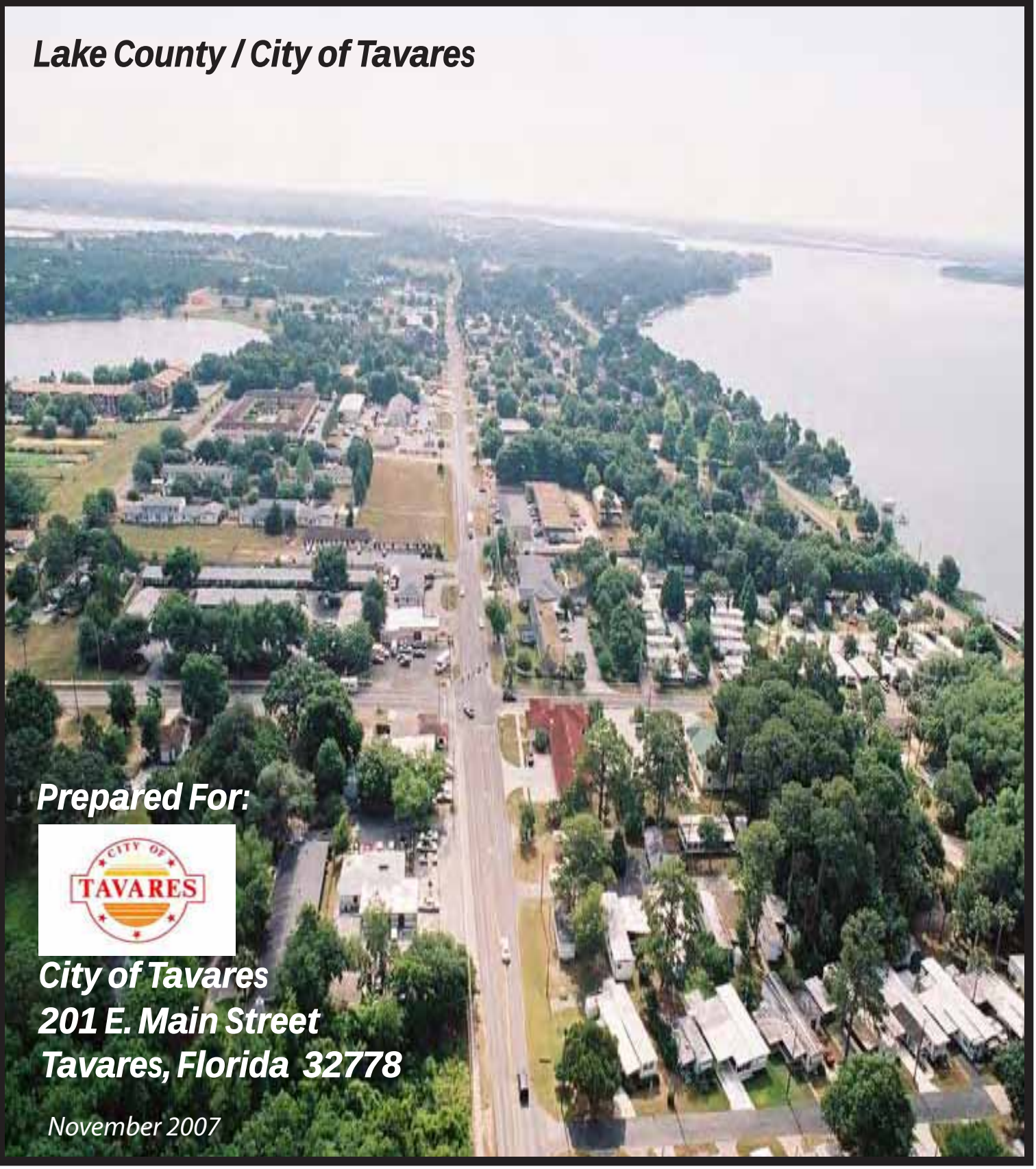
# Preliminary Engineering Report

## Alfred Street (Old 441) Corridor Study
## From SR 19 to Bay Road

**Lake County / City of Tavares**



**Prepared For:**

**City of Tavares**
**201 E. Main Street**
**Tavares, Florida 32778**

*November 2007*

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City of Tavares

Prepared For:
**City of Tavares**
201 E. Main Street
Tavares, Florida 32778

Prepared By:
**DRMP, Inc.**
1505 E. Colonial Drive
Orlando, Florida 32803

November 20, 2007

# PROFESSIONAL ENGINEER CERTIFICATION

I hereby certify that I am a Registered Professional Engineer in the State of Florida practicing with Dyer, Riddle, Mills and Precourt, Inc. and that I have supervised the preparation and approve the evaluation, findings, opinions, conclusions, and technical advice hereby reported for:

**PROJECT:** Alfred Street Corridor Study

**LOCATION:** Alfred Street from SR 19 to Bay Road, Lake County, Florida.

This report includes a summary of data collection efforts, travel demand modeling, traffic operations analysis, and development of traffic projections for the Alfred Street PD&E Study. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering and planning as applied through professional judgment and experience.

NAME: Gregory A. Moore, P.E._____
Florida P.E. Number 59429

SIGNATURE: _____

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# Chapter 1

# Introduction

# 1 INTRODUCTION

## 1.1 Project Overview

This study has been conducted by the City of Tavares, in association with Lake County. The limits of the study corridor are Alfred Street (Old 441) from SR 19 to Bay Road, a distance of approximately 3 miles. The western third of the study corridor runs through Downtown Tavares, and the Historic District. The central and eastern thirds of the project are characterized by residential, light commercial and light industrial uses. The existing facility is a two-lane collector roadway that runs parallel to US 441 approximately one half mile to the south. Alfred Street provides local east-west connectivity between the Tavares Downtown area and Lake County Government complex and Mt. Dora to the east. A map of the project location within the City of Tavares is shown in Figure 1-1.

The primary objectives of the corridor study are:

- To evaluate alternatives that improves the quality of traffic operations while enhancing the safety and aesthetic characteristics of the corridor.
- Involve staff from governing agencies, property owners and local citizens in the development of the project alternatives.
- Provide increased access for pedestrians and bicyclists to the extent possible.
- Address current deficiencies with roadway drainage and stormwater facilities.

The study was conducted in the two stages referred to in this Preliminary Engineering Report as the first and second phases. The first stage developed, based upon direction for the City Council between 2004 and 2006, a blended raised median and textured pavement concept as the preferred alternative. Following this the new City Council in 2007 tasked the study team with the evaluation of additional alternatives, including a three-lane and One-Way Pair concept.

## 1.2 Purpose and Need

This report documents the need for the project and the development and evaluation of alternative concepts that best achieve the objectives of the study. The need for the project can be justified by examining the current and future travel demand characteristics within the corridor. The existing two-lane facility serves between 10,400 and 13,400 vehicles per day. By the design year 2030, average daily traffic volumes are expected to range from 17,500 to 22,600 vehicles per day. Several critical intersections within the study corridor will need to be improved in order to serve future demand. In addition, left turn pockets developed between opposing travel lanes will enhance operational characteristics and through capacity.

The City of Tavares has also identified a need for enhanced pedestrian, bicycle and aesthetic features within this corridor. While some sidewalk is provided along the existing roadway, the City's vision is to enhance the overall walkability along Alfred Street by upgrading the sidewalks and providing them on both sides of the road throughout the length of the project. Within the western third of the project, bicycle facilities are not being considered due to right-of-way constraints and the availability of a dedicated bicycle trail running behind the Judicial Center toward Lake Dora, then eastward to Dora Avenue. From Dora Avenue eastward, the vision is to

provide either standard bicycle lanes or a shared multi-use path on one side of Alfred Street. This provides connectivity to the existing bicycle facility and extends the pedestrian and bicycle features eastward to Bay Street, where they can potentially be continued toward Mt. Dora in the future.

Particularly within the Downtown segment, improvements to the existing drainage system are needed. The existing drainage inlets and stormwater facilities were built many years ago and do not meet current design criteria. During large storm events, flooding is often experienced at the intersection of Alfred Street and Joanna Avenue. This is partly due to the poor condition of the underground pipe network and conveyance system within the Tavares downtown area.

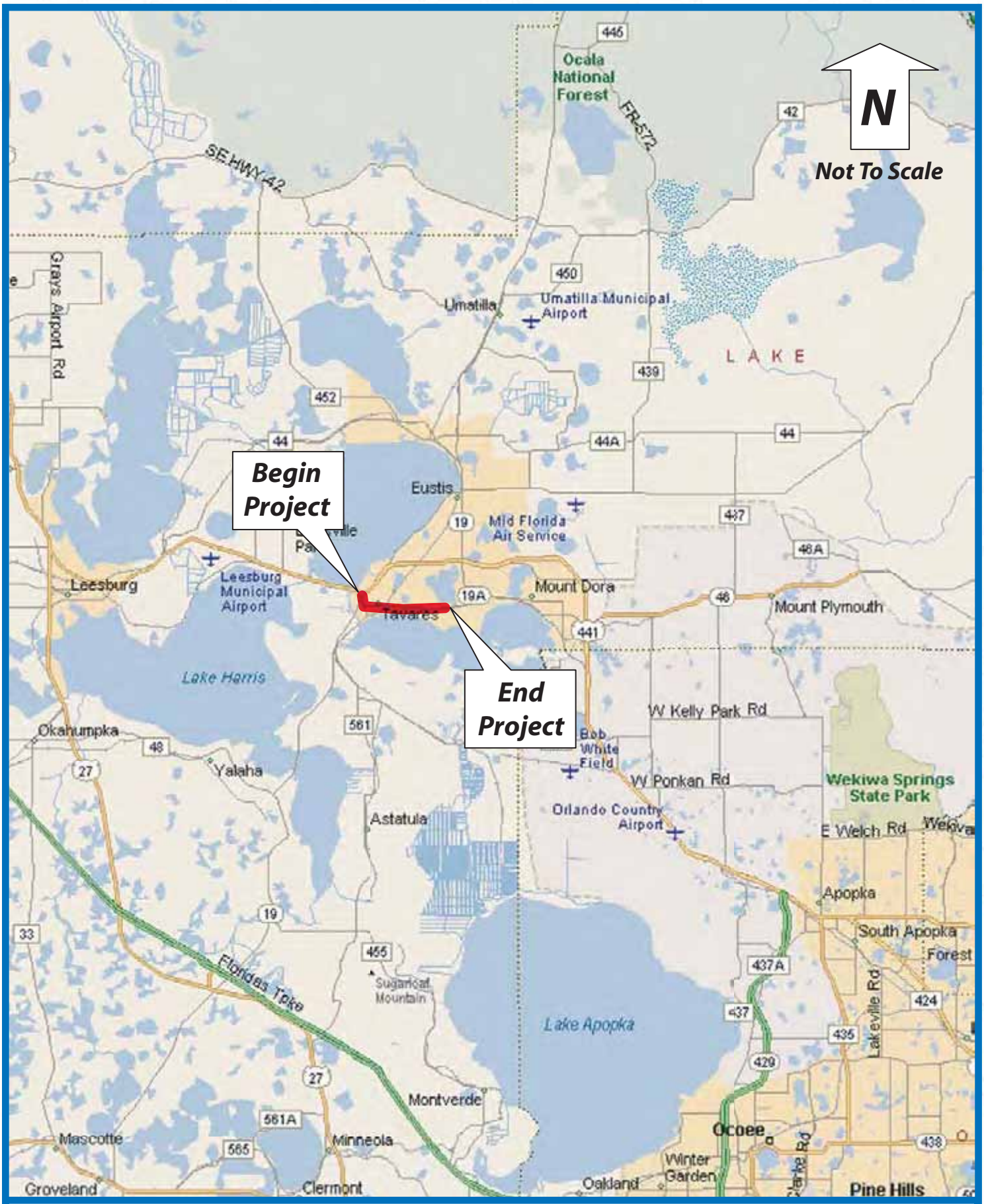
## 1.3 Consistency with Transportation Plans

This improvement is not specifically identified in the locally adopted plans. These include the Lake-Sumter MPO Long Range Transportation Plan (LRTP), and Comprehensive Plans for Lake County and the City of Tavares.

The impetus for the project came several years ago when this section of Alfred Street was identified for resurfacing as part of the Lake County work program. Rather than proceed with a typical milling and resurfacing project, Lake County approached the City of Tavares to see if they would interested in conducting a study to explore options beyond the standard resurfacing that was planned. The City saw this as an opportunity to develop a project that was more compatible with the long term vision for the corridor, particularly the Tavares Downtown and Historic District. The City chose to pursue the study and manage its production utilizing funding from the County coming from the impact fee program.

## 1.4 Consistency with CRA Advisory Committee's Vision

The goal of the Community Redevelopment Area (CRA) Advisory Committee is to sustain a multi-functional community within the downtown area that provides for a pedestrian friendly environment and encourages economic growth. The downtown area provides residents and visitors the opportunity to enjoy the distinct, historic and scenic features unique to downtown Tavares, while encouraging economic growth and sustainability for local business. In keeping with CRA Advisory Committee's vision, a One-Way Pair concept was considered for downtown Tavares which will provide roadway conditions favorable to for pedestrians and businesses alike.




# Project Location Map

City of Tavares

## Alfred Street (Old US 441)

From SR 19 to Bay Street

Figure 1-1

CITY OF TAVARES

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ENGINEERS • SURVEYORS • PLANNERS • SCIENTISTS

# Chapter 2

# Existing Conditions

# 2 EXISTING CONDITIONS

## 2.1 Existing Roadway Characteristics

When it was originally constructed, Alfred Street was U.S. Highway 441, and was a major route serving traffic from all parts of Lake County and the surrounding area. Since construction of the current U.S. 441, Alfred Street has evolved into more of a local roadway that serves the Tavares Downtown and Lake County government center, as well as east-west traffic between SR 19 and Eustis / Mt. Dora.

The functional classification of a roadway helps define the design criteria and standards that are used in developing an improvement. Alfred Street has been evaluated as an Urban Collector for this study. This is based on guidance provided in the Comprehensive Plans of Lake County and the City of Tavares, in addition to the Federal guidelines contained within the *AASHTO Policy on Geometric Design of Highways and Streets, 2004*.

### 2.1.1 Identification of Project Segments

For the purpose of this discussion, the study corridor can be divided into three segments as described below and illustrated in Figure 2-1.

- Section A (Downtown Section) – From SR 19 to Dora Avenue. This section includes the Historic Downtown Tavares, the Florida Central Railroad crossing and the majority of the signalized intersections in the study corridor. As illustrated in Figure 2-2, this section is characterized by narrow right-of-way, numerous driveway connections and fairly dense development. Just east of the Florida Central Railroad crossing is a forested wetland area that creates a visual break between the Downtown and the eastern portions of the study corridor.

- Section B (Central Section) – From Dora Avenue to David Walker Drive. As illustrated in Figure 2-3, this section is characterized by several residential and light commercial land uses. Buildings are typically set back further from the roadway than is observed in the Downtown section. There are also numerous driveway connections and postal boxes located within this segment.

- Section C (Eastern Section) – From David Walker Drive to Bay Road. This section is characterized by its land use and proximity to the Florida Central Railroad tracks. There are several light industrial businesses within this section, along with several citrus/agricultural land uses. Just east of the David Walker Drive intersection, the Florida Central Railroad tracks run parallel to Alfred Street approximately 80-ft to the south. This is illustrated in Figure 2-4.

Begin Project
Section A
(Downtown Section)
Section B
(Central Section)
Lake Dora
Section B
(Central Section)
Section C
(Eastern Section)
End Project
Alfred Street Corridor Study
Figure 2-1
DRMP

**Figure 2-2: Section A (Downtown) West of Joanna Avenue, Facing East**

**Figure 2-3: Section B (Central) Aerial View East of Dora Avenue, Facing East**

**Figure 2-4: Section C (Eastern) Aerial View West of Bay Road, Facing East**

### 2.1.2 Right-of-Way

The existing right-of-way width along Alfred Street is not constant throughout the corridor. The yellow lines that define the study corridor in Figure 2-1 represent the existing right-of-way limits. These are based on available information in the Lake County Geographic Information System (GIS), which rely on property ownership information on file with the Lake County Property Appraiser. In general terms, the width of available right-of-way is summarized as follows:

- SR 19 to Sinclair Avenue – Narrows from 84 feet to 50 feet
- Sinclair Street to the Florida Central Railroad Tracks – Typically 50 feet
- Florida Central Railroad Tracks to Dora Avenue – Widening gradually from 50 to 90 feet
- Dora Avenue to east of Campbell Drive (at self storage facility) – 90 feet
- East of Campbell Drive to west of Lakeview Street – Typically 66 feet
- West of Lakeview Street to east of Lakeview Street – Typically 40 feet
- East of Lake view Street to Bay Road – Typically 66 feet

### 2.1.3 Typical Sections

As illustrated in the previous Figures, the existing typical section along Alfred Street consists of two 12-ft travel lanes without shoulders. The majority of the study corridor contains open drainage (no curb & gutter). However, there is curb and gutter within the Downtown section between Sinclair Avenue and Disston Avenue. Caroline Street, which would be utilized if the One-Way Pair concept was implemented, runs parallel to and north of Alfred Street and consists of two 12-ft travel lanes without shoulders and has curb & gutter.

### 2.1.4 Pedestrian and Bicycle Facilities.

Sidewalks are present within the Downtown section of the study corridor, but are not continuous throughout. The Central and Eastern sections do not currently provide sidewalks. The existing Alfred Street corridor does not presently contain bicycle lanes. However, there is a multi-use trail facility at the far western end of the corridor that runs adjacent to the Alfred Street right-of-way between the SR 19 intersection and the Judicial Center. This is illustrated in Figure 2-5.

**Figure 2-5: Multi-use Trail Facility between SR 19 and Judicial Center**

### 2.1.5 Horizontal and Vertical Alignment

The horizontal geometry along the Alfred Street study corridor contains 4 curves. The most significant curve is just south of the SR 19 intersection as Alfred Street enters the Downtown area just north of the Judicial Center. A plan view of this curve can be seen in Figure 2-6. This is also pictured in Figure 2-6. There does not appear to be any superelevation on the existing curve and the radius is approximately 350-ft. This radius is approximately equal to the minimum allowable under design criteria for lower-speed urban streets, assuming a design speed between 30 and 35 mph.

The other three curves are within the roadway alignment are more gentle in nature, each having radii that far exceed design criteria for speed of 45 mph or less. The David Walker Drive intersection has curves in advance of the signal on both the eastern and western Alfred Street approaches. The western curve has a radius that exceeds 6,000 feet and the eastern curve has a

radius exceeding 4,000 feet. There is also a gentle curve, which has a radius of approximately 3,700 ft, leading into the Bay Road intersection.

**Figure 2-6: Curve Southeast of SR 19, Facing Eastward**

The vertical geometry of Alfred Street is relatively flat. There is a dip in the profile within the Downtown area between Texas Avenue and Joanna Avenue. It does not appear that the existing vertical geometry is deficient with regard to sight distance or other design elements that would normally be taken into account for the purposes of a corridor evaluation.

### 2.1.6 Intersections and Signalization

There are five (5) signalized intersections within the study corridor in the following locations:

- Alfred Street at SR 19 (Downtown Section)
- Alfred Street at Sinclair Avenue (Downtown Section)
- Alfred Street at St. Clair Abrams Avenue (Downtown Section)
- Alfred Street at Dora Avenue (Downtown/Central Section)
- Alfred Street at Bay Street (Eastern Section)

At a future date, it is anticipated that the intersection of Alfred Street and David Walker Drive will also be signalized. Following the hurricanes in the fall of 2004, left turn displays were added to the Sinclair and St. Clair Abrams intersections to improve existing operations. The signals are not currently coordinated.

## 2.2 Drainage

The following is a synopsis of the more detailed information provided in the *Drainage Analysis and Pond Siting Memorandum* developed as part of this study. This document contains a more in-depth discussion of drainage issues and documentation of the stormwater/pond siting analysis conducted for the study.

The Alfred Street study area is within the jurisdiction of the St Johns River Water Management District (SJRWMD). The existing profile of Alfred Street is relatively flat. The existing drainage pattern within the study limits along the eastern portion of Alfred Street consists of sheet flow off the roadway into adjacent roadside swales or into adjacent grassed areas. Many of the existing roadside swales are in fair to poor condition due to erosion & siltation.

There are four existing stormwater systems within the Downtown section that take stormwater runoff from Alfred Street as well as some adjacent lands via curb inlets and pipe. These systems discharge southward to Lake Dora, which is part of the Harris Chain-of-Lakes. A total of 26 inlet structures are located on the north and south sides of Alfred Street within the right-of-way. The seven (7) eastern-most inlets discharge into a wetland area that is adjacent to Alfred Street. This wetland area also drains to Lake Dora.

The existing drainage systems are in poor condition. Many of the curb inlets are substandard and much of the pipe network was constructed with a variety of pipe materials, i.e. ACCMP, VCP, etc., some of which are in the same run of pipe. The piping for one of the systems runs under the sanctuary of the First Baptist Church, which is downstream of the project area. During large storm events, persistent flooding has been observed at the intersection of Alfred Street and Joanna Avenue.

Offsite basins involved in the study corridor are described below and illustrated in Figure 2-7, Figure 2-8 and Figure 2-9. Basin A consists of two drainage sub-basins: Basin A-1 and Basin A-2. Basin A-1 is the Alfred Street right-of-way from SR19 to Barrow Avenue and consists of approximately 2.6 acres. Basin A-2 consists of approximately 9.7 acres of developed land north of Alfred Street that is part of the Public Facilities District.

Basin B consists of four drainage sub-basins: Basin B-1, B-2 and Basin B-3. Basin B-1 is the Alfred Street right-of-way from Barrow Avenue to Suwannee Place and consists of approximately 9.2 acres. Basin B-2 consists of approximately 2.9 acres of developed land north of Alfred Street. Basin B-3 consists of approximately 5.0 acres of developed land south of Alfred Street. Basin B-4 consists of approximately 8.9 acres of developed land south of Alfred Street Both basins B-2 and B-3 are zoned for mixed use commercial. Basin B-4 consists of multi-family residential and commercial properties.

Basin C consists of three drainage sub-basins: Basin C-1, Basin C-2 and Basin C-3. Basin C-1 is the Alfred Street right-of-way from Suwannee Place to Lake Avenue and consists of approximately 7.4 acres. Basin C-2 is approximately 5.2 acres of developed land north of Alfred Street and consists of commercial and light industrial properties. Basin C-3 is approximately 95.7 acres of vacant and developed land north of Alfred Street and consists of commercial, single-family and citrus grove properties.

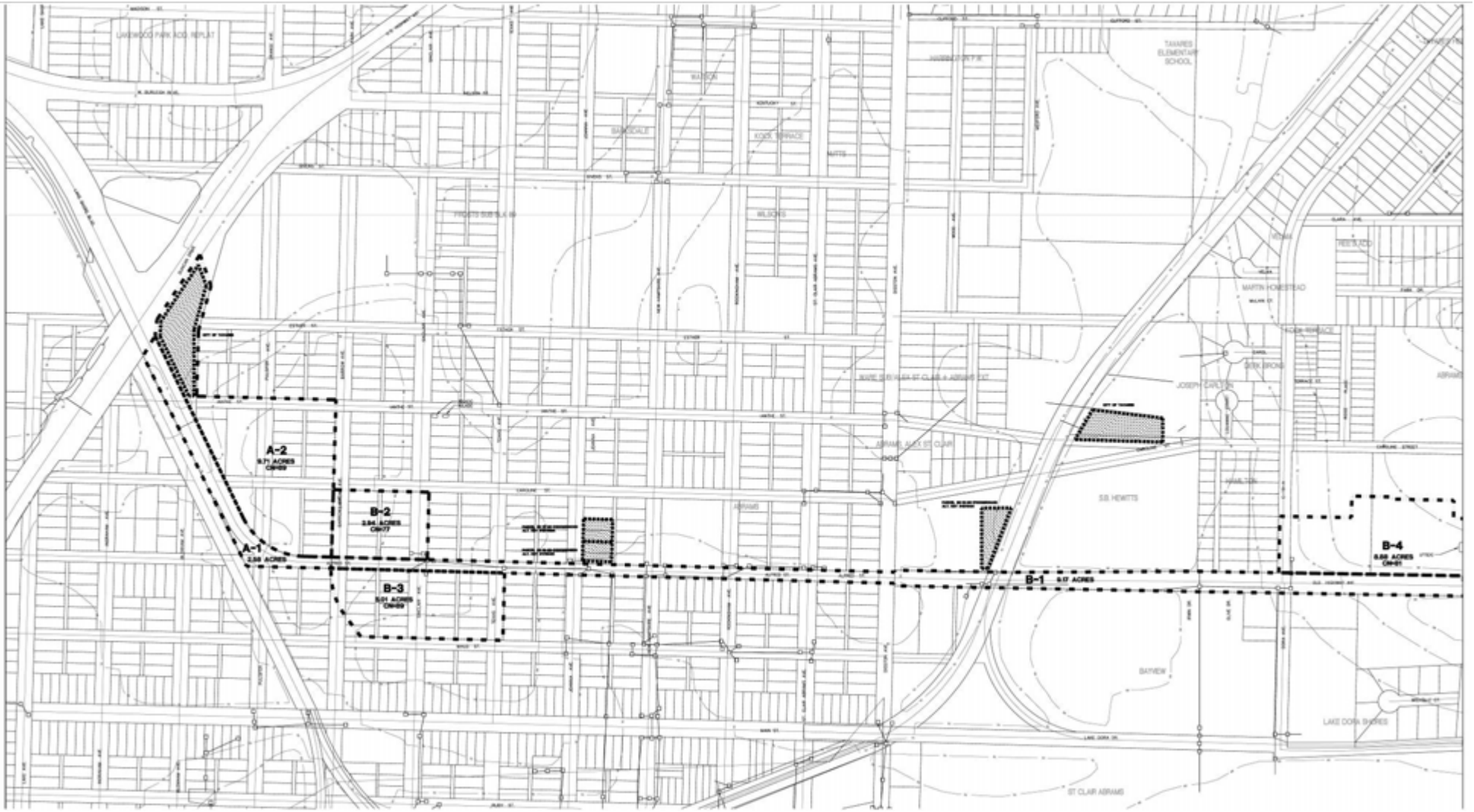



**Figure 2-7: Drainage Basin and Pond Siting Exhibit (Downtown Section)**

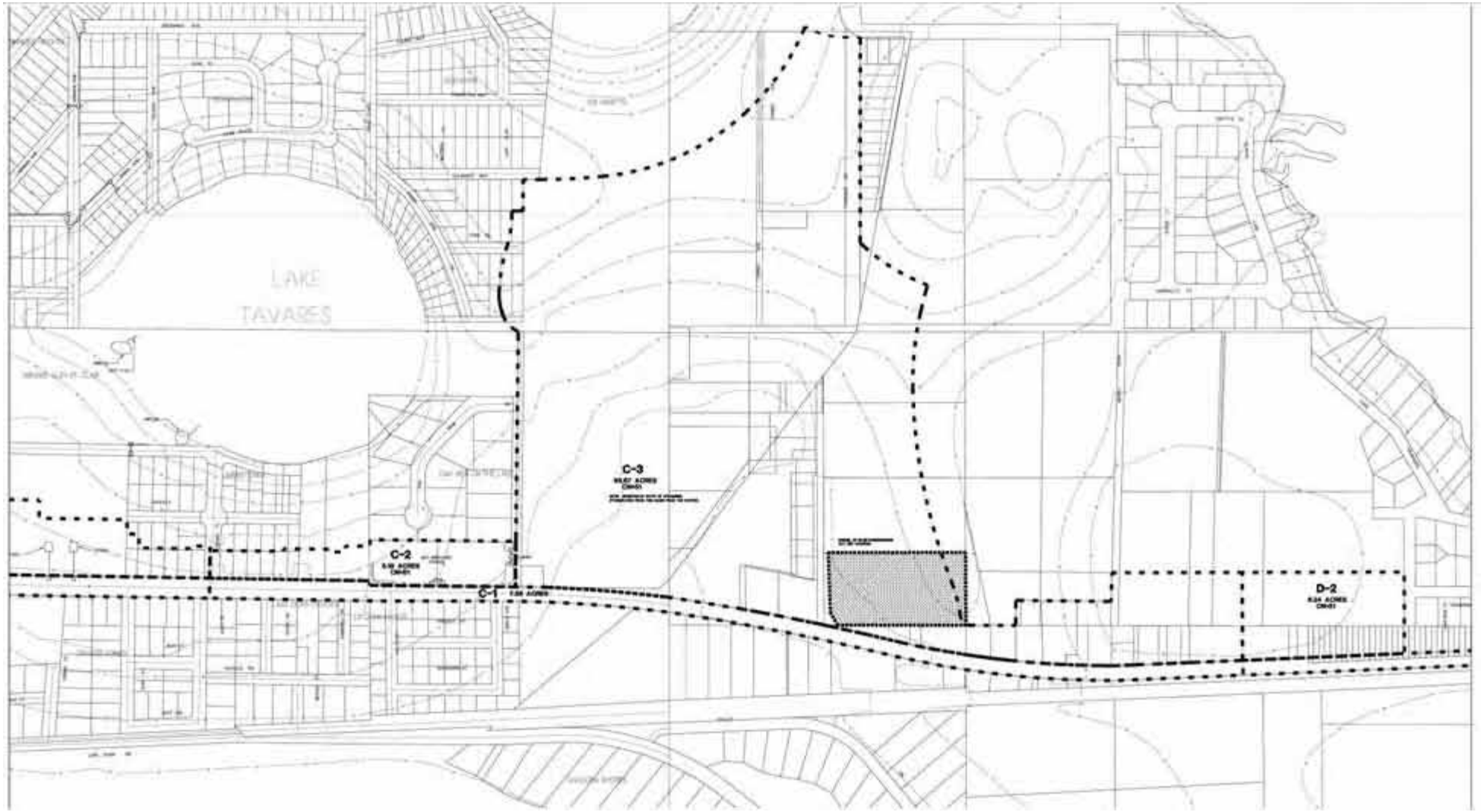



**Figure 2-8: Drainage Basin and Pond Siting Exhibit (Central Section)**

**Figure 2-9: Drainage Basin and Pond Siting Exhibit (Eastern Section)**

Basin D consists of two drainage sub-basins: Basin D-1 and Basin D-2. Basin D-1 is the Alfred Street right-of-way from Lake Avenue to Holly Drive and consists of approximately 8.8 acres. Basin D-2 is approximately 2.8 acres of developed land north of Alfred Street that consists of commercial properties.

## 2.3 Geotechnical Data

The anticipated geotechnical conditions were evaluated based on a review of the United States Department of Agriculture (USDA) Soil Conservation Service (SCS) Soil Survey maps for Lake County, Florida.

The initial review determined that the majority of soils in the corridor are classified as sands with varying amounts of silt (A-3, A-2-4). The depth of these soils range from 0 to 98 inches below the surface. The SCS predicts that the seasonal high ground water levels range from ground surface to +10 feet below ground surface. Table 2-1 presents a summary of the results for each of the sub-basins, which includes the soil series name and designation symbol, the depth to the seasonal high ground water table, permeability and hydrologic soil group classification.

**Table 2-1: Summary of Basin Soil Characteristics**

| Sub-Basin | Soil Series | Designation Symbol | Depth to Seasonal High Groundwater Table | Permeability (in/hr) | Hydrologic Soil Group |
|---|---|---|---|---|---|
| A-1 | Astatula | AtB | > 120” | > 20.0 | A |
| | Immokalee | Is | 0 – 10” | 0.63 – 20.0 | B/D |
| | Fill Land | Fm | - N/A - | - N/A - | - N/A - |
| A-2 | Astatula | AtB | > 120” | > 20.0 | A |
| B-1 | Astatula | AtB | > 120” | > 20.0 | A |
| | Lake | LaB | > 120” | > 20.0 | A |
| | Cassia | Ca | 10 – 40” | 2.0 – 20.0 | C |
| | Fill Land | Fm | - N/A - | - N/A - | - N/A - |
| B-2 | Astatula | AtB | > 120” | > 20.0 | A |
| B-3 | Astatula | AtB | > 120” | > 20.0 | A |
| B-4 | Lake | LaB | > 120” | > 20.0 | A |
| C-1 | Astatula | AtB | > 120” | > 20.0 | A |
| | Lake | LaB | > 120” | > 20.0 | A |
| | Pomello | Pn | 30 – 40” | 2.0 – 20.0 | C |
| | Myakka | Mk | 0 – 10” | 0.63 – 20.0 | D |
| C-2 | Astatula | AtB | > 120” | > 20.0 | A |
| | Lake | LaB | > 120” | > 20.0 | A |
| | Pomello | Pn | 30 – 40” | 2.0 – 20.0 | C |
| C-3 | Astatula | AtB | > 120” | > 20.0 | A |
| | Lake | LaB | > 120” | > 20.0 | A |
| | Pomello | Pn | 30 – 40” | 2.0 – 20.0 | C |
| | Myakka | Mk | 0 – 10” | 0.63 – 20.0 | D |
| | Placid | Pe | 0” | 6.3 – 20.0 | D |

| Sub-Basin | Soil Series | Designation Symbol | Depth to Seasonal High Groundwater Table | Permeability (in/hr) | Hydrologic Soil Group |
|---|---|---|---|---|---|
| D-1 | Astatula | AtB | > 120” | > 20.0 | A |
| | Lake | LaB | > 120” | > 20.0 | A |
| | St. Lucie | Sc | > 80” | > 20.0 | A |
| | Pomello | Pn | 30 – 40” | 2.0 – 20.0 | C |
| | Myakka | Mk | 0 – 10” | 0.63 – 20.0 | D |
| | Placid | Pe | 0” | 6.3 – 20.0 | D |
| | Fill Land | Fm | - N/A - | - N/A - | - N/A - |
| D-2 | Astatula | AtB | > 120” | > 20.0 | A |

## 2.4 Floodplains

Based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM’s), Zone A FEMA flood plain areas are located within and adjacent to the Alfred Street right-of way between Mayfair Way and Old Hammock Road. It should be noted that the Zone A area indicated on the FIRM map is not consistent with ground surface contours. Past development projects may have significantly altered the flood plain. Zone A FEMA flood plain areas are also located adjacent to (but not within) the Alfred Street right-of way between Disston Avenue and Irwin Drive, and between Saunders Circle and Bay Road.

## 2.5 Lighting

Roadway illumination is provided along Alfred Street from State Road 19 to Anderson Drive. Lighting elements are mounted to the utility/power poles, along the south side of the roadway from SR 19 to the railroad right-of-way and from Dora Avenue to Anderson Drive. Lighting elements are also located along the north side of the roadway from the railroad right-of-way to Dora Avenue. Although the electric service is paid by the City of Tavares, the streetlights were installed and are maintained by Progress Energy as retail units. Repairs are performed as citizen’s reports are received. No preventive maintenance is programmed. There is no standard spacing of the lighting fixtures. The closest spacing observed is approximately 300ft. The 70-Watt open-bottom fixtures are high-pressured sodium with an average mounting height of approximately 25 feet.

It is estimated that the street lighting system is at least 10 years old.

## 2.6 Utilities

The following is a list of the facilities along the project corridor that have potential to be affected by a proposed improvement. It is important to note that this evaluation focuses on utilities other than storm water facilities.

*Existing Standard Utilities – City of Tavares*

- 8” Water Main (WM) along the north side of Alfred Street inside existing right-of-way at Ianthe Street – 50 ± feet.
- One known 12” Water Main (WM) underground crossing at Caroline Street.

- 2” Water Main (WM) along the north side of Alfred Street inside existing right-of-way west from Barrow Avenue – 170 ± feet.
- 6” Water Main (WM) along the north side of Alfred Street inside existing right-of-way from Barrow Avenue to Disston Avenue – 2,540 ± feet. One known 1” WM underground road crossings across Alfred Street at Joanna Avenue. Five known 2” WM underground road crossings across Alfred Street at Sinclair Ave., Texas Ave., New Hampshire Ave., Rockingham Ave., and St. Clair Abrams Avenue. One known 8” WM underground road crossings across Alfred Street at Barrow Avenue. Three known WM underground road crossings across Alfred Street at Disston Avenue which includes (1) 6” WM, (1) 12” WM and (1) 16” WM.
- 2” Water Main (WM) along the north side of Alfred Street inside existing right-of-way from Dora Avenue to Anderson Drive – 2,260 ± feet.
- 6” Water Main (WM) along the south side of Alfred Street inside existing right-of-way from Dora Avenue to Anderson Drive – 3,110 ± feet. Four known 6” WM underground road crossings across Alfred Street at Dora Ave., west of Dora Avenue - 210 ± feet., Suwanee Place, and Anderson Drive.
- 6” Water Main (WM) along the north side of Alfred Street inside existing right-of-way west from Anderson Drive – 430 ± feet.
- Five known sanitary gravity sewer (SS) underground road crossings across Alfred Street between Pulsifer Avenue and Disston Avenue.
- Two sanitary gravity sewer (SS) manholes and ± 390 feet of SS pipe along Alfred Street inside existing right-of-way from Disston Avenue to the railroad right-of-way.
- Two sanitary gravity sewer (SS) manholes and ± 140 feet of SS pipe along Alfred Street inside existing right-of-way at Oliver Drive.
- Four sanitary gravity sewer (SS) manholes and ± 950 feet of SS pipe along Alfred Street inside existing right-of-way from Jean Street to Campbell Drive.
- 6” Sanitary Force Main (FM) along the north side of Alfred Street inside existing right-of-way at Ianthe Street – 50 ± feet.
- 3” Sanitary Force Main (FM) along the north side of Alfred Street inside existing right-of-way from Campbell Drive to the City’s Lift Station #13 – 450 ± feet.
- One known 16” FM underground road crossing across Alfred Street at Caroline Street.
- One known 8” FM underground road crossings across Alfred Street at Dora Avenue.

Note: Assume depth of cover for all water and wastewater utilities described above is 30 inches for all smaller pipelines (<12” diameter) and is 36 inches of cover for the larger pipelines (>12” diameter.)

*Progress Energy / SECO*

- Electrical (overhead) distribution lines are found along both the north and south sides of the roadway throughout the entire study segment. Progress Energy overhead distribution lines are located on the south side of Alfred from SR 19 to New Hampshire Avenue, the

north side of Alfred Street from New Hampshire Avenue to Dora Avenue and the south side from Dora Avenue to Bay Road. Sumter Electric Company, Inc. (SECO) also has overhead distribution lines located on the north side of Alfred from Merry Road to Bay Road. The poles for the overhead distribution lines are located approximately within five feet of the right-of-way line. Progress Energy also has numerous overhead crossings of Alfred Street.

*Comcast Cable Utilities*

- Overhead Cable TV (CA TV) lines on Progress Energy power pole line along both the north and south sides of Alfred Street inside the existing right-of-way along the entire corridor from Barrow Avenue to Bay Road. Comcast also has numerous existing overhead crossings of Alfred Street along the entire corridor. Total overhead cable run along Alfred Street – 14,800 ± feet.

*Sprint Telephone Utilities*

- There are numerous facilities along this corridor ranging from 50 pair to 900 pair copper cables; fiber optic cables; conduit (asbestos) and manholes containing copper and fiber optic cables. This route is a major feeder and distribution route for sprint, providing communication services to this area and beyond.

Note: Assume depth of cover for existing Sprint Telephone utilities described above is 30 inches.

*TECO Peoples Gas*

- A 2” Natural gas transmission line (GM) is found along the north side of Alfred Street inside the existing road right-of-way from St. Clair Abrams Avenue to Dora Avenue. A 2” GM is also located on the south side of Alfred Street inside existing right-of-way extending ± 200 feet westward from Dora Avenue. There are four known 2” GM underground road crossings across Alfred Street between Sinclair Avenue and Texas Avenue, Texas Avenue and Joanna Avenue, Joanna Avenue and New Hampshire Avenue and St Clair Abrams Avenue and Disston Avenue.

*City of Leesburg*

- The City of Leesburg owns fiber optic line (FO) on the south side of Alfred Street inside existing ROW roadway from Pulsifer Avenue to Texas Avenue. A fiber optic line is also located on the south side of Alfred Street inside existing right-of-way roadway from Sinclair Avenue to Texas Avenue. There are three known FO underground road crossings across Alfred Street between Sinclair Avenue and Texas Avenue. There is one known FO underground road crossings across Alfred Street at Sinclair Avenue and one at New Hampshire Avenue.

*City of Tavares*

The City of Tavares owns the three traffic lights within the Alfred Street corridor. The traffic lights are located at Sinclair Avenue, St. Clair Abrams Avenue and Dora Avenue. The City of Leesburg was contracted to operate and maintain the traffic lights.

## 2.7 Environmental Characteristics

### 2.7.1 Land Use Data

The landuse data available for the study area was obtained from the Lake County GIS, the City of Tavares GIS, and the St. Johns Water Management District.

*Existing Land Use*

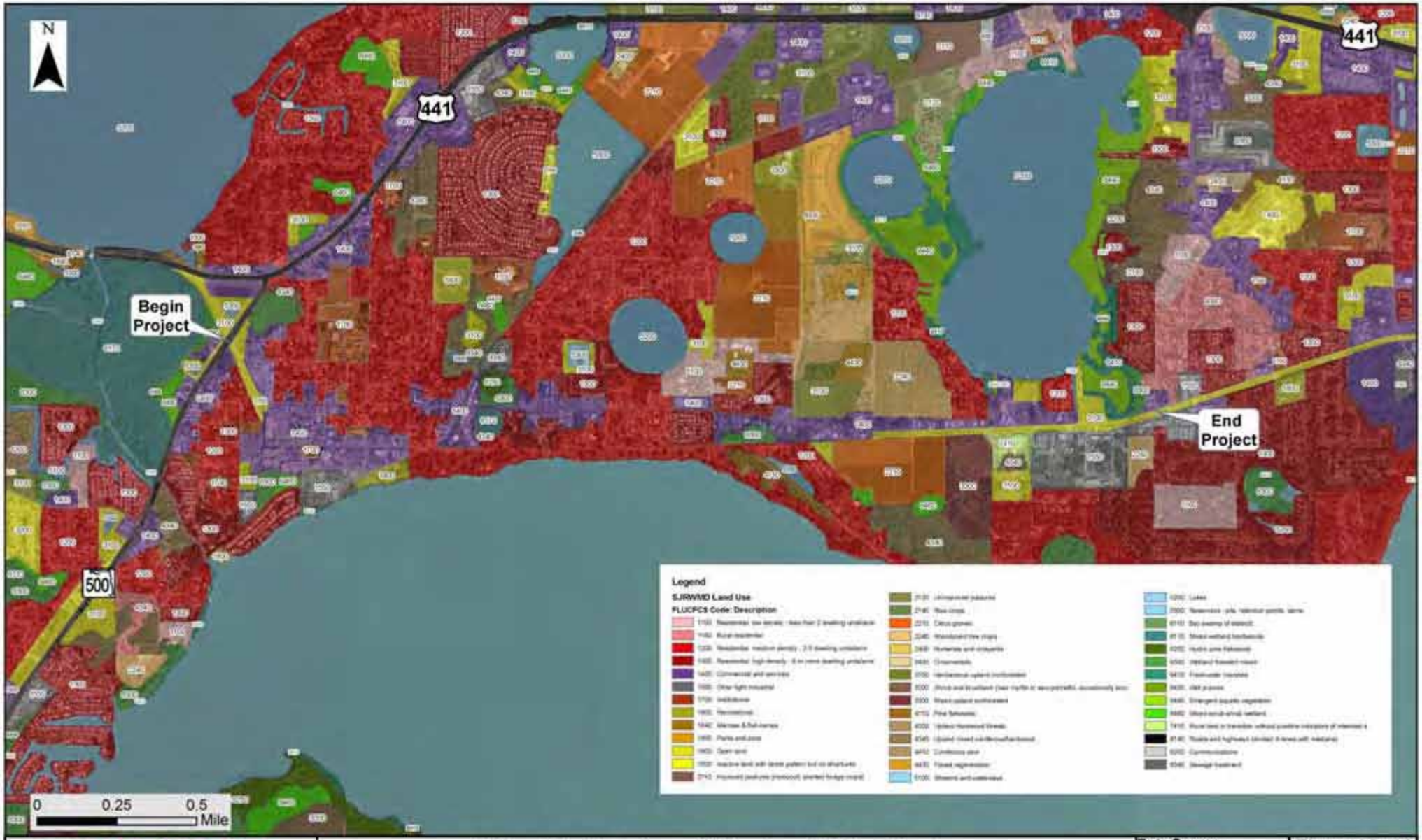
The Downtown Section of the study corridor consists primarily of commercial and other public uses. There are several small retail stores and professional offices within this section. Public facilities include the Lake County Judicial Center and the City of Tavares Public Library and the Ridge Park recreation complex. Scattered amongst the public buildings and commercial uses are also a few single-family residential homes and two churches. The existing land use is illustrated in Figure 2-10.

The Central Section is comprised of both commercial and residential uses. Both medium density (single family) and higher density (multi family) residential uses are found within this section. The commercial uses that are found include small businesses and office space, a self storage facility, a convenience store/gas station and a restaurant/bar. As the corridor transitions into the Eastern Section, the land use is nearly all light industrial or vacant land / citrus groves. There are several automobile service shops and other miscellaneous light industry.

*Future Land use*

A future land use map was complied using data from the City of Tavares GIS. The data contained within the Lake County GIS was very generalized and did not reflect the detailed zoning of various properties within the corridor. The future land use is illustrated in Figure 2-11. The limits of the data available from the City did not cover the entire project corridor. The available data from Lake County GIS for the portion not covered in Figure 2-11 shows the entire eastern portion of the corridor as being Urban Development with up to seven (7) units per acre.

A comparison between the existing and future land use maps reveals a difference in the coding between data sources. However, there does not appear to be a significant difference between existing and future uses.

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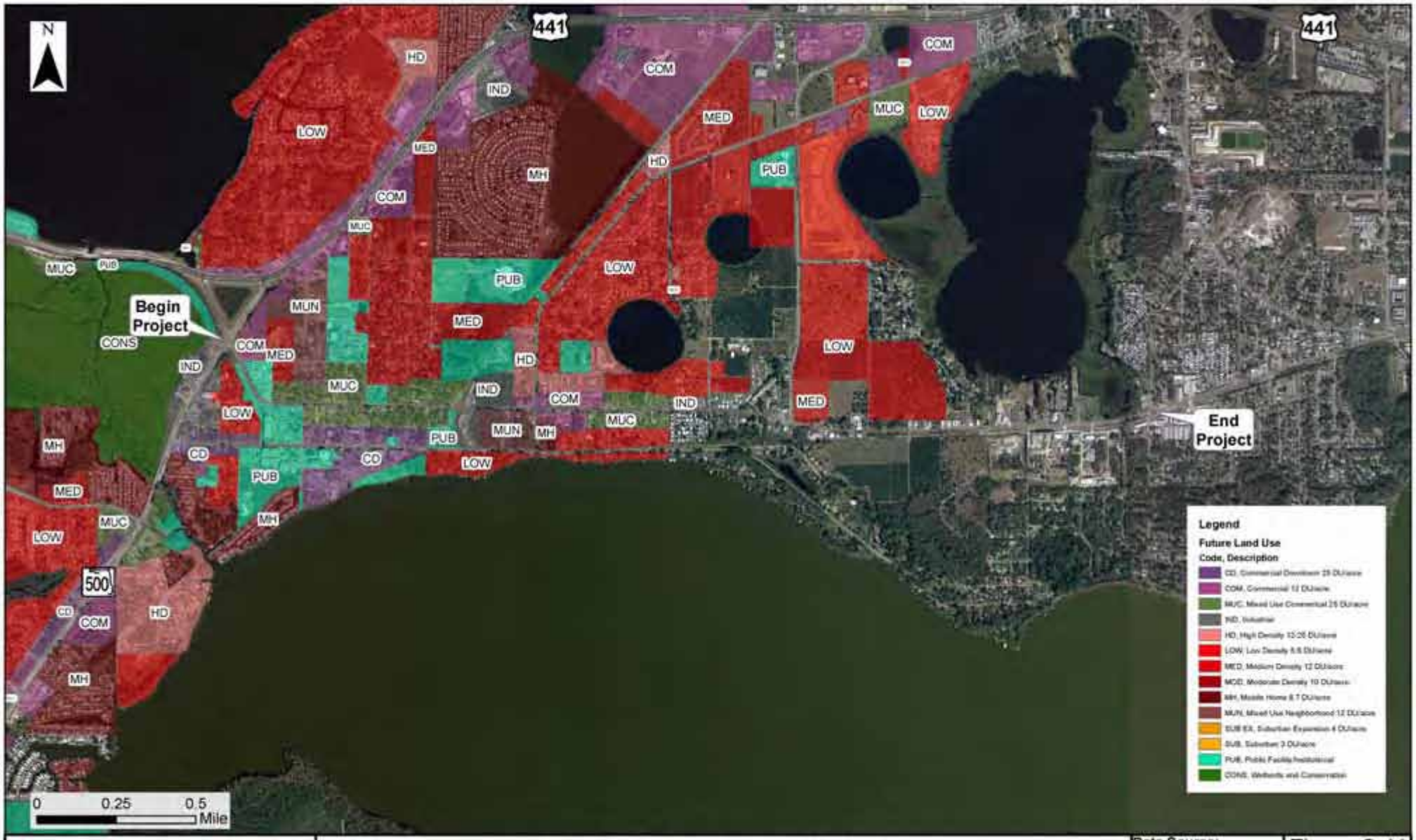
**Alfred St. Roadway Widening PD&E Study**
**Land Use Map**

FDOT District 5 — Lake County, Florida

Data Source:

Figure 2-10
April 2006

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**Alfred St. Roadway Widening PD&E Study**
**FDOT District 5** **Future Land Use Map** **Lake County, Florida**

Data Source:

Figure 2-11
April 2006

### 2.7.2 Cultural Features

The following is a summary of an archaeological and historic review of the corridor performed for this project. The *Historic Structure Review* was finalized in March 2006, and fully documents the historic characteristics of the Alfred Street corridor within the study limits. This separate report also summarizes some of the findings from the *Architectural Survey and National Register Evaluation of Downtown Tavares*, conducted by Lake County in 1999.

*Archaeological Sites*

Initial background research was conducted of the Florida Master Site File (FMSF) to determine if any previously recorded cultural features were located in the Alfred Street study area. The existing historic structures that have been previously recorded along Alfred Street were identified through information provided in GIS format from the FMSF office in Tallahasee in September 2005. There are no recorded archeological sites along the roadway; however, four (4) sites have been recorded within 0.5 miles of the project area. All of the sites are located near the northwestern edge of the project area. The locations of previously recorded resources are provided in Figure 2-12.

The Barnett site (8LA1145) and the New Hampshire site (8LA1146) are prehistoric campsites containing low densities of lithic and/or ceramic artifacts. The Dora Canal site (8LA1143) is a single-artifact site. None of these sites is considered eligible for the NRHP. The fourth site, 8LA1144 (Lake Shore site) is recorded as a prehistoric burial mound that dates to the St. Johns I through St. Johns II periods (700 B.C. to A.D. 1500). 8LA1144 is located along the south side of US 441, approximately 0.3 miles east of the intersection of US 441 and Alfred Street. Site 8LA1144 is considered eligible for listing in the NRHP by the Florida Division of Historical Resources. It is not anticipated that the proposed improvements to Alfred Street will impact archaeological sties.

*Historic Structures*

A total of 121 historic structures built between 1886 and 1960 were identified within 0.5 miles of Alfred Street. Five (5) of these sites were recorded as facing the roadway. Alfred Street passes through the Historic Downtown Tavares. The Downtown segment has retained a majority of its historic fabric, but also has some non-historic elements.

Sixteen of the previously recorded resources (8LA1174, 8LA2295-8LA2297, 8LA2313, 8LA2321, 8LA2332, 8LA2339, 8LA2343, 8LA2344, 8LA2349-8LA2353 and 8LA2355) were determined to be contributing buildings to the Downtown Tavares Historic District. Two of these resources, 8LA2352 and 8LA2353 no longer exist and do not contribute to the potential district. In addition, several buildings were noted along Alfred Street that appeared to have been built during the 1950s that were not included in a 1999 survey by GAI Consultants Inc. that could now be contributing resources to the potential district.

The focus of this study is to develop improvement alternatives that fit within the existing right-of-way to the extent possible. The potential for impacts to historic resources will be limited to those that encroach on the existing right-of-way. The evaluation conducted for this study identified the potential for impacts to these resources.

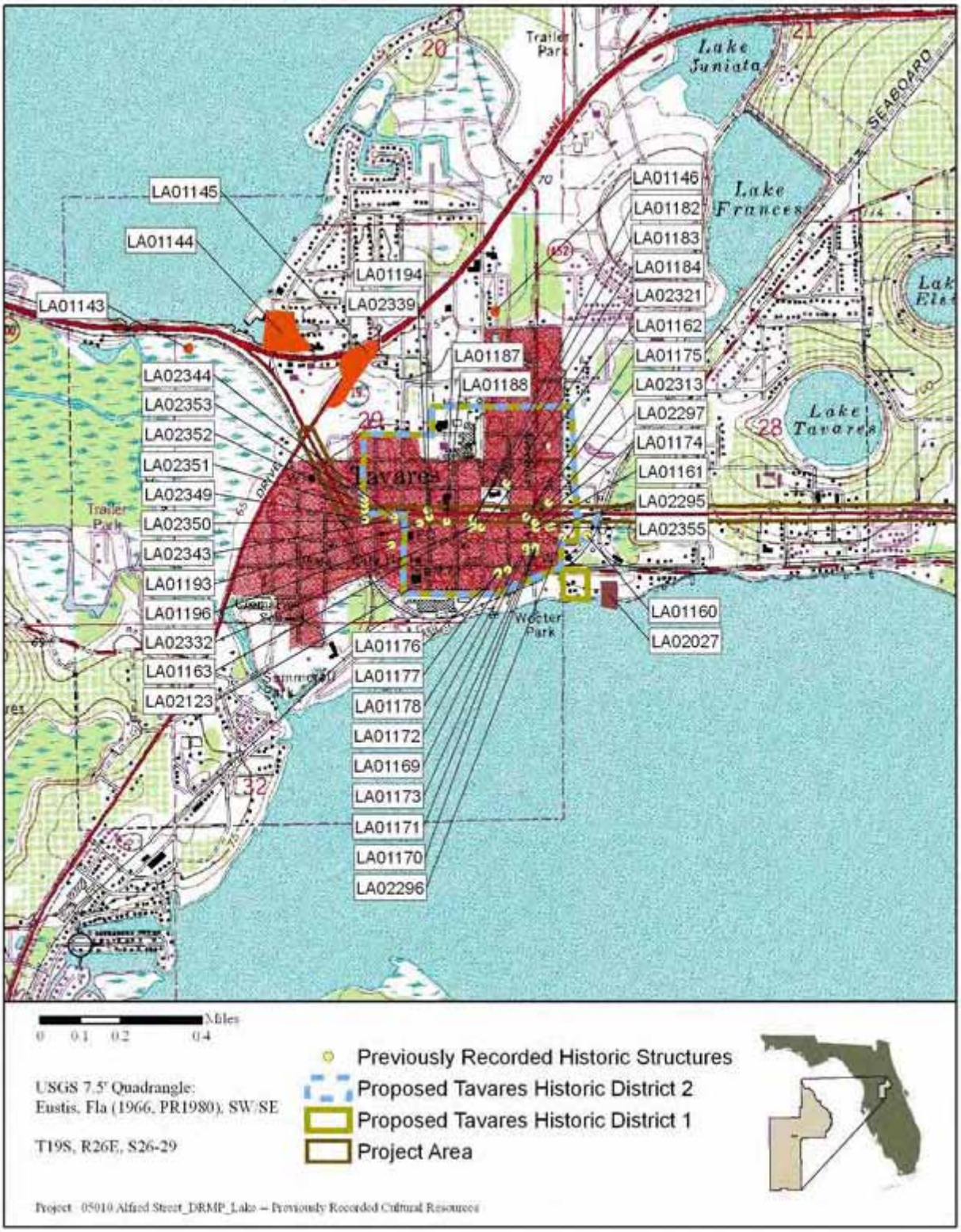



**Figure 2-12: Previously Recorded Historic Resources in the Study Area**

Twelve storm drains appear to be historic within the Alfred Street corridor. "R.O. Collins Iron Works 920 Tallahassee, Fl" is stamped into the edge of each of the metal grate covers. R.O. Collins Iron Works was originally known as the Tallahassee Iron Works and was established in Tallahassee in the early 20th century. The drains were noted only within the Downtown area, at the intersections of Sinclair Avenue, Joanna Avenue, New Hampshire Avenue, Rockingham Avenue, and St. Clair Abrams Avenue. In many instances the drains were located at more than one corner of an intersection. If determined to be historic, these storm drains may be contributing resources to the potential Downtown Tavares Historic District. Historic fabric typically found within the roadway cross section such as granite curbing, historic sidewalks, or brick streets were not found within the project area.

Two churches which may be eligible for listing in the NRHP appear to be potentially encroaching into the Alfred Street right-of-way. The Church of Christ (8LA1187) at 311 Joanna Avenue appears to have historic concrete retaining wall adjacent to the sidewalk along Alfred Street. This is illustrated in Figure 2-13.

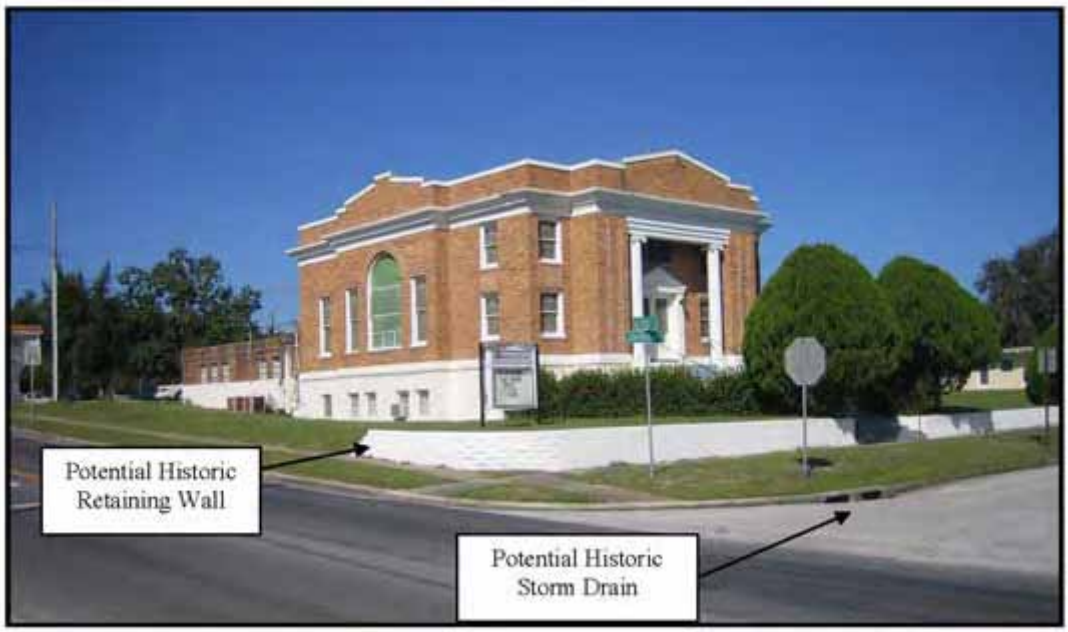



**Figure 2-13: Church of Christ at 311 Joanna Avenue (8LA1187)**

The Union Congregational Church (8LA1174) at 302 St. Clair Abrams Avenue also appears to abut the northern edge of the right-of-way. This is illustrated in Figure 2-14. One historic commercial building (8LA2355) located at 326 Alfred Street extends closely to the Alfred Street right-of-way and its loggia on the eastern elevation may encroach into the North Disston Avenue right-of-way. This building is a contributing resource to the potential Downtown Tavares Historic District.

**Figure 2-14: United Congregational Church at 302 St. Clair Abrams (8LA1174)**

Historic fabric also exists to the west and east of the proposed Downtown Tavares Historic District, but this fabric does not appear to meet the minimum criteria for listing in the NRHP. Two former gas stations located at the northwest and northeast corners of Dora Avenue, at 823 East Alfred Street and 903 East Alfred Street, either abut or extend into the Old Highway 441 Right-of-way.

### 2.7.3 Natural and Biological Features

In accordance with Executive Order 11990, Protection of Wetlands, May 1977, potential wetland impacts resulting from the proposed roadway improvements have been studied. Preliminary wetland determinations were based on information obtained from a review of the US Geological Survey (USGS) 7.5 minute topographic quadrangle maps, US Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) maps, US Department of Agriculture (USDA) Soils Conservation Service (SCS) Soils Survey for Lake County, Florida, current and historical aerial photography, and field reviews conducted by qualified biologists at DRMP, Inc. Each wetland system encountered within the project corridor was identified based on criteria outlined in the US Army Corps of Engineers (USACOE) Wetland Delineation Manual (1987).

The two primary wetland types encountered within the project corridor consist of wetland hardwood forests (Wetland W-1) and freshwater marsh surrounded by woody wetland vegetation (Wetland W-2). The overall project right-of-way, as well as proposed pond locations, was surveyed by a qualified biologist for impacts to wetland systems.

*Wetland W-1 (FLUCFCS 617 - USFWS PFO7)*

Located just east of the Florida Central Railroad crossing and the Downtown area, this forested wetland system is approximately 13 acres and is bisected by Alfred Street. The wetland hardwood forest exhibits a canopy closure of approximately 80%. Dominant canopy species include red maple (*Acer rubrum*), loblolly bay (*Gordonia lasianthus*), and sweet bay (*Magnolia virginiana*). Understory species include chinaberry (*Melia azedarach*), Brazilian pepper (*Schinus terebinthifolius*), and primrose willow (*Ludwigia spp.*). Ground cover consisted of Virginia chain fern (*Woodwardia virginica*) and air potato (*Dioscoria bulbifera*).

This wetland system maintains a hydrologic connection between Lake Francis and Lake Dora, while also historically connecting Lake Elsie and Lake Tavares prior to current development. Suitable nest and foraging habitat still exist within the interior of the system. However, upland development surrounding the system has reduced the value for wildlife usage.

*Wetland W-2 (FLUCFCS 618/641 – USFWS L1UB)*

This system consisting of Lake Saunders and adjacent contiguous wetlands is a lake and freshwater marsh system with a total size approaching 440 acres. The system is surrounded partially on the southern edge by woody wetland vegetation that is in closest proximity to the project corridor. The ecotonal wetland area between the marsh system and the current roadway right-of-way is comprised of Carolina willow (*Salix caroliniana*), wax myrtle (*Myrica cerifera*), chinaberry, and primrose willow.

The size of the system, and proximity to other large lakes in the area, results in abundant foraging and nesting habitat for many wetland-dependant species, and an overall high wildlife habitat value. Development has occurred along the edges of the lake, but primarily outside of the contiguous wetlands. Historically, this system would have been hydrologically connected to other lakes in the area, but recent development has limited that surface connectivity.

# Chapter 3

# Design Criteria

# 3 DESIGN CRITERIA

Since Alfred Street is not a state or federal facility, future improvements are only subject to the standards adopted by the City of Tavares and Lake County. Based on guidance received from staff, the current Florida Department of Transportation (FDOT) standards have guided the development of alternatives with regards to design geometry. Specifically, the development of alternatives was guided by the following documents:

- A Policy on Geometric Design of Highways and Streets (American Association of State Highway and Transportation Officials, AASHTO 2004) "AASHTO Greenbook"
- Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways (FDOT, 2005)
- Plans Preparation Manual (PPM) (FDOT, 2003)
- Manual of Uniform Traffic Control Devices (MUTCD) (FHWA, Washington, D.C., 2003 – Revision 1)
- Roadway and Traffic Design Standards (FDOT, 2004 English)

## 3.1 Roadways Design Criteria and Standards

The current roadway design criteria used for this study are presented in . All criteria are subject to change and only the most current criteria should be used during the final design phase.

**Table 3-1: Roadway Design Criteria and Standards**

| Design Element | | Value | Source |
|---|---|---|---|
| General Criteria | Functional Classification | Urban Collector | AASHTO Greenbook, 2004 |
| | Access Management Classification | N/A | FDOT PPM, Section 1.8 |
| | Design Speed (Downtown Section) | 25 mph | FDOT PPM, Table 1.9.1 |
| | Design Speed (Central and Eastern) | 45 mph | FDOT PPM, Table 1.9.1 |
| | Clear Zone (Urban – Collector) | 4 ft | Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways, "Florida Green Book" (Table 3-12) |
| | Sidewalk Width | | |
| | At back of Sidewalk | 6 ft | Florida Green Book, Section 3.C.7.d |
| | With grass strip | 5 ft | Florida Green Book, Section 3.C.7.d |
| | Design Year | 2030 | Based on Planning Horizon in LRTP |

## Table 3-1: Roadway Design Criteria and Standards (cont.)

| | Design Element | Value | Source |
|---|---|---|---|
| Typical Section | Lane Widths | 11 ft (min.) | Florida Greenbook, Table 3-7 |
| | With bike lanes | 11 ft | Design Choice |
| | Without bike lanes | 12 ft | Design Choice |
| | Median Width (minimum) | 10 ft (< 40 mph)<br>15.5 ft (45 mph) | Florida Green Book, Table 3-11<br>FDOT PPM, Table 2.2.1 |
| | Cross Slope – Pavement | 0.02 | FDOT PPM, Figure 2.1.1 |
| | Curb & Gutter Type | Type E & F | FDOT PPM, Figure 2.16.1 |
| | TWLTL Width | 12 ft | FDOT PPM, Table 2.2.1 |
| | Roadside Slopes | 1:2 to 1:6 | FDOT PPM, Table 2.4.1 |
| | Bike Lanes | 4 ft | FDOT PPM, Section 8.4.1 |
| Horizontal Alignment | Max Deflection Without a Curve | 2°00'00" | FDOT PPM, Table 2.8.1a |
| | Max Deflection for Through Lanes Through Intersections | 5°00' | FDOT PPM, Table 2.8.1b |
| | Min Curve Radius (w/o superelevation) | 300 ft (30 mph) | Florida Green Book, Table 3-3 |
| | Maximum Curvature ($e_{max}$ = 0.05) | 10°45' (533 ft)<br>8°15' (694 ft) | Florida Green Book, Table 3-3<br>FDOT PPM, Table 2.9.2 |
| | Min Length of Curve | 400 ft (absolute min)<br>600 ft (desirable min) | FDOT PPM, Table 2.8.2a |
| Vertical Alignment | Max Profile Grade | 9% | FDOT PPM, Table 2.6.1 |
| | Max Change in Grade w/o Vertical Curve | 0.80% | FDOT PPM, Table 2.6.2 |
| | Base Clearances | 1 ft | FDOT PPM, Table 2.6.3 |
| | Min distance requirements between VPI's | 250 ft | FDOT PPM, Table 2.6.4 |
| | Minimum Grade | 0.3% | FDOT PPM, Table 2.6.5 |
| | Min Sight Distance | | |
| | Stopping (<2% Grade) | 305 ft | FDOT PPM, Table 2.7.1 |
| | Stopping (>2% Grade) | 354 ft to 341 ft | FDOT PPM, Table 2.7.1 |
| | Curb and Gutter Section | | |
| | Min Crest Vertical Curve | K = 70 | FDOT PPM, Table 2.8.5 |
| | Min Sag Vertical Curve | K = 64 | FDOT PPM, Table 2.8.6 |

## 3.2 Stormwater Design Criteria and Standards

This section outlines the various regulatory agencies and associated criteria applicable for this project. The general criteria are summarized in Table 3-2. The preferred alternative pond sites are based on engineering properties, environmental, cultural and economic factors.

**Table 3-2: Stormwater Design Criteria and Standards**

| Criteria Item | Requirements |
|---|---|
| St. Johns River Water Management District (SJRWMD) | |
| Water Quality | - Pollution abatement treatment volume (Wet Detention) is 1" of runoff over total basin area, or 2.5" of runoff from the impervious area, whichever is greater.<br>- Pollution abatement treatment volume (Dry Retention) is ½" of runoff over total basin area or 1.25" of runoff over the impervious area, whichever is greater, plus an additional ½" of runoff for on-line systems. |
| Attenuation | - Match post-development to pre-development peak discharge rates outfalling from ponds for the 25-year, 24-hour storm event.<br>- Match post-development to pre-development peak discharge rates discharging from ponds for the 10-year, 24-hour storm event.<br>- Match post-development to pre-development peak discharge rates discharging from ponds for the mean-annual storm event. |
| Florida Department of Transportation (Not Required) | |
| Treatment | Requirement is to meet or exceed the applicable regulatory agency criteria. |
| Attenuation (Open Basin) | Peak post-development discharge rates shall not exceed pre-development rates for all critical duration storms with return frequency of up to and including the 100-year storm period. |
| Attenuation(Closed Basin) | Peak post-development discharge rates shall not exceed pre-development rates for all critical duration storms with return frequency of up to and including the 100-year storm period. Retention volume shall recover one-half of the volume in 7 days with total volume recovered in 30 days. |

The proposed project will require securing an Environmental Resource Permit (ERP) from the St. Johns River Water Management District (SJRWMD). Stormwater runoff from this project has an ultimate outfall to the Harris Chain-of-Lakes, which is not considered an Outstanding Florida Water (OFW). Therefore, the SJRWMD open basin criteria has been used in the pond sizing process.

# Chapter 4

# Traffic

# 4 TRAFFIC

The following is a brief overview of the analysis developed and documented in the Design Traffic Report for this project.

## 4.1 Existing Traffic Conditions

Under the existing condition, Alfred Street is a two lane undivided roadway. The speed limit is 35 miles per hour through the Downtown segment. This increases to 45 mph within the Central and Eastern segments. Signalization includes some turn lanes with storage for left turning vehicles. Generally, right turns are accommodated in the thru travel lane. Particularly in the Downtown segment, there is not sufficient right-of-way to modify the geometry to improve intersection operations. The existing roadway geometry is illustrated in Figure 4-1.

## 4.2 Existing Traffic Volumes

To support the study, turning movement counts were collected during February and March 2005 at five intersections, which include Sinclair Avenue, St. Clair Abrams Avenue, Dora Avenue, David Walker Drive and Bay Road. Traffic count data was also obtained from Lake County and FDOT. The 2005 Average Annual Daily Traffic (AADT) along Alfred Street and 2005 AM and PM peak hour turning movement counts are illustrated in Figure 4-2. The link volumes show an increase in traffic volume in the corridor from west to east, with the most appreciable increase occurring at David Walker Drive.

Based on generalized service volumes, all roadway segments on Alfred Street for which count data was available operate at Level of Service (LOS) D. All signalized intersections currently operate at LOS D or better, with the exception of Alfred Street at St. Clair Abrams Avenue. This intersection operates at LOS E and F in the AM and PM peak hours, respectively. The intersection of Alfred Street and David Walker Drive, which is currently un-signalized, operates at LOS B and C in the AM and PM peak hours, respectively.

Recommended design traffic characteristics: $K_{30}$=10.1%, $D_{30}$=57.57%, T=5.0%

## 4.3 Traffic Analysis Assumptions

The *Design Traffic Report, August 2005* was prepared under separate cover as part of the first phase of this corridor study. The analysis assumed a design year of 2030, which is consistent with the planning horizon of the Lake-Sumter MPO. Existing traffic patterns within the study area were assumed to remain consistent with land use, following a similar growth pattern over time.

The Central Florida Regional Planning Model (CFRPM) III was utilized to generate future traffic projections for comparison to observed traffic growth rates collected by permanent count stations. Based on these analyses, a generalized annual growth rate of 2.74% was applied to Alfred Street and 2.31% was applied to the side streets. Adopting a trends-based methodology was thought to be conservative as compared with the lower projections resulting from the CFRPM III model analysis.

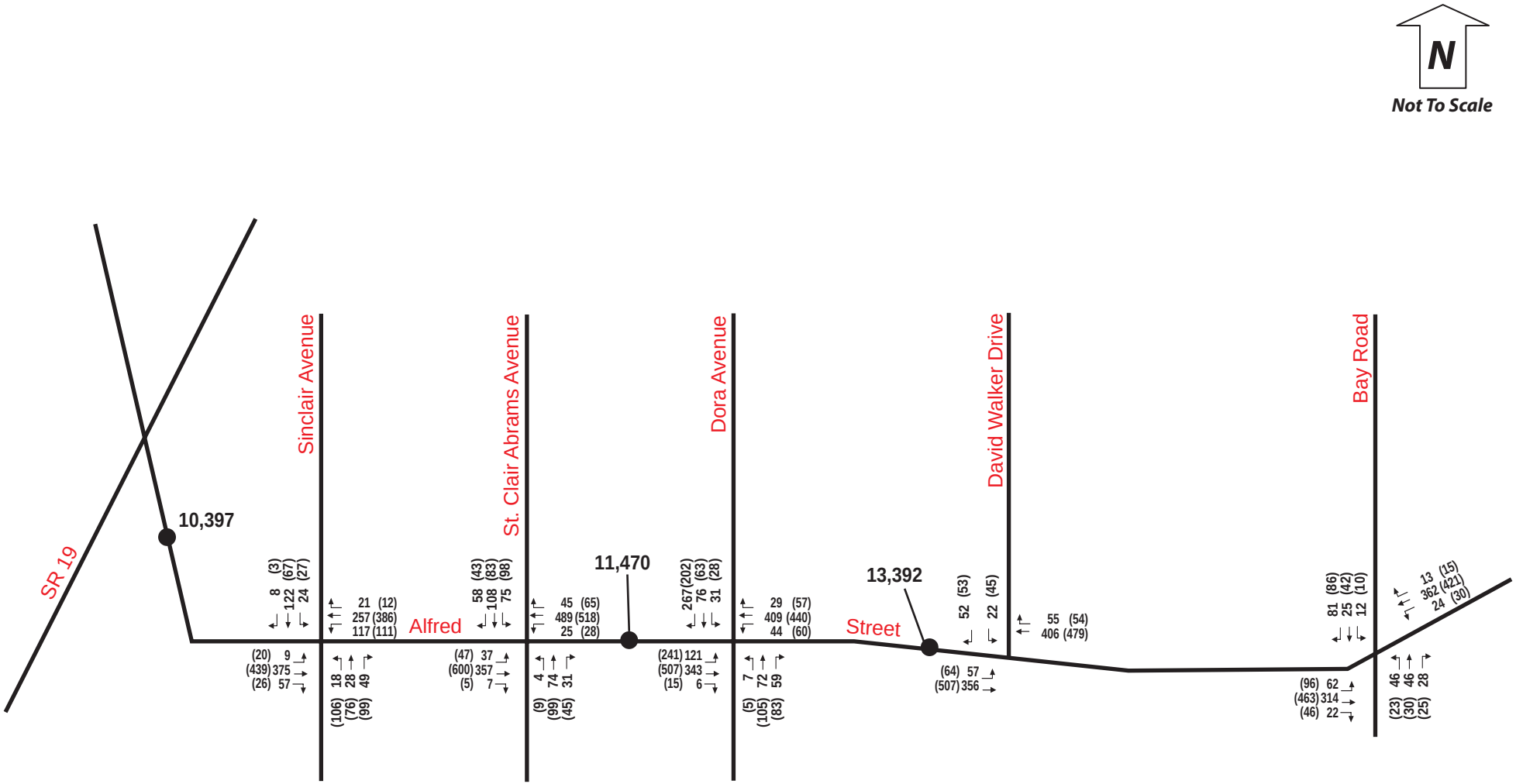
Figure 4.1

# Existing Geometry

City of Tavares

## Alfred Street (Old US 441)

From SR 19 to Bay Road




## Legend

Peak Hour TMC (PM) AM

24 Hour Traffic Volumes 10,397

Figure 4.2

# Existing Traffic Volumes

City of Tavares

# Alfred Street (Old US 441)

From SR 19 to Bay Road

## 4.4 Traffic Projections

The first phase of the project developed the future year traffic projections for Alfred Street and the side streets. This required the examination of model outputs in addition to historical traffic growth as documented by traffic count stations in the corridor. Based on the projected growth, Average Annual Daily Traffic (AADT) was developed for the years 2010, 2020 and 2030. These volumes are presented in Figure 4-3.

In accordance with standard procedures, future turning movement volumes at the study intersections were developed using the TURNS5 software. This is a program designed to predict future turning movement volumes by taking into account the existing AADT and turning movement volumes, growth rates or model year AADT volumes. Using the TURNS5 analysis, projected turning movements were developed for each analysis year.

For the second phase, the traffic volumes developed in the first phase were updated to take into account two developments that were not originally in the CFRPM model. The two developments were the Tavares Station Redevelopment and Judicial Center Expansion. Turning volumes generated by these developments (as documented in the *Downtown Tavares Traffic Operations Model* prepared for the *Tavares Station Redevelopment* prepared by Traffic Planning and Design, Inc., February 2007) were manually added to the initial volumes. The resulting turning movement volumes anticipated in future years are provided in Figure 4-4.

## 4.5 Level of Service Summary

For comparative purposes, the project has been analyzed in both the Build and No-Build scenarios. For the typical capacity improvement project, there is usually an appreciable difference between the No-Build operations and the performance of the network under the Build condition. The improvements proposed along Alfred Street, however, do not add thru capacity. There is a benefit to having a center island with left turn lanes that can remove left turning vehicles from the thru traffic stream. However, this benefit is difficult to quantify and does not have an appreciable impact on the traffic operational analysis.

Since the Alfred Street improvements do not significantly improve thru capacity, the Level of Service seen in the roadway links under the Build condition will match the No-Build condition. Several enhancements to the signalized intersections were recommended, which improved future operations under the Build Condition. These included such improvements as exclusive turn lanes and signal optimization. The LOS of the mainline was reviewed based on generalized service volumes. Figure 4-5 provides the projected LOS for the study intersections and roadway segments for the Build condition as summarized below.

Because the project does not add capacity/ thru lanes to Alfred Street, the two-lane roadway links and intersections are projected to fail under future volumes due to the new Judicial Center and Tavares Station community. Signalized intersections are generally the constraining element of a roadway. Right-of-way and environmental constraints, particularly within the downtown area, also preclude the construction of any additional through lanes.

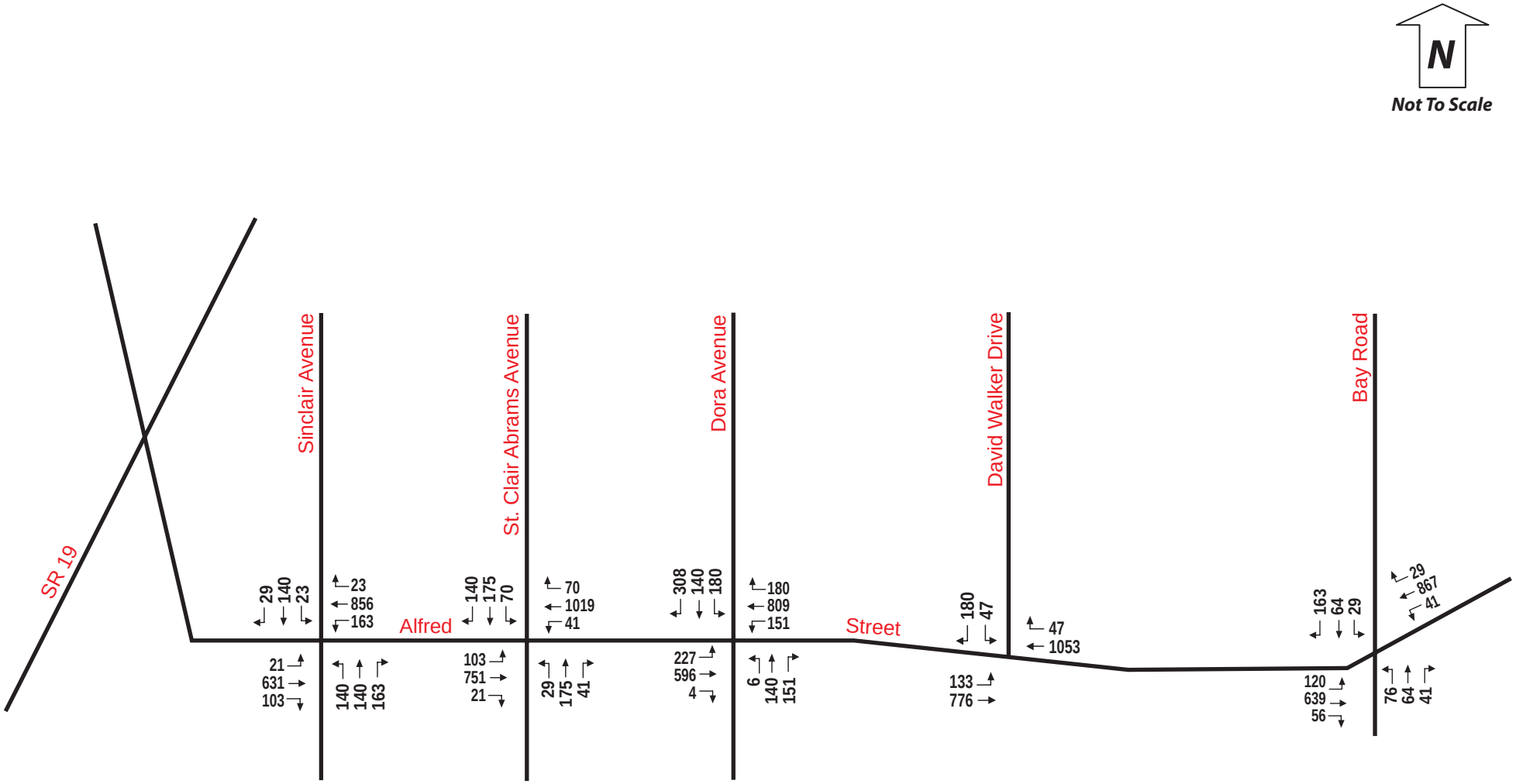



Figure 4.4

# Year 2030 Future Traffic Volumes

City of Tavares

## Alfred Street (Old US 441)

From SR 19 to Bay Road

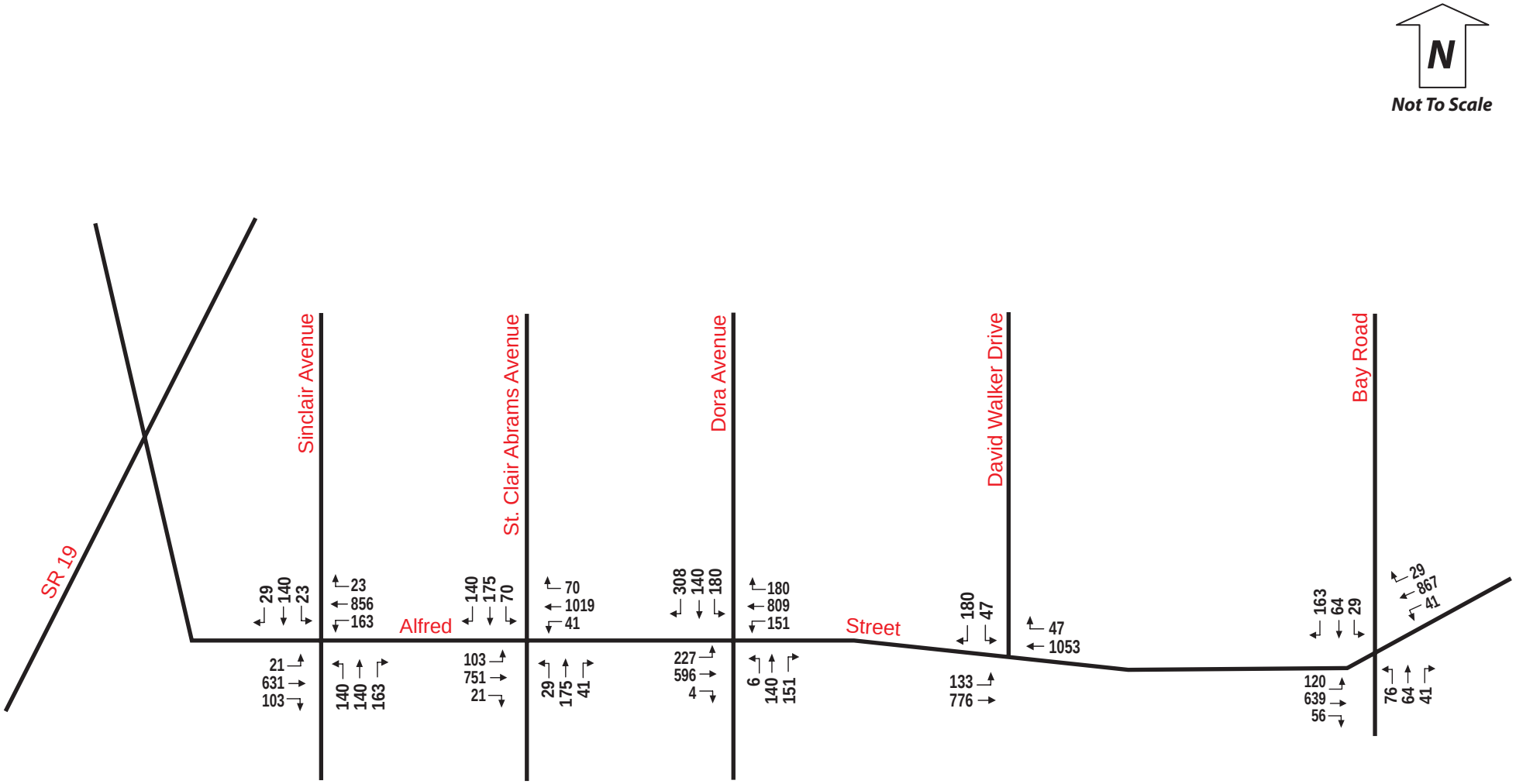



Figure 4.4

# Year 2030 Future Traffic Volumes

City of Tavares

## Alfred Street (Old US 441)

From SR 19 to Bay Road

Legend

D/D/D 2010/2020/2030 Level of Service
* No Adjustments to Intersection Geometry
** LOS Based on Signalization by 2020 ( No Additional Geometric Adjustments)

Figure 4.5

# Roadway and Intersection Level of Service - Build Condition

City of Tavares

## Alfred Street (Old US 441)

From SR 19 to Bay Road

# Chapter 5

# Development of Project Alternatives

# 5 ALTERNATIVES DEVELOPMENT

## 5.1 Methodology

The purpose of the corridor study is to develop and evaluate alternatives that meet the primary objectives of the project. These include improving aesthetics and drainage, providing enhanced bicycle and pedestrian features, providing for future travel demand to the extent possible, and maintaining access to adjacent property. This analysis seeks to develop the roadway improvement alternatives to fit within the existing right-of-way to the extent possible.

Using aerial photographs and property lines obtained from the Lake County Geographic Information System (GIS), a project base map was developed. This allowed for proposed improvements to be developed giving consideration to the existing roadway alignment and adjacent facilities.

The first step in the alternatives development was to identify potential typical sections that apply to the three project segments. The proposed typical section width accounted for the variation in available right-of-way between the Downtown segment and Central and Eastern segments. Once typical section options were identified, alignments were developed in plan view within the project limits to identify the footprint for each alternative. For this project, alternatives were developed to fit within the existing roadway right-of-way to the extent possible.

Once alternatives were complete from an engineering and design perspective, project costs were developed that included consideration of right-of-way impacts, construction costs, and other costs such as engineering design and construction inspection. This allowed for the development of an alternatives evaluation matrix that was used to compare the costs and impacts of the various alternatives. The discussion that follows will expand on the alternatives development.

## 5.2 No Project Alternative

The No Project Alternative (often referred to as the No-Build Alternative) assumes that no improvements will be made in the study area and that existing conditions will remain. This alternative is often used to compare the costs and benefits of implementing proposed improvements versus the alternative of continuing to use the existing facility. For this study, the No Project Alternative would mean that no improvement would be made to the Alfred Street or any intersection in the study area. The No Project Alternative is considered a viable option throughout the study process.

Advantages of the No-Build Alternative include minimal overall project cost, minimal impacts to the environment, and no disruption to traffic during construction. The disadvantages of the No-Build Alternative are that the objectives of the project are not satisfied. Drainage is not improved. No bicycle and pedestrian features or aesthetic enhancements are provided.

## 5.3 Alignment Considerations

Developing improvement alternatives that fit within existing right-of-way to the extent possible was one of the primary objectives of the study. Since the existing right-of-way is limited,

improvements were developed along an alignment that is generally centered within the existing roadway corridor.

As part of the second phase of study, a One-Way Pair alternative (Figure 5-1: Plan View of One-Way Pair Concept) was developed in which Alfred Street is utilized for eastbound traffic and Caroline Street is utilized for westbound traffic. Other parallel streets were also considered as part of this evaluation, but no other east/west street was found to be feasible in a one-way pair arrangement due to the geometric constraints involved at either end of the improvement. The One-Way Pair Concept is generally developed to fit within existing right-of-way, although several minor impacts to adjacent properties are involved at the eastern and western ends. These will be discussed in further detail in a later section.

**Figure 5-1: Plan View of One-Way Pair Concept**

## 5.4 Typical Section Development

As discussed in Section 2.1.1, the study corridor from SR 19 to Bay Road has been divided into three distinct project segments/ sections, Downtown, Center and Eastern (also called Section A, B, C). The primary reason for the segmentation of the project is the variability in width of the available right-of-way. Also, there is an appreciable change in land use and character of the corridor moving from west to east within the project limits.

Various typical sections were developed for each project segment with the intent that any typical section from one particular segment could be designed to work with any other typical section in an adjacent segment. The discussion below provides a summary of the various options that have been evaluated as part of the study.

### 5.4.1 Alternatives within the Downtown Section (SR 19 to Dora Avenue):

The Downtown Section/ Section A contains the most constrained right-of-way, with a corridor of only 50 feet between Sinclair Avenue and the Florida Central Railroad tracks, a distance of 0.5

miles. Options within this constrained section are limited, particularly with regard to turn lanes at the signalized intersections.

*10-foot Raised Median Alternative*

The first alternative, illustrated in Figure 5-2, involves a single 12-ft travel lane in each direction, separated by a 10-ft raised median, curb and gutter, and 6-ft sidewalks on both sides. This typical section takes up the entire 50-ft of available right-of-way.

Implementation of this improvement may require Temporary Construction Easements (TCE's) along adjacent properties to accommodate construction activities. While TCE's do not represent an actual purchase of right of way, there is a cost associated with obtaining the easement. This can be particularly true if the affected property owners are not supportive of the project. The impact of TCE costs may be reduced through an effective public involvement program in the design phase. An alternative to obtaining TCE's is to purchase the additional width needed to construct the improvement. Both options should be weighed and considered during the final design process.

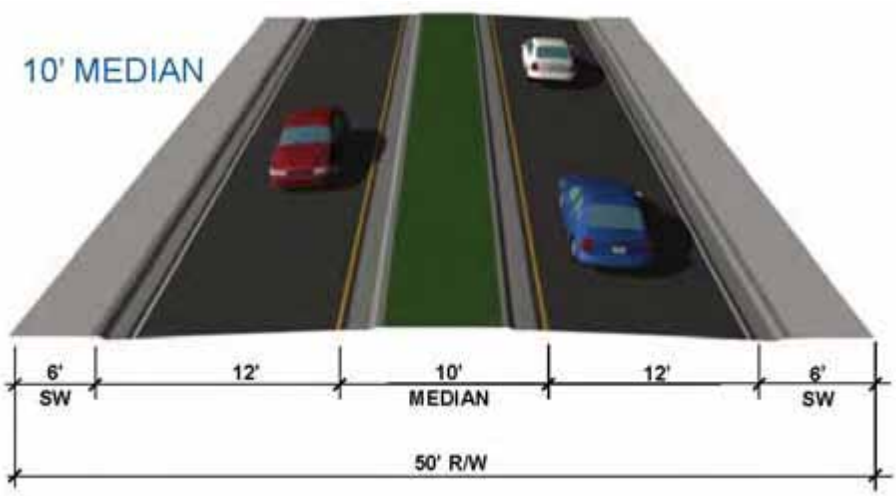



**Figure 5-2: Typical Section A1**

*6-foot Raised Median Alternative*

The second alternative within Downtown Section/ Section A is illustrated in Figure 5-3. This alternative involves a single 12-ft travel lane in each direction, separated by a 6-ft raised median, curb and gutter, and 6-ft sidewalks on both sides. Typical Section A2 provides 2-ft of additional space behind the sidewalk, which provides space to provide the smooth connection back to existing ground within the road right of way. If the needed transition between the back of the sidewalk and existing ground can be accomplished within 2-ft, it is possible that this alternative may require less TCE's than Typical Section A1. However there is a geometric disadvantage associated with this alternative. The use of a 6-ft median separator results in short transitions in the areas where signalized intersections or other cross streets develop left turn storage lanes

along Alfred Streets. This results in a roadway alignment that may be perceived as "wavy" as it will move in and out along this short alignment section.

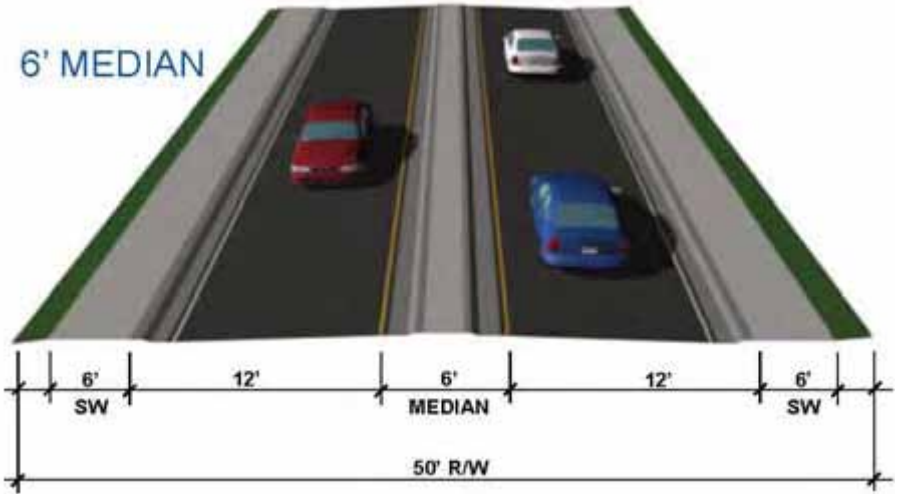



**Figure 5-3: Typical Section A2**

For the two alternatives evaluated above, both include raised median separation. The intent with each of these options is to provide median openings at select locations to facilitate access to adjacent properties.

*Three-Lane Alternative*

A three lane alternative, illustrated in Figure 5-4, was developed as part of the second phase of the study. This alternative provides, two 11-ft travel lanes and a 12-ft Two-Way-Left-Turn-Lane (TWLTL) or center turn lane, curb and gutter and 6-ft sidewalks on both sides. This typical section takes up the entire 50-ft of available right-of-way. This alternative provides the most access to the adjacent land use, whether it is commercial or residential. In addition, this alternative potentially provides the most left turn storage at intersections.

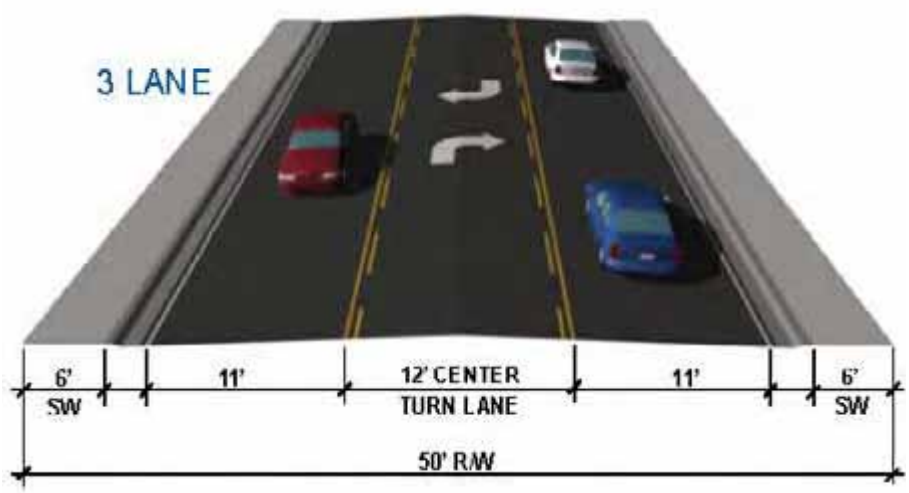



**Figure 5-4: Three Lane Alternative in Downtown Section**

*One Way Pair Alternative*

A One-Way Pair alternative, illustrated in Figure 5-5, was developed as part of the second phase of the study. The typical section provided by the alternative had a 12-ft travel lane for each directional through movement. The One-Way Pair is exclusive to the downtown area and would be located between US 19 and Disston Avenue. The concept utilizes Alfred St. for eastbound traffic and Caroline St. for westbound traffic.

**Figure 5-5: One-Way Pair Alternative in Downtown Section**

There is also a 5-ft and 7-ft sidewalk, an 8-ft planter strip, 8-ft on-street parking and curb and gutter on both sides. This typical section provides different operating characteristics and greater

opportunity for aesthetic features, such as landscaping. In general, this alternative is more pedestrian friendly as there is only one lane of traffic to cross.

*Summary*

Apart from the One-Way Pair, each alternative considered, transitions to a 3-lane section with 11-ft travel lanes and a 12-ft left turn lane would be developed at signalized intersections. This essentially matches the existing roadway condition at these intersections as shown in Figure 5-6.

**Figure 5-6: Transition to Develop Left Turns Storage at Signalized Intersections**

Beyond the Florida Central Railroad tracks, the right-of-way along Alfred Street gradually widens to 90-ft. This provides the opportunity to transition from the constrained typical section discussed in the preceding, to what is being considered in Sections B and C.

#### 5.4.2 Alternatives within the Central Section (Dora Avenue to David Walker Drive):

The available right-of-way within Section B varies between 90-ft and 66-ft. In order to develop a roadway alignment that is continuous, the lesser of the two widths is being considered for the development of alternatives within this area.

One of the project objectives is to provide accommodation for bicyclists from Dora Avenue eastward. Therefore, the typical sections evaluated within this section consider either bicycle lanes adjacent to the travel lanes or a dedicated pathway on one side of the road, separated from the traffic lanes.

*12-foot Raised Median Alternative*

The first alternative within Section B is illustrated in Figure 5-7. This alternative involves a single 11-ft travel lane in each direction, separated by a 12-ft raised median, 4-bicycle lanes, curb and gutter, and 5-ft sidewalks on both sides. This alternative provides an additional 2-ft of space on each side of the roadway to allow for a transition back to existing ground within the roadway right-of-way. With the relatively flat grades that are observed along the corridor, it is thought that this configuration will be sufficient to avoid the need for TCE's.

The recommendation of a 12-ft median in this alternative would require a lower posted speed than what is currently shown in this segment. To adhere to current FDOT standards, a median width less than 15.5 feet is not to be used on facilities with a design speed in excess of 40 mph. If a 40 mph design speed is assumed, the posted speed would need to be 35 mph or less. This is 10 mph lower than the 45 mph that is currently posted in this segment.

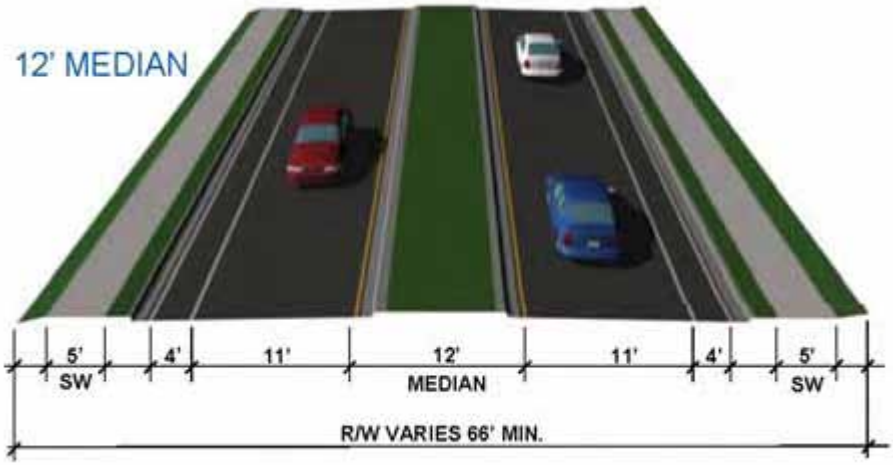



**Figure 5-7: Typical Section B1**

*15.5-foot Raised Median Alternative*

The second alternative within Section B is illustrated in Figure 5-8. This alternative involves a single 12-ft travel lane in each direction, separated by a 15.5-ft raised median, curb and gutter on both sides, a 5-ft sidewalk on the north side and a 10-ft multi-use trail on the south side. The multi-use trail along the south side of the roadway is intended to accommodate both bicycle and pedestrian traffic. This facility is separated from the roadway travel lanes by curb and gutter and a 3-ft grass strip.

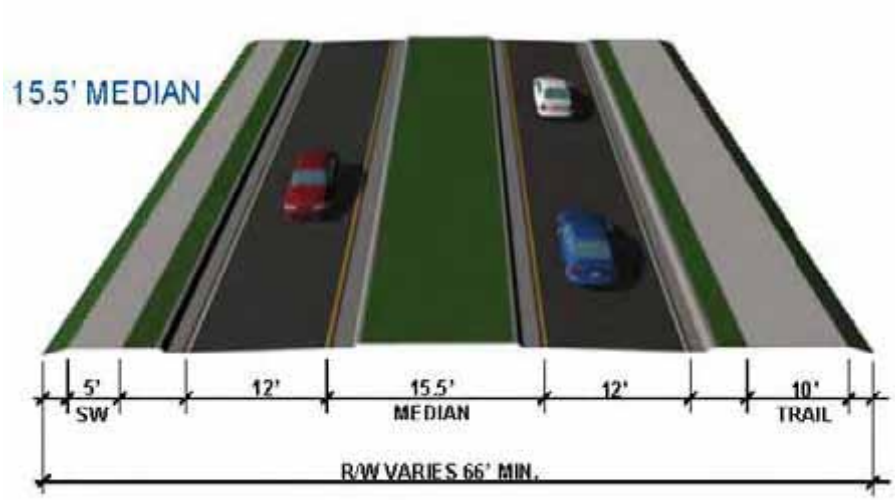



**Figure 5-8: Typical Section B2**

The width of the median provided in Typical Section B2 could be reduced if desired. This width is based on the suggested minimum outlined in the FDOT design standards for speeds up to 45 mph. It should be noted that the FDOT guidance is for multi-lane facilities, and the proposed improvements to Alfred Street essentially maintain a two lane roadway with median separation. Guidance provided in the federal policy (AASHTO Greenbook) states that median widths should be as wide as practical, but no smaller than 4 to 6 feet.

*Three-Lane Alternative*

A three lane alternative, illustrated in Figure 5-9, was developed as part of the second phase of the study. This alternative is very similar dimensionally to the 15.5-ft raised median alternative developed for this section, but instead of the raised median this alternative provides a 12-ft Two Way Left Turn Lane (TWLTL) or center turn lane.

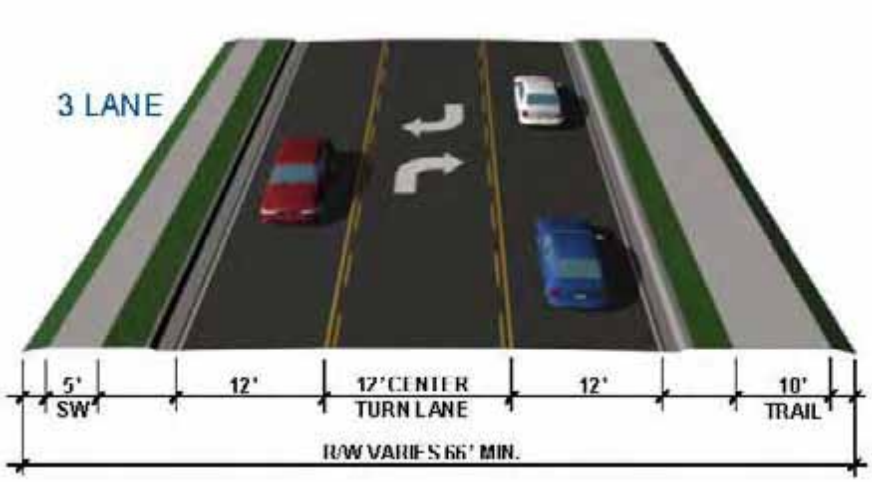



**Figure 5-9: Three Lane Alternative in Central Section**

There is curb and gutter on both sides, a 5-ft sidewalk on the north side and a 10-ft multi-use trail on the south side. The multi-use trail along the south side of the roadway is intended to accommodate both bicycle and pedestrian traffic. This facility is separated from the roadway travel lanes by curb and gutter and a 3-ft grass strip. The central and eastern sections of the study have more adjacent industrial land uses than the downtown section. This alternative provides the most access to these adjacent land uses, some of which are associated with large trucks.

### 5.4.3 Alternatives within the Eastern Section (David Walker Drive to Bay Road)

Section C is characterized by light industrial businesses and the Florida Central Railroad track that parallels Alfred Street along the south side. The available right-of-way within Section C is typically 66-ft. There is one short section approaching Bay Road near Lakeview Street where the right-of-way narrows to 40-ft. Within this short section, an encroachment onto the Florida Central Railway property will be necessary to maintain the typical section width of 66-ft.

Since the available rights-of-way in Sections B and C are similar, the alternatives evaluated in these sections were very similar. In fact, it should be noted that any alternative considered for Section B could easily be applied to Section C.

Since all of Section C has a railroad track running along the south side, the perception was that there might be a safety advantage to limit pedestrian traffic along the south side of Alfred Street. With the exception of some industry near Bay Road, the land along the south side is vacant or in use for citrus /agriculture. From a safety perspective, there may be an advantage to keeping the pedestrian facilities on the north side only, further away from the railroad tracks.

*22-foot Raised Median Alternative*

The concept of a multi-use path on the north side only is reflected in the first alternative considered for Section C. Illustrated in Figure 5-10, typical section C1 involves a single 12-ft travel lane in each direction, separated by a 22-ft raised median, curb and gutter, and a 10-ft multi-use trail along the north side only.

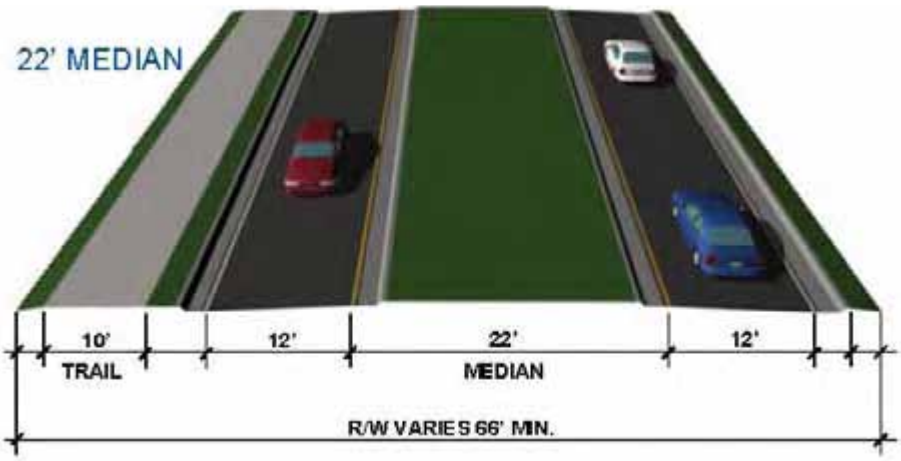



**Figure 5-10: Typical Section C1**

*15.5-foot Raised Median Alternative*

The second alternative considered within Section C is identical to typical section B2. Illustrated in Figure 5-11, this concept involves a single 12-ft travel lane in each direction, separated by a 15.5-ft raised median, curb and gutter on both sides, a 5-ft sidewalk on the north side and a 10-ft multi-use trail on the south side. The multi-use trail along the south side of the roadway is intended to accommodate both bicycle and pedestrian traffic. This facility is separated from the roadway travel lanes by curb and gutter and a 3-ft grass strip.

Typical section C2 takes a different perspective on the placement of the multi-use trail. Placing the 10-ft trail on the south side of the roadway minimizes the number of conflicts from driveways and cross streets that bicyclists and pedestrians must be aware of. This configuration also matches up with typical section B2 from the Central section.

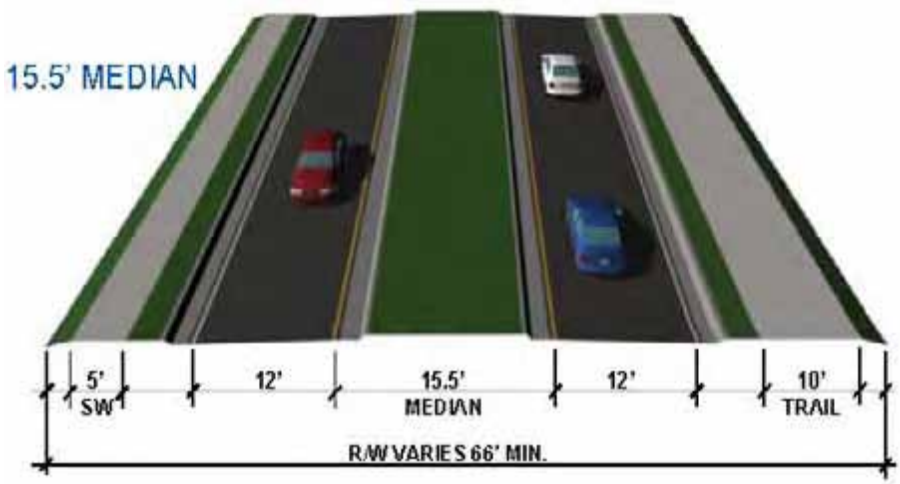



**Figure 5-11: Typical Section C2**

*Three-Lane Alternative*

A three lane alternative, illustrated in Figure 5-12, was developed as part of the second phase of the study. This alternative was very similar dimensionally to the 15.5-ft raised median alternative developed for this section, but instead of the raised median this alternative provides a 12-ft Two Way Left Turn Lane (TWLTL) or center turn lane.

There is curb and gutter on both sides, a 5-ft sidewalk on the north side and a 10-ft multi-use trail on the south side. The multi-use trail along the south side of the roadway is intended to accommodate both bicycle and pedestrian traffic. This facility is separated from the roadway travel lanes by curb and gutter and a 3-ft grass strip. The central and eastern sections of the study have more adjacent industrial land uses than the downtown section. This alternative provides the most access to these adjacent land uses, some of which are associated with large trucks.

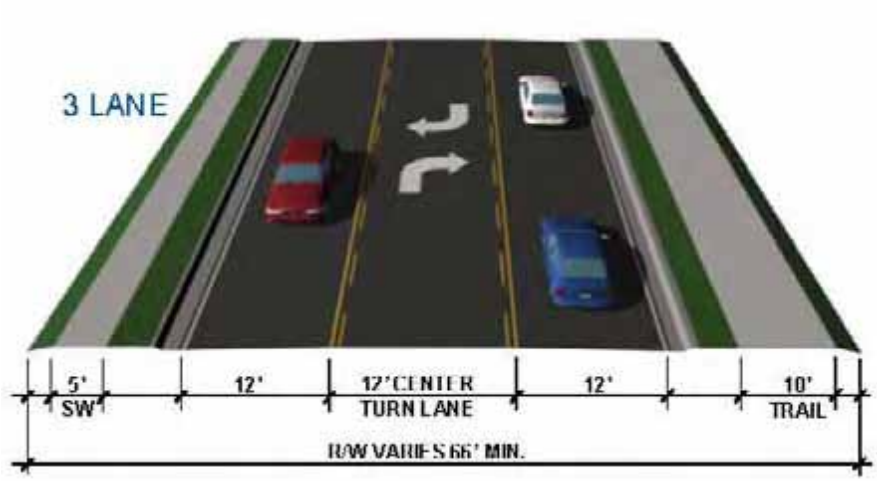



**Figure 5-12: Three Lane Alternative in Eastern Section**

## 5.5 Summary of Evaluation Measures

Following the development of alternative typical sections, plan view concepts were created to allow for an evaluation of alternatives and the various impacts associated with each. The project footprint is expected to be similar for the various typical sections being considered. This eliminates the need to consider several criteria during this phase. These include:

- Cultural and Historic resources impacted: An evaluation of how any public lands or historic properties or archaeological sites are potentially impacted by project alternatives.
- Wetland impacts: Wetland and floodplain impacts are estimated using the right-of-way boundaries of impact.
- Hazardous materials and contamination: Sites containing or having potential to contain petroleum, arsenic, lead, or other hazardous materials are also evaluated as part of the study process.

With the basic footprint approximately the same for each option being evaluated, the primary evaluation criterion that will allow for a comparison between alternatives is construction cost. When considering the cost of a project at the planning level, many other factors stem from the construction cost estimate. These include, design and engineering, construction engineering and inspection and others. Therefore, for the Alfred Street improvements, the primary evaluation criteria are:

- Construction cost: This analysis involved the use of the FDOT Long Range Estimates (LRE) system. This planning-level cost evaluation tool considers the elements of the typical section and applies these features over the length of each segment being evaluated. The LRE summary for each segment is totaled to comprise the total project construction cost. The LRE system utilized recent price history for materials involved in roadway construction, and has been the basis for cost estimating for many years on

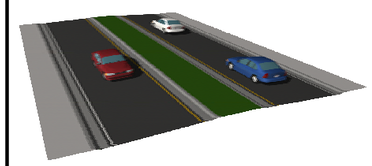
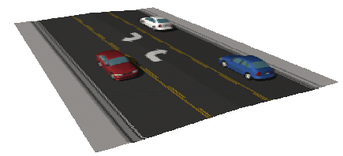
FDOT projects. To supplement the LRE, additional independent analyses may be conducted to refine the base construction costs associated with each alternative.

- Right-of-way cost and property impacts: For the purposes of this planning study, the right-of-way cost has been based on a fixed percentage of the total construction cost. This is based on guidance provided in the *2004 Transportation Costs* document developed by the Office of Policy Planning. As part of the second phase of study, costs associated with new alternatives were developed and initial project costs were updated to reflect year 2007 dollars using a growth factor.

## 5.6 Alternatives Comparison

As discussed in the previous section, a more detailed evaluation of impacts associated with each alternative was conducted. The results of this evaluation are presented in the Alternatives Comparison Matrix in Table 5-1. As mentioned earlier, the typical section alternatives can be used in any combination as long as they are assigned to the section for which they were developed. In addition, it is anticipated that all combinations of typical section alternatives will have a similar project footprint with respect to the right-of-way impacts. It should be noted that the One-Way Pair alternative is unique to the Downtown section.

# ALFRED STREET CORRIDOR STUDY
## City of Tavares, Lake County
## Table 5-1: ALTERNATIVES COMPARISON MATRIX

| EVALUATION FACTORS | DOWNTOWN SECTION | | | CENTRAL & EASTERN SECTION | |
|---|---|---|---|---|---|
| | RAISED MEDIAN | THREE LANE | ONE WAY PAIR | RAISED MEDIAN | THREE LANE |
| |  |  | | | |
| **Travel Service** | | | | | |
| Overall Traffic Operations Ranking | Third (Congested) | Second (Congested) | First (Less Congested) | Similar (Congested) | Similar (Congested) |
| Congestion at Major Intersections | High | High | Medium | Medium | Medium |
| Congestion at Minor Intersections | Medium | High | Heavy | Low | Low |
| Anticipated Travel Speed | 20 Mph | 25 Mph | 20 mph & 10 mph on Curves | 30 - 35 Mph | 40 - 45 Mph |
| Overall Safety | Higher | Lowest | Highest | Higher | Lowest |
| New Signalized Intersections | None | None | 2 Along Caroline Street | None | None |
| **Aesthetics and Pedestrian Facilities** | | | | | |
| Allows for On Street Parking | No | No | Yes | No | No |
| Bike Facilities | Yes | Yes | Yes | Yes | Yes |
| Pedestrian Friendliness | Medium | Low | High | Medium | Low |
| Aesthetic Features | Grassed Median | None | Planted Strip/ On-Street Parking | Grassed Median | None |
| Consistency with CRA Vision | Medium | Low | High | Not Applicable | Not Applicable |
| Accessibility to Adjacent Landuse | Low | High | Medium | Low | High |
| **Socio-Cultural Impacts** | | | | | |
| Right of Way Required | None | None | Yes (3 Parcels Impacted) | Yes (2 Parcels Impacted) | Yes (2 Parcels Impacted) |
| Potential for Impacts to Historic Resources | Low | Low | Medium | Low | Low |
| **Natural Environmental Impacts** | | | | | |
| Potential Wetland/ Floodplain Impacts | Minimal | Minimal | Minimal | Minimal | Minimal |
| Potential T & E Species Impacts | Not Anticipated | Not Anticipated | Not Anticipated | Not Anticipated | Not Anticipated |
| **Physical Environment Impacts** | | | | 0 | 0 |
| Potential Contamination Site Impacts | None Anticipated | None Anticipated | None Anticipated | None Anticipated | None Anticipated |
| Maintenance of Traffic During Construction | Disruptive | Disruptive | Less Disruptive | Disruptive | Disruptive |
| **Project Cost** | | | | | |
| Engineering Design | 1.07 | 1.25 | 1.51 | 1.78 | 1.88 |
| Right-of-Way Acquisition | 0.51 | 0.60 | 0.78 | 0.85 | 0.90 |
| Project Construction | 4.26 | 4.98 | 6.03 | 7.12 | 7.50 |
| Construction Engineering & Inspection | 0.64 | 0.75 | 0.90 | 1.07 | 1.13 |
| Environmental Mitigation | 0.10 | 0.10 | 0.10 | 0.10 | 0.10 |
| **TOTAL PROJECT COST** | **$6.58 M** | **$7.67 M** | **$9.33 M** | **$10.92 M** | **$11.50 M** |

## 5.7 Identification of the Preferred Alternative

Initially in the first phase of the study a reduced typical section preferred alternative was developed based upon input from various stakeholders (including the public and City and County staff) as described in Chapter 7. This concept incorporated typical sections A1, B2 and C2 which were the 10-ft, 15.5-ft and 15.5-ft raised median (with textured pavement) typical sections. Prior to the City Council taking action on the initial preferred alternative, an election resulted in several Council seats being replaced with new members.

Input on this project received from new Councilmembers with respect to the alternatives that had been studied was the impetus for the second phase of study. At the request of City Council, the second phase was initiated to study additional alternatives such as the One-Way Pair, as well as to conduct a more comprehensive public outreach program. City staff and the consultant project team held regular coordination meetings and provided updates to City Council to discuss the alternatives development and comments received at public meetings. As a result of this second phase, a Preferred Alternative Concept was identified and unanimously endorsed by the City Council as well as the Community Redevelopment Agency Advisory Committee (CRAAC).

The preferred alternative as recommended by this study includes:

*Section A (Downtown):* **One-Way Pair Alternative**

*Section B and C (Central & Eastern Sections):* **Three-Lane Alternative**

Once selected, the Preferred Alternative Concept was evaluated in greater detail with respect to its costs and associated impacts. This is documented in Chapter 6.

# Chapter 6

# Preliminary Design Analysis

# 6 PRELIMINARY DESIGN ANALYSIS

This section of the report documents the design and analysis of the preferred alternative. In short, the preferred alternative developed in the second phase of the study incorporated the One-Way Pair alternative in the Downtown section and the three-lane alternative in the Central and Eastern sections.

## 6.1 Typical Sections

There are two typical sections that comprise the Preferred Alternative Concept. Between SR 19 and a point west of Dora Avenue (termed the Section A Downtown section), the One-Way Pair alternative was selected. This is illustrated in Figure 6-1, and contains the following basic elements:

- One 12-ft travel lane for each directional through movement
- 8’ parking strip adjacent to the travel lane
- Curb and Gutter along both sides
- 8’ planter strip for aesthetics and landscaping
- 7’ sidewalk adjacent to travel lane, 5’ sidewalk behind planter strip

**Figure 6-1: Typical Section for Preferred Alternative (Downtown)**

Within the Central and Eastern sections, the three-lane typical section was selected. With the configuration of the One-Way Pair, the Three Lane section will begin at Disston Avenue, just west of the railroad crossing. As illustrated in Figure 6-2, this typical section contains the following basic elements:

- One 12-ft travel lane in each direction
- 12-ft Two Way Left Turn Lane (TWLTL) or center turn lane
- Curb and gutter along both sides
- 3’ grassed strip
- 10-ft multi-use trail on the south side
- 5-ft sidewalk on the north side.

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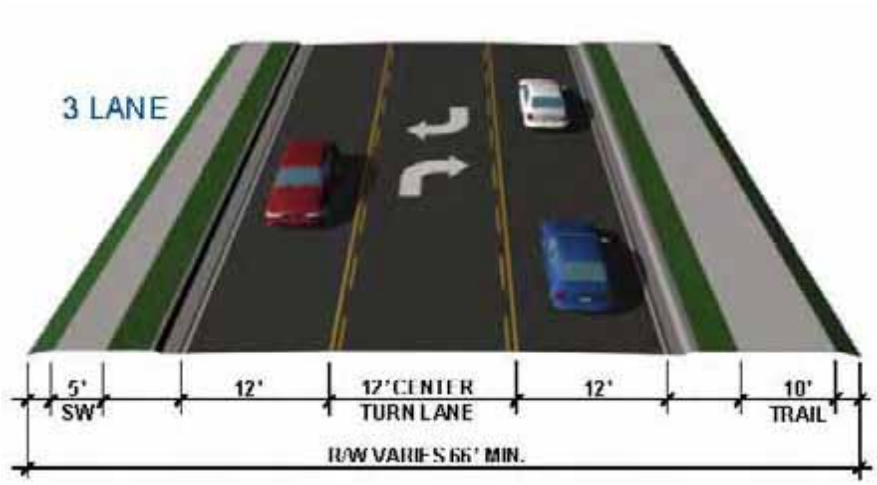



**Figure 6-2: Typical Section for Preferred Alternative (Central and Eastern)**

## 6.2 Summary of Roadway Features

As a reference and illustration, Appendix A contains the Preferred Alternative Concept Plans for the proposed improvements. The preferred alternative concept adds capacity and aesthetic features to the downtown area. Pedestrians will be required to cross only one lane of traffic and vehicles existing from side streets and driveways will only make right turns. The preferred alternative in the portion of the study area to the east of the rail way tracks will allow unrestricted access to the adjacent land uses.

Within the Downtown Section, the current stormwater drainage system would be improved and brought up to current standards. Within the Central and Eastern Sections, the improvement also changes the existing open drainage to a curb and gutter section, which would impact the access points along the corridor. While consolidation of redundant or continuous driveway connections will be necessary, the proposed concept seeks to maintain existing access to Alfred Street as much as possible.

The project traffic demand developed in the *Design Traffic Report* suggests that improvements are needed to several of the major intersections within the corridor. Due to the constrained right-of-way within the Downtown section, adding turn lanes to increase intersection capacity is not

practical. However, the Dora Avenue intersection and others in the Eastern and Central Sections do have available right-of-way to develop intersection improvements, beyond application of the typical section for that segment.

From the pedestrian and bicyclist's perspective, the corridor is being significantly enhanced. Within the Downtown Section, sidewalks are being provided continuously along both sides of Alfred Street. East of Dora Avenue, a 10-ft multi-use trail is being provided on the south side of Alfred Street to serve both bicycle and pedestrian traffic and increase the overall walkability of the corridor. Also in the Central and Eastern Sections of the project, a sidewalk of standard width is provided along the north side of Alfred Street.

### 6.2.1 Access Management

Access management is the practice of controlling vehicular access to a roadway in order to increase roadway efficiency and improve travel safety by reducing the number of traffic conflicts encountered by roadway users. The State Highway System Access Management Act (335.18 FS) mandates the implementation of access management standards based on the Access Management Classification System developed in Administrative Rule 14-97.

Since Alfred Street is not on the state system, there is not presently an access management classification that governs this facility. However, it is recognized that there are both operational and safety benefits to introducing access management techniques to this project. The configuration shown in the Preferred Alternative Concept represents a balance between access and geometry that supports efficient traffic operations. The project team recognizes that moving traffic through the corridor is not the only objective. Reasonable access to Alfred Street must also be developed in order to support commerce and existing land uses. The concept that has been developed seeks to provide this balance.

### 6.2.2 Aesthetics and Landscaping

One of the objectives of the study was to look for opportunities to enhance the aesthetic qualities of the corridor. The introduction of median separation provides an opportunity to install low level landscaping or provide grassed medians. Such treatments require irrigation to be successfully maintained. Since Alfred Street is operated and maintained by the City of Tavares, the installation of landscaping and other corridor beautification can be done directly by the City at their discretion.

With respect to aesthetics, the corridor within the Downtown section is being enhanced in several ways. There will be wide sidewalks will promote a more leisurely and walkable roadway environment. This will be supplemented by a wide planter strip which will offer the opportunity for grass or low-level landscaping and on-street parking which will provide a buffer between pedestrians and vehicular traffic. It is also possible to consider adding illumination in the form of decorative light fixtures in the median as is done along Donnelly Street in Mt. Dora. Brick textured pedestrian crossings could also be potentially used to add contrast and character.

## 6.3 Drainage & Stormwater Ponds

A *Preliminary Pond Siting Report* was prepared and submitted under separate cover that identified the preferred pond site locations listed in Table 6-1. These locations were selected

following an engineering analysis and cost evaluation of multiple sites within each drainage basin. This analysis was based on the availability of vacant land and engineering information available at the time this PD&E study was conducted.

**Table 6-1: Summary of Stormwater Ponds**

| Pond ID | Location | Location Relative to Alignment | Pond Size or Required Right-of-Way (Acres) |
|---|---|---|---|
| A1 | State Road 19 and Alfred Street Intersection | Northeast | 1.3 |
| B2 | Commercial Parcel West of RR Tracks | North | 0.49 |
| C1 | Alfred Street and David Walker Drive | Northeast | 4.48 |
| D2 | Alfred Street and Saunders Circle | North | 2.67 |

Pond A-1 is located on a vacant parcel at the northeast corner of the State Road 19 and Alfred Street intersection. This is a wet retention/detention facility sized using open basin criteria. Pond A-1 requires approximately 1.3 acres of right-of-way. The seasonal high water table in this area is near the ground surface making the area suitable for wet detention/retention.

Pond B-2 is located on an existing commercial parcel with two existing warehouses at the northwest corner of the Railroad and Alfred Street crossing. This is a dry retention facility sized using open basin criteria. Pond B-2 will require approximately 0.49 acres of right-of-way. A drainage easement eastward across the railroad right-of-way is also required for outfall access. The seasonal high water table in this area ranges at depths of 10 to 40 inches below ground surface.

Pond C-1 is located on a vacant parcel at the northeast corner of the David Walker Drive and Alfred Street intersection. This is a dry retention facility sized using open basin criteria. Pond C-1 requires approximately 4.48 acres of right-of-way. The seasonal high water table in this area is at a depth of ten feet below ground surface.

Pond Alternative D-2 is located on a vacant parcel north of Alfred Street east of Saunders Circle. This is a wet retention/detention facility sized using open basin criteria. Pond D-2 will require approximately 2.67 acres of right-of-way. The seasonal high water table in this area is at the ground surface.

To meet the agency guidelines, the Preferred Alternative will provide a closed drainage system with curb and gutter. The stormwater runoff shall be collected into storm drain inlets and then conveyed into the above listed preferred pond sites. All of the preferred ponds sites have been designed to meet water quality and water quantity requirements set forth by SJRWMD.

## 6.4 Right-of-Way Needs

To the extent possible, the proposed alignment was designed to fit within the existing Alfred Street right-of-way. The three cases in which right of way will be required are

- Storm water pond locations
- One-Way Pair transition between Alfred Street and Caroline Street
- Between Merry Road and Fairview Avenue in the Eastern section.

*Stormwater Pond Location*

Preliminary pond sizes and site locations investigated during the first phase analysis were not re-evaluated as part of the second phase of this project. While several of the pond locations initially identified may be accommodated as part of the design process, the rapidly changing nature of the land uses within the corridor may result in the need for re-evaluation of pond site locations. This reevaluation was beyond the scope of the second phase of the project. The final location of pond sites will be determined in final design.

*One-Way Pair transition between Alfred Street and Caroline Street*

The One-Way pair in the downtown will potentially require right-of-way to be acquired. In particular right of way will be required at the western and eastern tie in connection of the one-way roadways as shown in the next two figures.

**Figure 6-3: Potential Right-of-Way take on East End of One-Way Pair**

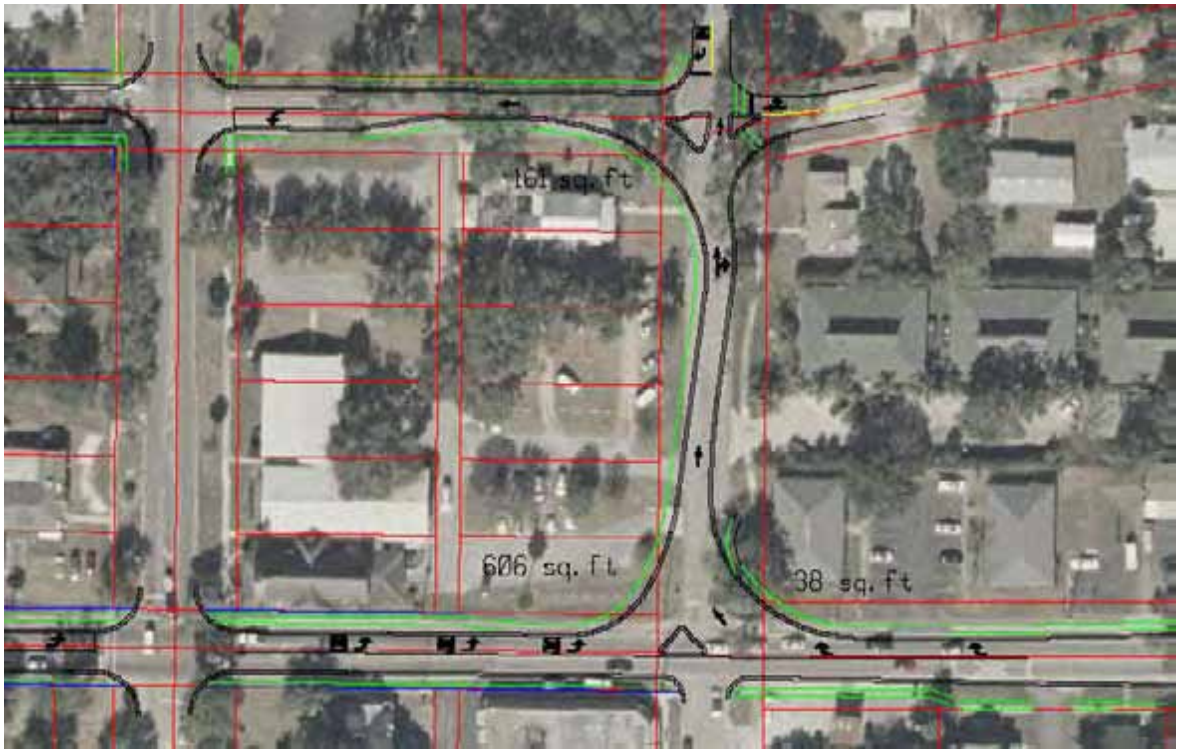



**Figure 6-4: Potential Right-of-Way take on West End of One-Way Pair**

It should also be noted that the curves required for the connection between Alfred Street and Caroline Street at the east end along Disston Avenue will require tight radii in order to avoid the need for more substantial right of way impacts. The concept pictured in Figure 6-4 involves curvature that will accommodate a larger semi-tractor trailer truck (WB 64-FL) at a minimal design speed. There is potential that these curves may require a design variation, as they will only support very low speed travel in this transition area.

*Between Merry Road and Fairview Avenue in the Eastern section*

In the Eastern Section, the right-of-way width was not consistently 66-ft wide. This results in a need to acquire adjacent property along the south side of Alfred Street between Merry Road and Fairview Avenue as illustrated in Figure 6-5.

The need for additional right-of-way in this short section is due to a grouping of long slender parcels on the north side of Alfred Street. Up until these parcels are encountered, the width of the Alfred Street right-of-way is approximately 66-ft throughout the corridor. In just this one section, the roadway right-of-way width narrows to 40-ft as illustrated in Figure 6-5.

This right-of-way constraint required a change in the Alfred Street alignment to avoid impacting the numerous parcels on the north side of the roadway. The concept takes the alignment to the south to avoid this impact, encroaching on the Florida Central Railway property. The nature of this impact is favorable because it does not preclude the railroad from expanding their existing

facility. The southern right-of-way line between the railroad from Alfred Street has a jog to the north within this segment, essentially between Merry Road and Fairway Avenue.

The value of required right-of-way has been estimated based on planning-level techniques and is based on a fixed percentage of roadway construction cost. In the final design phase, a more detailed estimate of right-of-way acquisition values should be developed.

**Figure 6-5: Right-of-Way Needed (South Side between Merry Rd. and Fairview Ave.)**

**Figure 6-6: Change in Right-of-Way Width in Eastern Section**

## 6.5 Assessment of Environmental Impacts

### 6.5.1 Cultural & Historic Features

An archaeological and historic structure review of the project corridor was conducted as part of this study. This included background research and an extensive field review. Many of the findings developed as part of this review were outlined in Section 2.7.2. In summary, the proposed improvements to Alfred Street have potential to impact structures or historic fabric that fall within the dedicated road right-of-way.

The intention of this project is to avoid any significant impacts to historic resources, particularly historic buildings. While curbing and iron drainage inlets that are considered historic fabric may be impacted, this is essentially unavoidable. In order to improve the drainage characteristics of the roadway within the Downtown Section, replacement of storm drains will be required.

The Alfred Street project has eight proposed ponds sites. This includes all alternative sites, of which just one pond per drainage basin will be needed. The evaluation of potential pond sites found no historic fabric within their proposed footprints. However, several of the proposed ponds are within the viewsheds of historic buildings.

Whenever it is determined that the project may impact listed historic resources, or resources determined eligible / potentially eligible for listing in the National Register of Historic Places, it is advised that consultation is conducted with the State Historic Preservation Officer (SHPO). SHPO coordination will provide guidance to the City on the implications of any impacts.

In the case of Alfred Street, it is not likely that the SHPO would find significant adverse impacts with this project, particularly since there is not a plan to destroy buildings within the historic Downtown area. However, coordination with SHPO can protect the project against difficulties in the future should it be decided that consultation is required for permitting.

### 6.5.2 Archaeological Sites

Archaeological sites are not anticipated to be an issue for the proposed improvements to Alfred Street. A review of the Florida Master Site File (FMSF) was conducted to determine if any previously recorded cultural resources were located in the Alfred Street project area. There are no recorded archaeological sites along the roadway or within the Area of Potential Effect (APE).

### 6.5.3 Parks & Recreation Areas

The City of Tavares operates Ridge Park, which is located on the north side of Alfred Street within the Downtown Section. This park is not adversely impacted by the proposed improvement. The Florida Central Railroad operates a scenic passenger train along the rail facility that parallels Alfred Street in the Eastern Section. This line does not utilize the crossing of Alfred Street just east of Downtown. The improvements are not expected to impact railroad operations.

### 6.5.4 Wildlife and Habitat

A review of data obtained from the Florida Fish and Wildlife Conservation Commission (FFWCC), USFWS, Florida Natural Areas Inventory (FNAI), and Lake County, Florida indicated that this project has potential to affect one or more state or federally listed species.

Potentially affected listed species include the gopher tortoise (*Gopherus polyphemus*), southern bald eagle (*Haliaeetus leucocephalus*), Florida black bear (*Ursus americanus floridanus*), Florida scrub jay (*Aphelocoma coerulescens*), and wading birds. An overview of the wildlife habitat area is found in Figure 6-7

The gopher tortoise is listed by the FFWCC as a Species of Special Concern. Generally, it is not anticipated that any gopher tortoise burrows will be affected by this project, as none were observed within the right-of-way during preliminary field evaluations. However, suitable habitat for gopher tortoises does exist in upland areas outside and adjacent to the current project right-of-way. If gopher tortoise burrows are observed within the project limits during project design or construction phases appropriate relocation or take permits will be required by FFWCC.

A review of the FFWCC Eagle Locator website indicated that there are several known eagle nests in the vicinity of the project. It should be noted that none of these nests lie within the 1500-foot protection zone defined by USFWS as they are primarily southeast of the eastern project terminus along the north shore of Lake Dora, with the closest nest (ID LA025) being approximately 1700 feet from the project corridor. During project design or construction phases, project biologists will need to verify the location of any know eagle nests within 1500' of the project, which would require involvement if the USFWS and FFWCC.

A review of the FFWCC bear occurrence data resulted in a documented bear occurrence north of the project on East Caroline St near wetland W-1. The Florida black bear is listed as threatened by the FFWCC. Although there is no evidence of bears utilizing the existing project corridor, there are large contiguous wetland systems within the project area that have the ability to provide adequate black bear habitat. Due to this project being in an urban/suburban environment and construction activities occurring along an existing roadway, it is not anticipated that the presence of bears will be an issue for this project.

The Florida scrub jay is listed as threatened by the USFWS and the FFWCC. A review of the FFWCC scrub habitat GIS layer as well as known occurrences within Lake County, from the USFWS-funded 2003 countywide survey, revealed that suitable habitat does exist for scrub jays on the eastern end of the project. Known occurrences of scrub jay clans have been recorded approximately 2,000 east of the current project limits. A review of current FFWCC GIS data available for scrub habitat resulted in suitable scrub jay habitat occurring within 150 feet of the project corridor. Based upon these findings, it is recommended that FDOT conduct a scrub jay survey prior to any construction activities as well as coordination with FFWCC and USFWS in order to establish the extent of suitable habitat, as well as the presence or absence of scrub jays within the project corridor.

Although no listed wading birds were observed foraging in wetlands or swales adjacent to the project corridor, the wetland systems are capable of providing sufficient foraging habitat for several species of wading birds including wood stork (*Mycteria americana*), little blue heron (*Egretta caerulea*), Florida sandhill crane (*Grus canadensis pratensis*), limpkin (*Aramus quarauna*), snowy egret (*Egretta thula*), tricolor heron (*Egretta tricolor*), and white ibis (*Eudocimus albus*). Due to the limited extent of construction activities, and the close proximity

of large contiguous wetland systems, this project is not likely to adversely affect wading bird populations.

*Recommendations for Future Project Phases*

Performing a survey for Florida scrub jays and gopher tortoises should be considered prior to commencing any construction activities. In addition, a query of current bald eagle nest locations should be conducted to verify that there are no active nests within 1500 feet of the limits of construction.

In addition to the additional field work mentioned in the preceding, the City should continue coordination with the appropriate regulatory agencies throughout design and permitting. One consideration would be to submit this document to the appropriate regulatory agencies for review and comment.

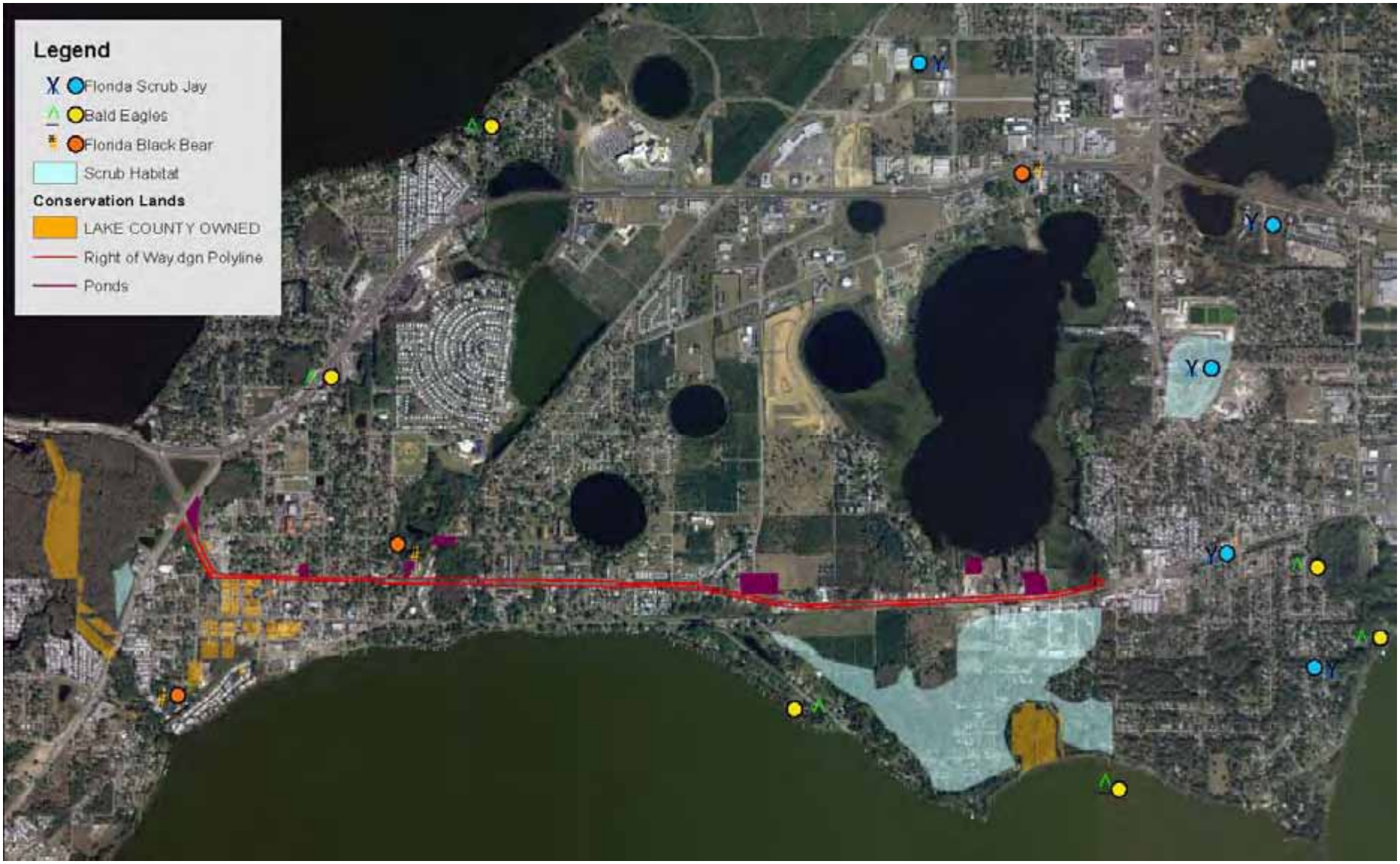



**Figure 6-7: Wildlife and Habitat Overview**

### 6.5.5 Wetlands

The project study area was evaluated to determine potential impacts on wetlands. The results of the analyses conducted for this study revealed that the proposed roadway concept could potentially impact approximately 0.6 acres state and federal jurisdictional wetlands. All other pond and floodplain compensation sites occur safely within undeveloped uplands.

A Wetland Rapid Assessment Procedure (WRAP) was performed for each wetland community that would be impacted by the proposed project. A total of two wetlands, W-1 and W-2 were analyzed using the WRAP methodology with the exception of non-vegetated open water areas. These wetland systems also appear in Figure 6-8 and Figure 6-9. The WRAP scores for each wetland analyzed is determined by summing all individual variable scores (ranging from 0 to 3) and dividing by the number of possible inputs, resulting in a maximum WRAP score with a low of 0.0 (no wetland function and value) to a high of 1.0 (greatest wetland function and value).

Cumulative WRAP scores for the wetlands evaluated ranged from a low of 0.58 (Wetland W-1) to a high of 0.78 (Wetland W-2). It is anticipated that each wetland in the project corridor would be impacted to some degree by clearing and grubbing within the right-of-way during construction. This results in habitat fragmentation or isolation, and increased encroachment of nuisance species.

Wetland W-2 had the highest WRAP score. This wetland area scored high due to high wildlife potential, quality native vegetation with minimal disturbance, and good hydrology. Wetland W-1 received the lowest WRAP score determined for wetlands in the project corridor. This is due to the small size of the wetland and the lack of an adequate buffer and wildlife potential.

*Secondary and Cumulative Impacts*

Secondary impacts resulting from construction of the proposed project are anticipated to be relatively minimal. The hydrologic and drainage assessment for this project and the surrounding area indicate that this proposed project will not have an adverse impact on local hydrology. Additional stormwater facilities will be designed for each drainage basin to treat and attenuate more stormwater than is accounted for by the existing drainage system. Impacts to water quality during project construction will be minimized. All federal, state, and local water quality regulations will be satisfied by implementation of the FDOT *Standard Specifications for Road and Bridge Construction*, Section 104, Prevention, Control, and Abatement of Erosion and Water Pollution.

Any unavoidable impacts to wetlands and habitat directly associated with the footprint of the project and the construction zone will be addressed through mitigation associated with permit approval. Mitigation shall occur within the same regulatory basin as the impacts, to avoid any cumulative wetland impacts.

**Figure 6-8: Summary of Impacts to Wetland W-1**

**Figure 6-9: Summary of Impacts to Wetland W-2**

*Summary*

Overall wetland impacts resulting from this project would be minimal (approximately 0.6 acres). Though both systems encountered within the project corridor are large systems, impacts to each are relatively small due to the utilization of existing right-of-way to conduct much of the construction activities. This results in lowered wetland impacts when compared with the potential impacts of a new alignment. The total area of wetlands impacted has been reduced through avoidance and minimization by utilization of the existing roadway alignment while taking into consideration social, economic, and other environmental factors.

The City will coordinate with the appropriate regulatory agencies throughout design and permitting. Best Management Practices will be incorporated during construction to minimize water quality impacts such as erosion and turbidity within surface waters and wetlands adjacent to construction activities. This will include taking all reasonable action to ensure avoidance and minimization of any impacts to jurisdictional wetland systems within the limits of construction.

*Conceptual Mitigation Alternatives*

Where required, the City will seek to provide suitable mitigation for any unavoidable impacts to jurisdictional wetlands. Mitigation policies have been established by the ACOE, the Florida Department of Environmental Protection, and the Water Management Districts. Under current SJRWMD and ACOE rules and regulations, several options exist for mitigation for loss of wetlands. With the minor impacts anticipated for this project it is possible that no mitigation would be required, particularly if the total impact by the project could be kept to under 0.5 acres.

If mitigation is necessary, two options for consideration are mitigation banking or upland and/or wetland preservation. Mitigation banking requires the purchase of credits from the operating entity of a permitted mitigation bank. The Lake Louisa/Green Swamp Mitigation Bank is the only mitigation bank with a service area that covers the project limits. Under current Environmental Resource Permit Regulations, mitigation for wetland impacts may also be accomplished through preservation of upland or wetland habitats. The amount of land to be placed into preservation varies on a case by case basis and is dependent upon the Functional Loss due to wetland impacts versus the Relative Functional Gain of the habitat to be placed into conservation, according to the Uniform Mitigation Assessment Method (UMAM). This method of mitigation will require the purchase of land for placement into a perpetual conservation easement.

### 6.5.6 Permitting Considerations

This project has the potential to impact wetlands and/or listed species regulated by the state and federal government. Therefore, it may be necessary to submit an Environmental Resource Permit (ERP) application for Section 404 dredge and fill permit to the US Army Corps of Engineers (ACOE) and the St. John's River Water Management District (SJRWMD). In addition, impacts to listed species will need to be addressed through the Florida Fish and Wildlife Conservation Commission and the US Fish and Wildlife Service.

These permits address the proposed project's impact on wetlands including filling of jurisdictional wetlands, the effect of wetland and upland habitat loss on listed species, and to

help determine the mitigation necessary to offset the loss of wetlands and habitat resulting from this project.

ACOE and SJRWMD regulate wetlands impacts within this project area. The FDEP, USFWS, and the FFWCC review and comment on wetland permit applications. It is currently anticipated that the following permits will be required for this project:

| Permit | Issuing Agency |
|---|---|
| Standard General Environmental Resource Permit | SJRWMD |
| Section 404 General Dredge and Fill Permit (impacts < 0.5 acres) | USACOE |
| National Pollutant Discharge Elimination System Permit | FDEP |

The Florida Fish and Wildlife Conservation Commission (FFWCC) and US Fish and Wildlife Service (USFWS) will consult with and provide comments to the SJRWMD and ACOE on the potential impacts of the proposed roadway construction on state and federal listed species. Their comments and/or objections will be noted in the sufficiency response from the ACOE. The State Historic Preservation Office will comment to SJRWMD on the presence of any historical sites that might be within the final roadway, pond, or floodplain compensation site alternatives.

*SJRWMD*

The complexity of the permitting process depends greatly on the degree of the impact to jurisdictional areas. For this project, the various stormwater management site alternatives will result in less than one acre of wetland impacts. The SJRWMD requires an ERP when construction of any project results in the creation of a water management system, impacts to waters of the State, or impacts to isolated wetlands. A Standard General permit will be required with mitigation for projects with proposed wetland impacts less than one acre. Typically SJRWMD can review and approve a Standard General ERP in 4-6 months.

*ACOE*

For the ACOE, a General dredge and fill permit will be required if project wetland impacts are less than 0.5 acres. This project would qualify for this permit, as total project wetland impacts are estimated at 0.6 acres. A General permit requires compliance with Section 404(b)(1) guidelines, including verification that all impacts have first been avoided to the greatest extent possible, that unavoidable impacts have been minimized to the greatest extent practicable, and that unavoidable impacts have been mitigated in the form of wetlands creation, restoration, and/or enhancement. Review and issuance of a General ACOE permit for this project typically takes 4-6 months from the time the permit application is submitted.

*FDEP*

Any project which results in the clearing of five or more acres of land will require a National Pollution Discharge Elimination System (NPDES) permit from the FDEP, pursuant to 40 CFR parts 122 and 124. The NPDES stormwater program regulates point source discharges of stormwater into surface waters of the State of Florida from certain municipal, industrial and

construction activities. This includes road construction activities and construction of stormwater management facilities. The potential discharge associated with the construction work is covered under the Generic Permit for Stormwater Discharge from Large and Small Construction Activities. In association with this permit, implementation of a Stormwater Pollution Prevention Plan (SWPPP) during the construction of this project will be required. The primary functions of the NPDES requirements are to ensure that sediment and erosion during construction of the project is controlled. These permits typically utilize Best Management Practices to ensure compliance. Before proceeding with construction, a Notice of Intent (NOI) must be filed with the Florida Department of Environmental Protection.

#### 6.5.7 Floodplains

The location hydraulics of the proposed improvements to Alfred Street have been considered in the analysis conducted for the *Pond Siting Report*. Based on the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM's), Zone A FEMA flood plain areas are located within and adjacent to the Alfred Street right-of way between Mayfair Way and Old Hammock Road.

It should be noted that the Zone A area indicated on the FIRM map is not consistent with ground surface contours. Past development projects may have significantly altered the flood plain. Zone A FEMA flood plain areas are also located adjacent to (but not within) the Alfred Street right-of way between Disston Avenue and Irwin Drive and between Saunders Circle and Bay Road.

It is anticipated that impacts would be considered "minimal encroachment" as it pertains to base floodplain involvement. Reassessment of the flood plain under current conditions should be considered at the time of final design. In short, the impacts of the proposed improvement will be limited and will have an insignificant effect on the FEMA flood stage elevation.

#### 6.5.8 Contamination

Based on a records search and field review, 18 sites were evaluated along Alfred Street within the limits of the study area. The evaluation consisted of research of environmental regulatory agency files including FDEP and Lake County to obtain information on environmental permits within the corridor; interviews with site owners; contacting the Lake County Health Department and the FDEP for information on underground storage tanks and possible hazardous wastes with the corridor; and collating all data obtained in the research process and assigning a hazardous waste potential risk rating for each parcel of land within the project limits. The five (5) sites determined to be at a medium degree of risk are noted below.

*Site No. 2 – US Car Care – 101 Alfred Street*

The US Car Care facility is located on the southwest corner of Alfred Street and North New Hampshire Avenue. The facility is registered as a UST site whose on-site tanks were removed in 1995. The facility currently operates as a service to general auto, tires, oil change, radiator fluids and air conditioning. Waste oil is stored in 55-gallon drums and aboveground containers for anti-freeze, recycled oil and oil filters are stored on-site for pick-up and disposal. Small containers of gasoline and vehicle lubricants are also stored on-site as part of the daily operation of the US Car

Care facility. Accordingly, the utilization and storage of these materials constitutes a potential environmental condition in connection with the construction of the Right-of-Way.

*Site No. 5 – Spray's Auto & Truck Repair – 15226 Alfred Street.*

The Spray's Auto & Truck Repair facility is located on the south side of Alfred Street just west of Merry Road. The facility operates as a service to general auto, tires, oil change, radiator fluids and air conditioning. Waste oil is stored in 55 gallon drums and aboveground containers for anti-freeze, recycled oil and oil filters are stored on-site for pick-up and disposal. Small containers of gasoline and vehicle lubricants are also stored on-site as part of the daily operation of the US Car Care facility. Accordingly, the utilization and storage of these materials constitutes a potential environmental condition in connection with the construction of the Right-of-Way.

*Site No. 6 – Potters Auto Repair – 15306 Alfred Street.*

The Potters Auto Repair is located on the south side of Alfred Street just west of Merry Road. The facility operates as a service to general auto, tires, oil change, radiator fluids and air conditioning. Waste oil is stored in 55 gallon drums and aboveground containers for anti-freeze, recycled oil and oil filters are stored on-site for pick-up and disposal. Small containers of gasoline and vehicle lubricants are also stored on-site as part of the daily operation of the US Car Care facility. Accordingly, the utilization and storage of these materials constitutes a potential environmental condition in connection with the construction of the Right-of-Way.

*Site No. 9 – Mike Bakers Auto Repair – 903 Alfred Street*

The Mike Bakers Auto Repair facility is located on the northeast side of Alfred Street and Dora Avenue. The facility operates as a service to general auto, tires, oil change, radiator fluids and air conditioning. Waste oil is stored in 55 gallon drums and aboveground containers for anti-freeze, recycled oil and oil filters are stored on-site for pick-up and disposal. Small containers of gasoline and vehicle lubricants are also stored on-site as part of the daily operation of the US Car Care facility. Accordingly, the utilization and storage of these materials constitutes a potential environmental condition in connection with the construction of the Right-of-Way.

*Site No. 10 – Wheelers Paint & Body – 823 Alfred Street*

The Wheelers Paint & Body facility is located on the northwest corner of Alfred Street and Dora Avenue. Two (2) USTs located on-site were closed in place in 1992. The facility operates as a service to general auto, tires, oil change, radiator fluids and air conditioning. Waste oil is stored in 55 gallon drums and aboveground containers for anti-freeze, recycled oil and oil filters are stored on-site for pick-up and disposal. Small containers of gasoline and vehicle lubricants are also stored on-site as part of the daily operation of the US Car Care facility. Accordingly, the utilization and storage of these materials constitutes a potential environmental condition in connection with the construction of the Right-of-Way.

## 6.6 Utility Impacts

Utility Coordination Packages were sent to utility companies to identify relocation and costs and there were a few responses. A variety of utilities are located throughout the Alfred Street corridor, which are detailed in the existing facilities discussion provided in Chapter 2.

The coordination that has been done with Sprint resulted in an estimated impact of approximately 4.75 million dollars to this one provider alone. The assumption that was made in review of the proposed concept was based on all the facilities being replaced within the Alfred Street right-of-way. As discussed in Section 2.6 , Sprint has extensive facilities in the corridor. However, it may be possible to avoid many of the major impacts since the depth of cover is estimated at 30 inches. This issue will need to be investigated further in the design phase of the project.

## 6.7 Traffic Control Considerations

Constructing the proposed improvements within the existing right-of-way will involve an increased level of difficulty due to the constrained nature of the corridor and large number of access points, particularly within the Downtown Section. The ability to construct the proposed improvement was considered in terms of project feasibility. More detailed maintenance of traffic plans will need to be developed in the final design process.

In concept, the improvements to Alfred Street could be constructed in phases. The Downtown Section will likely require a detour route during construction, utilizing parallel streets to the north and south of Alfred Street. Initially, one direction of travel would be detoured around the project as the other side is constructed. Once completed, traffic would be shifted to the newly constructed side as the other half is built. At times, Alfred Street may require complete closure but this would need to be minimized to protect access to adjacent properties as much as possible.

The Central and Eastern Sections may require some temporary pavement to maintain traffic while new sections are constructed. In the first phase, temporary pavement would be installed on one side to create a temporary traffic lane adjacent to the existing outside travel lane. This will allow for construction to occur on the opposite existing travel lane. The second phase shifts traffic to the newly constructed side. Temporary pavement is removed and the remaining portion of the roadway is constructed. This is illustrated in Figure 6-10. It is recognized that access to driveways will need to be maintained as much as possible at all times during construction. In addition, temporary signing for businesses may be required to assist in directing traffic flow.

## 6.8 Summary of Project Costs

In summary, the total projected project cost is approximately $20,800,000. This is a planning-level cost estimate comprised of:

- Construction Costs Developed Using the FDOT Long Range Estimating System.
- Guidance provided in *FDOT 2004 Transportation Costs* (Office of Policy Planning)
- Independent analysis of specific project conditions where applicable.

Table 6-2: Cost Summary for the Preferred Alternative Concept provides a breakdown of project cost for the Preferred Alternative Concept.

*City of Tavares*

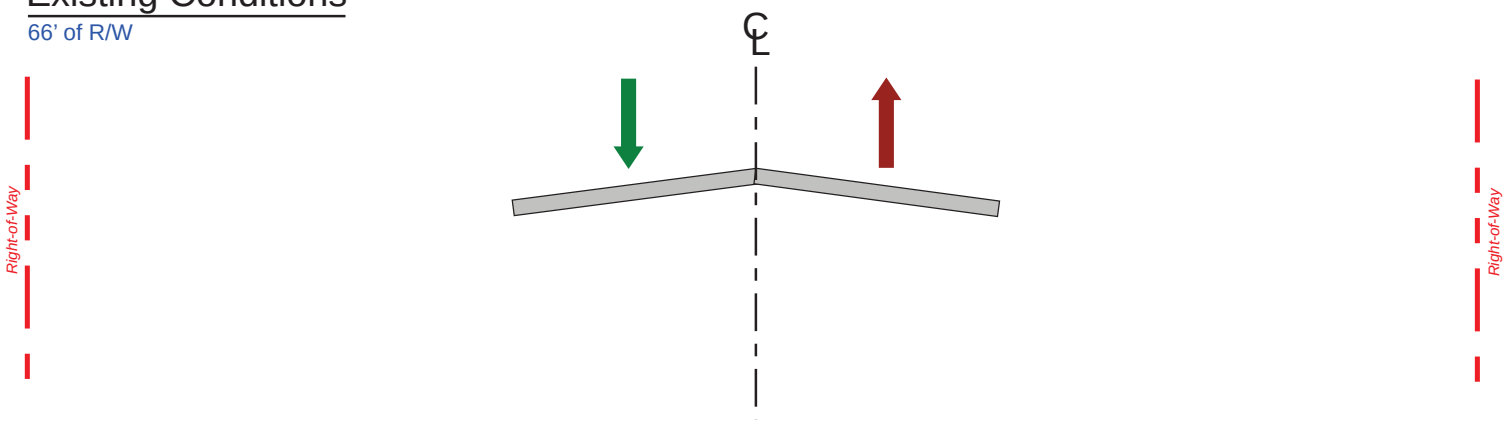
# *Alfred Street (Old US 441)*

*From SR 19 to Bay Road*

**Phase of Construction**

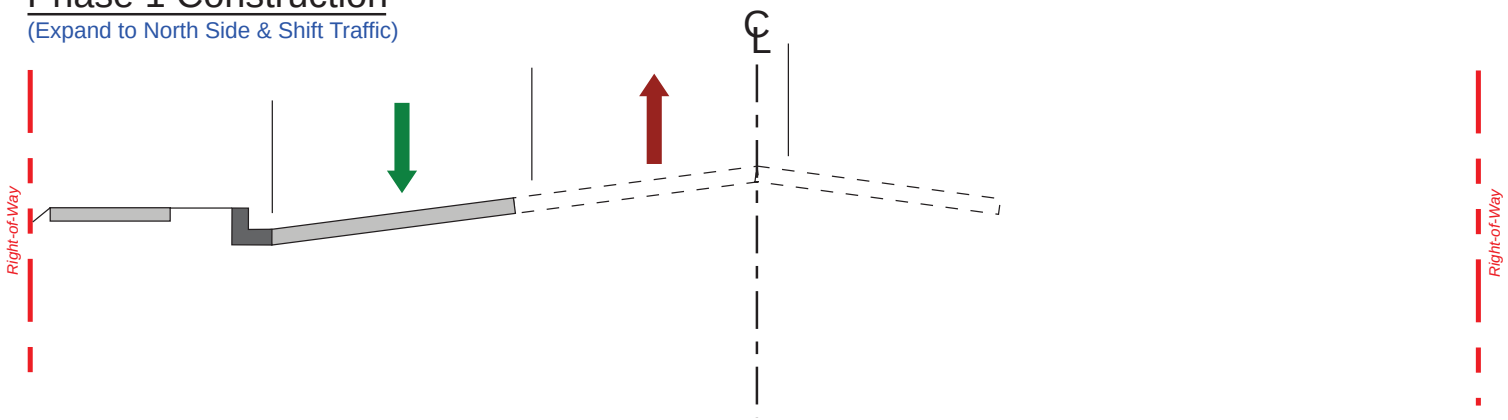
## Existing Conditions

66' of R/W




## Phase 1 Construction

(Expand to North Side & Shift Traffic)




## Phase 2 Construction

(Complete South Side & Establish Median)

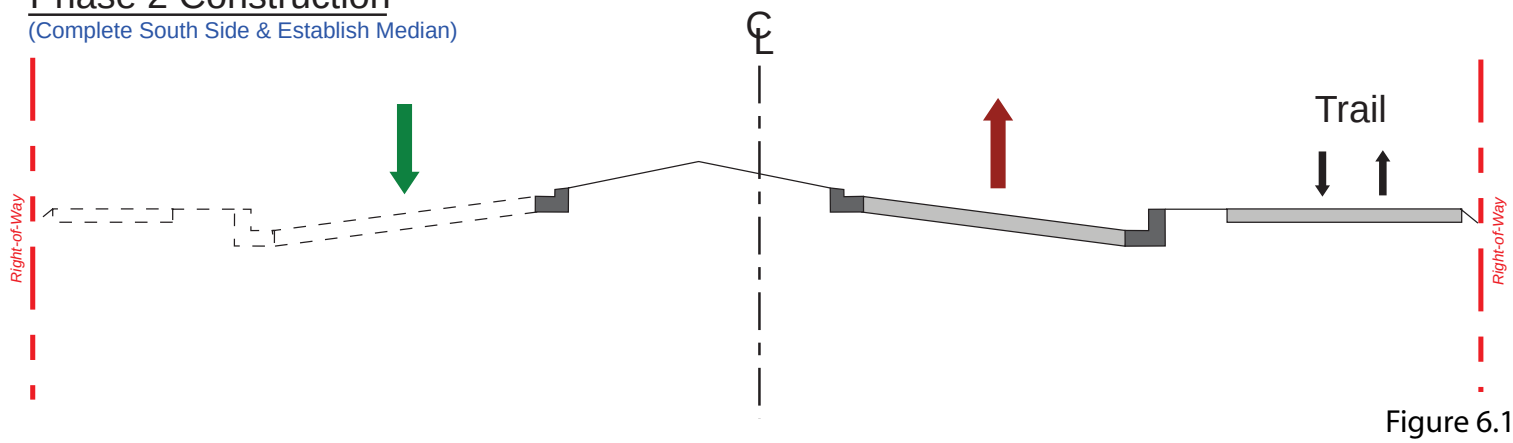



Figure 6.10

*Recent Rise in Roadway Construction Costs*

Over the last several years, there has been a spike in raw materials and labor costs that has resulted in significant budget overruns on roadway projects throughout Florida and nationwide. Cost increases of up to 80% in some cases have made the construction of planned roadway improvements very difficult for all agencies. As of the date of this report, this situation is thought to have stabilized in the near term based on feedback received from industry professionals. The 2007 estimate provided below reflects the updated values developed as part of the second phase of study.

It should be noted that the LRE system utilized in the development of this cost estimate references a dynamic database of unit prices that should reflect the increase in raw materials and roadway construction elements to some degree. However, it is difficult to predict what prices will do in the future.

**Table 6-2: Cost Summary for the Preferred Alternative Concept**

| PREFERRED ALTERNATIVE | |
|---|---|
| **COST FACTOR** | |
| Engineering Design Costs | $3.38 M |
| Right-of-Way Costs | $1.68 M |
| Construction Costs | $13.53 M |
| Construction Engineering & Inspection | $2.03 M |
| Environmental Mitigation | $0.20 M |
| **TOTAL PROJECT COST** | **$20.8 M** |

* *Based on planning level analysis and the following assumptions.*

Construction Costs Developed Using the FDOT Long Range Estimating System

Other cost components have been estimated based on guidance provided in *FDOT 2004 Transportation Costs* (Office of Policy Planning)

Engineering Design Costs: 25% of construction costs

Right-of-Way Costs: 12-14% of construction costs, including fees and processing

Construction Engineering & Inspection: 15% of construction costs

Environmental Mitigation: 0.75% of construction costs (little involvement anticipated)

# Chapter 7

# Public Involvement Program

# 7 PUBLIC INVOLVEMENT PROGRAM

A Public Involvement Program was an integral part of this project. The purpose of this program was to establish and maintain communication with the public at-large, and individuals and agencies concerned with the project and its potential impacts. As a result of the public involvement program, the study was able to successfully build consensus and identify a preferred alternative concept that balanced the needs of the project stakeholders.

## 7.1 Stakeholders Coordination

As part of the initial phase of study, an Alternatives Public Meeting and several Council update presentations were given leading to the identification of an initial preferred concept. Prior to the City Council taking action on the initial preferred alternative, an election resulted in several Council seats being replaced with new members. Input on this project received from new Councilmember's with respect to the alternatives that had been studied was the impetus for the second phase of study. At the request of City Council, the second phase was initiated to study additional alternatives such as the One-Way Pair, as well as to conduct a more comprehensive public outreach program.

As part of the stakeholders' coordination process, City staff and the consultant project team held regular coordination meetings and provided updates to City Council to discuss the alternatives development and comments received at public meetings. Summary of the coordination and public involvement program conducted for this study is provided below.

### 7.1.1 Notification Process

In the Second Phase of the project, residents of the study area were notified of upcoming Public Meetings by direct mailings, hand delivered fliers and utility bill notifications; moreover, the City placed newspaper ads and constructed police signs. The coverage area parameters are shown in Figure 7-1. In addition, the project team developed content for posting to the City's website in a special section dedicated to the Alfred Street Corridor Study. This section (http://www.tavares.org/alfredstudy.html) was updated regularly as new information became available and included presentation materials, project updates, and contact information.

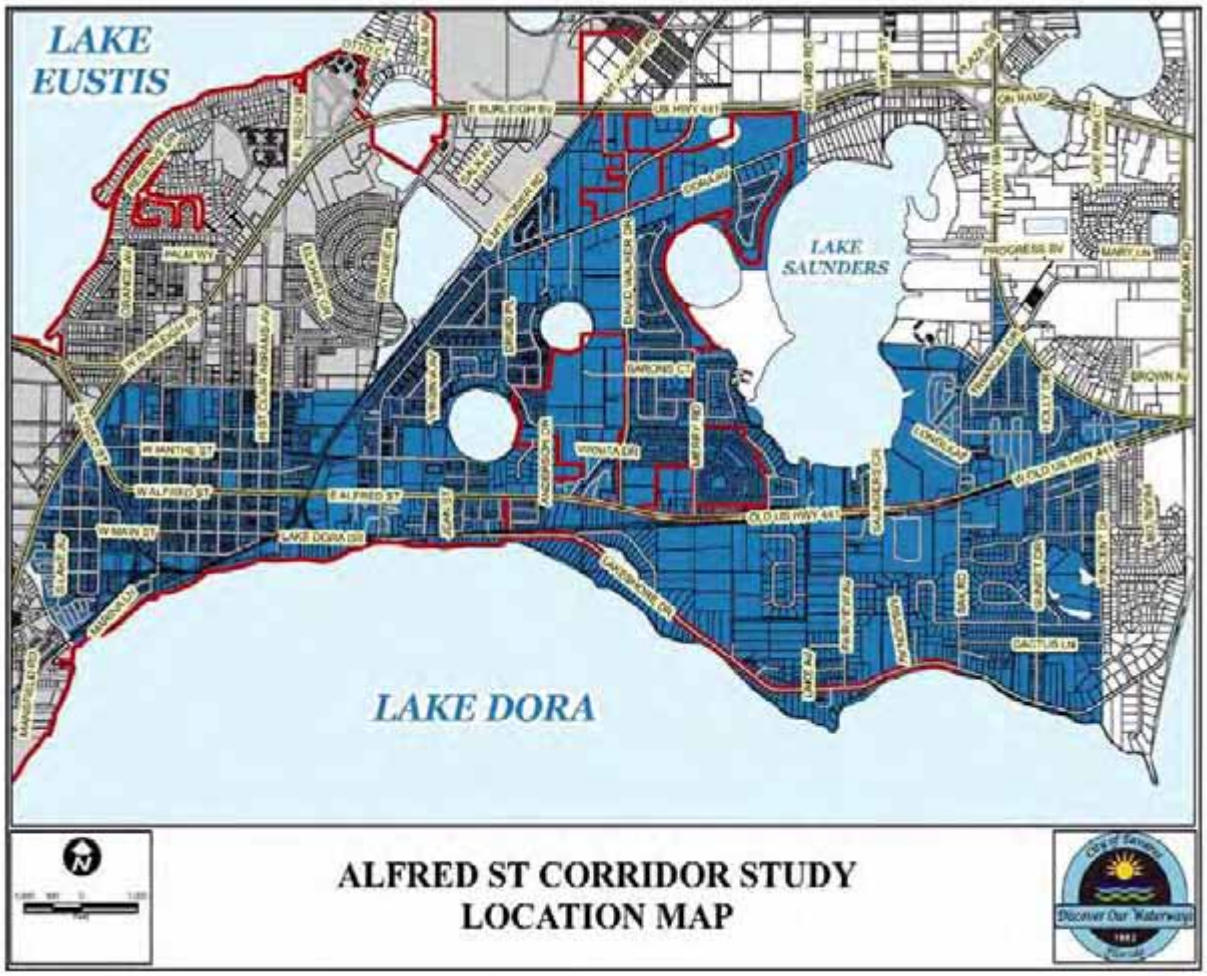



**Figure 7-1: Coverage Area for Second Phase Notification Process**

## 7.2 First Phase

- February 10, 2005 – Project coordination meeting to review data collection activities.
- April 11, 2005 – Project coordination meeting to review development of design traffic and identify typical section alternatives.
- July 28, 2005 – Project coordination meeting to discuss initial analysis results, development of design traffic and review the first update presentation to City Council.
- August 3, 2005 – Project overview presentation to City Council. Slides from this presentation that were handed out at the meeting are available in Appendix B.
- August 30, 3005 – Project coordination meeting to discuss the evaluation of alignment alternatives and begin development of pond siting analysis and report. Begin scheduling and preparations for the Public Meeting.
- November 15, 2005 – Alternatives Public Meeting (summary provided below)

- January 20, 2006 – Project coordination meeting to review comments received and identify the Preferred Alternative Concept.
- April 19, 2006 – Project update presentation to City Council and review of the recommended Preferred Alternative Concept. Receipt of Council and public comments regarding the proposed improvements and Phase I results.
- November 27, 2006 – Project update to City Council (including newly-elected members) included complete review of study process, alternatives analysis, public meeting summary, comments received, refinements to the initial recommended preferred concept reflecting comments received from the public.

## 7.3 Second Phase

- April 18, 2007 – Council update to initiate Phase II of the study
- May 6, 2007 – Council update to review materials developed for the initial Public Kickoff Meeting for the second phase of study
- May 10, 2007 – Second Phase Kickoff Meeting to start the second phase of the project.
- June 2, 2007 – Council update on alternatives development progress and initial results from the traffic analysis.
- July 26, 2007 – Alternatives Public Meeting (summary provided below)
- August 15, 2007 – Project coordination meeting with City Council to communicate input from Alternatives Public Meeting and receive Council input.
- September 10, 2007 – CRA Advisory Committee Update (Unanimous endorsement of Preferred Alternative)
- October 3, 2007 – Public Hearing /City Council Meeting (Unanimous approval of Preferred Alternative and Study recommendations)

## 7.4 Public Meetings

### 7.4.1 First Phase Pubic Alternatives Meeting

The Alternatives Public Meeting for the Alfred St. Preliminary Engineering Study in Lake County was held on November 15, 2005 from 5:00 to 7:00 pm at the Tavares Civic Center. The format for the meeting was an informal open house with staff from the consultant project team available to answer questions and discuss the project with the participants.

The materials presented included the alternative concepts under evaluation displayed over large-scale aerial photography. In addition to the footprints for the proposed project alternatives, other details on the displays included street names, business names, and property lines. The exhibits on display included:

- An overall area map showing the location of the project and begin/end limits
- Large Scale Displays of the Alternatives Under Evaluation showing typical sections and plan-view concepts of the preliminary design
    - Downtown Section (Typical Sections A1 and A2)

  - Central Section (Typical Sections B1 and B2)
  - Eastern Section (Typical Sections C1 and C2)
- Alternatives Evaluation Matrix showing the various project costs and impacts
- A display summarizing the various Engineering, Environmental and Social evaluation factors considered for the project
- Historic and Cultural Resources summary identifying the Downtown Historic District
- Access management summary displays and informational handouts
- Project schedule summary board
- Production Schedule Display to identify project phases
- An informational table with roll plots highlighting potential contamination sites, wetlands, and other environmental issues that have been investigated

A total of eleven (11) comments were received; seven (7) on written comment forms, and three (3) by e-mails, and one (1) by telephone. A summary of the comments received, both in writing and verbally at the public meeting as recorded by the study team staff is provided below. Written comments received and related correspondences are also provided in Appendix B as a reference.

*Access Management*

- Tavares Learning Center would have a difficult time in routing parents. B1 alternative would help but parents leaving the City and turning left into the parking lot would block traffic.
- Day care is busy in the morning/afternoon at the Alfred St/Jean St. proposed median location. The median would prevent people from turning into daycare and make them attempt U-turn at the next available break in the median.
- Concerns were expressed about closing the access to Texas Avenue. There are 45 tenants of the Ft. Smith Building that would have to travel a total of three additional blocks to access this commercial/office center.
- Eliminate the 2-ft grass strip to save space and open up the median for a continuous two-way left turn lane.
- Concrete median will limit access to homeowners, businesses, police, and emergency vehicles.

*Sidewalk/Bike Path*

- Two residents were in favor of a separate bike path, not bike lane. Traffic is 45+ mph through much of the road and having bikers on right of way is dangerous. Preference is to have sidewalk/bike lane on one side of street only.
- Several comments were received in favor of the trail on the south side of the road.

*Traffic Operations*

- Some attendees mentioned turning movements and ease of access to side streets and driveways. For example, one participant mentioned that traffic traveling in either direction to reach business or residence on opposite side will need to turn 2 or 3 blocks prior to their

destination. Also, present design makes it impossible for semi-truck to make a turn from the right lane to a side street.

- Several comments were received in favor of the median treatments. Also cited was the need to include turn lanes within the downtown area in particular.

*General*

- Retention ponds should be kept off the roadway frontage to allow for future development.
- There is no need to upgrade the industrial area with these aesthetic treatments. Raised medians in industrial areas prevent truck movements. Considering deceleration lanes in this area instead of a median would be more appropriate.

### 7.4.2 Second Phase Kickoff Meeting

The Alfred Street Corridor Study Update Public Meeting in Lake County was held on May 10th from 5:30 to 7:30 pm in the Tavares City Hall. Participants were asked to sign in upon entering and comment forms and an overview handout were distributed to each attendee as they registered. The format for the meeting was an informal open-house with staff from the consultant project team available to answer questions and discuss the project with the participants. An audio/ visual presentation was then given by the project team to provide an overview of the study and alternatives under evaluation. Following this questions and comments were fielded from participants and recorded.

The materials presented at the meeting included the project alternatives under consideration displayed over large scale aerial photography. In addition to the footprints for the proposed project alternatives, other details on the displays included street names and property lines. The exhibits on display included:

- Large Scale Displays of the alternatives under evaluation which included:
  - One-Way Pair Alternative
  - Three-Lane Alternative
  - Raised Median/Brick Texture Alternative
- Typical Section Matrix showing the various typical sections being considered for each section
- Project schedule summary board
- Study schedule summary board
- Production Schedule Display to identify project phases

The meeting ended at approximately 7:30 pm. The peak attendance occurred just after 6:00 with a crowd of approximately 70 people. The majority of participants had left the meeting by about 7:00 pm.

As of May 29, 2007, nineteen (19) comments were received concerning alternative/ typical section preference.

*Traffic Operations*

- Concern was expressed by residents about the additional traffic that would be placed on Caroline Street if the One-Way Pair is implemented.
- Concern was expressed about the need for signal retiming of the downtown signals along Alfred Street in order to provide better gaps for left turning traffic.
- Several comments were received with regards to how traffic would be reduced on Alfred Street as result of the widening of US 441, also called NEW US 441, located to the north of Alfred Street.
- Comments were received with regards to how the Alfred Street project would help to reduce traffic on Dora Avenue.
- Concern was expressed about the noise level on Alfred Street. It was suggested that the speed limit be reduced and noise barriers be added.
- Concern was expressed about the One-Way Pair low turning speed.
- Concern was expressed about speed reduction that would occur as a result of using a raised median.
- It was suggested that that for the One-Way Pair alternative the side streets be one-wayed in the downtown section.

*Pedestrians and Safety*

- Concern was expressed about the need for a traffic signal and roadway lighting at the David Walker Drive intersection.
- Several comments were received about the need for a pedestrian crossing at the New Hampshire Avenue intersection which is currently unsignalized.
- Concern was expressed about the need for children to safely cross Caroline Street while going to and from the High school and the Library.

*Access Management*

- Numerous business owners expressed concerned about access to their business. There was concern in particular about access to the Fire Station.
- Concern was expressed about the ability of large trucks to make turns.

*Maintenance of Traffic*

- Concern was expressed about the detours that would occur during construction and how this would be handled.
- Concern was expressed about how driveway access would be maintained during construction and the possible effect on business.
- Concern was expressed about the amount dust during construction.

*General*

- Questions were asked about how storm water will be controlled.

- Questions were asked about what will happened to the wetlands area or "jelly muck" located in the Central section along Alfred Street. Concern was expressed in particular about the cost of construction.
- Concern was expressed about the potential for business closure along Alfred Street if the One-Way Pair alternative was implemented.
- It was suggested that Maud Street be considered instead of Caroline Street for the One-Way Pair alternative.
- It was suggested that a sign be installed to request and encourage the concept of driver friendliness.

#### 7.4.3 Second Phase Alternatives Meeting

The Alfred Street Corridor Alternatives Public Meeting in Lake County was held on July 26th from 5:30 to 7:30 pm in the Tavares City Hall. Participants were asked to sign in upon entering and comment forms, an overview handout and answers to questions the last meeting were distributed to each attendee as they registered. The format for the meeting was an informal open-house with staff from the consultant project team available to answer questions and discuss the project with the participants. An audio/ visual presentation was then given by the project team to provide an overview of the study and alternatives under evaluation. Following this, questions and comments were fielded from participants and recorded.

The materials presented at the meeting included the project alternatives under consideration displayed over large scale aerial photography. In addition to the footprints for the proposed project alternatives, other details on the displays included street names and property lines. The exhibits on display included:

- Large Scale Displays of the alternatives under evaluation which included:
  - One-Way Pair Alternative
  - Three-Lane alternative
  - Raised median/ Brick texture alternative
- Typical section matrix showing the typical sections being considered for each section
- Alternatives comparison matrix
- Project schedule summary board
- Study schedule summary board

The meeting ended at approximately 7:30 pm. The peak attendance occurred just after 5:30 with a crowd of approximately 73 people. The majority of participants had left the meeting by about 7:00 pm.

A total of 31 comments were received; (18) comments received orally during the meeting, (7) received via email/fax, (2) via mail and (4) received at the meeting on July 26th 2007. A summary of the comments received, both in writing and verbally at the public meeting as recorded by the study team staff is provided below. Written comments received and related correspondences are also provided in Appendix B as a reference.

*Access Management*

- Concern was expressed about the ability of the raised median alternative to accommodate U-turns.
- Questions were received concerning the method used to determine the location of the median openings for the raised median alternative.
- Concern was expressed about the safety of allowing U-turns at the raised median openings.

*Traffic Operations*

- Several comments were received with regards to how traffic would be reduced on Alfred Street as a result of the widening of US 441, also called NEW US 441, located to the north of Alfred Street.
- Concern was expressed about the speed with which the various improvements would operate and about the traffic models ability to take this into account.
- Concern was expressed about the ability of the raised median to handle the left turn queue spill back from adjacent intersections.

*General*

- Concern was expressed about the ability of the raised median to handle the left turn queue spill back from adjacent intersections.
- It was asked that the project website be updated with the display information from the meeting.
- Concern was expressed about the affect on businesses along Alfred Street and Caroline Street if the One-Way Pair alternative was implemented.
- Questions were asked about the impact of the project to Herbie the Train.
- It was suggested that the City consider a minor makeover of Alfred Street, involving resurfacing and re-striping, instead of the proposed more major improvements.

#### 7.4.4 CRA Advisory Committee Meeting

The Alfred Street Corridor Study project alternatives were presented to the CRA Advisory Committee on September 10th from approximately 2:00-2:45 p.m. in Tavares City Hall. The alternatives were presented to the CRA Advisory Committee to facilitate a recommendation to the City Council for a final vote on the preferred concept on October 3rd. After DRMP's presentation, a consultant from IBI Group presented options for the Downtown Master Plan Study and concluded with an endorsement of DRMP's preferred concepts. Following the presentations, the Committee voted unanimously in favor to endorse the One-Way Pair Concept within the downtown area.

#### 7.4.5 Second Phase Public Hearing / Council Presentation

The Alfred Street Corridor Final Public Meeting in Lake County was held on October 3rd at 4:00 p.m. in the Tavares City Hall. The meeting was incorporated as part of the regular City Council meeting, giving the public the opportunity to ask questions and address the Council directly before a voted was taken. Greg Moore gave a PowerPoint presentation, which gave an overview of the study process and included recommendations from the CRA Advisory Committee and the

IBI Group, Inc. Following Mr. Moore's presentation, the council voted unanimously to accept DRMP's recommendations in a 5-0 vote. There were no comments or questions from the public.

### 7.5 Comments and Coordination Summary

A *Comments and Coordination Summary* for the Alfred Street Corridor Study has been assembled under separate cover which includes detailed summaries of all Public Meetings and agency coordination conducted for both the first and second phases of this project. Also provided in this document are the PowerPoint slide handouts, sign-in sheets from the meetings, comment forms received from participants, as well as question and response memos developed as part of the public outreach process.

# Appendix A

## Concept Plans

| REVISIONS | | | | | |
|---|---|---|---|---|---|
| DATE | BY | DESCRIPTION | DATE | BY | DESCRIPTION |
| | | | | | |

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ORLANDO, FLORIDA 32803
CERTIFICATE OF AUTHORIZATION NO. 2648
GREGORY A. MOORE, P.E. LICENSE NO. 59429

| Road No. | County | City |
|---|---|---|
| Old 441 | Lake | Tavares |

# Alfred Street (Old US 441)

**From SR 19 to Bay Road**

**Preferred Alternative Concept Plans**

SHEET NO.

1 of 12

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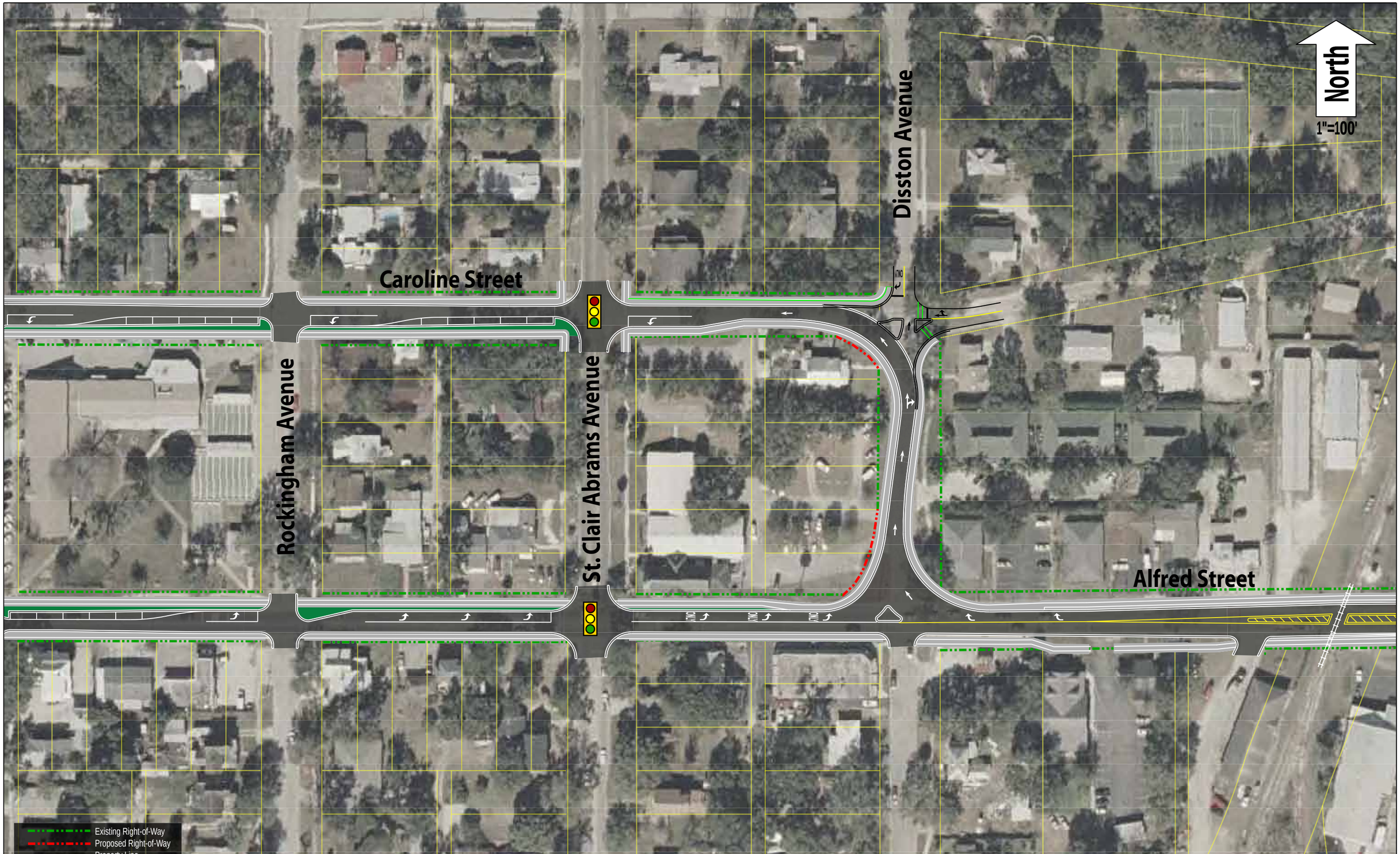
|---|---|---|
| Old 441 | Lake | Tavares |

**Alfred Street (Old US 441)**
**From SR 19 to Bay Road**
**Preferred Alternative Concept Plans**

SHEET NO.
2 of 12

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| Road No. | County | City |
|---|---|---|
| Old 441 | Lake | Tavares |

# Alfred Street (Old US 441)

**From SR 19 to Bay Road**
**Preferred Alternative Concept Plans**

SHEET NO.
3 of 12

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| Road No. | County | City |
|---|---|---|
| Old 441 | Lake | Tavares |

# Alfred Street (Old US 441)

**From SR 19 to Bay Road**
**Preferred Alternative Concept Plans**

SHEET NO.
4 of 12

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| Road No. | County | City |
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| Old 441 | Lake | Tavares |

# Alfred Street (Old US 441)

**From SR 19 to Bay Road**
**Preferred Alternative Concept Plans**

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| Road No. | County | City |
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| Old 441 | Lake | Tavares |

**Alfred Street (Old US 441)**
**From SR 19 to Bay Road**
**Preferred Alternative Concept Plans**

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| Road No. | County | City |
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| Old 441 | Lake | Tavares |

***Alfred Street (Old US 441)***
***From SR 19 to Bay Road***
***Preferred Alternative Concept Plans***

SHEET NO.
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| Old 441 | Lake | Tavares |

**Alfred Street (Old US 441)**
**From SR 19 to Bay Road**
**Preferred Alternative Concept Plans**

SHEET NO.
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| Road No. | County | City |
|---|---|---|
| Old 441 | Lake | Tavares |

# Alfred Street (Old US 441)

**From SR 19 to Bay Road**
**Preferred Alternative Concept Plans**

SHEET NO.
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| Road No. | County | City |
|---|---|---|
| Old 441 | Lake | Tavares |

**Alfred Street (Old US 441)**
**From SR 19 to Bay Road**
**Preferred Alternative Concept Plans**

SHEET NO.
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| Road No. | County | City |
|---|---|---|
| Old 441 | Lake | Tavares |

**Alfred Street (Old US 441)**
**From SR 19 to Bay Road**
**Preferred Alternative Concept Plans**

SHEET NO.
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|---|---|---|
| Old 441 | Lake | Tavares |

# Alfred Street (Old US 441)

**From SR 19 to Bay Road**

**Preferred Alternative Concept Plans**

SHEET NO.

12 of 12