be provided for the project from Broward County.

ATTACHMENT 9

Project #9 - Implementation Package for Pine Island Road and Peters Road Intersection Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 9
Pine Island Road and Peters Road Intersection Improvements

Broward MPO
Metropolitan Planning Organization

FDOT

PROJECT IMPLEMENTATION PACKAGE
PINE ISLAND ROAD AND PETERS ROAD INTERSECTION IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The Pine Island Road and Peters Road intersection improvement project is located within the City of Plantation, Florida. The intersection is situated north of I-595/SR 84, east of Nob Hill Road, and west of University Drive. The limits of the improvements extend along Pine Island Road approximately 800 feet south of Peters Road, and along Peters Road approximately 800 feet east of Pine Island Road. The limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISITNG CONDITIONS

Pine Island Road within the project limits is a six-lane divided Broward County minor arterial roadway. Sidewalks and bicycle lanes are present along both sides within the project limits.

Peters Road is a four-lane divided Broward County major collector roadway. Sidewalks and bicycle lanes are present along both sides of the within the project limits. Broward County Transit bus stops are located on both sides of Peters Road just east of Pine Island Road.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to preserve mobility and safety at the intersection of Pine Island Road and Peters Road for all modes of travel through the future year planning horizon.

The need for this project is to accommodate future transportation demand in the study area, add intersection capacity to reduce the likelihood of backups to the Pine Island Road and SR 84/I-595 interchange, and maintain safe facilities for all modes, including bicycle, pedestrian, and transit facilities.

The project has been identified as a long-term need based on the existing year (2019) and future year (2045) Level of Service (LOS) analysis results. The Pine Island Road and Peters Road intersection currently operates at a LOS D during the AM and PM peak hours. By 2045 the intersection operations during the PM peak hour will degrade to LOS F without any improvements. In addition, this intersection is a location with high crash concentration averaging 24 crashes per year. Improvements will potentially reduce delay and improve safety at the intersection.

4. CORRIDOR IMPROVEMENT

Infrastructure improvements needed along the entire Pine Island Road corridor from north of SW 6th Court to south of Nova Drive, and along the entire SR 84 corridor within the study area were identified as part of the study. These included improvements to the Pine Island Road and SR 84/I-595 interchange, three Pine Island Road intersections, and multimodal sidewalk, bicycle lane, and bus stop improvements. The needed Pine Island Road corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

Pine Island Road north and south of SR 84

- Add buffered bicycle lanes along Pine Island Road where missing between Orange Grove Drive and eastbound SR 84.
- Widen sidewalk to be a shared use path for both bicycles and pedestrians through the interchange area (northbound, southbound, eastbound).
- Construct bus shelters to serve four BCT bus stops located along Pine Island Road between SR 84 and SW 3rd Street.

Pine Island Road and Peters Road Signalized Intersection

- Add a third exclusive westbound left-turn lane.
- Add a second exclusive westbound right-turn lane.
- Add a second exclusive northbound right-turn lane.

Pine Island Road and SW 6th Court Signalized Intersection

- Add a second exclusive westbound left-turn lane.

Pine Island Road and Nova Drive Signalized Intersection

- Add an exclusive eastbound right-turn lane.
- Add an exclusive westbound right-turn lane.

Pine Island Road and SR 84 / I-595 Interchange

- Westbound SR 84 bypass/overpass –new bridge over Pine Island Road.
- Eastbound SR 84 bypass/overpass –new bridge over Pine Island Road.
- Reconstruct westbound SR 84 and Pine Island Road signalized intersection as noted below.
    - Westbound: Widen the approach and provide one exclusive left-turn lane, one shared through/left-turn lane, and three exclusive right-turn lanes.
    - Southbound: Widen the approach and provide two exclusive left-turn lanes, three through lanes, an exclusive right-turn lane, and a shared through/right-turn lane.
    - Northbound: Add a third northbound through lane.
- Reconstruct eastbound SR 84 and Pine Island Road signalized intersection as noted below.
    - Eastbound: Widen the approach and provide two exclusive left-turn lanes, one shared through/left-turn lane, and two exclusive right-turn lanes.

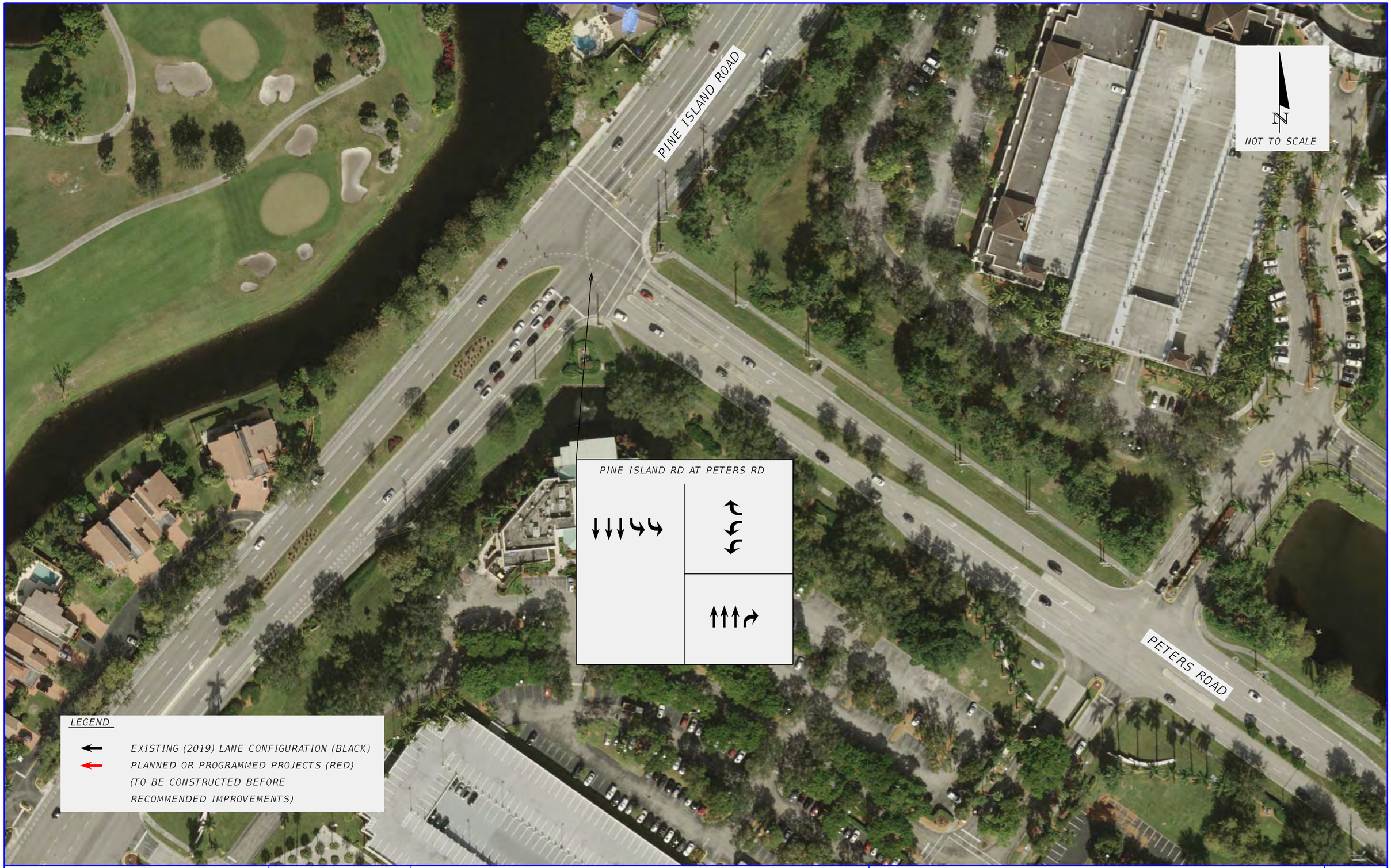
- Northbound: Widen the approach and provide two exclusive left-turn lanes, three through lanes, and two exclusive right-turn lanes.
- Southbound: Add a third through lane.

5. PROJECT SCOPE / DESCRIPTION

The Pine Island Road and Peters Road intersection project scope of work includes the following components described below.

- Add a third exclusive westbound left-turn lane.
- Add a second exclusive westbound right-turn lane.
- Add a second exclusive northbound right-turn lane.
- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.

Figure 2 shows the project area without the recommended project improvements.
Figure 3 shows a conceptual plan of the project improvements.



Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

PINE ISLAND ROAD AND PETERS ROAD EXISTING CONDITIONS & PLANNED IMPROVEMENTS

FIGURE 2

Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY
ALONG I-595 CORRIDOR

PINE ISLAND ROAD AND
PETERS ROAD INTERSECTION IMPROVEMENTS

FIGURE 3

6. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The Pine Island Road and Peters Road intersection improvements will provide a more efficient and less congested route for traffic. In addition, it can improve safety for motorists. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion, does not meet LOS D in 2045 peak hours – operates at LOS F • Does not improve safety for bicyclists, pedestrians, or vehicles
Build	• 2045 Traffic Operations – Reduces delay, congestion, backups, travel times • Improves safety for motorists	• Right-of-way impacts • Cost

7. PROJECT CONSIDERATIONS

Based on a conceptual design of the improvements, additional right-of-way would need to be acquired along the east side of Pine Island Road south of Peters Road to implement the northbound exclusive right-turn lane improvement along Pine Island Road. In addition, there are anticipated impacts to existing utilities (overhead power lines) along the east side of Pine Island Road south of Peters Road, and environmental impacts which need to be considered.

Potential environmental impacts to be further evaluated during the next phase of the project include impacts to other surface waters and protected species and habitat. These environmental impacts are anticipated to be minimal.

8. COST AND FUNDING INFORMATION

It is recommended that this intersection project be evaluated as a part of a larger PD&E Study for improvements along Pine Island Road. The purpose of the PD&E Study

is to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). This intersection improvement project is recommended to be included in a PD&E study for the Pine Island Road and SR 84/I-595 interchange project.

Following the PD&E phase, the project may advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase is $405,000. Typically, acquisition of right-of-way occurs concurrent with or just after the design phase before the project moves into construction. A cost estimate for right-of-way acquisition for this project has not yet been determined. The construction cost estimate is $1.84 million, and cost for construction engineering inspection services during construction is $341,000. The total project cost for design and construction, excluding right-of-way costs, is approximately $2.59 million in year 2021 dollars.

The improvements are proposed along the roadways of Pine Island Road and Peters Road. Both Pine Island Road and Peters Road are under the jurisdiction of Broward County. The improvements are proposed along Pine Island Road south of Peters Road, and along Peters Road east of Pine Island Road. Since both roads are County roadways, local funding from Broward County could be used for the project. Alternatively, federal and/or state funds could be pursued through the standard Broward MPO project prioritization process.

ATTACHMENT 10

Project #10 - Implementation Package for Pine Island Road and SW 6th Court Intersection Project

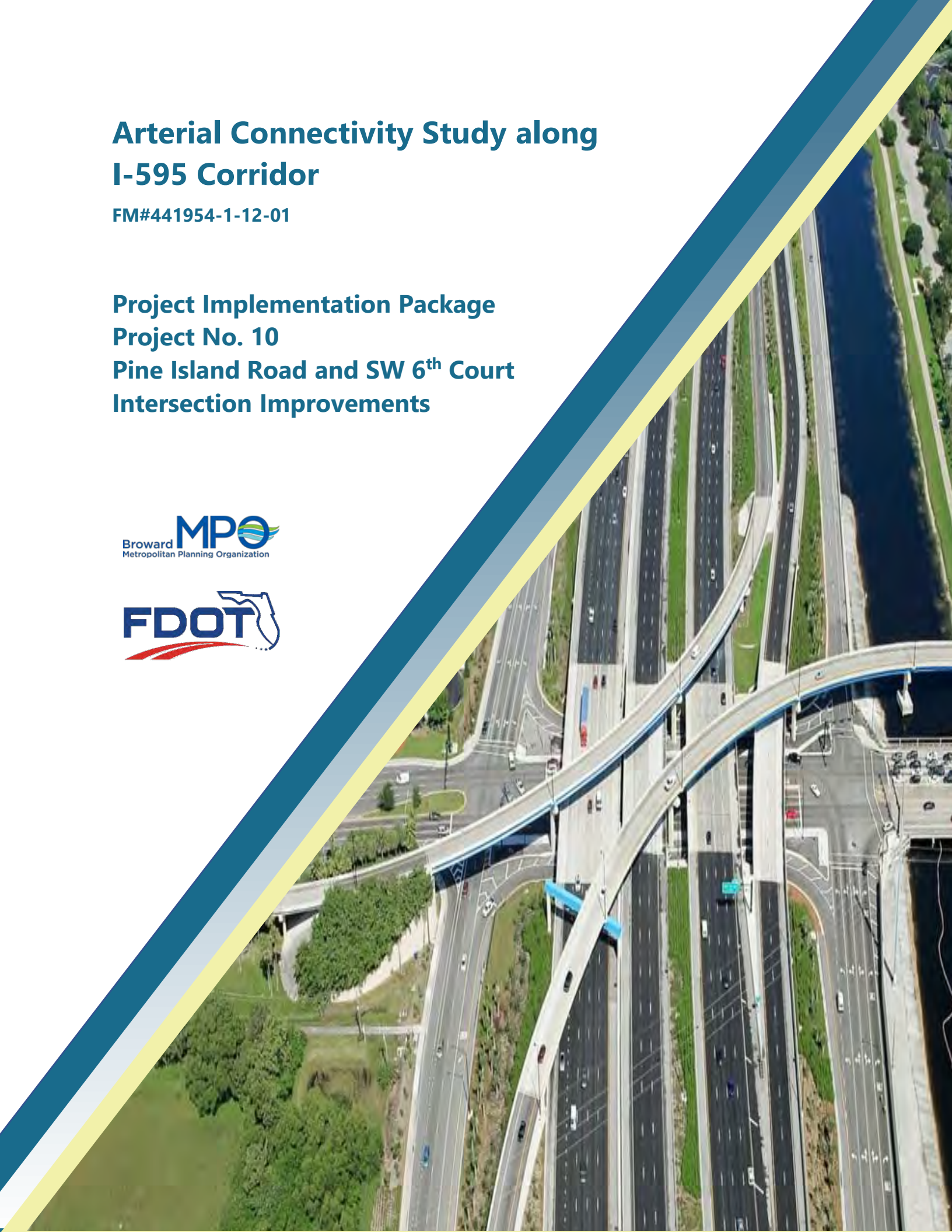
Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 10
Pine Island Road and SW 6th Court Intersection Improvements

Broward MPO
Metropolitan Planning Organization

FDOT

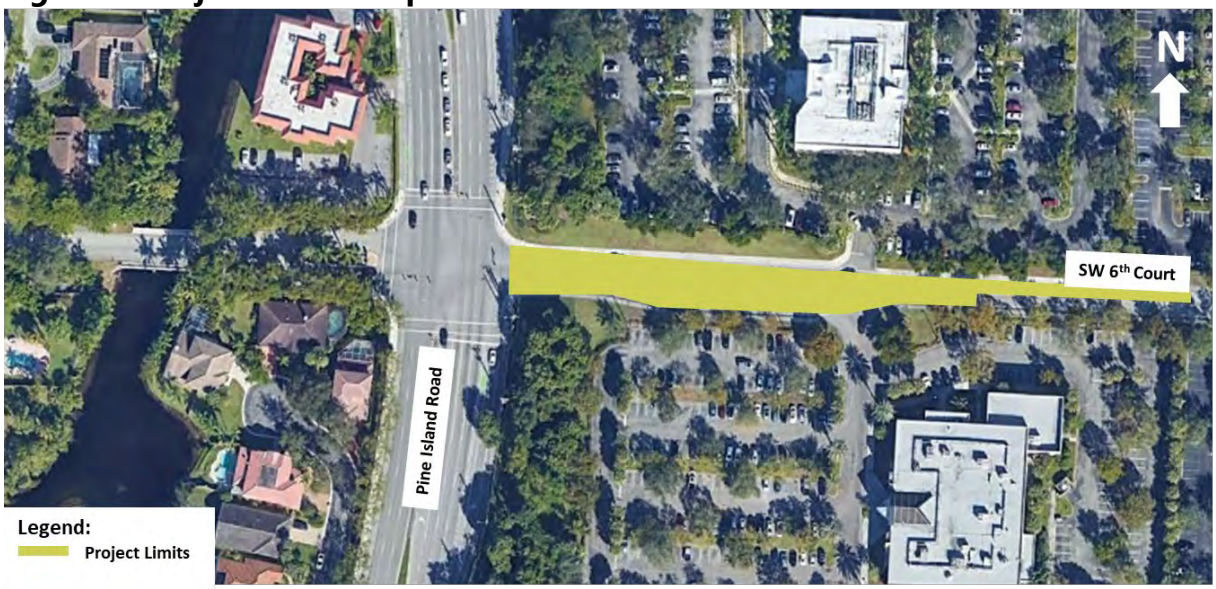


PROJECT IMPLEMENTATION PACKAGE
PINE ISLAND ROAD AND SW 6TH COURT INTERSECTION IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The Pine Island Road and SW 6th Court intersection improvement project is located within the City of Plantation, Florida. The intersection is generally situated north of I-595/SR 84, east of Nob Hill Road, and west of University Drive. The limits of the improvements extend along SW 6th Court approximately 800 feet east of Pine Island Road. The limits of the project are shown in Figure 1.

Figure 1: Project Limits Map



2. EXISTING CONDITIONS

North and south of SW 6th Court, Pine Island Road is a six-lane divided Broward County minor arterial roadway. Sidewalks and bicycle lanes are present along both sides of Pine Island Road. A Broward County bus stop is located on the west side of Pine Island Road north of SW 6th Court.

SW 6th Court, the east leg of the intersection, is a two-lane undivided local road. Sidewalks are present on both sides of SW 6th Court within the project limits. There are no bicycle lanes on SW 6th Court within the study limits.

Gatehouse Road, the west leg of the intersection, is a two-lane undivided local road. At the intersection with Pine Island Road sidewalks are not present on Gatehouse Road and neither are bicycle lanes.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to preserve mobility and safety at the intersection of Pine Island Road and SW 6th Court for all modes of travel through the future year planning horizon.

The need for this project is to accommodate future transportation demand in the study area, add intersection capacity to provide congestion relief, and maintain safe facilities for all modes, including bicycle, pedestrian, and transit facilities.

The project has been identified as a mid-term need based on the existing year (2019) and future year (2045) Level of Service (LOS) analysis results. The Pine Island Road and SW 6th Court intersection currently operates at a LOS B during the AM and a LOS D during the PM peak hour. By 2045 the intersection will degrade to LOS E during the AM peak hour and LOS F during the PM peak hour without any improvements. In addition, this intersection is a location with high crash concentration averaging 20 crashes per year. Improvements will potentially reduce delay and improve safety at the intersection.

4. CORRIDOR IMPROVEMENT

Infrastructure improvements needed along the entire Pine Island Road corridor from north of SW 6th Court to south of Nova Drive, and along the entire SR 84 corridor within the study area were identified as part of the study. These included improvements to the Pine Island Road and SR 84/I-595 interchange, three Pine Island Road intersections, and multimodal sidewalk, bicycle lane, and bus stop improvements. The needed Pine Island Road corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

<u>Pine Island Road north and south of SR 84</u>

- Add buffered bicycle lanes along Pine Island Road where missing between Orange Grove Drive and eastbound SR 84.
- Widen sidewalk to be a shared use path for both bicycles and pedestrians through the interchange area (northbound, southbound, eastbound).
- Construct bus shelters to serve four BCT bus stops located along Pine Island Road between SR 84 and SW 3rd Street.

Pine Island Road and SW 6th Court Signalized Intersection

- Add a second westbound left-turn lane.

Pine Island Road and Peters Road Signalized Intersection

- Add a third westbound left-turn lane.
- Add a second westbound right-turn lane.
- Add a second northbound right-turn lane.

Pine Island Road and Nova Drive Signalized Intersection

- Add an exclusive eastbound right-turn lane.
- Add an exclusive westbound right-turn lane.

Pine Island Road and SR 84 / I-595 Interchange

- Westbound SR 84 bypass/overpass –new bridge over Pine Island Road.
- Eastbound SR 84 bypass/overpass –new bridge over Pine Island Road.
- Reconstruct westbound SR 84 and Pine Island Road signalized intersection as noted below.
    - Westbound: Widen the approach and provide one exclusive left-turn lane, one shared through/left-turn lane, and three exclusive right-turn lanes.
    - Southbound: Widen the approach and provide two left-turn lanes, three through lanes, an exclusive right-turn lane, and a shared through/right-turn lane.
    - Northbound: Add a third northbound through lane.
- Reconstruct eastbound SR 84 and Pine Island Road signalized intersection as noted below.
    - Eastbound: Widen the approach and provide two exclusive left-turn lanes, one shared through/left-turn lane, and two exclusive right-turn lanes.
    - Northbound: Widen the approach and provide two left-turn lanes, three through lanes, and two exclusive right-turn lanes.
    - Southbound: Add a third through lane.

5. PROJECT SCOPE / DESCRIPTION

The Pine Island Road and SW 6th Court intersection project scope of work includes the following major components described below.

- Add a second westbound left-turn lane.
- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.

Figure 2 shows the project area without the recommended project improvements. Figure 3 shows a conceptual plan of the project improvements.

Broward MPO Metropolitan Planning Organization

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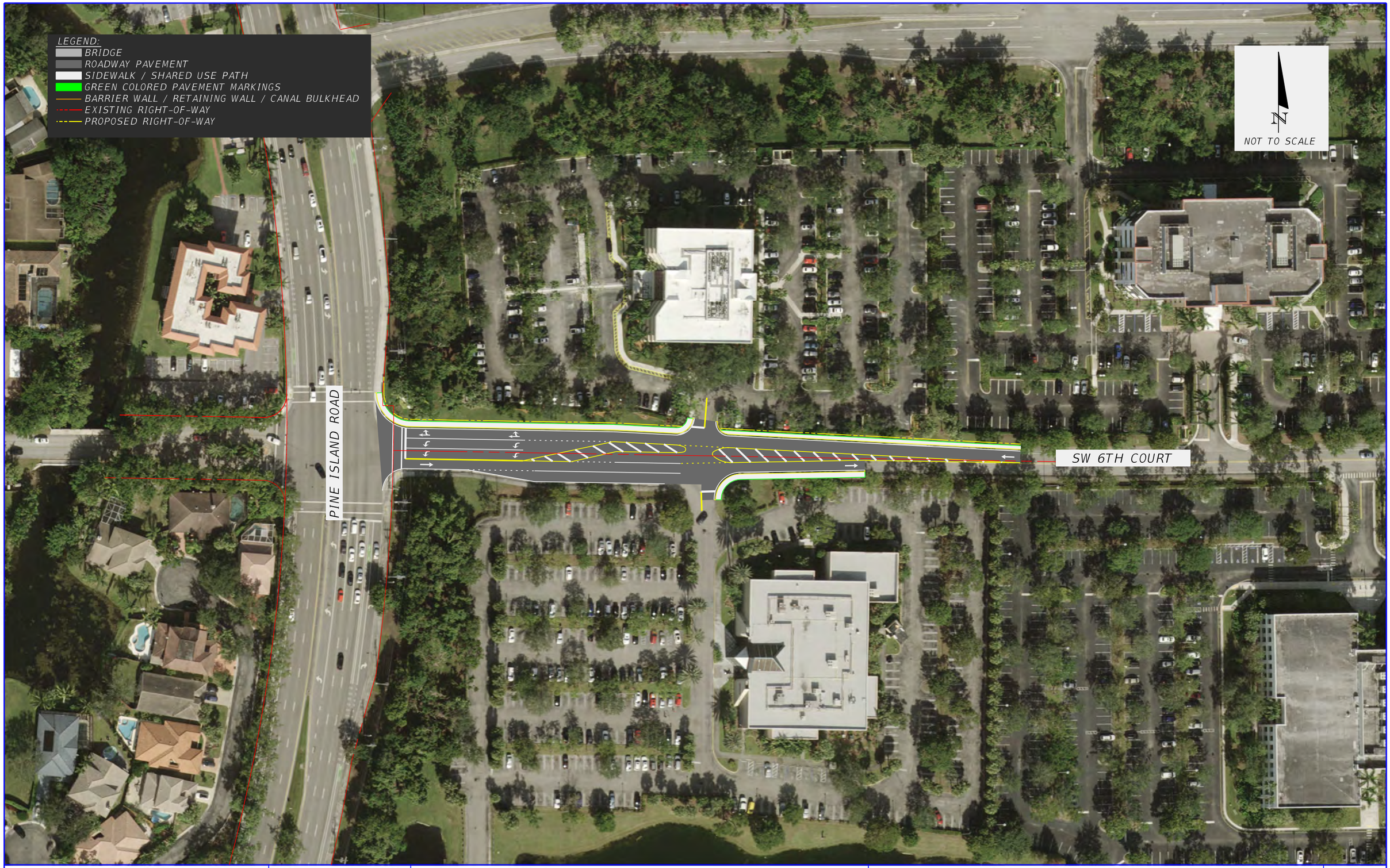
ARTERIAL CONNECTIVITY STUDY
ALONG I-595 CORRIDOR

PINE ISLAND ROAD AND SW 6TH COURT
EXISTING CONDITIONS &
PLANNED IMPROVEMENTS

FIGURE 2



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ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

PINE ISLAND ROAD AND SW 6TH COURT INTERSECTION IMPROVEMENTS

FIGURE 3

6. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The Pine Island Road and SW 6th Court intersection improvements will provide a more efficient and less congested route for traffic. In addition, it will improve safety for motorists. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion, does not meet LOS D in 2045 peak hours – operates at LOS F • Does not improve safety for bicyclists, pedestrians, or vehicles
Build	• 2045 Traffic Operations – Reduces delay, congestion, backups, travel times • Improves safety for pedestrians, bicyclists, vehicles • Enhances connectivity for pedestrians & bicyclists	• Right-of-way impacts • Cost

7. PROJECT CONSIDERATIONS

Based on a conceptual design of the improvements, right-of-way or an easement would be needed for a public agency to implement the improvements. No public right-of-way was found to exist along SW 6th Court. Therefore, the right of way or easement would be needed along SW 6th Court east of Pine Island Road to implement the recommended concept.

In addition, there are anticipated environmental impacts which need to be considered. Potential environmental impacts to be further evaluated during the next phase of the project include impacts to other surface waters and protected species and habitat. These environmental impacts are anticipated to be minimal.

8. COST AND FUNDING INFORMATION

SW 6th Court is shown to be privately owned according to information available from the Broward County Property Appraiser website as of October 2021. Therefore, improvements along SW 6th Court are recommended to be completed as a privately funded or locally funded improvement project. Given that it would be a private or local funded improvement project, the design phase could be the next phase of the improvement project. During this phase, permits would be obtained, and final construction plans prepared. The estimated cost to complete the design phase is $251,000. The construction cost estimate is $466,000, and cost for construction engineering inspection services during construction is $173,000. The total project cost is approximately $890,000 in year 2021 dollars.

The improvements are proposed along the roadway of SW 6th Court, and SW 6th Court is privately owned by the adjacent property owners. Therefore, it is within the jurisdiction of the owners of the private roadway to choose to fund the project.

ATTACHMENT 11

Project #11 - Implementation Package for University Drive from south of SW 30th Street to south of SR 84 Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 11
University Drive/SR 817 Improvements from South of SW 30th Street to South of SR 84

Broward MPO
Metropolitan Planning Organization

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PROJECT IMPLEMENTATION PACKAGE
UNIVERSITY DRIVE/SR 817 IMPROVEMENTS FROM SOUTH OF SW 30TH STREET TO SOUTH OF SR 84

1. PROJECT LOCATION AND LIMITS

The University Drive capacity improvement project is located within the Town of Davie, Florida. The limits of the improvements extend along University Drive from south of SW 30th Street to south of SR 84 for approximately 1.2 miles. The project encompasses four signalized intersections, two of which require a turn lane improvement in addition to the University Drive capacity improvement. The project limits include SW 30th Street and Nova Drive for approximately 700 feet east of University Drive. The location and limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

University Drive from south of SW 30th Street to south of SR 84 is a six-lane divided roadway, and it is a principal arterial which is part of the state highway system. University Drive has continuous sidewalk along both sides within the project limits. Bicycle lanes are present along both sides of University Drive within the project limits, except for a gap where bicycle lanes are missing on the east and west sides between Kolsky Boulevard and SR 84.

SW 30th Street east and west of University Drive is a two-lane undivided Town of Davie major collector roadway. SW 30th Street has sidewalk along both sides within the project limits, however, there are no bicycle lanes present.

Nova Drive east and west of University Drive is a two-lane undivided Broward County major collector roadway. Nova Drive has sidewalk along both sides within the project limits, except for a gap in sidewalk on the south side west of University Drive. There are no bicycle lanes present.

SW 23rd Street is a four-lane divided private roadway that serves as a driveway into commercial properties on the west and east sides of University Drive. Sidewalk is only present along the north side of SW 23rd Street east of University Drive. There are no bicycle lanes present along SW 23rd Street.

Kolsky Boulevard is a private road that serves as a driveway into commercial properties on the west and east sides of University Drive. It has two lanes west of University Drive, and four lanes east of University Drive. Sidewalk is present on both sides of Kolsky Boulevard east of University Drive, and on the north side west of University Drive. There are no bicycle lanes present.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to add capacity, provide congestion relief, and improve safety for all modes of travel along University Drive. The need for this project is to accommodate future transportation demand, accommodate transit enhancements, and address high crash locations to improve safety for all modes.

The project is identified as a mid-term need based on the existing year (2019) and future year (2045) Level of Service (LOS) analysis results. The existing overall intersection LOS is D or better during peak hours for all four of the University Drive signalized intersections within the project limits. However, there are long delays and queues during peak hours on the east and west approaches at all four intersections. All four intersections are expected to operate at LOS E or worse during at least one

peak hour within the next ten years. By 2045 without any improvements, all four intersections will operate at overall LOS F during at least one peak hour.

In addition, three intersections along University Drive within the project limits were identified to have a high crash concentration. They are University Drive and Nova Drive which has an average of 107 crashes per year, University Drive and S 1900 Block/Kolsky Boulevard which has an average of 35 crashes per year, and University Drive and S 2300 Block/SW 23rd Street which has an average of 35 crashes per year. Improvements will reduce delay and potentially improve safety along University Drive.

4. CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire University Drive corridor were identified as part of the study. These included roadway improvements to University Drive south of SR 84/I-595, north of SR 84/I-595, and at the SR 84/I-595 interchange, as well as multimodal sidewalk, bicycle lane, and bus stop improvements. The needed University Drive corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

University Drive South of SR 84

- Widen University Drive from south of SW 30th Street to eastbound SR 84 to add a fourth northbound and southbound through lane.
- Reconstruct University Drive from approx. 1,700 feet south of Nova Drive (at Autozone driveway) to south of Kolsky Boulevard, to provide two elevated lanes northbound and southbound in the median and two northbound and southbound lanes at-grade.
- Construct a one lane ramp from the elevated northbound University Drive lanes to the existing flyover to westbound I-595. This includes modifying or replacing the approach to the northbound to westbound I-595 flyover.
- Add buffered bicycle lanes along University Drive for the limits.
- Widen sidewalk along northbound University Drive to be a shared use path for bicyclists and pedestrians from Nova Drive to SR 84.
- Replace bus bays where they currently exist.

University Drive and SW 30th Street Intersection

- Widen University Drive to add a fourth northbound and southbound through lane through the intersection.

- Add a second westbound right-turn lane and an accompanying right-turn overlap phase with signal head.

University Drive and Nova Drive Intersection

- Widen University Drive to add a fourth northbound and southbound through lane through the intersection, including two elevated lanes in each direction and two at-grade lanes in each direction.
- Add a second westbound left-turn lane.

University Drive and SR 84 / I-595 Interchange

- Construct a westbound SR 84 to northbound University Drive right-turn lane bridge over the New River Canal to allow for a free-flow right-turn movement.
- Reconstruct the westbound I-595 off-ramp bridge over westbound SR 84 to allow ramp traffic to merge with SR 84 on the north side.
- Construct an eastbound SR 84 bypass/overpass bridge over University Drive.
- At the westbound SR 84 and University Drive signalized intersection reconfigure the turn lanes as noted below.
    - Southbound: Provide one exclusive right-turn lane.
    - Westbound to eastbound SR 84 U-turn: Signalize the U-turn movement at eastbound SR 84 and provide two U-turn lanes.
- At the eastbound SR 84 and University Drive signalized intersection, widen the eastbound SR 84 approach to provide three exclusive right-turn lanes, one shared through/left-turn lane, and one exclusive left-turn lane.
- Widen sidewalk to a shared use path width to serve both bicyclists and pedestrians through the interchange area (northbound, southbound, eastbound).

University Drive North of SR 84

- Widen University Drive from westbound SR 84 to north of Federated Road to add a fourth northbound and southbound through lane.
- Replace buffered bicycle lanes along University Drive northbound and southbound for the limits.
- Add sidewalk where it does not exist along University Drive between Peters Road and Federated Road.
- Replace bus bays where they currently exist.

University Drive and Peters Road Intersection (Add Lanes At-Grade Concept)

- Widen University Drive to add a fourth northbound and southbound through lane through the intersection.
- Add a second northbound right-turn lane & overlap phase with signal head.
- Add a third westbound left-turn lane on Peters Road.
- Add an overlap phase with signal head for the eastbound right-turn lanes.
- Include sidewalk and bicycle lanes on all approaches where it exists currently.
- Replace bus bays where they currently exist.

University Drive Bus Stop Improvements

- Provide bus shelters for five BCT bus stops (#5637, 0277, 3783, 3495, 4194) along University Drive within the study limits where daily activity is greater than 10.

5. IMPROVEMENTS EVALUATED

For University Drive from SW 30th Street to eastbound SR 84, the following roadway modifications were evaluated to determine a recommended mitigation concept.

1) Add a fourth northbound and fourth southbound through lane on University Drive through the four signalized study intersections from SW 30th Street to Kolsky Boulevard.
2) Elevate two northbound and two southbound University Drive through lanes over Nova Drive and over 23rd Street/2300 Block signalized intersections to allow through traffic to bypass the signalized intersections.
3) Provide two northbound and two southbound University Drive through lanes at-grade to allow for local trips to access the signalized intersections of 23rd Street/2300 Block and Nova Drive and adjacent driveways.
4) Provide a one-lane ramp from the University Drive elevated northbound through lanes to merge with an at-grade University Drive one-lane ramp, leading to the existing northbound to westbound SR 84/I-595 flyover.
5) Additional turn lanes at the University Drive and SW 30th Street intersection that could improve operations and fit mostly within existing right-of-way were evaluated. A westbound second right-turn lane was identified as a feasible improvement.
6) Additional turn lanes at the University Drive and Nova Drive intersection that could improve operations and fit mostly within existing right-of-way were

evaluated. A westbound second left-turn lane was identified as a feasible improvement.

An additional fourth through lane in each direction along University Drive can accommodate more vehicles and reduce delays at each of the intersections. It also provides an opportunity for buses to use the outside at-grade lane to drop off and pick up passengers at various points along the University Drive corridor, and for other vehicles to use the outside lane for slower right-turning traffic.

Elevating two through lanes in each direction allows a large percentage of traffic on University Drive to bypass the signalized intersections at 23rd Street/2300 Block and Nova Drive. This reduces the number of stops, and vehicular delay at the signalized intersections. The signal's extra green time can be redistributed to large volume turning movements at these intersections to improve their operations.

6. PROJECT SCOPE / DESCRIPTION

The University Drive project scope of work from south of SW 30th Street to south of SR 84 includes the following components described below.

- Widen University Drive from south of SW 30th Street to eastbound SR 84 to add a fourth northbound and southbound through lane.
- Reconstruct University Drive from approximately 1,700 feet south of Nova Drive (at AutoZone driveway) to south of Kolsky Boulevard, to elevate two of the four northbound lanes and two of the southbound lanes over Nova Drive and SW 23rd Street. Two northbound lanes and two southbound lanes would remain at ground level to provide local access.
- Construct a one-lane ramp from the elevated University Drive northbound lanes connecting to the existing northbound to westbound I-595 flyover.
- Add buffered bicycle lanes along University Drive throughout the project limits.
- Widen sidewalk along northbound University Drive for both bicyclists and pedestrians from Nova Drive to SR 84.
- Construct two bus shelters at BCT bus stops without a shelter. The first is located on the west side of University Drive just south of Kolsky Boulevard, and the second is located on the east side of University Drive between SW 30th Street and Nova Drive.
- Replace the bus bays where they currently exist.
- At the University Drive and SW 30th Street intersection construct a second westbound right-turn lane and overlap phase with signal head.

- At the University Drive and Nova Drive intersection construct a second westbound left-turn lane.
- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.

Figure 2 shows the project area without the recommended project improvements.
Figure 3 shows a conceptual plan of the project improvements along with typical sections.
Figure 4 shows a 3D rendering of the project area with the project improvements superimposed over a 2021 aerial image of the study area.

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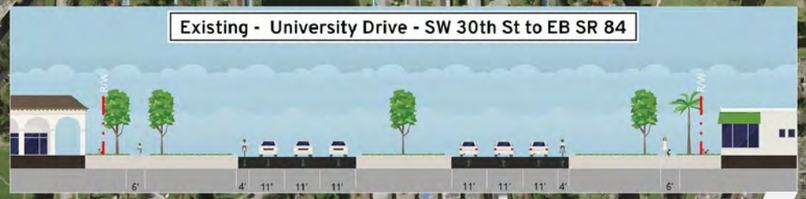

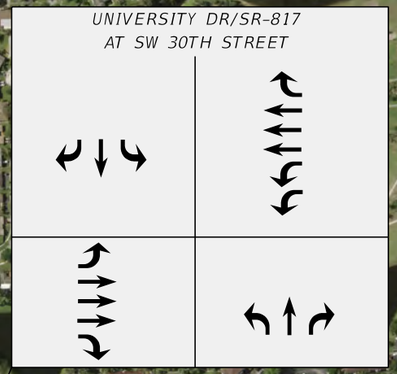

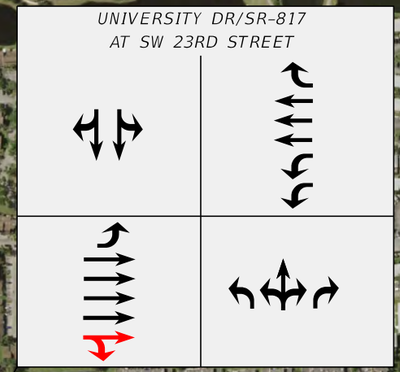

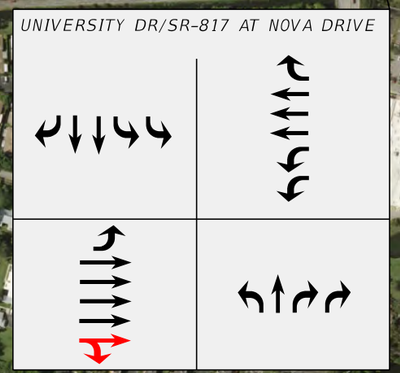

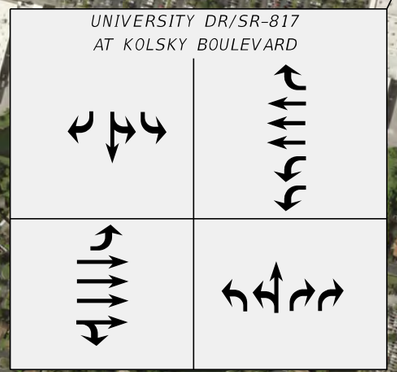

SW 30TH STREET

NOVA DRIVE

SW 23RD STREET

KOLSKY BOULEVARD

UNIVERSITY DRIVE

EB SR 84

WB SR 84

I-595

LEGEND

- EXISTING (2019) LANE CONFIGURATION (BLACK)
- PLANNED OR PROGRAMMED PROJECTS (RED) (TO BE CONSTRUCTED BEFORE RECOMMENDED IMPROVEMENTS)

Broward MPO Metropolitan Planning Organization

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ARTERIAL CONNECTIVITY STUDY
ALONG I-595 CORRIDOR

UNIVERSITY DRIVE SOUTH OF SR 84
TO SW 30TH STREET
EXISTING CONDITION &
PLANNED IMPROVEMENTS

FIGURE 2

NOT TO SCALE

UNIVERSITY DRIVE

SW 30TH STREET

NOVA DRIVE

SW 23RD STREET

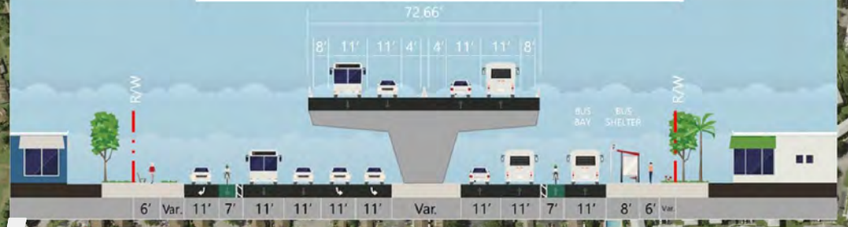
KOLSKY BOULEVARD

EB SR 84

I-595

WB SR 84

Proposed – University Drive SW 30th St to EB SR 84 - View 2
Between Nova Drive and 23rd Street



Proposed – University Drive SW 30th St to EB SR 84 - View 1
Approaching Nova Drive and 23rd Street

LEGEND:
- BRIDGE
- ROADWAY PAVEMENT
- SIDEWALK / SHARED USE PATH
- GREEN COLORED PAVEMENT MARKINGS
- BARRIER WALL / RETAINING WALL / CANAL BULKHEAD
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- EXISTING LIMITED ACCESS RIGHT-OF-WAY

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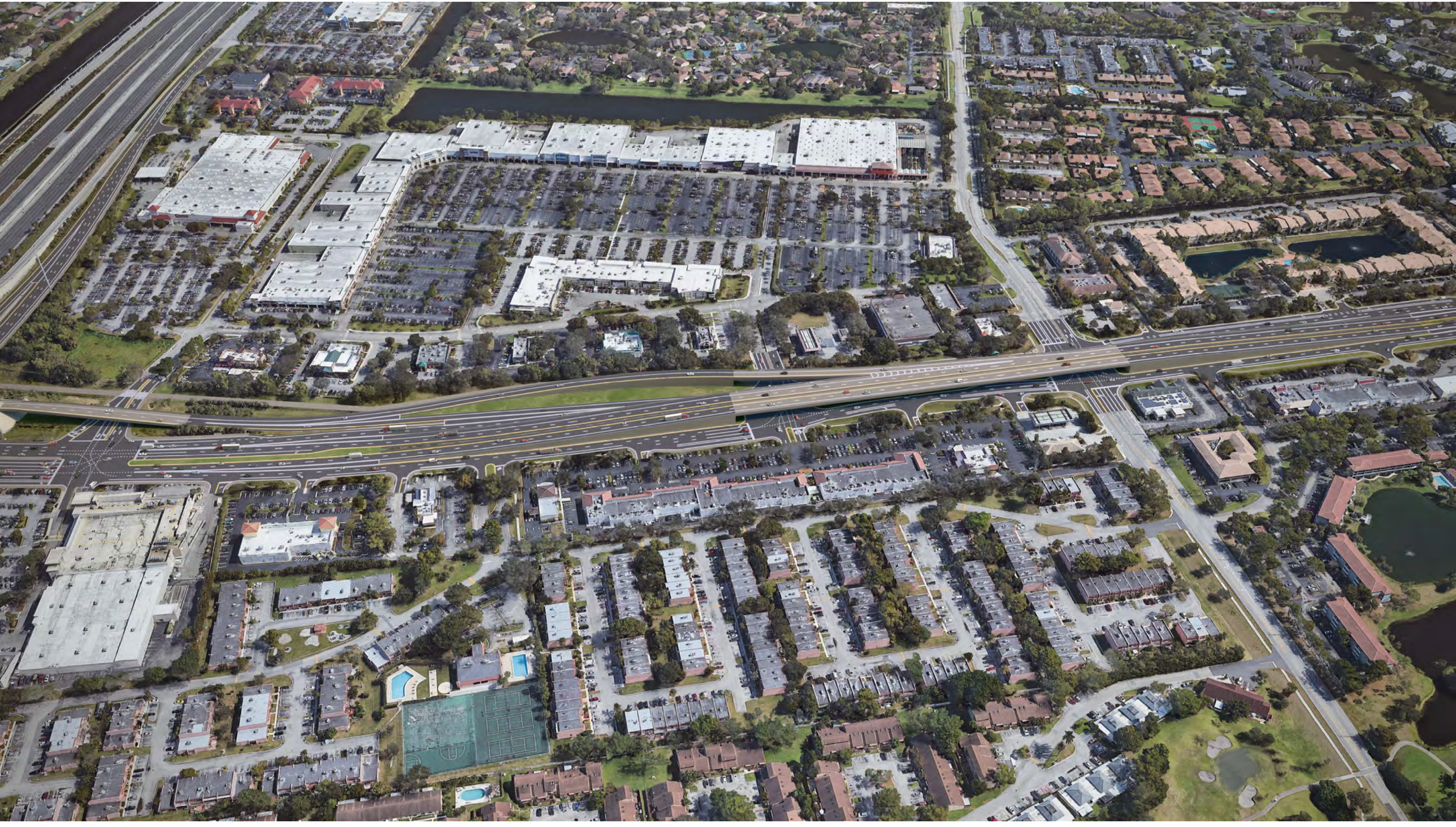
ARTERIAL CONNECTIVITY STUDY
ALONG I-595 CORRIDOR

UNIVERSITY DRIVE SOUTH OF SR 84
TO SW 30TH STREET IMPROVEMENTS

FIGURE 3



7. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The University Drive improvements between SW 30th Street and SR 84 will improve safety and reduce congestion for vehicular traffic. In addition, safety will be improved for pedestrians and bicyclists. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion, does not meet LOS D in 2045–operates at LOS F • Does not improve safety for bicyclists, pedestrians, or vehicles • Does not improve connectivity for pedestrians, bicyclists, or vehicles
Build	• 2045 Traffic Operations – Significantly reduces delay & congestion • Reduces conflicts at intersections • Improves safety for pedestrians, bicyclists, vehicles • Enhances connectivity for pedestrians, bicyclists, vehicles	• Right-of-way impact • Minor access impacts (restricts movements at 2 driveways south of Nova Drive) • Potential for noise impact • Visual impact (view of overpasses) • Cost

8. PROJECT CONSIDERATIONS

Based on a conceptual design of the recommended University Drive improvements, additional right-of-way would need to be acquired to implement the improvements.

The locations listed below describe where additional right-of-way would be needed to implement the recommended concept.

- University Drive along the west side from south of SW 30th Street to SW 33rd Street
- University Drive along the west side from south of Nova Drive to eastbound SR 84
- SW 30th Street along the north side east of University Drive
- University Drive and Nova Drive intersection in the southwest corner

In addition, there are anticipated environmental impacts which need to be considered. Potential environmental impacts to be further evaluated during the next phase of the project include impacts to wetlands and other surface waters, floodplains, noise sensitive sites, and protected species and habitat. A sociocultural effects evaluation will be required to assess the potential access impacts to businesses and neighborhoods.

An Access Management Plan is recommended as part of the next phase for the University Drive corridor to identify optimal configurations for potential driveway modifications. Visual impacts to adjacent properties due to the proposed new roadway structures also need to be considered.

9. COST AND FUNDING INFORMATION

A Project Development and Environment (PD&E) Study is recommended as the next phase of the improvement project. The purpose of the PD&E Study is to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). It is recommended for this project to be included with the PD&E study for the University Drive and SR 84/I-595 interchange improvement project. As such, the estimated cost for the PD&E phase is $3.0 million.

Following the PD&E phase, the project will advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase is $8.1 million. Typically, acquisition of right-of-way occurs concurrent with or just after the design phase before the project moves into construction. A cost estimate for right-of-way acquisition for this project has not yet been determined. The construction cost estimate is $60.2 million, and cost for construction engineering inspection services during construction is $7.5 million. The total project cost, excluding the PD&E Study and right-of-way costs, is approximately $75.8 million in year 2021 dollars.

The improvements are proposed along the roadways of University Drive, Nova Drive, and SW 30th Street. University Drive is under the jurisdiction of the State of Florida. Nova Drive is under the jurisdiction of Broward County, while SW 30th Street is under the jurisdiction of the Town of Davie. University Drive as part of the state highway system and national highway system and is eligible for state and federal funds. In addition, because the project will improve a portion of the northbound University Drive to westbound I-595 on-ramp and will be integrated with the University Drive and SR 84/I-595 interchange improvement project, State of Florida SIS program funds may be sought as a source of funding for the project.

However, eligibility for SIS program funding must still be evaluated by FDOT. If the project is determined to be eligible, then the project may be proposed for SIS funding and can compete with other eligible projects statewide for SIS funding. If the project is determined not to be eligible for SIS funding, then other federal, state, or local funds would need to be pursued through the Broward MPO project prioritization process. There is also opportunity for local funding to be provided for the project from Broward County and/or the Town of Davie.

ATTACHMENT 12

Project #12 - Implementation Package for University Drive and SR 84 / I-595 Interchange Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 12
University Drive/SR 817 and SR 84/ I-595 Interchange Improvements

Broward MPO
Metropolitan Planning Organization

FDOT

PROJECT IMPLEMENTATION PACKAGE
UNIVERSITY DRIVE/SR 817 AND SR 84/I-595 INTERCHANGE IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The University Drive/SR 817 and SR 84/I-595 interchange improvement project is located within Broward County, Florida. The portion of the project located north of SR 84 is within the City of Plantation, and the portion of the project located south of SR 84 is within the Town of Davie. The limits of the improvements extend along University Drive from approximately 1,500 feet north of the westbound SR 84 intersection to approximately 500 feet south of the eastbound SR 84 intersection. The project limits also extend along eastbound and westbound SR 84 from approximately 2,500 feet west of University Drive to approximately 2,500 feet east of University Drive. The location and limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

University Drive between SW 13th Place and Kolsky Boulevard is a six-lane divided roadway, and it is a principal arterial which is part of the state highway system. University Drive has sidewalk along both sides within the project limits, except for a gap where sidewalk is missing on the east side between SR 84 and Kolsky Boulevard. There are no bicycle lanes on University Drive between Kolsky Boulevard and westbound SR 84. From westbound SR 84 to SW 13th Place a shoulder is present for bicyclists along University Drive.

SR 84 eastbound is a one-way, generally two-lane, roadway within the project limits. SR 84 westbound is also a one-way, generally two-lane, roadway within the project limits. SR 84 (eastbound and westbound) is a minor arterial which is part of the state highway system. Along SR 84 eastbound, sidewalk is present east and west of University Drive. Sidewalk is not present along SR 84 westbound. Bicycle lanes are present along SR 84 eastbound. A shoulder is present for bicycle traffic along SR 84 SR 84 westbound. Bicycle and pedestrian traffic along westbound SR 84 are encouraged to use the adjacent New River Greenway located west of University Drive.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to improve safety for all modes of travel through the interchange and provide congestion relief by reducing existing and future motorist delay, travel time and queuing along University Drive and at the access points with I-595 and SR 84.

The need for the project consists of adding capacity to better accommodate the existing and future transportation demand and improving safety for all modes.

The project has been identified as a mid-term need based on the existing year (2019) and future year (2045) Level of Service (LOS) analysis results. The University Drive intersections at the I-595/SR 84 interchange are operating at a Level of Service (LOS) C/E during the existing AM peak hour and LOS D/C during the PM peak hour. By 2045 the intersection operations during the AM peak hour will degrade to LOS E/F, and during the PM peak hour will degrade to LOS E without any improvements. In addition, this interchange has the highest crash concentration of the eight study interchanges along I-595/SR 84. It is averaging 77 crashes per year at westbound SR 84, and 85 crashes per year at eastbound SR 84. Improvements will reduce delay and potentially improve safety at the interchange.

4. CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire University Drive corridor and along the entire SR 84 corridor within the study area were identified as part of the study. These included improvements to the SR 84/I-595 interchange and intersection improvements at Peters Road, Nova Drive, and SW 30th Street. Corridor improvements also include multimodal improvements such as sidewalk, bicycle lane, and bus stop improvements. The needed University Drive corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

University Drive and SR 84 / I-595 Interchange

- Construct a westbound SR 84 to northbound University Drive right-turn lane bridge over the New River Canal to allow for a free-flow right-turn movement.
- Reconstruct the westbound I-595 off-ramp bridge over westbound SR 84 to allow ramp traffic to merge with SR 84 on the north side.
- Construct an eastbound SR 84 bypass/overpass bridge over University Drive.
- At the westbound SR 84 and University Drive signalized intersection reconfigure the turn lanes as noted below.
    - Southbound: Provide one exclusive right-turn lane.
    - Westbound to eastbound SR 84 U-turn: Signalize the U-turn movement at eastbound SR 84 and provide two U-turn lanes.
- At the eastbound SR 84 and University Drive signalized intersection, widen the eastbound SR 84 approach to provide three exclusive right-turn lanes, one shared through/left-turn lane, and one exclusive left-turn lane.
- Widen sidewalk to a shared use path width to serve both bicyclists and pedestrians through the interchange area (northbound, southbound, eastbound).

University Drive South of SR 84

- Widen University Drive from south of SW 30th Street to eastbound SR 84 to add a fourth northbound and southbound through lane.
- Reconstruct University Drive from approx. 1,700 feet south of Nova Drive (at Autozone driveway) to south of Kolsky Boulevard, to provide two elevated lanes northbound and southbound in the median and two northbound and southbound lanes at-grade.
- Construct a one lane ramp from the elevated northbound University Drive lanes to the existing flyover to westbound I-595. This includes

modifying or replacing the approach to the northbound to westbound I-595 flyover.
- Add buffered bicycle lanes along University Drive for the limits.
- Widen sidewalk along northbound University Drive to be a shared use path for bicyclists and pedestrians from Nova Drive to SR 84.
- Replace bus bays where they currently exist.

University Drive and SW 30th Street Intersection

- Widen University Drive to add a fourth northbound and southbound through lane through the intersection.
- Add a second westbound right-turn lane and an accompanying right-turn overlap phase with signal head.

University Drive and Nova Drive Intersection

- Widen University Drive to add a fourth northbound and southbound through lane through the intersection, including two elevated lanes in each direction and two at-grade lanes in each direction.
- Add a second westbound left-turn lane.

University Drive North of SR 84

- Widen University Drive from westbound SR 84 to north of Federated Road to add a fourth northbound and southbound through lane.
- Replace buffered bicycle lanes along University Drive northbound and southbound for the limits.
- Add sidewalk where it does not exist along University Drive between Peters Road and Federated Road.
- Replace bus bays where they currently exist.

University Drive and Peters Road Intersection (Add Lanes At-Grade Concept)

- Widen University Drive to add a fourth northbound and southbound through lane through the intersection.
- Add a second northbound right-turn lane & overlap phase with signal head.
- Add a third westbound left-turn lane on Peters Road.
- Add an overlap phase with signal head for the eastbound right-turn lanes.
- Include sidewalk and bicycle lanes on all approaches where it exists currently.
- Replace bus bays where they currently exist.

University Drive Bus Stop Improvements

- Provide bus shelters for five BCT bus stops (#5637, 0277, 3783, 3495, 4194) along University Drive within the study limits where daily activity is greater than 10.

5. INTERCHANGE ALTERNATIVES EVALUATED

One alternative with multiple components was evaluated for improving the University Drive and SR 84/I-595 interchange.

The following interchange improvements were evaluated to determine the recommended mitigation concept.

1. Modified Diamond Interchange with the following components:
    a. Eastbound SR 84 through lane overpass over University Drive
    b. Eastbound SR 84 to southbound University Drive flyover
    c. Westbound SR 84 right-turn bypass lane
    d. Widen existing University Drive southbound to eastbound SR 84/I-595 flyover from one-lane to two-lanes
    e. Widen existing University Drive northbound to westbound SR 84 / I-595 flyover from one-lane to two-lanes
    f. Bridging the I-595 westbound off-ramp over westbound SR 84

It was determined that the modified diamond interchange with an eastbound SR 84 overpass, a westbound SR 84 right-turn bypass lane, and bridging the I-595 westbound off-ramp over westbound SR 84 were feasible improvements. Therefore, to address the SR 84 interchange deficiencies, the modified diamond interchange with these components is recommended for further analysis, design, and implementation.

6. PROJECT SCOPE / DESCRIPTION

The University Drive and SR 84/I-595 modified diamond interchange project scope of work includes the following components listed below. Only University Drive corridor improvements that are located within the interchange influence area are included in the project scope.

- Construct a westbound SR 84 to northbound University Drive right-turn lane bridge over the New River Canal to allow for a free-flow right-turn movement.
- Reconstruct the westbound I-595 off-ramp bridge over westbound SR 84 to allow ramp traffic to merge with SR 84 on the north side.
- Construct an eastbound SR 84 bypass/overpass bridge over University Drive.

- At the westbound SR 84 and University Drive signalized intersection reconfigure the turn lanes as noted below.
    - Southbound: Provide one exclusive right-turn lane.
    - Westbound to eastbound SR 84 U-turn: Signalize the U-turn movement at eastbound SR 84 and provide two U-turn lanes.
- At the eastbound SR 84 and University Drive signalized intersection, widen the eastbound SR 84 approach to provide three exclusive right-turn lanes, one shared through/left-turn lane, and one exclusive left-turn lane.
- Widen sidewalk to a shared use path width to serve both bicyclists and pedestrians through the interchange area (northbound, southbound, eastbound).
- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.

Figure 2 shows the project area without the recommended project improvements.
Figure 3 shows a conceptual plan of the project improvements as well as typical sections.
Figure 4 shows a 3D rendering of the project area with the project improvements superimposed over a 2021 aerial image of the study area.

Broward MPO Metropolitan Planning Organization | FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

UNIVERSITY DRIVE AND SR 84/I-595 EXISTING CONDITION & PLANNED IMPROVEMENTS

FIGURE 2

UNIVERSITY DRIVE

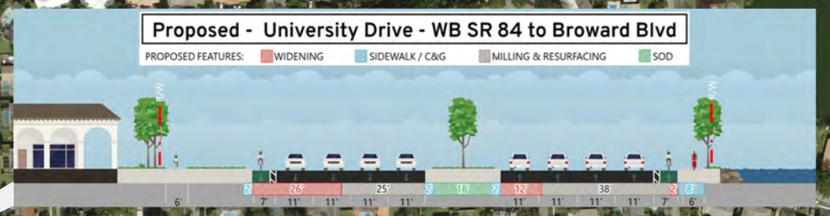
EB SR 84

WB SR 84

I-595

NOT TO SCALE

Proposed - University Drive - WB SR 84 to Broward Blvd



Proposed – University Drive SW 30th St to EB SR 84 - View 1
Approaching Nova Drive and 23rd Street

LEGEND:
- BRIDGE
- ROADWAY PAVEMENT
- SIDEWALK / SHARED USE PATH
- GREEN COLORED PAVEMENT MARKINGS
- BARRIER WALL / RETAINING WALL / CANAL BULKHEAD
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- EXISTING LIMITED ACCESS RIGHT-OF-WAY

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

UNIVERSITY DRIVE AND SR 84/I-595 INTERCHANGE IMPROVEMENTS

FIGURE 3


MAERSK
FedEx
EAST
595
95
Ft. Lauderdale

7. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The University Drive and SR 84/I-595 interchange improvements will provide a more efficient and less congested route for traffic, while enhancing safety and connectivity for pedestrians and bicyclist. In addition, safety will be improved for vehicles, pedestrians, and bicyclists along the corridor and through the SR 84 interchange. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion, does not meet LOS D in 2045-operates at LOS F in peak hour • Does not improve safety for bicyclists, pedestrians, or vehicles • Does not improve connectivity for pedestrians, bicyclists, or vehicles
Build	• 2045 Traffic Operations – Significantly reduces delay & congestion • Reduces conflicts at intersections • Improves safety for pedestrians, bicyclists, vehicles • Enhances connectivity for pedestrians, bicyclists, vehicles	• Right-of-way impact • Potential for noise impact • Visual impact (view of overpasses) • Canal impact • Cost

8. PROJECT CONSIDERATIONS

Based on a conceptual design of the improvements, additional right-of-way would need to be acquired to implement the improvements. In addition, there are anticipated structural and environmental impacts which need to be considered.

The locations listed below describe where additional right-of-way would be needed to implement the recommended concept.

- Westbound SR 84 east and west of University Drive. These are potential impacts to the New River Canal SFWMD property.
- University Drive southbound along the west side from Kolsky Boulevard to eastbound SR 84 for the fourth lane and bicycle lanes.

One existing roadway structure would be impacted. The northbound University Drive bridge over Kolsky Boulevard leading to westbound I-595 flyover would need to be modified or replaced to accommodate a second lane. In addition, three new structures will be required. The first is a roadway bridge for the westbound I-595 off-ramp to cross over westbound SR 84 west of University Drive. The second is a bridge for westbound SR 84 traffic turning right onto northbound University Drive to cross over the New River Canal, and the third is a new roadway bridge for eastbound SR 84 traffic to cross over University Drive.

Potential environmental impacts to be further evaluated during the next phase of the project include impacts to wetlands and other surface waters, floodplains, noise sensitive sites, and protected species and habitat. In addition, the proposed new roadway structures could have visual impacts to adjacent properties. Coordination and public outreach to adjacent property owners would need to occur.

Also, an Interchange Access Request document will be required to document acceptability of the modification to the I-595 westbound off-ramp that connects to westbound SR 84.

9. COST AND FUNDING INFORMATION

A Project Development and Environment (PD&E) Study is recommended as the next phase of the improvement project. The purpose of the PD&E Study is to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). It is recommended for this PD&E study to also include the proposed improvement projects along University Drive from south of SR 84 to south of SW 30th Street, and from north of SR 84 to Broward Boulevard. As such, the estimated cost for the PD&E phase is $3.0 million.

Following the PD&E phase, the project will advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase for the interchange project is $6.7 million. Typically, acquisition of right-of-way occurs concurrent with or just after the design phase before the project moves into construction. A cost estimate for right-of-way acquisition for this project has not yet been determined. The construction cost estimate is $49.4 million, and cost for construction engineering inspection services during construction is $6.2 million. The total project cost, excluding right-of-way costs, is approximately $65.3 million in year 2021 dollars.

The improvements are proposed along the roadways of University Drive, I-595, and SR 84. University Drive is under the jurisdiction of the State of Florida. I-595 and SR 84 are also under the jurisdiction of the State of Florida.

Much of the roadway modification work is proposed along SR 84. SR 84 is an integral part of the I-595 Strategic Intermodal System (SIS) corridor, and functions as a collector-distributor roadway providing access to and from I-595 via the interchange with University Drive. The project will improve University Drive, SR 84, and I-595. State of Florida SIS program funds may be sought as a source of funding for the project. However, eligibility for SIS program funding must still be evaluated by FDOT. If the project is determined to be eligible, then the project may be proposed for SIS funding and can compete with other eligible projects statewide for SIS funding. If the project is determined not to be eligible for SIS funding, then other federal, state, or local funds would need to be pursued through the standard Broward MPO project prioritization process.

ATTACHMENT 13

Project #13 - Implementation Package for University Drive from south of SR 84 to Broward Boulevard Project

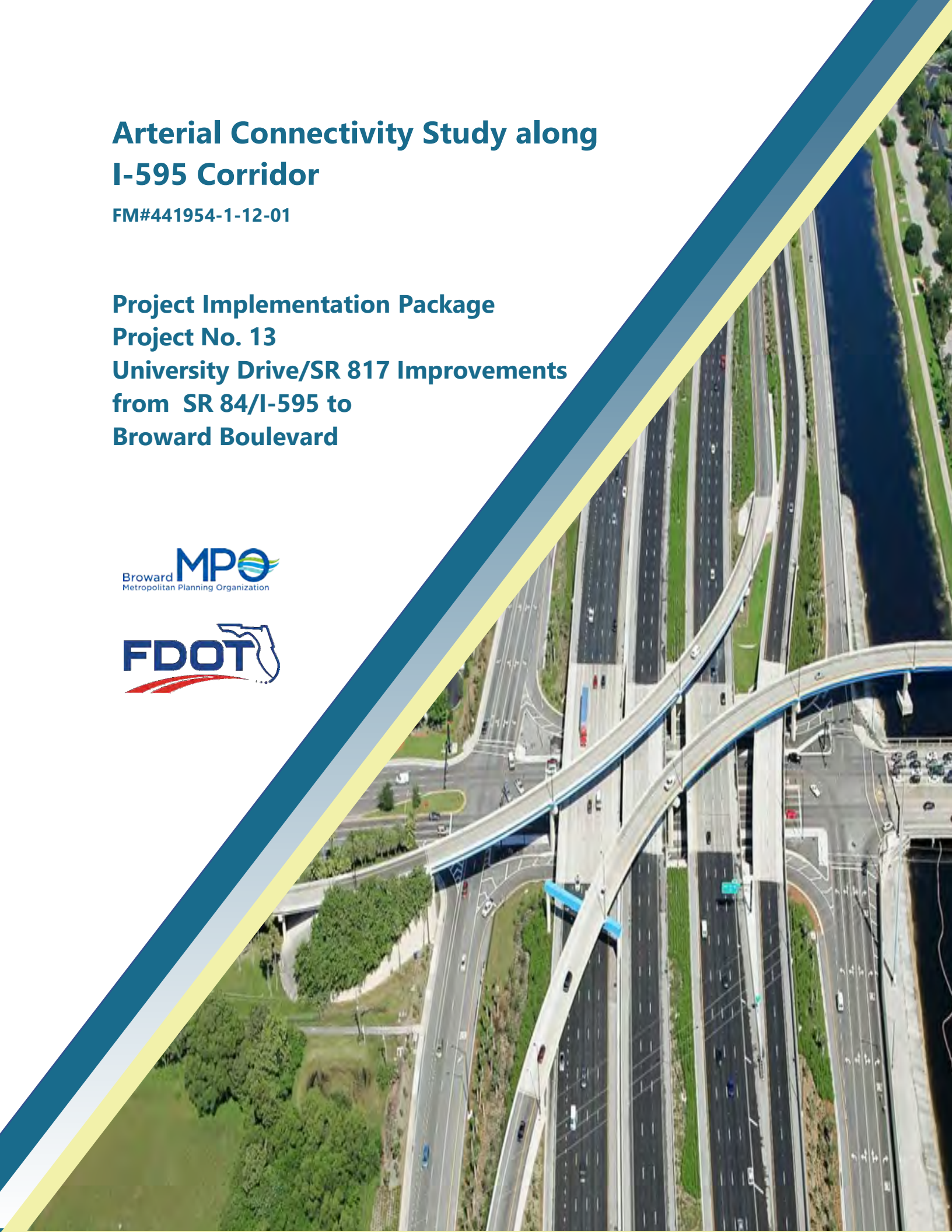
Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 13
University Drive/SR 817 Improvements from SR 84/I-595 to Broward Boulevard

Broward MPO
Metropolitan Planning Organization

FDOT



PROJECT IMPLEMENTATION PACKAGE
UNIVERSITY DRIVE/SR 817 IMPROVEMENTS FROM SR 84/I-595 TO BROWARD BOULEVARD

1. PROJECT LOCATION AND LIMITS

The University Drive capacity improvement project is located within the City of Plantation, Florida. The limits of the improvements extend along University Drive from north of SR 84 to Broward Boulevard for approximately 1.5 miles. The project encompasses three signalized intersections, one of which (Peters Road) requires improvements in addition to the University Drive capacity improvement. The project limits therefore extend along Peters Road approximately 800 feet west of University Drive and approximately 1,200 feet east of University Drive. The location of the project and limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

University Drive from north of SR 84 westbound to Broward Boulevard is a six-lane divided State principal arterial. University Drive has sidewalk along both sides within the project limits, except for a gap where sidewalk is missing in some areas along the east side of the corridor between Peters Road and SW 6th Street. Bicycle lanes are present along both sides of University Drive within the project limits, and Broward County Transit bus stops are present along both sides of University Drive within the project limits.

Peters Road is a four-lane divided Broward County major collector east and west of University Drive. Peters Road has sidewalk along both sides within the project limits. Bicycle lanes are not present within the study limits.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to add capacity, provide congestion relief, and improve safety for all modes of travel along University Drive. The need for this project is to accommodate existing and future transportation demand, accommodate transit enhancements, and address high crash locations to improve safety for all modes.

The need for the project is immediate given the existing year (2019) Level of Service (LOS) analysis results. The signalized intersection of University Drive and Peters Road is operating at LOS E during the AM peak hour and LOS D during the PM peak hour. The other two University Drive signalized intersections within the project limits, The Fountains and Federated Road, are operating at LOS C or better during AM and PM peak hours.

By the 2045 planning horizon without any improvements traffic operations along University Drive will degrade. The signalized intersection of Peters Road will operate at LOS F during both peak hours, The Fountains intersection will operate at LOS D during both peak hours, and Federated Road intersection will operate at LOE E/F during the peak hours. In addition, four intersections along University Drive within the project limits were identified to have a high crash concentration. They are University Drive and SW 13th Place which has an average of 33 crashes per year, University Drive and Peters Road which has an average of 96 crashes per year, University Drive and SW 10th Street which has an average of 25 crashes per year, and University Drive and The Fountains which has an average of 30 crashes per year. Improvements will reduce delay and potentially improve safety along University Drive.

4. CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire University Drive corridor within the study limits were identified. These included roadway capacity improvements along University Drive north and south of SR 84, improvements to the SR 84/I-595 interchange as well as multimodal sidewalk, bicycle lane, and bus stop improvements. The needed University Drive corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

University Drive North of SR 84

- Widen University Drive from westbound SR 84 to north of Federated Road to add a fourth northbound and southbound through lane.
- Replace buffered bicycle lanes along University Drive northbound and southbound for the limits.
- Add sidewalk where it does not exist along University Drive between Peters Road and Federated Road.
- Replace bus bays where they currently exist.

University Drive and Peters Road Intersection (Add Lanes At-Grade Concept)

- Widen University Drive to add a fourth northbound and southbound through lane through the intersection.
- Add a second northbound right-turn lane & overlap phase with signal head.
- Add a third westbound left-turn lane on Peters Road.
- Add an overlap phase with signal head for the eastbound right-turn lanes.
- Include sidewalk and bicycle lanes on all approaches where it exists currently.
- Replace bus bays where they currently exist.

University Drive Bus Stop Improvements

- Provide bus shelters for five BCT bus stops (#5637, 0277, 3783, 3495, 4194) along University Drive within the study limits where daily activity is greater than 10.

University Drive South of SR 84

- Widen University Drive from south of SW 30th Street to eastbound SR 84 to add a fourth northbound and southbound through lane.
- Reconstruct University Drive from approx. 1,700 feet south of Nova Drive (at Autozone driveway) to south of Kolsky Boulevard, to provide two elevated lanes northbound and southbound in the median and two northbound and southbound lanes at-grade.

- Construct a one lane ramp from the elevated northbound University Drive lanes to the existing flyover to westbound I-595. This includes modifying or replacing the approach to the northbound to westbound I-595 flyover.
- Add buffered bicycle lanes along University Drive for the limits.
- Widen sidewalk along northbound University Drive to be a shared use path for bicyclists and pedestrians from Nova Drive to SR 84.
- Replace bus bays where they currently exist.

University Drive and SW 30th Street Intersection

- Widen University Drive to add a fourth northbound and southbound through lane through the intersection.
- Add a second westbound right-turn lane and an accompanying right-turn overlap phase with signal head.

University Drive and Nova Drive Intersection

- Widen University Drive to add a fourth northbound and southbound through lane through the intersection, including two elevated lanes in each direction and two at-grade lanes in each direction.
- Add a second westbound left-turn lane.

University Drive and SR 84 / I-595 Interchange

- Construct a westbound SR 84 to northbound University Drive right-turn lane bridge over the New River Canal to allow for a free-flow right-turn movement.
- Reconstruct the westbound I-595 off-ramp bridge over westbound SR 84 to allow ramp traffic to merge with SR 84 on the north side.
- Construct an eastbound SR 84 bypass/overpass bridge over University Drive.
- At the westbound SR 84 and University Drive signalized intersection reconfigure the turn lanes as noted below.
    - Southbound: Provide one exclusive right-turn lane.
    - Westbound to eastbound SR 84 U-turn: Signalize the U-turn movement at eastbound SR 84 and provide two U-turn lanes.
- At the eastbound SR 84 and University Drive signalized intersection, widen the eastbound SR 84 approach to provide three exclusive right-turn lanes, one shared through/left-turn lane, and one exclusive left-turn lane.
- Widen sidewalk to a shared use path width to serve both bicyclists and pedestrians through the interchange area (northbound, southbound, eastbound).

5. IMPROVEMENTS EVALUATED

For University Drive from westbound SR 84 to Broward Boulevard, the following roadway modification was evaluated to determine a recommended mitigation concept.

- A fourth northbound and fourth southbound through lane on University Drive from westbound SR 84 to Broward Boulevard to accommodate more vehicles and reduce delays at each of the intersections. It also provides an opportunity for buses to use the new outside fourth lane to drop off and pick up passengers at various points along the University Drive corridor, and for all vehicles to use the new fourth outside lane for slower right-turning traffic.

For the University Drive and Peters Road intersection, the following three intersection alternatives were evaluated to determine a recommended mitigation concept.

1) Displaced Left-Turn (DLT) for the eastbound, westbound, and southbound approaches, and Median U-turn for northbound left-turns
2) Center Left-Turn Overpass
3) Additional Lanes At-Grade

Table 1 summarizes the advantages and disadvantages of each of the three University Drive and Peters Road intersection concepts.

Table 1: Comparison of Intersection Concept's Advantages and Disadvantages at University Drive and Peters Road

Alternatives	Advantages	Disadvantages
1) No Build	• No cost • No impacts • No disruption	• Does not address congestion, operates with long delay and queues at LOS F • Does not improve safety for bicyclists, pedestrians, vehicles • Does not improve connectivity for bicyclists, pedestrians, vehicles
2) Displaced Left-Turn (DLT) Lanes	• Significantly reduces delay and achieve LOS D in peak hours • Lower delay and fewer stops on major street could reduce rear-end crashes	• Required right-of-way larger than conventional intersection • Access impacts to businesses and adjacent side streets (changes ingress/egress patterns to corner developments) • Potential driver confusion & wrong-way movements • More complex for pedestrians & bicyclists to navigate • Due to adjacent driveway at median U-turn signal, and pedestrian crossing phases, estimated delay benefits may not be fully realized
3) Center Left-Turn Overpass	• Significantly reduces delay and improves to LOS E in peak hours • Reduces conflict points, improves safety • Pedestrian and bicyclists cross less traffic and less lanes	• Required right-of-way larger than conventional intersection • Access impacts to businesses and adjacent side streets (changes ingress/egress patterns to corner developments) • Visual impacts (blocked visibility to businesses by structure) • Left-turn lanes must remain through the at-grade signal for access to developments in four corners • Southbound overpass ramp merge point (south of Peters Road) too close to I-595/SR 84 eastbound flyover entrance could cause weaving maneuvers and render overpass for westbound left-turns destined to flyover unusable
4) Add Turn Lanes	• Reduces delay and queues • Can be constructed mostly within existing right-of-way, and lower cost	• Partly addresses congestion • Minor right-of-way impacts

NOTE: Alternatives 2, 3, and 4 include the following improvements: 1) New 4th northbound and southbound through lane on University Drive; 2) Wider bicycle lanes along University Drive northbound and southbound.; 3) Sidewalk along University Drive northbound and southbound.; 4) Transit bus stop upgrades for benches or shelters.

6. PROJECT SCOPE / DESCRIPTION

The roadway capacity improvements along University Drive north of SR 84 westbound and at the Peters Road intersection project scope of work includes the following components listed below. Only University Drive north of SR 84 corridor improvements and Peters Road intersection improvements are included in the project scope.

University Drive North of SR 84

- Widen University Drive from westbound SR 84 to north of Federated Road to add a fourth northbound and southbound through lane.
- Replace buffered bicycle lanes along University Drive northbound and southbound for the limits.
- Add sidewalk where it does not exist along University Drive between Peters Road and Federated Road.
- Replace bus bays where they currently exist.
- Construct three bus shelters at BCT bus stops without a shelter. The first is located on the west side of University Drive just south of Peters Road, the second is located on the west side of University Drive just north of Peters Road, and the third is located on the west side of University Drive just south of Federated Road.
- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.

University Drive and Peters Road Intersection (Add Lanes At-Grade Concept)

- Widen University Drive to add a fourth northbound and southbound through lane through the intersection.
- Add a second northbound right-turn lane & overlap phase with signal head.
- Add a third westbound left-turn lane on Peters Road.
- Add an overlap phase with signal head for the eastbound right-turn lanes.
- Include sidewalk and bicycle lanes on all approaches where it exists currently.
- Replace bus bays where they currently exist.

Figure 2 shows the project area without the recommended project improvements. Figure 3 shows a conceptual plan of the project improvements as well as typical sections.

EB SR 84

I-595

WB SR 84

PETERS ROAD

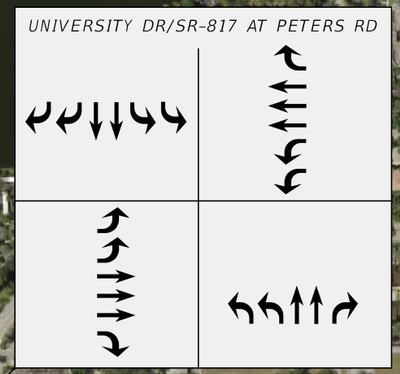
THE FOUNTAINS

FEDERATED ROAD

BROWARD BOULEVARD

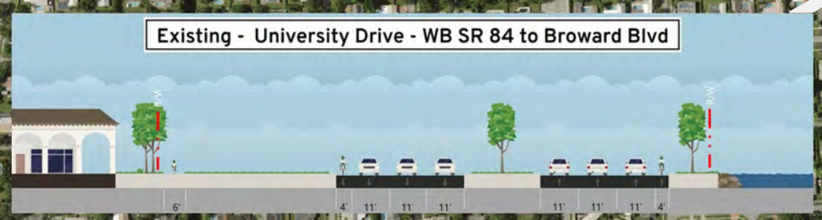
UNIVERSITY DRIVE

UNIVERSITY DR/SR-817 AT PETERS RD

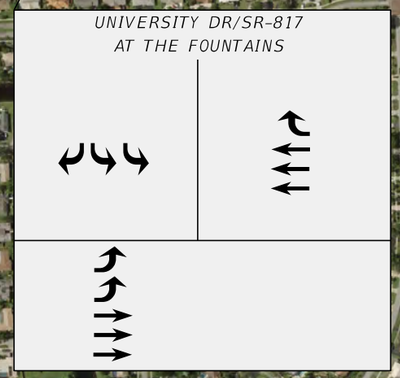


NOT TO SCALE

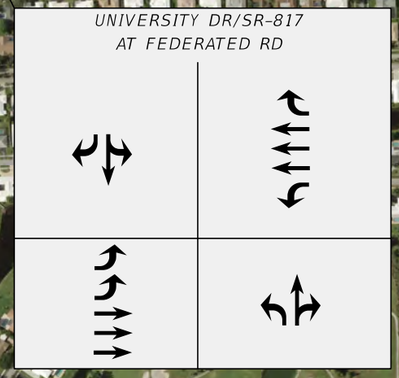
Existing - University Drive - WB SR 84 to Broward Blvd



UNIVERSITY DR/SR-817
AT THE FOUNTAINS



UNIVERSITY DR/SR-817
AT FEDERATED RD



LEGEND

EXISTING (2019) LANE CONFIGURATION (BLACK)

PLANNED OR PROGRAMMED PROJECTS (RED)
(TO BE CONSTRUCTED BEFORE
RECOMMENDED IMPROVEMENTS)

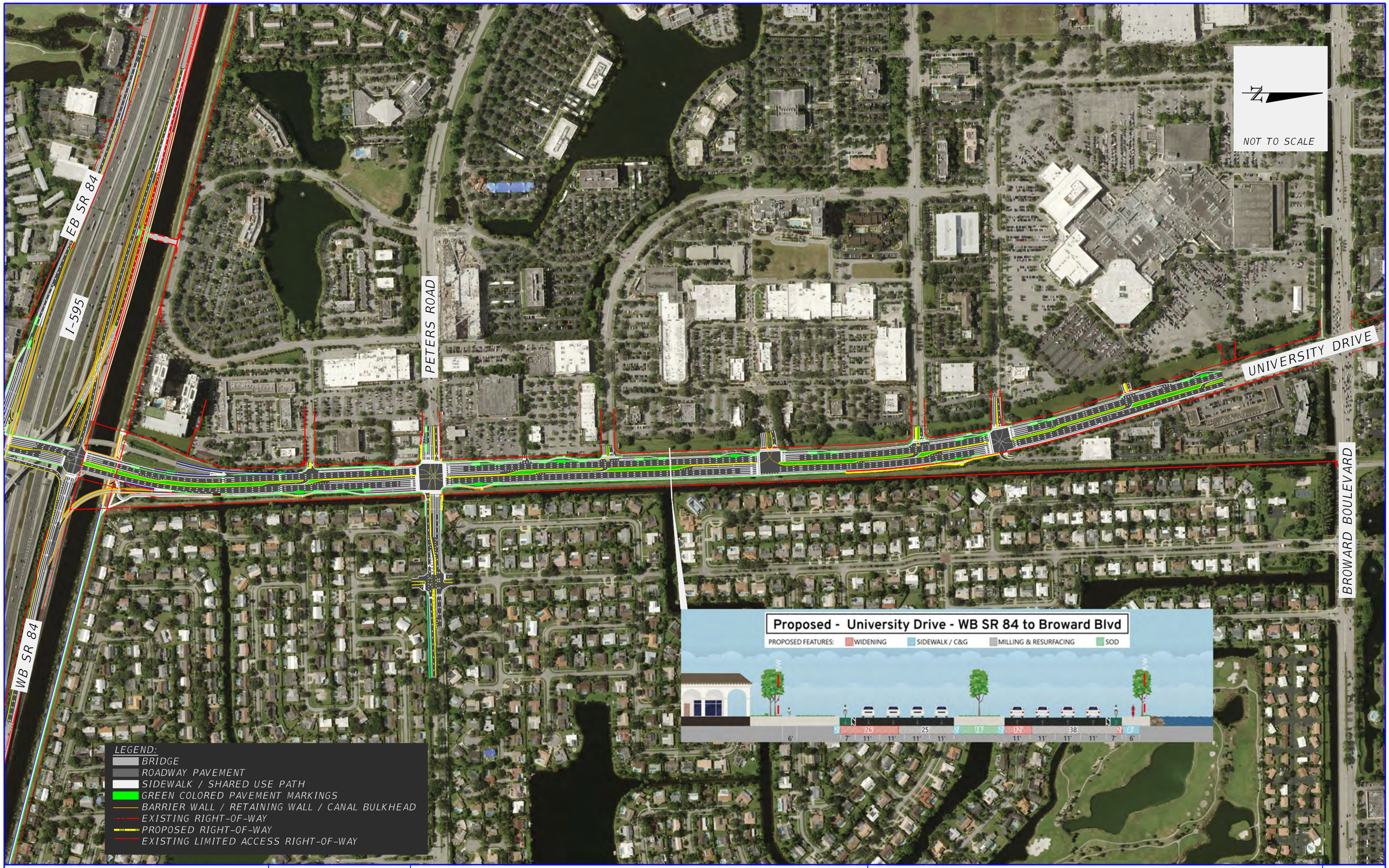
Broward MPO
Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

UNIVERSITY DRIVE NORTH OF SR 84 TO BROWARD BOULEVARD EXISTING CONDITION & PLANNED IMPROVEMENTS

FIGURE 2



Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

UNIVERSITY DRIVE NORTH OF SR 84 TO BROWARD BOULEVARD IMPROVEMENTS

FIGURE 3

7. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The University Drive improvements between SR 84 and Broward Boulevard will improve safety and reduce congestion for vehicular traffic. In addition, safety will be improved for pedestrians, bicyclists, and transit users. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 2.

Table 2: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion, does not meet LOS D in 2045-operates at LOS F • Does not improve safety for bicyclists, pedestrians, or vehicles • Does not improve connectivity for pedestrians, bicyclists, or vehicles
Build	• 2045 Traffic Operations – Significantly reduces delay & congestion • Improves safety for pedestrians, bicyclists, vehicles • Enhances connectivity for pedestrians, bicyclists, vehicles	• Right-of-way impact • Potential for noise impact • Cost

8. PROJECT CONSIDERATIONS

Based on a conceptual design of the University Drive project improvements, additional right-of-way would need to be acquired to implement the improvements. The locations listed below describe where additional right-of-way would be needed to implement the recommended concept.

- At University Drive and Peters Road, a minor corner clip in all four corners.
- Along the east side of University Drive south of Federated Road for replacing the bus bay and sidewalk.

Anticipated environmental impacts also need to be considered. Potential environmental impacts to be further evaluated during the next phase of the project include impacts to wetlands and other surface waters, floodplains, noise sensitive sites, and protected species and habitat.

9. COST AND FUNDING INFORMATION

A Project Development and Environment (PD&E) Study is recommended as the next phase of the improvement project. The purpose of the PD&E Study is to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). It is recommended for this project to be included with the PD&E study for the University Drive and SR 84/I-595 interchange improvement project. As such, the estimated cost for the PD&E phase is $3.0 million.

Following the PD&E phase, the project will advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase is $1.6 million. Typically, acquisition of right-of-way occurs concurrent with or just after the design phase before the project moves into construction. A cost estimate for right-of-way acquisition for this project has not yet been determined. The construction cost estimate is $11.5 million, and cost for construction engineering inspection services during construction is $1.8 million. The total project cost, excluding the PD&E Study and right-of-way costs, is approximately $14.9 million in year 2021 dollars.

The improvements are proposed along the roadways of University Drive and Peters Road. University Drive is under the jurisdiction of the State of Florida, and Peters Road is under the jurisdiction of Broward County. University Drive as part of the state highway system and national highway system, is eligible for state and federal funds. Funding for the project would need to be pursued through the standard Broward MPO project prioritization process. There is also opportunity for local funding to be provided for the project from Broward County.

ATTACHMENT 14

Project #14 - Implementation Package for Davie Road and Nova Drive Intersection Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 14
Davie Road and Nova Drive Intersection Improvements

Broward MPO
Metropolitan Planning Organization

FDOT

PROJECT IMPLEMENTATION PACKAGE
DAVIE ROAD AND NOVA DRIVE INTERSECTION IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The Davie Road and Nova Drive intersection improvement project is located within the Town of Davie, Florida. The limits of the improvements extend along Davie Road from approximately 1,500 feet north of Nova Drive to approximately 1,500 feet south of Nova Drive. The project limits also extend along eastbound and westbound Nova Drive from approximately 500 feet west of Davie Road to approximately 100 feet east of Davie Road. The limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISITING CONDITIONS

Davie Road is a Broward County minor arterial roadway. Davie Road north of Nova Drive is a six-lane divided roadway and it is a four-lane undivided roadway south of Nova Drive. Davie Road has sidewalks present along both sides of the roadway. Bicycle lanes are present along both sides of Davie Road except north of Reese Road along the west side where sharrows are provided in lieu of a designated bicycle lane.

Nova Drive is a four-lane divided Broward County minor collector with sidewalks and bicycle lanes on both sides of the roadway west of Davie Road.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to preserve mobility and improve safety along Davie Road for all modes of travel through the future year planning horizon.

The need for this project is to accommodate future transportation demand in the study area, add intersection capacity to prevent backups to the Davie Road and SR 84/I-595 interchange, and maintain safe bicycle, pedestrian, and transit facilities at the intersection.

The project is needed by year 2025, therefore, it has been identified as a mid-term need. The Davie Road intersection at Nova Drive currently operates at a Level of Service (LOS) C during the AM peak hour and a LOS D during the PM peak hour. However, by the 2045 planning horizon, without any improvements the intersection will operate at a LOS F during AM and PM peak hours. In addition, this intersection is a location with high crash concentration averaging 18 crashes per year. Improvements will potentially reduce crashes related to congestion along Davie Road.

4. CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire Davie Road corridor, were identified as part of the study. These included improvements to the SR 84/I-595 interchange, Nova Drive intersection improvements, and multimodal sidewalk and bus stop improvements. The needed Davie Road corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

<u>Davie Road Multimodal Improvements</u>

- Replace existing bicycle lanes along Davie Road where they currently exist.
- Widen sidewalk to be a shared use path width for both bikes and pedestrians through the interchange area (northbound, southbound, eastbound).
- Provide shelters for six BCT bus stops along Davie Road between SR 84 and south of Nova Drive.
- Replace sidewalk along both sides of Davie Road.

<u>Davie Road and Nova Drive Intersection Improvements</u>

- Add a third northbound through lane.
- Add a second northbound left-turn lane.
- Add a second southbound left-turn lane.
- Add a second southbound right-turn lane.
- Add a second eastbound left-turn lane.
- Replace existing bicycle lanes along Davie Road where they currently exist.

Davie Road and SR 84/I-595 Interchange Improvements

- Add new eastbound SR 84 overpass – includes a new bridge structure for traffic to travel over Davie Road.
- Reconfigure the westbound SR 84 and Davie Road signalized intersection as noted below.
  - Westbound: Widen approach from four lanes to five lanes and eliminate the one free flowing through lane (turbo lane). Replace with three westbound through lanes and two exclusive left-turn lanes controlled by the signal.
  - Northbound: Add a third northbound left-turn lane.
- Reconfigure the eastbound SR 84 and Davie Road signalized intersection as noted below.
  - Eastbound: Reconfigure approach to one exclusive left-turn lane, one through lane, one exclusive free-flow right-turn lane.
  - Northbound: Add a third northbound through lane. Design the one exclusive right-turn lane as a free-flow right-turn lane.
  - Southbound: Remove the one existing southbound left-turn lane to use the space for the third northbound left-turn lane.

5. PROJECT SCOPE AND DESCRIPTION

The Davie Road at Nova Drive intersection project scope of work includes the following components described below. Only Davie Road corridor improvements within the Nova Drive intersection area are included in the project scope.

- Add a third northbound through lane.
- Add a second northbound left-turn lane.
- Add a second southbound left-turn lane.
- Add a second southbound right-turn lane.
- Replace existing bicycle lanes along Davie Road where they currently exist.
- Replace sidewalk along both sides of Davie Road.
- Provide shelters for BCT bus stops along Davie Road.

Figure 2 shows the project area without the recommended project improvements. The Town of Davie recently completed a construction project on Nova Drive from east of University Drive to Davie Road. The project added lanes on Nova Drive west of Davie Road and included a second eastbound left-turn lane on Nova Drive at the Davie Road intersection. This background improvement is reflected on Figure 2.

Figure 3 shows a conceptual plan of the project improvements.

NOT TO SCALE

NOVA DRIVE

DAVIE ROAD

DAVIE ROAD AT NOVA DRIVE

LEGEND

- EXISTING (2019) LANE CONFIGURATION (BLACK)
- PLANNED OR PROGRAMMED PROJECTS (RED) (TO BE CONSTRUCTED BEFORE RECOMMENDED IMPROVEMENTS)

Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

DAVIE ROAD AND NOVA DRIVE EXISTING CONDITIONS & PLANNED IMPROVEMENTS

FIGURE 2

NOT TO SCALE

NOVA DRIVE

DAVIE ROAD

LEGEND:
- BRIDGE
- ROADWAY PAVEMENT
- SIDEWALK / SHARED USE PATH
- GREEN COLORED PAVEMENT MARKINGS
- BARRIER WALL / RETAINING WALL / CANAL BULKHEAD
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY

Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

DAVIE ROAD AND NOVA DRIVE INTERSECTION IMPROVEMENTS

FIGURE 3

6. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The Davie Road and Nova Drive intersection improvements will provide a more efficient and less congested route for traffic. In addition, safety will be improved for vehicles by reducing the number of stops (congestion) which will reduce the likelihood of rear end crashes. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion • Operates at LOS F in 2045 peak hours • Does not improve safety for bicyclists, pedestrians, or vehicles
Build	• 2045 Traffic Operations – Reduces delay, congestion, backups, travel times • Meets LOS D in 2045 peak hours • Improves safety for vehicles	• Right-of-way impact • Cost

7. PROJECT CONSIDERATIONS

Based on the recommended improvements, additional right-of-way would need to be acquired to implement the improvements. Additional right-of-way is needed along the east and west sides of Davie Road from north of Nova Drive to south of Nova Drive.

In addition, there are anticipated environmental impacts which need to be considered. Potential environmental impacts to be further evaluated during the next phase of the project include impacts to other surface waters, and protected species and habitat. Environmental impacts are anticipated to be minimal.

8. COST AND FUNDING INFORMATION

It is recommended that this intersection project be evaluated as a part of a PD&E Study for the adjacent Davie Road and SR 84/I-595 interchange project. The purpose of the PD&E Study is to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). Following the PD&E phase, the project may advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase for the intersection is $831,000. Typically, acquisition of right-of-way occurs concurrent with or just after the design phase before the project moves into construction. A cost estimate for right-of-way acquisition for this project has not yet been determined. The construction cost estimate is $4.1 million, and cost for construction engineering inspection services during construction is $734,000. The total project cost, excluding the PD&E Study and right-of-way costs, is approximately $5.66 million in year 2021 dollars.

The improvements are proposed primarily along Davie Road with minor improvements to Nova Drive. Both Davie Road and Nova Drive are under the jurisdiction of Broward County, and the project could be funded by the local agency which owns the roadway. Alternatively, federal and/or state funds could be pursued through the standard Broward MPO project prioritization process to receive funding for this project.

ATTACHMENT 15

Project #15 - Implementation Package for Davie Road and SR 84 / I-595 Interchange Project

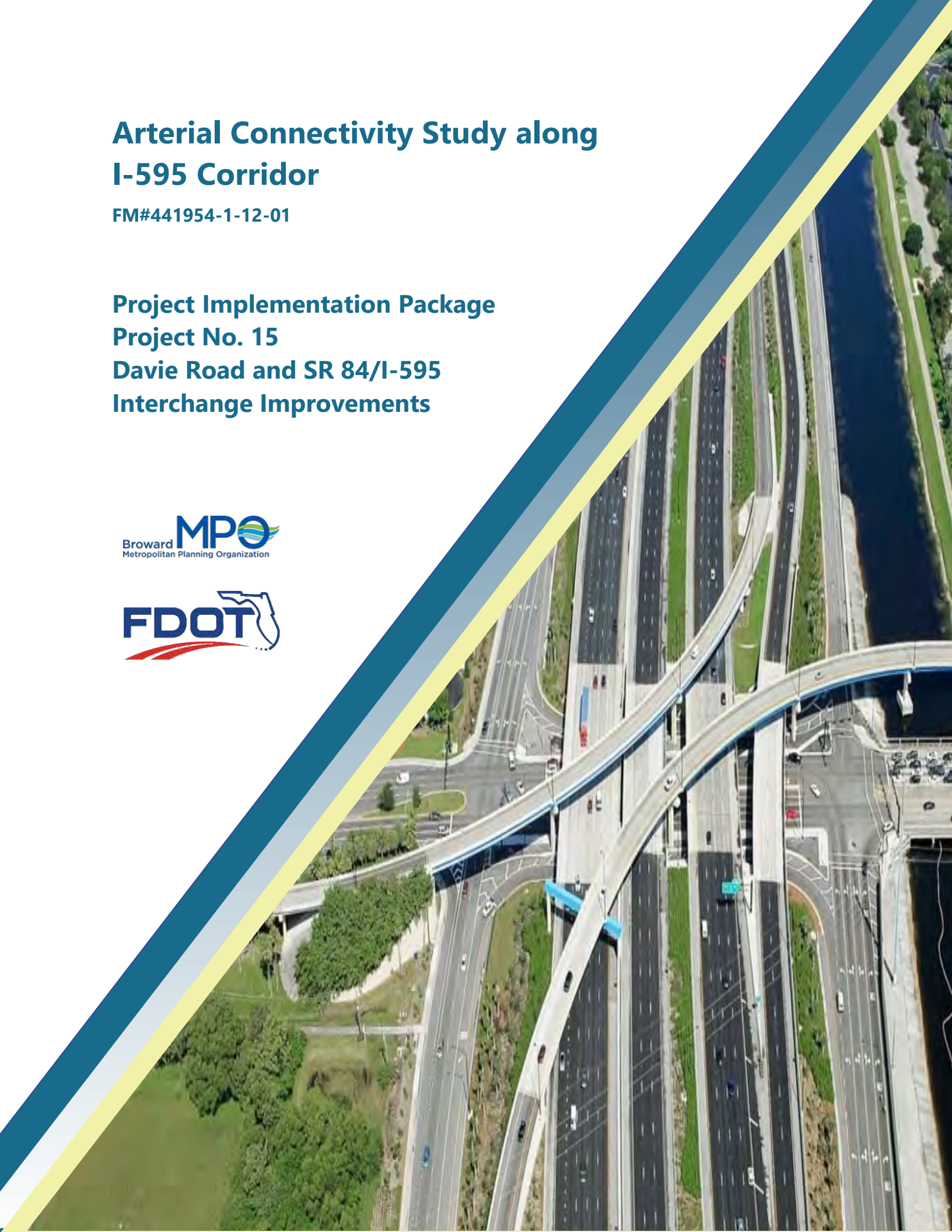
Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 15
Davie Road and SR 84/I-595 Interchange Improvements

Broward MPO
Metropolitan Planning Organization

FDOT



PROJECT IMPLEMENTATION PACKAGE
DAVIE ROAD AND SR 84/I-595 INTERCHANGE IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The Davie Road and SR 84/I-595 interchange improvement project is located within the Town of Davie, Florida. The limits of the improvements extend along Davie Road approximately 500 feet south of the eastbound SR 84 intersection to Reese Road. The project limits also extend along eastbound and westbound SR 84 from approximately 2,500 feet west of Davie Road to approximately 1,500 feet east of Davie Road. The limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

Davie Road is a Broward County minor arterial. Davie Road south of SR 84 is a six-lane divided roadway within the project limits. Sidewalk is present along both sides of Davie Road within the project limits. Bicycle lanes are not present along Davie Road. However, sharrow pavement markings are present along southbound Davie Road between SR 84 and Reese Road. The Davie Park and Ride lot is located in the southeast corner of Davie Road and eastbound SR 84. Broward County Transit buses stop at the Park and Ride lot.

SR 84 eastbound is a one-way, generally two-lane roadway within the project limits, and SR 84 westbound is a one-way, generally three-lane roadway within the project limits. SR 84 (eastbound and westbound) is a minor arterial which is part of the state highway system. Along SR 84 eastbound, sidewalk is present west of Davie Road and for a short distance (100 feet) east of Davie Road. Sidewalk is present along SR 84 westbound. A bicycle lane is present along SR 84 eastbound, west of Davie Road, but not east of Davie Road. A shoulder is present for bicycle traffic along SR 84 westbound. Bicycle and pedestrian traffic along westbound SR 84 are encouraged to use the adjacent New River Greenway.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to improve safety and relieve congestion at the interchange by reducing existing and future motorist delay, travel time and queuing along Davie Road and eastbound SR 84, while maintaining safe and efficient access to and from I-595.

The need for this project is to accommodate existing and future transportation demand in the study area, add capacity to provide congestion relief, and improve safety for all modes.

The need for the project is immediate given the existing year (2019) Level of Service (LOS) analysis results. The Davie Road intersection with eastbound SR 84 is operating at a LOS F during both the AM and PM peak hours and will become significantly worse by the 2045 planning horizon without any improvements. The Davie Road intersection with westbound SR 84 operates at LOS D during both the AM and PM peak hours. By 2045, the intersection will operate at LOS F during both peak hours. In addition, this interchange is a location with high crash concentration averaging 45 crashes per year at westbound SR 84, and 51 crashes per year at eastbound SR 84. Improvements will potentially reduce crashes related to congestion along Davie Road and SR 84.

4. CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire Davie Road corridor from south of Nova Drive to SR 84, and along the entire SR 84 corridor within the study area were identified as part of the study. These included improvements to the SR 84/I-595 interchange, an intersection improvement at Nova Drive, and multimodal sidewalk and bus stop improvements. The needed Davie Road corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

Davie Road Multimodal Improvements

- Replace existing bicycle lanes along Davie Road where they currently exist.
- Widen sidewalk to be a shared use path width for both bikes and pedestrians through the interchange area (northbound, southbound, eastbound).
- Provide shelters for six BCT bus stops along Davie Road between SR 84 and south of Nova Drive.

Davie Road and SR 84/I-595 Interchange Improvements

- Add new eastbound SR 84 overpass – includes a new bridge structure for traffic to travel over Davie Road.
- Reconfigure the westbound SR 84 and Davie Road signalized intersection as noted below.
    - Westbound: Widen approach from four lanes to five lanes and eliminate the one free flowing through lane (turbo lane). Replace with three westbound through lanes and two exclusive left-turn lanes controlled by the signal.
    - Northbound: Add a third exclusive left-turn lane.
- Reconfigure the eastbound SR 84 and Davie Road signalized intersection as noted below.
    - Eastbound: Reconfigure approach to one exclusive left-turn lane, one through lane, one exclusive free-flow right-turn lane.
    - Northbound: Redesign the existing shared through/right-turn lane as a dedicated through lane, and add a northbound through lane, resulting in three dedicated. Redesign the one exclusive right-turn lane as a free-flow right-turn lane.
    - Southbound: Remove the one existing left-turn lane to use the space for the third exclusive left-turn lane.

Davie Road and Nova Drive Intersection Improvements

- Add a third northbound through lane.
- Add a second northbound exclusive left-turn lane.
- Add a second southbound exclusive left-turn lane.
- Add a second southbound exclusive right-turn lane.
- Add a second eastbound exclusive left-turn lane.
- Replace existing bicycle lanes along Davie Road where they currently exist.

5. INTERCHANGE ALTERNATIVES EVALUATED

Multiple alternatives were evaluated for improving the Davie Road and SR 84 I-595 interchange. Addressing the capacity and operational issues were challenging to address at this location due to limited right-of-way and multiple critical properties located adjacent to the interchange that could not be impacted. These include a cemetery in the southwest corner, a Park and Ride lot in the southeast corner, and a historic park on the north side of westbound SR 84 west of Davie Road. The following two interchange configurations were evaluated to determine a recommended mitigation concept.

1. Diverging Diamond Interchange (DDI) with Overpass
2. Diamond Interchange with Lane Modifications and Overpass

To address the SR 84 interchange deficiencies, the diamond interchange with lane modifications and overpass is recommended for further analysis, design, and implementation.

Table 1 summarizes the advantages and disadvantages of the two Davie Road at SR 84/I-595 interchange concepts.

Table 1: Comparison of Interchange Concept's Advantages and Disadvantages at Davie Road and SR 84/I-595

Alternatives	Advantages	Disadvantages
1) Diverging Diamond Interchange	• Increases capacity for Davie Road at SR 84 • Improves LOS and reduces delay • Avoids impacting Sewell Lock Park • Avoids impacting cemetery	• Indirect path for pedestrians to cross traffic. • Challenging design for an eastbound through lane through the crossover signal • Short distance for westbound turbo lane to merge into three free-flow northbound left-turn lanes. • Does not achieve LOS D in 2045 peak hours. A signal phase must be provided for EB through movement • Possibility of wrong way movements • Pedestrian crossings at free flow lanes require ped push button activated signals
2) Diamond Interchange with Lane Modifications and Overpass	• Increases capacity for Davie Road at SR 84 • Improves LOS and reduces delay, meets LOS D in 2045 peak hours. • Avoids impacting Sewell Lock Park • Avoids impacting cemetery	• Eliminates westbound SR 84 turbo lane • Pedestrian crossings at free flow lanes require ped push button activated signals

NOTE: Both alternatives include the following improvements:

1) *Shared use path provided through interchange at SR 84.*
2) *Eastbound SR 84 overpass.*

6. PROJECT SCOPE / DESCRIPTION

The Davie Road and SR 84/I-595 modified diamond interchange with overpass project scope of work includes the following components listed below. Only Davie Road corridor improvements that are located within the interchange influence area are included in the project scope.

- Add new eastbound SR 84 overpass – includes a new bridge structure for traffic to travel over Davie Road.
- Reconfigure the westbound SR 84 and Davie Road signalized intersection as noted below.
  - Westbound: Widen approach from four lanes to five lanes and eliminate the one free flowing through lane (turbo lane). Replace with three westbound through lanes and two exclusive left-turn lanes controlled by the signal.
  - Northbound: Add a third exclusive left-turn lane.

- Reconfigure the eastbound SR 84 and Davie Road signalized intersection as noted below.
    - Eastbound: Reconfigure approach to one exclusive left-turn lane, one through lane, one exclusive free-flow right-turn lane.
    - Northbound: Redesign the existing shared through/right-turn lane as a dedicated through lane, and add a northbound through lane, resulting in three dedicated. Redesign the one exclusive right-turn lane as a free-flow right-turn lane.
    - Southbound: Remove the one existing southbound left-turn lane to use the space for the third northbound left-turn lane.
- Widen sidewalk to be a shared use path width for both bicyclists and pedestrians through the interchange area (northbound, southbound, eastbound).
- Provide shelters for BCT bus stops along Davie Road.

Figure 2 shows the project area without the recommended project improvements. Figure 3 shows a conceptual plan of the project improvements with typical section.

DAVIE ROAD AT WB SR-84

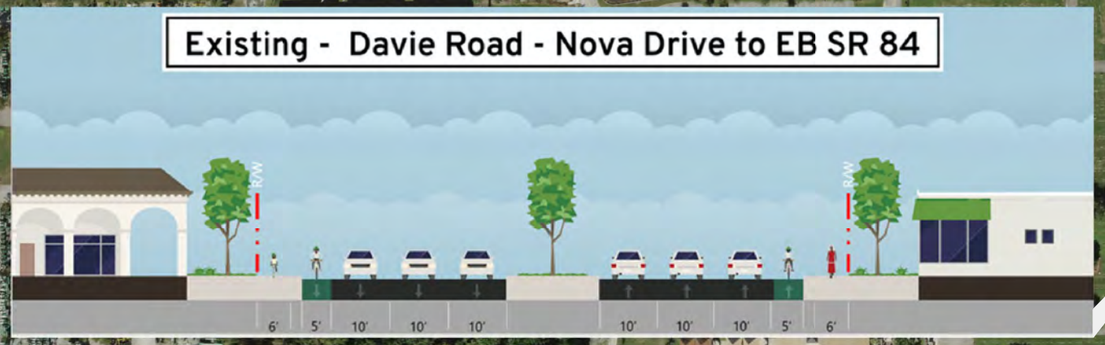
NOT TO SCALE

WB SR 84

I-595

EB SR 84

Existing - Davie Road - Nova Drive to EB SR 84



DAVIE ROAD AT REESE RD

DAVIE ROAD AT EB SR-84

LEGEND

- EXISTING (2019) LANE CONFIGURATION (BLACK)
- PLANNED OR PROGRAMMED PROJECTS (RED) (TO BE CONSTRUCTED BEFORE RECOMMENDED IMPROVEMENTS)
- FREE-FLOW LANE (GREEN)

Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

DAVIE ROAD AND SR 84/I-595 EXISTING CONDITIONS & PLANNED IMPROVEMENTS

FIGURE 2

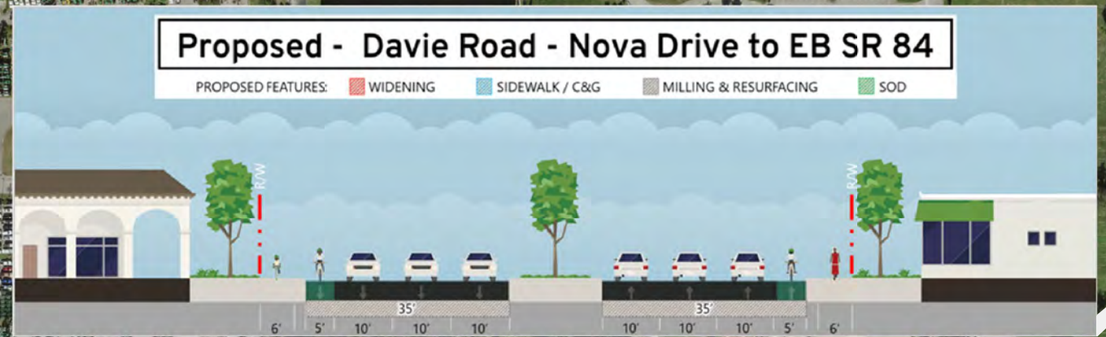
NOT TO SCALE

I-595

DAVIE ROAD

Proposed - Davie Road - Nova Drive to EB SR 84

PROPOSED FEATURES: WIDENING SIDEWALK / C&G MILLING & RESURFACING SOD



LEGEND:
- BRIDGE
- ROADWAY PAVEMENT
- SIDEWALK / SHARED USE PATH
- GREEN COLORED PAVEMENT MARKINGS
- BARRIER WALL / RETAINING WALL / CANAL BULKHEAD
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- EXISTING LIMITED ACCESS RIGHT-OF-WAY

Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

DAVIE ROAD AND SR 84/I-595 INTERCHANGE IMPROVEMENTS

FIGURE 3

7. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The Davie Road and SR 84/I-595 interchange improvements can provide a more efficient and less congested route for traffic on Davie Road, as well as on SR 84. In addition, safety will be improved for vehicles by reducing the number of stops (congestion) which will reduce the likelihood of rear end crashes. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 2.

Table 2: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruption	• Long delays & congestion • Operates at LOS F in 2045 peak hours • Does not improve safety for bicyclists, pedestrians, or vehicles • Does not improve connectivity for pedestrians, bicyclists, or vehicles
Build	• 2045 Traffic Operations – Reduces delay, congestion, backups, travel times • Meets LOS D in 2045 peak hours • Improves safety for vehicles	• Right-of-way impact • Cost

8. PROJECT CONSIDERATIONS

Based on a conceptual design of the improvements, additional right-of-way would need to be acquired to implement the improvements. Additional right-of-way would be needed along the east side of Davie Road between SR 84 and Reese Road.

In addition, there are anticipated structural and environmental impacts which need to be considered. One new structure is required as part of the improvements: a roadway bridge for eastbound SR 84 traffic to cross over Davie Road. Potential environmental impacts to be further evaluated during the next phase of the project include impacts to noise sensitive sites, protected species and habitat and potential visual impacts.

9. COST AND FUNDING INFORMATION

A Project Development and Environment (PD&E) Study is recommended as the next phase of the improvement project. The purpose of the PD&E Study is to further

evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). It is recommended that this PD&E study also include the improvement project at Davie Road and Nova Drive. As such, the estimated cost for the PD&E phase is $2.0 million.

Following the PD&E phase, the project will advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase is $2.9 million. Typically, acquisition of right-of-way occurs concurrent with or just after the design phase before the project moves into construction. A cost estimate for right-of-way acquisition for this project has not yet been determined. The construction cost estimate is $21.6 million, and cost for construction engineering inspection services during construction is $3.3 million. The total project cost, excluding right-of-way costs, is approximately $29.8 million in year 2021 dollars.

The improvements are proposed along the roadways of Davie Road and SR 84. Davie Road is under the jurisdiction of Broward County. SR 84 is under the jurisdiction of the State of Florida.

Much of the roadway modification work is proposed along SR 84. SR 84 is an integral part of the I-595 Strategic Intermodal System (SIS) corridor, and functions as a collector-distributor roadway providing access to and from I-595 via the interchange with Davie Road. The project will improve Davie Road, SR 84, and I-595. State of Florida SIS program funds may be sought as a source of funding for the project. However, eligibility for SIS program funding must still be evaluated by FDOT. If the project is determined to be eligible, then the project may be proposed for SIS funding and can compete with other eligible projects statewide for SIS funding. If the project is determined not to be eligible for SIS funding, then other federal, state, or local funds would need to be pursued through the standard Broward MPO project prioritization process. There is opportunity for local funding to also be provided for the project from Broward County.

ATTACHMENT 16

Project #16 - Implementation Package for SR 7/US-441 at Oakes Road Intersection Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 16
SR 7/US-441 and Oakes Road Intersection Improvements

Broward MPO
Metropolitan Planning Organization

FDOT

PROJECT IMPLEMENTATION PACKAGE
SR 7/US-441 AND OAKES ROAD INTERSECTION IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The SR 7/US-441 and Oakes Road intersection improvement project is located within the Town of Davie, Florida. The intersection is situated south of I-595/SR 84, east of Florida's Turnpike and west of I-95. The limits of the improvements extend along SR 7/US-441 from approximately 800 feet south of the existing Oakes Road intersection, to approximately 3,800 feet north of Oakes Road intersection. The project limits also extend approximately 2,200 feet along the off-ramp from Florida's Turnpike to southbound SR 7/US-441, 2,000 feet along the off-ramp from eastbound I-595/SR 84 to southbound SR 7/US-441, 3,000 feet along the on-ramp from northbound SR 7/US-441 to eastbound I-595/SR 84, and 2,600 feet along the on-ramp from northbound SR 7/US-441 to westbound I-595/SR 84. The limits of the project also include Oakes Road from SR 7/US-441 to approximately 1,600 feet west of SR 7/US-441. The limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

SR 7/US-441 within the study limits is a six-lane divided principal arterial which is part of the state highway system. SR 7/US-441 has sidewalk along the west side south of Oakes Road. However, sidewalk is missing on the west side of SR 7/US-441 north of Oakes Road, and along the east side of SR 7/US-441 north and south of Oakes Road. Designated bicycle lanes are present along both sides of SR 7/US-441 south of Oakes Road. North of Oakes Road, a shoulder is present for bicyclists on both sides. However, there are multiple conflict points for bicyclists to navigate with high-speed traffic that is free-flowing to and from on- and off-ramps that connect to SR 7/US-441 north of Oakes Road. A Broward County Transit bus stop is located on both sides of SR 7/US-441 south of Oakes Road.

Oakes Road is a four-lane divided Town of Davie local roadway. Oakes Road has sidewalk along the south-west side west of SR 7/US-441. Bicycle lanes are not present within the project limits.

The Florida's Turnpike and I-595/SR 84 on- and off-ramps that connect with SR 7/US-441 are one and two-lane limited access principal arterials that are part of the state interstate system.

The Florida Department of Transportation is currently designing improvements at the intersection of SR 7/US-441 and Oakes Road, that will be constructed within the next few years. The project will add a second eastbound exclusive left-turn lane on Oakes Road at SR 7/US-441 and will add sidewalk and bicycle facilities along SR 7/US-441 north of Oakes Road.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to preserve safety and mobility at the intersection of SR 7/US-441 and Oakes Road through the year 2045 planning horizon; provide more efficient access between the 595 Truck Stop and Florida's Turnpike, I-595, and SR 84; and maintain safe and efficient access through the interchange of SR 7/US-441 with I-595, SR 84, and Florida's Turnpike.

The need for this project is to accommodate future transportation demand and increase intersection capacity to reduce delay and minimize backups on SR 7/US-441 and Oakes Road. This project will also provide additional bicycle, pedestrian, and transit facilities.

The intersection improvement project currently under design by FDOT will delay the need for improvements until after year 2040. This project is needed by year 2045 to

maintain operations at LOS D or better. Therefore, it has been identified as a long-term need. This intersection currently operates at a Level of Service (LOS) D during both the AM and PM peak hours. However, by the 2045 planning horizon the intersection will operate at LOS E during the AM peak hour and LOS F during the PM peak hour. In addition, this intersection is a location with high crash concentration averaging 31 crashes per year. The improvements will reduce delay and potentially improve safety at the intersection.

4. CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire SR 7/US-441 corridor from Oakes Road to Riverland Road were identified as part of the study. These include intersection improvements at Oakes Road and at Riverland Road, as well as multimodal sidewalk, bicycle lane, and bus stop improvements. The needed SR 7/US-441 corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

SR 7/US-441 and Oakes Road Intersection Improvements

The long-term improvements will create a new Oakes Road North signalized intersection at SR 7, separate the Oakes Road intersection turning movements into two signalized intersections with SR 7 (Oakes Road North, and Oakes Road South), and create a new unsignalized intersection of Oakes Road South at Oakes Road North.

- New Oakes Road North at SR 7 signalized intersection to consist of:
  - Eastbound: Two exclusive left-turn lanes.
  - Northbound: Four northbound through lanes. The outer two lanes must be signed and marked as I-595 / SR 84 on-ramp lanes.
  - Southbound: One exclusive right-turn lane and three through lanes.
- Oakes Road South at SR 7 signalized intersection to consist of:
  - Eastbound: One exclusive right-turn lane.
  - Northbound: One exclusive left-turn lane and three through lanes.
  - Southbound: Three through lanes.
- New Oakes Road South at Oakes Road North unsignalized intersection to consist of:
  - Two-way stop control on the minor north and south approaches.
  - Eastbound: One shared through/right-turn lane, and one shared through/left-turn lane.

  - Northbound: One shared left-turn/ through/ right-turn lane.
  - Westbound: One shared through/right-turn lane, and one shared through/left-turn lane.
  - Southbound: One shared left-turn/ through / right-turn lane.

- Reconstruct Oakes Road, extending it directly east to intersect SR 7 from the current east-west alignment, and reconstructing the S-curve section of Oakes Road South to intersect at approximately 90 degrees at Oakes Road North.
- Reconstruct three existing driveways along the north side of Oakes Road, including the Town of Davie fire station driveway.
- Realign the Turnpike off-ramp to southbound SR 7 to create separation between the off-ramp merge point with SR 7 and the new Oakes Road North intersection. This distance would help vehicles coming from the Turnpike ramp merge into southbound SR 7 and get into the correct lane to either turn right at Oakes Road North or continue south on SR 7.
- Realign the northbound SR 7 on-ramp, to Turnpike and eastbound I-595, to create separation and a longer distance between the intersection and the ramp diverge point. This distance would help vehicles turning from North Oakes Road get into the correct lane to either enter Florida's Turnpike/I-595 or continue north on SR 7.
- Replace any impacted shared use path along SR 7.
- Replace existing bicycle lane keyholes at the intersection approaches.
- Provide a bus bench at the one bus stop location without a bench south of Oakes Road and provide shelters at the other three bus stops located at Oakes Road and south of Oakes Road.

<u>SR 7/US-441 and Riverland Road Intersection Improvements</u>

The improvements include the following modifications at the intersection.

- Add a second northbound exclusive left-turn lane.
- Add second southbound exclusive left-turn lane.
- Add an eastbound exclusive right-turn lane on SW 20th Street.
- Restripe the westbound Riverland Road approach as two exclusive left-turn lanes and one shared through/right-turn lane.
- Add or replace sidewalk along SR 7 and along Riverland Road in all four corners.
- Provide high emphasis crosswalks all four legs of intersection since the intersection is a designated school crossing with many pedestrians.

- Add a fourth lane northbound and southbound along SR 7 from the Turnpike/SR 84/I-595 ramps south of Riverland Road through the intersection to approximately 1,600 feet north of Riverland Road.
- The Turnpike/SR 84 off-ramp to northbound SR 7 will remain two-lanes and where it merges with northbound SR 7 this ramp will add two lanes to the three northbound SR 7 through lanes. At the intersection one of the five northbound lanes will end as the right-turn lane at Riverland Road.
- The fourth southbound through lane will extend through the intersection and end as it becomes one of two lanes that make up the Turnpike/westbound SR 84/I-595 on-ramp.
- Replace any impacted shared use path along SR 7.
- Replace existing bicycle lane keyholes at the intersection approaches.
- Provide a bus bench at the three bus stop locations without a bench north of Riverland Road and provide shelters at the four bus stops that do not have shelters north of Riverland Road.

5. PROJECT SCOPE / DESCRIPTION

The SR 7/US-441 at Oakes Road intersection project scope of work includes the following components listed below. Only improvements to the SR 7/US-441 and Oakes Road intersection are included in the project scope.

- New Oakes Road North at SR 7 signalized intersection to consist of:
  - Eastbound: Two exclusive left-turn lanes.
  - Northbound: Four northbound through lanes. The outer two lanes must be signed and marked as I-595 / SR 84 on-ramp lanes.
  - Southbound: One exclusive right-turn lane and three through lanes.
- Oakes Road South at SR 7 signalized intersection to consist of:
  - Eastbound: One exclusive right-turn lane.
  - Northbound: One exclusive left-turn lane and three through lanes.
  - Southbound: Three through lanes.
- New Oakes Road South at Oakes Road North unsignalized intersection to consist of:
  - Two-way stop control on the minor north and south approaches.
  - Eastbound: One shared through/right-turn lane, and one shared through/left-turn lane.
  - Northbound: One shared left-turn/ through / right-turn lane.
  - Westbound: One shared through/right-turn lane, and one shared through/left-turn lane.

  - Southbound: One shared left-turn/ through / right-turn lane.
- Reconstruct Oakes Road, extending it directly east to intersect SR 7 from the current east-west alignment, and reconstructing the S-curve section of Oakes Road South to intersect at approximately 90 degrees at Oakes Road North.
- Reconstruct three existing driveways along the north side of Oakes Road, including the Town of Davie fire station driveway.
- Realign the Turnpike off ramp to southbound SR 7 to create separation between the off-ramp merge point with SR 7 and the new Oakes Road North intersection. This distance would help vehicles coming from the Turnpike ramp merge into southbound SR 7 and get into the correct lane to either turn right at Oakes Road North or continue south on SR 7.
- Realign the northbound SR 7 on ramp, to Turnpike and eastbound I-595, to create separation and a longer distance between the intersection and the ramp diverge point. This distance would help vehicles turning from North Oakes Road get into the correct lane to either enter Florida's Turnpike/I-595 or continue north on SR 7.
- Replace any impacted shared use path along SR 7.
- Replace existing bicycle lane keyholes at the intersection approaches.
- Provide a bus bench at the one bus stop location without a bench south of Oakes Road and provide shelters at the other three bus stops located at Oakes Road and south of Oakes Road.
- Incorporate TSM&O/ITS devices and signal upgrades with the roadway improvements.

Figure 2 shows the project area without the recommended project improvements. This figure includes the planned turn lane improvement on Oakes Road currently under design by the FDOT.
Figure 3 shows a conceptual plan of the project improvements.

OAKES RD. NORTH

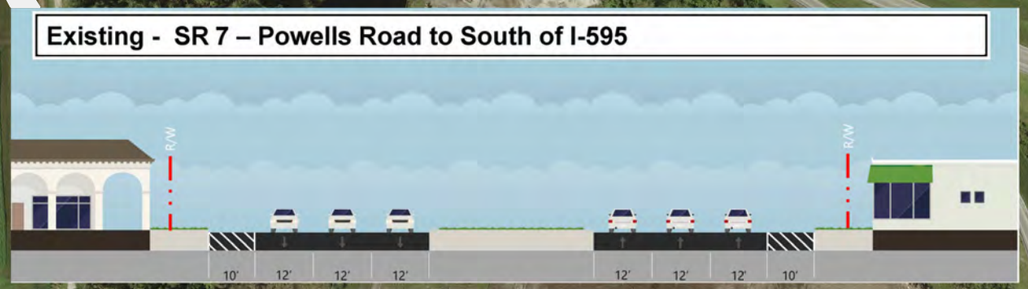
SR-7/US 441 AT OAKES ROAD

NOT TO SCALE

OAKES RD. SOUTH

SR 7/US 441

Existing - SR 7 – Powells Road to South of I-595



LEGEND

- EXISTING (2019) LANE CONFIGURATION (BLACK)
- PLANNED OR PROGRAMMED PROJECTS (RED) (TO BE CONSTRUCTED BEFORE RECOMMENDED IMPROVEMENTS)

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ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR

SR 7/US 441 AND OAKES ROAD EXISTING CONDITIONS & PLANNED IMPROVEMENTS

FIGURE 2

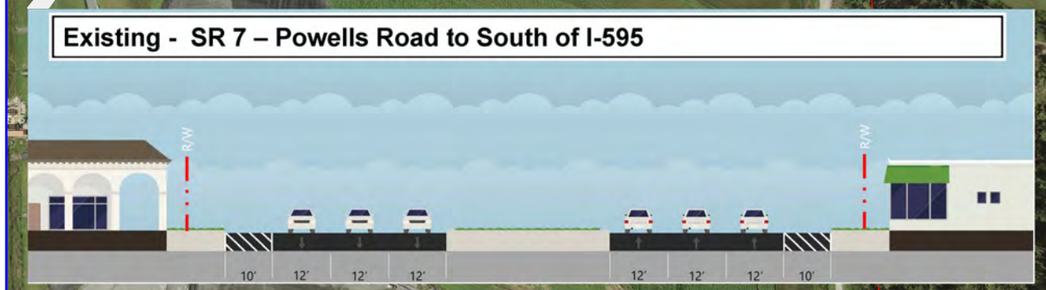
OAKES RD. NORTH

OAKES RD. SOUTH

SR 7/US 441

NOT TO SCALE

Existing - SR 7 – Powells Road to South of I-595



LEGEND:
- BRIDGE
- ROADWAY PAVEMENT
- SIDEWALK / SHARED USE PATH
- GREEN COLORED PAVEMENT MARKINGS
- BARRIER WALL / RETAINING WALL / CANAL BULKHEAD
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY

Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY
ALONG I-595 CORRIDOR

SR 7/US 441 AND
OAKES ROAD INTERSECTION IMPROVEMENTS

FIGURE 3

6. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The SR 7/US-441 and Oakes Road intersection improvements can provide a more efficient and less congested route for traffic on SR 7 through the SR 84/I-595 interchange area. It also improves access for freight trucks traveling to and from the 595 Truck Stop located in the southeast quadrant of SR 84 and Florida's Turnpike. The proposed improvements also improve safety, as the changes would result in less stops for vehicles traveling through the study intersection. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the existing design project improvements. The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
Existing Design Project Improvements	• No additional cost • Reduces delay & some queueing until 2040 • No right-of-way impacts • Improves safety & connectivity for bicyclists, pedestrians, vehicles	• Does not meet LOS D in 2045 peak hours • Only partially addresses truck turning movements to/from Oakes Road
Build	• Further reduces delay, congestion, backups, travel times • Meets LOS D in 2045 peak hours • Further improves safety • Further addresses truck turning movements to/from Oakes Road	• Right-of-way impacts • Pond impact • Access impacts • Interchange ramp impacts • Additional cost

7. PROJECT CONSIDERATIONS

Based on a conceptual design of the SR 7/US-441 and Oakes Road intersection improvements, additional right-of-way would potentially need to be acquired to implement the improvements. Additional right-of-way would be needed along the south side of Oakes Road between SW 46th Avenue and SR 7.

In addition, there are anticipated environmental impacts which need to be considered. Potential environmental impacts to be further evaluated during the next phase of the project include impacts to wetlands and other surface waters and protected species and habitat.

8. COST AND FUNDING INFORMATION

A Project Development and Environment (PD&E) Study is recommended as the next phase of the improvement project. The purpose of the PD&E Study is to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). As part of the PD&E Study, a Non-Interchange Access Request document may be required, because the project involves modifying on- and off-ramps between SR 7/US-441, Florida's Turnpike, and I-595/SR 84. This PD&E study is recommended to include the proposed improvement project at SR 7/US-441 and Riverland Road as well, since both projects are located close together, have similar purpose and need, and will be needed in approximately the same time period in the future. As such, the estimated cost for the PD&E phase is $1.0 million.

Following the PD&E phase, the project will advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase for the SR 7/US-441 and Oakes Road intersection project is $1.5 million. Typically, acquisition of right-of-way occurs concurrent with or just after the design phase before the project moves into construction. A cost estimate for right-of-way acquisition for this project has not yet been determined. The construction cost estimate is $11.1 million, and cost for construction engineering inspection services during construction is $1.7 million. The total project cost, excluding right-of-way costs, is approximately $15.3 million in year 2021 dollars.

The improvements are proposed along the roadways of SR 7/US-441, Oakes Road, and on- and off-ramps between Florida's Turnpike/I-595/SR 84 and SR 7/US-441 south. Oakes Road is under the jurisdiction of the Town of Davie. SR 7/US-441 and the Florida's Turnpike, I-595, and SR 84 on- and off-ramps, are under the jurisdiction of the State of Florida.

The roadway modification work involves SR 7/US-441 and the Florida's Turnpike, I-595, and SR 84 on- and off-ramps, which are all state roadways. Therefore, federal or state funds should be pursued through the standard Broward MPO project prioritization process to receive funding for this project. There is opportunity for local funding to also be provided for the project from the Town of Davie.

ATTACHMENT 17

Project #17 - Implementation Package for SR 7/US-441 at Riverland Road Intersection Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 17
SR 7/US 441 and Riverland Road/ SW 20th Street
Intersection Improvements

Broward MPO
Metropolitan Planning Organization

FDOT

PROJECT IMPLEMENTATION PACKAGE
SR 7/US-441 AND RIVERLAND ROAD/SW 20TH STREET INTERSECTION IMPROVEMENTS

1. PROJECT LOCATION AND LIMITS

The SR 7/US-441 and Riverland Road/SW 20th Street intersection improvement project is located within Broward County, Florida. The intersection is situated north of I-595/SR 84, east of Florida's Turnpike and west of I-95. The limits of the improvements extend along SR 7/US-441 from approximately 3,800 feet south of Riverland Road, to approximately 1,700 feet north of Riverland Road. The project limits also extend along SW 20th Street approximately 400 feet west of SR 7/US-441, and along Riverland Road approximately 700 feet east of SR 7/US-441. The limits of the project are shown in Figure 1.

Figure 1: Project Location Map

2. EXISTING CONDITIONS

SR 7/US-441 within the study limits is a six-lane divided principal arterial which is part of the state highway system. SR 7/US-441 has sidewalk along both sides from north of Riverland Road to SW 21st Street, but sidewalk is missing south of SW 21st Street to I-595/SR 84. There are bicycle lanes present along both sides of SR 7/US-441 north of Riverland Road, but bicycle lanes are missing on the west side of SR7/US-441 south of SW 20th Street to I-595/SR 84. Bicycle lanes are also missing on the east side of SR 7/US-441 south of SW 21st Street to I-595/SR 84. A shoulder is present for bicyclists on both sides of SR 7/US-441 south of SW 21st Street. However, there are multiple conflict points for bicyclists to navigate with high-speed traffic that is free-flowing to and from on- and off-ramps that connect to SR 7/US-441 south of SW 21st Street. A Broward County Transit bus stop is located on the east side of SR 7/US-441 north of Riverland Road, and on the west side of SR 7/US-441 just north of SW 21st Street.

Riverland Road just east of SR 7/US-441 is a two-lane undivided major collector under FDOT jurisdiction. Sidewalk is present along both sides of the roadway within the project limits. There are no bicycle lanes on Riverland Road within the project limits. A Broward County Transit bus stop is located on both sides of Riverland Road east of SR 7/US-441.

SW 20th Street west of SR 7/US-441 is a two-lane undivided local road under the jurisdiction of Broward County. Sidewalk is present along both sides of the roadway, but there are no bicycle lanes on SW 20th Street west of SR 7/US-441.

The Florida's Turnpike and I-595/SR 84 on- and off-ramps that connect with SR 7/US-441 south of SW 21st Street are one and two-lane limited access principal arterials that are part of the state interstate system.

The Florida Department of Transportation is currently designing improvements at the intersection of SR 7/US-441 and Riverland Road, that will be constructed within the next few years. The project will extend a second lane from the eastbound I-595/SR 84 to northbound SR 7 flyover, creating four northbound lanes up to Riverland Road. It also involves reducing the number of SR 7 northbound lanes from three to two lanes prior to the eastbound flyover merging with SR 7. Also, a second westbound exclusive left-turn lane on Riverland Road at SR 7/US-441 is included in this project.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to preserve safety and mobility at the intersection of SR 7/US-441 and Riverland Road through the year 2045 planning horizon and maintain safe and efficient access through the interchange of SR 7/US-441 with I-595, SR 84, and Florida's Turnpike.

The need for this project is to accommodate future transportation demand, increase intersection capacity to reduce delay and minimize backups on SR 7/US-441 and Riverland Road/SW 20th Street. In addition, the project will provide bicycle, pedestrian, and transit facilities.

This project is needed by year 2045 to maintain operations at LOS D or better. Therefore, it has been identified as a long-term need. This intersection currently operates at a Level of Service (LOS) F during the AM peak hour and a LOS E in the PM peak hour. An intersection improvement project currently under design by FDOT will delay the need for this project's improvements until after year 2040. However, by 2045 operations at the intersection will degrade to LOS F and E during the AM and PM peak hours. In addition, this intersection is a location with high crash concentration averaging 38 crashes per year. The improvements will reduce delay and potentially improve safety at the intersection.

4. CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire SR 7/US-441 corridor from Oakes Road to Riverland Road were identified as part of the study. The recommended improvements along SR 7/US-441 include intersection improvements at Oakes Road and Riverland Road, as well as multimodal sidewalk, bicycle lane, and bus stop improvements. The needed SR 7/US-441 corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

SR 7/US-441 and Riverland Road Intersection Improvements

The improvements include the following modifications at the intersection.

- Add a second northbound exclusive left-turn lane.
- Add a second southbound exclusive left-turn lane.
- Add an eastbound exclusive right-turn lane on SW 20th Street, resulting in an exclusive right-turn lane, one through lane, and one exclusive left-turn lane.
- Restripe the westbound Riverland Road approach as two exclusive left-turn lanes and one shared through/right-turn lane.
- Add or replace sidewalk along SR 7 and along Riverland Road in all four corners.

- Provide high emphasis crosswalks all four legs of intersection since the intersection is a designated school crossing with many pedestrians.
- Add a fourth lane northbound and southbound along SR 7 from the Turnpike/SR 84/I-595 ramps south of Riverland Road through the intersection to approximately 1,600 feet north of Riverland Road.
- The Turnpike/SR 84 off-ramp to northbound SR 7 will remain two-lanes and where it merges with northbound SR 7 this ramp will add two lanes to the three northbound SR 7 through lanes. At the intersection one of the five northbound lanes will end as the right-turn lane at Riverland Road.
- The fourth southbound through lane will extend through the intersection and end as it becomes one of two lanes that make up the Turnpike/westbound SR 84/I-595 on-ramp.
- Replace any impacted shared use path along SR 7.
- Replace existing bicycle lane keyholes at the intersection approaches.
- Provide a bus bench at the three bus stop locations without a bench north of Riverland Road and provide shelters at the four bus stops that do not have shelters north of Riverland Road.

SR 7/US-441 and Oakes Road Intersection Improvements

The long-term improvements will create a new Oakes Road North signalized intersection at SR 7, separate the Oakes Road intersection turning movements into two signalized intersections with SR 7 (Oakes Road North, and Oakes Road South), and create a new unsignalized intersection of Oakes Road South at Oakes Road North.

- New Oakes Road North at SR 7 signalized intersection to consist of:
  - Eastbound: Two exclusive left-turn lanes.
  - Northbound: Four northbound through lanes. The outer two lanes must be signed and marked as I-595 / SR 84 on-ramp lanes.
  - Southbound: One exclusive right-turn lane and three through lanes.
- Oakes Road South at SR 7 signalized intersection to consist of:
  - Eastbound: One exclusive right-turn lane.
  - Northbound: One exclusive left-turn lane and three through lanes.
  - Southbound: Three through lanes.

- New Oakes Road South at Oakes Road North unsignalized intersection to consist of:
    - Two-way stop control on the minor north and south approaches.
    - Eastbound: One shared through/right-turn lane, and one shared through/left-turn lane.
    - Northbound: One shared left-turn/ through/ right-turn lane.
    - Westbound: One shared through/right-turn lane, and one shared through/left-turn lane.
    - Southbound: One shared left-turn/ through / right-turn lane.
- Reconstruct Oakes Road, extending it directly east to intersect SR 7 from the current east-west alignment, and reconstructing the S-curve section of Oakes Road South to intersect at approximately 90 degrees at Oakes Road North.
- Reconstruct three existing driveways along the north side of Oakes Road, including the Town of Davie fire station driveway.
- Realign the Turnpike off-ramp to southbound SR 7 to create separation between the off-ramp merge point with SR 7 and the new Oakes Road North intersection. This distance would help vehicles coming from the Turnpike ramp merge into southbound SR 7 and get into the correct lane to either turn right at Oakes Road North or continue south on SR 7.
- Realign the northbound SR 7 on-ramp, to Turnpike and eastbound I-595, to create separation and a longer distance between the intersection and the ramp diverge point. This distance would help vehicles turning from North Oakes Road get into the correct lane to either enter Florida's Turnpike/I-595 or continue north on SR 7.
- Replace any impacted shared use path along SR 7.
- Replace existing bicycle lane keyholes at the intersection approaches.
- Provide a bus bench at the one bus stop location without a bench south of Oakes Road and provide shelters at the other three bus stops located at Oakes Road and south of Oakes Road.

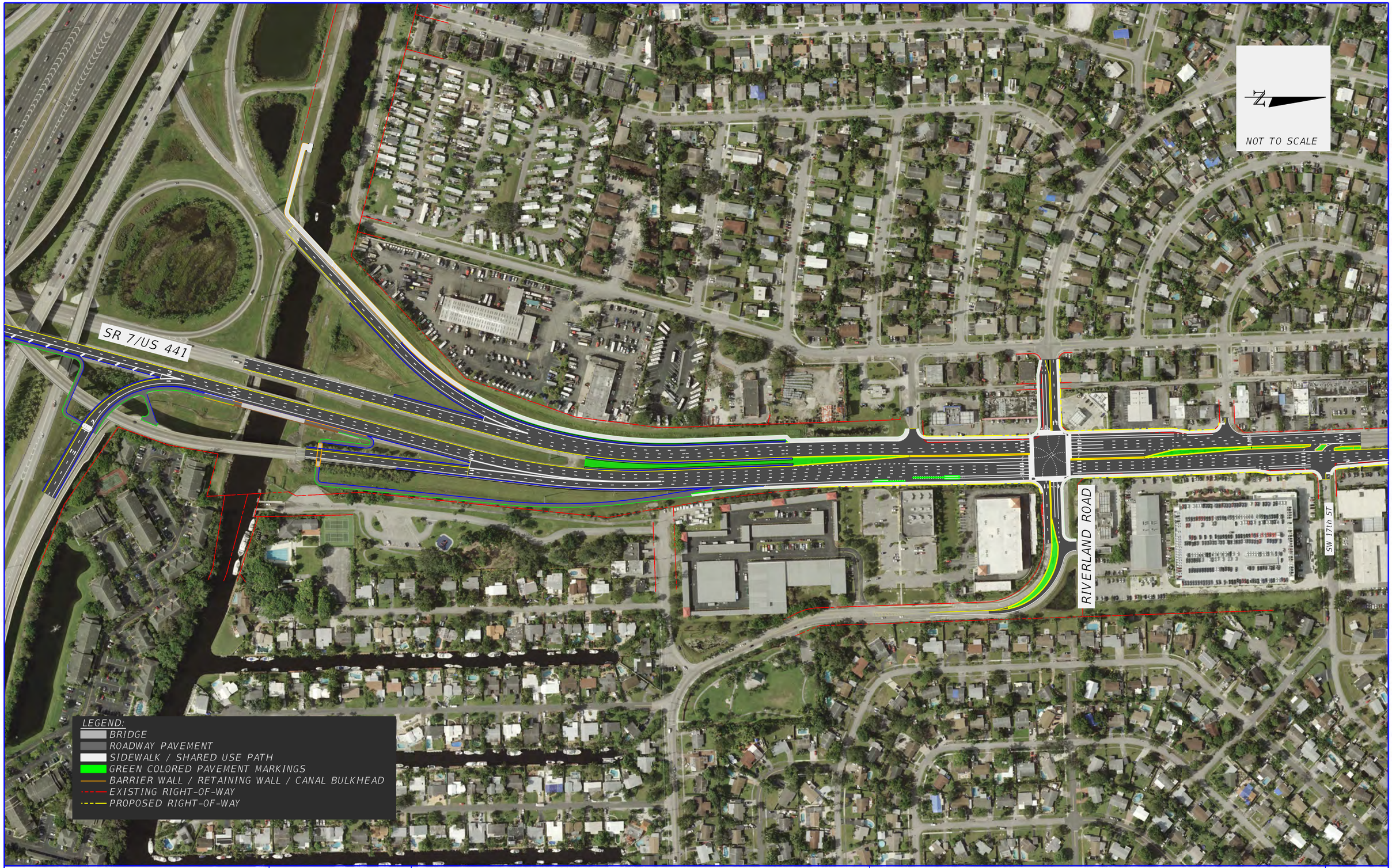
5. PROJECT SCOPE / DESCRIPTION

The SR 7/US-441 and Riverland Road/SW 20th Street intersection project scope of work includes the following components described below. Only SR 7/US-441 and Riverland Road/SW 20th Street intersection improvements are included in the project scope.

- Add a second northbound exclusive left-turn lane.
- Add a second southbound exclusive left-turn lane.
- Add an eastbound exclusive right-turn lane on SW 20th Street, resulting in an exclusive right-turn lane, one through lane, and one exclusive left-turn lane.
- Restripe the westbound Riverland Road approach as two exclusive left-turn lanes and one shared through/right-turn lane.
- Add or replace sidewalk along SR 7 and along Riverland Road in all four corners.
- Provide high emphasis crosswalks all four legs of intersection since the intersection is a designated school crossing with many pedestrians.
- Add a fourth lane northbound and southbound along SR 7 from the Turnpike/SR 84/I-595 ramps south of Riverland Road through the intersection to approximately 1,600 feet north of Riverland Road.
- The Turnpike/SR 84 off-ramp to northbound SR 7 will remain two-lanes and where it merges with northbound SR 7 this ramp will add two lanes to the three northbound SR 7 through lanes. At the intersection one of the five northbound lanes will end as the right-turn lane at Riverland Road.
- The fourth southbound through lane will extend through the intersection and end as it becomes one of two lanes that make up the Turnpike/westbound SR 84/I-595 on-ramp.
- Replace any impacted shared use path along SR 7.
- Replace existing bicycle lane keyholes at the intersection approaches.
- Provide a bus bench at the three bus stop locations without a bench north of Riverland Road and provide shelters at the four bus stops that do not have shelters north of Riverland Road.
- Incorporate TSM&O / ITS devices and signal upgrades with the roadway improvements.

Figure 2 shows the project area without the recommended project improvements. This figure includes the planned turn lane improvement on Riverland Road currently under design by the FDOT.
Figure 3 shows a conceptual plan of the project improvements.

		ARTERIAL CONNECTIVITY STUDY ALONG I-595 CORRIDOR	SR 7/US 441 AND RIVERLAND ROAD EXISTING CONDITIONS & PLANNED IMPROVEMENTS	FIGURE 2



Broward MPO Metropolitan Planning Organization

FDOT

ARTERIAL CONNECTIVITY STUDY
ALONG I-595 CORRIDOR

SR 7/US 441 AND
RIVERLAND ROAD INTERSECTION IMPROVEMENTS

FIGURE 3

6. ADVANTAGES AND DISADVANTAGES OF NO BUILD AND BUILD ALTERNATIVES

The SR 7/US-441 and Riverland Road intersection improvements can provide a more efficient and less congested route for traffic on SR 7 through the SR 84/I-595 interchange area. The proposed improvements also improve safety, as the changes would result in less stops for vehicles traveling through the study intersection. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the existing design project improvements. The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
Existing Design Project Improvements	• No additional cost • Reduces delay & some queueing until 2040 • No right-of-way impacts • Improves safety & connectivity for bicyclists, pedestrians, vehicles	• Does not meet LOS D in 2045 peak hours
Build	• Further reduces delay, congestion, backups, travel times • Meets LOS D in 2045 peak hours • Further improves safety	• Right-of-way impacts • Interchange ramp impacts • Additional cost

7. PROJECT CONSIDERATIONS

Based on a conceptual design of the SR 7/US-441 and Riverland Road intersection improvements, additional right-of-way would need to be acquired to implement the improvements. The locations listed below describe where additional right-of-way would be needed to implement the recommended concept.

- SR 7 both sides (east and west) from south of Riverland Road to SW 17th Street
- SW 20th Street south side between SW 41st Avenue to SR 7

In addition, there are anticipated environmental impacts which need to be considered. Potential environmental impacts to be further evaluated during the next phase of the

project include impacts to noise sensitive sites, and protected species and habitat. Environmental impacts must be evaluated keeping in mind environmental justice considerations.

8. COST AND FUNDING INFORMATION

It is recommended that this intersection project be evaluated as a part of a Project Development and Environment (PD&E) Study for improvements along SR 7/US-441 from Oakes Road through Riverland Road. The purpose of the PD&E Study is to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA). As part of the PD&E Study, a Non-Interchange Access Request document may be required, because the project involves modifying on- and off-ramps between SR 7/US-441, Florida's Turnpike, and I-595/SR 84.

Following the PD&E phase, the project will advance to the design phase. During this phase, final construction plans will be prepared. The estimated cost to complete the design phase for the SR 7/US-441 and Riverland Road/SW 20th Street intersection project is $1.19 million. Typically, acquisition of right-of-way occurs concurrent with or just after the design phase before the project moves into construction. A cost estimate for right-of-way acquisition for this project has not yet been determined. The construction cost estimate is $8.05 million, and cost for construction engineering inspection services during construction is $1.37 million. The total project cost for design and construction, excluding PD&E and right-of-way costs, is approximately $10.61 million in year 2021 dollars.

The improvements are proposed along the roadways of SR 7/US-441, Riverland Road, SW 20th Street, and on- and off-ramps between Florida's Turnpike/I-595/SR 84 and SR 7/US-441. SR 7/US-441, Florida's Turnpike, I-595, SR 84, and Riverland Road east of SR 7/US-441 are under the jurisdiction of the State of Florida. SW 20th Street west of SR 7/US-441 is under the jurisdiction of Broward County.

Most of the roadway modification work involves state roads. Therefore, federal or state funds should be pursued through the standard Broward MPO project prioritization process to receive funding for this project. There is opportunity for local funding to also be provided for the project from Broward County.

ATTACHMENT 18

Project #18 - Implementation Package for New River Greenway Underpass Crossing at NW/SW 136th Avenue Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 18
New River Greenway Underpass at NW 136th Avenue

Broward MPO
Metropolitan Planning Organization

FDOT

PROJECT IMPLEMENTATION PACKAGE
NEW RIVER GREENWAY UNDERPASS AT NW 136TH AVENUE

1. PROJECT LOCATION AND LIMITS

The New River Greenway underpass project at NW 136th Avenue is located within Broward County, Florida. The New River Greenway is an existing shared use path along the north side of the New River Canal and extends from Markham Park (located west of I-75) to University Drive, and from Davie Road to Anglers Avenue (just west of I-95). The portion of the project located west of NW 136th Avenue is within the City of Sunrise, and the portion of the project located east of NW 136th Avenue is within the City of Plantation.

The pedestrian and bicycle underpass project is located at the intersection of the New River Greenway and NW 136th Avenue. The limits of the improvements extend along the New River Greenway, from approximately 500 feet west of NW 136th Avenue to 500 feet east of NW 136th Avenue. The limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

The New River Greenway is an existing 12-foot-wide shared use path located along the north side of the New River Canal and it is part of the Broward County greenways network. At the existing New River Greenway crossing of NW 136th Avenue, pedestrians and bicyclists must travel south of the greenway to cross NW 136th Avenue at a signalized intersection with westbound SR 84. At the intersection, they must push the pedestrian signal button to activate the pedestrian crossing phase, allowing them to cross the arterial. After crossing they must travel north along the NW 136th Avenue roadway bridge over the New River Canal to reach the other side of the New River Greenway. This path to cross NW 136th Avenue is approximately 500 feet and may take several minutes to cross at the signalized intersection.

Requiring greenway users to cross at the busy signalized westbound SR 84 intersection exposes greenway users to a large volume of traffic approaching the crossing from the east, north and south. In addition, westbound right-turning vehicles do not always yield to pedestrians in the crosswalk. The location of the existing crossing at the signalized intersection causes undue delay to greenway users and to motorists. Also, greenway users must stop to cross each north-south arterial located approximately 1 mile apart. This connectivity issue can discourage bicyclists and others from using the greenway.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to improve safety and connectivity for greenway users and increase the use of the New River Greenway as an alternative to driving. The need for this project is to provide a long-term solution that will improve safety by minimizing conflicts between pedestrians, bicyclists, and motorists. In addition, the project is needed to reduce delay at the roadway crossing and provide a more efficient transportation route for pedestrians and bicyclists.

Broward County is planning to design and construct a high intensity activated cross walk beacon (HAWK) at the NW 136th Avenue crossing within the next few years. Installing a low-cost HAWK crossing can make the crossing safer but will not minimize delay for greenway users or motorists. Therefore, the underpass project is recommended to be constructed within the next 10 years, as a mid-term project constructed after the HAWK crossing is installed. The New River Greenway underpass project at NW 136th Avenue will reduce pedestrian, bicyclist and motorist conflicts and delay and provide a safer and more efficient route for greenway users to cross the north-south arterial.

4. NEW RIVER GREENWAY CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire New River Greenway corridor within the study area were identified as part of the study. These included improvements to each of the north-south arterial crossings and an extension of the New River Greenway. The New River Greenway corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

New River Greenway Crossings

For the New River Greenway crossings, the short-term HAWK signal concept is recommended to be implemented at five of the existing north-south arterial crossings within the study area. Long-term concept improvements were also evaluated and recommended based on the physical characteristics and feasibility at each of the north-south arterial crossing locations. The following improvements are recommended at each of the crossings.

- NW 136th Avenue
  - Short-term: Implement HAWK signal concept
  - Long-term: An underpass concept assuming study-recommended roadway improvements for NW 136th Avenue will be constructed, since the roadway improvements include an elevated flyover that may conflict with the location of a greenway overpass.
- Flamingo Road
  - Short-term: Implement HAWK signal concept
  - Long-term: An overpass concept assuming it has slightly less impacts and cost than an underpass.
- Hiatus Road
  - Short-term: Implement HAWK signal concept
  - Long-term: An overpass concept assuming it has slightly less impacts and cost than an underpass.
- Nob Hill Road
  - Short-term: Implement HAWK signal concept
  - Long-term: An overpass concept assuming it has slightly less impacts and cost than an underpass.
- Pine Island Road
  - Short-term: Implement HAWK signal concept
  - Long-term: An overpass concept assuming it has slightly less impacts and cost than an underpass.
- University Drive
  - Long-term: An underpass concept due to the existing elevated flyover that conflicts with the location of a greenway overpass. This greenway

crossing improvement is only recommended if the New River Greenway extension will be constructed, since there is currently no greenway to connect to east of University Drive.

New River Greenway Extension

The New River Greenway extension between University Drive and Davie Road is recommended to be implemented. This recommended improvement consists of constructing a new 12-foot-wide shared use path along the north side of the New River Canal from University Drive to Sewell Lock Park. Sewell Lock Park is located on the north side of westbound SR 84, just west of Davie Road, where the existing greenway pathway currently terminates. For consistency the New River Greenway extension should be designed to match with the existing greenway design as a 12-foot-wide shared use concrete path with signing and amenities provided for users.

Two possible locations were identified for the new greenway path to cross over the New River Canal and connect with the existing terminus of the greenway on the south side of the canal. The first option is to utilize the existing Sewell Lock, which currently spans across the canal, and modify it so it may be used as a pedestrian/bicyclist bridge in addition to its current purpose. The second option is to construct a new pedestrian/bicyclist bridge over the New River Canal just west of the Sewell Lock. The location of the bridge across the New River Canal would need to be determined after assessing the acceptability of using the existing Sewell Lock as a pedestrian/bicyclist bridge. Constructing the New River Greenway extension provides a shorter and faster route to travel between Davie Road and University Drive and can encourage more people to use the greenway to make trips.

5. ALTERNATIVES EVALUATED

Several concepts were evaluated for improving the New River Greenway crossing at NW/SW 136th Avenue. The following concepts were evaluated.

1. HAWK Signal
2. Overpass Crossing
3. Underpass Crossing

As a beneficial short-term improvement project, the HAWK signal is recommended for the New River Greenway crossing of NW 136th Avenue. The HAWK signal can provide a safer crossing for greenway users. It provides better visibility for pedestrians and bicyclists and allows greenway users to cross the roadway at a location with less vehicle conflicts than the busy SR 84 westbound intersection. It also provides for a more direct

crossing for greenway users. Broward County is planning to implement this treatment in the near-term.

As a long-term improvement project, the Underpass Crossing improvement project is recommended for the New River Greenway crossing of NW 136th Avenue. An underpass is recommended in lieu of an overpass at this location because major interchange modifications are recommended for the NW/SW 136th Avenue and SR 84/I-595 interchange. The interchange improvements include an elevated flyover (roadway bridge) for southbound NW 136th Avenue traffic to connect to eastbound SR 84. The location of the proposed flyover would conflict with an elevated New River Greenway overpass. Therefore, the underpass crossing improvement project is recommended.

Table 1 summarizes the advantages and disadvantages of each of the three alternatives evaluated for the New River Greenway crossing of NW/SW 136th Avenue.

Table 1: Comparison of New River Greenway Crossing Concept's Advantages and Disadvantages at NW/SW 136th Avenue

Greenway Concept	Advantages	Disadvantages
HAWK Signal	• Provides a safer crossing than No Build. • Easy to Use - No grade change for greenway users. • Can be implemented as a short-term improvement. • Minimal to no negative environmental impacts.	• Greenway users must stop to activate pedestrian crossing signal. • Traffic must stop on north south arterial for greenway crossing. • Slightly longer distance for pedestrians/bicyclists to cross using HAWK signal as compared to No Build.
Overpass Crossing	• Provides a safer crossing for greenway users than No Build by reducing conflicts between greenway users and vehicles. • Provides a more direct route for greenway users to cross than No Build. • Provides a continuous non-stop route to cross the arterial. • Reduces delay to vehicles on the roadway by reducing number of pedestrians crossing at signalized intersections.	• Need to avoid or minimize impacts to canals and maintenance area for canals. • Greenway users need to travel uphill and downhill on the ramps. • Long bridges and foundations can be challenging to design and construct. • Visual impacts to nearby businesses or homes. • Conflict with planned elevated interchange improvements.
Underpass Crossing	• Provides a safer crossing for greenway users than No Build by reducing conflicts between greenway users and vehicles. • Provides a more direct route for greenway users to cross than No Build. • Provides a continuous non-stop route to cross the arterial. • Reduces delay to vehicles on the roadway by reducing number of pedestrians crossing at signalized intersections.	• Need to avoid or minimize impacts to canals and maintenance area for canals. • Greenway users need to travel uphill and downhill on the ramps. • Constructing a culvert / tunnel requires roadway reconstruction. • Requires regular maintenance, lighting, bulkhead wall, and pump station.

6. PROJECT SCOPE / DESCRIPTION

The New River Greenway underpass project scope of work includes the following components described below. Only the New River Greenway underpass improvements are included in the project scope.

- Construct a New River Greenway underpass crossing below NW 136th Avenue for pedestrians and bicyclists.
  - The underpass crossing is envisioned to be constructed as a concrete culvert installed below the north-south arterial.
  - A 12-foot vertical clearance below the road is desirable for underpasses, tunnels, and designated SUN Trail facilities.
- Construct a ramp on each side of the underpass that will connect both sides of the New River Greenway and will connect to the existing sidewalk along NW 136th Avenue.
  - Various ramp alignments one either end of the underpass can be considered such as spiral or linear ramps.
  - Stairs should be included for pedestrians as an efficient way to access the underpass.
- Install lighting fixtures and a drainage pump system for stormwater removal.
- Consider incorporating gates to close the underpass if/when needed.

Figure 2 illustrates a conceptual plan of a New River Greenway underpass.

HIATUS ROAD

NORTH NEW RIVER CANAL

WB SR 84

0 10 40
Feet

GENERAL:
- PRECAST CULVERT CONTRUCTION WILL REQUIRE TEMPOCARY LANE OR ROADWAY CLOSURES.
- CAN BE IMPLEMENTED AT 4 OF THE 6 NORTH-SOUTH ROADWAYS: NW 136TH STREET, FLAMINGO ROAD, HIATUS ROAD, AND UNIVERSITY DRIVE.
- PRIVATE RIGHT OF WAY REQUIRED FOR NOB HILL ROAD AND PINE ISLAND ROAD.
- DIRECT ROUTE PROVIDED FOR GREENWAY TRAFFIC TO CROSS THE NORTH-SOUTH ROAD, AND DOES NOT REQUIRE GREENWAY TRAFFIC TO STOP.
- NO SIGNIFICANT GRADE CHANGE TO NAVIGATE FOR GREENWAY USERS.
- ELIMINATES CONFLICTS WITH VEHICLES FOR GREENWAY USERS.
- DOES NOT IMPACT THE CANAL CAPACITY AND CONVEYANCE.
- REQUIRES LIGHTING AND PUMP STATION – ADDITIONAL MAINTENANCE.
- FAIRLY DIRECT GREENWAY ROUTE, BUT SOME WINDING GREENWAY ALIGNMENT.
- STAIRS PROVIDE SHORTER ALTERNATIVE ROUTE FOR PEDESTRIANS.

LEGEND:
- GREENWAY AT-GRADE
- GREENWAY BELOW GRADE
- WALL / RAILING

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
HIATUS	BROWARD	441954-1-12-01

New River Greenway Underpass Conceptual Design Plan

$USER$ $DATE$ $TIME$ $MODELNAME$ $FILE$

7. ADVANTAGES AND DISADVANTAGES OF THE NEW RIVER GREENWAY UNDERPASS CONCEPT

The New River Greenway underpass crossing improvements at NW/SW 136th Avenue will improve safety for pedestrians and bicyclists and will reduce delay to greenway users and vehicular traffic. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 2.

Table 2: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruptions	• Does not improve safety for bicyclists, pedestrians • Does not reduce delay for greenway users and vehicular traffic • Does not improve connectivity for pedestrians, bicyclists
Underpass Crossing	• Provides a safer crossing for greenway users than No Build by reducing conflicts between greenway users and vehicles. • Provides a more direct route for greenway users to cross than No Build. • Provides a continuous non-stop route to cross the arterial. • Reduces delay to vehicles on the roadway by reducing number of pedestrians crossing at signalized intersections.	• Need to avoid or minimize impacts to canals and maintenance area for canals. • Greenway users need to travel uphill and downhill on the ramps. • Constructing a culvert tunnel requires roadway reconstruction. • Requires regular maintenance, lighting, bulkhead wall, and pump station.

8. PROJECT CONSIDERATIONS

Based on a conceptual design of the improvements, right-of-way dedication or a right of way occupancy permit from SFWMD would be needed to implement the improvements. The underpass project is partially located within Broward County roadway right-of-way, and South Florida Water Management District (SFWMD) right-of-way for the New River Canal. Coordination with SFWMD is needed to determine possible impacts to the canal (or to their operations and maintenance of the canal), and to determine if a permit can be granted for construction of the greenway underpass and ramp connections to and from the underpass.

In addition, there are potential environmental impacts which must be considered. A review of potential impacts to environmental resources will need to be conducted. In addition, coordination with the City of Sunrise, City of Plantation and adjacent property owners should be conducted to obtain input into the design of the underpass project.

For the underpass crossing, safety of users during dark conditions may be a concern. Therefore, lighting and an emergency telephone may be installed to facilitate safe nighttime use, or gates may be installed to preclude nighttime use. If nighttime use is precluded, then an at-grade crossing must be maintained.

9. COST AND FUNDING INFORMATION

Pre-design work is recommended as the next phase for this project. Pre-design work should include early coordination with SFWMD and adjacent property owners, and an evaluation of potential environmental impacts and how they can be mitigated. Alternatively, a PD&E Study may be conducted as the next phase of the project. The purpose of a PD&E Study would be to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA).

The estimated cost for the design phase is $726,000. During this phase, final construction plans will be prepared. A right of way occupancy permit from SFWMD will need to be granted concurrent with or just after the design phase before the project moves into construction. A cost estimate for a SFWMD right-of-way occupancy permit for this project has not been determined. The construction cost estimate is $3.3 million, and cost for construction engineering inspection services during construction is $611,000. The total project cost, excluding right-of-way costs, is approximately $4.6 million in year 2021 dollars.

The New River Greenway is part of the Broward County greenways system, and NW 136th Avenue is a county roadway. The New River Greenway underpass improvement project is proposed primarily within SFWMD property along the New River Canal. Therefore, the underpass project is recommended to be led by Broward County using local County funds to pay for the project. If federal or state funds are pursued, then the project may go through the standard Broward MPO project prioritization process to be eligible to receive funding. If the project receives federal funding, then the FDOT Local Agency Program (LAP) process could be used to reimburse the County for planning, design, and/or construction costs.

ATTACHMENT 19

Projects #19, 20, 21, and 22 - Implementation Package for New River Greenway Overpass Crossing at Flamingo Road, Hiatus Road, Nob Hill Road, and Pine Island Road Projects

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 19, 20, 21, and 22
New River Greenway Overpass Projects

Broward MPO
Metropolitan Planning Organization

FDOT

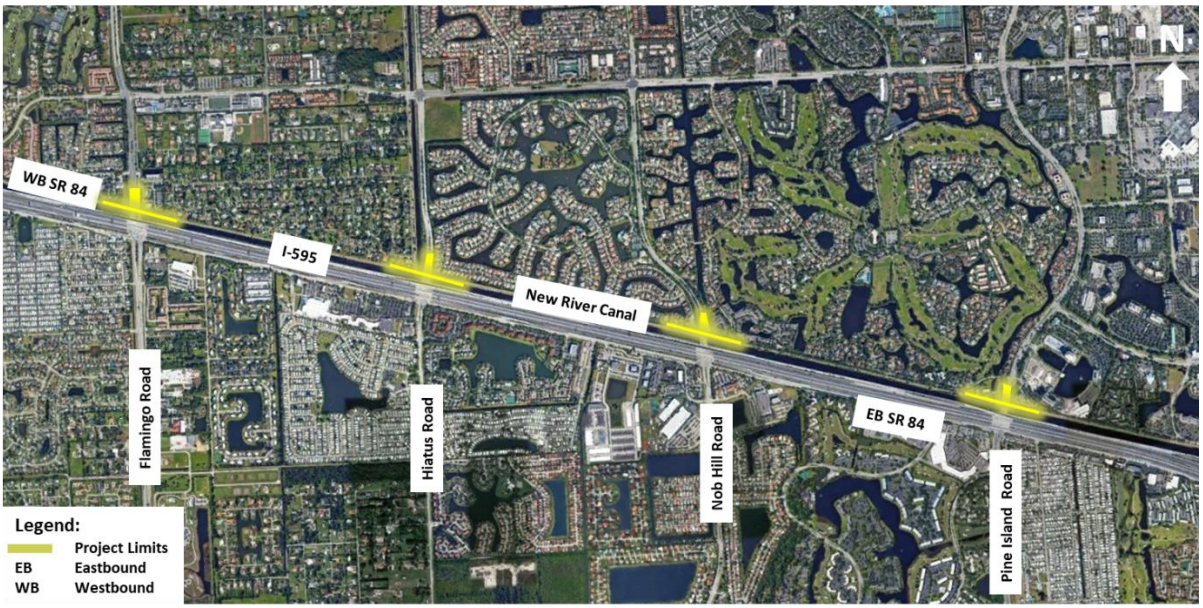
PROJECT IMPLEMENTATION PACKAGE
NEW RIVER GREENWAY OVERPASS PROJECTS AT FLAMINGO ROAD, HIATUS ROAD, NOB HILL ROAD, AND PINE ISLAND ROAD

1. PROJECT LOCATIONS AND LIMITS

The New River Greenway overpass projects are located within Broward County, Florida. The New River Greenway is an existing shared use path along the north side of the New River Canal and extends from Markham Park (located west of I-75) to University Drive, and from Davie Road to Anglers Avenue (just west of I-95). A New River Greenway overpass, or bridge by which the pathway for pedestrians and bicyclists can pass over a roadway, is recommended at four crossroad locations. A New River Greenway overpass project is recommended at the greenway's intersection with the following four crossroads: Flamingo Road, Hiatus Road, Nob Hill Road, and Pine Island Road.

The overpass project limits extend approximately 500 feet west and 500 feet east of each of the four north-south arterials. The overpass project limits also extend from approximately 50 feet south of the greenway to 100 feet north of the greenway along the east and west sides of the arterial roadways. The location of each of the four New River Greenway overpass projects, as well as the limits of the projects, are shown in Figure 1.

Figure 1: Map of Project Locations and Limits



2. EXISTING CONDITIONS

The New River Greenway is an existing 12-foot-wide shared use path located along the north side of the New River Canal and it is part of the Broward County greenways network. At the existing greenway and roadway crossings, greenway users must travel south of the greenway along a bridge over the New River Canal to a signalized intersection with westbound SR 84. At this intersection, pedestrians and bicyclists must push the pedestrian signal button to activate the pedestrian crossing phase allowing them to cross the arterial. After crossing, greenway users then must travel north along the bridge over the New River Canal to reach the other side of the New River Greenway. This path to cross each arterial is approximately 500 feet and may take several minutes to cross at the signalized intersection.

Requiring greenway users to cross at the busy signalized westbound SR 84 intersection exposes greenway users to a large volume of traffic approaching the crossing from the east, north and south. In addition, westbound right-turning vehicles do not always yield to pedestrians in the crosswalk. The location of the existing crossing at the signalized intersection causes undue delay to greenway users and to motorists. Also, greenway users must stop to cross each north-south arterial located approximately 1 mile apart. This connectivity issue can discourage bicyclists and others from using the greenway.

3. PROJECT PURPOSE AND NEED

The purpose of each New River Greenway overpass project is to improve safety and connectivity for greenway users and increase the use of the New River Greenway as an alternative to driving. The overpass projects are needed to provide a long-term solution that will improve safety by minimizing conflicts between pedestrians, bicyclists, and motorists. In addition, the overpass projects are needed to reduce delay at roadway crossings and provide a more efficient transportation route for pedestrians and bicyclists.

Broward County is planning to design and construct high intensity activated cross walk beacons (HAWK) at each of the four crossings within the next few years. Installing low-cost HAWK crossings can make the crossings safer but will not minimize delay for greenway users or motorists. Therefore, the overpass projects are recommended to be constructed within the next 10 years, as mid-term projects to be constructed after the HAWK crossings are installed. The New River Greenway overpass projects at Flamingo Road, Hiatus Road, Nob Hill Road, and Pine Island Road would reduce pedestrian, bicyclist and motorist conflicts and delay and provide a safer and more efficient route for greenway users to cross each north-south arterial.

4. NEW RIVER GREENWAY CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire New River Greenway corridor within the study area were identified as part of the study. These included improvements to each of the north-south arterial crossings and an extension of the New River Greenway. The New River Greenway corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

New River Greenway Crossings

For the New River Greenway crossings, the short-term HAWK signal concept is recommended to be implemented at five of the existing north-south arterial crossings within the study area. Long-term concept improvements were also evaluated and recommended based on the physical characteristics and feasibility at each of the north-south arterial crossing locations. The following improvements are recommended at each of the crossings.

- NW 136th Avenue
  - Short-term: Implement HAWK signal concept
  - Long-term: An underpass concept assuming study-recommended roadway improvements for NW 136th Avenue will be constructed, since the roadway improvements include an elevated flyover that may conflict with the location of a greenway overpass.
- Flamingo Road
  - Short-term: Implement HAWK signal concept
  - Long-term: An overpass concept assuming it has slightly less impacts and cost than an underpass.
- Hiatus Road
  - Short-term: Implement HAWK signal concept
  - Long-term: An overpass concept assuming it has slightly less impacts and cost than an underpass.
- Nob Hill Road
  - Short-term: Implement HAWK signal concept
  - Long-term: An overpass concept assuming it has slightly less impacts and cost than an underpass.
- Pine Island Road
  - Short-term: Implement HAWK signal concept
  - Long-term: An overpass concept assuming it has slightly less impacts and cost than an underpass.
- University Drive
  - Long-term: An underpass concept due to the existing elevated flyover that conflicts with the location of a greenway overpass. This greenway crossing improvement is only recommended if the New River

Greenway extension will be constructed, since there is currently no greenway to connect to east of University Drive.

New River Greenway Extension

The New River Greenway extension between University Drive and Davie Road is recommended to be implemented. This recommended improvement consists of constructing a new 12-foot-wide shared use path along the north side of the New River Canal from University Drive to Sewell Lock Park. Sewell Lock Park is located on the north side of westbound SR 84, just west of Davie Road, where the existing greenway pathway currently terminates. For consistency the New River Greenway extension should be designed to match with the existing greenway design as a 12-foot-wide shared use concrete path with signing and amenities provided for users.

Two possible locations were identified for the new greenway path to cross over the New River Canal and connect with the existing terminus of the greenway on the south side of the canal. The first option is to utilize the existing Sewell Lock, which currently spans across the canal, and modify it so it may be used as a pedestrian/bicyclist bridge in addition to its current purpose. The second option is to construct a new pedestrian/bicyclist bridge over the New River Canal just west of the Sewell Lock. The location of the bridge across the New River Canal would need to be determined after assessing the acceptability of using the existing Sewell Lock as a pedestrian/bicyclist bridge. Constructing the New River Greenway extension provides a shorter and faster route to travel between Davie Road and University Drive and can encourage more people to use the greenway to make trips.

5. ALTERNATIVES EVALUATED

Several concepts were evaluated for improving the New River Greenway crossing at Flamingo Road, Hiatus Road, Nob Hill Road and Pine Island Road. The following concepts were evaluated.

1. HAWK Signal
2. Overpass Crossing
3. Underpass Crossing

As a beneficial short-term improvement project, the HAWK signal is recommended for the New River Greenway crossings of Flamingo Road, Hiatus Road, Nob Hill Road, and Pine Island Road. The HAWK signal can provide a safer crossing for greenway users. It provides better visibility for pedestrians and bicyclists and allows greenway users to cross the roadway at a location with less vehicle conflicts than the busy SR 84 westbound intersection. It also provides for a more direct crossing for greenway users. Broward County is planning to implement this treatment in the near-term.

As a long-term improvement project, the Overpass Crossing improvement project is recommended for the New River Greenway crossings of Flamingo Road, Hiatus Road, Nob Hill Road, and Pine Island Road. An overpass is recommended in lieu of an underpass at these locations because there are no roadway bridge conflicts at these locations, an overpass does not require roadway construction to implement it, the design fits better in some locations, and it is estimated to cost slightly less than an underpass.

Table 1 summarizes the advantages and disadvantages of each of the three alternatives evaluated for the New River Greenway crossings.

Table 1: Comparison of New River Greenway Crossing Concept's Advantages and Disadvantages

Greenway Concept	Advantages	Disadvantages
HAWK Signal	• Provides a safer crossing than No Build. • Easy to Use - No grade change for greenway users. • Can be implemented as a short-term improvement. • Minimal to no negative environmental impacts.	• Greenway users must stop to activate pedestrian crossing signal. • Traffic must stop on north south arterial for greenway crossing. • Slightly longer distance for pedestrians/bicyclists to cross using HAWK signal as compared to No Build.
Overpass Crossing	• Provides a safer crossing for greenway users than No Build by reducing conflicts between greenway users and vehicles. • Provides a more direct route for greenway users to cross than No Build. • Provides a continuous non-stop route to cross the arterial. • Reduces delay to vehicles on the roadway by reducing number of pedestrians crossing at signalized intersections.	• Need to avoid or minimize impacts to canals and maintenance area for canals. • Greenway users need to travel uphill and downhill on the ramps. • Long bridges and foundations can be challenging to design and construct. • Visual impacts to nearby businesses or homes. • Conflict with planned elevated interchange improvements.
Underpass Crossing	• Provides a safer crossing for greenway users than No Build by reducing conflicts between greenway users and vehicles. • Provides a more direct route for greenway users to cross than No Build. • Provides a continuous non-stop route to cross the arterial. • Reduces delay to vehicles on the roadway by reducing number of pedestrians crossing at signalized intersections.	• Need to avoid or minimize impacts to canals and maintenance area for canals. • Greenway users need to travel uphill and downhill on the ramps. • Constructing a culvert / tunnel requires roadway reconstruction. • Requires regular maintenance, lighting, bulkhead wall, and pump station.

6. PROJECT SCOPE / DESCRIPTION

The project scope of work for each of the New River Greenway overpass projects at Flamingo Road, Hiatus Road, Nob Hill Road, and Pine Island Road includes the following components described below. Only the New River Greenway overpass improvements are included in the project scope.

- Construct a New River Greenway overpass bridge for pedestrians and bicyclists that spans over top of the crossroad.
  - A minimum vertical clearance of 17.5 feet over the roadway is required.
- The overpass bridge must be long enough to span the expanded north-south arterial lanes as recommended for each SR 84/I-595 interchange project from the study. Construct a ramp on each side of the overpass that will connect both sides of the New River Greenway and will connect to the existing sidewalk along the north-south crossroad.
  - Various ramp alignments on either end of the overpass can be considered such as spiral or linear ramps. A best fit ramp design can be selected based on existing surrounding conditions and community preference.
  - Stairs should be included for pedestrians as an efficient way for them to access the overpass to cross the roadway.
- Consider incorporating artistic design features such as a gateway sign on the bridge to make it an attractive community feature.

Figure 2 illustrates a conceptual plan of a New River Greenway overpass.
Figure 3 shows a 3D rendering of a conceptual New River Greenway overpass design at the Flamingo Road crossing. The overpass is superimposed over a 2021 aerial image of the study area.

HIATUS ROAD

NORTH NEW RIVER CANAL

WB SR 84

0 10 40
Feet

GENERAL:
- CAN BE IMPLEMENTED AT ALL 6 NORTH-SOUTH ROADWAYS: NW 136TH STREET, FLAMINGO ROAD, HIATUS ROAD, NOB HILL ROAD, PINE ISLAND ROAD AND UNIVERSITY DRIVE.
- DIRECT ROUTE PROVIDED FOR GREENWAY TRAFFIC TO CROSS THE NORTH-SOUTH ROAD, AND DOES NOT REQUIRE GREENWAY TRAFFIC TO STOP.
- GRADE CHANGE FOR GREENWAY BRIDGE MAY BE CHALLENGING FOR SOME GREENWAY USERS.
- ELIMINATES CONFLICTS WITH VEHICLES FOR GREENWAY USERS THAT CHOOSE TO USE 2ND LEVEL CROSSING.
- NO IMPACTS TO THE CANAL CAPACITY AND CONVEYANCE.
- REQUIRES LONG OR SPIRAL GREENWAY BRIDGES.
- MAY CREATE SIGNALIZATION VISIBILITY ISSUES ON THE SOUTHBOUND ROADWAY.
- PROVIDES OPPORTUNITY FOR ARCHITECTURAL, CITY GATEWAY AND/OR BEAUTIFICATION FEATURES.
- STRAIGHT, ZIGZAG, HELICOIDAL OR COMBINATION RAMPS COULD BE USED ON EITHER SIDE.

LEGEND:
- GREENWAY AT-GRADE
- GREENWAY ON STRUCTURE
- WALL / RAILING

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
HIATUS	BROWARD	441954-1-12-01

New River Greenway Overpass Conceptual Design Plan

$USER$ $DATE$ $TIME$ $MODELNAME$ $FILE$


Think Green.
Think Clean.

7. ADVANTAGES AND DISADVANTAGES OF THE NEW RIVER GREENWAY OVERPASS CONCEPT

The New River Greenway overpass crossing improvements will improve safety for pedestrians and bicyclists and will reduce delay to greenway users and vehicular traffic. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 2.

Table 2: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruptions	• Does not improve safety for bicyclists, pedestrians • Does not reduce delay for greenway users and vehicular traffic • Does not improve connectivity for pedestrians, bicyclists
Overpass Crossing	• Provides a safer crossing for greenway users than No Build by reducing conflicts between greenway users and vehicles. • Provides a more direct route for greenway users to cross than No Build. • Provides a continuous non-stop route to cross the arterial. Reduces delay to vehicles on the roadway by reducing number of pedestrians crossing at signalized intersections.	• Need to avoid or minimize impacts to canals and maintenance area for canals. • Greenway users need to travel uphill and downhill on the ramps. • Long bridges and foundations can be challenging to design and construct. Visual impacts to nearby businesses or homes.

8. PROJECT CONSIDERATIONS

Based on a conceptual design of the improvements, right-of-way dedication or a right of way occupancy permit from SFWMD would be needed to implement the improvements. Each overpass project is partially located within Broward County roadway right-of-way, and South Florida Water Management District (SFWMD) right-of-way for the New River Canal. Coordination with SFWMD is needed to determine possible impacts to the canal (or to their operations and maintenance of the canal), and to determine if a permit can be granted for construction of the greenway overpass and ramp connections to and from the overpass.

In addition, there are potential environmental impacts which must be considered. A review of potential impacts to environmental resources will need to be conducted as part of the next phase of the project. In addition, coordination with the municipalities and adjacent property owners should be conducted to obtain input into the design of each overpass project. An overpass may have visual impacts to adjacent residential properties that must be considered.

9. COST AND FUNDING INFORMATION

Pre-design work is recommended as the next phase for this project. Pre-design work should include early coordination with SFWMD and adjacent property owners, and an evaluation of potential environmental impacts and how they can be mitigated. Alternatively, a PD&E Study may be conducted as the next phase of the project. The purpose of a PD&E Study would be to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA).

The estimated cost for the design phase for each overpass project is $635,000. During this phase, final construction plans will be prepared. A right of way occupancy permit from SFWMD will need to be granted concurrent with or just after the design phase before the project moves into construction. A cost estimate for a SFWMD right-of-way occupancy permit for this project has not been determined. The construction cost estimate for each overpass project is $2.89 million, and cost for construction engineering inspection services during construction is $534,000. The total project cost for each overpass, excluding permit or mitigation costs, is approximately $4.06 million in year 2021 dollars.

The New River Greenway is part of the Broward County greenways system, and the four crossroads are all county roadways. The New River Greenway overpass projects are proposed primarily within SFWMD property along the New River Canal and will cross over Broward County roadways. Flamingo Road, Hiatus Road, Nob Hill Road, and Pine Island Road, north of SR 84 where the greenway crosses, are under the jurisdiction of Broward County. Therefore, the four overpass projects are recommended to be led by Broward County using local County funds to pay for the projects. If federal or state funds are pursued, then the projects should go through the standard Broward MPO project prioritization process to be eligible to receive funding. If a project receives federal funding, then the FDOT Local Agency Program (LAP) process could be used to reimburse the County for planning, design, and/or construction costs.

ATTACHMENT 20

Project #23 - Implementation Package for New River Greenway Extension from University Drive to Davie Road Project

Arterial Connectivity Study along I-595 Corridor

FM#441954-1-12-01

Project Implementation Package
Project No. 23
New River Greenway Extension

PROJECT IMPLEMENTATION PACKAGE
NEW RIVER GREENWAY EXTENSION

1. PROJECT LOCATION AND LIMITS

The New River Greenway extension project is located within the City of Plantation, Florida, along the northern edge of the New River Canal between University Drive and Davie Road. The New River Greenway is an existing shared use path that runs parallel along the New River Canal and extends from Markham Park (located west of I-75) to University Drive, and from Davie Road to Anglers Avenue (just west of I-95). The proposed project would connect the greenway directly between University Drive and Davie Road. The limits of the project extend approximately 1.4 miles along the north bank of the New River Canal, from the west side of University Drive to Sewell Lock Park located west of Davie Road. The limits of the project are shown in Figure 1.

Figure 1: Project Limits Map

2. EXISTING CONDITIONS

The New River Greenway is part of the Broward County greenways network. West of University Drive it is an existing 12-foot-wide shared use path running along the north bank of the New River Canal. East of Sewell Lock Park it is an existing 10-foot-wide sidewalk running along the north side of westbound SR 84. There is a gap in the existing New River Greenway between University Drive and Davie Road. To connect each side of the greenway, greenway users must travel north or south along University Drive or Davie Road, then east or west along Nova Drive, and north-south

again along Davie Road or University Drive. That route is approximately 2.65 miles long and directs greenway users to travel along the side of University Drive and Dave Road, both of which are roadways with very high volumes of traffic. In addition, the current greenway connection route requires pedestrians and bicyclists to cross four SR 84 signalized intersections.

3. PROJECT PURPOSE AND NEED

The purpose of this project is to improve safety for all modes, improve connectivity for greenway users, and increase use of the New River Greenway as an alternative to driving. The project is needed as a safer and more direct east-west route for pedestrians and bicyclists to travel between University Drive and Davie Road. In addition, the project is needed to minimize conflicts that occur between pedestrians, bicyclists, and vehicles at the signalized intersections of University Drive and Davie Road with eastbound SR 84 and westbound SR 84.

The need for the project is immediate given the current length of the route that greenway users must travel between University Drive and Davie Road, the existing year (2019) traffic volume on University Drive and Davie Road that greenway users must cross, and the pedestrian and bicycle related crashes that have occurred along University Drive and Davie Road. The existing route for New River Greenway users to travel between University Drive and Davie Road is approximately 1 mile longer (2.65 miles vs. 1.60 miles) than the proposed route. In addition, the existing route exposes pedestrians and bicyclists to high volumes of vehicular traffic when walking along University Drive, Nova Drive, and Davie Road. Between the years 2014 and 2018, ten bicycle and pedestrian related crashes occurred along the existing greenway route between University Drive and Davie Road.

The New River Greenway extension with underpass crossing at University Drive would reduce pedestrian, bicyclist, and motor vehicle conflicts, and provide a safer and more efficient route for greenway users to travel between University Drive and Davie Road. Closing the gap in the New River Greenway will also provide a more convenient and continuous route for bicyclists and pedestrians, which is expected to encourage more use of the greenway.

4. NEW RIVER GREENWAY CORRIDOR IMPROVEMENTS

Infrastructure improvements needed along the entire New River Greenway corridor within the study area were identified as part of the study. These included improvements to each of the north-south arterial crossings and an extension of the New River Greenway. The New River Greenway corridor improvements identified in the study and documented in Technical Report 1, are listed below for information.

New River Greenway Extension

The New River Greenway extension between University Drive and Davie Road is recommended to be implemented. This recommended improvement consists of constructing a 12-foot-wide shared use path along the north side of the New River Canal from University Drive to Sewell Lock Park. Sewell Lock Park is located on the north side of westbound SR 84, just west of Davie Road, where the existing greenway pathway currently terminates. For consistency the New River Greenway extension should be designed to match with the existing greenway design as a 12-foot-wide shared use concrete path with signing and amenities provided for users.

Two possible locations were identified for the new greenway path to cross over the New River Canal and connect with the existing terminus of the greenway on the south side of the canal. The first option is to utilize the existing Sewell Lock, which currently spans across the canal, and modify it so it may be used as a pedestrian/bicyclist bridge in addition to its current purpose. The second option is to construct a new pedestrian/bicyclist bridge over the New River Canal just west of the Sewell Lock. The location of the bridge across the New River Canal would need to be determined after assessing the acceptability of using the existing Sewell Lock as a pedestrian/bicyclist bridge. Constructing the New River Greenway extension provides a shorter and faster route to travel between Davie Road and University Drive and can encourage more people to use the greenway to make trips.

New River Greenway Crossings

For the New River Greenway crossings, the short-term HAWK signal concept is recommended to be implemented at five of the existing north-south arterial crossings within the study area. Long-term concept improvements were also evaluated and recommended based on the physical characteristics and feasibility at each of the north-south arterial crossing locations. The following improvements are recommended at each of the crossings.

- NW 136th Avenue
    - Short-term: Implement HAWK signal concept
    - Long-term: An underpass concept assuming study-recommended roadway improvements for NW 136th Avenue will be constructed,

since the roadway improvements include an elevated flyover that may conflict with the location of a greenway overpass.

- Flamingo Road
  - Short-term: Implement HAWK signal concept
  - Long-term: An overpass concept assuming it has slightly less impacts and cost than an underpass.
- Hiatus Road
  - Short-term: Implement HAWK signal concept
  - Long-term: An overpass concept assuming it has slightly less impacts and cost than an underpass.
- Nob Hill Road
  - Short-term: Implement HAWK signal concept
  - Long-term: An overpass concept assuming it has slightly less impacts and cost than an underpass.
- Pine Island Road
  - Short-term: Implement HAWK signal concept
  - Long-term: An overpass concept assuming it has slightly less impacts and cost than an underpass.
- University Drive
  - Long-term: An underpass concept due to the existing elevated flyover that conflicts with the location of a greenway overpass. This greenway crossing improvement is only recommended if the New River Greenway extension will be constructed, since there is currently no greenway to connect to east of University Drive.

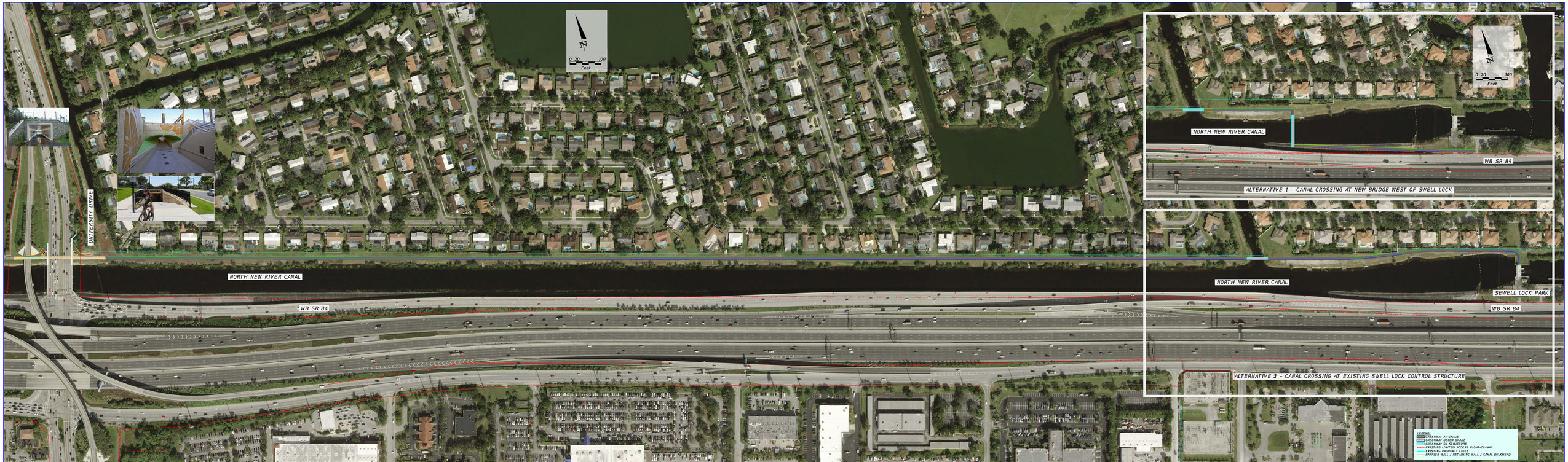
5. PROJECT SCOPE / DESCRIPTION

The New River Greenway extension project scope of work includes the following components listed below. Only the New River Greenway extension improvements are included in the project scope.

- Construct a 12-foot-wide shared use path along the north side of the New River Canal between University Drive and Sewell Lock Park west of Davie Road.
- Construct a 12-foot-wide underpass crossing below University Drive for pedestrians, bicyclists, and wheelchair users.
- Construct a New River Greenway bridge to cross over the north-south canal situated on the western edge of the Isla del Sol neighborhood.
- Modify the existing Sewell Lock structure to utilize it as a pedestrian and bicyclist bridge to cross the New River Canal. If the Sewell Lock structure

cannot be modified to serve as a pedestrian and bicyclist bridge, then a new pedestrian and bicyclist bridge would need to be constructed over the New River Canal, west of Sewell Lock Park.

Figure 2 shows a conceptual plan of the project improvements.



FDOT

Arterial Connectivity Study along I-595 Corridor - New River Greenway Extension between University Drive and Davie Road Concept Plan

FIGURE 2

6. ADVANTAGES AND DISADVANTAGES OF THE NEW RIVER GREENWAY EXTENSION CONCEPT

The New River Greenway extension improvements will improve safety for pedestrians and bicyclists, improve connectivity for greenway users, and reduce delay and conflicts for vehicular traffic. Advantages and disadvantages for the recommended Build improvements were assessed in comparison to the No Build conditions (without the proposed improvements). The advantages and disadvantages are summarized in Table 1.

Table 1: Project Advantages and Disadvantages

Alternatives	Advantages	Disadvantages
No Build	• No cost • No impacts • No disruptions	• Does not improve safety for bicyclists, pedestrians • Does not reduce delay for greenway users and vehicular traffic • Does not improve connectivity for pedestrians, bicyclists
New River Greenway Extension between University Drive and Davie Road	• Provides a more direct route for greenway users to travel between University Drive and Davie Road. • Provides a continuous non-stop route between University Drive and Davie Road. • Provides a safer route for greenway users by reducing the exposure to roadway traffic. Reduces delay to vehicles on the roadway by reducing number of pedestrians crossing at signalized intersections.	• Need to minimize impacts to canals and maintenance area for canals.Visual impacts to nearby homes.

7. PROJECT CONSIDERATIONS

Based on a conceptual design of the improvements, right-of-way dedication or a right of way occupancy permit from SFWMD would be needed to implement the improvements. The greenway extension is located along the north side of the New River Canal which is within South Florida Water Management District (SFWMD) property. Coordination with SFWMD is needed to determine possible impacts to the canal (or their operations and maintenance of the canal), and to determine if a permit can be granted for construction of the greenway extension.

The New River Greenway extension will require construction of two, possibly three new structures. The first is an underpass crossing below University Drive. The second is a new bridge structure for pedestrians and bicyclists to cross over the canal located along the west edge of the Isla del Sol Neighborhood. The third is a bridge for the shared use path to cross over the New River Canal west of Davie Road near Sewell Lock Park. The underpass below University Drive would be constructed within Florida Department of Transportation (FDOT) right-of-way. The new greenway extension shared use path along the north side of the New River Canal would be constructed within SFWMD right-of-way.

Extending the greenway will also require close coordination with property owners of the single-family homes which are located along the north side of the New River Canal. The extension of the greenway shared use path would be constructed near the southern edge of their properties. The greenway extension may have visual impacts to adjacent residential properties that must be considered. Coordination and public outreach to the adjacent communities is recommended at the next phase.

In addition, there are anticipated structural and environmental impacts which must be considered. A review of potential impacts to environmental resources will need to be conducted as part of the next phase of the project. It is noted that Sewell Lock Park is listed on the National Register of Historic Places.

8. COST AND FUNDING INFORMATION

Pre-design work is recommended as the next phase for this project. Pre-design work should include early coordination with SFWMD and adjacent property owners, and an evaluation of potential environmental impacts and how they can be mitigated. Alternatively, a PD&E Study may be conducted as the next phase of the project. The purpose of a PD&E Study would be to further evaluate alternatives and project impacts, gather public input, determine a preferred alternative, and ensure compliance with the National Environmental Policy Act (NEPA).

The estimated cost for the design phase is $1.22 million. During this phase, final construction plans will be prepared. A right of way occupancy permit from SFWMD will need to be granted concurrent with or just after the design phase before the project moves into construction. A cost estimate for a SFWMD right-of-way occupancy permit for this project has not been determined. The construction cost estimate is $7.32 million, and cost for construction engineering inspection services during construction is $1.26 million. The total project cost, excluding permit or mitigation costs, is approximately $9.8 million in year 2021 dollars.

The New River Greenway extension would be located primarily within South Florida Water Management District right-of-way. The underpass crossing below University Drive is within Florida Department of Transportation right-of-way. Given that the existing New River Greenway is part of the Broward County greenways system, the extension of the existing greenway is recommended to be led by Broward County using local County funds to pay for the project. If federal or state funds are pursued, then the project should go through the standard Broward MPO project prioritization process to be eligible to receive funding. If the project receives federal funding, then the FDOT Local Agency Program (LAP) process could be used to reimburse the County for planning, design, and/or construction costs.