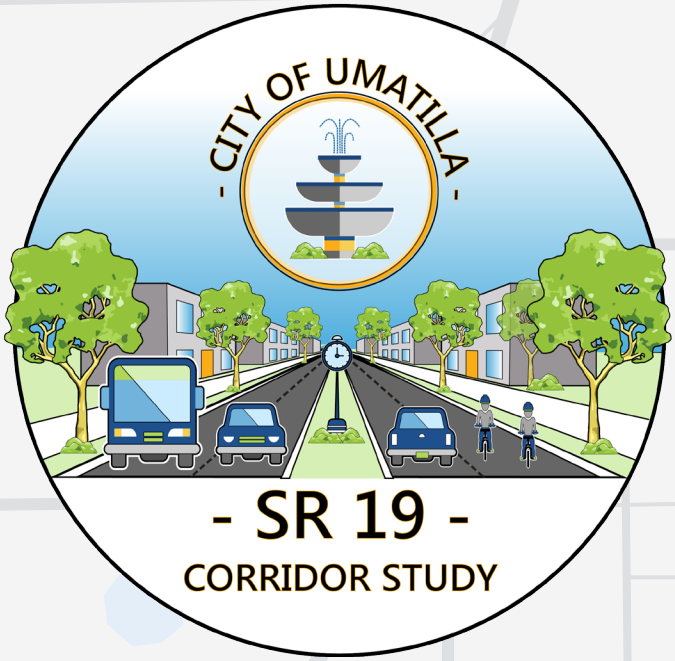

Florida Department of Transportation District Five

Central Avenue (SR 19) Corridor Planning

Final Report

September 2018

Financial No: 439756-1

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Chapter One: Introduction

1.1 Report Purpose

In September 2016, the Florida Department of Transportation (FDOT) started a Corridor Planning Study (FM #439756-1) on State Road (SR) 19/Central Avenue from County Road (CR) 450A to Bulldog Way, a distance of 2.021 miles in Lake County, Florida. As part of this effort, a parallel corridor, Umatilla Boulevard was also evaluated from its southern terminus at Ocala Street to its northern terminus south of Lake Street. This report summarizes the existing and future conditions, the public involvement process, the alternatives evaluated and the recommended alternative.

1.2 Project Background and Purpose

This project, number nine on the List of Unfunded Priority Project (LOPP) Design Projects, was requested by the City of Umatilla and the Lake-Sumter Metropolitan Planning Organization (MPO). The study was conducted to determine the needs and develop a vision for the SR 19 corridor with the goal of assessing the feasibility of improving safety for all users and implementing improvements considering complete streets design guidelines. This study involved an evaluation to determine how best to meet the needs of current and future users, and to establish a long-term plan, which balances land use and transportation. This project was coordinated with local and regional agency partners, including the Lake-Sumter MPO, the City of Umatilla, and LakeXpress.

This corridor study integrated the Healthy Community Design approach into the corridor study process. Healthy Community Design (HCD) is a planning approach which integrates public health, transportation, and community planning to recognize how the built environment affects the physical, social, and mental health of communities. Communities that are designed to support physical activity – a network of complete streets with wide sidewalks, bike lanes, street trees, and convenient access to transit, active recreation, jobs, affordable housing and healthy food choices – encourage residents to make healthy choices and live healthy lives. Transportation is an important part of this built environment and significantly influences physical activity and well-being, safety, and the ability of the community to access destinations essential to a healthy lifestyle. By integrating this approach into the corridor study, physical improvements and policies were identified and documented.

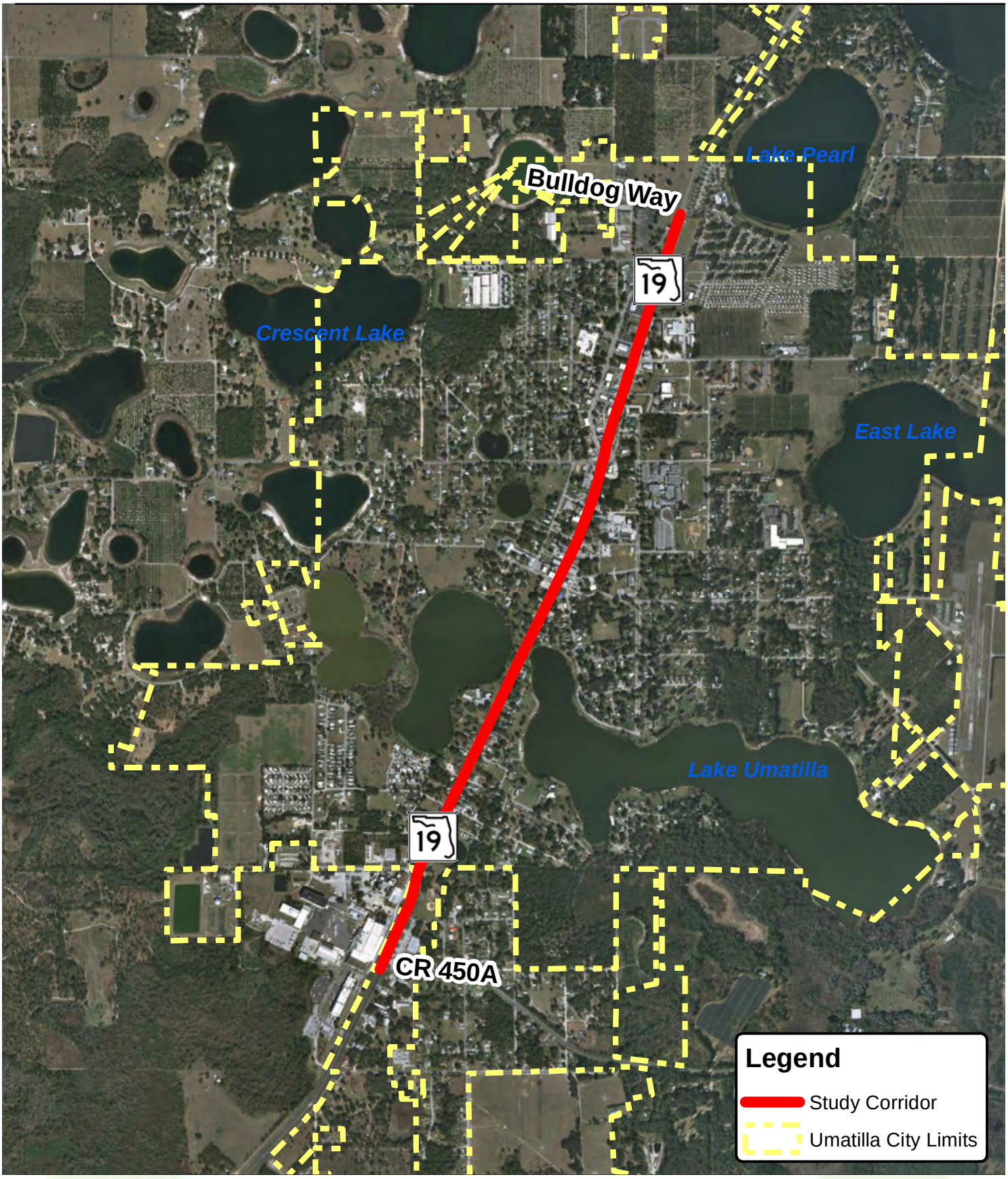


Figure 1
Study Area Map

0 1,000 2,000
Feet

N

1.3 The Public Outreach Process

Public involvement includes communicating to, and receiving information from, interested persons, groups, and government organizations. Successful public involvement is about building credibility, understanding, and consensus. This requires a process characterized by technical competence, integrity, and good listening. This study included the following activities as part of the public outreach process:

- Public Involvement Plan (PIP)
- Project Visioning Team (PVT)
- Public Workshops

1.3.1 The Public Involvement Plan (PIP)

The Public Involvement Plan (PIP) identified stakeholders and other interested parties to contribute to the decision-making process. It also outlines the strategies and methods to carry out meaningful public involvement and agency coordination. The goal of the PIP was to generate interest in the project and to document the public input process. The PIP provides for:

- Early and continuous involvement of stakeholders;
- Reasonable availability of technical and other project information;
- Collaborative input on multimodal transportation improvements for the study area and the criteria against which they will be measured and evaluated; and
- Open access to the decision-making process.

1.3.2 The Project Visioning Team (PVT)

In order to build consensus, specific agency staff and other interested parties were invited to serve on a Project Visioning Team (PVT). The purpose of this group was to assist and guide the study. The Project Visioning Team consisted of approximately 27 members and included representatives from the following:

- Florida Department of Transportation
- Lake-Sumter Metropolitan Planning Organization (MPO)
- City of Umatilla
- Lake County Departments of Community Services, Engineering, and Public Works
- LakeXpress
- Lake County Schools
- East Central Florida Regional Planning Council (ECFRPC)
- Lake County Department of Health
- Florida Waterman Hospital
- Property Owners

Project Visioning Team Meetings were held at Umatilla City Hall on the following dates:

- October 27, 2016
- March 9, 2017

- June 27, 2017

This group played an active role in providing local knowledge about development plans, everyday user perspective, local pedestrian and transit use, and the vetting and development of potential improvement strategies. The PVT members noted that maintaining the existing on-street parking along SR 19 was important for local businesses. They also noted that the signal cycle time for east-west traffic at the signalized intersections is too long and should be evaluated. The PVT worked collaboratively with FDOT to evaluate potential alternatives, and eliminate those alternatives that they did not believe would be supported by the community, such as lane reduction.

Detailed meeting information and attendance sheets are included in the Comments and Coordination Package.

1.3.3 Public Workshops

Two (2) public workshops were held to solicit input from interested parties. The format of the workshops included presentations that covered the study process, existing conditions and key project issues, and to highlight samples of similar projects and/or planning techniques being considered as part of this corridor planning study. The preferred alternative was also presented at the second public workshop. The public was presented with key project contacts and ways they can get involved.

Public Workshops were help at Umatilla City Hall on the following dates:

- April 25, 2017 (Public Kick-Off Workshop)
  - 23 workshop attendees signed in.
  - Meeting purpose:
    - Introduce the public to the overall project, and the goals and objectives.
    - Provide an overview of the existing and future conditions analysis findings.
    - Gain consensus on the Project Purpose and Need.
    - Receive input on issues along the corridor not identified in the existing conditions analysis.
    - Begin the discussion of potential alternatives to address identified issues.

- January 30, 2018 (Alternatives Workshop)
  - 23 workshop attendees signed in.
  - Meeting Purpose:
    - Review the overall project, and the goals and objectives.
    - Review an overview of the existing and future conditions analysis findings.
    - Present preferred short- and long-term alternatives.
    - Receive input on preferred alternatives.

Detailed meeting summaries and attendance sheets are included in the Comments and Coordination Package.

2

Chapter Two: Existing Conditions

2.1 Introduction

This chapter highlights provides an overview of the information found under separate cover in the *Existing Conditions Report.* This information served as a baseline for comparison against short-term (year 2021) and long-term (year 2040) future conditions, as well as developing alternatives.

2.2 Roadway and Intersection Characteristics

The SR 19 Corridor Study consists of a 2.0-mile section of SR 19 (Central Avenue) beginning at County Road 450A to the south and ending at Bulldog Way to the north. This corridor study also includes the approximately half-mile segment of Umatilla Boulevard, from its southern terminus at Ocala Street) to its northern terminus just south of Lake Street, which was also analyzed as part of the study.

The SR 19 Study Corridor is separated into three (3) sections:

- SR 19 from CR 450A to Golden Gem Drive is a four (4) lane divided arterial with a median and rural cross-section (no curb and gutter). Travel lanes are typically 12 feet wide.
- From north of Golden Gem Drive to Bulldog Lane/W Ocala Street, SR 19 is a four (4) lane arterial with a curbed median with well-maintained landscaping and a closed drainage system with curb and gutter. Travel lanes are typically 12 feet wide.
- North of W Ocala Street, SR 19 is a three (3) lane arterial with a bi-directional center turn lane. In this segment, drainage is typically a closed system with grate/drainage pan and no curb and gutter. Travel lanes are typically 11 feet wide, including the center turn lane.

The SR 19 project corridor from CR 450A to Bulldog Way is classified as an “urban minor arterial,” and is owned and maintained by the Florida Department of Transportation (FDOT). The posted speed limit is 45 miles-per-hour (mph) along the southern portion of SR 19. South of Golden Gem Drive, the posted speed limit is reduced to 40 mph for a small section, until it reduces again to 35 mph south of Guerrant Street/Cassady Street.

Table 1 shows the approximate limits for Access Class categories for SR 19 and Umatilla Boulevard in the Study Area and corresponding posted speed limits in miles per hour (MPH). While Umatilla Boulevard is not a state facility and not subjected to FDOT Access Management Standards, it can still be considered for access management improvements. For purposes of this evaluation, Umatilla Boulevard is presented in Table 1 with an Access Class of "4".

Table 1: Roadway Access Management Classifications and Posted Speeds

Roadway	Limits	Access Class	Posted Speed (mph)
SR 19	CR 450A (MP 3.546) to S of Golden Gem Drive (MP 3.743)	3	45
SR 19	S of Golden Gem Drive (MP 3.743) to S of Cassady Street/Guerrant Street (MP 4.514)	3	40
SR 19	S of Cassady Street/Guerrant Street (MP 4.514) to S of Bulldog Lane/Ocala Street (MP 4.906)	3	35
SR 19	S of Bulldog Lane/Ocala Street (MP 4.906) to Bulldog Way (MP 5.567)	4	35
Umatilla Boulevard	W Ocala Street to SR 19	4*	25

*Note: Umatilla Boulevard is not a state facility; however, for purposes of this evaluation, it was evaluated with an Access Class of 4.
Source: FDOT Straight Line Diagram

Right-of-way (ROW) data from a variety of different sources was reviewed to assess the available ROW for the entire length of the corridor (from CR 450A to Bulldog Way/Olde Mill Stream RV Resort). Since there was not a single data source to rely on for ROW information for the entire corridor, multiple sources needed to be used. The results of this analysis are provided in Table 2. ROW data is not available for Umatilla Boulevard.

Table 2: Right-of-Way Summary

Roadway	Location	ROW Width (Feet)	Source
SR 19	North of CR 450-A	173.4	FDOT Right of Way Map 11100-2504 (Dec 1966)
SR 19	North of Ball Park Road	164	FDOT Right of Way Map 11100-2504 (Dec 1966)
SR 19	North of Roberts Street	130	Microstation File
SR 19	North of W Ocala Street/Bulldog Lane	60	Microstation File
SR 19	South of Palmetto Street	60	FDOT Right of Way Map 11100-2503 (July 1964)
SR 19	North of Mary Street/Owens Street	60	FDOT Right of Way Map 11100-2503 (July 1964)
SR 19	North of Umatilla Boulevard	60	FDOT Right of Way Map 11100-2503 (July 1964)

Source: FDOT Right of Way Maps and Microstation ROW files

The majority of SR 19 and Umatilla Boulevard has sidewalks present on both sides of the road with occasional gaps along the corridor. Most side streets do not have any type of sidewalk

connection to SR 19. There are no designated bicycle lanes along SR 19 or Umatilla Boulevard, except a 150-foot bicycle lane on SR 19 northbound south of the intersection of SR 19 and E Collins Street (CR 450), and a 150-foot bicycle lane on SR 19 northbound starting south of the intersection of SR 19 and Palmetto Street. There is an existing multi-use path on City of Umatilla right-of-way that runs parallel to SR 19 between Bulldog Lane and E Collins Street.

Figure 2 depicts the existing intersection geometry for the Study Area Intersections.

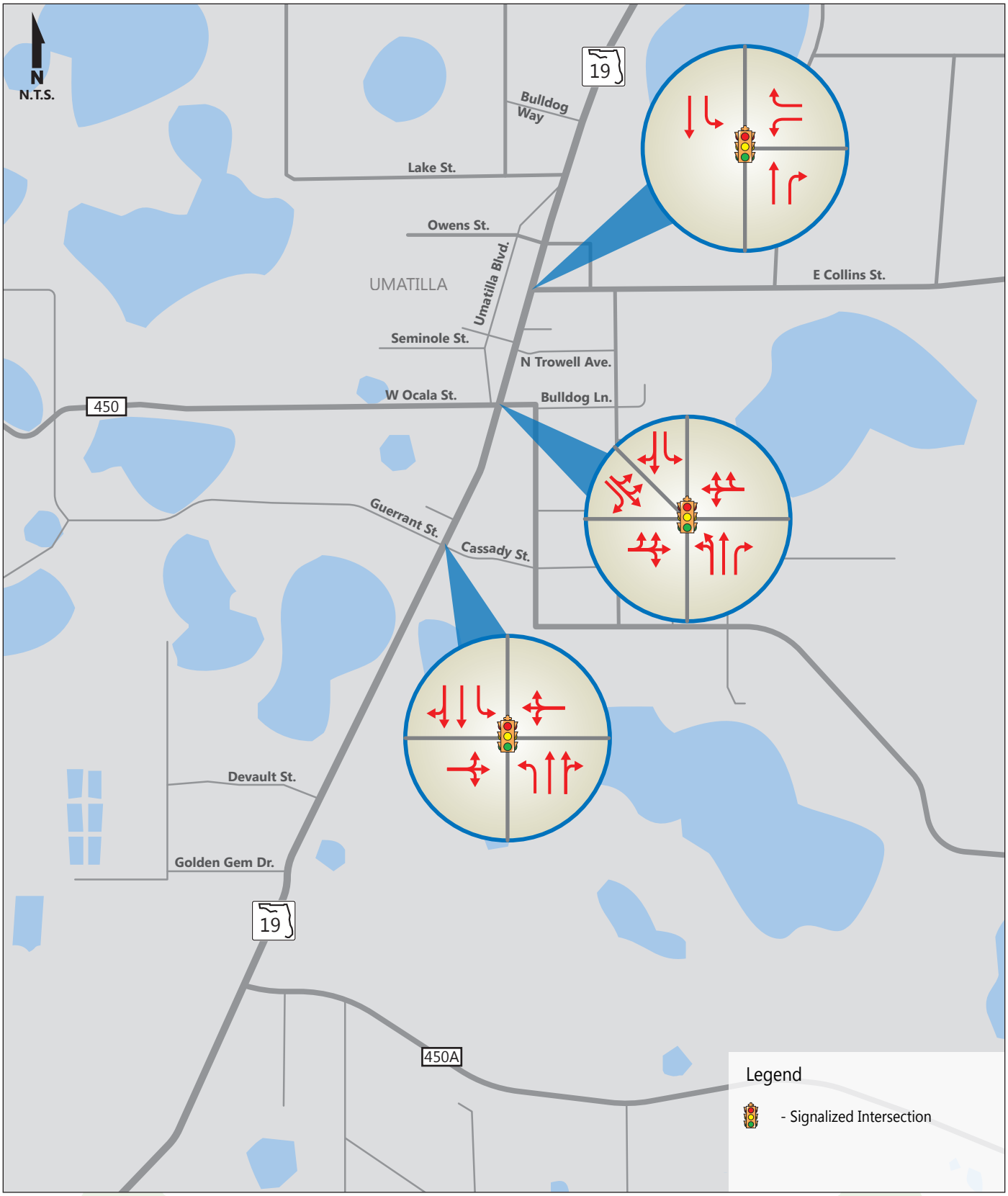


Figure 2
Existing Intersection Geometry

- SR 19 -
CORRIDOR STUDY

2.1 Existing Volumes

Weekday daily and hourly traffic volumes along roadway segments and intersections were collected from the FDOT Florida Transportation Information (FTI) database. These counts were also supplemented by 24-hour tube counts and 7-hour (7:00 – 9:00 AM, 1:00 – 4:00 PM, and 4:00 – 6:00 PM) manual turning movement counts conducted along the Study Area roadway segments and intersections in September and November 2016. Figure 3 presents the existing turning movement volumes.

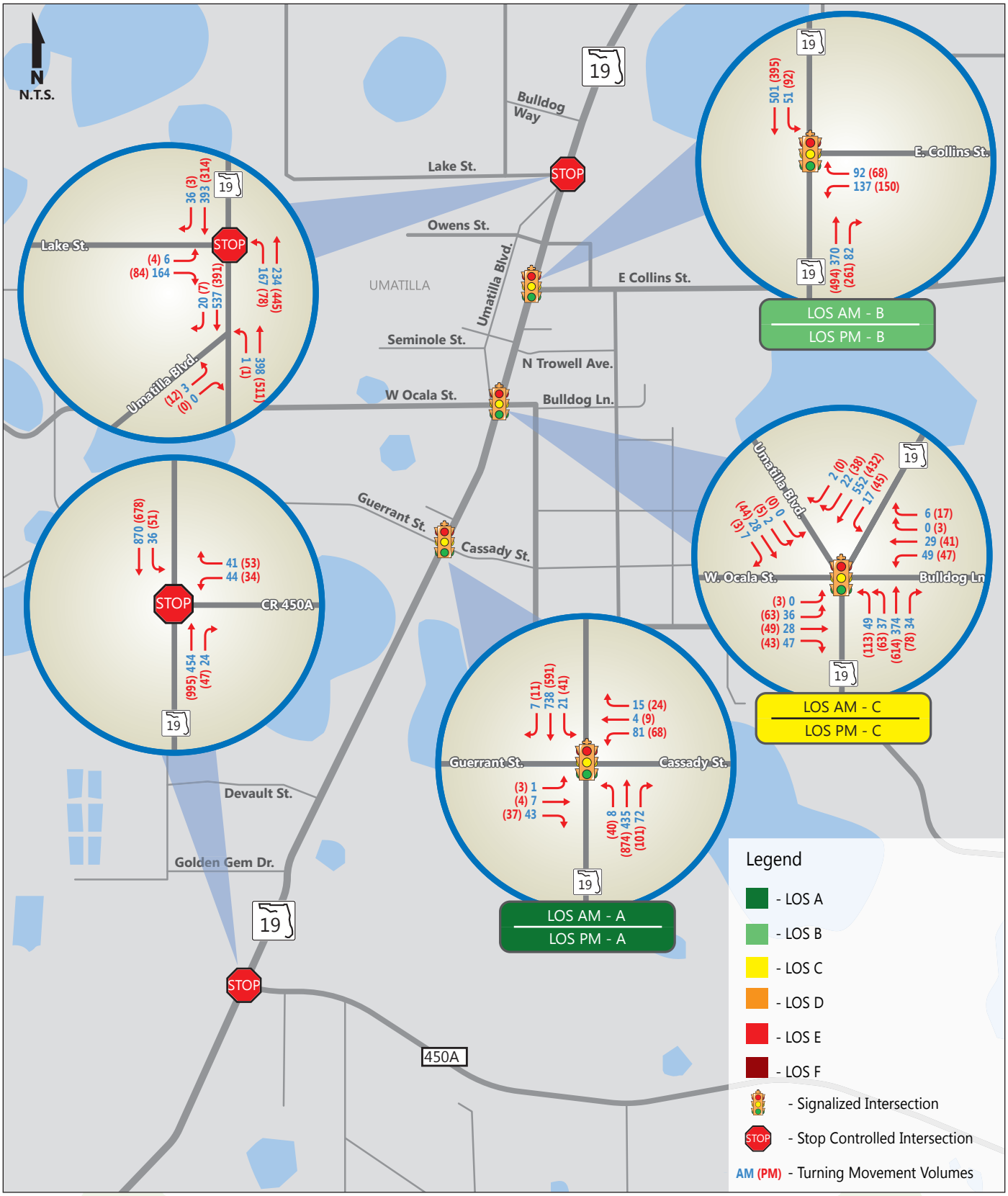


Figure 3
Turning Movement Volumes
and Level of Service

2.2 Existing Operational Analysis

An analysis of operations along the corridor was conducted using existing 2016 traffic volumes. The following subsections provide a summary of the key findings for each mode. The complete, detailed analysis is included in the *Existing Conditions Report*.

2.2.1 Existing Roadway Operations

Policy VII-1.1.2 of the Lake County Comprehensive Plan Transportation Element adopts FDOT's LOS Standard of D on state roads within the urban area boundary, including SR 19.

As shown in Table 3, all the roadway segments within the Study Area currently operate within acceptable LOS standards (LOS D or better).

Table 3: 2016 Existing Roadway Segment Level of Service

Roadway / Segment	No. of Lanes	Speed Limit (mph)	Adopted LOS	Maximum Service Volumes[1]		Daily			AM Peak Hour Directional Traffic				PM Peak Hour Directional Traffic			
				Daily	Peak	AADT	LOS	v/c	Volume	Dir	LOS	v/c	Volume	Dir	LOS	v/c
SR 19																
South of CR 450A	4D	45	D	39,800	2,000	18,690	C	0.47	853	SB	C	0.43	971	NB	C	0.49
CR 450A to Guerrant St/ Cassady St	4D	40	D	39,800	2,000	17,000	C	0.43	634	SB	C	0.32	791	NB	C	0.40
Guerrant St/Cassady St to W Ocala St/Bulldog Ln	4D	35	D	32,400	1,630	17,000	D	0.52	634	SB	C	0.39	791	NB	D	0.49
W Ocala St/Bulldog Ln to E. Collins St	2D	35	D	15,500	790	12,500	D	0.81	538	SB	D	0.68	659	NB	D	0.83
E. Collins St to Bulldog Way	2D	35	D	15,500	790	12,500	D	0.81	538	SB	D	0.68	659	NB	D	0.83
North of Bulldog Way	2D	45	D	18,600	920	9,948	C	0.53	428	SB	C	0.46	469	NB	C	0.51
CR 450A																
East of SR 19	2U	30	D	24,400	1,200	2,000	B	0.08	81	WB	B	0.07	94	EB	B	0.08
CR 450/W Ocala St																
West of SR 19	2U	35	D	24,200	1,190	3,364	B	0.14	125	WB	B	0.11	153	EB	B	0.13
CR 450/E. Collins St																
East of SR 19	2U	35	D	24,200	1,190	5,400	B	0.22	220	WB	B	0.18	339	EB	B	0.28
Umatilla Boulevard																
North of SR 19	2U	25	D	24,200	1,190	1,434	B	0.06	53	SB	B	0.04	88	SB	B	0.07

Source: FDOT FTI and supplemental daily and turning movement counts

1 - 2012 FDOT Quality/Level of Service Handbook

2.2.2 Existing Intersection Operations

An analysis of both signalized and unsignalized intersections within the Study Area was performed. Table 4 shows the signalized and unsignalized intersections analyzed.

Table 4: Intersection Summary

Intersection	Type
SR 19 at CR 450A	Unsignalized
SR 19 at Umatilla Blvd	Unsignalized
SR 19 at Lake St	Unsignalized
SR 19 at Guerrant St/ Cassady St	Signalized
SR 19 at W Ocala St/ Bulldog Lane	Signalized
SR 19 at E Collins St	Signalized

All the signalized study intersections operate at an overall intersection LOS C or better; however, many of the side street movements operate at LOS D or E. These movements experience long delays and/or queues due to the long cycle lengths along the SR 19 corridor. Although these movements operate at LOS D or E, the volume-to-capacity (v/c) ratios are all below 1.0.

Unsignalized study intersections were also analyzed with all movements currently operating at LOS D or better.

2.2.3 Existing Bicycle Operations

In addition to the LOS for the general motorists, the LOS for bicyclists was also evaluated using the 2012 FDOT Quality/Level of Service Handbook. The LOS for the bicycle mode is based on the number of vehicles traveling on the roadway and the coverage of available bicycle lanes or paved shoulders provided along the corridor. Bicyclists along SR 19 are currently experiencing LOS E on most of the segments; however, depending on the time period being considered, some of the segments are operating at LOS D. Along Umatilla Boulevard, bicyclists experience LOS C during all time periods.

2.2.4 Existing Pedestrian Operations

The LOS for pedestrians was evaluated in addition to the vehicle and bicycle modes using the 2012 FDOT Quality/Level of Service Handbook. The pedestrian LOS is based on the number of vehicles traveling on the roadway and the coverage of available sidewalks provided along the corridor. Pedestrians traveling along the corridor are currently experiencing LOS D or better between CR 450A and E Collins Street (CR 450). Pedestrians are experiencing poor LOS (LOS E or LOS F) south of CR 450A and north of E Collins Street (CR 450) where the sidewalk coverage is sparse. Pedestrians are experiencing LOS D or better along Umatilla Boulevard depending on the time period being considered.

2.2.5 Existing Transit Operations

Transit LOS was also examined using the 2012 FDOT Quality/Level of Service Handbook. Transit LOS is based on the adjusted service frequency (vehicles per hour) in the peak hour in the peak direction and the coverage of available sidewalks. Presently, Route 4 provides service along the corridor every two hours. Based on the 2012 FDOT Quality/Level of Service Handbook, this equates to LOS F.

2.3 Safety and Crash Analysis

A safety and crash analysis was completed for the SR 19 Study Area roadways and intersections to determine if the traffic demands combined with geometric conditions pose potential safety concerns. These intersections are:

- SR 19 at CR 450A
- SR 19 at Guerrant St/ Cassady St
- SR 19 at W Ocala St/ Bulldog Lane
- SR 19 at E Collins St
- SR 19 at Lake St

Crash data from the Signal Four Analytics database for the previous five years (October 01, 2012 to September 30, 2016) was analyzed to identify crash patterns along the corridor.

A total of 104 crashes resulted in 40 injuries and no fatalities. The data indicates a steady increase in total crashes from 2012 through 2015 with a reduction in crashes in 2016. The increase over the years indicates a need for safety improvements in the Study Area, especially considering traffic volumes have been relatively flat during the last five years. The predominant crash types were rear end crashes (39.4%), left turn crashes (22.1%), and off road crashes (10.6%).

Two of the five Study Area intersections (SR 19 at Guerrant Street/Cassady Street and SR 19 at E Collins Street (CR 450) experience an average crash rate higher than the average crash rate for similar facilities, according to the statewide average. This indicates the need for further study and evaluation for safety improvements.

3

Chapter Three: Future Conditions

3.1 Introduction

The study involved forecasting travel demands and identifying land use changes. This analysis was performed for short-term (year 2021) and long-term (year 2040) conditions in order to anticipate future needs and recommend corresponding transportation improvements.

The 2021 short-term analysis was conducted in order to provide a 5-year horizon to evaluate the effect of transportation system improvements/enhancements, which do not require right of way acquisitions, or significant environmental impacts.

The 2040 long-term analysis was conducted in order to provide a longer-term horizon to evaluate the effect of transportation improvements/recommendations, which will likely take more time to design, permit, and fund. The year 2040 is consistent with the Central Florida Regional Planning Model future year.

For more information, please refer to the *Future Conditions Report*.

3.2 Items Considered in Analysis

As part of the future conditions analysis planned improvements and growth projections were considered in the short-term and long-term conditions assessment. This section summarizes these two components.

3.2.1 Planned Improvements

Planned improvements identified by various transportation agencies were considered as part of the future conditions analysis. These improvements are broken down by mode.

The improvements contained in the FDOT Resurfacing, Restoration, and Rehabilitation (3R) project (FM 437938-1) have been included as background improvements in the baseline 2021 and 2040 future conditions evaluation presented in this chapter. Implementation of the 3R project is scheduled for the year 2020 in the FDOT Five Year Work Program.

Roadway Improvements

The Lake-Sumter MPO 2040 LRTP identifies SR 19 (from CR 450A to Bulldog Way) as a constrained corridor with a maximum of four (4) lanes.

Preliminarily, the FDOT 3R scope identified resurfacing along SR 19 from Golden Gem Drive to 75 feet south of Palmetto Street, but no operational/geometric improvements were identified.

Bicycle and Pedestrian Improvements

The Lake County Trails Master Plan identifies a proposed North Lake Trail – Phase 2 running through the Study Area. This trail is expected to begin north of Ferran Park in Eustis and terminate at Bulldog Way in Umatilla. While the plan indicates there is a desire to place the trail on the east side of SR 19, no planning has been completed to determine a final alignment for this trail, and no funding has been designated for design or construction. Conversations with Lake County, indicated the extents and final location of the trail are to be determined and can be modified to ensure future construction projects can complete portions of the planned trail.

Preliminarily, the August 2015 FDOT 3R scope identified bicycle and pedestrian improvements from Golden Gem Drive to 75 feet south of Palmetto Street. The bicycle improvements include new bike facilities throughout the length of the project with the introduction of 9-foot buffered bike lanes, sharrows, and 4-foot bike lanes, without moving the existing curbs. The final 3R scope (FM 437938-1), scheduled for 2020 in the FDOT Five Year Work Program, includes 5.5-foot bicycle lanes, consistent with the preferred alternative recommended in this Corridor Study. See Figures 8, 10, and 12 in Chapter 6.

Pedestrian improvements primarily include rebuilding curb ramps not satisfying Americans with Disabilities Act (ADA) code, and minor improvements to widen or construct new sidewalk where existing facilities are too narrow.

Transit Improvements

The LakeXpress Transit Development Plan (TDP) identified one improvement to the route running through the Study Area (Route 4):

- Year 2020: Increased frequency (2 hours to 1 hour)

Route 4 operates along SR 19 from 7:15 AM to 7:15 PM, Monday through Friday with 120-minute service. Service is not provided on Saturdays, Sundays, and major holidays. There are bus stops located throughout the study area primarily at intersections along SR 19, with a few along E Collins St. when the route travels to North Lake Community Park.

Preliminarily, the FDOT 3R scope identified the construction of new landing pads for existing bus stops from Golden Gem Drive to 75 feet south of Palmetto Street.

3.2.2 Growth Projections and Assumptions

In order to determine an appropriate growth rate for the SR 19 Study Area, traffic projections from multiple available sources were considered. This included the latest version of the Central Florida Regional Planning Model, Version 6.1 (CFRPM 6.1), FDOT historical Average Annual Daily Traffic (AADT) growth trends, and Lake County population projections from the Bureau of Economic and Business Research (BEBR). Table 5 below presents the comparison of the resulting growth rates.

Table 5: Annual Growth Rate Comparison

Growth Method	2040 Growth Rate
Historic Trends Analysis	-0.80%
Model Growth Analysis	-0.17%
BEBR Growth Analysis (Lake County – Medium)	2.23%
Average Growth Rate	0.42%
Growth Rate Used in Study	**0.50%**

The historic growth trends were not applied because of the negative value as illustrated in Table 5. The model growth analysis also identified a negative growth rate between 2016 and 2040. The BEBR growth analysis projects the growth for Lake County to be 2.23% between 2015 and 2040. The average of these three growth projections was found to be 0.42%. This average was rounded up to 0.50% to provide a conservative estimate to develop the 2021 and 2040 future traffic volumes. There are no major proposed developments along the Study Area expected to impact the characteristics of the corridor. The adopted Future Land Uses along the corridor are generally consistent with existing land uses; therefore, the background growth will be due to small scale developments and potential redevelopment along the corridor.

The 0.5% annual growth rate was presented to the Project Vision Team during a meeting on March 9, 2017, where it received concurrence.

3.3 Health Trends

Health trends offer a general indication of how health issues change over time. Data obtained from the Department of Health from 2002, 2007, 2010, and 2013 were used to extrapolate the trends for the short-term scenario (year 2021). Table 6 presents the 2021 estimates regarding health, specifically chronic diseases, facing Lake County and Florida. This projection does not consider any improvements, changing demographics, or other factors which may impact the trend; it simply projects the past trend will continue.

The chronic diseases described in this section, including heart diseases, cerebrovascular diseases (e.g., strokes), and diabetes were identified as some of the County's top causes of death in the 2016 Community Health Needs Assessment (CHNA) completed by Florida Waterman Hospital. The 2016 CHNA further identified asthma, diabetes, obesity, and heart disease in the list of "ten most pressing and feasible issues" to focus on improving in collaboration with Lake County.

The percent of the adult population who have had heart or cerebrovascular diseases was not included in available data; however, data was available for certain risk factors for these diseases. Per the American Heart Association, American Stroke Association, and Center for Disease Control, diabetes, hypertension, and obesity are all risk factors for both heart disease and cerebrovascular diseases. Therefore, these risk factors are included in the health indicators below.

Table 6: Health Trends in Lake County – 2021 Estimates

Health Indicator (Percent of Adult Population Affected)	Florida (2013)	Lake County (2021 Estimates)	Florida (2013)	Florida (2021 Estimates)
Asthma	8.7%	9.4%	8.3%	9.9%
Diabetes	15.2%	19.7%	11.2%	14.1%
Hypertension	39.0%	44.4%	34.6%	41.9%
Obese	27.5%	30.4%	26.4%	30.6%
Overweight or Obese	65.5%	69.9%	62.8%	65.5%

As the data in Table 6 indicates, the prevalence of chronic diseases has risen since 2002, and is projected to continue to rise based on the trends. Implementing Healthy Community Design (HCD) principles by offering active transportation options (walking and bicycling facilities) and providing safe and convenient access to destinations including parks, schools, and grocery stores may help to change the trend lines and reduce the percent of the population living with these diseases.

3.4 2021 Short-Term Scenario

An operational analysis was conducted to determine the Level of Service (LOS) for vehicles, pedestrians, bicyclists, and transit in the 2021 short-term scenario assuming no improvements (outside of the planned improvements documented in Section 3.2.1). This scenario is referred

to as the 2021 "no build" or 2021 baseline. The same methodology used for determining the 2016 existing LOS was applied to this scenario.

For the 2021 future operational analysis, the projected traffic volumes were developed by applying the annual growth rate of 0.5% to the existing 2016 traffic volumes. In order to compare future roadway conditions (without recommended improvements from this study) to existing roadway conditions, it was assumed the same signal timings would be utilized at each signalized intersection and the lane geometry would remain the same. Improvements identified in the FDOT 3R scope were assumed to be in place for the baseline 2021 future condition.

The results from the operational analysis for each mode are detailed in the following subsections.

3.4.1 2021 Roadway Segment Operations

The 2021 projected roadway operations for the SR 19 corridor is projected to operate within the adopted LOS standard, LOS D, for the daily, AM peak hour, and PM peak hour scenarios.

3.4.2 2021 Intersection Operations

2021 future intersection operations were examined during the AM, mid-day, and PM peak hours. In order to provide a baseline future scenario, it was assumed the same signal timings would be utilized at each signalized intersection and the lane geometry would remain the same (i.e., no improvements). A queue length analysis was also performed.

The analysis determined there is very little change in both delay and queue length in the 2021 short-term scenario as shown in Table 7.

Table 7: 2021 Projected Unsignalized Intersection Level of Service without Improvements

Intersection	Movement	AM Peak			Mid-Day			PM Peak		
		v/c[1]	Delay[2]	LOS[3]	v/c[1]	Delay[2]	LOS[3]	v/c[1]	Delay[2]	LOS[3]
SR 19 at CR 450A	WBL	0.168	17.6	C	N/A	N/A	N/A	0.221	27.5	D
	WBR	0.071	10.1	B	N/A	N/A	N/A	0.142	13.6	B
	NBT	Note 1	Note 1	Note 1	N/A	N/A	N/A	Note 1	Note 1	Note 1
	NBR	Note 1	Note 1	Note 1	N/A	N/A	N/A	Note 1	Note 1	Note 1
	SBL	0.036	8.5	A	N/A	N/A	N/A	0.085	11.1	B
	SBT	Note 1	Note 1	Note 1	N/A	N/A	N/A	Note 1	Note 1	Note 1
SR 19 at Umatilla Blvd	NBL	0.001	8.6	A	0.000	0.0	A	0.001	8.2	A
	NBT	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	SBT	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	SBR	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	EBL	0.008	14.2	B	0.020	13.9	B	0.031	14.1	B
	EBR	0.000	0.0	A	0.000	0.0	A	0.000	0.0	A

SR 19 at Lake St	NBL	0.165	8.9	A	0.095	8.4	A	0.070	8.2	A
	NBT	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	SBT	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	SBR	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1	Note 1
	EBL	0.019	16.0	C	0.011	14.8	B	0.011	14.8	B
	EBR	0.288	13.2	B	0.200	11.6	B	0.129	10.9	B

Note 1: Unopposed Movement
Source: VHB using HCM 2010 Methodology
1 Volume-to-capacity ratio
2 Average delay in seconds per vehicle
3 Level of service

3.4.3 2021 Bicycle Operations

The LOS for the bicycle mode is based on the number of vehicles traveling on the roadway and the coverage of available bicycle lanes provided along the corridor. The following bicycle improvements identified in the August 2015 FDOT 3R draft scope were included in the 2021 bicycle operations analysis:

- Restripe SR 19 from Golden Gem Drive to the Guerrant Street/Cassady Street intersection to provide a 9-foot buffered bicycle lane
- Restripe the roadway from Guerrant Street/Cassady Street to south of W Ocala Street (CR 450)/Bulldog Lane to provide a 15.5-foot outside lane to accommodate sharrows
- Remove the curb and gutter and widen the roadway from W Ocala Street (CR 450)/Bulldog Lane to Palmetto Street to provide a bicycle lane.

When these results are compared to existing conditions, the bicycle LOS along SR 19 from CR 450A to Guerrant Street/Cassady Street improves from LOS D to B as a result of the implementation of designated bicycle lanes along these segments.

3.4.4 2021 Pedestrian Operations

The 2021 future pedestrian operations were examined during the daily condition and the AM and PM peak hours. The pedestrian LOS is based on the number of vehicles traveling on the roadway and the coverage of available sidewalks provided along the corridor. There were no significant sidewalk improvements identified in the August 2015 FDOT 3R draft scope; therefore, it was assumed the sidewalk coverage would remain the same throughout the corridor.

Due to the minimal increase in traffic expected to occur along the corridor, it was concluded there would be little change in the pedestrian LOS. Pedestrians are expected to continue experiencing poor LOS south of CR 450A and north of E Collins Street (CR 450), due to the sparse sidewalk coverage. Pedestrians are generally expected to experience LOS D or better along Umatilla Boulevard.

3.4.5 2021 Transit Operations

Presently, Route 4 provides service along the corridor every two hours. According to the Lake Xpress TDP, frequency on Route 4 will increase from every two (2) hours to every hour in 2020. According to the 2012 FDOT Quality/Level of Service Handbook, while the headway will be improved, the existing low sidewalk coverage along SR 19 (calculated to be at approximately 65%) will continue to result in LOS F conditions in 2021 unless sidewalk coverage is improved.

3.5 2040 Long-Term Scenario

Similar to the short-term scenario, an operational analysis was conducted to determine the LOS for the various modes in the 2040 long-term scenario. This scenario is often referred to as the 2040 "no build" or 2040 baseline. The same methodology used for determining the 2016 and 2021 LOS was applied to this scenario.

For the 2040 future operational analysis, the projected traffic volumes were developed by applying the annual growth rate of 0.5% to the existing 2016 traffic volumes. Similar to the short-term scenario, in order to compare future roadway conditions (without recommended improvements from this study) to existing roadway conditions fairly, it was assumed the same signal timings would be utilized at each signalized intersection and the lane geometry would remain the same.

3.5.1 2040 Roadway Segment Operations

The 2040 projected roadway operations for the SR 19 corridor is projected to operate within the adopted LOS standard, LOS D, for the daily, AM peak hour, and PM peak hour scenarios.

3.5.2 2040 Intersection Operations

2040 future intersection operations were examined during the AM, mid-day, and PM peak hours. In order to compare future conditions to existing conditions fairly, it was assumed the same signal timings would be utilized at each signalized intersection and the lane geometry would remain the same (i.e., no improvements). A queue length analysis was also performed.

The analysis determined very little change in both delay and queue length in the 2040 long-term scenario. The two exceptions to this are:

- An increase in delay for the westbound left movement at SR 19 and CR 450A in the PM peak hour
- An increase in queue length for the southbound through/right movement at SR 19 and W Ocala Street (CR 450)/Bulldog Lane during the AM peak hour

3.5.3 2040 Bicycle Operations

The LOS for the bicycle mode is based on the number of vehicles traveling on the roadway and the coverage of available bicycle lanes provided along the corridor. The same bicycle lane

coverage from the baseline 2021 future conditions analysis, which included the improvements identified in the August 2015 FDOT 3R draft scope, were used for the baseline 2040 future conditions analysis.

The bicycle LOS along SR 19 from CR 450A to Guerrant Street/Cassady Street and from W Ocala Street (CR 450)/Bulldog Lane to E Collins Street (CR 450) improves as a result of the implementation of designated bicycle lanes along these segments. These results are consistent with the results from the 2021 future conditions analysis.

3.5.4 2040 Pedestrian Operations

The 2040 future pedestrian operations were examined during the daily condition and the AM and PM peak hours. There were no significant sidewalk improvements identified in the FDOT 3R scope; therefore, it was assumed the sidewalk coverage would remain the same throughout the corridor.

Due to the minimal increase in traffic expected to occur along the corridor, it was concluded there would be little change in the pedestrian LOS. Pedestrians are expected to continue experiencing poor LOS south of CR 450A and north of E Collins Street (CR 450), due to the sparse sidewalk coverage. Pedestrians are generally expected to experience LOS D or better along Umatilla Boulevard.

3.5.5 2040 Transit Operations

Transit LOS was also examined. According to the TDP, no new transit improvements are identified for Route 4 after frequency is improved in 2020. Assuming no improvements are made to the sidewalk coverage, LOS F conditions will continue in 2040.

4

Chapter Four: Purpose and Need Development

4.1 Introduction

The Purpose and Need Statement is established based on identified transportation problems or deficiencies. It is used to guide the range of alternatives developed that meet the project need.

4.2 Issues and Opportunities

This section is intended to summarize the issues identified in the existing and future conditions analysis, raised by the Project Visioning Team and public input, as well as opportunities to consider in the development of potential improvement strategies. During the data collection and existing conditions analysis, elements within the corridor found to be deficient were noted as summarized in this section. Wherever possible, other aspects of the corridor representing potential opportunities to support future enhancements were also documented. In addition, the current local agency transportation plans were reviewed to identify a range of potential improvement strategies. The following is a summary of data collection and stakeholder feedback.

4.2.1 Health Trends

In the 2016 CHNA, Florida Waterman Hospital, identified top causes of death and most pressing needs to address, including chronic diseases and conditions, such as asthmas, diabetes, hypertension, and obesity. An analysis of the health trends based on available data indicated the prevalence of these conditions is projected to continue to rise based on the trends.

Healthy Community Design (HCD) is a planning approach integrating public health, transportation, and community planning to recognize how the built environment affects the

physical, social, and mental health of communities, and encourages people to live healthy lives. In addition to the chronic diseases identified by Florida Hospital Watermen, the health of a community should be measured in a holistic manner, measuring the physical, mental, and social well-being of the community and its residents. The *Existing Conditions Report* analyzed ten Healthy Community Design Principles and identified the following six that directly address the transportation needs of the corridor and were used as part of the evaluation methods for multimodal improvement alternatives:

1) Maximize the Opportunity for All Residents to Get Physical Activity
2) Encourage Mixed Use Development
3) Make Education the Cornerstone of Designing or Revitalizing the Community
4) Improve Access to Job Opportunities
5) Invest in Transportation Solutions
6) Promote Access to Healthy Food

4.2.2 Traffic Conditions and Operations

An analysis of all Study Area roadway segments, unsignalized intersections, and signalized intersections indicated they all currently operate at an acceptable Level of Service (LOS).

LOS for roadway segments is computed based on the average annual daily traffic for the segment in question. Roadway segments with lower volumes receive an LOS of B, while those with higher volumes experience a progressively worse grade, up to a maximum of LOS E.

LOS for intersections is computed using average vehicular delay. Intersections which experience lower levels of delay receive an LOS of A, while those which experience higher levels of delay receive a progressively worse grade, up to a maximum of LOS F.

Although the level of service analysis indicates all the intersections operate at LOS D or better, a queuing analysis revealed queues are so long they disrupt the traffic flow between the intersections, which are not taken into account in the capacity analysis. These interruptions can block traffic from getting to and/or through the Study Area intersections, resulting in additional delay and related congestion. In an effort to understand the impacts of the standing vehicle queues, the 95th percentile queues are summarized for each movement at the signalized intersections in Table 8.

Table 8: 2016 Existing Signalized Intersection 95th Percentile Queues

Intersection	Movement	AM Peak [feet]	Mid-Day [feet]	PM Peak [feet]
SR 19 at Guerrant St/ Cassady St	EBL/T/R	43	36	41
	WBL/T/R	134	185	136
	NBL	6	14	20
	NBT/R	82	146	176
	SBL	4	13	5
	SBT	53	115	29

SR 19 at W Ocala St/ Bulldog Lane	EBL/T/R	133	123	195
	WBL/T/R	22	152	142
	NBL	50	101	140
	NBT	234	505	695
	NBR	0	17	38
	SBL	9	16	41
	SBT/R	550	442	426
	SEL	59	56	84
	SER	0	0	0
SR 19 at E Collins St	WBL	184	N/A	198
	WBR	48	N/A	49
	NBT	132	N/A	515
	NBR	13	N/A	110
	SBL	24	N/A	38
	SBT	220	N/A	159

Source: VHB using HCM 2010 Methodology

As such, this indicates an opportunity to optimize signal timings throughout the corridor to reflect the changes in peak direction during the AM, midday, and PM peak hours.

4.2.3 Access Management

An access management analysis revealed most of the driveways and median openings along SR 19 do not meet current Class 3 and Class 4 access management standards (minimum connection spacing of 660 feet when greater than 45mph, 440 feet when less than 45mph). Section 2.7.4 Access Management of the Existing Conditions Report includes a series of line diagrams depicting the distance between existing driveways on the corridor and if access management standards are met or not met. In select parts of the corridor, there are opportunities to improve the conditions by closing unutilized driveways and consolidating median openings.

4.2.4 Bicycle and Pedestrian Facilities

An inventory of the bicycle and pedestrian network revealed there are minimal bicycle facilities and several sidewalk gaps within the Study Area. In general, there are no designated bicycle lanes along SR 19 or Umatilla Boulevard. The two exceptions are noted below:

- 150-foot bicycle lane on SR 19 northbound starting 150 feet before the intersection of SR 19 and E Collins Street
- 150-foot bicycle lane on SR 19 northbound starting at the intersection of SR 19 and Palmetto Street

The majority of SR 19 has sidewalks present on both sides of the road with the following exceptions:

- No sidewalks on both sides of the road from CR 450A to Golden Gem Drive
- No sidewalk connecting west side of SR 19 with east side of Umatilla Boulevard at the intersection of SR 19 and W Ocala Street/Bulldog Lane

- No sidewalk on west side of SR 19 from 475 feet north of W Ocala Street/Bulldog Lane to 85 feet south of E Collins Street
- No sidewalk along east side of SR 19 from E Collins Street to Mary Street

The lack of bicycle and pedestrian facilities discourages usage of these modes and creates safety issues for those who choose to walk or bike.

4.2.5 Transit Facilities

An inventory of transit stops has revealed most lack landing pads; landing pads are needed for ADA compliance when entering and exiting the bus. Furthermore, most of the bus stops do not have a bench or a shelter, which would improve the rider's comfort level when waiting at the bus stop.

4.2.6 Crash Analysis and Safety

A safety and crash analysis was completed for the SR 19 Study Area roadways and intersections to determine if the traffic demands combined with geometric conditions pose potential safety concerns. Crash data from the Signal Four Analytics database for the previous five years (October 01, 2012 to September 30, 2016) was analyzed to identify crash patterns along the corridor.

A total of 104 crashes resulted in 40 injuries and no fatalities. The data indicates a steady increase in total crashes from 2012 through 2015 with a reduction in crashes in 2016. The increase over the years indicates a need for safety improvements in the Study Area, especially considering traffic volumes have been relatively flat during the last five years. The predominant crash types were rear end crashes (39.4%), left turn crashes (22.1%), and off road crashes (10.6%).

Two of the five Study Area intersections (SR 19 at Guerrant Street/Cassady Street and SR 19 at E Collins Street (CR 450)) experience an average crash rate higher than the average crash rate for similar facilities, according to the statewide average. This indicates the need for further study and evaluation for safety improvements.

4.3 Purpose and Need Statement

The Purpose and Need Statement are guided by the goals of the project and supported by the existing conditions data and issues previously identified. The Purpose and Need Statement was used to evaluate the potential alternatives and ultimately select the final recommendations. This statement reflects the reason this project was initiated and the issues it aims to address.

4.3.1 Purpose

The purpose of this project is to provide an enhanced multimodal transportation system which promotes the creation of a healthier community; incorporates complete streets design components; improves access to employment, retail, and institutional uses along the corridor; accommodates for future growth and economic development; and provides safe and convenient access to users of all ages and physical abilities.

4.3.2 Needs Statement

An enhanced multimodal system is needed to create a healthy community which provides improved accommodations for walking, bicycling, and using transit along the corridor. Furthermore, there is a need to improve safety and operations along the corridor. These needs are based on the following observations:

- Trends indicating an increase in chronic diseases amongst the adult population
- Lack of bicycle facilities
- Sidewalk gaps
- Bus stops with minimal amenities
- Documented safety concerns
- Driveways and median openings which do not meet current standards
- High level of delay for side streets

4.4 Guiding Principles and Measures of Success

The Healthy Community Design Principles described in Section 4.2.1 are directly related to transportation, and were used as the guiding principles for planning multimodal improvements for the SR 19 Study Area. The transportation needs of the corridor, as well as the documented community health concerns, provided the basis on which alternatives will be analyzed and evaluated.

Objectives and evaluation measures were identified based on each guiding principle to established measurable criteria used to evaluate the effectiveness and feasibility of potential alternatives for the Study Area. The 2010 *Active Design Guidelines* handbook published by the New York City Center for Active Design determined the relationship between urban development and active modes of travel can be measured by analyzing five “D” variables. The original three “Ds” (Density, Diversity, and Design) were established by Robert Cervero and Kara Kockelman. These have been supplemented by adding Destination Accessibility and Distance to Transit to create the five “Ds.” These five characteristics are “essential to promoting active living through urban design and planning.”

Table 9: Measures of Success

Guiding Principle	Objective	Measure	Associated D-Variable(s)
Maximize the Opportunity for all Residents to get Physical Activity	Enhancing and expanding pedestrian facilities	Number of pedestrian-scale amenities (e.g., lighting, shade trees, etc.)	Design
		Number of miles of new sidewalk proposed	
	Providing bicycle facilities or parallel alternatives	Number of miles of new bicycle facilities proposed	
	Improving pedestrian and bicyclist access to recreational and community destinations	Number of parks and other recreational facilities accessible by the improved bike/ped network	Destination Accessibility
		Potential to decrease the average percent of household income spent of transportation	
Encourage Mixed Use Development	Reviewing density, intensity, and land use allocation standards to determine viability of bicycle or pedestrian trips	Potential to increase in percent of commuters who bike or walk to work	Density; Diversity; Destination Accessibility
	Designating mixed use node(s) in appropriate areas to maintain the small-town character of Umatilla	Potential to increase bicycle and pedestrian trips along corridor	Diversity; Design; Destination Accessibility
Make Education the Cornerstone of Designing or Revitalizing the Community	Connecting bicycle and pedestrian networks to schools	Number of schools accessible by the improved bike/ped network	Destination Accessibility

Table 9 (Continued)

Guiding Principle	Objective	Measure	Associated D-Variable(s)
Improve Access to Job Opportunities	Providing improved bus stop facilities	Number of stops proposed for upgrade to meet ADA standards	Design; Destination to Transit; Destination Accessibility
		Number of stops proposed for shelters/benches to increase in transit ridership	
	Enhancing connections between the transit system and the bicycle and pedestrian networks	Number of stops with new connections to sidewalk	
		Number of stops with new connections to a bike facility (sharrow, bike lane, buffered bike lane, cycle track)	
Invest in Transportation Solutions	Closing median openings	Number of median openings closed	Design
	Closing driveways	Number of driveways closed	
	Creating a Complete Street	Number of modes accommodated	
		Presence of streetscape amenities	
	Improving the safety of the most vulnerable users (bicyclists and pedestrians)	Reduce conflict points between bicycles/pedestrians and vehicles	
		Number of pedestrian mid-block crossings	
	Reducing the crash rate at the two high crash intersections (SR 19 at Guerrant St/Cassady St; SR 19 at E Collins St)	Potential to reduce the frequency of crashes of the type commonly found at each intersection	
Promote Access to Healthy Food	Connecting bicycle and pedestrian networks to grocery stores	Number of grocery stores accessible by the improved bike/ped network	Destination Accessibility

5

Chapter Five: Alternatives and Strategies

5.1 Introduction

The following sections describe alternatives and strategies as having the potential to address the project need. These alternatives were evaluated and refined with further technical analysis to develop the preferred alternative, described in the Chapter 6.

Through the process, two levels of alternative improvements were identified. The first are corridor-long, or "base" improvements. These improvements represent the potential short- and long-term alternative for the overall facilities and operations along the corridor. The second type of improvements are "site-specific." These improvements address specific locations or intersections identified in the Issues and Opportunities, and could be funded and constructed as individual projects, separate from the corridor-long improvements.

5.2 Alternative Roadway Improvements

The roadway improvements identified for SR 19 are broad and cover a wide array of items; some do not require physical construction and can be inexpensive to implement, while others may require construction and/or acquisition of right of way. For ease of understanding, the roadway improvements are presented in a general order of complexity and potential implementation timeframe, with the simpler and easier to implement improvements being presented first.

5.2.1 Existing Geometry with Signal Retiming

This improvement would keep the existing roadway geometry but retime all three signalized intersections (Guerrant St/Cassady St, W Ocala St [CR 450]/Bulldog Ln, and E Collins St [CR 450]) to better meet vehicular demand. The results of this analysis are presented for both 2021 and 2040 in the following subsections.

2021 Conditions with Retiming

When these results of the analysis are compared to the 2021 baseline condition without improvements (see Section 3.4.2), the retiming results in the side streets generally having reduced delay, and the main street results in a slight increase in delay. In terms of queuing, the analysis indicates the retiming reduces the length of many long queues, including those on SR 19.

2040 Conditions with Retiming

When these results are compared to the 2040 baseline condition without improvements (see Section 3.5.2), it indicates the retiming results in the side streets generally having reduced delay, and the main street having a slight increase in delay. In terms of queuing, the analysis confirms the retiming reduces the length of many long queues, including those on SR 19.

5.2.2 Add Turn Lanes at SR 19 and W Ocala St (CR 450)/Bulldog Ln/Umatilla Blvd

This improvement would add left turn lanes for northbound traffic on W Ocala Street (CR 450) and southbound traffic on Bulldog Lane at the intersection of SR 19. This would improve operations at the intersection, reducing delay for these two side streets. Delay for Eastbound traffic on W Ocala Street would be reduced from 41.4 seconds to 40.1 seconds in the year 2040 PM peak period. Delay for Westbound traffic on Bulldog Ln would be reduced from 61.5 seconds to 44.7 seconds in the year 2040 PM peak period.

The analysis determined, compared to the 2040 baseline condition without improvements, this improvement generally reduced delay and queue lengths on W Ocala Street (CR 450) and Bulldog Lane, while having no impact on SR 19. Additional ROW would be required to accommodate the turning lanes.

5.2.3 Roundabouts

A roundabout is a type of circular intersection in which traffic travels counterclockwise around a central island and entering traffic must yield to circulating traffic. When designed properly, a roundabout improves safety for all users and improves efficiency at the intersection by reducing delay and queuing. There were two intersections evaluated as roundabouts.

SR 19 and W Ocala St (CR 450)/Bulldog Ln/Umatilla Blvd

This improvement would replace the traffic signal at the intersection of SR 19 and W Ocala Street (CR 450)/Bulldog Lane/Umatilla Boulevard with a roundabout.

The intersection of SR 19 at W Ocala Street (CR 450)/Bulldog Lane/Umatilla Boulevard is a good candidate for a roundabout. As an intersection with five approaches, there is more vehicular delay than a typical four-legged intersection, due to the need for more traffic signal

phases. This longer than normal delay also results in longer queue lengths at this intersection. Furthermore, due to the atypical geometry of the five legs of the intersection, there are also driver expectancy issues which can result in higher number of crashes than a typical intersection.

The analysis compared the roundabout option to the 2021 and 2040 baseline conditions as well as the 2021 and 2040 conditions with retiming, and determined the roundabout results in reduced delay and queues for all approaches and for all time periods.

Prior to implementation, additional analyses and design will need to be performed to determine the suitability of a roundabout at this location.

SR 19 and Lake Street

This improvement would be located at the unsignalized intersection of Lake Street and SR 19. It would address the close proximity of the intersections of Lake Street, Umatilla Boulevard, and SR 19, which results in three separate curb cuts within 200 feet.

The analysis compared the roundabout option to the 2021 and 2040 baseline conditions as well as the 2021 and 2040 conditions with retiming, and determined the roundabout results in reduced delay for the side streets.

Prior to implementation, additional analyses and design will need to be performed to determine the suitability of a roundabout at this location.

5.2.4 One-Way Pair

This improvement would introduce a one-way pair between W Ocala Street (CR 450)/Bulldog Lane and Lake Street. SR 19 would be converted into two lanes serving northbound traffic while Umatilla Boulevard would be converted into two lanes serving southbound traffic. Prior to implementation, additional analysis and design will need to be performed to determine the suitability of this treatment, particularly with regard to the rerouting of traffic.

As a long-term improvement, the one-way pair was analyzed for 2040 conditions. When compared to 2040 baseline condition with retiming, the results indicate this improvement reduces delay and queue length for the SR 19 through movements.

5.2.5 Lane Elimination

This improvement would implement a “road diet” along a portion of SR 19. A road diet involves reducing the number of travel lanes in order to provide accommodations for other users. In this case, the road diet would involve removing one travel lane in each direction along SR 19 and adding a dedicated bike lane in each direction. The existing on-street parking will remain in place. The road diet would begin north of Golden Gem Drive and extend north

approximately 0.8 miles to the intersection of W Ocala Street (CR 450)/Bulldog Lane. The only intersection within these limits which would experience geometric changes would be SR 19 at Guerrant Street/Cassady Street. This intersection was analyzed for the 2021 and 2040 conditions, assuming the following lane geometry:

Northbound: 1 left turn lane, 1 shared through/right turn lane, 1 bicycle lane
Southbound: 1 left turn lane, 1 shared through/right turn lane, 1 bicycle lane
Eastbound: 1 shared left/through/right lane
Westbound: 1 shared left/through/right lane

As can be expected, the northbound and southbound volume-to-capacity (v/c) ratios increase considerably as compared to the 2021 Conditions with Retiming scenario. This is a direct result of eliminating one of the through lanes in the northbound and southbound directions. Other than the increase in the v/c ratios, all other parameters remain comparable to the 2021 Retiming conditions. The overall LOS for the intersection is LOS A in the AM, Mid-Day, and PM peak hours.

The only movements with a considerable change in queue length from the 2021 Retiming scenario are the northbound and southbound through movements, which will increase due to the road diet. The northbound and southbound left turn lanes will need to be lengthened in order for left turning vehicles to bypass the through lane queue.

Similar to the 2021 scenario comparison, the main impact the road diet has on the 2040 Conditions with Retiming is the increase in the v/c ratios for the northbound and southbound through movements. In the 2040 baseline condition, the intersection experiences an overall LOS A in the AM, Mid-Day, and PM peak hours. As a result of the road diet, the northbound and southbound through queues will increase significantly from the 2040 Retiming scenario; however, when compared to the 2021 Road Diet analysis, the northbound queue increases by approximately 150 feet and the longest southbound queue will not exceed the longest 2021 southbound queue.

5.3 Bicycle Facility Improvements

For this analysis, it was assumed bicycle facilities would be provided along the full length of the corridor. These facilities might include a bicycle lane, or a buffered bicycle lane, depending on the existing conditions and context of the individual segments of the study area. Multi-use trails are discussed in Section 5.4.

As the analysis was done during the evaluation phase of the study, there were two potential roadway cross-sections which could be selected for SR 19 between Golden Gem Drive and W Ocala Street (CR 450)/Bulldog Lane. The existing four-lane section, or potential road diet were still being analyzed; therefore, both scenarios were evaluated in regard to bicycle LOS. This is necessary as the LOS for the bicycle mode is based on the number of vehicles traveling on the roadway (which is determined by the number of travel lanes) and the coverage of available bicycle lanes provided along the corridor.

The bicycle LOS associated with the addition of bike lanes along SR 19 between CR 450A and W Ocala Street (CR 450)/Bulldog Lane with the existing cross-section is LOS C in the daily

condition, and LOS B in both the AM and PM peak hours. With the road diet in place, the bicycle LOS degrades to LOS C in the AM and PM peak hours for this segment. Regardless of the roadway cross-section, the implementation of dedicated bicycle lanes will provide cyclists with improved accommodations when riding along the corridor.

When compared to 2040 baseline conditions, the implementation of bike lanes throughout the study corridor, improves the LOS for cyclists from LOS E or better between CR 450A and Bulldog Way, to LOS C or better.

5.4 Pedestrian Improvements

For this analysis, it was assumed sidewalks or other pedestrian facilities would be provided along the full length of the corridor. These facilities might be adding sidewalks to close sidewalk gaps, or connect to destinations, as well as providing a multi-use trail to extend the existing trail north of W Ocala Street. The specific improvements depend on the existing conditions and context of the individual segments of the study area. The implementation of a sidewalk throughout the corridor will provide pedestrians with LOS D or better along SR 19.

5.5 Transit Improvements

Transit improvements identified as part of this study included identifying bus stops in need of accessibility improvements (i.e., landing pads, sidewalks) or amenities (e.g., benches and shelters). A more detailed stop-by-stop stop analysis determined improvements for individual bus stops based on the existing conditions and locations, and add amenities, such as benches or shelters.

6

Chapter Six: The Preferred Alternative

6.1 Introduction

The SR 19 Corridor Study Project Team, FDOT 3R Team, and FDOT Units met internally numerous times between July 2017 through December 2017 to evaluate potential alternatives described in the previous chapter. The result of this collaboration was a set of "Short-Term" improvements and "Long-Term" improvements. The Short-Term improvements are intended to be implemented through the 3R project, which is currently under design and scheduled for construction in 2020. The Long-Term improvements are outside of the scope of the 3R project and require additional right-of-way. Both types of improvements are described in the following sections.

6.2 Short-Term Improvements

The Short-Term improvements are intended to be implemented through the 3R project, which is currently under design and scheduled for construction in 2020. The improvements consist of restriping to accommodate on-street bicycle lanes and maintain existing on-street parking. There is no impact on existing utilities, curbs, or adjacent right-of-way.

6.2.1 Study Area Segments

Short-term improvements are recommended for Segments 1 through 4. The Segments are shown on Figure 4.

Segment #	From	To
1	CR 450a	Golden Gem Rd
2	Golden Gem Rd	Mebane St
3	Mebane St	Cassady St
4	Cassady St	Bulldog Ln

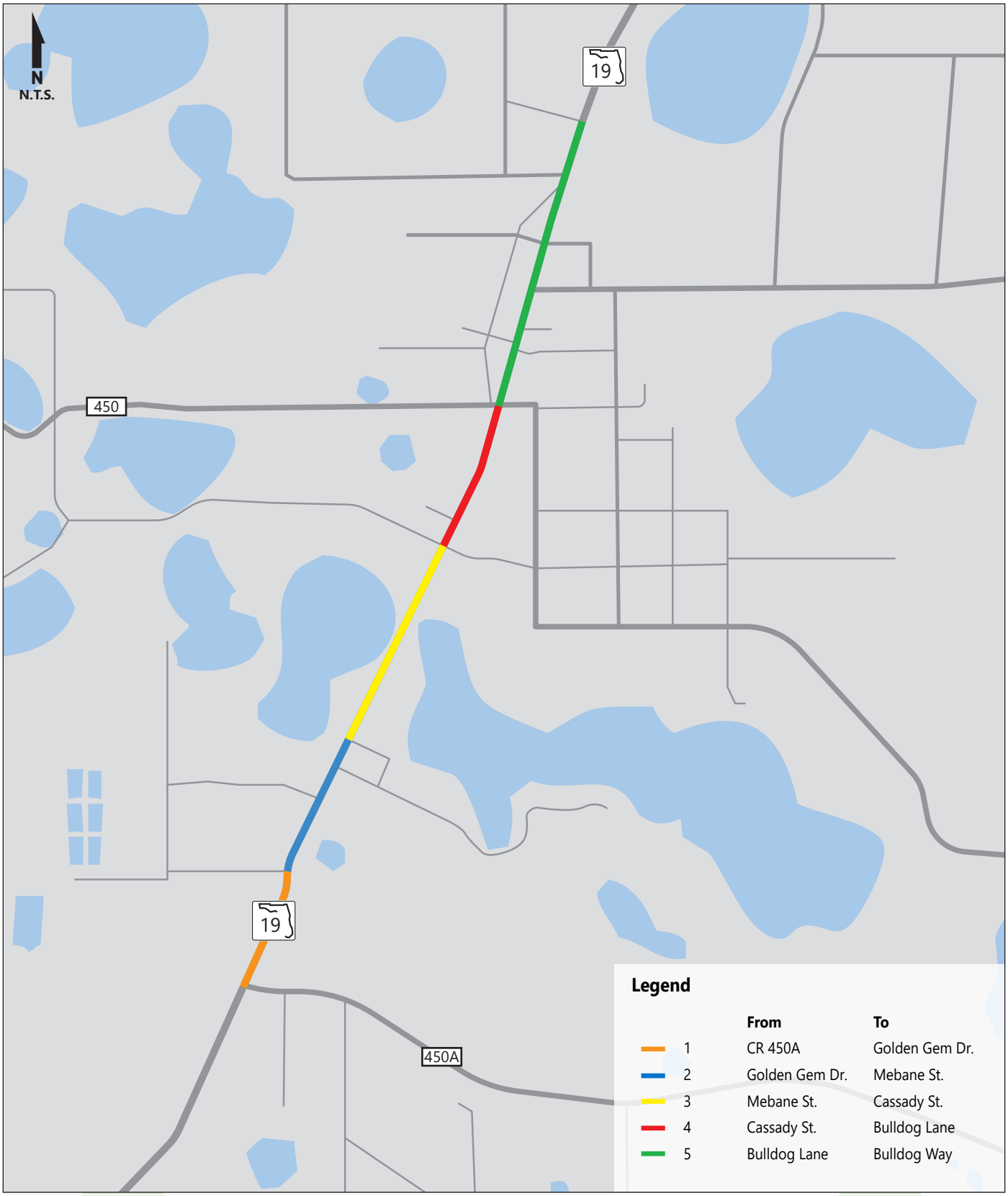


Figure 4
Segment Location Map

6.2.2 Process of Identifying Short-Term Improvements

After receiving input from the Project Visioning Team and community, the project team worked collaboratively with the FDOT 3R team, FDOT Units, and FDOT Management to identify and evaluate potential alternatives that could be accomplished within the scope, budget and schedule of the 3R project, which is programmed for 2020. After a series of meetings to evaluate different alternatives, a preferred alternative was selected.

The short-term preferred alternative balances the needs of all priorities on the corridor, considering low volume parking use, bicycle lane requirements, percentage of truck traffic, traffic volumes, and speed characteristics. This cross section is the most feasible method of incorporating all modes of transportation without moving the curb, which would result in increased expense and delay of the upcoming 3R project.

6.2.3 Recommended Short-Term Preferred Alternative

The following table describes the recommended improvements of the Short-Term Preferred Alternative. Existing curbs are maintained in all segments. See the Concept Plan roll plot, or Appendix A, for additional details. Existing and Preferred short-term typical cross sections are depicted in Figures 5 through 12.

Segment #	From	To	Description
1	CR 450A	Golden Gem Rd	• Add on-street bicycle lanes. • Construct sidewalks where missing
2	Golden Gem Rd	Mebane St	• Reduce travel lanes from 12-feet to 11-feet • Add 5.5-foot on-street bicycle lanes • Reduce parking lanes from 9-feet to 7-feet (inclusive of gutter pan)
3	Mebane St	Cassady St	• Reduce travel lanes from 12-feet to 11-feet • Add 5.5-foot on-street bicycle lanes • Reduce parking lanes from 9-feet to 7-feet (inclusive of gutter pan)
4	Cassady St	Bulldog Ln	• Reduce travel lanes from 12-feet to 11-feet • Add 5.5-foot on-street bicycle lanes • Reduce parking lanes from 9-feet to 7-feet (inclusive of gutter pan)

Figure 5: Segment 1 Existing Typical Section (CR 450a to Golden Gem Rd)

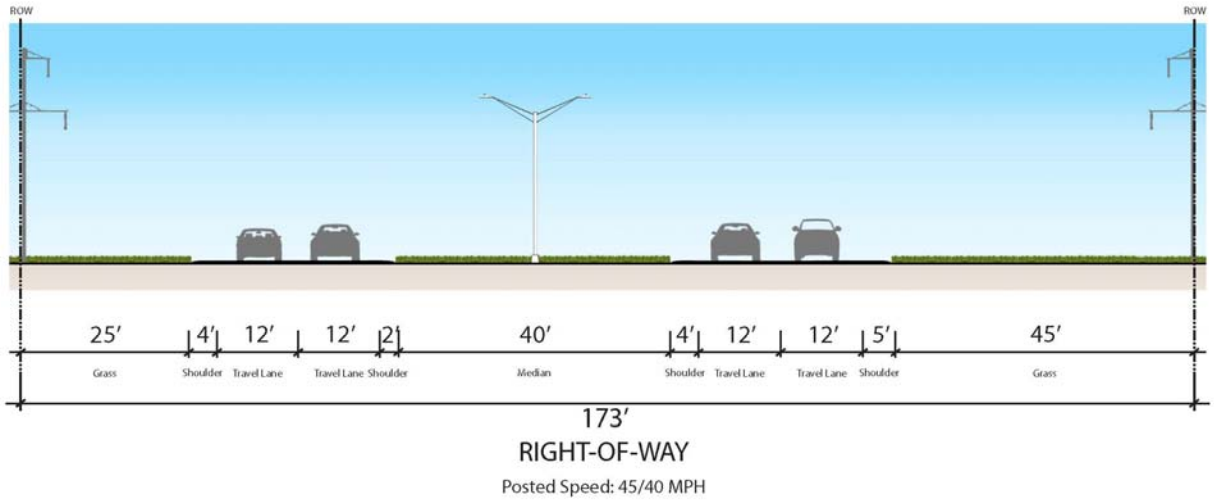


Figure 6: Segment 1 Preferred Short-Term Typical Section (CR 450a to Golden Gem Rd)

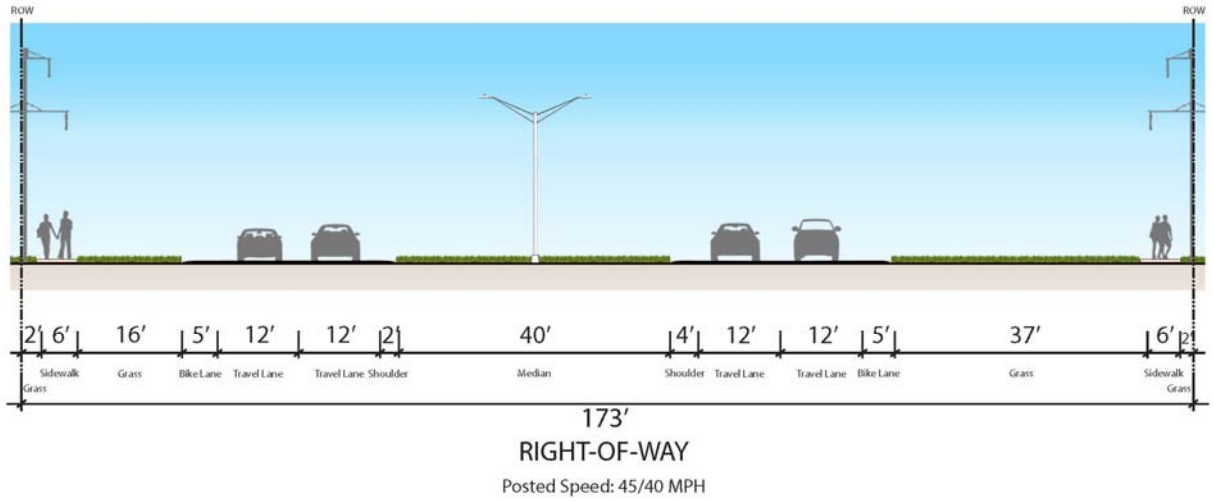


Figure 7: Segment 2 Existing Typical Section (Golden Gem Rd to Mebane St)

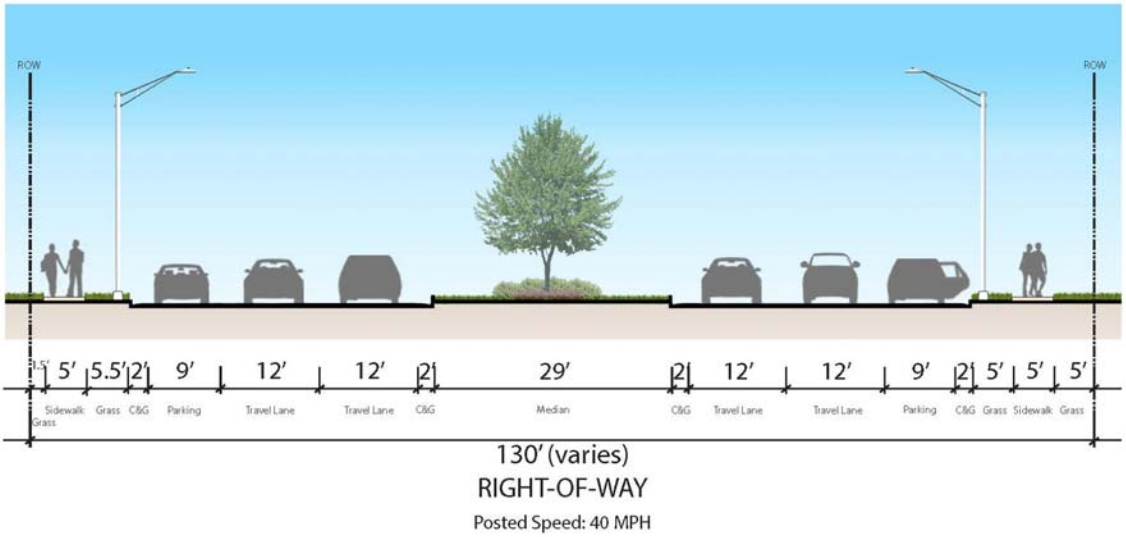


Figure 8: Segment 2 Preferred Short-Term Typical Section (Golden Gem Rd to Mebane St)

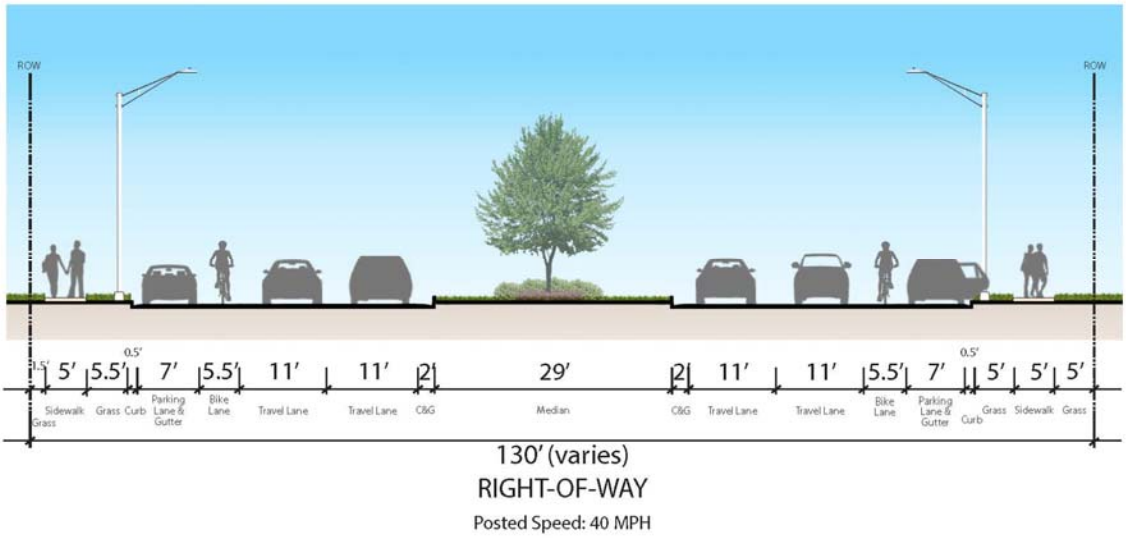


Figure 9: Segment 3 Existing Typical Section (Mebane St to Cassady St)

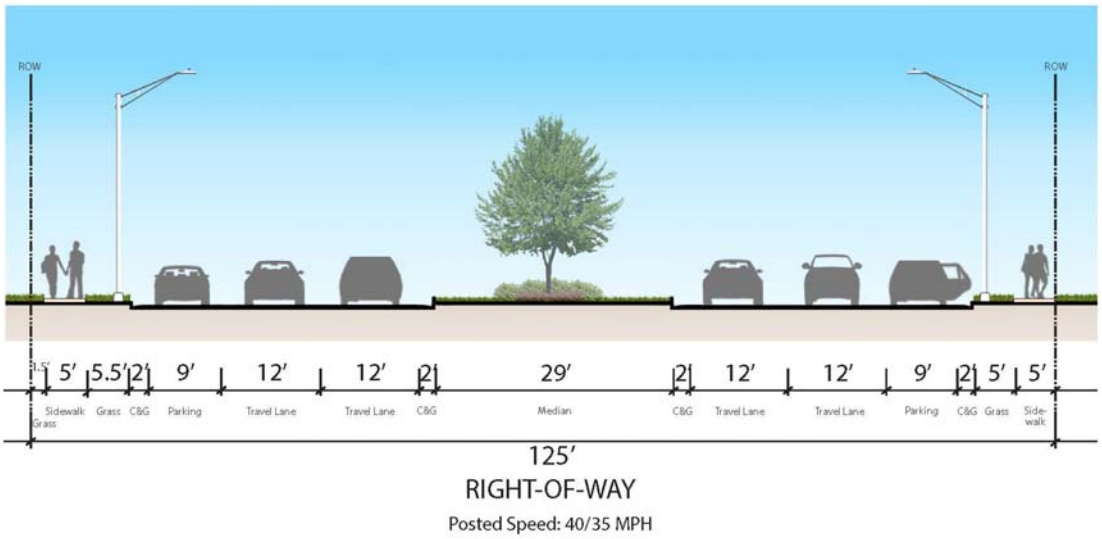


Figure 10: Segment 3 Preferred Short-Term Typical Section (Mebane St to Cassady St)

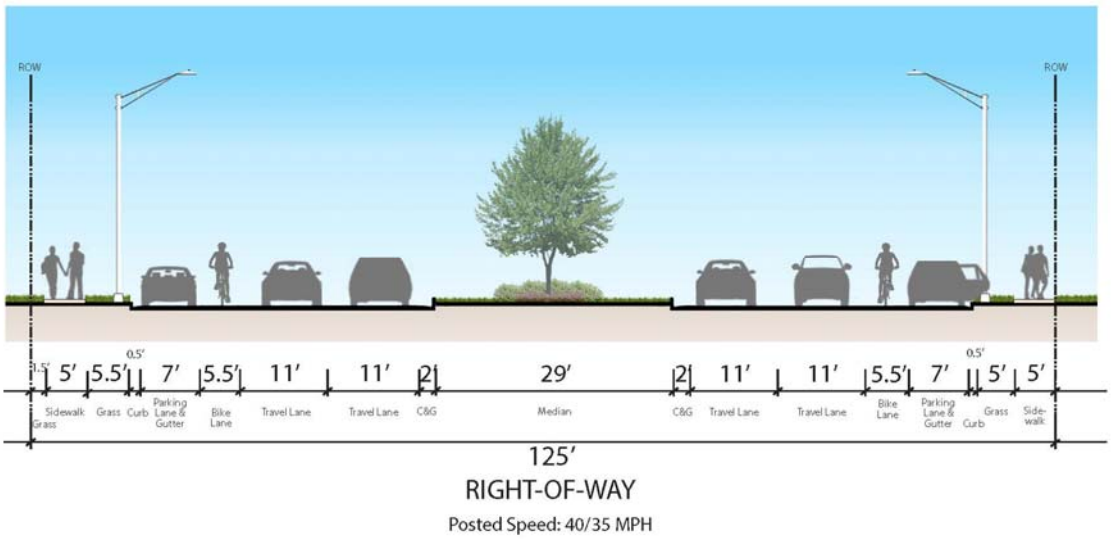


Figure 11: Segment 4 Existing Typical Section (Cassady St to Bulldog Ln)

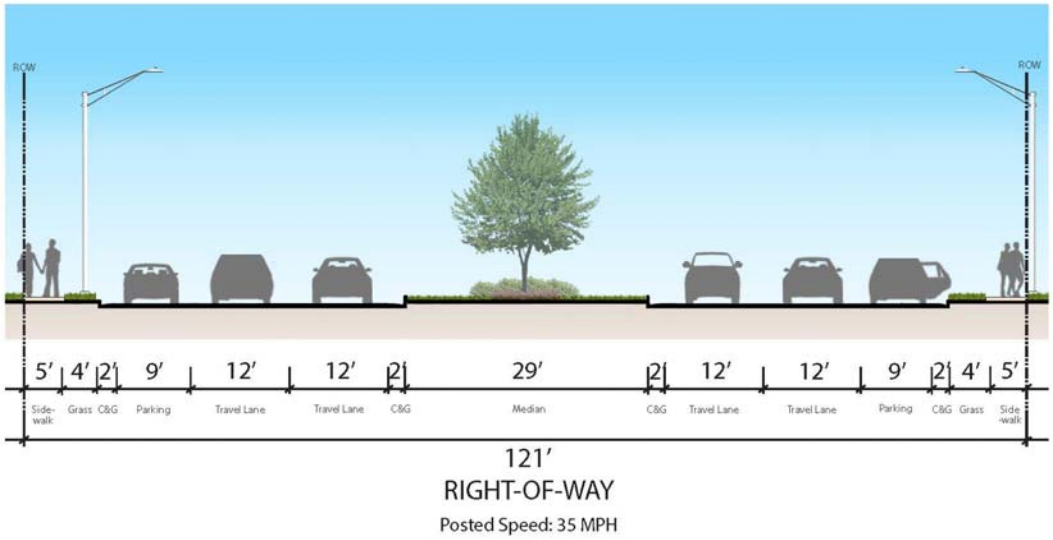
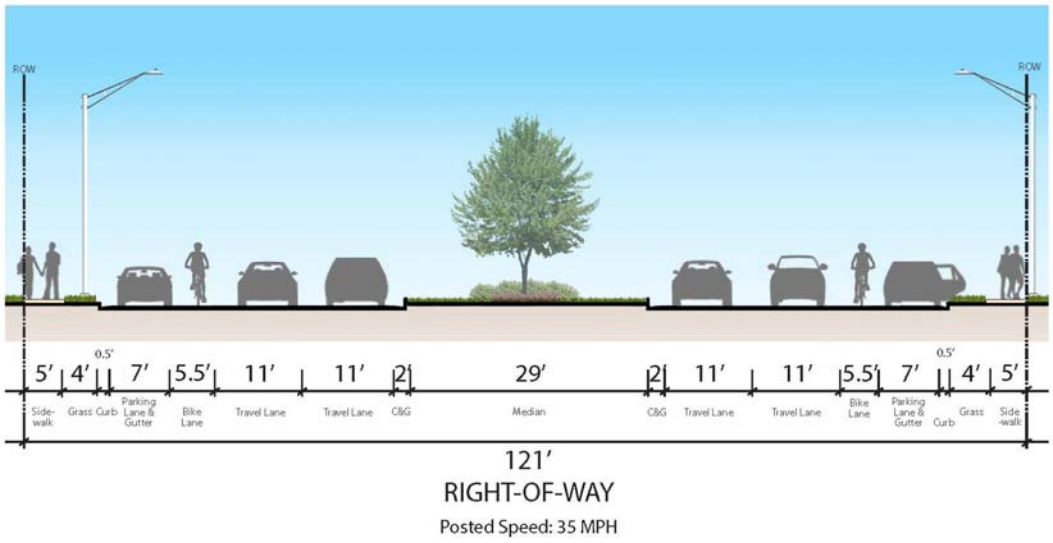


Figure 12: Segment 4 Preferred Short-Term Typical Section (Cassady St to Bulldog Ln)



6.3 Long-Term Improvements

Long-Term Improvements occur outside of the upcoming 3R project. These improvements included more substantial physical changes to the corridor, including the addition of stormwater management facilities, addition of roundabouts, curb modifications, utility modifications, and right-of-way acquisition.

6.3.1 Recommended Long-Term Preferred Alternative

The following table describes the recommended improvements of the Long-Term Preferred Alternative. The Long-Term Preferred Alternative assumes that the Short-Term improvements have already occurred, as described previously. See the Concept Plan roll plot, or Appendix A, for additional details. Preferred long-term typical cross sections are depicted in Figures 13 through 16.

Segment #	From	To	Description
1	CR 450a	Golden Gem Rd	• No change
2	Golden Gem Rd	Mebane St	• Construct 10-foot multi-use trail on east side of roadway
3	Mebane St	Cassady St	• Reduce median from 29-feet to 22-feet. • Shift northbound travel lanes, curbs, and utility poles to accommodate for 10-foot multi-use trail on east side of roadway
4	Cassady St	Bulldog Ln	• No change
5	Bulldog Ln	Bulldog Way	• Reduce travel lane widths from 11.5-feet to 11-feet • Reduce center turn lane from 14-feet to 12-feet • Extend existing multi-use trail (located on City of Umatilla right-of-way) to northern terminus of project. • Construct full curbs and stormwater management facilities. • Access management for driveways

Figure 13: Segment 2 Preferred Long-Term Typical Section (Golden Gem Rd to Mebane St)

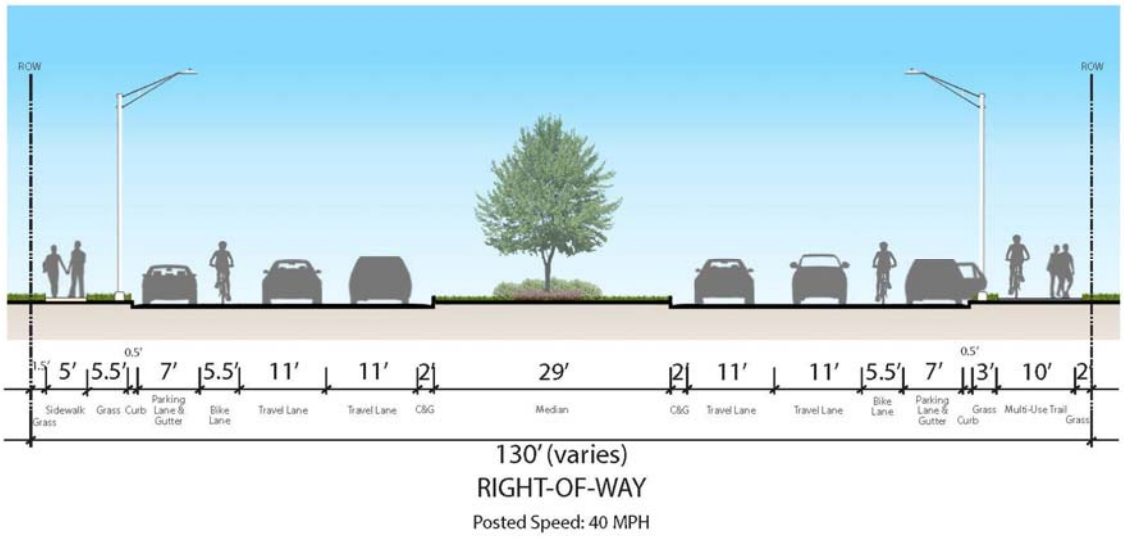


Figure 14: Segment 3 Preferred Long-Term Typical Section (Mebane St to Cassady St)

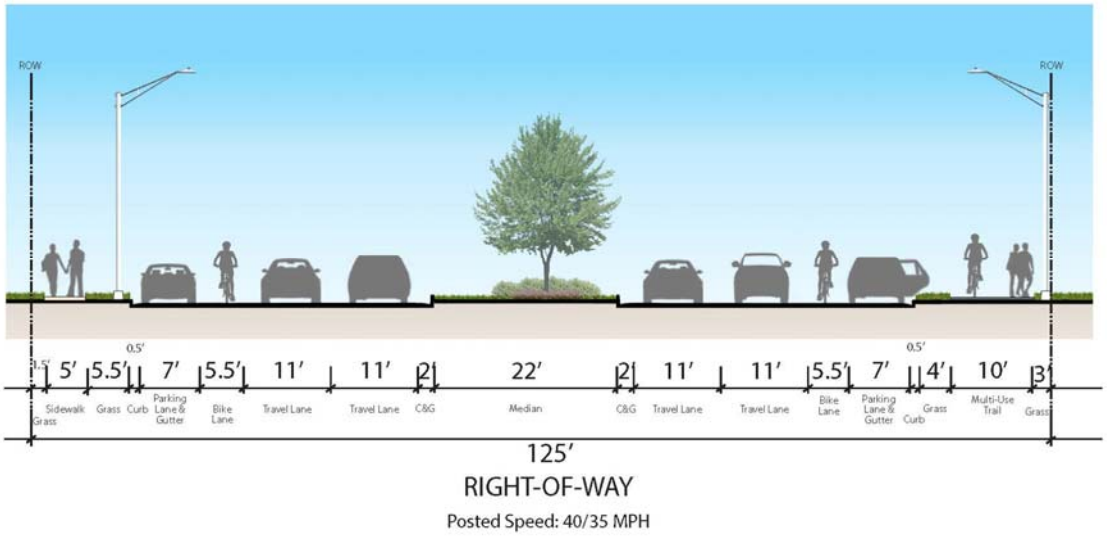


Figure 15: Segment 5 Existing Typical Sections (Bulldog Ln to Bulldog Way)

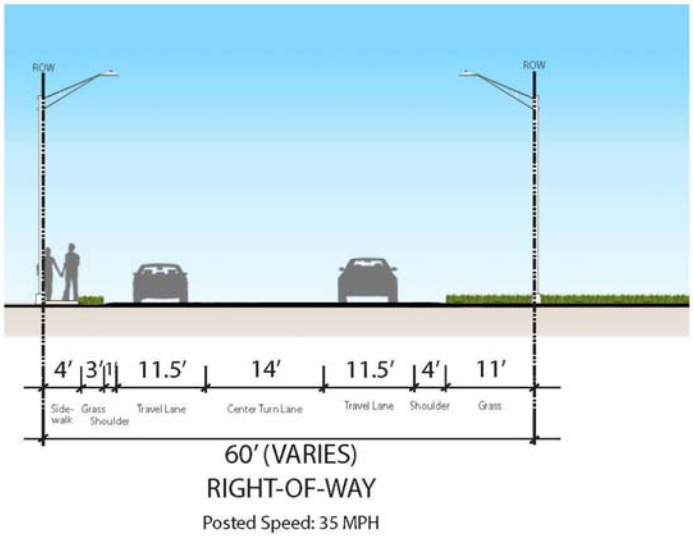
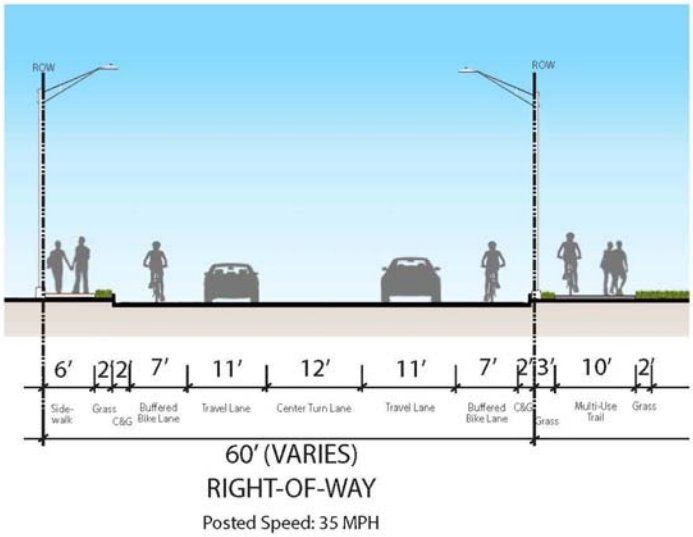


Figure 16: Segment 5 Preferred Long-Term Typical Section (Bulldog Ln to Bulldog Way)



6.3.2 Pedestrian and Bicycle Facilities

On-street bicycle lanes are included in both short-term and long-term preferred alternatives, as shown in Figures 5 through 16. The long-term preferred alternative reconstructs the existing eastern sidewalk as a 10-foot multi-use path in Segments 2 (Figure 13) and 3 (Figure 14). In Segment 5 (Figure 16), the existing multi-use path, located between Bulldog Lane and E Collins Road, is extended to the northern terminus of the study area. See the Concept Plan for site specific details.

Continuous sidewalks are provided on both sides of SR 19 for the entire length of the corridor, with the exception of Segment 5, which includes the aforementioned 10-foot multi-use trail on the eastern side.

6.3.3 Transit Facilities

No transit stops are proposed to be moved. Where sidewalks are not directly connected to transit stops, the Project Team designated the need to construct new landing pads, shelters, and sidewalk connections. See the Concept Plan for site specific details in Appendix A.

FDOT will continue to coordinate with LakeXpress during the design phase of short-term and long-term improvements.

6.3.4 Roundabouts

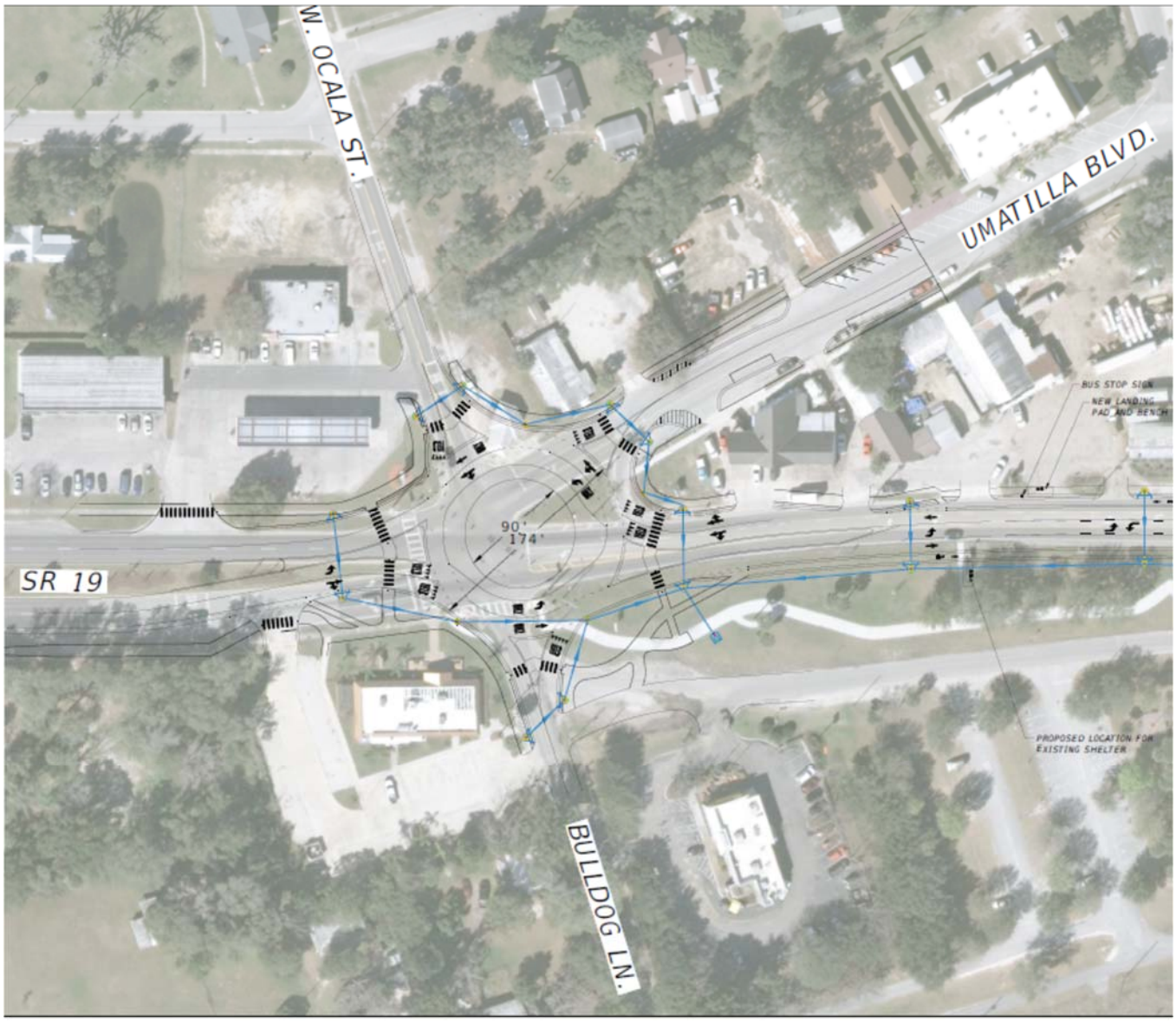
Roundabouts are recommended in two locations, as shown in Figures 17 and 18. These are long-term improvements because they require a right-of-way phase to be conducted. The Project Team performed Screening Level 1 on the two proposed roundabouts.

The proposed roundabout at the "Five Points" intersection of SR 19. Bulldog Lane, W Ocala St, and Umatilla Boulevard (Figure 17) has a significant impact on intersection operation, particularly the Umatilla Boulevard leg and for east/west traffic flow. This is because the roundabout eliminates the need for three separate traffic signal phases.

Table 9: PM Peak Hour Delay 2040 Scenario (SR 19/W Ocala St./Umatilla Blvd.)

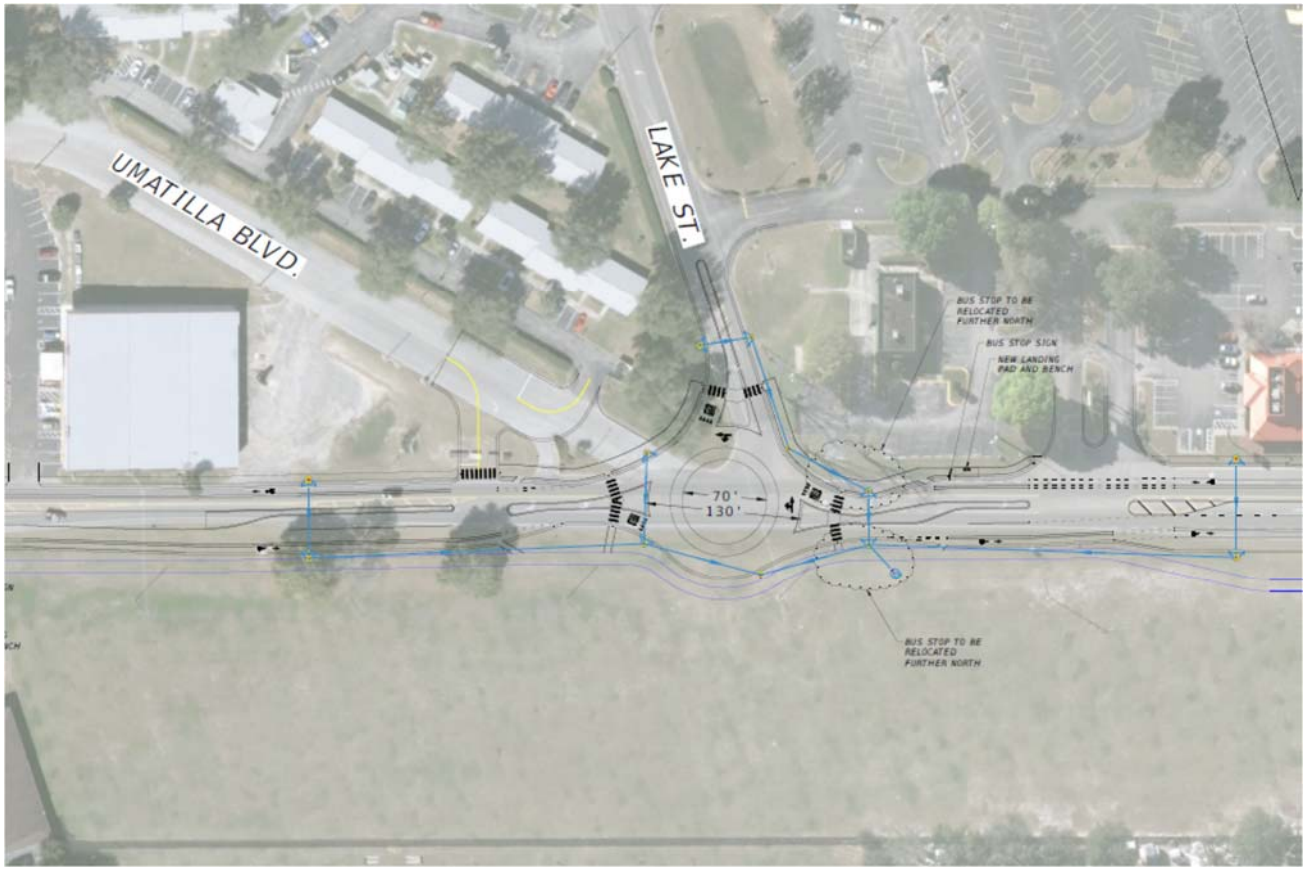
	PM Peak vehicle delay	
Leg	Year 2040 No Build	Year 2040 with Roundabout
SR 19 Northbound	23.3 sec	9.5 sec
SR 19 Southbound	26.1 sec	7.0 sec
Umatilla Boulevard Southbound	63.5 sec	9.7 sec
W Ocala St Eastbound	61.5 sec	12.0 sec
Bulldog Lane Westbound	41.4 sec	15.7 sec

Figure 17: Conceptual Roundabout (SR 19/W Ocala St./Umatilla Blvd.)



The northern roundabout, located at the intersection of Lake Street and SR 19 (Figure 18), will and slow down speeding traffic coming southbound. It may also reduce rear-end crashes at the existing traffic signal at E Collins Street. Introduction of this roundabout also provides the opportunity to realign the Umatilla Boulevard intersection, which is intersects with SR 19 in an acute angle and is located in very close proximity to Lake Street.

Figure 18: Conceptual Roundabout and Intersection Realignment (SR 19/Lake St./Umatilla Blvd.)



6.4 Preliminary Engineering Cost Estimates

The Project team calculated preliminary engineering cost estimates for both short-term and long-term improvements. Table 10 below provides the cost by Segment.

Table 10: Preliminary Engineering Cost Estimates

Segment	Time Frame	From	To	Cost	Comments
1	Short-Term	CR450A	Golden Gem Rd	$644,000	
2 & 3	Short-Term	Golden Gem Rd	Cassady St	$1,358,000	Included in 3R
2 & 3	Long-Term	Golden Gem Rd	Cassady St	$1,510,000	
4	Short-Term	Cassady St	Bulldog Ln	$682,000	Included in 3R
5	Long-Term	Bulldog Ln	Bulldog Way	$7,613,000	
Total				**$11,807,000**	

Right-of-way acquisition is not included in the costs above. See Appendix B for the full cost estimate detail.

7

Chapter Seven: Next Steps

7.1 Next Steps

The Short-Term improvements will be further designed, programmed and constructed by FDOT as part of the 3R Project (FM 437938-1) that currently included in the Five Year Work Program for Fiscal Year 2020. This project will resurface and restripe Segments 2, 3, and 4 to include bicycle lanes, consistent with Figures 8, 10, and 12.

The Long-Term improvements must be included in the Lake-Sumter Metropolitan Planning Organization (MPO) List of Project Priorities (LOPP) and Transportation Improvement Program (TIP). Projects from the LOPP are included in the FDOT Work Program to the maximum extent feasible based on the availability of funding.