

# FINAL PRELIMINARY ENGINEERING REPORT

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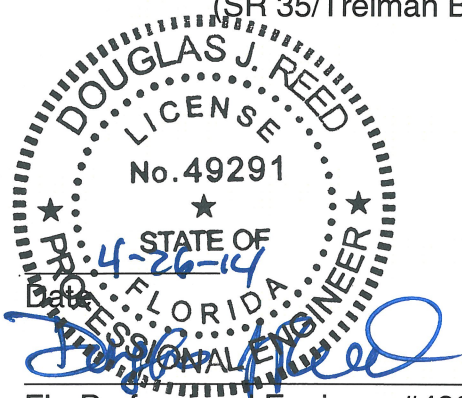
## SR 50 (CORTEZ BOULEVARD) PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

SR 50 (Cortez Boulevard)  
from West of I-75 to US 301 (SR 35/Treiman Boulevard)  
Hernando County, Florida

ETDM Project Number: 3391  
Work Program Item Segment Number: 416732-2  
Federal-Aid Project Number: TBD



This preliminary engineering report contains detailed engineering information that fulfills the purpose and need for SR 50 (Cortez Boulevard) from West of I-75 to US 301 (SR 35/Treiman Boulevard), within Hernando County, Florida.



January 2014

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Prepared for:



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**January 2014**

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## **1.0 SUMMARY**

### **1.1 INTRODUCTION**

The Florida Department of Transportation (FDOT), District Seven, conducted a Project Development and Environment (PD&E) Study to determine the engineering and environmental effects of the proposed improvement to State Road 50 (SR 50) [Cortez Boulevard] from west of I-75 to US 301 (SR 35/Treiman Boulevard) in Hernando County, Florida.

This preliminary engineering report (PER) contains detailed engineering information that fulfills the purpose and need for SR 50 (Cortez Boulevard) from west of I-75 to US 301 (SR 35/Treiman Boulevard), within Hernando County, Florida. The purpose of this PER is to provide technical engineering information to the Design Project Manager, Design Team, Permit Coordinator, and right-of-way (ROW) professionals regarding the Build Alternative. This PER supplements information provided in the *Type 2 Categorical Exclusion*<sup>1</sup> (Type 2 CE) prepared for this study.

### **1.2 PURPOSE**

The purpose of the study was to provide documented environmental and engineering analyses to assist FDOT in reaching a decision on the type, location, and conceptual design of the necessary improvements in order to accommodate future traffic demand in a safe and efficient manner. The study also satisfied the requirements of FDOT and followed the process outlined in the *FDOT Project Development and Environment Manual*<sup>2</sup>.

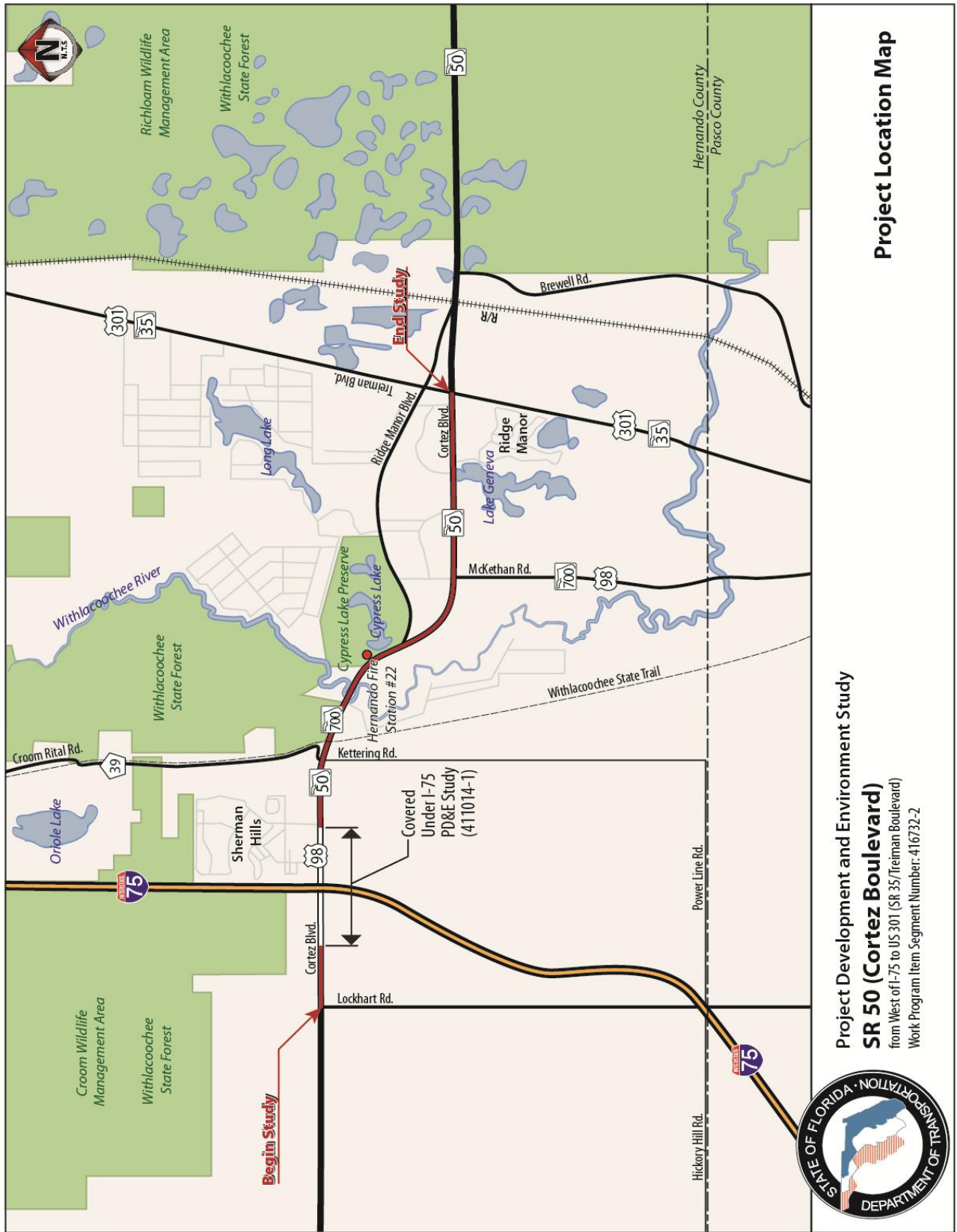
This study documented the need for the improvements and presented the procedures utilized to develop and evaluate various improvement alternatives. Information relating to the engineering and environmental characteristics essential for development of alternative alignments and analytical decisions was collected. Design criteria were established and preliminary alternative alignments were developed. The comparison of alternative alignments was based on a variety of parameters utilizing a matrix format. This process identified the Recommended Alternative that minimizes natural, physical, and socio-economic impacts, while providing the necessary future transportation improvements. The study also solicited input from the community and users of the facility. The design year for the analysis is 2035.

### **1.3 PROJECT DESCRIPTION**

SR 50 (Cortez Boulevard) is proposed to be widened from four to six lanes from west of I-75 to US 98 (SR 700/Treiman Boulevard) and from two to four lanes from US 98 (SR 700/Treiman Boulevard) to US 301 (SR 35/Treiman Boulevard) within Hernando County, Florida (Roadway ID 08 070 000). The study limits extend from west of I-75 easterly to US 301 (SR 35/Treiman Boulevard), as shown in **Figure 1-1**. Interstate 75 (I-75) ramp terminal intersections and approaching segments (length 0.9 miles [mi]) were exempted out of this study since those improvements were analyzed as part of the I-75 PD&E Study, Work Program Item Segment (WPIS) No. 411014-1. The total length of the project (including the I-75 interchange area) is



Figure 1-1: Project Location Map



SR 50 (Cortez Boulevard) from West of I-75 to US 301 (SR 35/Treiman Boulevard)

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approximately 6.3 mi. The project is within the Brooksville SE and Saint Catherine United States Geological Survey (USGS) quadrangle maps (map numbers 3719 and 3718, respectively).

The project is within Township 22 South, Range 20 East, Section 36; Township 22 South, Range 21 East, Sections 31, 32, and 33; and Township 23 South, Range 21 East, Sections 1, 2, 3, 4, 5, 6, 10, 11, and 12 of the Public Land Survey System (PLSS).

A prior PD&E study was approved on September 28, 1989, for the segment of SR 50 (Cortez Boulevard) from SR 50/SR 50A to US 301 (SR 35/Treiman Boulevard). That study recommended the roadway be widened to four lanes. The only segment that hasn't been improved to four lanes is from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard), which currently remains a two-lane undivided rural roadway.

## **1.4 COMMITMENTS AND RECOMMENDATIONS**

### **Commitments:**

The FDOT has established the following commitments:

- Gopher tortoise: Due to the presence of gopher tortoise habitat and burrows within and adjacent to the existing right-of-way (ROW), a gopher tortoise survey in appropriate habitat within construction limits (including roadway footprint, stormwater management ponds and floodplain compensation sites) will be performed within 90 days of the construction project's letting date. The Florida Department of Transportation (FDOT) will secure any relocation permits needed for this species during the project permitting phase of the project.
- Eastern indigo snake: The FDOT commits to reinitiate informal consultation with the U.S. Fish and Wildlife Service (USFWS) during the project's Design phase to provide additional information necessary to allow the Service to complete their analysis of the project's effects to the eastern indigo snake, and complete informal consultation on the project prior to advancing the project to construction to comply with Title 23 Code of Federal Regulations (CFR) Part 771.133. The FDOT commits to utilizing the Service's revised *Standard Protection Measures for the Eastern Indigo Snake*, dated August 12, 2013 or later measures if they have been updated by the USFWS.
- Wood stork: FDOT will evaluate impacts to suitable foraging habitat (SFH) within the Core Foraging Area (CFA) during design and provide any additional wetland mitigation necessary to offset permanent impacts to SFH through the United States Army Corps of Engineers (USACE) permit.
- FDOT will resurvey for Sherman's fox squirrel nests, southeastern American kestrel nest cavities, burrowing owl burrows and bald eagle nests during the project's design phase. Coordination with the USFWS and the Florida Fish and Wildlife Conservation Commission (FWC) will be initiated as appropriate.
- FDOT will resurvey for Britton's beargrass, Robin's Bellflower, and Cooley's Water-willow prior to construction. Coordination with the USFWS and FWC will be initiated as appropriate.

- Widening of the bridges over the Withlacoochee Bridge will be completed so as to not impact the Withlacoochee State South Paddling Trail or access to it, and the paddling trail will remain open during the construction phase. The FDOT will add a plan note into the General Notes of the project’s final design plans to ensure that contractor equipment staging, materials stockpiling or storing activities will not be allowed within the Withlacoochee River South Paddling Trail “property” or along Paul R. Steckle Lane which is located within the FDOT SR 50 ROW. This local roadway provides access to the riverbank and is also the primary access to adjoining residential parcels. In addition, FDOT plans to maintain access to any future existing unimproved pathway(s) down the riverbank to the Trail that are within the SR 50 ROW. The Withlacoochee River South Paddling Trail “property” within the limits of the project’s construction area will be restored to a condition which is at least as good as that which existed prior to the project being started.
- Coordination with the Florida Department of Environmental Protection (FDEP) will take place during design to ensure connectivity of the proposed sidewalks along S.R. 50 to the Withlacoochee State Trail.
- No construction related activities such as stockpiling or staging of equipment will take place on any of these properties:
  - Withlacoochee State Forest-Croom Tract
  - Withlacoochee State Trail and Park (other than constructing two sidewalk connections)
  - Withlacoochee River South Paddling Trail
  - Cypress Lakes Preserve and Florida National Scenic Trail
- A land use review will be performed during the design phase of the project to ensure that all noise-sensitive land uses that have received a building permit prior to the project’s Date of Public Knowledge are evaluated.

***Recommendations:***

The Build Alternative described below has been selected as the Recommended Alternative. Details are provided below.

**1.5 DESCRIPTION OF PROPOSED ACTION**

This project considered adding one travel lane in each direction from west of I-75 to US 301 (SR 35/Treiman Boulevard) in Hernando County, Florida. The I-75 ramp terminal intersections and approaching segments (length 0.9 mi) were exempted out of this study since those improvements were analyzed as part of the I-75 PD&E Study, Work Program Item Segment No: 411014-1. The total length of the project (including the I-75 interchange area) is approximately 6.3 mi.

**1.5.1 Proposed Typical Sections**

**Figure 1-2** shows the existing and proposed typical sections that were evaluated for the Build Alternative from west of I-75 to Kettering Road. This typical section is a six-lane divided suburban roadway with a 46-foot (ft) median, which includes a 33-ft raised grass median, including Type E curb and gutter. Three 12-ft travel lanes with 6.5-ft inside shoulders and 8-ft

flush outside shoulders (5 ft paved), are provided in each direction. This typical section also contains open drainage ditches that parallel both sides of the roadway. Sidewalks, 5 ft wide, are provided adjacent to the ROW line. The proposed design speed for this typical section is 50 miles per hour (mph), the minimum design speed for a Strategic Intermodal System (SIS) facility. This typical section fits within the existing 200 ft of ROW.

**Figure 1-3** shows the existing and proposed typical sections that were evaluated for the Build Alternative between Kettering Road and US 98 (SR 700/McKethan Road). The proposed typical section includes both inside and outside widening to result in a six-lane divided rural roadway with a 40-ft depressed grass median and flush inside and outside shoulders. Since the Annual Average Daily Traffic (AADT) volumes are considered low volume east of Kettering Road, 8-ft inside unpaved shoulders and 8-ft outside shoulders (5 ft paved) are provided in each direction. This typical section also contains open drainage ditches and 5-ft sidewalks adjacent to the ROW line. The proposed design speed for this typical section is 65 mph. This typical section fits within the existing 200 ft of ROW if a Design Variation is granted for the substandard border width (36 ft of 40 ft required). A preliminary drainage review supports the reduced border width. In some areas, the existing ROW width will allow the standard 40-ft border. In other areas where right turn lanes are needed, the standard border width will be reduced to stay within existing ROW.

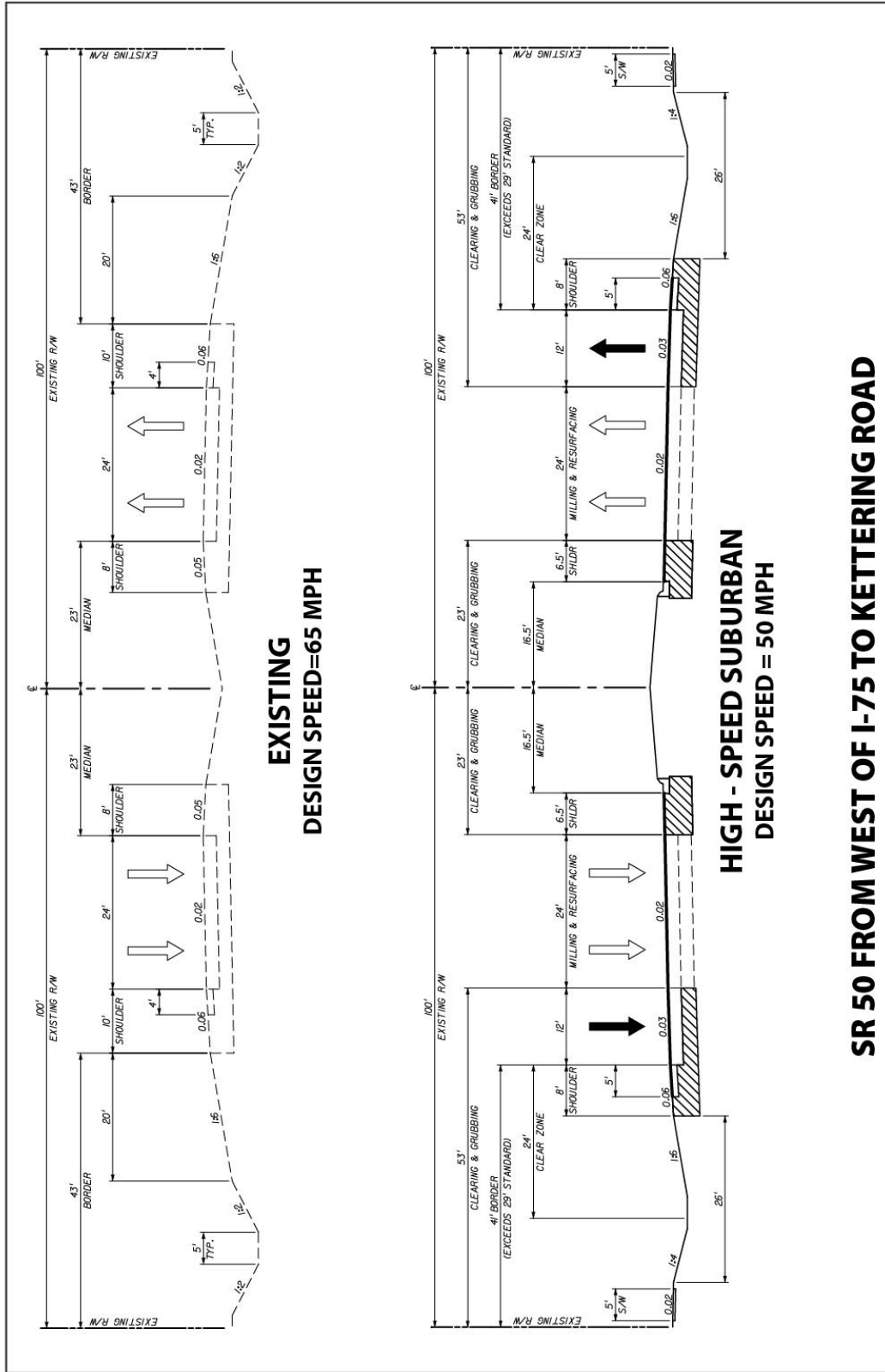
**Figure 1-4** shows the widening of the two existing bridges over the Withlacoochee River. In order to facilitate maintenance of traffic (MOT) and limit the bridge widening to just one side of each bridge, the proposed roadway median width will transition from 40 ft to 54 ft on each approach. The outside concrete barrier of each bridge will be removed, along with the deck to the center of the first beam. Each bridge will then be widened to accommodate three 12-ft lanes, 10-ft inside and outside shoulders, and a 5-ft sidewalk separated from the shoulder with a concrete barrier. Florida I-Beams will support the widened portion of the deck. In addition, the inside barrier on the westbound bridge will be replaced to meet current standards.


**Figure 1-5** shows the existing and proposed typical sections from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard). This segment improves SR 50 (Cortez Boulevard) from a two-lane undivided rural roadway to a four-lane divided roadway by removing the crown from the existing roadway, which will become the new westbound lanes. New pavement, 24 ft wide, will be constructed 40 ft south of the existing roadway, to become the new eastbound roadway. The completed four-lane rural roadway will have a 40-ft depressed grass median and flush 6-ft inside shoulders (0 ft paved) and 8-ft outside shoulders (5 ft paved). This typical section also contains open drainage ditches and 5-ft sidewalks adjacent to the ROW line. The proposed design speed for this typical section is 65 mph. This typical section fits within the existing 200 ft of ROW which is consistent with the previously approved PD&E study.

### **1.5.2 Horizontal Alignment**

The proposed improvements will follow the existing alignment, which is generally centered within the existing 200-ft ROW. The existing two-lane undivided section from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard) was originally constructed such that future widening to a rural divided multilane highway would accommodate a 40-ft median centered within the ROW.

Figure 1-2: Proposed Roadway Typical Section  
from West of I-75 to Kettering Road

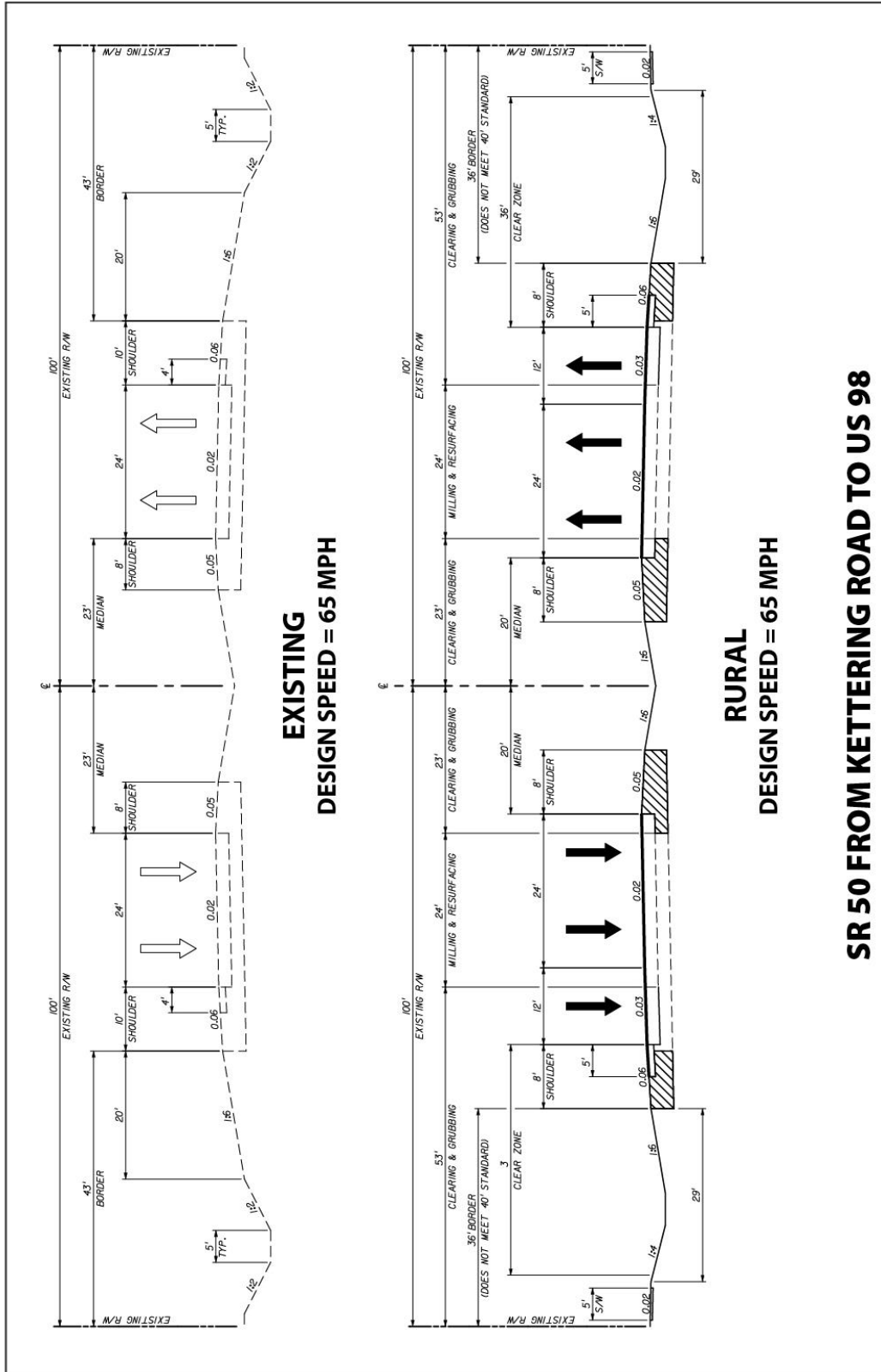




**Proposed Roadway  
Typical Section**

Project Development and Environment Study  
**SR 50 (Cortez Boulevard)**  
 from West of I-75 to US 301 (SR 35/Treiman Boulevard)  
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Figure 1-3: Proposed Roadway Typical Section  
from Kettering Road to US 98 (SR 700/McKethan Road)



**Proposed Roadway  
Typical Section**

Project Development and Environment Study  
**SR 50 (Cortez Boulevard)**  
from West of I-75 to US 301 (SR 35/Treiman Boulevard)  
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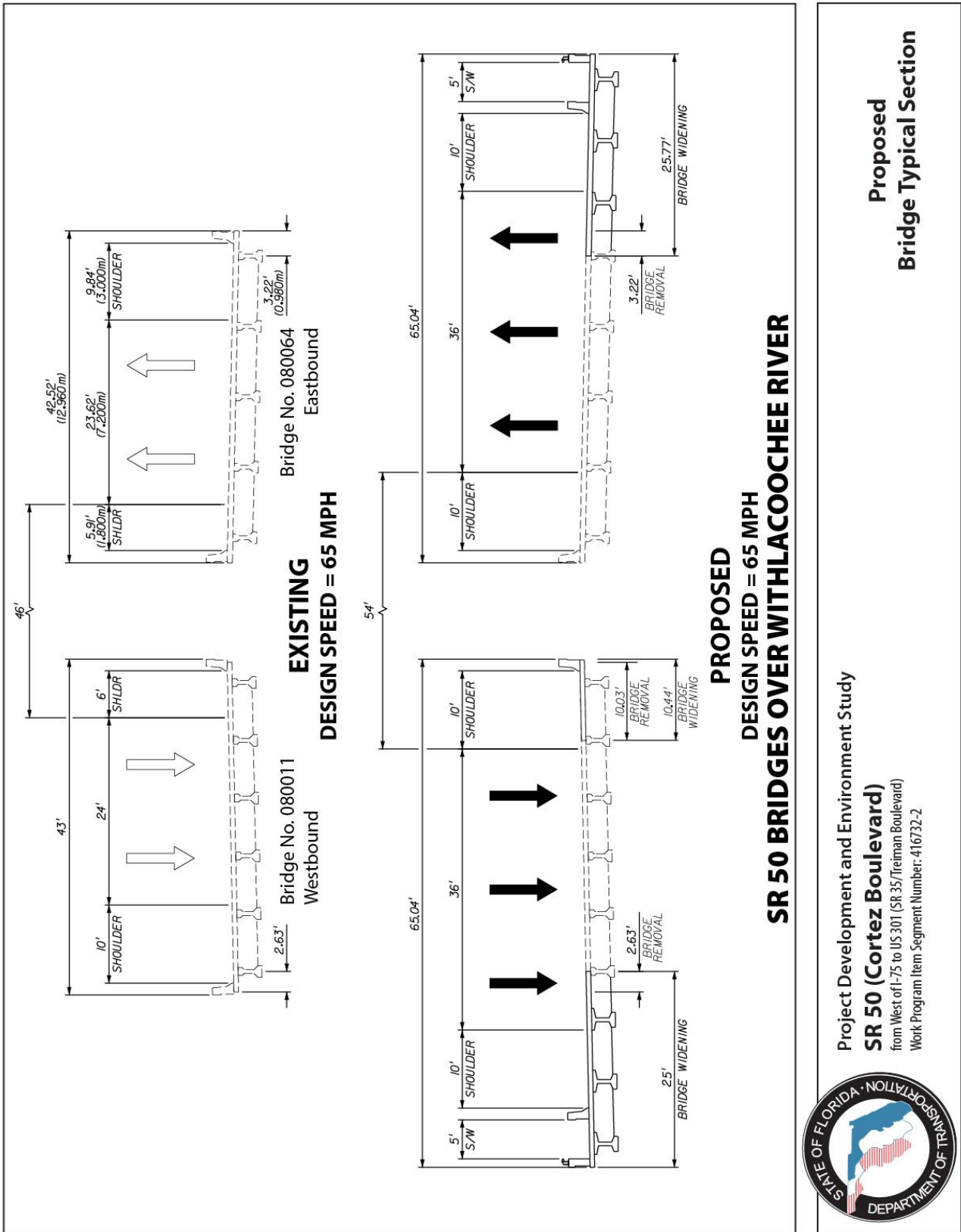
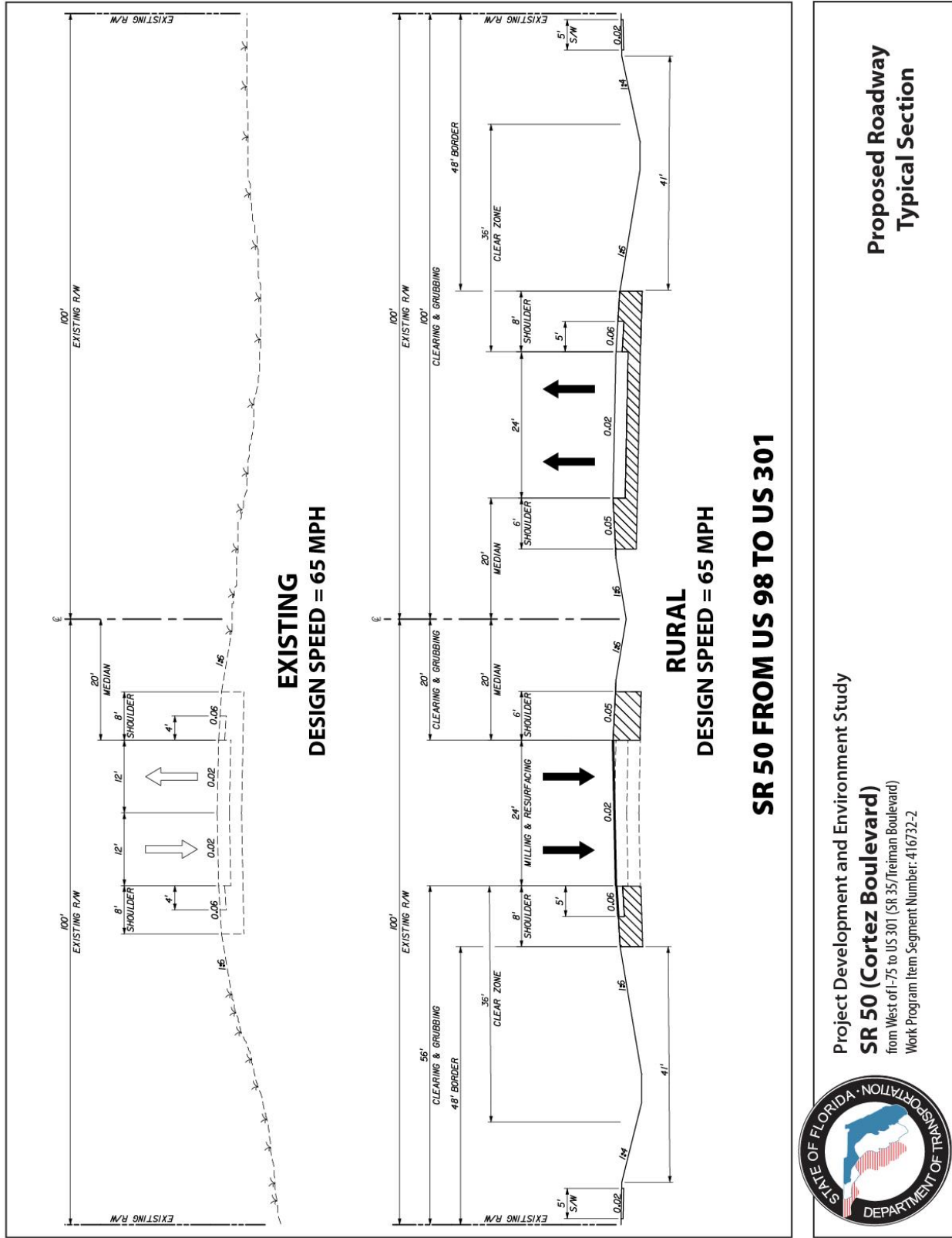


Figure 1-4: Proposed Bridge Typical Section



**Figure 1-5: Proposed Typical Section  
from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard)**



Project Development and Environment Study  
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**Proposed Roadway  
Typical Section**



Hernando County Frontage Road Ordinance Chapter 24 Roads and Bridges, Article 1, Sec. 24-2 (c) states that developers of properties adjacent to the major arterial highway grid must provide, at the developer's expense, a frontage road from property line to property line parallel to the arterial highway upon demonstration of need and demand by the county. Since construction improvements are not currently programmed and concepts have not yet been developed for the frontage roads (planned by Hernando County), Lockhart Road or Kettering Road, these improvements are considered in this study for planning purposes and information only. Future studies will determine the specific typical sections, lane configuration and alignments. Preliminary conceptual design plans for the Preferred Alternative are included in **Appendix A**.

## **1.6 REFERENCES**

1. *Type 2 Categorical Exclusion*; Atkins North America, Inc.; Tampa, Florida; January 2014.
2. *Project Development and Environment Manual*; Florida Department of Transportation; Tallahassee, Florida; 2013.  
<http://www.dot.state.fl.us/emo/pubs/pdeman/pdeman1.shtm>

## **2.0 EXISTING CONDITIONS**

### **2.1 EXISTING TYPICAL SECTIONS**

SR 50 (Cortez Boulevard) is a four-lane divided rural roadway from west of I-75 to US 98 (SR 700/McKethan Road) as shown in **Figure 2-1**. Two 12-ft lanes, an 8-ft inside shoulder and a 10-ft outside shoulder (4 ft paved) is provided in each direction, separated by a 46-ft depressed, grassed median. Exclusive left and right turn lanes are provided at major intersections. No sidewalks are present. Bicyclists are accommodated on the 4-ft paved outside shoulders.

Not including I-75 ramp terminals, 16 median openings are provided at ¼-mile average spacing; one of these, at Parkland Avenue, is a directional median opening. Traffic signals are provided at I-75 ramp terminals, Bronson Road/Windmere Road, Kettering Road, US 98 (SR 700/McKethan Road), and US 301 (SR 35/Treiman Road). Runoff is collected in roadside swales and conveyed to stormwater management facilities (SMFs). SR 50 (Cortez Boulevard) from County Road (CR) 541 (Spring Lake Highway, 3 mi west of Lockhart Road) to the Ridge Manor Campground entrance was resurfaced in 2008 (FPID No. 415185-1-52-01). SR 50 (Cortez Boulevard) from east of Kettering Road to US 98 (SR 700/McKethan Road) was widened from two to four lanes in 2001 (FPID No. 254808-1-52-01).

SR 50 (Cortez Boulevard) transitions to a two-lane undivided rural roadway approximately ¼ mi east of US 98 (SR 700/McKethan Road). As shown in **Figure 2-1**, one 12-ft lane and an 8-ft shoulder (4 ft paved) are provided in each direction from US 98 (SR 700/McKethan Road) to east of US 301 (SR 35/Treiman Boulevard). No sidewalks are present. Bicyclists are accommodated on the 4-ft paved outside shoulders. Runoff is collected in roadside swales. The US 301 (SR 35/Treiman Boulevard) intersection is signalized. This section was resurfaced in 2009 (FPID No. 406545-1-52-01).

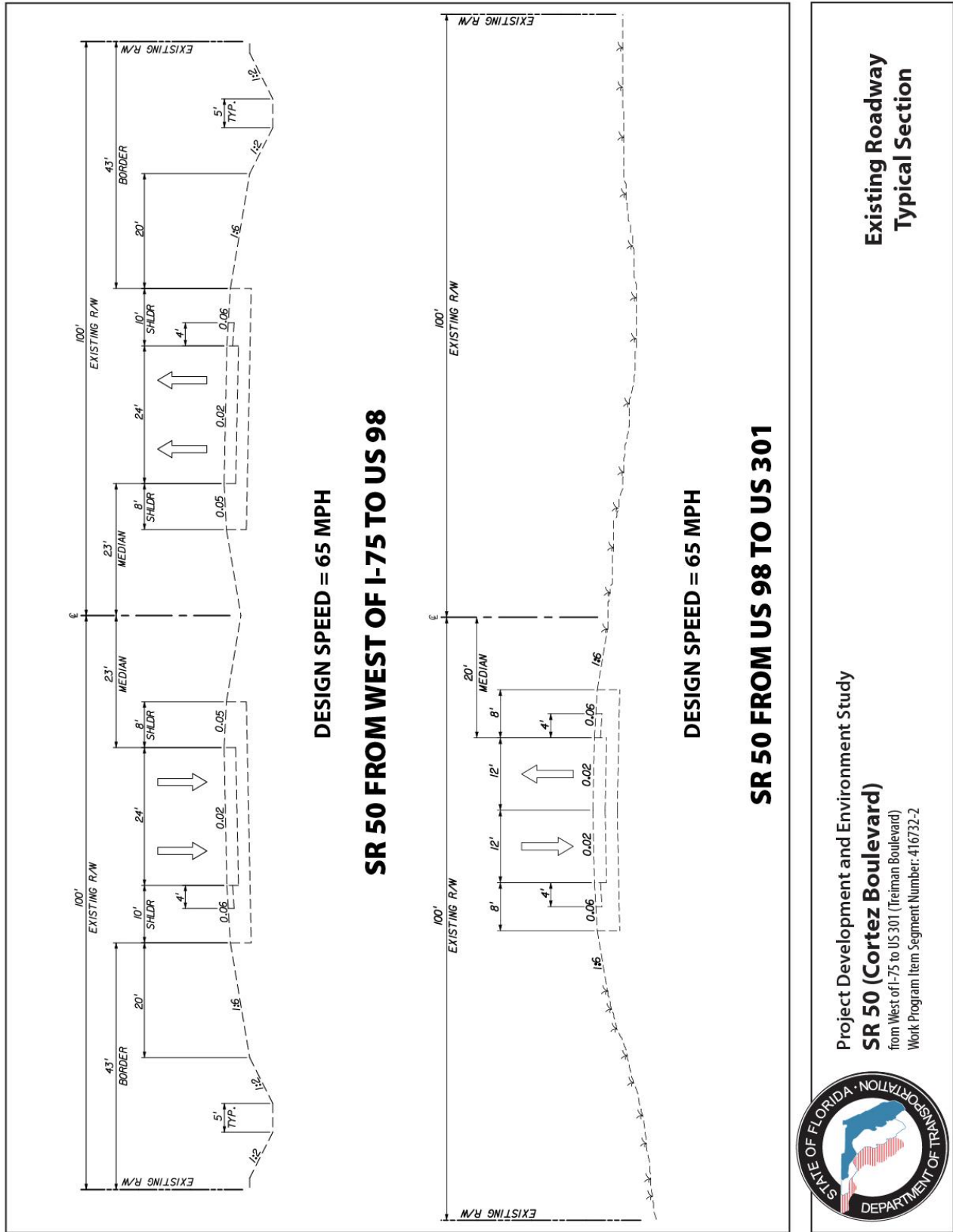
### **2.2 EXISTING RIGHT-OF-WAY**

The typical existing ROW width is a minimum of 200 ft wide; however, some wider areas exist throughout the corridor. Limited access ROW exists in the vicinity of the I-75 interchange. Existing controlled and limited access ROW lines are illustrated with width dimensions on the preliminary conceptual design plans for the Build Alternative included in **Appendix A**. Existing offsite SMFs are fenced within existing ROW along the project between I-75 and US 98 (SR 700/McKethan Road). Property lines, specific land uses, and other features along the corridor are also illustrated on the preliminary concept plans.

### **2.3 SUBMERGED LANDS EASEMENT**

The FDEP has granted a submerged lands easement to FDOT covering the Withlacoochee River through the FDOT existing ROW. The easement grants FDOT authority to construct and/or improve and maintain SR 50 (Cortez Boulevard).

Figure 2-1: Existing Roadway Typical Section



## 2.4 ROADWAY CLASSIFICATIONS AND DESIGNATIONS

SR 50 (Cortez Boulevard) is part of the State Highway System (SHS) and has a Functional Classification of Rural Principal Arterial. There are no grade separated interchanges, other than I-75, along the project. The facility's access management classification is Access Class 3, Restrictive, from west of I-75 to east of Kettering Road (Milepost [MP] 5.250) and Access Class 4, Non-Restrictive, from east of Kettering Road (MP 5.250) to US 301.

SR 50 (Cortez Boulevard) has a SIS designation of SIS Corridor and also a Florida Intrastate Highway System (FIHS) designation from US 19 to I-75. SR 50 (Cortez Boulevard) is a Federal Aid Road on the National Highway System (NHS) from US 19 to I-75, and is part of the Surface Transportation Program (STP) from I-75 to US 301. In addition, the entire length of SR 50 within Hernando County has been designated a hurricane evacuation route by the Florida State Emergency Response Team (SERT) and is identified as an evacuation route in the Hernando County Comprehensive Plan. The Hernando County Metropolitan Planning Organization (MPO) *Congestion Management Process 2010 State of the System Report*<sup>1</sup> has designated SR 50 (Cortez Boulevard) in the study area as a truck route.

## 2.5 HORIZONTAL AND VERTICAL ALIGNMENT

The existing horizontal alignment was derived from multiple sources, including: FPID No. 411011-2-52-01 (I-75 widening final design; from begin project to west of Kettering Road), SPN 08070-3502 as-built plans (from west of Kettering Road to east of US 98 [SR 700/McKethan Road], and FPID No. 406545-1-52-01 as-built plans (from east of US 98 [SR 700/McKethan Road] to end project). The alignment contains nine Points of Intersection (PIs), or points where the alignment changes direction. The PIs incorporate curves where the Deflection Angles ( $\Delta$ ) are significant. When the Deflection Angle is very small, no curves are necessary. The Degree of Curvature (D) is defined as the angle subtended by a 100-ft arc. SR 50 contains three horizontal curves and six PIs without curvature within the project limits. Table 2-1 summarizes the existing horizontal characteristics of each.

**Table 2-1: Existing Horizontal Alignment Characteristics**

PI Station	Deflection Angle ( $\Delta$ ) and Direction	Degree of Curvature (D)	Curve Radius (R)	Curve Length (L)
955+86.78	00° 00' 29.34" left		No Curve	
974+99.57	00° 00' 02.14" right		No Curve	
1001+49.62	00° 02' 30.49" right		No Curve	
1027+97.34	00° 01' 44.27" left		No Curve	
1060+30.17	27° 29' 46.17" right	1° 00' 00.00"	5,729.58 ft	2,749.62 ft
1103+46.44	41° 41' 28.98" right	2° 15' 00.00"	2,546.48 ft	1,852.95 ft
1140+11.65	69° 16' 06.03" left	3° 00' 00.00"	1,909.86 ft	2,308.94 ft
1185+17.00	00° 14' 30.36" right		No Curve	
1238+04.19	00° 05' 18.00" right		No Curve	

The existing vertical alignment was obtained from as-built plans provided by FDOT. The elevations along the roadway profile grade line range from a high point of 119.05 feet (ft) above sea level east of Remington Road to a low point of 66.06 ft above sea level east of the Withlacoochee State Trail overpass. A profile grade primarily consists of tangent sections with sag and crest vertical curves.

## **2.6 PEDESTRIAN ACCOMMODATIONS**

There are no sidewalks within the study area. Bicyclists are accommodated on the 4-ft paved outside shoulders. One crosswalk is located at the Windmere Road/Bronson Boulevard intersection (east approach only). The Withlacoochee State Trail is a regional north/south shared-use trail that crosses over SR 50 (Cortez Boulevard) on a bridge structure (Bridge No. 0809001) approximately 800 ft east of Kettering Road. There are no public schools within the study corridor. The Ridge Manor Christian Academy (34275 SR 50 [Cortez Boulevard]) is a private Christian school for pre-school through high school students, located approximately ½ mile west of US 301 (SR 35/Treiman Boulevard).

## **2.7 LIGHTING**

The only roadway lighting within the project limits is high-mast lighting within 1,000 ft of the I-75 interchange, between Nature Coast Boulevard/La Rose Road and Bronson Road/Windmere Road.

## **2.8 TRAFFIC SIGNALS**

Traffic Signals are located at the following intersections:

- I-75 northbound and southbound ramps (interconnected)
- Bronson Road/Windmere Road
- Kettering Road/Croom Rital Road
- US 98 (SR 700/McKethan Road)
- US 301 (SR 35/Treiman Boulevard)

For more information on existing traffic signals, please refer to the *Final Traffic Report*<sup>2</sup>. There are no pedestrian signals within the project limits.

## **2.9 DESIGN AND POSTED SPEEDS**

SR 50 has a design speed of 65 mph within the project limits. The posted speeds vary from a minimum of 45 mph to a maximum of 60 mph. **Table 2-2** summarizes the design and posted speeds within the project limits.

**Table 2-2: Existing Design and Posted Speeds**

From	To	Design Speed	Posted Speed
Begin Construction	East of Remington Rd	65 mph	60 mph
East of Remington Rd	West of I-75	65 mph	55 mph
West of I-75	East of Sherman Hills Blvd	65 mph	45 mph
East of Sherman Hills Blvd	West of US 301	65 mph	55 mph
West of US 301	East of US 301	65 mph	45 mph
East of US 301	End Construction	65 mph	55 mph

## 2.10 RAILROAD CROSSINGS

There are no active railroad crossings within the project limits.

## 2.11 PAVEMENT CONDITIONS

A flexible pavement condition survey was conducted in February, 2011 for the SR 50 corridor. The pavement program provides ratings based on cracking and rideability conditions. A scale of one to ten is used in rating the pavement condition of the roadway, with a rating of six or less considered deficient. **Table 2-3** identifies the pavement condition ratings for the SR 50 (Cortez Boulevard) corridor.

**Table 2-3: SR 50 Pavement Condition Rating**

Segment	Milepost	Cracking Rating	Ride Rating
West of Lockhart Road to East of Withlacoochee State Trail	2.654 – 5.274	10.0	8.4
East of Withlacoochee State Trail to Withlacoochee River Bridges	5.274 – 5.757	10.0	7.7
Withlacoochee River Bridges to Ridge Manor Campground/MHP	5.757 – 7.464	10.0	8.1
Ridge Manor Campground/MHP to east of US 301 (SR 35/Treiman Blvd)	7.464 – 9.519	10.0	8.1

## 2.12 DRAINAGE SYSTEM INVENTORY

A *Final Preliminary Stormwater Management Facility Report*<sup>3</sup> was prepared for this study. Location Hydraulics are summarized in Section 5 of the *Final Environmental Technical Compendium*<sup>4</sup>. The existing drainage patterns were determined using USGS quadrangle maps, SWFWMD contour aeriels, field review, and FDOT drainage maps for SR 50 (Cortez Boulevard).

From west of I-75 to Kettering Road, with the exception of the I-75 interchange, the stormwater runoff from the roadway sheet flows into roadside ditches where it is treated and attenuated.

From Kettering Road to US 98 (SR 700/McKethan Road), the stormwater runoff from the roadway sheet flows into roadside ditches and then outfalls to existing SMFs along SR 50 (Cortez Boulevard). All of the project runoff in this area ultimately drains into the adjacent Withlacoochee River and Withlacoochee River wetland system, which is classified as an OFW by the FDEP.

From US 98 (SR 700/McKethan Road) to the end of the project, the stormwater runoff from the roadway either sheet flows directly into adjacent wetland areas or into roadside ditches that then discharge into adjacent wetland areas via cross drains. These wetland areas drain into Lake Geneva and ultimately to the Withlacoochee River.

### **2.12.1 SEASONAL HIGH WATER TABLE ELEVATIONS**

The Seasonable High Water Table (SHWT) elevations for the project area are tabulated in Table 1.5.1 of the *Final Preliminary Stormwater Management Facility Report*. The elevations were estimated from the Natural Resources Conservation Service (NRCS) Soils Survey for Hernando County. When using the NRCS Soils Survey, the median value in the SHWT depth range given in the Soils Survey was used along with the approximate ground level elevations from the 1-ft SWFWMD Aerial contours to calculate the SHWT elevation. Excerpts of the NRCS report can be found in Appendix A of the *Final Preliminary Stormwater Management Facility Report*.

### **2.12.2 EXISTING STORMWATER MANAGEMENT FACILITIES**

There are approximately nine cross drains located within the study limits and two bridges over the Withlacoochee River. The existing cross drains have been identified for the length of the project as shown in the Figures in Appendix F of the *Final Environmental Technical Compendium*. A cross drain analysis was determined not to be commensurate with the purpose of the study. A cross drain analysis will be performed as part of the final design; however, it is anticipated that most of the cross drains will need to be extended and potentially upsized.

Roadway runoff from west of I-75 to Kettering Road is treated in roadside swales using concrete ditch blocks. These treatment cells are located on both sides of the roadway, with the runoff in the median being conveyed to the roadside swales.

From Kettering Road to US 98 (SR 700/McKethan Road) the runoff is collected via roadside ditches and conveyed into seven existing stormwater management facilities (SMFs A-G) which ultimately discharge into the Withlacoochee River and surrounding wetland system. The SMFs are comprised of two dry detention ponds and five wet detention ponds. Ponds A and G, the dry retention ponds, retain and infiltrate 0.75 inches of the impervious area. Ponds B-F were designed to treat 1.5 inches of the impervious area. All of the existing ponds were designed for the SWFWMD 25-year, 24-hour rainfall event of 8.8 inches for peak discharge and attenuation. All of the SMFs appear to accommodate the ultimate six-lane typical section with the exception

of Pond G. The drainage basin for Pond G includes half of the roadway for SR 50 (Cortez Boulevard) from approximately 200 ft east of the intersection of SR 50 (Cortez Boulevard) and US 98 (SR 700/McKethan Road) to a high point at the end of the transition area east of the intersection. The drainage basin for Pond G also includes the south side of US 98 (SR 700/McKethan Road). A more detailed evaluation should be conducted during the design phase.

## **2.13 TRAFFIC DATA**

Under existing conditions, SR 50 (Cortez Boulevard) is a four-lane divided arterial facility from west of I-75 to east of US 98 (SR 700/McKethan Road) and a two-lane undivided arterial from east of US 98 (SR 700/McKethan Road) to US 301 (Treiman Boulevard). Existing traffic count data for 2011 which was collected for the purpose of this study indicates the following:

- The segment of SR 50 (Cortez Boulevard) from Lockhart Road to Kettering Road carries AADT volumes that range from 13,700 to 20,200.
- The segment of SR 50 (Cortez Boulevard) from Kettering Road to US 98 (SR 700/McKethan Road) carries an AADT volume of 13,400.
- The segment of SR 50 (Cortez Boulevard) from US 98 (SR 700/McKethan Road) to US 301 (Treiman Boulevard) carries an AADT volume of 7,300.

A planning level segment analysis indicates that SR 50 (Cortez Boulevard) from Lockhart Road to Kettering Road operates at Level of Service (LOS) B. SR 50 (Cortez Boulevard) from Kettering Road to US 301 (Treiman Boulevard) operates at LOS A. For more information on existing traffic signals, please refer to the *Final Traffic Report*.

## **2.14 CRASH DATA AND SAFETY ANALYSIS**

In order to obtain a better understanding of the safety concerns along the corridor, an analysis of crash data was conducted within the study corridor influence area. Crash reports for a five-year period (2005-2009) were provided by FDOT for all the intersections and segments within the study area and summarized. The crash data were then analyzed for intersections and segments following the procedures provided in the FDOT Highway Safety Improvement Program Guideline, which defines an intersection (spot) as 0.100 mi or less in length and a segment as 0.101 to 3.0 mi in length.

An initial breakdown of crash data based on crash type indicated that of the 170 total crashes, the highest crash type was angled crash (52 crashes, or approximately 31 percent), the next highest was rear end crash (31 crashes, or approximately 18 percent) and the third highest was left turn crash (29 crashes, or approximately 17 percent).

Out of the 90 total intersection crashes, the intersection of SR 50 (Cortez Boulevard)/ Bronson Boulevard/Windmere Road had the most crashes of any intersection location within the study area over the five-year period (34 crashes, or approximately 38 percent) followed by SR 50 (Cortez Boulevard)/US 98 (SR 700/McKethan Road)/Olancha Road (26 crashes, or approximately 29 percent).



Out of the 80 total segment crashes, the segment of SR 50 (Cortez Boulevard) from east of Bronson Boulevard/Windmere Road to west of Kettering Road/CR 39 (Croom Rital Road) had the most crashes of any segment (35 crashes, or approximately 44 percent) followed by the segment of SR 50 (Cortez Boulevard) from Kettering Road/CR 39 (Croom Rital Road) to US 98 (SR 700/McKethan Road)/Olancha Road (22 crashes, or approximately 28 percent).

An additional breakdown of the types of crashes that occurred at all the intersections and segments within the study area is shown in **Figure 2-2** and detailed in **Table 2-4**.

Safety ratios were also computed in order to identify locations with safety concerns. The guideline methodology was used to calculate safety ratios for all spots/intersections and segment locations within the study area. Safety ratios above 1.000 indicate that the spot/intersection and/or segment locations experience vehicle collisions at an above average rate and, therefore, traffic safety at these locations may need to be improved. The analysis indicates that two intersection locations and one segment have a safety ratio greater than 1.000. The intersections and segment with safety ratio greater than 1.000 are listed below:

#### **Intersections**

- SR 50 (Cortez Boulevard)/ Bronson Boulevard/Windmere Road
- SR 50 (Cortez Boulevard)/ US 98 (SR 700/McKethan Road)/Olancha Road

#### **Roadway Segments**

- SR 50 (Cortez Boulevard) from Bronson Boulevard/Windmere Road to Kettering Road/CR 39 (Croom Rital Road)

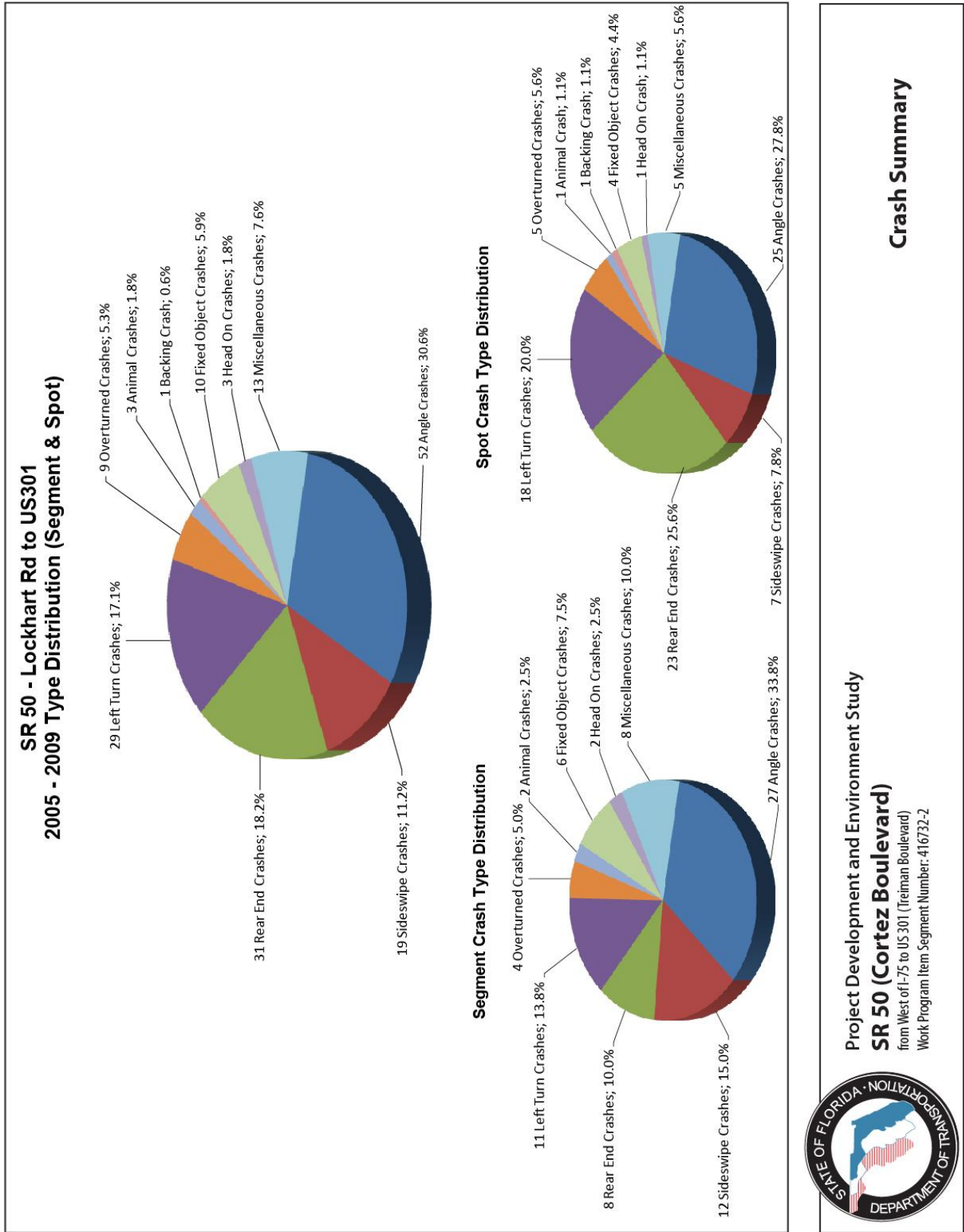
The safety ratio calculations for the intersections and segments are provided in Appendix L of the *Final Traffic Report*.

Average safety ratios for years 2005-2009 for the intersections along SR 50 within the study area indicate that SR 50 (Cortez Boulevard) crash rates are higher than the statewide averages at two major intersections. The SR 50 (Cortez Boulevard) segment from east of Bronson Boulevard to west of Kettering Road has a crash rate higher than the statewide average. The average safety ratios for intersections and segments are listed in **Table 2-5**.

## **2.15 UTILITIES**

In order to evaluate potential surface and subsurface utility conflicts associated with the proposed project, information was collected concerning the location and characteristics of the existing utilities within the SR 50 (Cortez Boulevard) corridor. A list of the utility providers in the vicinity of the project was obtained by calling Call Sunshine (1-800-432-4770, design ticket #344001981). Base maps were sent to utility providers in accordance with Part 2, Chapter 10 of the *FDOT Project Development and Environment Manual*<sup>5</sup> with a request to provide information on the location and type of any facilities owned, leased, maintained, or planned. Utility providers and contacts are included in **Table 2-6**. Maps that were returned by each utility provider, showing specific locations of each utility, are included in the project files.

Figure 2-2: Crash Summary



**Table 2-4: Study Area Crash Summary**

Type of Crashes	Number of Crashes					Total
	2005	2006	2007	2008	2009	
<b>Crash Type Distribution - Spot Crashes (Long Forms only)</b>						
<b>SR 50 (Cortez Boulevard) and Bronson Boulevard / Windmere Road Intersection (MP 4.159 - 4.317)</b>						
Angle	3	1	1	4	4	13
Sideswipe	-	-	1	-	-	1
Rear End	-	-	1	2	2	5
Left Turn	4	3	1	3	-	11
Right Turn	-	-	-	-	-	-
Overtuned	-	-	1	-	-	1
Animal	-	-	-	-	-	-
Backing	-	1	-	-	-	1
Fixed Object	-	-	-	-	1	1
Head On	-	-	-	-	-	-
Miscellaneous	-	-	-	-	1	1
<b>Total</b>	<b>7</b>	<b>5</b>	<b>5</b>	<b>9</b>	<b>8</b>	<b>34</b>
<b>SR 50 (Cortez Boulevard) and Kettering Road / Croom Rital Road Intersection (MP 4.958 - 5.147)</b>						
Angle	1	-	2	-	-	3
Sideswipe	-	-	1	1	2	4
Rear End	2	-	1	-	2	5
Left Turn	-	-	1	-	-	1
Right Turn	-	-	-	-	-	-
Overtuned	-	1	-	1	-	2
Animal	1	-	-	-	-	1
Backing	-	-	-	-	-	-
Fixed Object	-	1	-	-	-	1
Head On	-	-	-	-	-	-
Miscellaneous	1	-	-	-	-	1
<b>Total</b>	<b>5</b>	<b>2</b>	<b>5</b>	<b>2</b>	<b>4</b>	<b>18</b>
<b>SR 50 (Cortez Boulevard) and US98 (McKethan Road) / Olancha Road Intersection (MP 6.931 - 7.120)</b>						
Angle	1	-	-	3	2	6
Sideswipe	-	-	-	-	1	1
Rear End	1	2	4	-	2	9
Left Turn	-	1	3	-	-	4
Right Turn	-	-	-	-	-	-
Overtuned	1	-	-	-	1	2
Animal	-	-	-	-	-	-
Backing	-	-	-	-	-	-
Fixed Object	-	1	-	-	1	2
Head On	-	-	-	-	-	-
Miscellaneous	-	1	-	-	1	2
<b>Total</b>	<b>3</b>	<b>5</b>	<b>7</b>	<b>3</b>	<b>8</b>	<b>26</b>

**Table 2-4: Study Area Crash Summary**

Type of Crashes	Number of Crashes					Total
	2005	2006	2007	2008	2009	
<b>SR 50 (Cortez Boulevard) and US301 (Treiman Boulevard) Intersection (MP 8.448 - 8.638)</b>						
Angle	-	1	-	1	1	3
Sideswipe	-	-	-	-	1	1
Rear End	1	3	-	-	-	4
Left Turn	1	-	-	-	1	2
Right Turn	-	-	-	-	-	-
Overtuned	-	-	-	-	-	-
Animal	-	-	-	-	-	-
Backing	-	-	-	-	-	-
Fixed Object	-	-	-	-	-	-
Head On	-	-	-	1	-	1
Miscellaneous	1	-	-	-	-	1
<b>Total</b>	<b>3</b>	<b>4</b>	<b>-</b>	<b>2</b>	<b>3</b>	<b>12</b>
<b>Crash Type Distribution - Segment Crashes (Long Forms only)</b>						
<b>SR 50 (Cortez Boulevard) - Lockhart Road to West of I-75 (MP 3.031 - 3.768)</b>						
Angle	1	-	-	1	3	5
Sideswipe	-	-	-	-	1	1
Rear End	-	2	-	-	1	3
Left Turn	-	-	-	-	-	-
Right Turn	-	-	-	-	-	-
Overtuned	-	1	-	-	-	1
Animal	-	-	1	-	-	1
Backing	-	-	-	-	-	-
Fixed Object	-	-	1	-	-	1
Head On	-	-	-	-	-	-
Miscellaneous	-	-	-	1	-	1
<b>Total</b>	<b>1</b>	<b>3</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>13</b>
<b>SR 50 (Cortez Boulevard) - East of Bronson Boulevard / Windmere Road to West of Kettering Road / Croom Rital Road (MP 4.318 - 4.957)</b>						
Angle	3	3	1	5	5	17
Sideswipe	-	1	-	1	1	3
Rear End	-	-	2	-	-	2
Left Turn	5	2	-	1	1	9
Right Turn	-	-	-	-	-	-
Overtuned	-	-	-	1	-	1
Animal	-	-	-	-	-	-
Backing	-	-	-	-	-	-
Fixed Object	-	-	-	-	-	-
Head On	1	-	-	-	-	1
Miscellaneous	-	-	-	-	2	2
<b>Total</b>	<b>9</b>	<b>6</b>	<b>3</b>	<b>8</b>	<b>9</b>	<b>35</b>

**Table 2-4: Study Area Crash Summary**

Type of Crashes	Number of Crashes					Total
	2005	2006	2007	2008	2009	
<b>SR 50 (Cortez Boulevard)- Kettering Road / Croom Rital Road to US98 / SR700 / McKethan Road / Olancha Road (MP 5.148 - 6.930)</b>						
Angle	1	-	-	-	1	2
Sideswipe	3	2	-	-	-	5
Rear End	-	1	1	1	-	3
Left Turn	-	-	-	-	-	-
Right Turn	-	-	-	-	-	-
Overtuned	1	1	-	-	-	2
Animal	-	-	-	-	1	1
Backing	-	-	-	-	-	-
Fixed Object	1	-	-	1	1	3
Head On	-	-	1	-	-	1
Miscellaneous	3	-	-	-	2	5
<b>Total</b>	<b>9</b>	<b>4</b>	<b>2</b>	<b>2</b>	<b>5</b>	<b>22</b>
<b>SR 50 (Cortez Boulevard)- US98 / SR700 / McKethan Road / Olancha Road to US301 / SR35 / Treiman Boulevard (MP 7.121 - 8.447)</b>						
Angle	1	2	-	-	-	3
Sideswipe	1	1	1	-	-	3
Rear End	-	-	-	-	-	-
Left Turn	-	2	-	-	-	2
Right Turn	-	-	-	-	-	-
Overtuned	-	-	-	-	-	-
Animal	-	-	-	-	-	-
Backing	-	-	-	-	-	-
Fixed Object	1	-	-	-	1	2
Head On	-	-	-	-	-	-
Miscellaneous	-	-	-	-	-	-
<b>Total</b>	<b>3</b>	<b>5</b>	<b>1</b>	<b>-</b>	<b>1</b>	<b>10</b>

**Table 2-5: Safety Ratios**

<b>SR 50 Intersection</b>	<b>Safety Ratio</b>
Bronson Boulevard/Windmere Road	1.640
Kettering Road/Croom Rital Road	0.824
US 98/SR 700/McKethan Road/Olancha Road	1.595
US 301/SR 35/ Treiman Boulevard	0.872
<b>SR 50 Segment</b>	<b>Safety Ratio</b>
Lockhart Rd to west of I-75	0.490
Bronson Blvd to Kettering Rd	1.494
Kettering Rd to US 98 (SR 700/McKethan Rd)	0.473
US 98 (SR 700/McKethan Rd) to US 301 (SR 35/Treiman Blvd)	0.367

SR 50 (Cortez Boulevard) from West of I-75 to US 301 (SR 35/Treiman Boulevard)

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**Table 2-6: Utilities**

UTILITY PROVIDER	CONTACT	UTILITY & LOCATION
ATT Distribution 146 Orange Place Maitland, FL 32751	Ms. Pam Cote	No Response
Bright House Networks – Hernando 2850 South Lecanto Highway Lecanto, FL 34461	Mr. Don Hamner 813-862-0522	<p><u>Aerial CATV – Fiber Optic and Coaxial</u></p> <ol style="list-style-type: none"> <li>1. Along SR 50 north side ROW line from west of Lockhart Rd to Nature Coast Blvd., crossing to south at Lockhart and Nature Coast Blvd.</li> <li>2. Along SR 50 north side ROW line from east of I-75 to Olivet Dr., and then crossing to south along Olivet Dr.</li> <li>3. Crossing to south at Parkland Dr.</li> <li>4. Along east side of US 301 from south to north of SR 50</li> <li>5. Along north side of SR 50 ROW from US 98 to US 301</li> <li>6. Crossing to south side at All Faiths United Church, Lakewood Dr., Tree Ln.</li> <li>7. Along south side of SR 50 from west of US 301 to east of US 301</li> </ol> <p><u>Buried CATV - Fiber Optic and Coaxial</u></p> <ol style="list-style-type: none"> <li>1. Along north side of ROW from Nature Coast Blvd. to east of I-75</li> <li>2. Crossing north to south along Cyril Dr.</li> </ol> <p>Crossing to south at Westlake Blvd.</p>
Withlacoochee River Electric Cooperative 30461 Commerce Drive San Antonio, Florida 33576	Mr. Kenny Adams	No Response

<p>CenturyLink 33 North Main Street Winter Garden, Florida 34787</p>	<p>Mr. Wade Rich 407-814-5383</p>	<p><u>Aerial Cable</u></p> <ol style="list-style-type: none"> <li>1. Crossing SR 50 from Cyril Dr to Amelia Ln., then following north ROW line behind fire station, and along north ROW line to 200 ft. east of US 98</li> <li>2. Crossing SR 50 at Olivet Dr.</li> </ol> <p><u>Buried Telephone</u></p> <ol style="list-style-type: none"> <li>1. Two lines crossing SR 50 at Ridge Manor Blvd.</li> <li>2. Two lines along north ROW line from east of US 98 for 1000 ft, one line continuing 800 ft, then crossing to south ROW line</li> <li>3. Along south ROW line from 1200 ft east of US 98 to east of US 301</li> <li>4. Crossing SR 50 at Westwood Dr.</li> <li>5. Along north ROW line from Westwood Dr. toward east, crossing to south at Lakewood Dr.</li> <li>6. Crossing SR 50 at Terrace Ridge Apartments</li> <li>7. Crossing SR 50 at Tree Ln. and 600 ft west of Tree Ln.</li> <li>8. Crossing SR 50 along west side of US 301</li> </ol>
<p>TECO Peoples Gas – St. Petersburg 1900 9<sup>th</sup> Ave. N. St. Petersburg, FL 33713</p>	<p>Mr. Ray Zwissler Engineering Technician 727-826-3333</p>	<p><u>Gas Line</u></p> <ol style="list-style-type: none"> <li>1. Along South side of SR 50 from Nature Coast Blvd. to east of Parkland Ave.</li> <li>2. Crossing to north side at Nature Coast Blvd.</li> <li>3. Crossing to north side at Bronson Rd./Windmere Rd.</li> </ol>

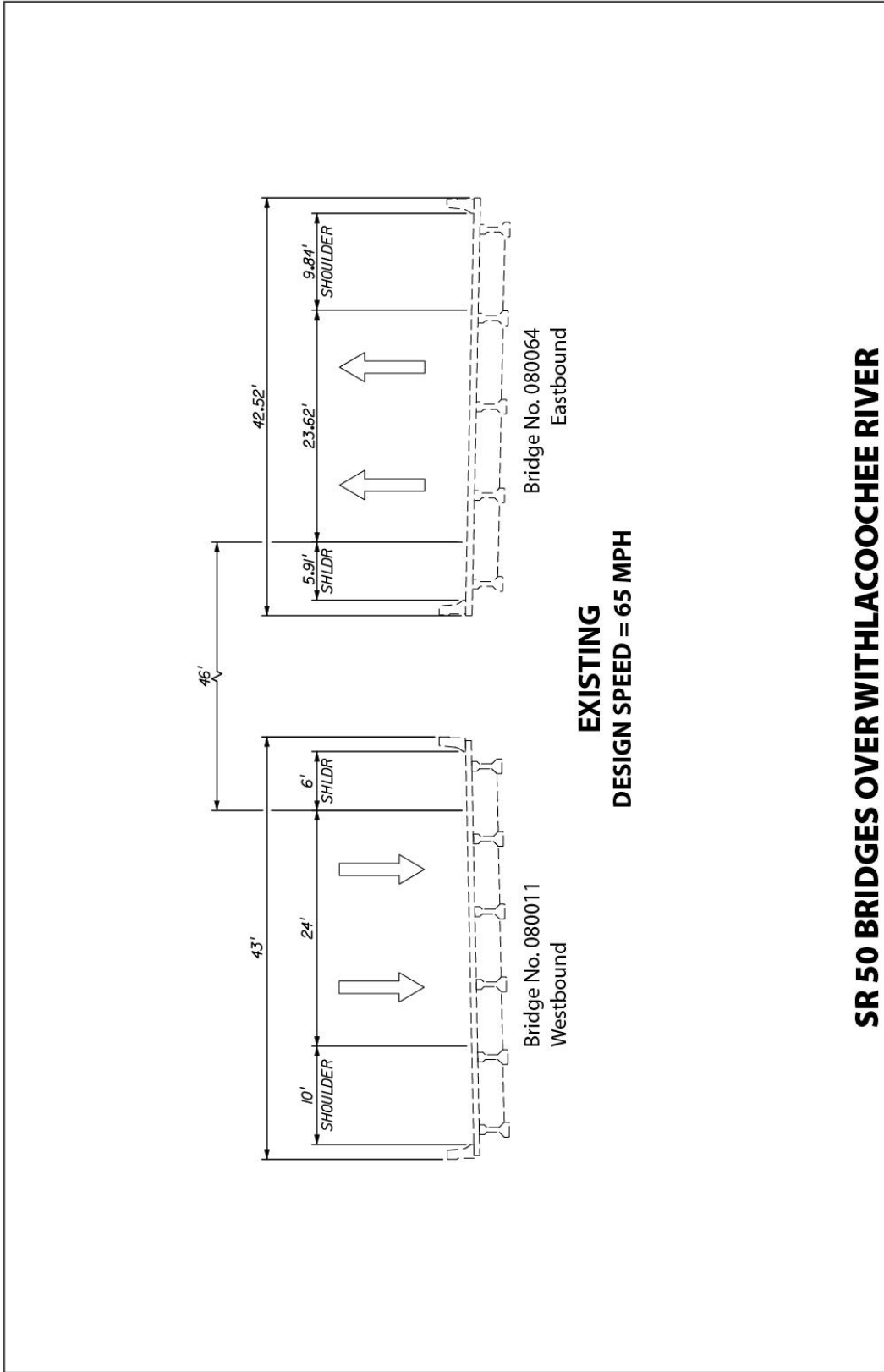
<p>Hernando County Utilities Department 21030 Cortez Boulevard Brooksville, Florida 34601</p>	<p>Ms. Cynthia Suter Project Assistant 352-540-4368</p>	<p><u>Water Main</u></p> <ol style="list-style-type: none"> <li>1. Along south side of SR 50, west of Lockhart Road to Sherman Hills Blvd.</li> <li>2. Crossing to north side at Nature Coast Blvd., Bronson Rd./Windmere Rd., Parkland Ave., and Sherman Hills Blvd.</li> <li>3. Along north side of SR 50 from Parkland Ave. to US 301, attached to Withlacoochee River bridge (WB)</li> <li>4. Crossing to south side at Kettering Rd., East Hernando Transfer Station, US 98, Lakewood Dr., United Methodist Church, and US 301, attached to Withlacoochee River bridge (EB)</li> </ol> <p><u>Force Main</u></p> <ol style="list-style-type: none"> <li>1. Along south side of SR 50 from Lockhart Rd. to Nature Coast Blvd., from Bronson Rd. to US 301</li> <li>2. Crossing to north side at Parkland Rd., east of Parkland Rd., and Sherman Hills Rd.</li> </ol>
<p>Sumter Electric Cooperative, Inc. 330 South US Highway 301 Sumterville, Florida 33585</p>	<p>Mr. Alan Kimbley</p>	<p>No Response</p>

## 2.16 EXISTING STRUCTURES

There are three existing bridge structures within the project limits. The Withlacoochee State Trail carries a shared-use path over SR 50 (Cortez Boulevard) on structure (Bridge No. 0809001) approximately 800 ft east of Kettering Road. No changes are necessary for the Withlacoochee State Trail Bridge since the proposed roadway improvements will fit beneath the bridge. In addition, SR 50 (Cortez Boulevard) is carried over the Withlacoochee River on two bridges (Bridge Nos. 080011 and 080064) (**Figure 2-3**). The existing conditions of the Withlacoochee River bridges are summarized below, since these bridges will require widening to accommodate proposed improvements.



Figure 2-3: Existing Bridge Typical Section



**SR 50 BRIDGES OVER WITHLACOOCHEE RIVER**



Project Development and Environment Study  
**SR 50 (Cortez Boulevard)**  
 from West of I-75 to US 301 (Treiman Boulevard)  
 Work Program Item Segment Number: 416732-2

**Existing  
Bridge Typical Section**

### **2.16.1 Eastbound Bridge 080064**

This bridge was built in 1998 and last inspected on February 10, 2011. The bridge has no fracture critical components and is not rated as being scour critical, structurally deficient, or functionally obsolete. There are five 42.5-ft wide, 48-ft long spans, for a total structure length of 240.2 ft, with a 24° skew. The concrete cast-in-place deck is supported on five prestressed Class III concrete beams and 24-inch-square precast concrete piles. The National Bridge Inventory (NBI) ratings are as follows:

- Deck: 8 (Very Good)
- Superstructure: 8 (Very Good)
- Substructure: 8 (Very Good)
- Performance Rating: Excellent
- Channel: 7 (Minor Damage)
- Sufficiency Rating: 98.6
- Health Index: 98.28

### **2.16.2 Westbound Bridge 080011**

This bridge was built in 1972 and last inspected on February 10, 2011. The bridge has no fracture critical components and is not rated as being scour critical, structurally deficient, or functionally obsolete. There are five 42.25-ft-wide, 48-ft-long spans, for a total structure length of 240 ft, with a 24° skew. The concrete cast-in-place deck is supported on six prestressed American Association of State Highway and Transportation Officials American Association of State Highway Transportation Officials (AASHTO) Type II girders and 18-inch-square precast concrete piles. The NBI ratings are as follows:

- Deck: 7 (Good)
- Superstructure: 7 (Good)
- Substructure: 8 (Very Good)
- Performance Rating: (Good)
- Channel: 7 (Minor Damage)
- Sufficiency Rating: 98.6
- Health Index: 93.99

## 2.17 REFERENCES

1. *Congestion Management Process 2010 State of the System Report*; Hernando County Metropolitan Planning Organization; December 20, 2010.
2. *Final Traffic Report*; Atkins North America, Inc.; Tampa, Florida; January 2014.
3. *Final Preliminary Stormwater Management Facility Report*; Atkins North America Inc.; Tampa, Florida; January 2014.
4. *Final Environmental Technical Compendium*; Atkins North America, Inc.; Tampa, Florida; January 2014.
5. *Project Development and Environment Manual*; Florida Department of Transportation; Tallahassee, Florida; 2013.  
<http://www.dot.state.fl.us/emo/pubs/pdeman/pdeman1.shtm>

## **3.0 PLANNING PHASE / CORRIDOR ANALYSIS**

### **3.1 NEED FOR PROJECT**

The purpose of this project is to widen SR 50 (Cortez Boulevard) from a four- to six-lane divided facility from west of I-75 to US 98 (SR 700/McKethan Road) and from a two- lane undivided to a four-lane divided facility from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard) in Hernando County, a distance of approximately 6.3 mi.

The widening will accommodate increases in traffic due to growth along the project corridor and the surrounding areas.

#### **3.1.1 Regional Connectivity**

SR 50 (Cortez Boulevard) is a major east-west arterial that crosses central Florida from the state's west coast to its east coast. SR 50 (Cortez Boulevard) across Hernando County provides connections to several regional and national north-south routes including US 19, Suncoast Parkway, US 41, I-75 and US 301 (SR 35/Treiman Boulevard). SR 50 (Cortez Boulevard) is designated as a truck route and provides excellent access to distribution centers in the Tampa Bay region, including the major Wal-Mart distribution center located south of SR 50 (Cortez Boulevard) between Lockhart Road and Kettering Road. SR 50 (Cortez Boulevard), from US 19 to I-75, is designated as a part of the highway component of the SIS. The SIS is a statewide transportation network that provides for high speed and high volume traffic movements within the state. The primary function of the system is to service interstate and regional commerce and long distance trips. The segment of SR 50 (Cortez Boulevard) from Lockhart Road to US 301 (SR 35/Treiman Boulevard) is not on the SIS. SR 50 (Cortez Boulevard) is part of the Regional Roadway Network designated by the West Central MPO Chairs' Coordinating Committee (CCC) and it is included in the Regional Roadway Network.

The project will expand SR 50 (Cortez Boulevard) from its current two- or four-lane divided rural typical section to a four- or six-lane divided facility utilizing suburban or rural typical sections. Recent studies indicate the need to provide six lanes for segments of the highway. This project will also help alleviate heavy congestion, improve safety and thereby reduce high accident rates, and provide for enhanced emergency response times and emergency evacuation.

#### **3.1.2 Plan Consistency**

The following improvements are included in the Hernando County MPO's *2035 Cost Affordable Long Range Transportation Plan*<sup>1</sup> (LRTP) adopted December 15, 2009 with amendments through November 19, 2013: SR 50 (Cortez Boulevard) from Lockhart Road to I-75 four-lane divided to six-lane divided, SR 50 (Cortez Boulevard) from I-75 to Kettering Road four-lane divided to six-lane divided, SR 50 (Cortez Boulevard) from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard) two-lane undivided to four-lane divided, and SR 50 from Windmere Road/ Bronson Boulevard to US 98 (McKethan Road) four-lane divided to six-lane divided. The project limits from Kettering Road to US 98 (SR 700/McKethan Road) are not currently included in the Cost Affordable Project Table for years 2015-2035 in the LRTP.

The Transportation Element (2035 Highway Network Map) of the Hernando County Comprehensive Plan last amended in January 2013 includes SR 50 (Cortez Boulevard) from Lockhart Road to US 98 (SR 700/McKethan Road) as an eight-lane divided facility and SR 50 (Cortez Boulevard) from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard) is identified as six-lane divided facility.

The *Hernando County MPO Transportation Improvement Program (TIP) Fiscal Years 2013/2014 to 2017/2018* (adopted June 25, 2013 and amended November 19, 2013), Priority List of Projects includes the widening of SR 50 (Cortez Boulevard) from Lockhart Road to McKethan Road/ US 98 from four lanes to six lanes and the widening of SR 50 (Cortez Boulevard) from US 98 (McKethan Rd) to US 301 (Treiman Blvd) from two to four lanes. Two design segments include SR 50 (Cortez Boulevard) from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard) (Work Program Item Segment Number: 416732-3) and SR 50 (Cortez Boulevard) from Windmere Rd./ Bronson Blvd. to US 98 (SR 700/McKethan Road) (Work Program Item Segment Number: 416732-4). Project segment 416732-3 is identified as two-lane to four-lane improvement and 416732-4 is identified as a four-lane to six-lane improvement in the Committed Projects (2009 to 2014) section of the *2035 Cost Affordable LRTP*. The Statewide Transportation Improvement Program (STIP) has been amended to include projects 416732-3 and 416732-4.

This project will widen SR 50 (Cortez Boulevard) to a four- and six-lane divided arterial facility. Frontage roads may be constructed by others in the future. Hernando County Frontage Road Ordinance Chapter 24 Roads and Bridges, Article 1, Sec. 24-2 (c) states that developers of properties adjacent to the major arterial highway grid must provide, at the developer's expense, a frontage road from property line to property line parallel to the arterial highway upon demonstration of need and demand by the county.

According to Section 1 of the *Hernando County Comprehensive Plan (amended January 8, 2013)*, two Planned Development Districts (PDDs) are located within the project area; I-75/SR 50 and Hickory Hill. The I-75/SR 50 PDD will allow for commercial, industrial, residential, multi-family, recreation, and public facilities. Within this PDD is the Sunrise Developments of Regional Impact (DRI) approved to be located in the southeast quadrant of I-75 and SR 50 that is proposed to include mixed use residential, retail commercial, and office. The I-75/SR 50 PDD is also identified in the *Hernando County Comprehensive Plan, Map G - Regional Attractors and Regional Activity Centers*. The Hickory Hill PDD is located further south of SR 50 (Cortez Boulevard), east of Lockhart Road. Hickory Hill has been designated as both a PDD and DRI. This will be a master planned residential community with recreational amenities, integrated neighborhood commercial, and ancillary uses.

### **3.1.3 Emergency Evacuation**

SR 50 (Cortez Boulevard) is designated as an emergency evacuation route from west of US 19 to the Sumter County Line and is shown on the Florida Division of Emergency Management's evacuation route network.

### **3.1.4 Future Population and Employment Growth**

SR 50 (Cortez Boulevard) serves as a regional roadway and one of only three east-west major roadways in Hernando County. Employment estimates for Hernando County from 2006 to 2035 are expected to grow from 55,900 to 121,576 (an increase of 54%). Population is also expected to increase from 154,245 to 308,584 (an increase of 50%) from 2006 to 2035.

### **3.1.5 Existing Traffic**

Under existing conditions, SR 50 (Cortez Boulevard) is a four-lane divided arterial facility from west of I-75 to east of US 98 (SR 700/McKethan Road) and a two-lane undivided arterial from east of US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard). Existing traffic count data for 2011 which was collected for the purpose of this study indicates the following:

- The segment of SR 50 (Cortez Boulevard) from Lockhart Road to Kettering Road carries AADT volumes that range from 13,700 to 20,200.
- The segment of SR 50 (Cortez Boulevard) from Kettering Road to US 98 (SR 700/McKethan Road) carries an AADT volume of 13,400.
- The segment of SR 50 (Cortez Boulevard) from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard) carries an AADT volume of 7,300.

A planning level segment analysis indicates that SR 50 (Cortez Boulevard) from Lockhart Road to Kettering Road operates at LOS B. SR 50 (Cortez Boulevard) from Kettering Road to US 301 (SR 35/Treiman Boulevard) operates at LOS A.

### **3.1.6 Future Traffic**

The Hernando County MPO's *2035 Cost Affordable Long Range Transportation Plan* indicates the following:

- SR 50 (Cortez Boulevard) from west of I-75 to Kettering Road will be improved to a six-lane divided arterial facility between 2015 and 2025. Further improvements will be made to the same section of the roadway between 2026 and 2035 where a two-lane, bi-directional frontage road will be added on each side of mainline SR 50 (Cortez Boulevard).
- SR 50 (Cortez Boulevard) from Kettering Road to US 98 (SR 700/McKethan Road) will continue to operate as a four-lane arterial facility.
- SR 50 (Cortez Boulevard) from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard) will be improved to a four-lane arterial facility between 2026 and 2035.

The Tampa Bay Regional Planning Model (TBRPM) – 2035 Cost Affordable Model, which is the basis for the Hernando MPO's adopted 2035 LRTP, indicates the following:

- The segment of SR 50 (Cortez Boulevard) from Lockhart Road to Kettering Road carries AADT volumes that range from 63,600 to 79,100. The frontage roads that parallel SR 50 (Cortez Boulevard) from Lockhart Road to Kettering Road carry AADT volumes that range from 6,900 to 15,100.

- The segment of SR 50 (Cortez Boulevard) from Kettering Road to US 98 (SR 700/McKethan Road) carries an AADT volume of 52,300.
- The segment of SR 50 (Cortez Boulevard) from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard) carries an AADT volume of 24,700.

Under the above improved conditions for 2035, SR 50 (Cortez Boulevard) from Lockhart Road to Kettering Road will operate at LOS B – LOS C. SR 50 (Cortez Boulevard) from Kettering Road to US 98 (SR 700/McKethan Road) will operate at LOS F and SR 50 (Cortez Boulevard) from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard) will operate at LOS A. However, the proposed improvement of SR 50 (Cortez Boulevard) to a four- and six-lane arterial will make the entire study corridor operate at acceptable LOS conditions.

The 2035 No-Build planning and operational level analyses conducted for the purpose of these studies indicate that all of the segments and intersections along SR 50 (Cortez Boulevard) between Lockhart Road and US 301 (SR 35/Treiman Boulevard) will operate at failing LOS conditions (LOS F).

### 3.1.7 Safety

Safety within the SR 50 (Cortez Boulevard) corridor will be enhanced due to the implementation of bi-directional, two-lane frontage roads on either side of this facility and widening of the SR 50 (Cortez Boulevard) mainline from four to six lanes. Congestion will be reduced on SR 50 (Cortez Boulevard) by separating the local trips accessing land uses along this regional roadway. Also, limiting access along SR 50 (Cortez Boulevard) to only frontage road connections will significantly reduce side friction and therefore, the potential for conflicts with other vehicles.

Average safety ratios for years 2005-2009 for the intersections along SR 50 (Cortez Boulevard) within the study area indicate that SR 50 (Cortez Boulevard) crash rates are higher than the statewide averages at two major intersections. The SR 50 (Cortez Boulevard) segment from east of Bronson Boulevard to west of Kettering Road has a crash rate higher than the statewide average. The average safety ratios for intersections and segments are listed in **Table 3-1**.

**Table 3-1: Safety Ratios**

SR 50 (Cortez Boulevard) Intersection	Safety Ratio
Bronson Boulevard/Windmere Road	1.640
Kettering Road/Croom Rital Road	0.824
US 98 (SR 700/McKethan Road)/Olancha Road	1.595
US 301 (SR 35/Treiman Boulevard)	0.872
SR 50 (Cortez Boulevard) Segment	Safety Ratio
Lockhart Rd. to west of I-75	0.490
Bronson Blvd. to Kettering Rd.	1.494
Kettering Rd. to US 98 (McKethan Rd.)	0.473
US 98 (McKethan Rd.) to US 301 (Treiman Blvd.)	0.367

### **3.1.8 Transit**

Currently, there is no fixed route bus service within the corridor. The West Central Florida MPO CCC Regional Cost Affordable Transit Facilities and Services 2010-2025 identifies no planned transit facilities and services along this portion of SR 50 (Cortez Boulevard). The Hernando County MPO's 2035 LRTP Transit Needs Plan Local Transit Route Needs identifies proposed local Route 90 along a portion of the project limits from SR 50 (Cortez Boulevard) from Lockhart Road to US 98 (SR 700/McKethan Road). The Hernando County MPO's 2035 LRTP Needs Assessment Transit Networks identifies a proposed express bus route along SR 50 (Cortez Boulevard) west of I-75.

Hernando County has a cooperative effort, called THE Bus, which consists of the Hernando County Board of County Commissioners, Hernando County MPO, City of Brooksville, FDOT, Federal Transit Administration and McDonald Transit Associates, Inc. This cooperative effort provides service to Hernando County. There are no current bus routes along SR 50 (Cortez Boulevard) within the limits of this project; however, other study initiatives of the Tampa Bay Area Regional Transportation Authority (TBARTA) may extend service to within the subject corridor in the future. TBARTA and FDOT are currently conducting a study to explore transit connections from Hillsborough County to the south northerly to Citrus County. The limits of this SR 50 (Cortez Boulevard) corridor are included within the limits of that transit evaluation study.

### **3.1.9 Access to Intermodal Facilities and Freight Activity Centers**

Access to intermodal facilities is an important consideration in the development of the Hernando County transportation system. SR 50 (Cortez Boulevard) is a designated truck route that accesses one of the County's primary industrial areas. The Walmart Peninsular Florida Distribution Center accesses SR 50 (Cortez Boulevard) at Kettering Road. The countywide truck routing system provides a continuous network of arterial roadways designed to handle the through movement of heavy trucks. This system must also provide a high level of accessibility to all parts of the county. Provision of the frontage roads and widening from four to six lanes and from two to four lanes within the SR 50 (Cortez Boulevard) corridor should enhance truck access to the business community. This is due to enhanced traffic flow on the adjacent SIS facility and improved level of service that results from an effective frontage road and collector-distributor system.

### **3.1.10 Relief to Parallel Facilities**

The closest parallel facility is SR 52, approximately 10 mi to the south. As with SR 50 (Cortez Boulevard), SR 52 connects US 19 to I-75 and US 301 (SR 35/Treiman Boulevard). Therefore, widening SR 50 (Cortez Boulevard) will provide an improved link in the regional network that could provide relief for those trips between US 19, I-75 and US 301 (SR 35/Treiman Boulevard) that would otherwise use SR 52.

### **3.1.11 Bikeways and Sidewalks**

The existing rural cross-section design incorporates open swales with no sidewalks. Paved shoulders functioning as 'undesignated' bike lanes provide some utility for bicyclists.



The Hernando County MPO's 2035 Cost Affordable LRTP 2035 Future Planned Bicycle Facilities identifies this portion of SR 50 (Cortez Boulevard) as having existing bicycle facilities, paved shoulder/bike lane and identifies a multi-use trail (the Withlacoochee State Trail) and two trailheads, one on SR 50 (Cortez Boulevard) at Kettering Road and SR 50 (Cortez Boulevard) east of Kettering Road.

Integration of non-motorized transportation is an important component of a balanced transportation system within an urbanized area. The proposed improvements should safely accommodate bicycles and pedestrians to the greatest extent possible. Typically the frontage roads have low volumes and operating speeds, and provide more direct access to commercial areas than will an SIS roadway such as SR 50 (Cortez Boulevard). The proposed cross section will include 5-ft wide sidewalks. The future SR 50 (Cortez Boulevard) travel lanes will continue to be 12 ft in width. Bicycles will be accommodated on paved shoulders or bike lanes. Any pedestrian and bicycle features along SR 50 (Cortez Boulevard) should also provide a direct connection to the Withlacoochee State Trail, which crosses over SR 50 on structure near Kettering Road. There is also a trailhead on Kettering Road approximately 400 ft south of SR 50 (Cortez Boulevard).

Both Hernando County and the FDEP Office of Greenways and Trails (OGT) have requested and recommended, respectively, that a 12 ft multi-use trail be constructed within the ROW as part of this project to connect to the Withlacoochee Trail and lay groundwork for connections to nationally and regionally significant trails in the County. Since a multi-use trail is not consistent with the LRTP, and the County cannot commit to maintain it, no multi-use trail is proposed. Sidewalks, 5 ft wide, are currently being proposed in each direction, including connections to the Withlacoochee Trail.

## **3.2 EFFICIENT TRANSPORTATION DECISION MAKING**

This project has been screened through the Efficient Transportation Decision Making (ETDM) system.

### **3.2.1 ETDM Planning Screen**

ETDM #3391 was a Planning Screen publication prepared by Hernando County. This publication addressed the County's intent to implement SR 50 Frontage Roads from Lockhart Road to Kettering Road. ETDM #5171 was a Planning Screen publication prepared by Hernando County. This publication covered a portion of the project limits from Kettering Road to US 98 (SR 700/McKethan Road). This publication addressed the proposed six laning of SR 50. The section of SR 50 from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard) has not been published in any prior screening event.

### **3.2.2 ETDM Programming Screen**

FDOT submitted this project in the ETDM Environmental Screening Tool (EST) simultaneously with the Advance Notification (AN) package (ETDM #3391 – SR 50 [Cortez Boulevard] from Lockhart Road to US 301). During this 45-day review, the Environmental Technical Advisory Team (ETAT) provided their comments on the project's purpose and need, and issued their

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SR 50 (Cortez Boulevard) from West of I-75 to US 301 (SR 35/Treiman Boulevard)

Work Program Item Segment Number: 416732-2

Degree of Effect (DOE) findings by resource area for each of the proposed corridors. Upon completion of the ETDM Programming Screen review, a *Programming Summary Report* was developed and entered into the EST which provided the FDOT's response to each DOE finding as well as discussion about the overall project. As a result of the AN and the EST screening, there were no controversial comments received.

### **3.3 REFERENCES**

1. 2035 Long Range Transportation Plan Hernando County Metropolitan Planning Organization; Adopted December 15, 2009, including amendments through November 19, 2013.

## 4.0 PROJECT DESIGN STANDARDS

### 4.1 DESIGN CRITERIA

In order for the proposed roadway improvements to fulfill the objective of accommodating motorized vehicles, and where appropriate, pedestrians and bicyclists in a safe and efficient manner, the proposed typical sections must adhere to specific design standards. The FDOT *Plans Preparation Manual*<sup>1</sup>, AASHTO – *A Policy on Geometric Design of Highway Streets*<sup>2</sup>, the FDOT *Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways* (Commonly known as the “*Florida Greenbook*”)<sup>3</sup>, and the District Seven Straight Line Diagrams (SLD’s) were used as references in the development of proposed design criteria for this project. **Table 4-1** presents the minimum design criteria used for this effort and their respective values or designations.

**Table 4-1: Proposed Minimum Design Criteria**

Design Element	Value/Designation High-Speed Suburban	Value/Designation Rural	Documentation
Functional Classification	Rural Principal Arterial - Other		2000 Urban Area Boundaries and Federal Functional Classification Maps, FDOT SLD
Access Classification	Access Class 3 - Lockhart Rd to Kettering Rd Access Class 4 - Kettering Rd to US 301		FDOT
Strategic Intermodal System (SIS) Designation	Lockhart Rd to I-75		FDOT SIS System Map
Level of Service	LOS C: Lockhart Rd to I-75 (SIS) LOS D: I-75 to US 301		FDOT 2009 Quality/Level of Service Handbook
Design Speed	50 mph	65 mph	PPM Section 2.16 FDOT PPM Tables 1.9.1 & 1.9.2
Travel Lane Width	12 ft		FDOT PPM Table 2.1.1
Median Width	30 ft	40 ft	PPM Section 2.16 FDOT PPM Tables 2.2.1
Shoulder Width: 6-lane Inside Outside Withlacoochee River Bridge	6.5 ft paved 8 ft. (5 ft paved) NA	Low Volume AADT 8 ft (0 ft paved) 8 ft (5 ft paved) 10 ft (inside and outside)	PPM Figure 2.16.2 FDOT PPM Table 2.3.2 FDOT PPM Figure 2.0.1
Shoulder Width: 4-lane Inside Outside	NA	Low Volume AADT 6 ft (0 ft paved) 8 ft (5 ft paved)	PPM Figure 2.16.2 FDOT PPM Table 2.3.2
Sidewalk Width	5 ft		PPM Section 8.3.1
Border Width	29 ft	40 ft	PPM Section 2.16.7 FDOT PPM Table 2.5.1
Bicycle Lane Width	5 ft	5 ft Paved Shoulder	PPM Figure 2.16.2 PPM Section 8.4.3
Recoverable Terrain	24 ft	36 ft	PPM Table 2.11.11

**Table 4-1: Proposed Minimum Design Criteria (cont.)**

Design Element	Value/Designation High-Speed Suburban	Value/Designation Rural	Documentation
Front Slopes Fill Height (ft) 0 – 5 ft 5 - 10 ft 10 – 20 ft >20 ft	1:6 1:6 to CZ, 1:4 1:6 to CZ, 1:3 1:2 w/ Guardrail		FDOT PPM Table 2.4.1
Back Slopes	1:4 or 1:3 w/ Standard Trapezoidal Ditch and 1:6 Front Slope		
Transverse Slopes	1:4		
Desirable Length of Horizontal Curve	15V = 750 ft.	15V = 975 ft.	FDOT PPM Table 2.8.2a
Minimum Length of Horizontal Curve	400 ft		
Maximum Curvature	6° 30' 00"	4° 15' 00"	FDOT PPM Tables 2.8.3, 2.9.1, 2.9.2
Maximum Horizontal Curve using Normal Cross Slope Rural	2° 00' 00"	0° 15' 00"	FDOT PPM Table 2.8.4
Max. Rate Superelevation	0.05	0.10	FDOT PPM Section 2.16.10 FDOT PPM Section 2.9
Superelevation Transition Rate	1:160	1:200	FDOT PPM Table 2.9.3
Max. Deflection w/o Horizontal Curve	0° 45' 00"		FDOT PPM Section 2.16.9 FDOT PPM Table 2.8.1a
Maximum Grade (Rolling Terrain)	6%	4%	FDOT PPM Section 2.16.8
Roadway Base Clearance	1 ft.	3 ft	FDOT PPM Table 2.6.3
Maximum Grade Algebraic Difference w/o Vertical Curve	0.60%	0.30%	FDOT PPM Table 2.6.2
Crest Vertical Curve "K" Value	136	313	FDOT PPM Table 2.8.5
Minimum Length of Crest Vertical Curve	300 ft	450 ft	
Sag Vertical Curve "K" Value	96	157	FDOT PPM Table 2.8.6
Minimum Length of Sag Vertical Curve	200 ft	350 ft	
Stopping Sight Distance: grades of 2% or less	425 ft	645 ft	FDOT PPM Table 2.7.1
Typical Cross Section Slopes (ft/ft)	0.02, 0.02, 0.03		FDOT PPM Figure 2.1.1
Minimum Vertical Clearance for Structures over Side Streets	16'- 6"		FDOT PPM Table 2.10.1
Minimum Vertical Clearance for Overhead Sign Structures	17'- 6"		FDOT PPM Table 2.10.2

## 4.2 REFERENCES

1. *Plans Preparation Manual*; Florida Department of Transportation; Tallahassee, Florida; January 2014.
2. *A Policy on Geometric Design of Highways and Streets*; American Association of State Highway and Transportation Officials; 2004.
3. *Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways* (Commonly known as the “*Florida Greenbook*”); Florida Department of Transportation; Tallahassee, Florida; October 16, 2007.

## **5.0 ALTERNATIVE ALIGNMENT ANALYSIS**

SR 50 (Cortez Boulevard) is planned to be widened from four to six lanes from west of I-75 to US 98 (SR 700/Treiman Boulevard) and from two to four lanes from US 98 (SR 700/Treiman Boulevard) to US 301 (SR 35/Treiman Boulevard) in Hernando County using Rural Principal Arterial standards. As such, the proposed roadway must meet certain design and operational criteria as established by the Florida Legislature. The focus of the alternative alignment analysis is to identify the best alignment, typical section, and other major design features to safely accommodate traffic within the corridor and how to best avoid and minimize effects to natural and social resources. The Build Alternative is then evaluated with regards to needs, criteria, costs, and impacts, and compared to the No-Build Alternative.

### **5.1 NO-BUILD ALTERNATIVE**

The No-Build Alternative would not construct the SR 50 (Cortez Boulevard) improvements. It would leave the existing roadway in its current configuration, except for other intersection, pedestrian, bicycle, or safety improvements identified in the Hernando County MPO's 2035 LRTP<sup>1</sup>.

However, the No-Build Alternative option fails to fulfill the project's purpose and need or meet any of the goals of the MPO's LRTP. The advantages and disadvantages of the No-Build Alternative are as follows:

#### **5.1.1 Advantages**

- No expenditure of public funds for design, ROW acquisition, utility relocation, or construction would be required.
- Traffic would not be disrupted due to construction, thus avoiding inconveniences to local businesses and residences.
- No environmental degradation or disruption of natural resources.

#### **5.1.2 Disadvantages**

- Does not meet the established purpose and need for the project.
- Substandard LOS for the existing roadway network.
- Reduced economic viability and mobility due to traffic congestion.
- Increased traffic congestion causing increased road user cost due to travel delay.
- Deterioration of air quality caused by traffic congestion and delays.
- Increased roadway maintenance costs.
- Inconsistent with the plans and goals of the Hernando County MPO.

The No-Build Alternative remained a viable alternative throughout the PD&E study.

## **5.2 TRANSPORTATION SYSTEMS MANAGEMENT**

Transportation Systems Management (TSM) alternatives include those activities that maximize the efficiency of the existing system. Possible options include ride-sharing, fringe parking, the addition of turn lanes, traffic signal timing optimization, and access management measures. While TSM options will be incorporated into the proposed project to the greatest extent possible, TSM improvements alone would provide little to no contributions to meeting the project's purpose and need.

Multi-modal solutions to substandard roadways are generally only effective within highly urbanized or constrained corridors. Specific examples of multi-modal alternatives are mass transit systems such as bus or rail options.

While the TSM alternative can provide improved traffic operations, the TSM alternative on its own fails to fulfill the purpose and need for the project through the design year 2035. Therefore, the TSM alternative was not considered as a solution for the expected deficiencies along SR 50 (Cortez Boulevard) in the design year 2035.

## **5.3 MULTI-MODAL ALTERNATIVES**

### **5.3.1 Transit Alternatives**

Currently, there is no fixed route bus service within the corridor. The West Central Florida MPO Chairs' Coordinating Committee (CCC) Regional Cost Affordable Transit Facilities and Services 2010-2025 identifies no planned transit facilities and services along this portion of SR 50 (Cortez Boulevard). The Hernando County MPO's 2035 LRTP Transit Needs Plan Local Transit Route Needs identifies proposed local Route 90 along a portion of the project limits from SR 50 (Cortez Boulevard) from west of I-75 to US 98 (SR 700/McKethan Road). The Hernando County MPO's 2035 LRTP Needs Assessment Transit Networks identifies a proposed express bus route along SR 50 (Cortez Boulevard) west of I-75.

### **5.3.2 Non-motorized Transportation**

The proposed Build Alternatives include 5-ft paved shoulders to accommodate bicyclists and 5-ft sidewalks throughout the SR 50 (Cortez Boulevard) corridor. Sidewalk connections to the Withlacoochee State Trail are proposed from both sides of SR 50 (Cortez Boulevard).

### **5.3.3 Multi-modal Alternative Conclusion**

While the multi-modal and transit alternatives also have the potential to improve traffic operations along the corridor, these alternatives fail to fulfill the needs and goals of the project on their own within the study area. Planned projects to add transit systems and sidewalks and shoulders for bicycles will not eliminate the need for improvements to SR 50 (Cortez Boulevard). While multi-modal features are integral parts of the Build Alternative in the form of roadway lanes, sidewalks, and bike lanes, the multi-modal alternative fails to fulfill the purpose

and need for the project. Therefore, multi-modal/transit alternatives were not considered as stand-alone solutions for the existing and expected deficiencies within the study area.

## **5.4 ALTERNATIVE EVALUATION**

Alternatives were considered and evaluated as described in the following sections.

### **5.4.1 Design Criteria**

In order for the proposed roadway improvements to fulfill the objective of accommodating motorized vehicles, and where appropriate, pedestrians and bicyclists in a safe and efficient manner, the proposed typical sections must adhere to specific design standards. The minimum design criteria used for this effort and their respective values or designations was presented previously in **Table 4-1**.

### **5.4.2 Typical Sections**

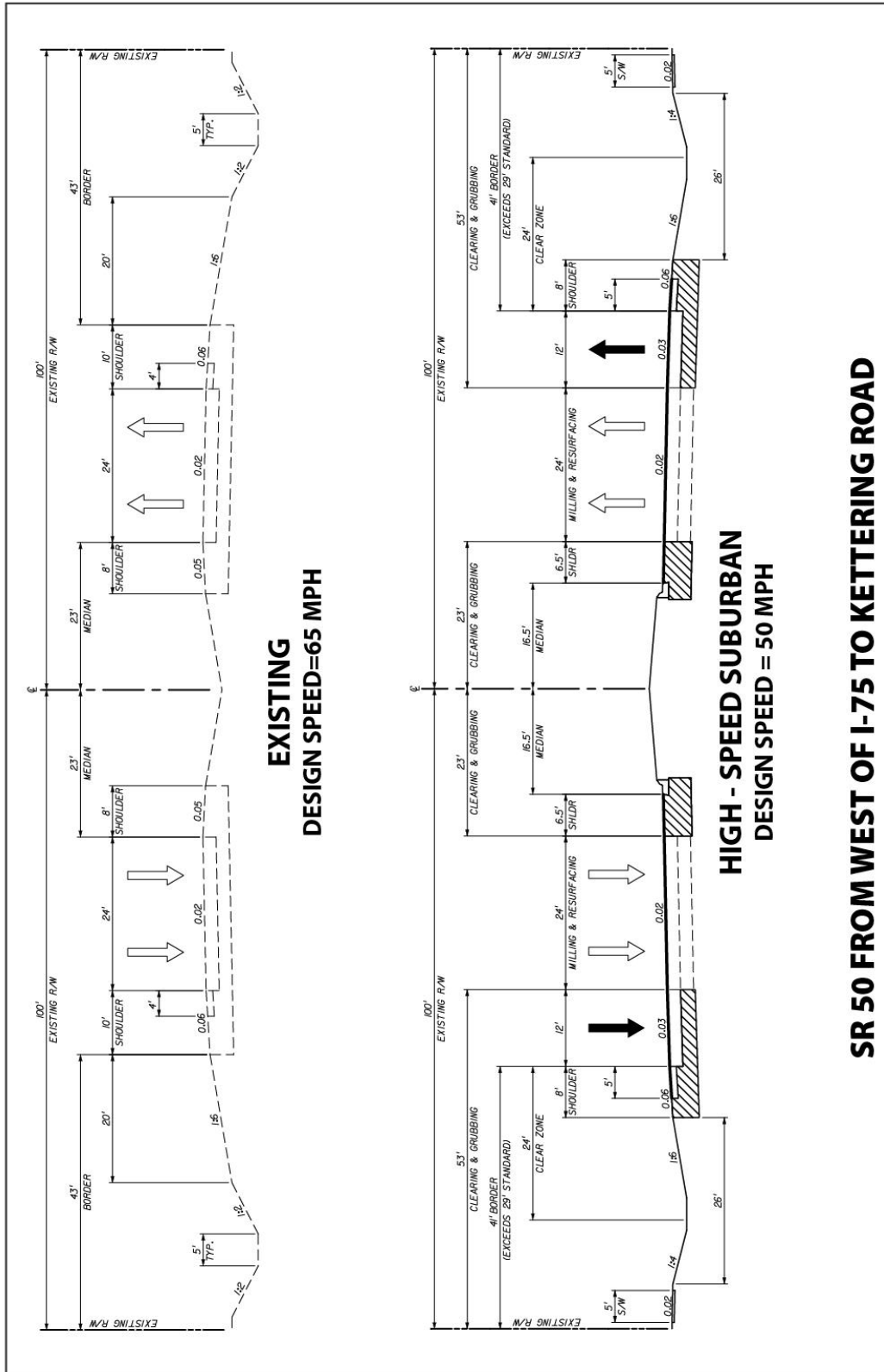
Urban, rural, and suburban typical sections were considered throughout the project limits. In general, construction costs are highest for urban, and lowest for rural. All three alternative typical sections would fit within existing ROW. An urban typical section would not be appropriate in the rural areas, east of Kettering Road, where there is a high degree of access control with only one traffic signal, and where the land is mostly vacant, low-density rural residential or state forest in nature. In addition, there is little existing or planned commercial development in this area, and travel speeds are higher. East of the project limits, the area is also rural in nature, dominated by the Withlacoochee State Forest. Therefore, a rural typical section would be appropriate east of Kettering Road.

West of the project area, the adjacent land use is also rural in nature with a high degree of access control and few traffic signals. However, commercial development fronts SR 50 (Cortez Boulevard) near the I-75 interchange, with existing residential and planned mixed-use development behind the commercial area. SR 50 (Cortez Boulevard) is planned as an urban roadway in the immediate vicinity of the I-75 interchange. Therefore, a suburban typical section is appropriate from Lockhart Road to west of I-75, and from east of I-75 to Kettering Road, as a transition from the rural areas to the east and west to the urban roadway at the interchange.

**Figure 5-1** shows the existing and proposed typical sections that were evaluated for the Build Alternative from west of I-75 to Kettering Road. The proposed typical section is a six-lane divided suburban roadway with a 46-ft median, which includes a 33-ft raised grass median, including Type E curb and gutter. Three 12-ft travel lanes with 6.5-ft inside shoulders and 8-ft flush outside shoulders (5 ft paved), are provided in each direction. Bicyclists will be accommodated by the outside 5-ft paved shoulder in each direction. This typical section also contains open drainage ditches that parallel both sides of the roadway. Continuous sidewalks, 5 ft wide, are provided adjacent to the ROW line. The proposed design speed for this typical section is 50 mph, the minimum design speed for a SIS facility. This typical section fits within the existing 200 ft of ROW.



Figure 5-1: Proposed Roadway Typical Section  
from West of I-75 to Kettering Road



Proposed Roadway  
Typical Section

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**Figure 5-2** shows the existing and proposed typical sections that were evaluated for the Build Alternative between Kettering Road and US 98 (SR 700/McKethan Road). The proposed typical section includes both inside and outside widening to result in a six-lane divided rural roadway with a 40-ft depressed grass median and flush inside and outside shoulders. Since the AADT volumes are considered low volume east of Kettering Road, 8-ft inside unpaved shoulders and 8-ft outside shoulders (5 ft paved), are provided in each direction. This typical section also contains open drainage ditches and 5 ft continuous sidewalks adjacent to the ROW line. The proposed design speed for this typical section is 65 mph. This typical section fits within the existing 200 ft (minimum) of ROW with the Design Variation approved for the substandard border width (36 ft of 40 ft required). A preliminary drainage review supports the reduced border width. In some areas, the existing ROW width will allow the standard 40-ft border. In other areas where right turn lanes are needed, the standard border width will be reduced to fit within existing ROW.

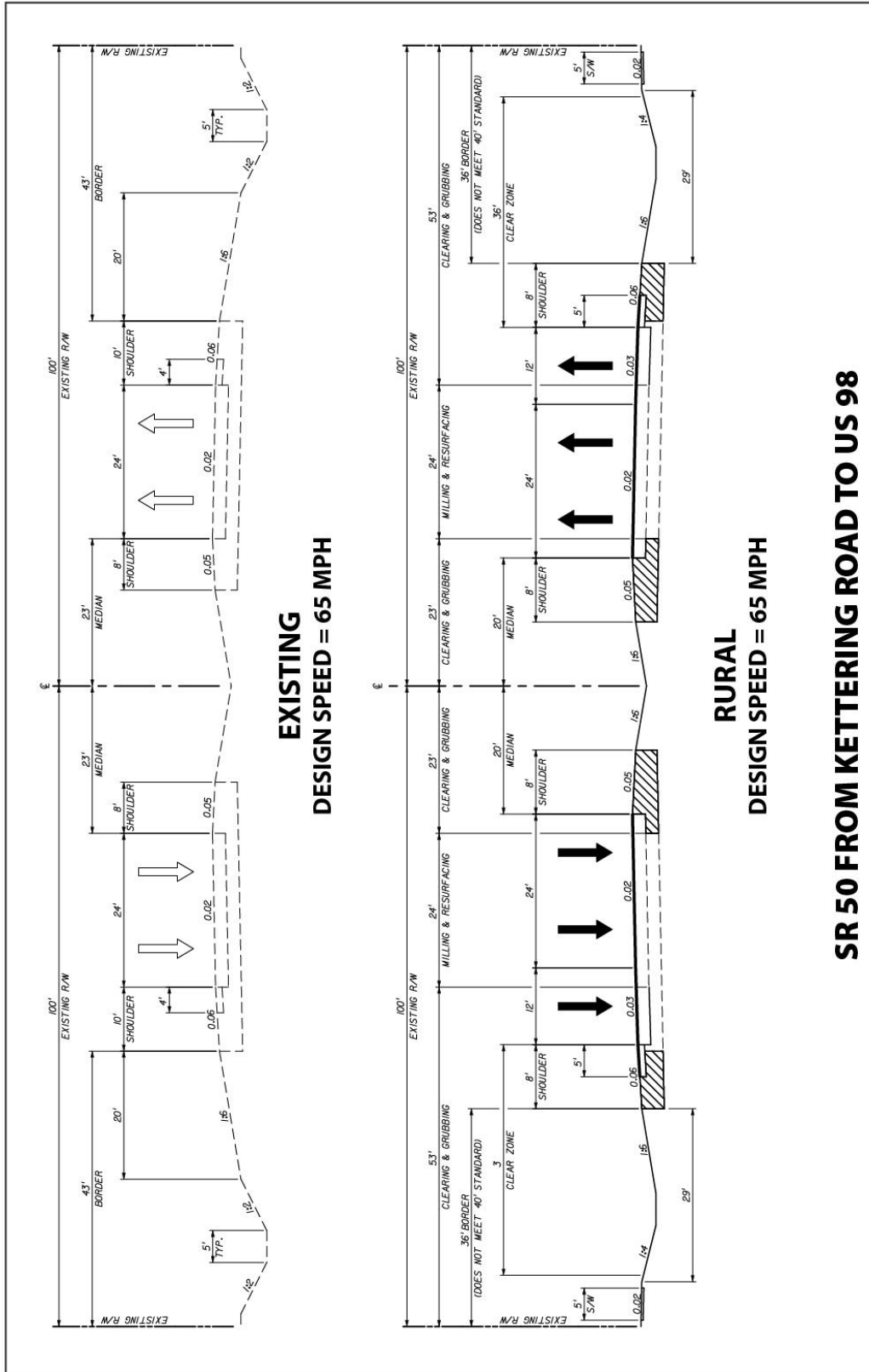
**Figure 5-3** shows the existing and proposed typical section from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard). The proposed improvements in this segment consists of widening SR 50 (Cortez Boulevard) from a two-lane undivided rural roadway to a four-lane divided roadway by removing the crown from the existing roadway, which will become the new westbound lanes. New pavement, 24 ft wide, will be constructed 40 ft south of the existing roadway, to become the new eastbound roadway. The completed four-lane rural roadway will have a 40-ft depressed grass median and flush 6-ft unpaved inside shoulders and 8-ft outside shoulders (5 ft paved). This typical section also contains open drainage ditches and 5 ft continuous sidewalks adjacent to the ROW line. The proposed design speed for this typical section is 65 mph. This typical section fits within the existing 200 ft (minimum) of ROW.

**Figure 5-4** shows the widening of the two existing bridges over the Withlacoochee River. In order to facilitate MOT and limit the bridge widening to just one side of each bridge, the proposed roadway median width will transition from 40 ft to 54 ft on each approach. The outside concrete barrier of each bridge will be removed, along with the deck to the center of the first beam. Each bridge will then be widened to accommodate three 12-ft lanes, 10-ft inside and outside shoulders, and a 5-ft sidewalk separated from the shoulder with a concrete barrier. Florida I-Beams will support the widened portion of the deck. In addition, the inside barrier on the westbound bridge will be replaced to meet current standards.

### **5.4.3 Horizontal and Vertical Alignment**


Since the improvements are proposed to an existing facility, the Build Alternative will generally follow the existing horizontal alignment. Alignment alternatives that widen to the north and south sides were considered. The existing two-lane undivided section from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard) was originally constructed such that future widening to a rural divided multilane highway would accommodate a 40-ft median centered within the ROW. Since the proposed Build Alternative typical section width throughout the study area fit within the existing 200-ft ROW, a centered alignment will minimize ROW and construction costs, residential and business relocations, environmental impacts, and avoid impacts to the Withlacoochee State Forest and the Withlacoochee State Trail overpass.

Figure 5-2: Proposed Roadway Typical Section  
from Kettering Road to US 98 (SR 700/McKethan Road)

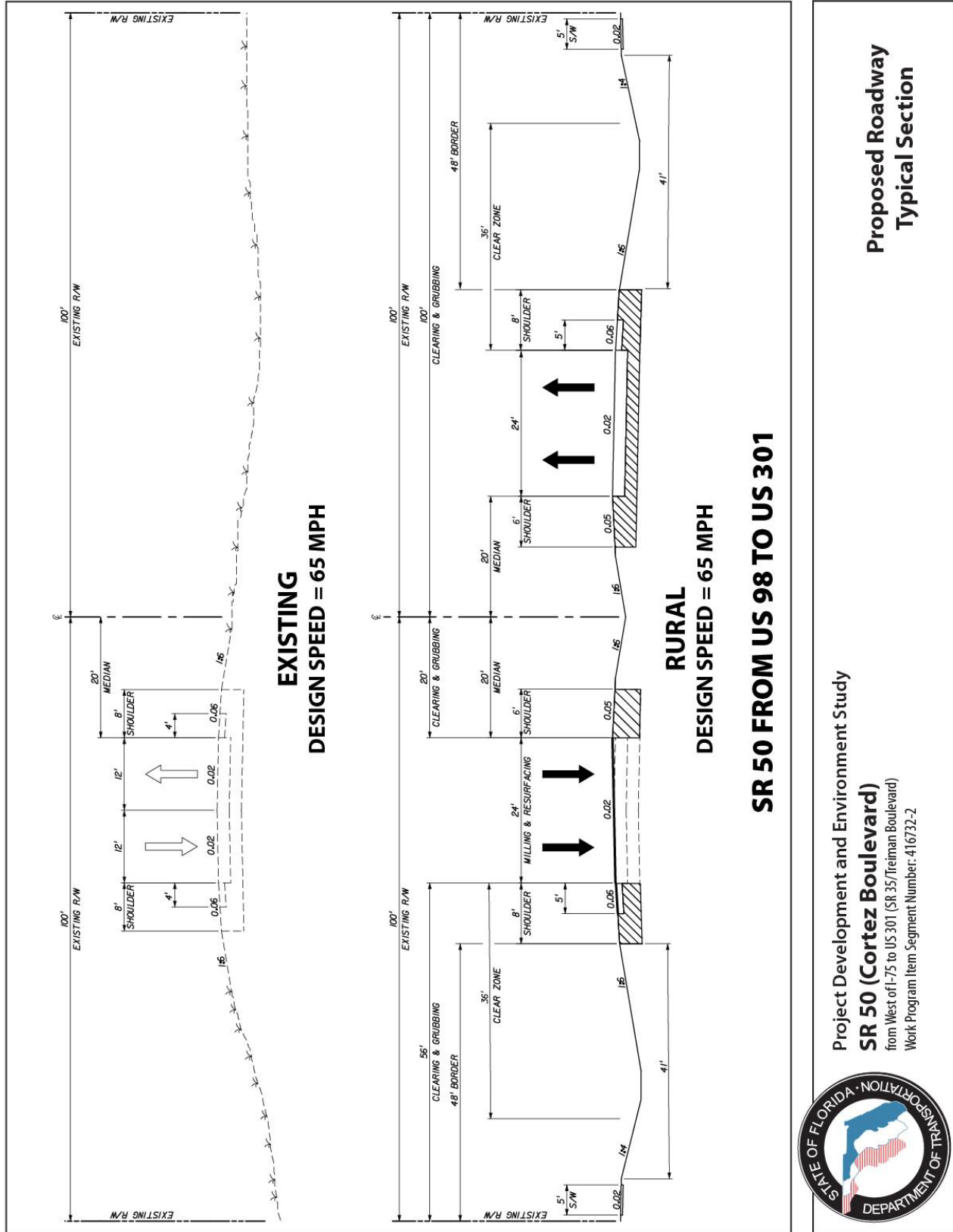


**Proposed Roadway  
Typical Section**

Project Development and Environment Study  
**SR 50 (Cortez Boulevard)**  
from West of I-75 to US 301 (SR 35/Treiman Boulevard)  
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**Figure 5-3: Proposed Typical Section  
from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard)**

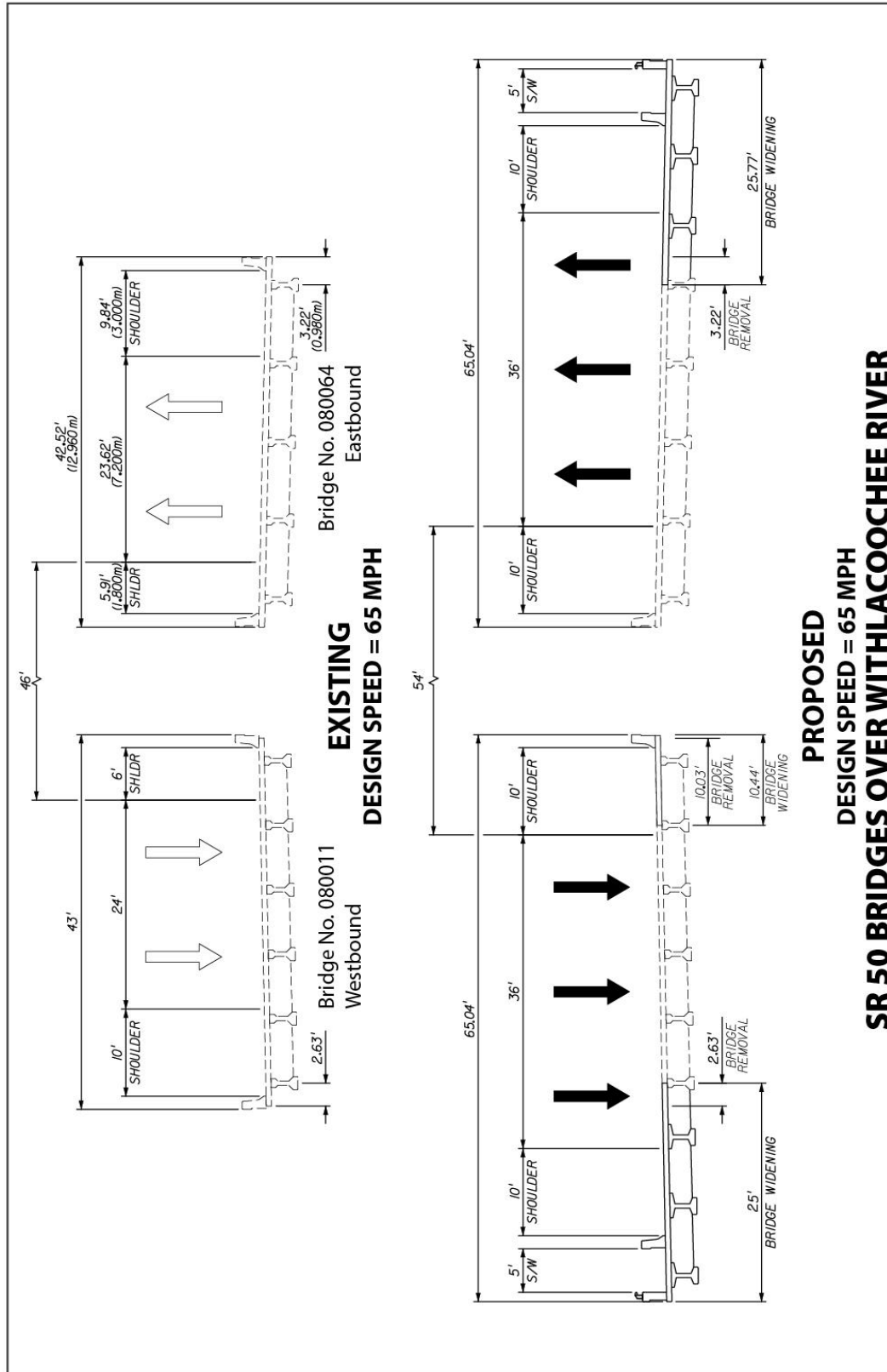



SR 50 (Cortez Boulevard) from West of I-75 to US 301 (SR 35/Treiman Boulevard)

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Final Preliminary Engineering Report

Figure 5-4: Proposed Bridge Typical Section




  
 Project Development and Environment Study  
**SR 50 (Cortez Boulevard)**  
 from West of I-75 to US 301 (SR 35/Treiman Boulevard)  
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**Proposed**  
**Bridge Typical Section**

Hernando County Frontage Road Ordinance Chapter 24 Roads and Bridges, Article 1, Sec. 24-2 (c) states that developers of properties adjacent to the major arterial highway grid must provide, at the developer's expense, a frontage road from property line to property line parallel to the arterial highway upon demonstration of need and demand by the county. Since construction improvements are not currently programmed and concepts have not yet been developed for the frontage roads (planned by Hernando County), Lockhart Road, or Kettering Road, these improvements are considered in this study for planning purposes and information only. Future studies (by others) will determine the specific typical sections, lane configuration and alignments.

The Build Alternative will also follow the existing vertical alignment, as the project involves widening and using the existing pavement to the greatest extent feasible.

Preliminary conceptual design plans for the Build Alternative are included in **Appendix A**.

#### **5.4.4 Lane Requirements and Intersection Layouts**

All the study area roadway segments and intersections are expected to meet the minimum LOS standard under future Build conditions with the recommended future mainline and intersection improvements identified in **Figure 5-5**. The design traffic conditions and recommended future intersection lane geometry improvements are further explained in Section 6 of this report.

### **5.5 RIGHT-OF-WAY**

The Build Alternative fits within the existing 200 ft of ROW along SR 50 (Cortez Boulevard). ROW acquisition along the US 98 (SR 700/McKethan Road) and US 301 (SR 35/Treiman Boulevard) approaches to SR 50 (Cortez Boulevard) is needed to provide additional lanes in order to meet the acceptable LOS at the intersections. In addition, SMFs will be required that would involve ROW impacts. However, existing SMFs will be used where feasible to minimize or avoid ROW impacts.

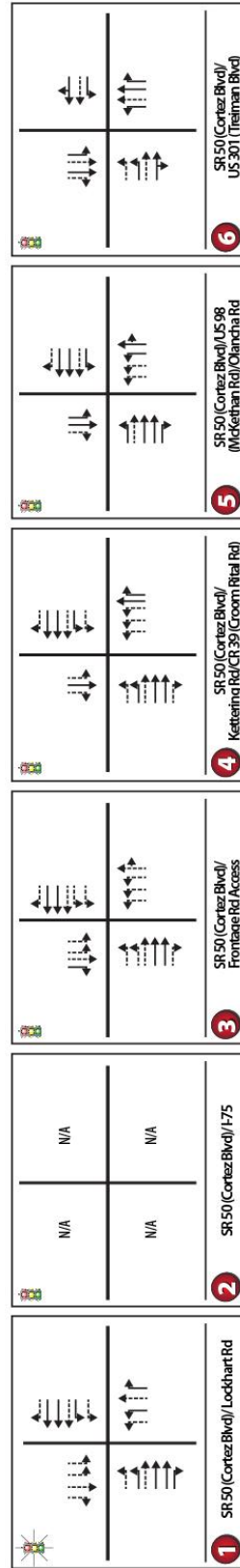
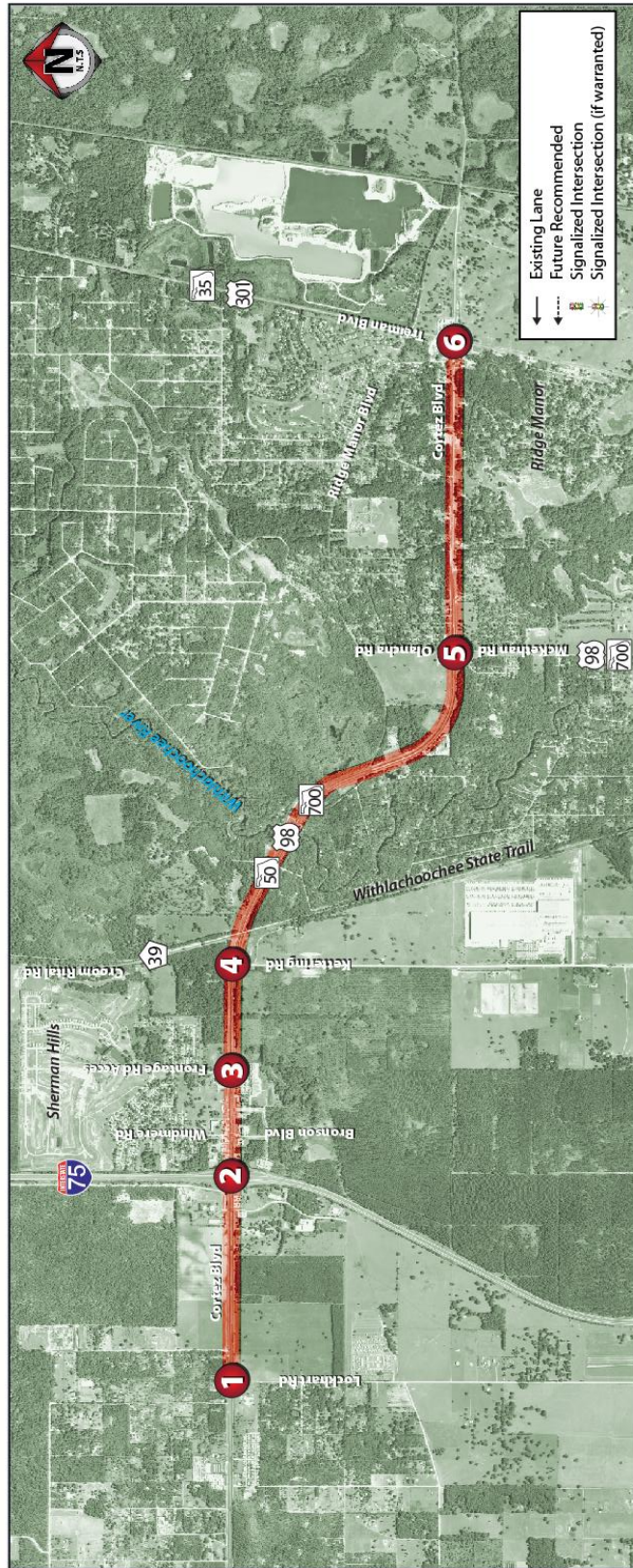
Adverse property effects were quantified with two measures: number of parcels being affected and acreage of ROW to be acquired. No relocations are anticipated due to the ROW acquisition.


### **5.6 COST ESTIMATES**

Preliminary cost estimates were prepared for the alternatives, including separate estimates of design, ROW, construction, and construction engineering inspection. These project costs are presented in 2011 dollars.

- **ROW acquisition** cost includes the cost to purchase private property. Cost of ROW acquisition is related to the number parcels affected, the amount of acreage required, and any other damages, such as impacted signs, structures, etc. Since administrative costs are incurred with each land parcel impacted, regardless of the acreage, costs will be greater when parcel count increases. In addition, the greater the acreage required and the more improvements which are affected within the proposed ROW, the higher the costs will be. A combination of these factors produces the total estimated ROW costs. The ROW costs

Figure 5-5: Recommended Future Intersection Geometries





**Project Development and Environment Study**  
**SR 50 (Cortez Boulevard)**  
 from West of I-75 to US 301 (Treiman Boulevard)  
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**Recommended Future Intersection Geometries**

were determined using 2013 dollars and include all estimated ROW costs for the roadway and SMFs. It is important to note that the ROW cost estimates were prepared as an evaluation tool to compare alternatives. The estimates are also a budget tool used by FDOT to estimate total acquisition costs associated with the proposed ROW. A ROW cost estimate does not reflect an opinion of market value and is not a real estate appraisal; and is subject to change as the project progresses.

- **Construction** costs of each alternative were calculated using FDOT's Long Range Estimates (LRE) pay item database. Construction cost estimates include all roadway and drainage items, stormwater management systems, signing and marking, embankment, bridge structures, and all other major construction components. Excluded are utility adjustments. Contingency costs were also included for project unknowns.
- **Design** (final design) and **Construction Engineering and Inspection (CEI)** costs were each estimated based upon a percentage (12 percent) of the construction cost.

## 5.7 PRELIMINARY DRAINAGE

A *Final Preliminary Stormwater Management Facility Report*<sup>2</sup> was prepared to determine the drainage basins and the pond sizes required from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard). There will be no analysis performed from Lockhart Road to Kettering Road. Kettering Road is located approximately 5,000 ft east of I-75. From Kettering Road to US 98 (SR 700/McKethan Road), an analysis was performed to determine if the existing ponds were designed to accommodate the ultimate six-lane typical section.

The existing stormwater from Lockhart Road to Kettering Road is treated in linear water management systems. This segment will be widened from four to six lanes. The stormwater treatment and attenuation from Lockhart Road to Kettering Road will be accommodated in the proposed ponds for the I-75 project (FPID No. 411011-2-52-01). The stormwater from Kettering Road to US 98 (SR 700/ McKethan Road) discharges to offsite SMFs, which ultimately discharge into the Withlacoochee River. This analysis determined that the SMFs were designed to provide treatment for six lanes of directly connected impervious area (DCIA), and the SMFs generally overattenuated the SWFWMD required 25-year 24-hour discharge rate. The final design phase will need to evaluate whether the existing SMFs are sufficient to meet the SWFWMD water quality and quantity criteria at the time of the design phase.

US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard), is divided into four basins. Basin 1 from US 98 (SR 700/McKethan Road) to 2,730 ft east of US 98 (SR 700/McKethan Road) discharges west to the SMF Pond G west of US 98. The analysis shows that in the proposed condition, Pond G will not be able to handle the additional impervious area and meet SWFWMD criteria. The basin was analyzed and a pond size for the entire DCIA for SR 50 (Cortez Boulevard) and US 98 (SR 700/McKethan Road). The remaining three basins were evaluated and pond sizes estimated for each of the basins. **Table 5-1** provides the estimated pond sizes. The analysis assumed an offsite SMF drainage design concept similar to the segment from Kettering Road to US 98.

One pond for each of the four basins was analyzed so that they comply with the treatment and attenuation requirements of the SWFWMD water quality and quantity criteria and the attenuation requirements of the FDOT. A wet detention system and a dry detention system were evaluated

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SR 50 (Cortez Boulevard) from West of I-75 to US 301 (SR 35/Treiman Boulevard)

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for each of the three remaining basins. The dry pond assumptions resulted in pond sizes slightly smaller than the wet detention ponds. However, since the dry retention pond size is greatly influenced by the site soil conditions, only the wet pond sizes are provided.

The wet pond sizes range from 1.7 acres (ac.) to 3.9 ac. Depending on the placement of the pond in the design phase, a dry retention system should also be feasible in Basins 1, 3 and 4. The estimated sizes of ponds and Floodplain Compensation sites (FPC) are found in **Table 5-1** as follows:

**Table 5-1: Estimated Pond Sizes**

Basin	Begin Station	End Station	Basin Length (ft)	Treatment Depth Required (ft)	Attenuation Depth Required (ft)	Pond Size Estimate (ac)	Square Dimension (ft)
1	1150+00	1187+30	3730	1.0	1.4	3.4	836
2	1183+70	1213+00	2930	0.4	0.8	3.9	413
3	1213+00	1239+00	2600	1.3	2.2	1.7	276
4	1239+00	1261+68	2268	1.1	1.8	2.7	344
FPC	920+00	1261+68	34,168	NA	NA	9.0	NA

Note: The square dimensions include the maintenance berm and tie downs.

The ponds sizes should generally be conservative within the limits of the basin. A hydraulic gradient was established from the lowest point in the roadway to the farthest point on the roadway within Basin 2 and 3. For Basins 1 and 4 the hydraulic gradient was established along US 98 (SR 700/McKethan Road) and US 301 (SR 35/Treiman Boulevard) as this was the furthest point away from the assumed pond location. This resulted in larger ponds due to limiting the height in which the treatment and attenuation depth can be stacked. During the design phase, pond sizes might be reduced in size by utilizing pond liners, locating the ponds closer to the low point in the roadway, adjusting the roadway profile grade, providing compensatory treatment for the lowest roadway area, or designing a dry pond. The design phase pond selection will require the consideration of these drainage design concepts and an alternative analysis that evaluates the natural, physical, and socio-economic impacts at potential pond locations.

The flood risks associated with the encroachment upon the 100 year floodplain were evaluated for this study. Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM) panel numbers 12053C0219, 12053C0238D, 12053C0239D, and 12053C0243D, dated February 2, 2012 are provided as Figures 1.6.1 – 1.6.7 in the *Final Preliminary Stormwater Management Facility Report*. Portions of the project are located with the 100-year floodplain elevation designated as Flood Zone AE, where the base elevations have been determined and are shown at selected intervals within the zone on the FEMA Firmettes. Floodplain compensation may be required for this project. Based upon the widening of the roadway footprint into the floodplain, it was estimated that roughly 9.0 ac. of floodplain compensation could be required. This estimate will increase if ponds are placed within the 100 year floodplain.

## 5.8 UTILITIES

In order to evaluate potential surface and subsurface utility conflicts associated with the proposed project, information must be obtained concerning the location and characteristics of the existing utilities within the SR 50 (Cortez Boulevard) corridor. A list of the utility providers in

the vicinity of the project was obtained by calling Call Sunshine (1-800-432-4770, design ticket #344001981). Base maps were sent to utility providers in accordance with Part 2, Chapter 10 of the FDOT *Project Development and Environment Manual* with a request to provide information on the location and type of any facilities owned, leased, maintained or planned. Utility providers and contacts were provided previously in **Table 2-6** (Section 2 of this report). Maps that were returned by each utility provider, showing specific locations of each utility, are included in the project files.

## **5.9 LIGHTING**

Street lighting is not proposed along SR 50 (Cortez Boulevard). Lighting may be installed within the I-75 interchange area.

## **5.10 TRAFFIC CONTROL CONCEPTS**

MOT and sequence of construction will be planned and scheduled to minimize traffic delays throughout the project. Signs will be used to provide notice of road closures and other pertinent information to the traveling public. The local news media will be notified in advance of road closings and other construction-related activities, which could excessively inconvenience the community so that motorists, residents, and business persons can make other accommodations. The existing number of travel lanes on existing roads should be maintained to the maximum extent possible. Lane closures, if necessary, should occur during off-peak hour be followed.

SR 50 (Cortez Boulevard) provides access to numerous residences and businesses. Due to its importance, SR 50 (Cortez Boulevard) should remain functional throughout the duration of the construction activities. The existing number of travel lanes should be maintained to the maximum extent possible. Lane closures, if necessary, should occur during off-peak hours.

Detailed maintenance of traffic plans will be developed during final design phase. However; the following conceptual construction sequence will help maintain traffic operations:

- Relocate existing utilities within the ROW.
- Construct SMFs.
- Construct temporary pavement as necessary to maintain existing two-way traffic.
- Construct the inside widening in each direction (curb and gutter, travel lanes) while maintaining existing two-way traffic on the existing pavement and temporary pavement or outside shoulder.
- Construct outside widening (travel lanes, shoulder, sidewalks). Temporarily operate two-way traffic on the completed inside widening while constructing the remaining travel lanes and outside shoulders.
- Shift eastbound and westbound traffic to their respective, completed roadways.

## **5.11 BICYCLE AND PEDESTRIAN ACCOMMODATIONS**

The Build Alternative will result in improved accommodations for bicyclists and pedestrians with the addition of 5 ft paved shoulders and 5 ft sidewalks throughout the project. In addition, a sidewalk connection to the Withlacoochee State Trail will be provided.

Both Hernando County and the FDEP OGT have requested and recommended, respectively, that a 12 ft multi-use trail within the ROW be constructed as part of the project to connect to the Withlacoochee State Trail and lay groundwork for connections to nationally and regionally significant trails in the County. Since a multi-use trail is not consistent with the LRTP, and the county cannot commit to maintain it, no multi-use trail is proposed. Sidewalks, 5 ft wide, are currently being proposed in each direction, including connections to the Withlacoochee State Trail.

## **5.12 MULTI-MODAL ACCOMMODATIONS**

The proposed Build Alternative includes 5-ft paved shoulders to accommodate bicyclists and 5-ft sidewalks in each direction throughout the SR 50 (Cortez Boulevard) corridor. Sidewalk connections to the Withlacoochee State Trail are proposed from both sides of SR 50 (Cortez Boulevard).

Currently, there is no fixed route bus service within the corridor. The West Central Florida MPO CCC Regional Cost Affordable Transit Facilities and Services 2010-2025 identifies no planned transit facilities and services along this portion of SR 50 (Cortez Boulevard). The Hernando County MPO's 2035 LRTP Transit Needs Plan Local Transit Route Needs identifies proposed local Route 90 along a portion of the project limits from SR 50 (Cortez Boulevard) from west of I-75 to US 98 (SR 700/McKethan Road). The Hernando County MPO's 2035 LRTP Needs Assessment Transit Networks identifies a proposed express bus route along SR 50 (Cortez Boulevard) west of I-75.

Hernando County has a cooperative effort, called THE Bus, which consists of the Hernando County Board of County Commissioners, Hernando County MPO, City of Brooksville, FDOT, Federal Transit Administration and McDonald Transit Associates, Inc. This cooperative effort provides service to Hernando County. There are no current bus routes along SR 50 (Cortez Boulevard) within the limits of this project; however, other study initiatives of TBARTA may extend service to within the subject corridor in the future. TBARTA and FDOT are currently conducting a study to explore transit connections from Hillsborough County to the south northerly to Citrus County. The limits of this SR 50 (Cortez Boulevard) corridor are included within the limits of that transit evaluation study.

## **5.13 ACCESS MANAGEMENT**

SR 50 (Cortez Boulevard) is currently Access Class 3 from US 19 (west of I-75) to Kettering Road, and Access Class 4 from Kettering Road to east of US 301 (SR 35/Treiman Boulevard). The Access Classification is proposed to be changed to Access Class 3 between Kettering Road to east of US 301 (SR 35/Treiman Boulevard), and the changes will be presented at the Public

Hearing. Some existing median openings are proposed for closure, some full median openings will be changed to directional median openings to prevent certain turning movements, and the location of some median openings are proposed to be shifted to better meet Access Class 3 median opening spacing standards. Proposed changes to median openings are illustrated on the Preliminary Concept Plans in **Appendix A**.

## **5.14 BRIDGE ANALYSIS**

SR 50 (Cortez Road) is carried over the Withlacoochee River on two bridges (Bridge Nos. 080011 and 080064) (See **Figure 1-3**). The existing conditions of the Withlacoochee River bridges (see Section 2) are generally good, and will allow modifications (widening) to accommodate proposed improvements.

As previously explained, **Figure 5-4** shows the widening of the two existing bridges over the Withlacoochee River. In order to facilitate MOT and limit the bridge widening to just one side of each bridge, the proposed roadway median width will transition from 40 ft to 54 ft on each approach. The outside concrete barrier of each bridge will be removed, along with the deck to the center of the first outside fascia beam of each bridge. Each bridge will then be widened to accommodate three 12-ft lanes, 10-ft inside and outside shoulders, and a 5-ft sidewalk separated from the shoulder with a concrete barrier. The span arrangement of the widened bridges will match the span arrangement of the existing bridges. Florida I-Beams will support the widened portion of the deck. The beams will be supported by prestressed square concrete piles capped with a bent cap. This is similar to the foundation system incorporated in the existing bridges. The proposed bent cap will be dowelled into the existing bent cap. In addition, the inside barrier on the westbound bridge will be replaced to meet current standards.

## **5.15 NAVIGATION**

SR 50 (Cortez Boulevard) doesn't cross any navigable waterways; therefore, a USCG Bridge Permit will not be required.

## **5.16 RECOMMENDED ALTERNATIVE EVALUATION MATRIX**

In order to evaluate the study alternatives, a qualitative and quantitative evaluation matrix (**Table 5-2**) was prepared using criteria from a multitude of categories including socioeconomic, environmental, cultural, potential hazardous material/petroleum contamination, and costs (design, ROW, construction, and construction engineering inspection). The matrix data was developed utilizing raster-based aerial photography depicting the proposed ROW needs for each alternative. A brief description of these qualitative and quantifiable evaluation criteria follows.

### ***Right-of-Way Impacts:***

- **Number of Parcels Affected:** The number of private property parcels (residential, business, vacant) affected by the proposed roadway improvements. ROW acquisition is proposed from these parcels along US 98 (SR 700/McKethan Road) and US 301 (SR 35/Treiman Boulevard). These affects do not include SMF locations.

**Table 5-2: Alternative Comparative Evaluation Matrix**

<b>Evaluation Factors</b>	<b>No-Build Alternative</b>	<b>Recommended Build Alternative</b>
<b>Right-of-Way (ROW) Impacts</b>		
Number of Parcels Affected	0	12
ROW Acquisition – US 98 and US 301 Roadway (acres [ac])	0	20.417
ROW Acquisition – Stormwater Management Facilities and Floodplain Compensation Sites (ac)	0	20.700
Business Relocations	0	0
Residential Relocations	0	0
<b>Natural, Environmental and Physical Effects</b>		
Species/Habitat (Potential Impacts)	None	Low
Potential Contamination Sites (Medium and High risk)	0	5
Wetlands and Other Surface Waters within Proposed ROW (ac) [includes existing ponds]	0	7.29
Noise Sensitive Sites (within 66 dB(A) isopleth)	0	18
Community Facilities (schools, police, fire, medical, etc.)	0	0
Historic/Archaeological Sites	0	0
<b>Estimated Costs (2011 Dollars)</b>		
Design (12 percent of Roadway and Bridge Construction)	\$0	\$2,619,737
Roadway Right-of-way	\$0	\$4,788,600
Pond Right-of-Way	\$0	\$1,500,200
Construction*	\$0	\$21,831,144
CEI (12 percent of Construction)	\$0	\$2,619,737
<b>Total Cost (Present Day Cost)</b>	<b>\$0</b>	<b>\$33,359,419</b>

\* Includes roadway, earthwork, shoulder, median, drainage, bridge widening, signing, signalization, maintenance of traffic, mobilization, unknowns/contingency

\* Does not include exempted area

- **ROW Acquisition - Roadway:** the acreage of ROW proposed for purchase needed to construct the roadway approaches to SR 50 (Cortez Boulevard) along US 98 (SR 700/McKethan Road and US 301 (SR 35/Treiman Boulevard)
- **ROW Acquisition – SMF and Floodplain Compensation Sites:** The estimated acreage of ROW needed to construct the SMFs and floodplain compensation sites. The specific parcels have not been identified.
- **Business Relocations:** The number of businesses estimated to be relocated by the Build Alternative was identified by reviewing the Preliminary Concept Plans. Other business effects expected to be sustained by businesses which will not require relocation, such as signs or parking losses, etc., were considered in the ROW acquisition cost estimates. There are no business relocations expected.
- **Residential Relocations:** The number of existing residences estimated to be relocated by the Build Alternative was assessed by determining the number of residences that exist within the proposed ROW. There are no residential relocations expected.
- **Natural, Environmental, and Physical Impacts:**
  - **Species Habitat:** A qualitative measure (none, low, moderate, high) of expected impacts to protected species or habitat.
  - **Potential Contamination Sites (Medium and High Risk):** The number of potentially hazardous material and/or petroleum contaminated sites ranked medium or high risk along the project.
  - **Wetlands within Proposed ROW:** The acreage of wetlands within the existing and proposed ROW that could be impacted by the roadway improvements (not including SMFs).
  - **Noise Sensitive Sites:** The number of noise sensitive sites that would approach or exceed the Noise Abatement Criteria (NAC). Seventeen residences and the Ridge Manor Oaks Golf and Country Club Hole #3 were predicted to approach or exceed the NAC for design year (2035) proposed build conditions.
- **Community Facilities:** The project involvement with existing community facilities such as churches, schools, child care facilities, nursing homes, hospitals, cemeteries, fire stations, etc. were assessed. No impacts are expected.
- **Historic/Archaeological Sites:** A thorough investigation was undertaken to determine if there are any National Register of Historic Places (NRHP)-listed or eligible historic sites and structures along the project corridor.

***Estimated Costs:***

- **Total Estimated Project Costs:** Preliminary cost estimates were prepared for all Alternatives, including ROW acquisition, MOT, mobilization, engineering/final design, construction, CEI costs and contingencies. These project costs shown in the matrix were generated using 2011 dollars. The Design and CEI costs are each estimated to be 12 percent based on current costs for Design and CEI for other similar roadway facilities.
- **The ROW acquisition cost, in 2012 dollars,** includes the cost of private property purchase, and reimbursement cost for miscellaneous business damages. The roadway

construction cost includes roadway, signing and marking, and signalization. Utility adjustments, landscaping, and wetland mitigation are not included in this estimate. Structure costs include the cost to widen the existing bridges over the Withlacoochee River. Drainage improvements include the drainage system and pond construction.

### **5.17 SELECTION OF RECOMMENDED ALTERNATIVE**

The No-Build Alternative does not meet any of the goals of the MPO's LRTP. The No-Build Alternative fails to fulfill the project's purpose and need to accommodate future traffic projections in a safe and efficient manner, resulting in substandard LOS within the corridor. Increased traffic congestion will cause increased road user cost due to travel delay. The No-Build Alternative will result in reduced economic viability and mobility due to traffic congestion and deterioration of air quality caused by traffic congestion and delays.

While the Build Alternative has costs associated with design, ROW acquisition, and construction, it would result in a four- to six-lane facility that meets established LOS standards while safely accommodating expected future traffic growth. Therefore, the Build Alternative has been selected as the Recommended Alternative.

### **5.18 PREFERRED ALTERNATIVE**

Following the Public Hearing, the Build Alternative was selected as the Recommended Alternative. Once approved by the Federal Highway Administration (FHWA), the Recommended Alternative becomes the Preferred Alternative, and it can be advanced to the design phase.

### **5.19 REFERENCES**

1. 2035 Long Range Transportation Plan Hernando County Metropolitan Planning Organization (MPO); Adopted December 15, 2009, including amendments through November 19, 2013.
2. *Final Preliminary Stormwater Management Facility Report*; Atkins North America, Inc.; Tampa, Florida; January 2014.

## **6.0 DESIGN DETAILS OF RECOMMENDED ALTERNATIVE**

### **6.1 TYPICAL SECTION PACKAGE**

The Typical Section Package is included in **Appendix B**.

### **6.2 INTERSECTION CONCEPTS AND SIGNAL ANALYSIS**

As shown in the Preliminary Concept Plans in **Appendix A**, each intersection has been designed to meet an acceptable LOS in the Design year 2035. SR 50 (Cortez Boulevard) is designated as an SIS Corridor west of I-75 in a transitioning area. Therefore, the LOS Standard is "C". East of I-75, the LOS Standard is set at the present time by Hernando County at LOS "D". All signalized intersections will include crosswalks and pedestrian signals. Non-signalized intersections will include stop control on the side street approaches. More information on intersection concepts is provided in the following sections.

### **6.3 DESIGN TRAFFIC VOLUME**

#### **6.3.1 Design Traffic Volumes**

A *Final Traffic Report*<sup>1</sup> was prepared to document the methodology and results of the traffic evaluations. The report is summarized below.

##### **6.3.1.1 Existing AADT**

The existing (2011) AADT volumes for the study area roadway segments were developed from raw bi-directional 72-Hour and 48-Hour count data. Axle correction factors developed from the vehicle classification counts were applied to the count data, to obtain the AADT volumes. The appropriate FDOT seasonal adjustment factors obtained from the *2010 Florida Traffic Information (FTI) DVD*<sup>2</sup> were also used in the development of AADT volumes. The resultant existing (2011) AADT volumes are depicted in **Figure 6-1**.

##### **6.3.1.2 Existing Traffic Characteristics**

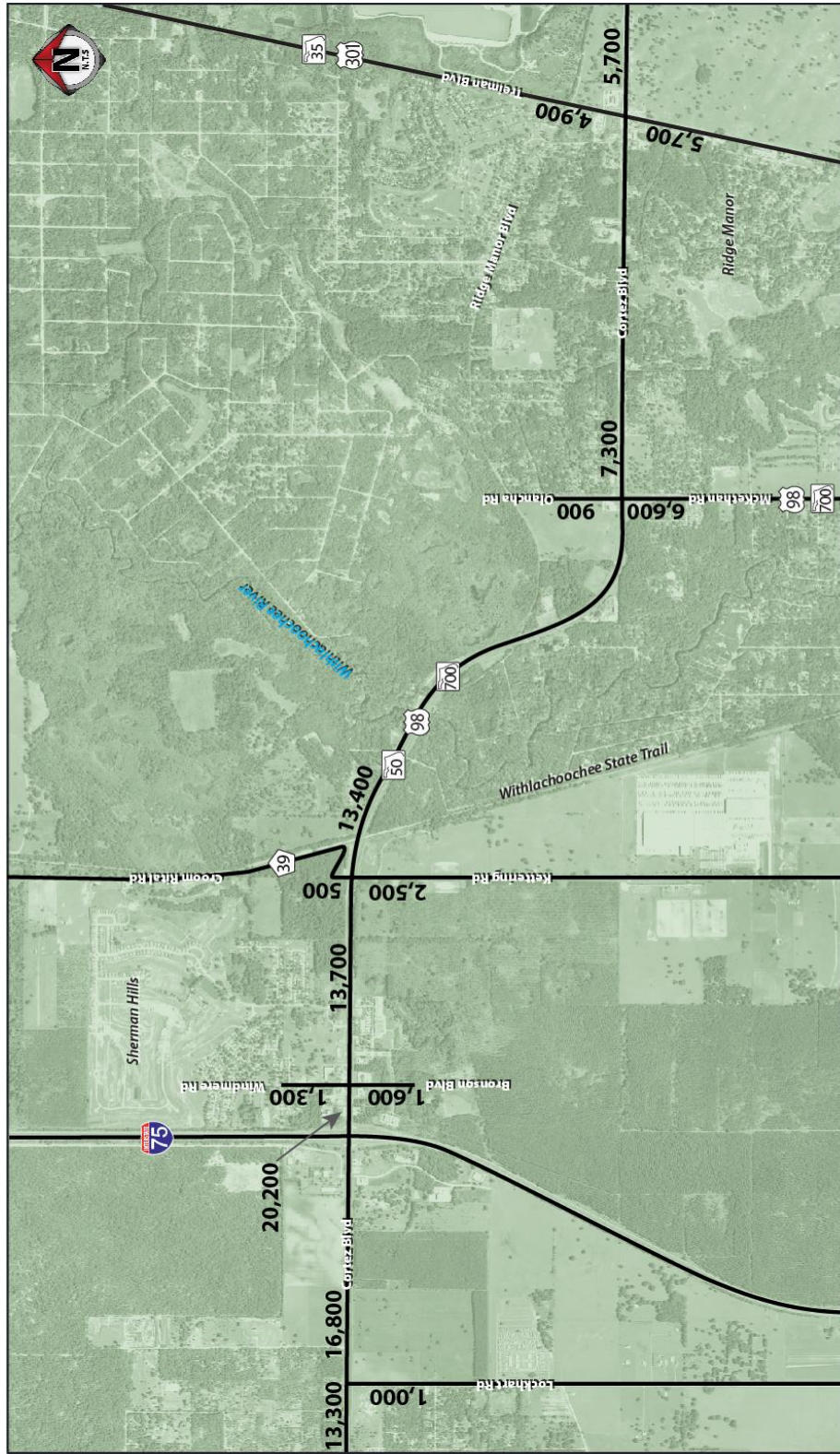
**Table 6-1** shows the  $K_{30}$ ,  $D_{30}$  and  $T_{24}$  factors that were used for existing operational analyses along SR 50 (Cortez Boulevard) study corridor.

##### **6.3.1.3 Peak Hour Volumes and Design Hour Volumes**

The existing (2011) peak hour turning movement volumes for the study area were developed from raw turning movement counts taken between the hours of 7:00 AM – 10:00 AM and 3:00 PM – 6:00 PM during AM and PM peak periods. The turning movement counts were broken down into 15-minute intervals and each group of four consecutive 15-minute intervals was summed to determine the peak hour for each intersection. The FDOT peak season adjustment factors were applied to the raw counts, to obtain the peak hour turning movement volumes.



Figure 6-1: 2011 Existing Annual Average Daily Traffic



**2011 Existing Annual Average Daily Traffic (AADT)**

Project Development and Environment Study  
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 from West of I-75 to US 301 (Treiman Boulevard)  
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**Table 6-1: Existing  $K_{30}$ ,  $D_{30}$  and  $T_{24}$  Values**

$K_{30}$	$D_{30}$	$T_{24}$
9.74%	54.68%	16%

Note: The same  $K_{30}$  and  $D_{30}$  factors that were used for SR 50 (Cortez Boulevard) mainline were used for the study area side streets. The  $T_{24}$  factor for all the side streets in the study area were obtained from 2010 FTI DVD.

The existing turn percentages were then obtained from the peak hour turning movement volumes. The peak hour turning movement volumes were then converted to the design hour volume (DHV) by applying the methodology in the following paragraph.

First, the existing AADT volume was multiplied by the  $K_{30}$  factor of 9.74 percent to develop non-directional peak hour volumes. The directional peak hour volumes were then determined by applying a  $D_{30}$  factor of 54.68 percent to develop peak direction approach volumes and  $1-D_{30}$  or 45.32 percent to develop non-peak direction approach volumes at the intersections. The resulting approach volumes were distributed based on existing turning movement volume percentages at the respective locations. The existing DHVs (turning movement volumes) are shown in **Figure 6-2**.

#### **6.3.1.4 Existing Roadway Characteristics**

One unsignalized intersection and four signalized intersections were evaluated as part of this study. The intersections are as follows:

##### **Unsignalized**

- SR 50 (Cortez Boulevard)/Lockhart Road

##### **Signalized**

- SR 50 (Cortez Boulevard)/ Bronson Boulevard/Windmere Road
- SR 50 (Cortez Boulevard)/ Kettering Road/CR 39 (Croom Rital Road)
- SR 50 (Cortez Boulevard)/ US 98 (McKethan Road)/Olancha Road
- SR 50 (Cortez Boulevard)/ US 301 (SR 35/Treiman Boulevard)

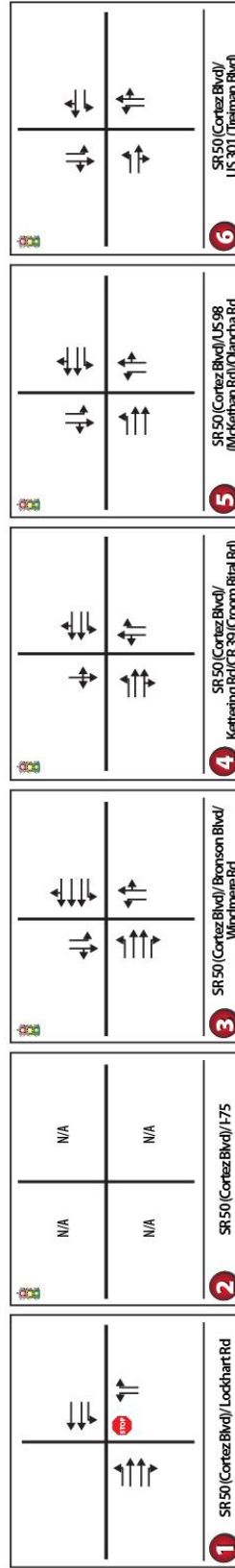
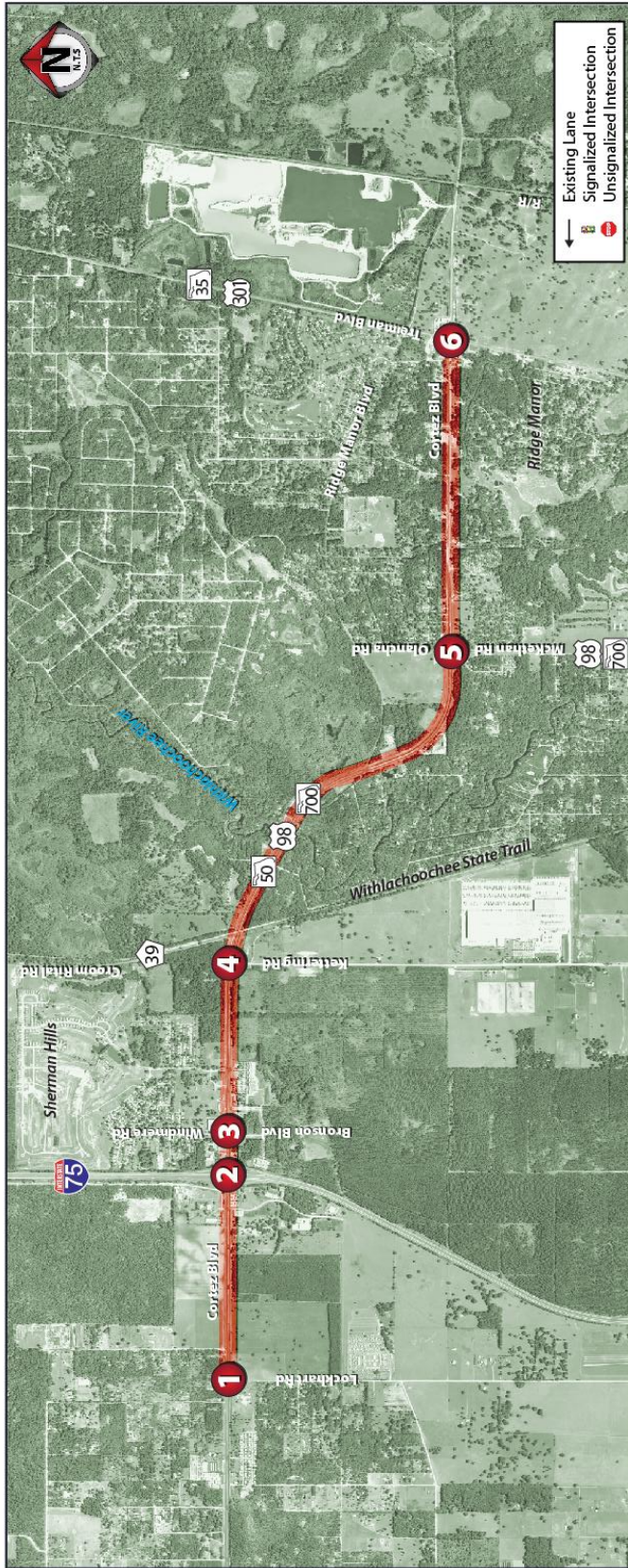
A field review was conducted to determine the lane geometry for the study area intersections. The existing (2011) lane geometries at the study area intersections are displayed in **Figure 6-3**.


#### **6.3.1.5 Existing Operational Analyses**

The existing operational analyses included evaluation of all unsignalized and signalized intersections and corresponding roadway segments located within the study area. The analyses were conducted using *Synchro 7*<sup>3</sup>. For all the intersections, the *Highway Capacity Manual* (HCM)<sup>4</sup> LOS was reported and for all the segments, arterial segment LOS conditions were reported from Synchro.



Figure 6-3: Existing (2011) Lane Geometries





**Project Development and Environment Study**  
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**2011 Existing  
 Intersection Geometries**

Based on review of traffic operational analyses, all the intersections and segments operate at acceptable level of service conditions for 2011 existing conditions, as shown in **Figure 6-4**.

**6.3.1.6 Future Traffic Development**

The following data sources were identified for the development of future AADT volumes along SR 50 (Cortez Boulevard) from Lockhart Road to US 301 (SR 35/Treiman Boulevard):

- TBRPM Version 7.0 – 2006 Validation and 2035 Cost Feasible Model
- 2010 FTI DVD - Historical AADT volumes
- PER, I-75 (SR 93) PD&E Study from north of SR 52 to south of CR 476B, Federal Aid Project Number 0751-120I, June 2007
- 2011 AADT volume counts obtained for the study

Using the above identified data sources, different traffic projection methodologies were applied to obtain growth rate percentages that can be utilized for future AADT traffic development. Based on the guidance received from FDOT District Seven planning staff and the need to balance design hour traffic volumes along SR 50 with the recently approved I-75 PD&E Study (PER, I-75 (SR 93) from north of SR 52 to south of CR 476B, Federal Aid Project Number 0751-120I, June 2007), it was determined to use annual growth rate percentages outlined in **Table 6-2**.

**Table 6-2: Recommended Annual Growth Rates**

West of I-75	East of I-75	West of US 301	East of US 301
16%	13%	10%	7%

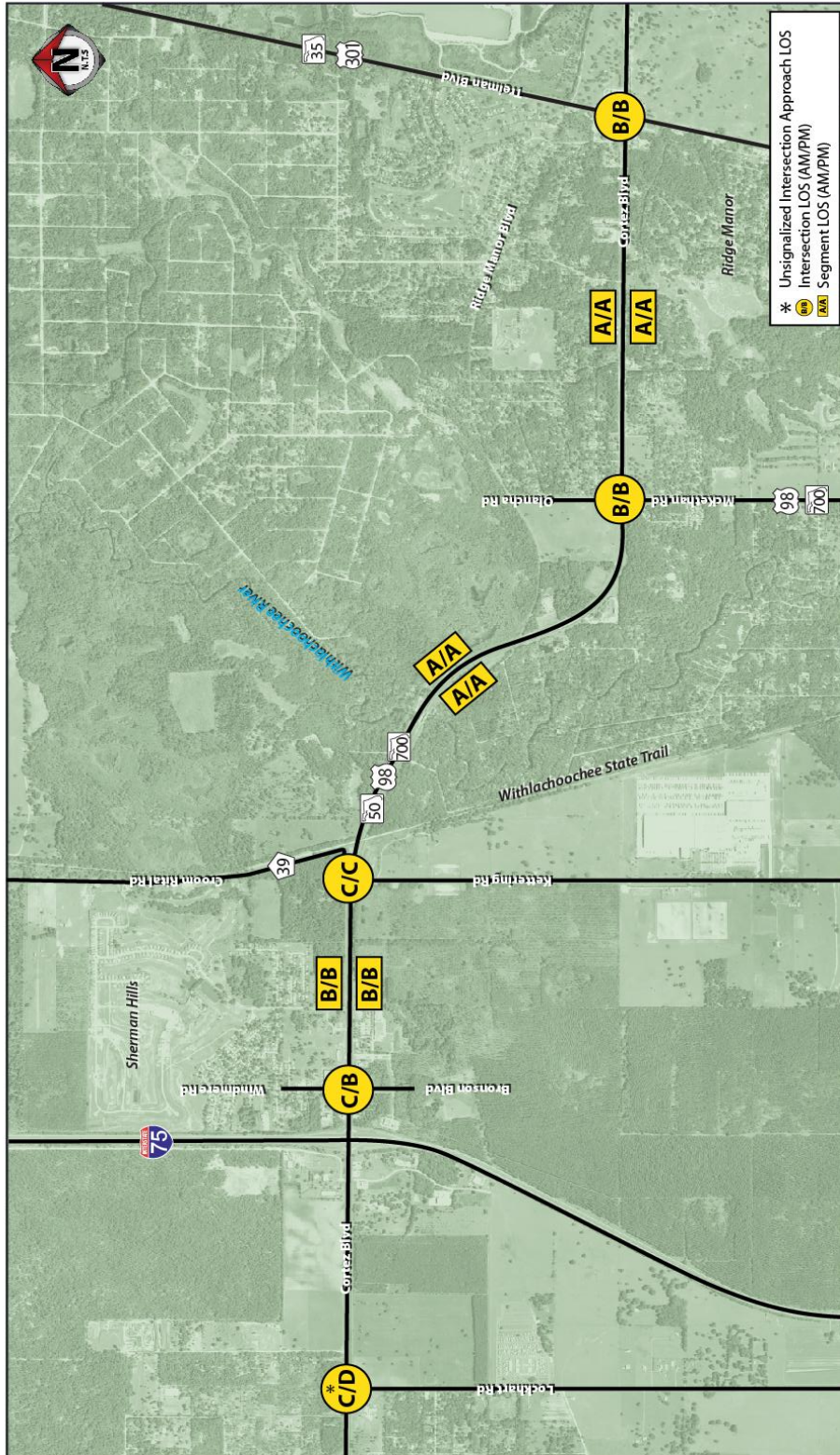
**6.3.1.7 Annual Average Daily Traffic Projections**

The future AADT volumes were developed for the opening year (2015) and design year (2035) roadway system located in the study area. The existing AADT volumes were extrapolated by a simple annual growth rate as for a period of four and twenty-four years to obtain opening year (2015) and design year (2035) AADT volumes respectively. **Figure 6-5** and **Figure 6-6** display the AADT volumes for opening year (2015) and design year (2035) conditions, respectively.

**6.3.1.8 Future Design Hour Projections**

The future AADT volumes were used to develop the future No-Build DHVs. Similar to the procedure followed under existing conditions, the opening year (2015) AADT volumes and design year (2035) AADT volumes were multiplied by a  $K_{30}$  factor of 9.74 percent to develop non-directional peak hour volumes. The directional peak hour volumes were then determined by applying a  $D_{30}$  factor of 54.68 percent to develop peak direction approach volumes and 1- $D_{30}$  or 45.32 percent to develop non-peak direction approach volumes at the intersections. The resulting approach volumes were distributed based on existing turning movement volumes at the respective locations. Additionally for the design year (2035), traffic volumes along SR 50 (Cortez Boulevard) were balanced per the guidance received from FDOT, District Seven planning staff with the DHVs obtained for I-75 and SR 50 interchange from I-75 PD&E Study.

Figure 6-4: Existing 2011 AM and PM Level of Service

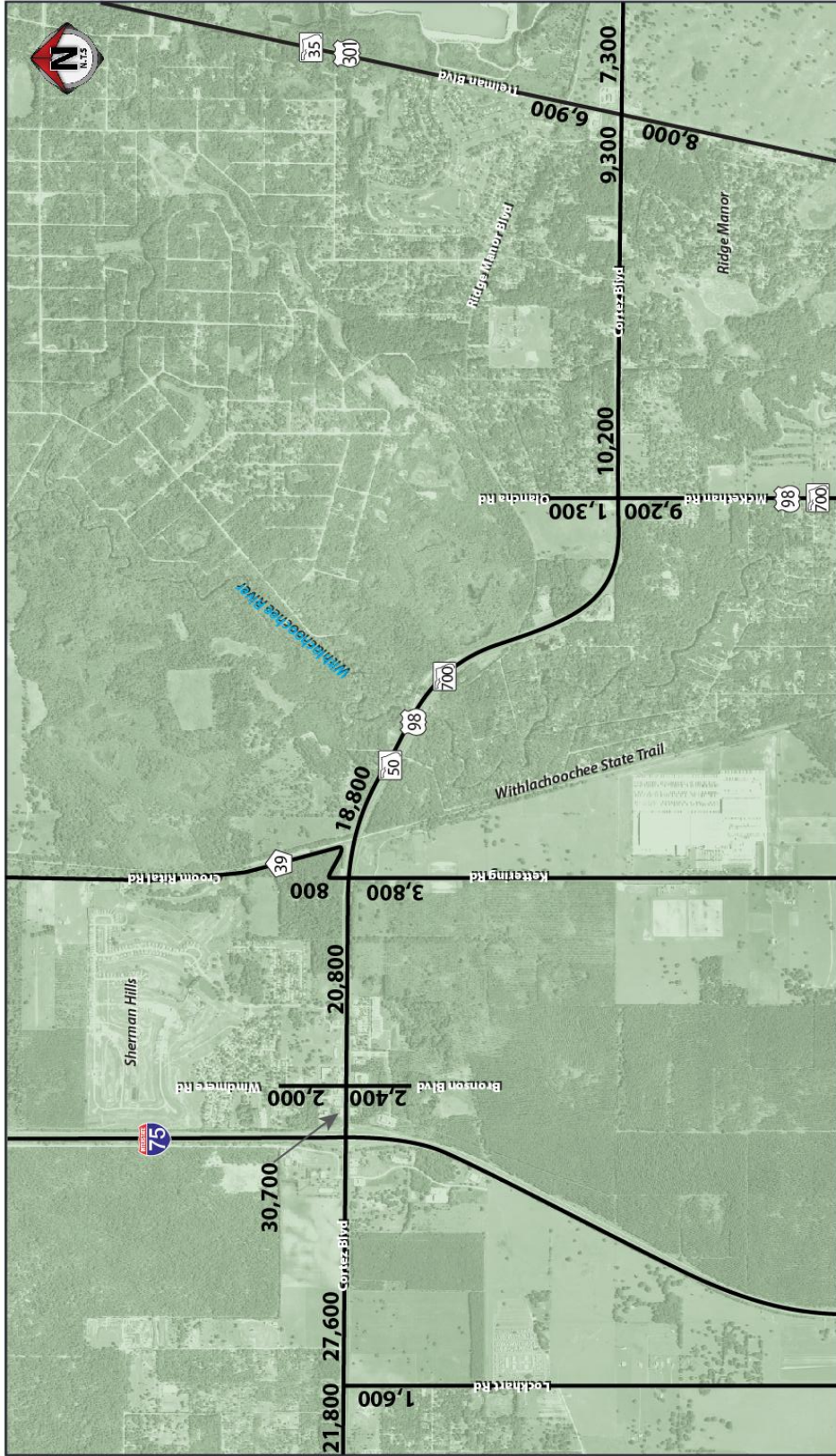


**Existing 2011 AM and PM  
Level of Service (LOS)**

Project Development and Environment Study  
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Figure 6-5: 2015 Annual Average Daily Traffic



**2015 Annual Average Daily Traffic (AADT)**

Project Development and Environment Study  
**SR 50 (Cortez Boulevard)**  
 from West of I-75 to US 301 (Treiman Boulevard)  
 Work Program Item Segment Number: 416732-2


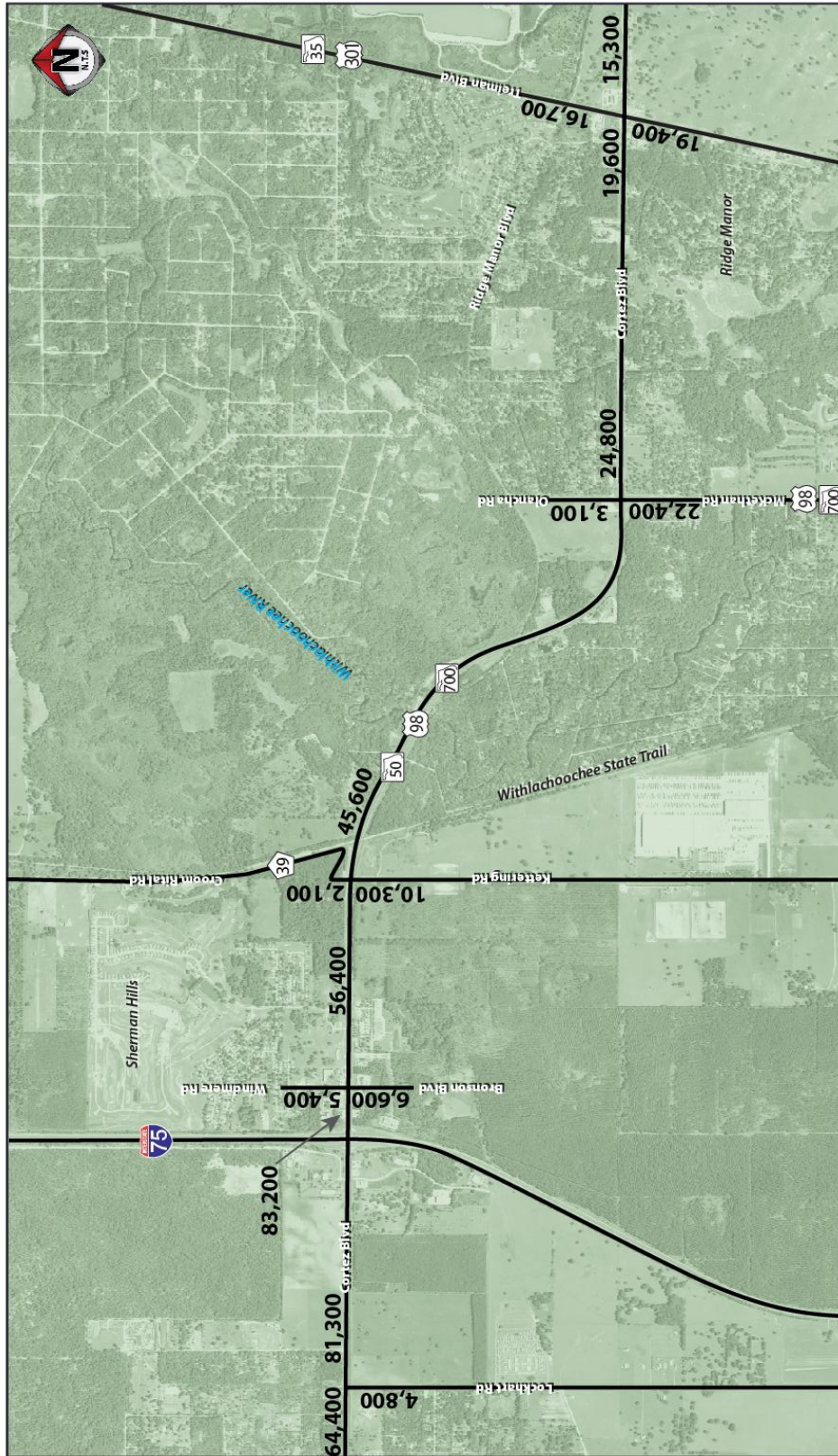



Figure 6-6: 2035 Annual Average Daily Traffic



**2035 Annual Average Daily Traffic (AADT)**

Project Development and Environment Study  
**SR 50 (Cortez Boulevard)**  
 from West of I-75 to US 301 (Treiman Boulevard)  
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The design year (2035) DHVs for Build conditions were computed assuming bi-directional two-lane frontage roads on each side of SR 50 from Lockhart Road to I-75 and from I-75 to Kettering Road/CR 39 (Croom Rital Road). Based on the percentage splits calculated from the model it is assumed that frontage roads between Lockhart Road and I-75 will carry approximately 14 percent of the total traffic along SR 50 (Cortez Boulevard) between Lockhart Road and I-75 and 16 percent of the total traffic along SR 50 (Cortez Boulevard) between I-75 and Kettering Road/CR 39 (Croom Rital Road). Additionally, the design year (2035) Build alternative also assumed directional median openings and additional driveway access along SR 50 (Cortez Boulevard) between Lockhart Road and Frontage Road Access facility (Sherman Hills Boulevard).

The opening year (2015) DHVs for Build alternative were assumed to be the same as No-Build alternative. The traffic volumes were not adjusted for the presence of bi-directional two-lane frontage roads as was done for the design year (2035) Build DHVs. This is because the Hernando MPOs *2035 Long Range Transportation Plan (LRTP)*<sup>5</sup> (Adopted December 15, 2009 with amendments through November 19, 2013) states that the frontage roads will be built only between 2026 and 2035.

The 2015 No-Build and Build DHVs for AM and PM peak hour are shown in **Figure 6-7 and Figure 6-8**, respectively. The 2035 No-Build and Build DHVs for AM and PM peak hour are shown in **Figure 6-9 and Figure 6-10**, respectively.

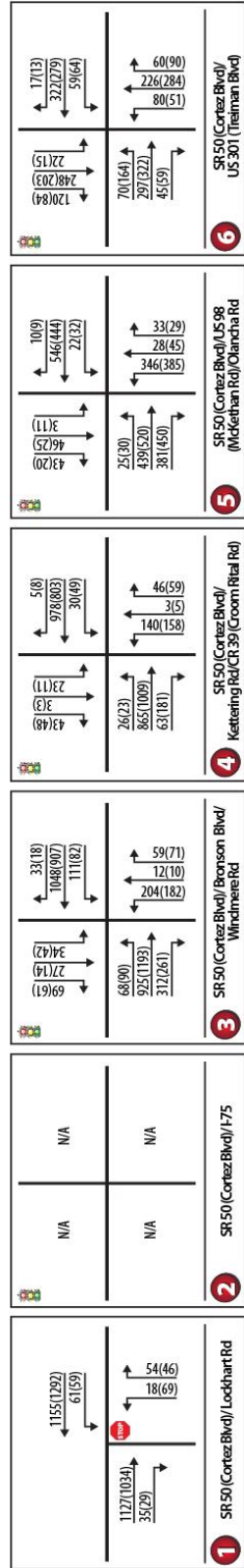
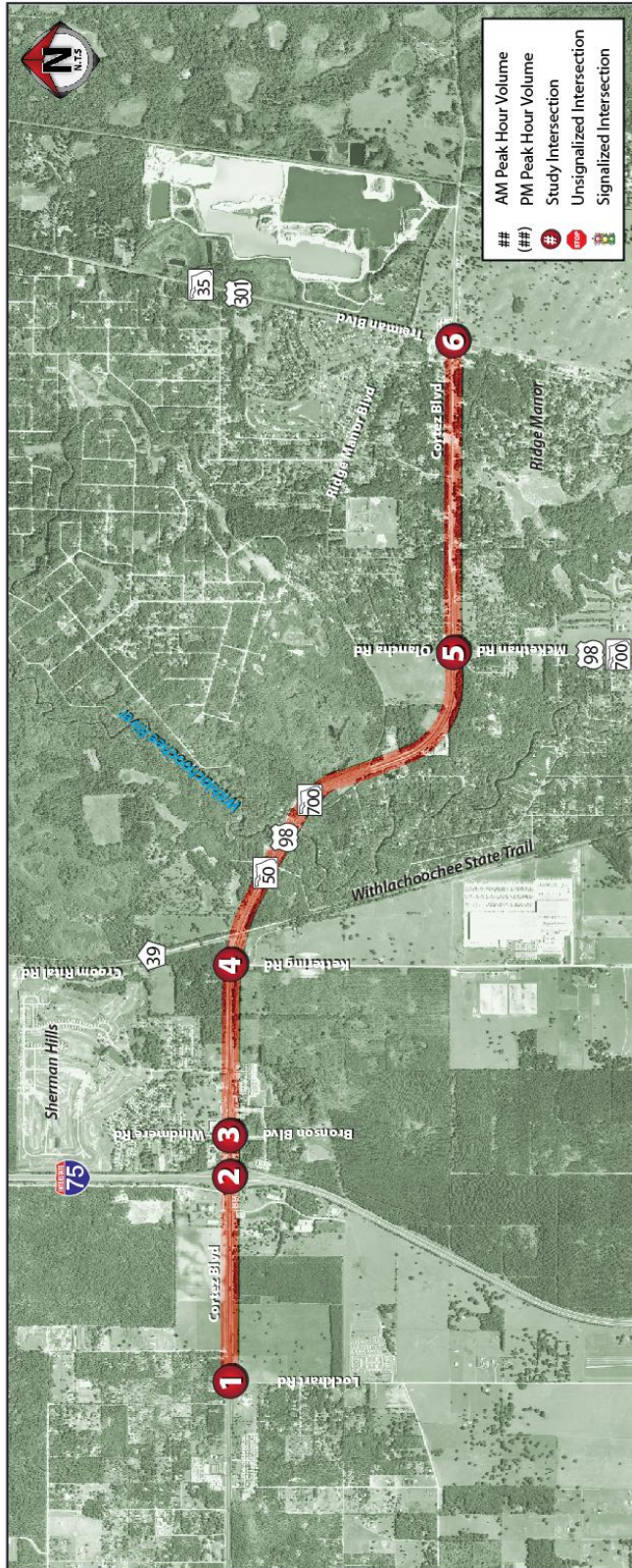
#### **6.3.1.9 Future Operational Analyses**


The opening year (2015) and design year (2035) operational analyses of No-Build alternative did not consider any capacity improvements along roadway segments or any improvements to the intersections within the study area. However, the future operational analyses of the Build alternative were conducted by considering adequate segment and intersection improvements ensuring that SR 50 (Cortez Boulevard) would operate at acceptable LOS conditions. Synchro 7 was used to analyze future intersection and segment operational conditions. For all the signalized intersections, signal phase splits were optimized retaining the existing cycle lengths. The results of all intersection operations were reported as HCM LOS and the results of all segments were reported using Synchro Arterial segment LOS. The recommended future intersection lane geometry improvements are presented in **Figure 6-11**.

#### **6.3.1.10 Results of Future Operational Analyses**

The intersection analysis of opening year (2015) No-Build conditions indicated that all the signalized intersections operate at acceptable LOS conditions and only the unsignalized intersection at SR 50 (Cortez Boulevard)/Lockhart Road fails to operate at acceptable LOS conditions. The segment analysis of opening year (2015) No-Build conditions indicated that all the segments operate at acceptable LOS conditions.

Figure 6-7: 2015 No-Build AM and PM Turning Movement Volumes

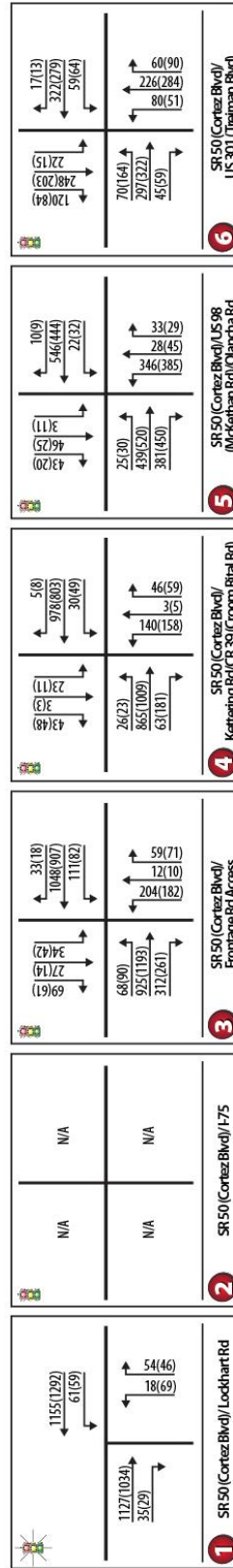
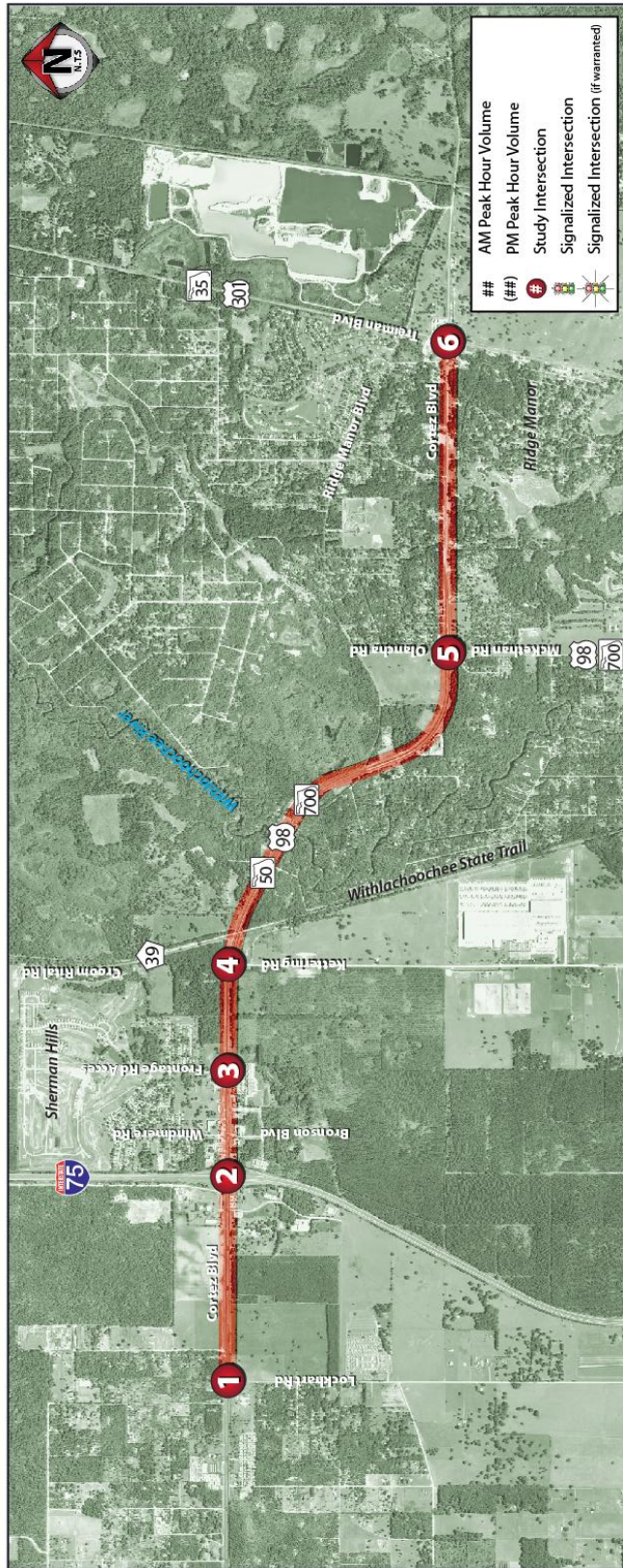




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**2015 No-Build AM and PM**  
**Turning Movement Volumes**

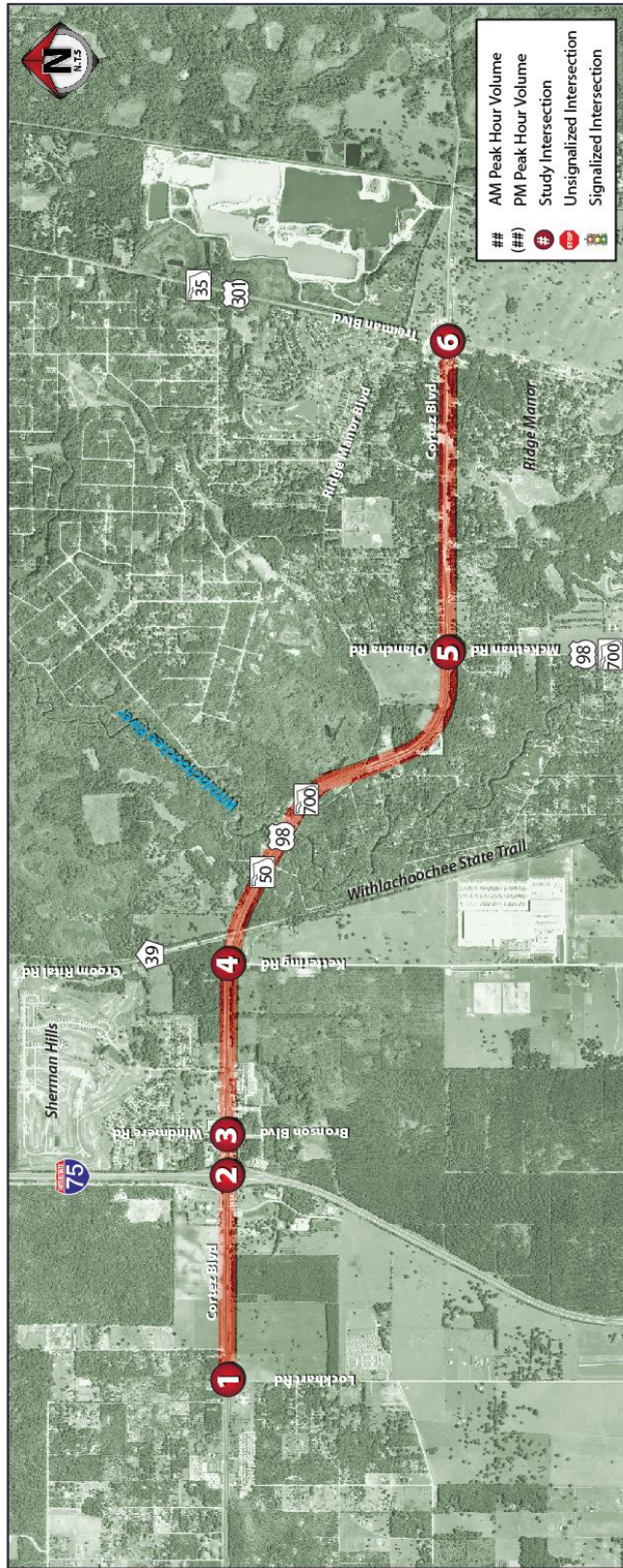
Figure 6-8: 2015 Build AM and PM Turning Movement Volumes



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**2015 Build AM and PM**  
**Turning Movement Volumes**

Figure 6-9: 2035 No-Build AM and PM Turning Movement Volumes



Intersection	AM Peak Hour Volume (##)	PM Peak Hour Volume (##)	Intersection Type
1 SR 50 (Cortez Blvd)/Lockhart Rd	3325(3357) 103(85)	160(103) 53(155)	Signalized Intersection
2 SR 50 (Cortez Blvd)/I-75	N/A	N/A	Study Intersection
3 SR 50 (Cortez Blvd)/Bronson Blvd/Winchmere Rd	270(260) 74(38) 91(114)	184(216) 256(203) 62(63)	Signalized Intersection
4 SR 50 (Cortez Blvd)/CR 39 (Croom Rital Rd) Kettering Rd	198(212) 20(20) 62(29)	123(159) 20(25) 432(484)	Signalized Intersection
5 SR 50 (Cortez Blvd)/US 98 (McKethan Rd)/Olantha Rd	194(47) 112(61) 7(27)	80(71) 69(108) 842(816)	Signalized Intersection
6 SR 50 (Cortez Blvd)/US 301 (Treiman Blvd)	381(206) 603(493) 53(37)	145(217) 548(691) 238(124)	Signalized Intersection

**2035 No-Build AM and PM**  
**Turning Movement Volumes**

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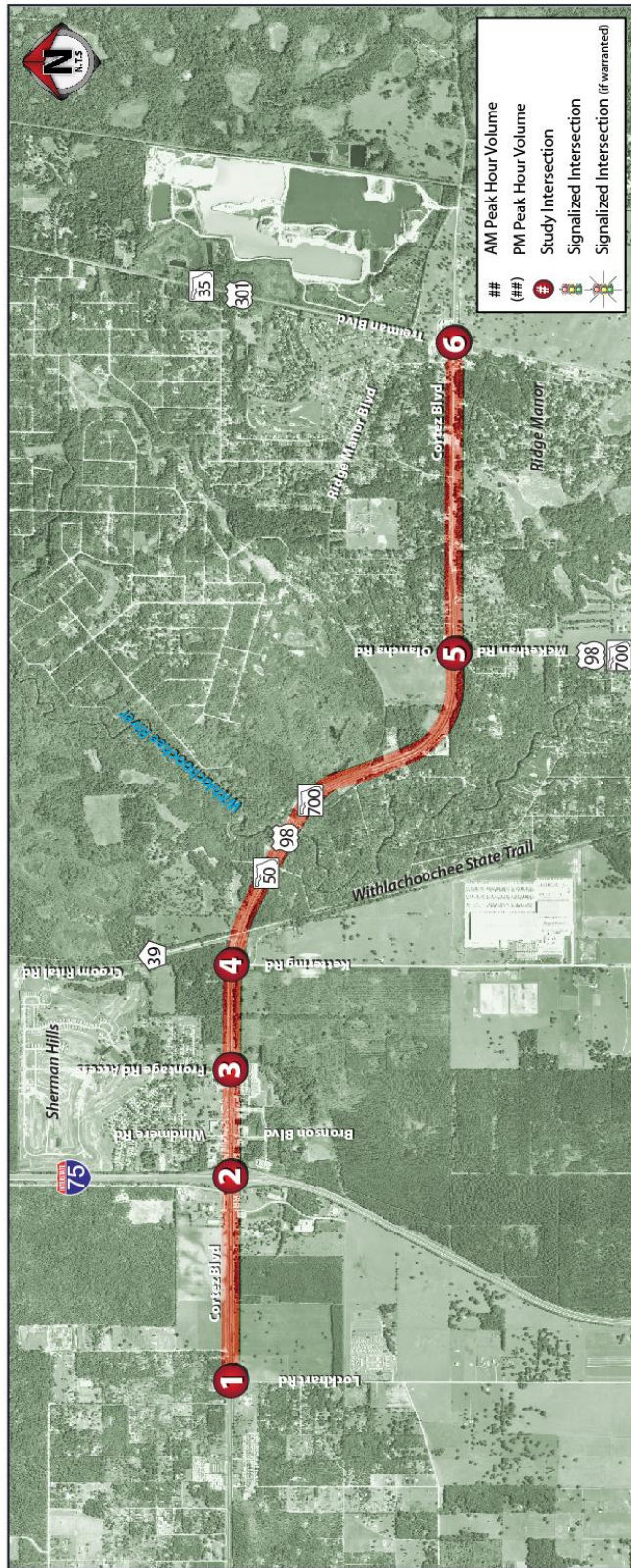


Figure 6-10: 2035 Build AM and PM Turning Movement Volumes



Study Intersection	Signalized Intersection (if warranted)	AM Peak Hour Volume	PM Peak Hour Volume																
1	SR 50 (Cortez Blvd) / Lockhart Rd	<table border="1"> <tr><td>190(185)</td><td>200(100)</td></tr> <tr><td>175(180)</td><td>3075(3137)</td></tr> <tr><td>3120(2885)</td><td>181(177)</td></tr> <tr><td>88(90)</td><td>103(156)</td></tr> </table>	190(185)	200(100)	175(180)	3075(3137)	3120(2885)	181(177)	88(90)	103(156)	<table border="1"> <tr><td>20(20)</td><td>111(155)</td></tr> <tr><td>20(20)</td><td>20(20)</td></tr> <tr><td>181(177)</td><td>91(156)</td></tr> <tr><td>103(156)</td><td>20(20)</td></tr> </table>	20(20)	111(155)	20(20)	20(20)	181(177)	91(156)	103(156)	20(20)
190(185)	200(100)																		
175(180)	3075(3137)																		
3120(2885)	181(177)																		
88(90)	103(156)																		
20(20)	111(155)																		
20(20)	20(20)																		
181(177)	91(156)																		
103(156)	20(20)																		
2	SR 50 (Cortez Blvd) / I-75	N/A	N/A																
3	SR 50 (Cortez Blvd) / Frontage Rd Access	<table border="1"> <tr><td>270(260)</td><td>261(306)</td></tr> <tr><td>171(176)</td><td>235(277)</td></tr> <tr><td>74(38)</td><td>628(653)</td></tr> <tr><td>90(50)</td><td>67(101)</td></tr> </table>	270(260)	261(306)	171(176)	235(277)	74(38)	628(653)	90(50)	67(101)	<table border="1"> <tr><td>318(390)</td><td>29(31)</td></tr> <tr><td>66(101)</td><td>67(101)</td></tr> <tr><td>29(31)</td><td>334(278)</td></tr> <tr><td>67(101)</td><td>334(278)</td></tr> </table>	318(390)	29(31)	66(101)	67(101)	29(31)	334(278)	67(101)	334(278)
270(260)	261(306)																		
171(176)	235(277)																		
74(38)	628(653)																		
90(50)	67(101)																		
318(390)	29(31)																		
66(101)	67(101)																		
29(31)	334(278)																		
67(101)	334(278)																		
4	SR 50 (Cortez Blvd) / Kettering Rd / CR 39 (Croom Pittal Rd)	<table border="1"> <tr><td>198(12)</td><td>202(150)</td></tr> <tr><td>20(20)</td><td>2012(2254)</td></tr> <tr><td>142(91)</td><td>225(451)</td></tr> <tr><td>20(20)</td><td>20(20)</td></tr> </table>	198(12)	202(150)	20(20)	2012(2254)	142(91)	225(451)	20(20)	20(20)	<table border="1"> <tr><td>460(485)</td><td>123(159)</td></tr> <tr><td>20(25)</td><td>20(25)</td></tr> <tr><td>56(175)</td><td>56(175)</td></tr> <tr><td>56(175)</td><td>56(175)</td></tr> </table>	460(485)	123(159)	20(25)	20(25)	56(175)	56(175)	56(175)	56(175)
198(12)	202(150)																		
20(20)	2012(2254)																		
142(91)	225(451)																		
20(20)	20(20)																		
460(485)	123(159)																		
20(25)	20(25)																		
56(175)	56(175)																		
56(175)	56(175)																		
5	SR 50 (Cortez Blvd) / US 98 (Mckethan Rd) / Olanda Rd	<table border="1"> <tr><td>194(47)</td><td>120(73)</td></tr> <tr><td>112(61)</td><td>1066(1262)</td></tr> <tr><td>7(27)</td><td>925(1090)</td></tr> <tr><td>1483(1196)</td><td>80(71)</td></tr> </table>	194(47)	120(73)	112(61)	1066(1262)	7(27)	925(1090)	1483(1196)	80(71)	<table border="1"> <tr><td>842(816)</td><td>69(108)</td></tr> <tr><td>80(71)</td><td>69(108)</td></tr> <tr><td>53(77)</td><td>53(77)</td></tr> <tr><td>53(77)</td><td>53(77)</td></tr> </table>	842(816)	69(108)	80(71)	69(108)	53(77)	53(77)	53(77)	53(77)
194(47)	120(73)																		
112(61)	1066(1262)																		
7(27)	925(1090)																		
1483(1196)	80(71)																		
842(816)	69(108)																		
80(71)	69(108)																		
53(77)	53(77)																		
53(77)	53(77)																		
6	SR 50 (Cortez Blvd) / US 301 (Treiman Blvd)	<table border="1"> <tr><td>381(206)</td><td>147(397)</td></tr> <tr><td>603(493)</td><td>627(80)</td></tr> <tr><td>53(37)</td><td>95(145)</td></tr> <tr><td>35(27)</td><td>145(217)</td></tr> </table>	381(206)	147(397)	603(493)	627(80)	53(37)	95(145)	35(27)	145(217)	<table border="1"> <tr><td>238(124)</td><td>548(691)</td></tr> <tr><td>145(217)</td><td>548(691)</td></tr> <tr><td>709(712)</td><td>709(712)</td></tr> <tr><td>709(712)</td><td>709(712)</td></tr> </table>	238(124)	548(691)	145(217)	548(691)	709(712)	709(712)	709(712)	709(712)
381(206)	147(397)																		
603(493)	627(80)																		
53(37)	95(145)																		
35(27)	145(217)																		
238(124)	548(691)																		
145(217)	548(691)																		
709(712)	709(712)																		
709(712)	709(712)																		

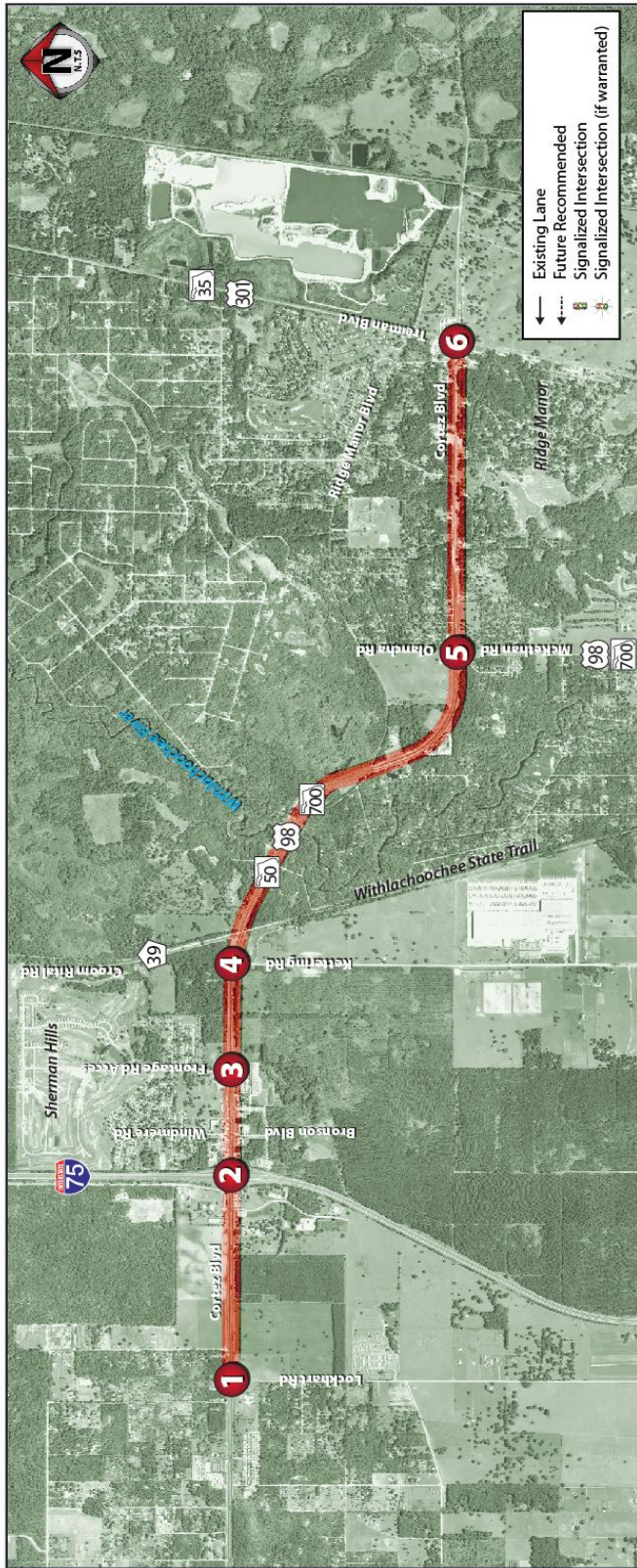
Note: Build volumes were developed assuming frontage roads between Lockhart Rd & I-75 and I-75 & Kettering Rd

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**2035 Build AM and PM  
 Turning Movement Volumes**

Figure 6-11: Recommended Future Intersection Geometries



<b>1</b>	SR 50 (Cortez Blvd)/Lockhart Rd	
<b>2</b>	SR 50 (Cortez Blvd)/I 75	N/A
<b>3</b>	SR 50 (Cortez Blvd)/Frontage Rd Access	
<b>4</b>	SR 50 (Cortez Blvd)/Kettering Rd (CR 39) (Croom Rd)	
<b>5</b>	SR 50 (Cortez Blvd)/US 98 (McKethan Rd)/Olantha Rd	
<b>6</b>	SR 50 (Cortez Blvd)/US 301 (Treiman Blvd)	



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**Recommended Future Intersection Geometries**

The intersection analysis of opening year (2015) Build conditions with the improved intersection and segment lane geometries indicated that all the intersections within the study corridor operate at acceptable LOS conditions for both AM and PM peak periods. The opening year (2015) Build conditions analysis also indicated that SR 50 (Cortez Boulevard)/Lockhart Road intersection needs to be signalized (if warranted). The segment analysis of opening year (2015) Build conditions indicated that all the segments operate at acceptable LOS conditions.

The intersection analysis of design year (2035) No-Build conditions indicated that all the intersections fail to operate at acceptable LOS conditions for both AM and PM peak periods. The segment analysis of design year (2035) No-Build conditions indicated the following segments will fail to operate at acceptable LOS conditions:

- SR 50 (Cortez Boulevard) from Bronson Boulevard/Windmere Road to Kettering Road/CR 39 (Croom Rital Road).
- Eastbound SR 50 (Cortez Boulevard) from US 98 (McKethan Road)/Olancha Road to Kettering Road/CR 39 (Croom Rital Road)

The intersection analysis of design year (2035) Build conditions with the improved intersection and segment lane geometries indicated that all the intersections operate at acceptable level of service conditions for both AM and PM peak periods. The design year (2035) Build conditions analysis also indicated that SR 50 (Cortez Boulevard)/Lockhart Road intersection needs to be signalized (if warranted). The segment analysis of design year (2035) Build conditions indicated the all the segments operate at acceptable LOS conditions.

Overall intersection delays and LOS along with approach delays and approach LOS for AM and PM peak periods, for opening year (2015) and design year (2035) are presented in **Tables 6-3 and 6-4**, respectively.

Year 2015 No-Build and Build conditions intersection and segment LOS are presented in **Figures 6-12 and 6-13**, respectively. Year 2035 No-Build and Build conditions intersection and segment LOS are presented in **Figures 6-14 and 6-15**, respectively.

### **6.3.1.11 Summary of Recommended Improvements**

The recommended improvements for the SR 50 (Cortez Boulevard) from west of I-75 to US 301 (SR 35/Treiman Boulevard) were identified from the design year (2035) traffic conditions, these mainline and intersection improvements were recommended to be implemented by the opening year (2015). The following are the recommended improvements for SR 50 (Cortez Boulevard) within the study corridor:

- Improve SR 50 (Cortez Boulevard) from four-lane divided arterial to six-lane divided arterial from west of I-75 to east of US 98 (McKethan Road)/Olancha Road.
- Improve SR 50 (Cortez Boulevard) from two-lane undivided arterial to four-lane divided arterial from east of US 98 (McKethan Road)/Olancha Road to US 301 (SR 35/Treiman Boulevard).
- Intersection improvements to accommodate traffic movements at all the signalized intersections along with signalization of SR 50 (Cortez Boulevard)/Lockhart Road intersection (if warranted).

**Table 6-3: Opening Year (2015) Intersection Operational Analyses**

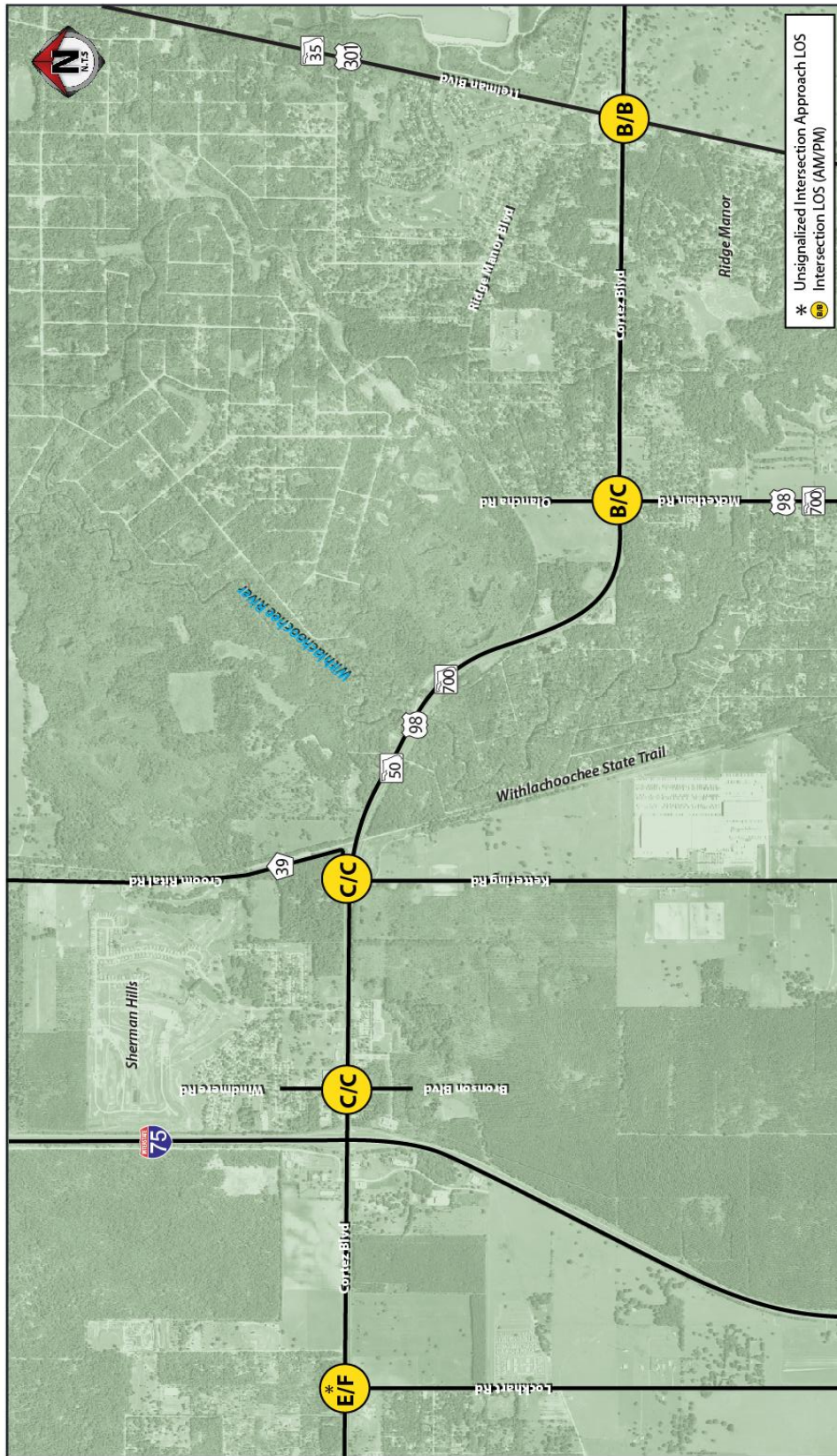
Peak Hour Intersection Analyses		Opening Year (2015)							
		No-Build (AM)		No-Build (PM)		Build (AM)		Build (PM)	
		Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS
SR 50 (Cortez Boulevard) & Lockhart Road*	EB	NA	NA	NA	NA	11.1	B	10.8	B
	WB	NA	NA	NA	NA	7.4	A	7.3	A
	NB	NA	NA	NA	NA	47.5	D	48.1	D
	SB	NA	NA	NA	NA	NA	NA	NA	NA
	Overall	37.8	E	207.5	F	10.3	B	10.6	B
SR 50 (Cortez Boulevard) & Bronson Boulevard/Windmere Road (Or) New Frontage Road Access Road**	EB	16.3	B	17.4	B	12.5	B	13.2	B
	WB	24.5	C	15.0	B	12.6	B	12.6	B
	NB	60.9	E	55.4	E	58.9	E	55.6	E
	SB	42.2	D	43.0	D	55.8	E	56.6	E
	Overall	25.0	C	21.0	C	18.9	B	18.5	B
SR 50 (Cortez Boulevard) & Kettering Road/Croom Rital Trail	EB	25.7	C	26.5	C	10.6	B	11.2	B
	WB	18.2	B	12.0	B	13.6	B	15.0	B
	NB	59.5	E	57.3	E	56.9	E	56.1	E
	SB	38.0	D	44.1	D	50.9	D	49.2	D
	Overall	25.5	C	24.6	C	17.2	B	17.8	B
SR 50 (Cortez Boulevard) & US 98 (SR 700/McKethan Road)/ Olancha Road	EB	17.0	B	19.7	B	8.6	A	8.6	A
	WB	13.2	B	13.9	B	15.6	B	15.7	B
	NB	31.5	C	31.1	C	33.3	C	34.5	C
	SB	15.3	B	14.8	B	41.1	D	43.9	D
	Overall	18.8	B	20.8	C	17.5	B	17.2	B
SR 50 (Cortez Boulevard) & US 301 (SR 35/Treiman Boulevard)	EB	13.1	B	12.4	B	22.0	C	21.5	C
	WB	13.0	B	11.2	B	19.9	B	19.2	B
	NB	14.2	B	18.2	B	19.0	B	21.3	C
	SB	15.8	B	15.9	B	22.9	C	24.0	C
	Overall	14.0	B	14.3	B	21.0	C	21.4	B



**Table 6-4: Design Year (2035) Intersection Operational Analyses**

Peak Hour Intersection Analyses		Design Year (2035)							
		No-Build (AM)		No-Build (PM)		Build (AM)		Build (PM)	
		Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS	Delay (Sec)	LOS
SR 50 (Cortez Boulevard) & Lockhart Road*	EB	NA	NA	NA	NA	41.0	D	44.1	D
	WB	NA	NA	NA	NA	48.8	D	29.8	C
	NB	NA	NA	NA	NA	66.8	E	57.2	E
	SB	NA	NA	NA	NA	61.1	E	60.4	E
	Overall	679.7	F	360.8	F	46.4	D	39.4	D
SR 50 (Cortez Boulevard) & Bronson Boulevard/Windmere Road (Or) New Frontage Road Access Road**	EB	346.0	F	361.8	F	31.2	C	47.9	D
	WB	259.5	F	165.1	F	36.0	D	31.4	C
	NB	591.4	F	297.4	F	73.7	E	64.0	E
	SB	46.9	D	39.3	D	69.9	E	67.0	E
	Overall	302.1	F	264.9	F	38.4	D	44.0	D
SR 50 (Cortez Boulevard) & Kettering Road/Croom Rital Trail	EB	497.8	F	572.4	F	32.1	C	43.7	D
	WB	545.1	F	247.9	F	60.5	E	34.5	C
	NB	418.8	F	278.3	F	74.9	E	68.2	E
	SB	30.3	C	34.1	C	60.4	E	61.2	E
	Overall	490.3	F	400.9	F	50.3	D	44.2	D
SR 50 (Cortez Boulevard) & US 98 (SR 700/McKethan Road)/ Olancha Road	EB	58.7	E	113.8	F	17.7	B	16.0	B
	WB	34.1	C	28.6	C	45.1	D	28.1	C
	NB	796.8	F	304.3	F	33.5	C	34.4	C
	SB	22.5	C	16.4	B	48.6	D	42.7	D
	Overall	197.0	F	127.4	F	31.3	C	23.8	C
SR 50 (Cortez Boulevard) & US 301 (SR 35/Treiman Boulevard)	EB	107.0	F	250.5	F	45.4	D	48.4	D
	WB	90.3	F	71.2	E	40.7	D	34.5	C
	NB	269.9	F	358.7	F	26.1	C	32.6	C
	SB	242.5	F	184.9	F	31.0	C	28.8	C
	Overall	182.0	F	227.0	F	35.4	D	37.6	D

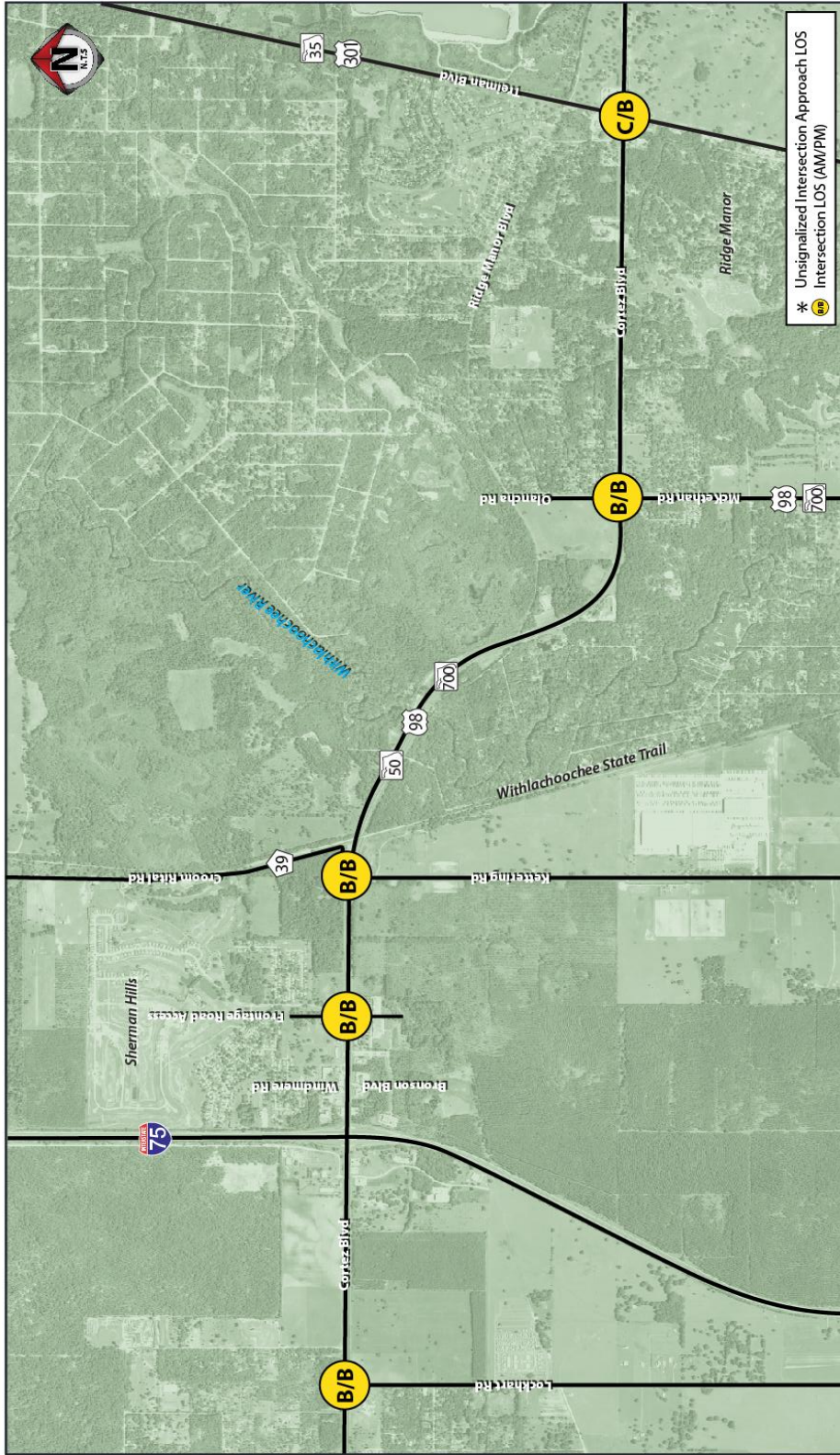
Figure 6-12: 2015 No-Build AM and PM Level of Service



**2015 No-Build AM and PM  
Intersection Level of Service (LOS)**

Project Development and Environment Study  
**SR 50 (Cortez Boulevard)**  
from West of I-75 to US 301 (Treiman Boulevard)  
Work Program Item Segment Number: 416732-2

Figure 6-13: 2015 Build AM and PM Level of Service



**2015 Build AM and PM  
Intersection Level of Service (LOS)**

Project Development and Environment Study  
**SR 50 (Cortez Boulevard)**  
from West of I-75 to US 301 (Treiman Boulevard)  
Work Program Item Segment Number: 416732-2


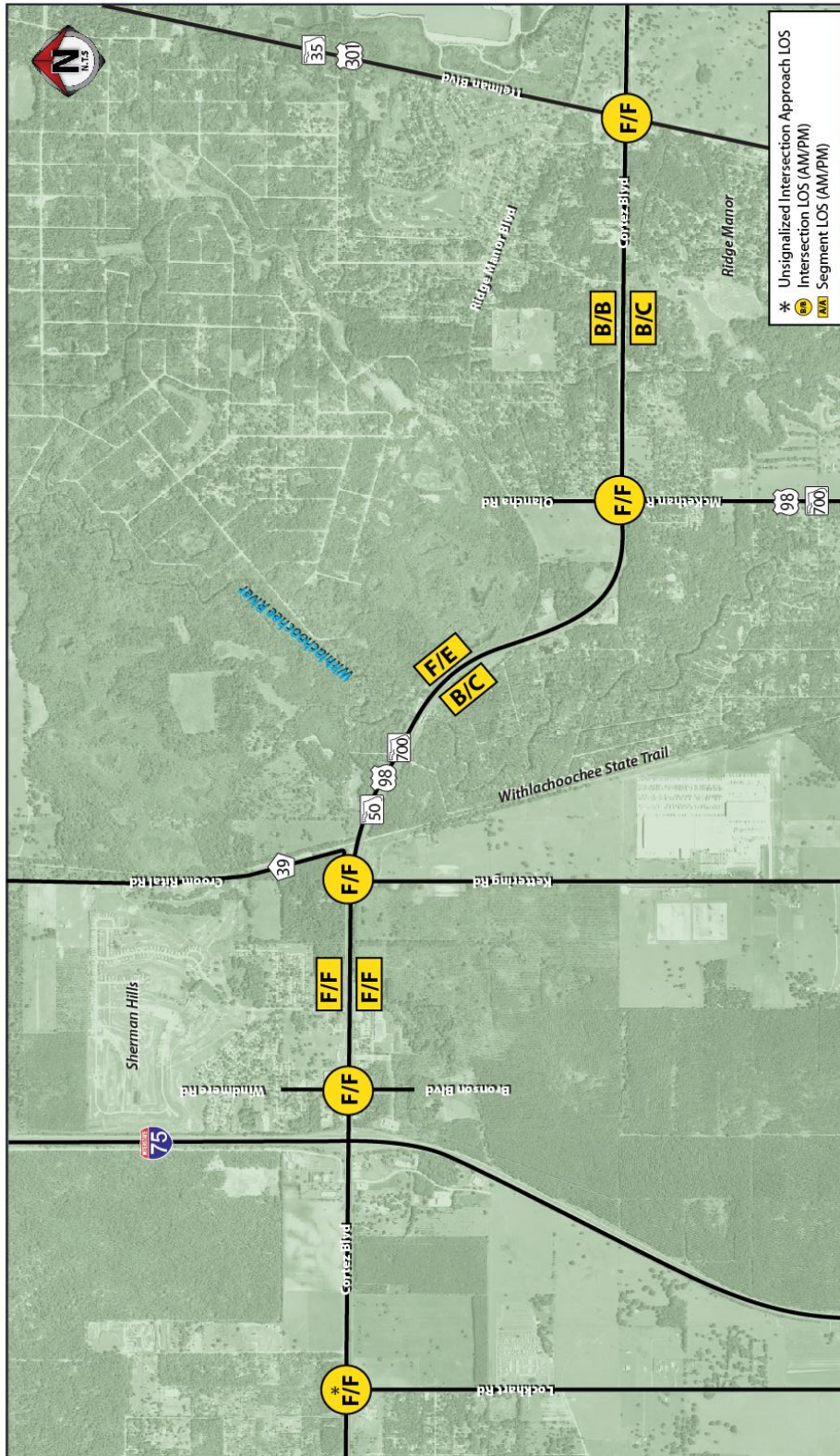


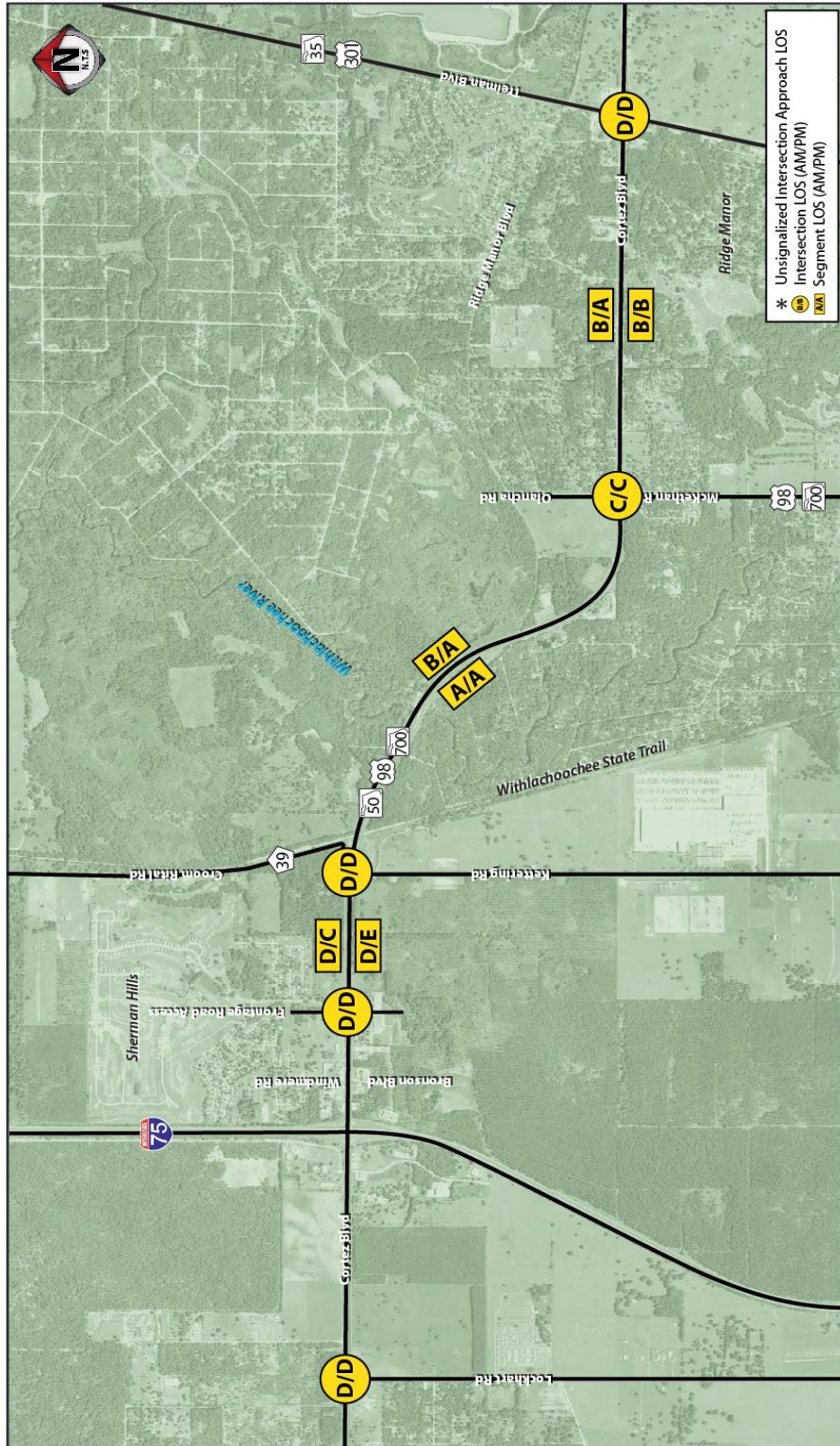
Figure 6-14: 2035 No-Build AM and PM Level of Service



**2035 No-Build AM and PM  
Level of Service (LOS)**

Project Development and Environment Study  
**SR 50 (Cortez Boulevard)**  
from West of I-75 to US 301 (Treiman Boulevard)  
Work Program Item Segment Number: 416732-2

Figure 6-15: 2035 Build AM and PM Level of Service



Project Development and Environment Study

**2035 Build AM and PM  
Level of Service (LOS)**

**SR 50 (Cortez Boulevard)**

from West of I-75 to US 301 (Treiman Boulevard)  
Work Program Item Segment Number: 416732-2



With the recommended future mainline and intersection improvements identified in **Figure 6-11**, all the study area roadway segments and intersections are expected to meet the minimum LOS standard under future Build conditions.

## **6.4 RIGHT-OF-WAY NEEDS AND RELOCATION**

Proposed roadway improvements along SR 50 (Cortez Boulevard) can be constructed within the existing 200-ft ROW. SMFs and floodplain compensation sites will require additional ROW; however, specific proposed pond sites are not being identified at this time. It is estimated that 11.7 ac. of ROW would be required to construct SMFs, with an additional 9.0 ac. for floodplain compensation. Roadway improvements needed along US 98 (McKethan Road) and US 301 (SR 35/Treiman Boulevard) in order to meet LOS requirements at the SR 50 (Cortez Boulevard) intersections will require acquisition of additional ROW. Proposed ROW is needed along the east side of US 98 (McKethan Road), south of SR 50 (Cortez Road). Proposed ROW is needed along the east side of US 301 (SR 35/Treiman Boulevard) on the south approach, and along both sides for the north approach. A Conceptual Stage Relocation Plan was not prepared in accordance with the provisions set forth in 49 Code of Federal Regulations (CFR), Part 24.4 of the Uniform Relocation Assistance and Acquisition Act of 1970, since no residential or business relocations are anticipated for this project.

## **6.5 COST ESTIMATES**

The estimated construction costs for the Recommended Alternative are summarized in **Table 6-5**. The costs were calculated using the FDOT's LRE method. The estimated total construction cost for the roadway and bridge improvements is \$21,831,144. The construction costs were generated using August, 2011 dollars and include MOT, mobilization, and unknowns/contingency costs.

**Table 6-5: Construction Costs**

Component	West of I-75 to Kettering Rd	Kettering Rd to US 98	US 98 to US 301	Along US 98 and US 301	Total
Earthwork	\$201,631	\$289,825	\$343,815	\$336,343	\$1,171,613
Roadway	\$1,605,007	\$2,115,527	\$1,566,755	\$1,579,994	\$6,867,303
Shoulder	\$401,299	\$522,323	\$511,343	\$396,582	\$1,831,546
Median	\$407,890	\$46,746	\$94,474	\$35,777	\$584,887
Drainage	\$451,117	\$549,738	\$548,418	\$601,661	\$2,150,935
Signing	\$36,542	\$42,719	\$42,157	\$75,559	\$196,976
Signalizations	\$201,437	\$100,718	\$85,231	NA	\$387,386
Bridges	N/A	\$1,741,272	N/A	NA	\$1,741,272
<b>Subtotal</b>	<b>\$3,304,921</b>	<b>\$5,408,868</b>	<b>\$3,192,213</b>	<b>\$3,025,915</b>	<b>\$14,931,917</b>
MOT (10%)	\$330,492	\$540,887	\$319,221	\$302,591	\$1,493,192
Mobilization (10%)	\$330,492	\$594,976	\$351,143	\$332,851	\$1,642,511
Unknowns (20%)	\$799,791	\$1,308,946	\$772,516	\$732,271	\$3,613,524
Initial Contingency	\$50,000	\$50,000	\$25,000	\$25,000	\$150,000
<b>Construction Cost Total</b>	<b>\$4,848,745</b>	<b>\$7,903,677</b>	<b>\$4,660,094</b>	<b>\$4,418,628</b>	<b>\$21,831,144</b>
Design (12%)	\$581,849	\$948,441	\$559,211	\$530,235	\$2,619,737
CEI (12%)	\$581,849	\$948,441	\$559,211	\$530,235	\$2,619,737
<b>ROW – Roadway</b>	<b>\$0</b>	<b>\$0</b>	<b>\$0</b>	<b>\$4,788,600</b>	<b>\$4,788,600</b>
<b>ROW - Ponds</b>	<b>\$0</b>	<b>\$0</b>	<b>\$1,500,200</b>	<b>\$0</b>	<b>\$6,288,800</b>
<b>Total Project Cost</b>	<b>\$6,012,444</b>	<b>\$9,800,559</b>	<b>\$7,278,716</b>	<b>\$10,267,699</b>	<b>\$33,359,419</b>

The costs for engineering (final design) and CEI were each estimated at 12 percent of the estimated construction cost for roadway and bridge. Therefore, engineering design and CEI are estimated to cost approximately \$2,619,737 each. The ROW acquisition for the Recommended Alternative pond sites and FPC sites are summarized in **Table 6-6**. The cost to acquire ROW for the roadway improvements, pond sites and FPC sites was estimated at \$4,788,600 and \$1,500,200, respectively, for a total of \$6,288,800.

**Table 6-6: Estimated Pond/FPC Sizes**

Basin	Begin Station	End Station	Basin Length (ft)	Treatment Depth Required (ft)	Attenuation Depth Required (ft)	Pond Size Estimate (ac)	Square Dimension (ft)
1	1150+00	1187+30	3730	1.0	1.4	3.4	836
2	1183+70	1213+00	2930	0.4	0.8	3.9	413
3	1213+00	1239+00	2600	1.3	2.2	1.7	276
4	1239+00	1261+68	2268	1.1	1.8	2.7	344
FPC	920+00	1261+68	34,168	NA	NA	9.0	NA

Note: The square dimensions include the maintenance berm and tie downs.

## **6.6 SCHEDULE**

Upon FHWA's approval of the Recommended Alternative, the project becomes eligible to proceed to the final design phase. Two design segments to add lanes and reconstruct SR 50 (Cortez Boulevard) have been identified in the FDOT Five-Year Work Program:

- SR 50 from US 98 (McKethan Road) to US 301 (Work Program Item Segment No. 416732-3, Preliminary Engineering is programmed in Fiscal Year 2014).
- SR 50 from Windmere Road/Bronson Boulevard to US 98/McKethan Road (Work Program Item Segment No. 416732-4, Preliminary Engineering is programmed in Fiscal Year 2014.)

No other phases are programmed.

## **6.7 PEDESTRIAN AND BICYCLE FACILITIES**

The Recommended Alternative will result in improved accommodations for bicyclists and pedestrians with the addition of 5 ft outside paved shoulders and 5 ft sidewalks in both directions throughout the project. In addition, a sidewalk connection to the Withlacoochee State Trail will be provided. These improvements are consistent with the Hernando County 2035 LRTP.

## **6.8 UTILITY IMPACTS**

Existing utilities (See **Table 2-6**) will likely be impacted by the project. The type, location, and ownership of existing and proposed utilities were summarized previously in this report. Depending on the location and depth of the utilities, implementation of the recommended improvements for the project may require adjustment of some of these facilities. Impacts resulting from utility adjustments were considered in the selection of the Recommended Alternative; however, utility relocation costs are not included in the total estimated project costs.

## **6.9 TEMPORARY TRAFFIC CONTROL PLAN**

SR 50 (Cortez Boulevard) provides access to numerous residences, neighborhoods, and businesses along this corridor. Due to its importance, SR 50 (Cortez Boulevard) should remain functional throughout the duration of the construction activities. The existing number of travel lanes should be maintained to the maximum extent possible. Lane closures, if necessary should occur during off-peak hours.

The following conceptual construction sequence will help maintain traffic operations:

- Relocate existing utilities within the ROW.
- Construct SMFs.
- Construct ditches and sidewalks while maintaining two-way traffic on the existing or temporary pavement.



- Construct either the ultimate eastbound or westbound lanes (sidewalks, curb and gutter, shoulders, travel lanes) while maintaining existing two-way traffic on a combination of the existing pavement and newly constructed or temporary pavement.
- Temporarily operate two-way traffic on a combination of existing pavement and newly constructed or temporary pavement, while constructing the remaining ultimate travel lanes in the other direction.
- Shift eastbound and westbound traffic to their respective, completed roadways.

## 6.10 DRAINAGE

A *Final Preliminary Stormwater Management Facility Report*<sup>6</sup> was prepared to determine the drainage basins and the pond sizes required from US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard). There will be no analysis performed from Lockhart Road to Kettering Road. Kettering Road is located approximately 5,000 ft east of I-75. From Kettering Road to US 98 (SR 700/McKethan Road), an analysis was performed to determine if the existing ponds were designed to accommodate the ultimate six-lane typical section.

The existing stormwater from Lockhart Road to Kettering Road is treated in linear water management systems. This segment will be widened from four to six lanes. The stormwater treatment and attenuation from Lockhart Road to Kettering Road will be accommodated in the proposed ponds for the I-75 project (FPID No. 411011-2-52-01). The stormwater from Kettering Road to US 98 (SR 700/ McKethan Road) discharges to offsite SMFs, which ultimately discharge into the Withlacoochee River. This analysis determined that the SMFs were designed to provide treatment for six lanes of DCIA, and the SMFs generally overattenuated the SWFWMD required 25-year, 24-hour discharge rate. The final design phase will need to evaluate whether the existing SMFs are sufficient to meet the SWFWMD water quality and quantity criteria at the time of the design phase.

US 98 (SR 700/McKethan Road) to US 301 (SR 35/Treiman Boulevard), is divided into four basins. Basin 1 from US 98 (SR 700/McKethan Road) to 2,730 ft east of US 98 (SR 700/McKethan Road) discharges westerly to SMF Pond G, located west of US 98. The analysis shows that in the proposed condition, Pond G will not be able to handle the additional impervious area and meet SWFWMD criteria. The basin was analyzed and a pond size for the entire DCIA for SR 50 (Cortez Boulevard) and US 98 (SR 700/McKethan Road). The remaining three basins were evaluated and pond sizes estimated for each of the basins. **Table 6-6** provides the estimated pond sizes. The analysis assumed an offsite SMF drainage design concept similar to the segment from Kettering Road to US 98.

One pond for each of the four basins was analyzed so that they comply with the treatment and attenuation requirements of the SWFWMD water quality and quantity criteria and the attenuation requirements of FDOT. A wet detention system and a dry detention system were evaluated for each of the three remaining basins. The dry pond assumptions resulted in pond sizes slightly smaller than the wet detention ponds. However, since the dry retention pond size is greatly influenced by the site soil conditions, only the wet pond sizes are provided.

The wet pond sizes range from 1.7 ac. to 3.9 ac. Depending on the placement of the pond in the design phase, a dry retention system should also be feasible in Basins 1, 3 and 4. The estimated pond sizes are found in **Table 6-6**.

The ponds sizes should generally be conservative within the limits of the basin. A hydraulic gradient was established from the lowest point in the roadway to the farthest point on the roadway within Basin 2 and 3. For Basins 1 and 4 the hydraulic gradient was established along US 98 (SR 700/McKethan Road) and US 301, (SR 35/Treiman Boulevard) as this was the furthest point away from the assumed pond location. This resulted in larger ponds due to limiting the height in which the treatment and attenuation depth can be stacked. During the design phase, pond sizes might be reduced in size by utilizing pond liners, locating the ponds closer to the low point in the roadway, adjusting the roadway profile grade line, providing compensatory treatment for the lowest roadway area, or designing a dry pond. The design phase pond selection will require the consideration of these drainage design concepts and an alternative analysis that evaluates the natural, physical, and socio-economic impacts at potential pond locations.

## **6.11 FLOODPLAINS**

In accordance with Executive Order 11988, “Floodplain Management,” DOT Order 5650.2, “Floodplain Management and Protection,” and Chapter 23, CFR, Part 650A, encroachment into floodplains from the construction of the proposed project alternatives will be considered later in future project phases to comply with 23 CFR 650 and 23 CFR 771.

FEMA completed the Flood Insurance Study (FIS) for Hernando County in 1981. There was a revision made to the FIS in January, 2010 and February, 2012.

Portions of the study area for the proposed SR 50 (Cortez Boulevard) widening are located within the floodplain limits shown on the FEMA FIRM Community Panels 12053C0219D, 12053C0238D, 12053C0239D, and 12053C0243D. Portions of SR 50 (Cortez Boulevard) from Kettering Road to US 301 (SR 35/Treiman Boulevard) lie within Zone AE, which is within the 100-yr floodplain where the base elevations have been determined and are shown at selected intervals within the zone on the FEMA Firmettes. Floodplain compensation may be required. Based upon the widening of the roadway footprint into the floodplain, it was estimated that roughly 9.0 ac. of floodplain compensation could be required. This estimate will increase if ponds are placed within the 100 year floodplain.

The recent FIRM also delineates floodplains within the existing SR 50 (Cortez Boulevard) ditches, and linear water management systems and SMF. It is assumed that these stormwater management systems accommodate and treat the ultimate six-lane typical section. These water management systems will be evaluated in the design phase.

The floodplain is primarily due to the Withlacoochee River and wetland system associated with it. The existing SR 50 (Cortez Boulevard) alignment is a transverse encroachment to freshwater floodplains. All of the floodplain encroachments will be minimal due to the proposed roadway alignment following the same alignment as the existing roadway. Floodplain compensation for any freshwater encroachments may be required by SWFWMD. There are no designated floodways within the project limits.

The existing cross drains have been identified for the length of the project. There are approximately nine cross drains located within the study limits and two bridges over the Withlacoochee River. A cross drain analysis was determined not to be commensurate with the purpose of the study. A cross drain analysis will be performed as part of the design phase; however, it is anticipated that most of the cross drains will need to be extended and potentially upsized.

The proposed project is consistent with the *Hernando County Comprehensive Plan* (last amended October 26, 2010). The proposed project will not encourage floodplain development due to local FEMA floodplain and SWFWMD regulations. The project drainage design will be consistent with local FEMA, FDOT, and SWFWMD design guides. Therefore, no significant change in the base flood elevation or limits will occur. The proposed roadway will follow the same general alignment as the existing roadway. Therefore, no natural or beneficial floodplain values will be significantly affected, but there will be 9.0 ac. of floodplain impacts resulting from the roadway improvements.

Section 5 of the *Final Environmental Technical Compendium* documents the floodplain encroachments. Based on the information collected during this study, the proposed improvements can be categorized as STATEMENT 4: PROJECTS ON EXISTING ALIGNMENT INVOLVING REPLACEMENT OF EXISTING DRAINAGE STRUCTURES WITH NO RECORD OF DRAINAGE PROBLEMS, as defined in Chap. 24 of the *FDOT PD&E Manual*, Part 2, Figure 24.1.

The proposed structures will perform hydraulically in a manner equal to or greater than the existing structures, and backwater surface elevations are not expected to increase. As a result, there will be no significant adverse impacts on natural and beneficial floodplain values. There will be no significant change in flood risk, and there will not be a significant change in the potential for interruption or termination of emergency service or emergency management evacuation routes. Therefore, it has been determined that this encroachment is not significant.

## **6.12 BRIDGE ANALYSIS**

SR 50 (Cortez Road) is carried over the Withlacoochee River on two bridges (Bridge Nos. 080011 and 080064) (See **Figure 1-3**). The existing conditions of the Withlacoochee River bridges (see Section 2) are generally good, and will allow modifications (widening) to accommodate proposed improvements.

As previously explained, **Figure 5-4** shows the widening of the two existing bridges over the Withlacoochee River. In order to facilitate MOT and limit the bridge widening to just one side of each bridge, the proposed roadway median width will transition from 40 ft to 54 ft on each approach. The outside concrete barrier of each bridge will be removed, along with the deck to the center of the first outside fascia beam of each bridge. Each bridge will then be widened to accommodate three 12-ft lanes, 10-ft inside and outside shoulders, and a 5-ft sidewalk separated from the shoulder with a concrete barrier. The span arrangement of the widened bridges will match the span arrangement of the existing bridges. Florida I-Beams will support the widened portion of the deck. The beams will be supported by pre-stressed square concrete piles capped with a bent cap. This is similar to the foundation system incorporated in the existing bridges.

The proposed bent cap will be dowelled into the existing bent cap. In addition, the inside barrier on the westbound bridge will be replaced to meet current standards. This work can be done while maintaining traffic.

The construction cost to widen both bridges is estimated at \$2,048,966.

### **6.13 SPECIAL FEATURES**

FDOT may consider context sensitive solutions such as aesthetic features and landscaping during the design phase so that the project is in harmony with the community and preserves and/or enhances the natural, environmental, scenic and aesthetic values of the area. The placement and maintenance of any landscaping shall comply with the required clear zone and sight distance at intersections. No other provisions or commitments were made regarding special aesthetic features, lighting, or noise walls.

### **6.14 ACCESS MANAGEMENT**

SR 50 (Cortez Boulevard) is currently Access Class 3 (Restrictive) from US 19 (west of Lockhart Road) to Kettering Road, and Access Class 4 (Non-Restrictive) from Kettering Road to east of US 301 (SR 35/Treiman Boulevard). The Access Classification is proposed to be changed to Access Class 3 between Kettering Road to east of US 301 (SR 35/Treiman Boulevard), and the changes will be presented at the Public Hearing. Some existing median openings are proposed for closure, some full median openings will be changed to directional median openings to prevent certain turning movements, and the location of some median openings are proposed to be shifted to better meet Access Class 3 median opening spacing standards. Proposed changes to median openings are illustrated on the Preliminary Concept Plans in **Appendix A**.

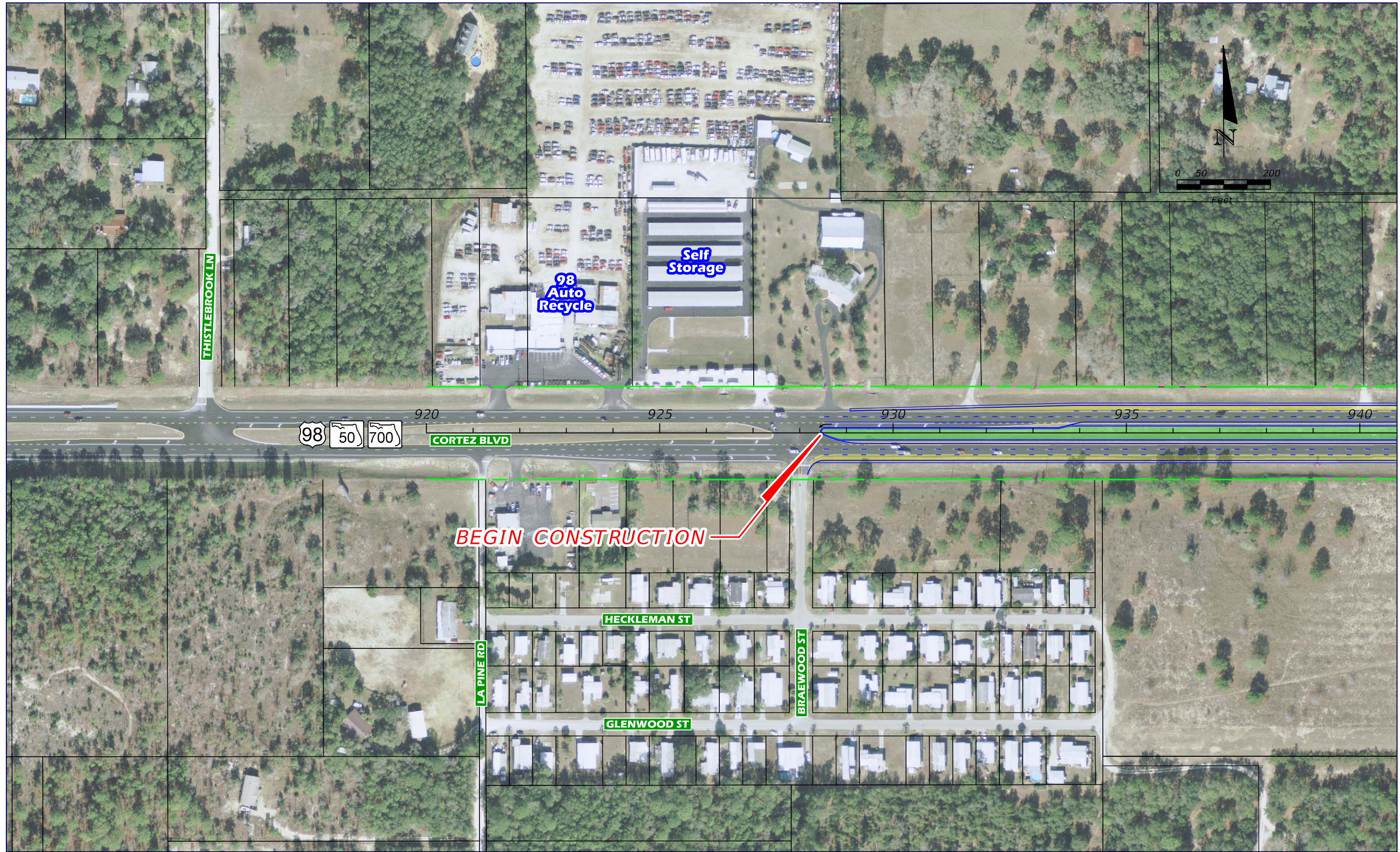
### **6.15 REFERENCES**

1. *Final Traffic Report*; Atkins North America, Inc.; Tampa, Florida; January 2014.
2. *2010 Florida Traffic Information DVD*; Florida Department of Transportation; Tallahassee, Florida; 2010.
3. *Synchro 7*; Trafficware; Albany, California; 2006.
4. *Highway Capacity Manual 2000*; Transportation Research Board, National Research Council; Washington, DC; 2000.
5. 2035 Long Range Transportation Plan Hernando County Metropolitan Planning Organization; Adopted December 15, 2009, including amendments through November 19, 2013.
6. *Final Preliminary Stormwater Management Facility Report*; Atkins North America, Inc.; Tampa, Florida; January 2014.

***APPENDIX A***

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***PRELIMINARY CONCEPT PLANS***



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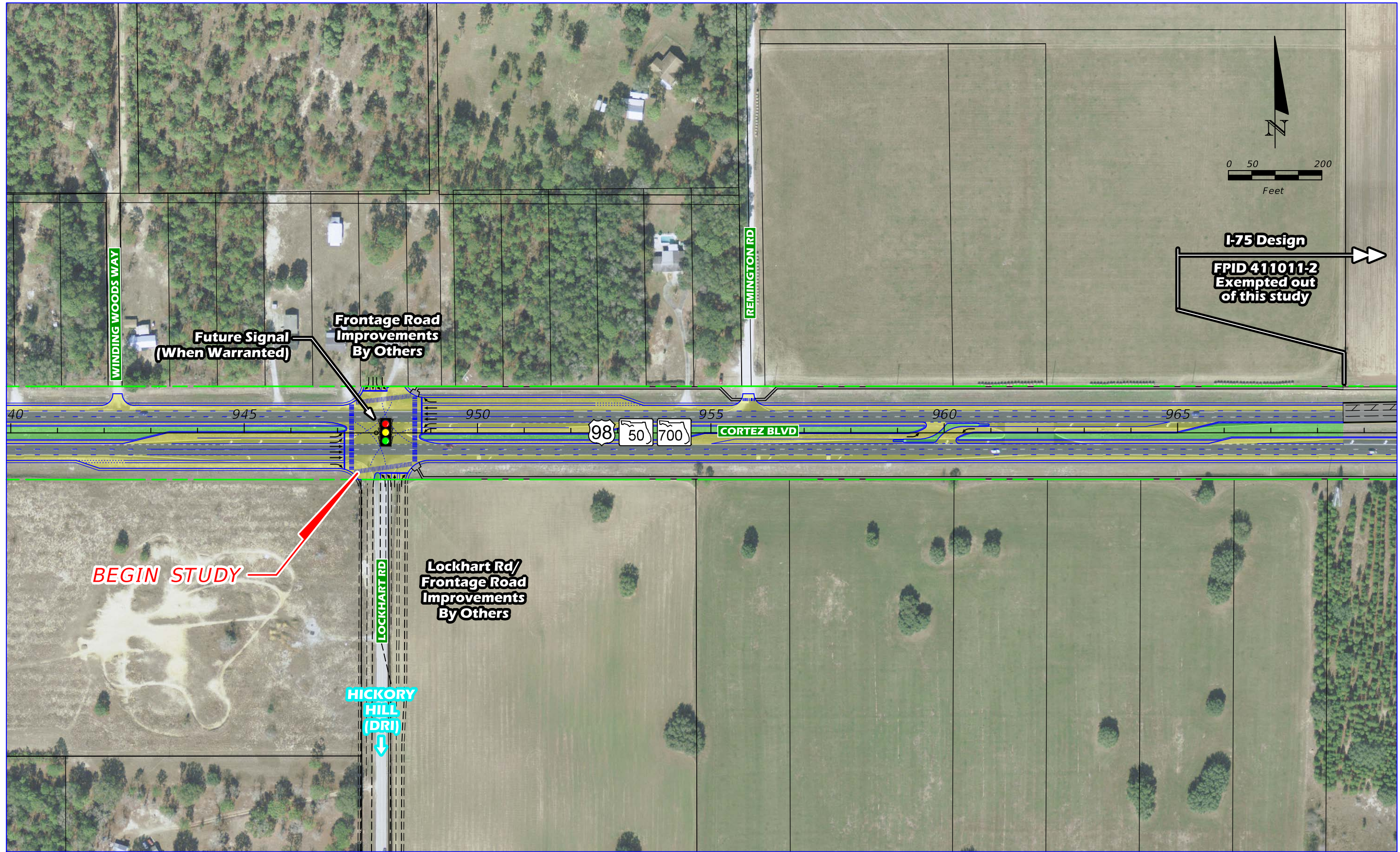
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	EXISTING L.A. ROW		PROPOSED PAVEMENT/WIDENING		PROPOSED SIDEWALK		WETLAND
	EXISTING ROW		PROPOSED EASEMENT (BY OTHERS)		PROPOSED TRAFFIC SIGNAL		CONSERVATION LAND
	EXISTING EASEMENT		PROPOSED TRAFFIC SIGNAL (BY OTHERS)		WITHLACOOCHEE STATE FOREST		POTENTIAL CONTAMINATION SITE
	PARCEL BOUNDARY						

ATKINS NORTH AMERICA, INC.  
 4030 WEST BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	416732-2

SR 50 (CORTEZ BLVD)  
 FROM WEST OF INTERSTATE 75  
 TO US 301 (SR 35/TREIMAN BLVD)

SHEET NO.  
 1



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	CENTERLINE OF CONSTRUCTION		PROPOSED L.A. ROW (BY OTHERS)		PROPOSED ROW		COUNTY-OWNED LAND
	EXISTING L.A. ROW		PROPOSED PAVEMENT/WIDENING		WETLAND		CONSERVATION LAND
	EXISTING ROW		PROPOSED EASEMENT (BY OTHERS)		WITHALACOOCHEE STATE FOREST		POTENTIAL CONTAMINATION SITE
	EXISTING EASEMENT		PROPOSED SIDEWALK		PROPOSED TRAFFIC SIGNAL		
	PARCEL BOUNDARY		PROPOSED TRAFFIC SIGNAL (BY OTHERS)				

ATKINS NORTH AMERICA, INC.  
 4030 WEST BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	416732-2

**SR 50 (CORTEZ BLVD)**  
**FROM WEST OF INTERSTATE 75**  
**TO US 301 (SR 35/TREIMAN BLVD)**

SHEET NO.  
 2



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	CENTERLINE OF CONSTRUCTION		PROPOSED L.A. ROW (BY OTHERS)		PROPOSED ROW		COUNTY-OWNED LAND
	EXISTING L.A. ROW		PROPOSED ROW (BY OTHERS)		PROPOSED PAVEMENT/WIDENING		WETLAND
	EXISTING ROW		PROPOSED EASEMENT (BY OTHERS)		PROPOSED SIDEWALK		CONSERVATION LAND
	EXISTING EASEMENT		PROPOSED TRAFFIC SIGNAL (BY OTHERS)		PROPOSED TRAFFIC SIGNAL		WITHLACOCHEE STATE FOREST
	PARCEL BOUNDARY						POTENTIAL CONTAMINATION SITE

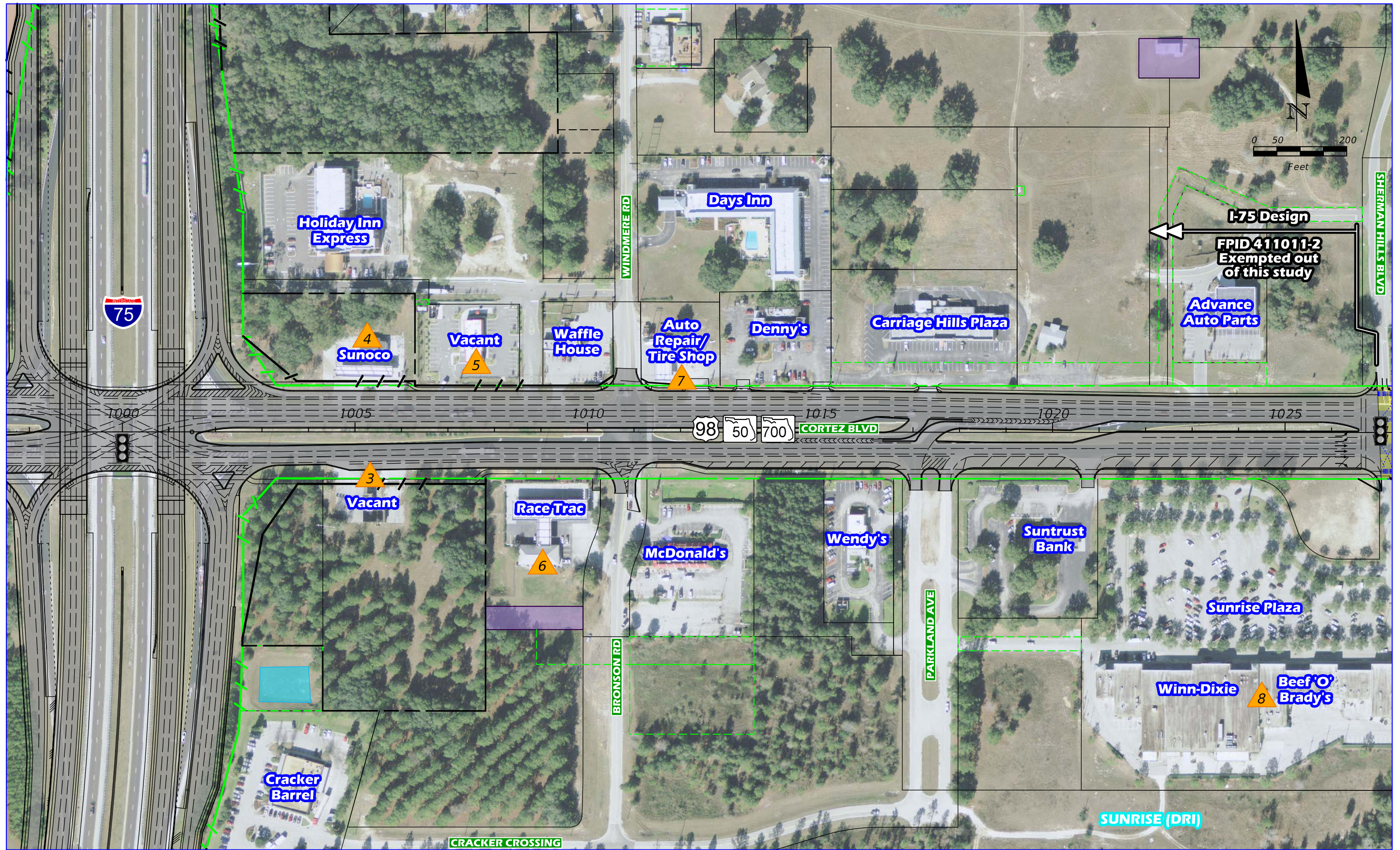
ATKINS NORTH AMERICA, INC.  
 4030 WEST BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	416732-2

SR 50 (CORTEZ BLVD)  
 FROM WEST OF INTERSTATE 75  
 TO US 301 (SR 35/TREIMAN BLVD)

SHEET NO.
3





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	CENTERLINE OF CONSTRUCTION		PROPOSED L.A. ROW (BY OTHERS)		PROPOSED ROW		COUNTY-OWNED LAND
	EXISTING L.A. ROW		PROPOSED ROW (BY OTHERS)		PROPOSED PAVEMENT/WIDENING		WETLAND
	EXISTING ROW		PROPOSED EASEMENT (BY OTHERS)		PROPOSED SIDEWALK		CONSERVATION LAND
	EXISTING EASEMENT		PROPOSED TRAFFIC SIGNAL (BY OTHERS)		PROPOSED TRAFFIC SIGNAL		WITHLACOCHEE STATE FOREST
	PARCEL BOUNDARY						POTENTIAL CONTAMINATION SITE

ATKINS NORTH AMERICA, INC.  
 4030 WEST BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	416732-2

SR 50 (CORTEZ BLVD)  
 FROM WEST OF INTERSTATE 75  
 TO US 301 (SR 35/TREIMAN BLVD)

SHEET NO.
4



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	CENTERLINE OF CONSTRUCTION		PROPOSED L.A. ROW (BY OTHERS)		PROPOSED ROW		COUNTY-OWNED LAND
	EXISTING L.A. ROW		PROPOSED ROW (BY OTHERS)		PROPOSED PAVEMENT/WIDENING		WETLAND
	EXISTING ROW		PROPOSED EASEMENT (BY OTHERS)		PROPOSED SIDEWALK		CONSERVATION LAND
	EXISTING EASEMENT		PROPOSED TRAFFIC SIGNAL (BY OTHERS)		PROPOSED TRAFFIC SIGNAL		WITHLACOOCHEE STATE FOREST
	PARCEL BOUNDARY				POTENTIAL CONTAMINATION SITE		

ATKINS NORTH AMERICA, INC.  
 4030 WEST BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	416732-2

**SR 50 (CORTEZ BLVD)**  
**FROM WEST OF INTERSTATE 75**  
**TO US 301 (SR 35/TREIMAN BLVD)**

SHEET NO.  
5



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	CENTERLINE OF CONSTRUCTION		PROPOSED L.A. ROW (BY OTHERS)		PROPOSED ROW		COUNTY-OWNED LAND
	EXISTING L.A. ROW		PROPOSED PAVEMENT/WIDENING		WETLAND		CONSERVATION LAND
	EXISTING ROW		PROPOSED EASEMENT (BY OTHERS)		WITHLACOOCHEE STATE FOREST		POTENTIAL CONTAMINATION SITE
	EXISTING EASEMENT		PROPOSED SIDEWALK		PROPOSED TRAFFIC SIGNAL		
	PARCEL BOUNDARY		PROPOSED TRAFFIC SIGNAL (BY OTHERS)				

ATKINS NORTH AMERICA, INC.  
 4030 WEST BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	416732-2

SR 50 (CORTEZ BLVD)  
 FROM WEST OF INTERSTATE 75  
 TO US 301 (SR 35/TREIMAN BLVD)

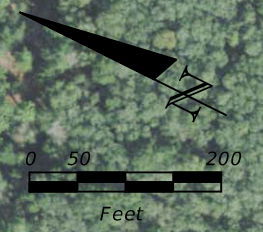
SHEET NO.
6



CURVE DATA CL SR50-2  
 PI STA. = 1103+18.90  
 $\Delta$  = 41° 41' 29" (RT)  
 D = 2° 16' 43"  
 T = 957.46  
 L = 1,829.66  
 R = 2,514.48  
 PC STA. = 1093+61.44  
 PT STA. = 1111+91.11

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990 CENTERLINE OF CONSTRUCTION EXISTING L.A. ROW EXISTING ROW EXISTING EASEMENT PARCEL BOUNDARY	PROPOSED L.A. ROW (BY OTHERS) PROPOSED ROW (BY OTHERS) PROPOSED EASEMENT (BY OTHERS) PROPOSED TRAFFIC SIGNAL (BY OTHERS)	PROPOSED ROW PROPOSED PAVEMENT/WIDENING PROPOSED SIDEWALK PROPOSED TRAFFIC SIGNAL	COUNTY-OWNED LAND WETLAND CONSERVATION LAND WITHLACOOCHEE STATE FOREST POTENTIAL CONTAMINATION SITE	ATKINS NORTH AMERICA, INC. 4030 WEST BOY SCOUT BLVD SUITE 700 TAMPA, FL 33607	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION ROAD NO. COUNTY FINANCIAL PROJECT ID SR 50 HERNANDO 416732-2	SR 50 (CORTEZ BLVD) FROM WEST OF INTERSTATE 75 TO US 301 (SR 35/TREIMAN BLVD)	SHEET NO. 7
--	---	--	---	--	---	---	----------------



CURVE DATA CL SR50-2  
 PI STA. = 1103+18.90  
 Δ = 41° 41' 29" (RT)  
 D = 2° 16' 43"  
 T = 957.46  
 L = 1,829.66  
 R = 2,514.48  
 PC STA. = 1093+61.44  
 PT STA. = 1111+91.11

CURVE DATA CL SR50-3  
 PI STA. = 1139+95.11  
 Δ = 69° 16' 06" (LT)  
 D = 2° 57' 02"  
 T = 1,341.31  
 L = 2,347.63  
 R = 1,941.86  
 PC STA. = 1126+53.80  
 PT STA. = 1150+01.43

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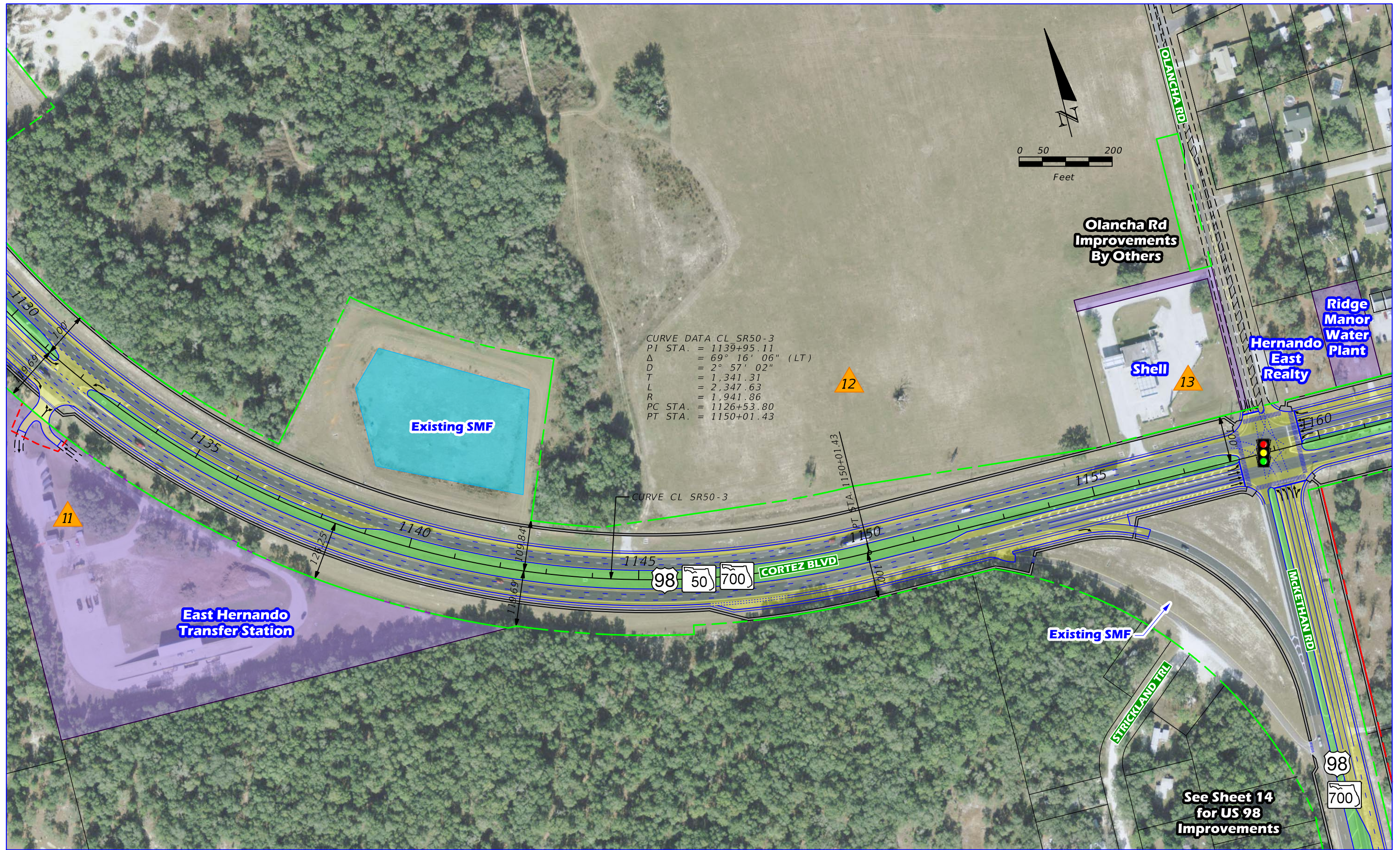
	CENTERLINE OF CONSTRUCTION		PROPOSED L.A. ROW (BY OTHERS)		PROPOSED ROW (BY OTHERS)		PROPOSED PAVEMENT/WIDENING		COUNTY-OWNED LAND
	EXISTING L.A. ROW		PROPOSED EASEMENT (BY OTHERS)		PROPOSED SIDEWALK		WETLAND		CONSERVATION LAND
	EXISTING ROW		PROPOSED TRAFFIC SIGNAL (BY OTHERS)		WITHLACOOCHEE STATE FOREST		POTENTIAL CONTAMINATION SITE		
	EXISTING EASEMENT								
	PARCEL BOUNDARY								

ATKINS NORTH AMERICA, INC.  
 4030 WEST BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	416732-2

**SR 50 (CORTEZ BLVD)**  
**FROM WEST OF INTERSTATE 75**  
**TO US 301 (SR 35/TREIMAN BLVD)**

SHEET NO.  
 8



CURVE DATA CL SR50-3  
 PI STA. = 1139+95.11  
 Δ = 69° 16' 06" (LT)  
 D = 2° 57' 02"  
 T = 1,341.31  
 L = 2,347.63  
 R = 1,941.86  
 PC STA. = 1126+53.80  
 PT STA. = 1150+01.43

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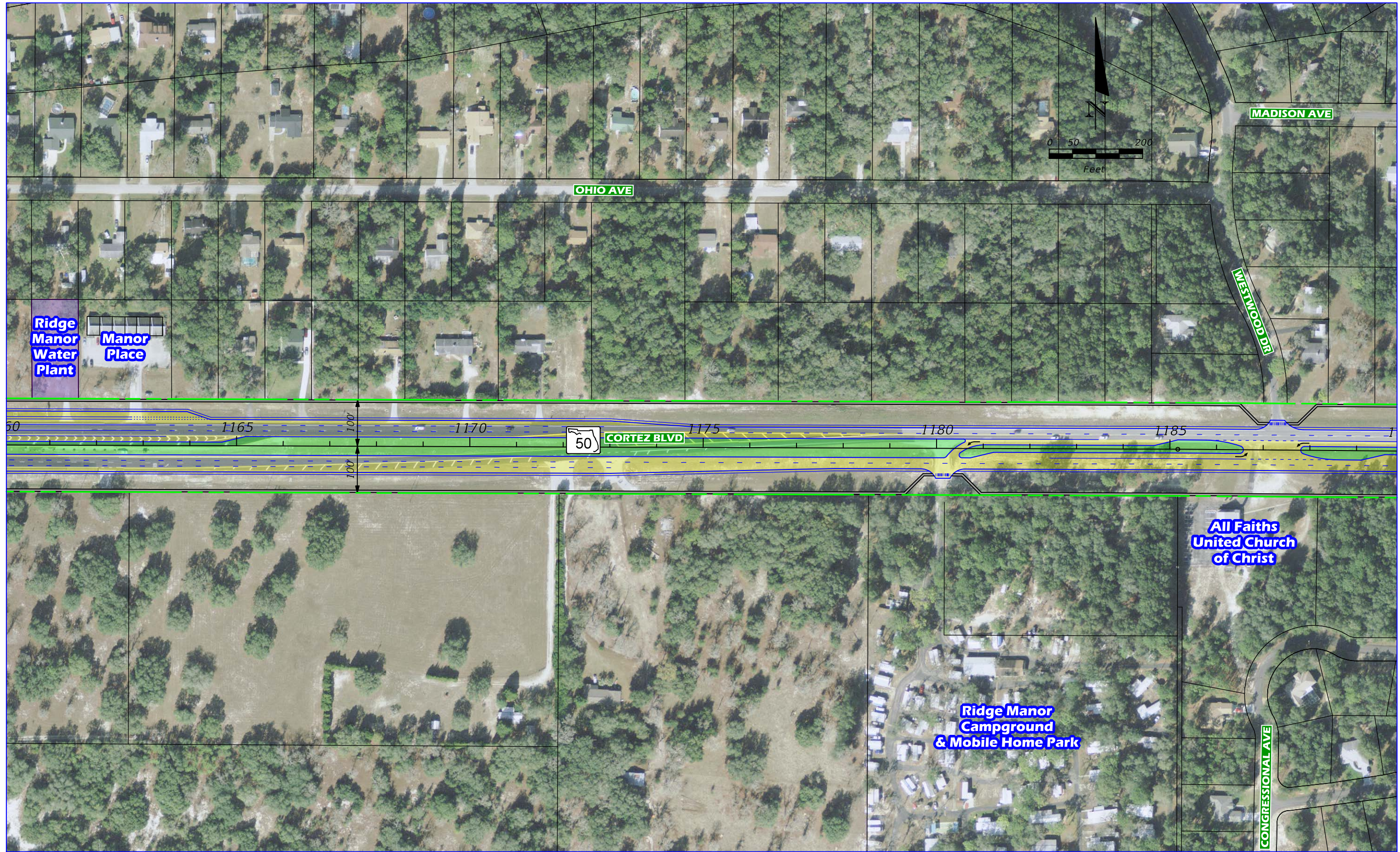
	CENTERLINE OF CONSTRUCTION		PROPOSED L.A. ROW (BY OTHERS)		PROPOSED ROW (BY OTHERS)		PROPOSED PAVEMENT/WIDENING		COUNTY-OWNED LAND
	EXISTING L.A. ROW		PROPOSED EASEMENT (BY OTHERS)		PROPOSED SIDEWALK		WETLAND		CONSERVATION LAND
	EXISTING ROW		PROPOSED TRAFFIC SIGNAL (BY OTHERS)		WITHALACOOCHEE STATE FOREST		POTENTIAL CONTAMINATION SITE		
	EXISTING EASEMENT								
	PARCEL BOUNDARY								

ATKINS NORTH AMERICA, INC.  
 4030 WEST BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	416732-2

SR 50 (CORTEZ BLVD)  
 FROM WEST OF INTERSTATE 75  
 TO US 301 (SR 35/TREIMAN BLVD)

SHEET NO.
9



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	CENTERLINE OF CONSTRUCTION		PROPOSED L.A. ROW (BY OTHERS)		PROPOSED ROW (BY OTHERS)		COUNTY-OWNED LAND
	EXISTING L.A. ROW		PROPOSED PAVEMENT/WIDENING		WETLAND		CONSERVATION LAND
	EXISTING ROW		PROPOSED EASEMENT (BY OTHERS)		WITHLACOOCHEE STATE FOREST		POTENTIAL CONTAMINATION SITE
	EXISTING EASEMENT		PROPOSED SIDEWALK		PROPOSED TRAFFIC SIGNAL		
	PARCEL BOUNDARY		PROPOSED TRAFFIC SIGNAL (BY OTHERS)				

ATKINS NORTH AMERICA, INC.  
 4030 WEST BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	416732-2

**SR 50 (CORTEZ BLVD)**  
**FROM WEST OF INTERSTATE 75**  
**TO US 301 (SR 35/TREIMAN BLVD)**

SHEET NO.  
 10



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CENTERLINE OF CONSTRUCTION	PROPOSED L.A. ROW (BY OTHERS)	PROPOSED ROW (BY OTHERS)	COUNTY-OWNED LAND
EXISTING L.A. ROW	PROPOSED ROW (BY OTHERS)	PROPOSED PAVEMENT/WIDENING	WETLAND
EXISTING ROW	PROPOSED EASEMENT (BY OTHERS)	PROPOSED SIDEWALK	CONSERVATION LAND
EXISTING EASEMENT	PROPOSED TRAFFIC SIGNAL (BY OTHERS)	PROPOSED TRAFFIC SIGNAL	WITHLACOOCHEE STATE FOREST
PARCEL BOUNDARY		POTENTIAL CONTAMINATION SITE	

ATKINS NORTH AMERICA, INC.  
 4030 WEST BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	416732-2

SR 50 (CORTEZ BLVD)  
 FROM WEST OF INTERSTATE 75  
 TO US 301 (SR 35/TREIMAN BLVD)

SHEET NO.
11





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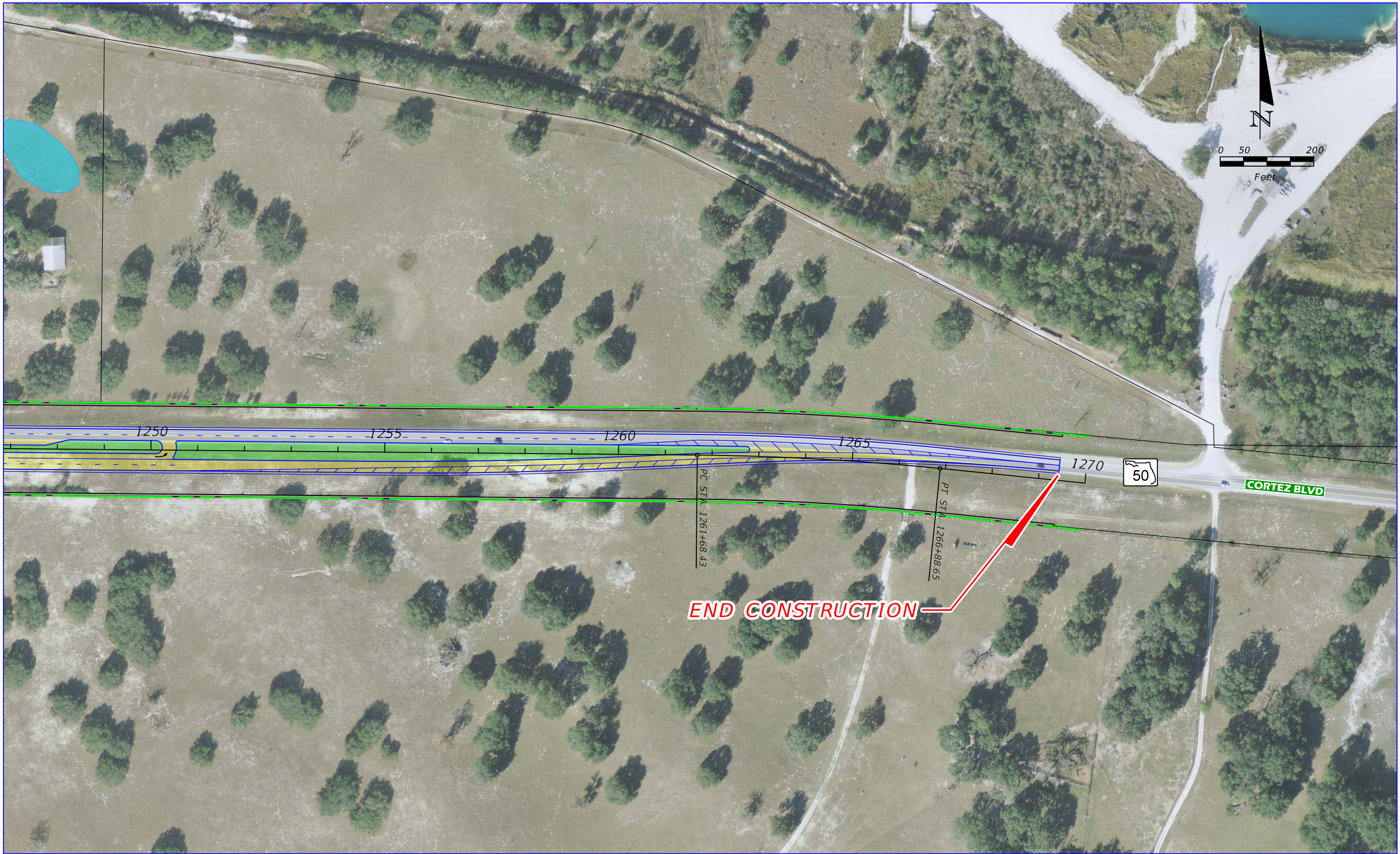
CENTERLINE OF CONSTRUCTION	PROPOSED L.A. ROW (BY OTHERS)	PROPOSED ROW (BY OTHERS)	PROPOSED ROW	COUNTY-OWNED LAND
EXISTING L.A. ROW	PROPOSED EASEMENT (BY OTHERS)	PROPOSED PAVEMENT/WIDENING	WETLAND	WETLAND
EXISTING ROW	PROPOSED EASEMENT (BY OTHERS)	PROPOSED SIDEWALK	CONSERVATION LAND	CONSERVATION LAND
EXISTING EASEMENT	PROPOSED TRAFFIC SIGNAL (BY OTHERS)	PROPOSED TRAFFIC SIGNAL	WITHLACOOCHEE STATE FOREST	WITHLACOOCHEE STATE FOREST
PARCEL BOUNDARY			POTENTIAL CONTAMINATION SITE	POTENTIAL CONTAMINATION SITE

ATKINS NORTH AMERICA, INC.  
 4030 WEST BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	416732-2

SR 50 (CORTEZ BLVD)  
 FROM WEST OF INTERSTATE 75  
 TO US 301 (SR 35/TREIMAN BLVD)

SHEET NO.  
 12



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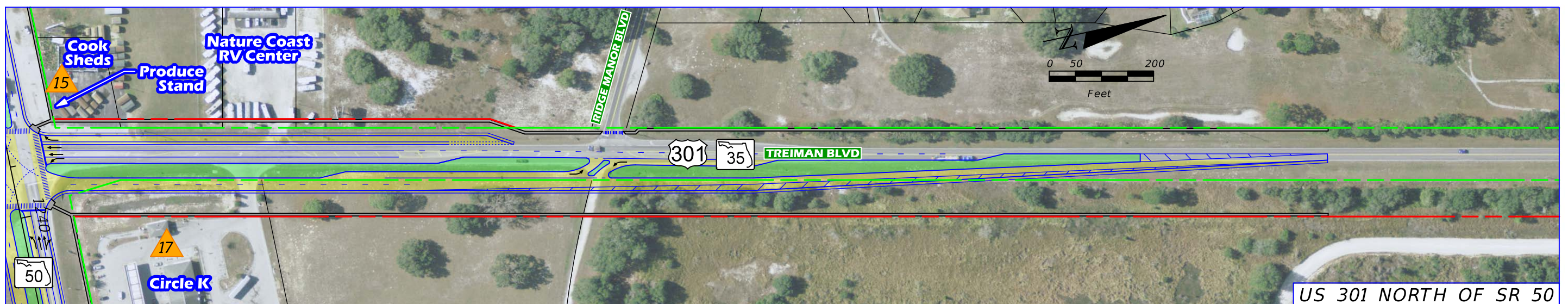
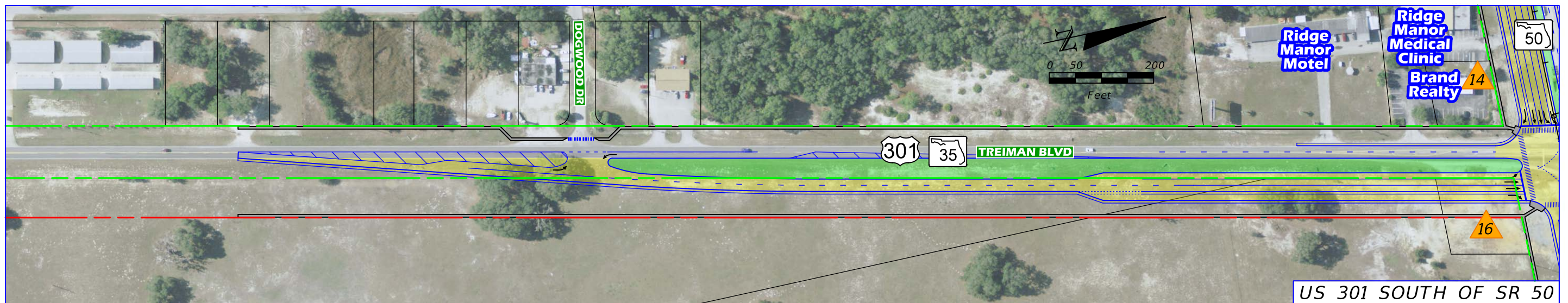
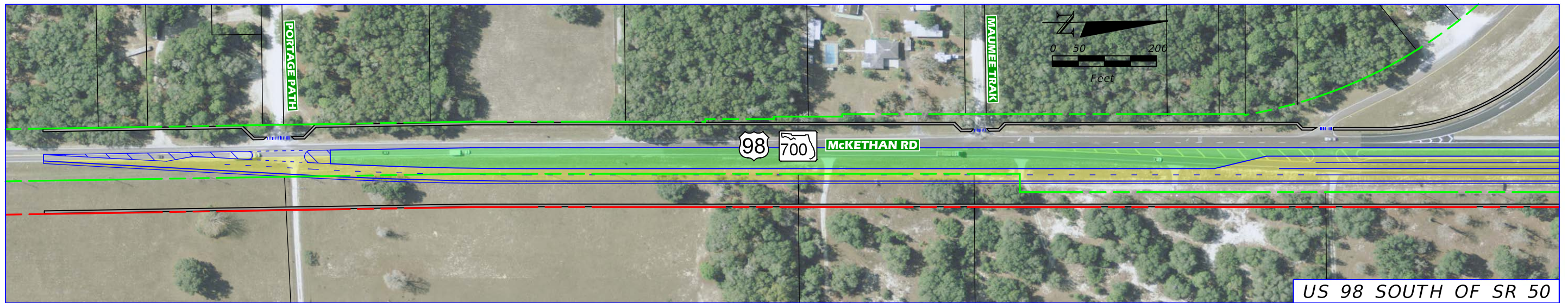
	CENTERLINE OF CONSTRUCTION		PROPOSED L.A. ROW (BY OTHERS)		PROPOSED ROW		COUNTY-OWNED LAND
	EXISTING L.A. ROW		PROPOSED ROW (BY OTHERS)		PROPOSED PAVEMENT/WIDENING		WETLAND
	EXISTING ROW		PROPOSED EASEMENT (BY OTHERS)		PROPOSED SIDEWALK		CONSERVATION LAND
	EXISTING EASEMENT		PROPOSED TRAFFIC SIGNAL (BY OTHERS)		PROPOSED TRAFFIC SIGNAL		WITHLACOOCHEE STATE FOREST
	PARCEL BOUNDARY				POTENTIAL CONTAMINATION SITE		

ATKINS NORTH AMERICA, INC.  
 4030 WEST BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	416732-2

**SR 50 (CORTEZ BLVD)**  
**FROM WEST OF INTERSTATE 75**  
**TO US 301 (SR 35/TREIMAN BLVD)**

SHEET NO.  
 13



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CENTERLINE OF CONSTRUCTION	PROPOSED L.A. ROW (BY OTHERS)	PROPOSED ROW (BY OTHERS)	PROPOSED PAVEMENT/WIDENING	COUNTY-OWNED LAND
EXISTING L.A. ROW	PROPOSED ROW (BY OTHERS)	PROPOSED EASEMENT (BY OTHERS)	PROPOSED SIDEWALK	WETLAND
EXISTING ROW	PROPOSED EASEMENT (BY OTHERS)	PROPOSED TRAFFIC SIGNAL (BY OTHERS)	CONSERVATION LAND	WITHLACOOCHEE STATE FOREST
EXISTING EASEMENT	PARCEL BOUNDARY	PROPOSED TRAFFIC SIGNAL	POTENTIAL CONTAMINATION SITE	

ATKINS NORTH AMERICA, INC.  
 4030 WEST BOY SCOUT BLVD  
 SUITE 700  
 TAMPA, FL 33607

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 50	HERNANDO	416732-2

**SR 50 (CORTEZ BLVD)  
 FROM WEST OF INTERSTATE 75  
 TO US 301 (SR 35/TREIMAN BLVD)**

SHEET NO.  
14

***APPENDIX B***

---

***TYPICAL SECTION PACKAGE***

**M E M O R A N D U M**  
**FLORIDA DEPARTMENT OF TRANSPORTATION**  
**Roadway Design - MS 7-810**

DATE: January 24, 2014  
TO: Robin Rhinesmith, Project Manager

FROM: Ronald A. Chin P.E., District Design Engineer  
BY: Allan Urbonas, District Roadway Design Engineer

COPIES: File

SUBJECT: Work Program Item Segment: 416732-2-22-01  
County: Hernando  
Project Description: SR 50 FROM LOCKHART RD TO US  
301

**Approved Typical Section Package**

---

Transmitted herewith is the approved typical section package for the above subject project. Please file the originals in the project management file system and provide a hard copy to the Engineer of Record. Thank you for your continued support and cooperation.

**STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION**

District 7 Roadway

**TYPICAL SECTION PACKAGE**

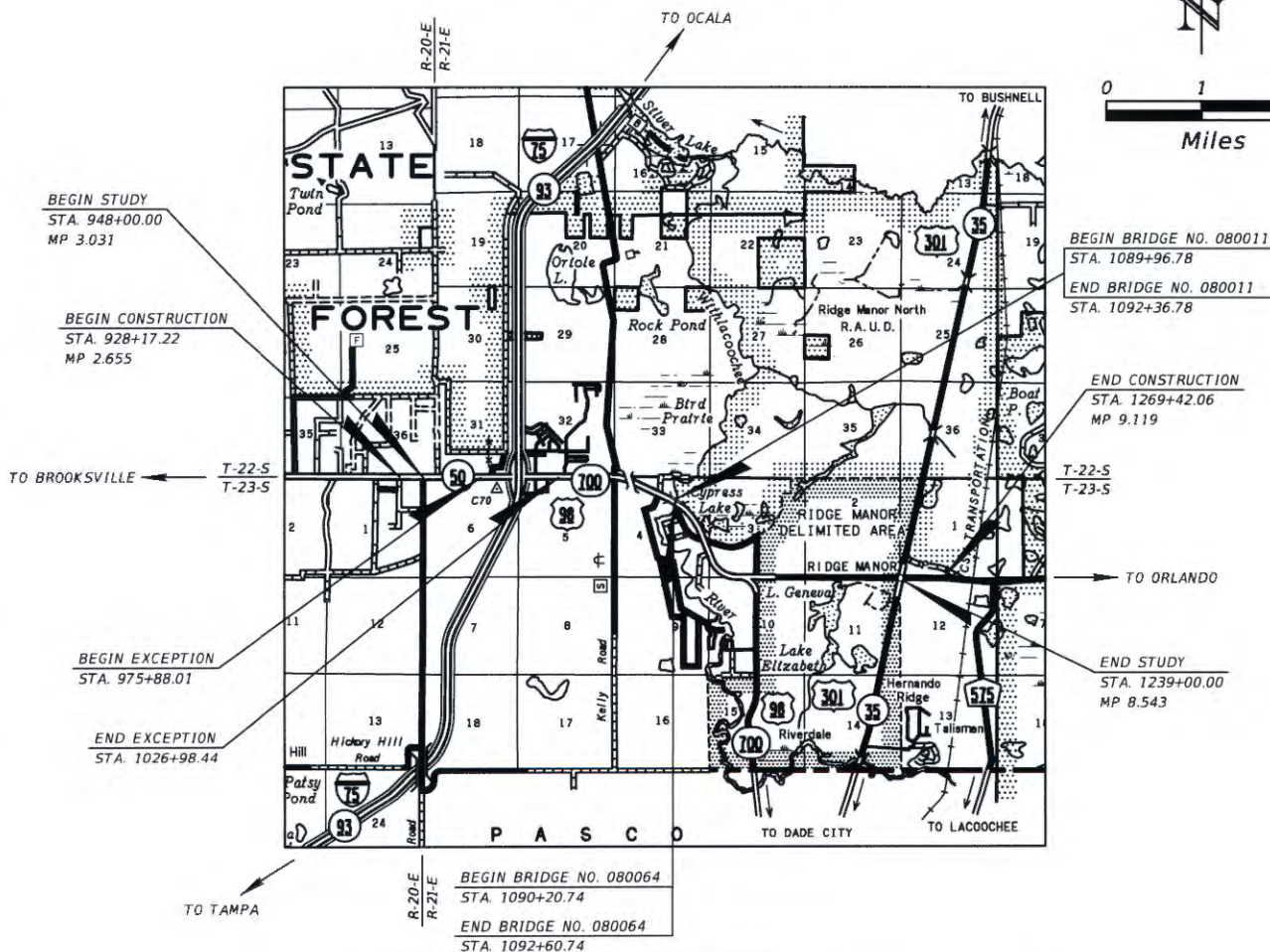
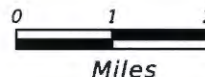
VSP  
C.F. JAN 09 2012

Design Department

FINANCIAL PROJECT ID 416732-2-22-01

HERNANDO COUNTY (08070)

STATE ROAD NO. 50 (CORTEZ BLVD)  
FROM WEST OF I-75  
TO US 301 (SR 35/TREIMAN BLVD)



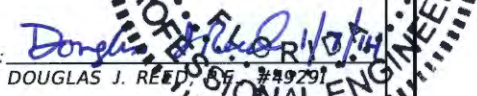
**LENGTH OF PROJECT**

	LINEAR FEET	MILES
ROADWAY	28,774.41	5.450
BRIDGES	240.00	0.045
NET LENGTH OF PROJECT	29,014.41	5.495
EXCEPTIONS	5,110.43	0.968
GROSS LENGTH OF PROJECT	34,124.84	6.463

ATKINS NORTH AMERICA, INC.  
4030 WEST BOY SCOUT BLVD  
SUITE 700  
TAMPA, FL 33607  
813-282-7275  
CERTIFICATE OF AUTHORIZATION NO. 24

DECEMBER 2013

DESIGNED BY:



DOUGLAS J. REED, P.E.

## PROJECT IDENTIFICATION

**FINANCIAL PROJECT ID** 416732-2-22-01      **COUNTY (SECTION)** HERNANDO (08070)  
**PROJECT DESCRIPTION** WIDENING OF SR 50 (CORTEZ BLVD) FROM WEST OF I-75 TO US 301 (SR 35/TREIMAN BLVD)

## PROJECT CONTROLS

<p style="text-align: center;"><u>FUNCTIONAL CLASSIFICATION</u></p> <p style="text-align: center;">(X) RURAL ( ) URBAN</p> <p>( ) FREEWAY/EXPWY.    ( ) MAJOR COLL. (X) PRINCIPAL ART.    ( ) MINOR COLL. ( ) MINOR ART.        ( ) LOCAL</p>	<p style="text-align: center;"><u>HIGHWAY SYSTEM</u></p> <p>Yes No</p> <p>(X) ( ) NATIONAL HIGHWAY SYSTEM (X) ( ) FLORIDA INTRASTATE HIGHWAY SYSTEM (X) ( ) STRATEGIC INTERMODAL SYSTEM (X) ( ) STATE HIGHWAY SYSTEM ( ) ( ) OFF STATE HIGHWAY SYSTEM</p>												
<p style="text-align: center;"><u>ACCESS CLASSIFICATION</u></p> <p>( ) 1 - FREEWAY ( ) 2 - RESTRICTIVE w/Service Roads (X) 3 - RESTRICTIVE w/660 ft. Connection Spacing ( ) 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing ( ) 5 - RESTRICTIVE w/440 ft. Connection Spacing ( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing ( ) 7 - BOTH MEDIAN TYPES</p>	<p style="text-align: center;"><u>TRAFFIC</u></p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th></th> <th style="text-align: center;">YEAR</th> <th style="text-align: center;">AADT</th> </tr> </thead> <tbody> <tr> <td>CURRENT*</td> <td style="text-align: center;"><u>2013</u></td> <td style="text-align: center;"><u>8,300 - 25,450</u></td> </tr> <tr> <td>OPENING</td> <td style="text-align: center;"><u>2015</u></td> <td style="text-align: center;"><u>9,300 - 30,700</u></td> </tr> <tr> <td>DESIGN</td> <td style="text-align: center;"><u>2035</u></td> <td style="text-align: center;"><u>19,600 - 83,200</u></td> </tr> </tbody> </table> <p>*ESTIMATED</p> <p style="text-align: right;"><u>DISTRIBUTION</u></p> <p>DESIGN SPEED <u>50 - 65 MPH</u>    K = 9.74%          POSTED SPEED <u>45 - 55 MPH</u>    D = 54.68%  <span style="float: right;">T 24 = 16.00%</span></p>		YEAR	AADT	CURRENT*	<u>2013</u>	<u>8,300 - 25,450</u>	OPENING	<u>2015</u>	<u>9,300 - 30,700</u>	DESIGN	<u>2035</u>	<u>19,600 - 83,200</u>
	YEAR	AADT											
CURRENT*	<u>2013</u>	<u>8,300 - 25,450</u>											
OPENING	<u>2015</u>	<u>9,300 - 30,700</u>											
DESIGN	<u>2035</u>	<u>19,600 - 83,200</u>											
<p style="text-align: center;"><u>CRITERIA</u></p> <p>(X) NEW CONSTRUCTION / RECONSTRUCTION ( ) RRR INTERSTATE / FREEWAY ( ) RRR NON-INTERSTATE / FREEWAY ( ) TDLC / NEW CONSTRUCTION / RECONSTRUCTION ( ) TDLC / RRR ( ) MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)</p>	<p style="text-align: center;">DESIGN SPEED APPROVALS</p> <p><i>Mc 1/15/14</i>  <u>Ronald E. Coe</u>      <u>1/21/14</u>          DISTRICT DESIGN ENGINEER      DATE</p> <p><u>Mary D. Quongson</u>      <u>1-24-14</u>          DISTRICT TRAFFIC OPERATIONS ENGINEER      DATE</p>												

**LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:**  
 VARIATION: BORDER WIDTH

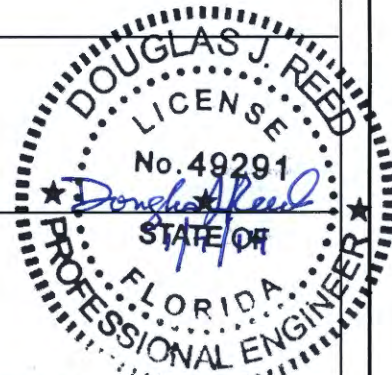
**LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:**

1. 240.2 FT EASTBOUND BRIDGE (080064) OVER WITHLACOOCHEE RIVER - MP 5.750
2. 240.0 FT WESTBOUND BRIDGE (080011) OVER WITHLACOOCHEE RIVER - MP 5.750

**LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:**

1. BRIGHT HOUSE NETWORKS	5. SUMTER ELECTRIC COOPERATIVE
2. HERNANDO COUNTY UTILITIES	6. CENTURYLINK
3. TECO PEOPLES GAS	7. WITHLACOOCHEE RIVER ELECTRIC
4. AT&T	

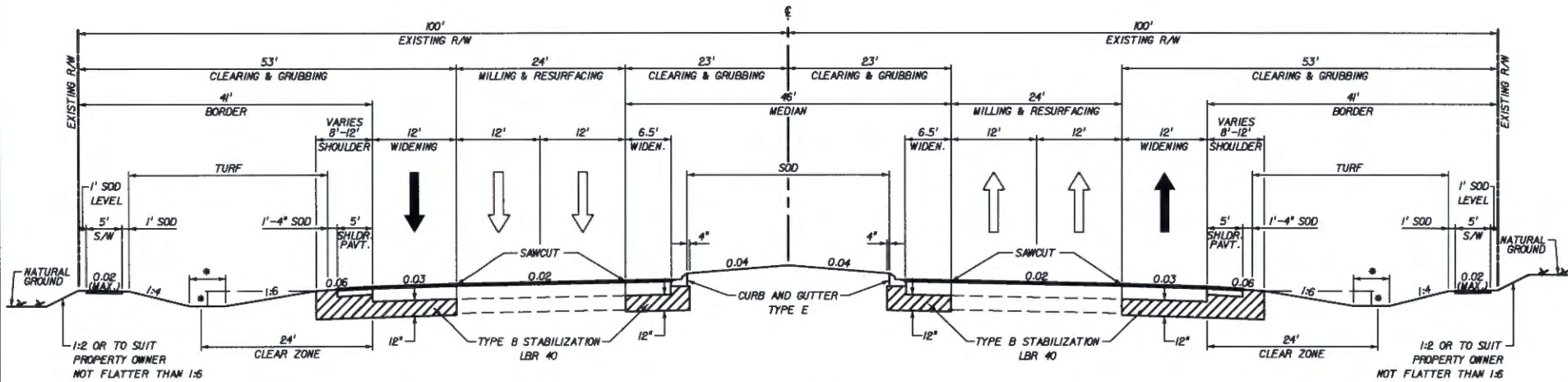
**LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:**



# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 416732-2-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME HERNANDO  
 SECTION NO. 08070 ROAD DESIGNATION SR 50 (US 98/CORTEZ BOULEVARD) LIMITS/MILEPOST (MP 3.031 - MP 8.543)  
 PROJECT DESCRIPTION WIDENING OF SR 50 (CORTEZ BLVD) FROM WEST OF I-75 TO US 301 (SR 35/TREIMAN BLVD)

## PROPOSED ROADWAY TYPICAL SECTION



TRAFFIC		
YEAR	AADT	
CURRENT*	2013	17,250 - 25,450
OPENING	2016	20,800 - 30,700
DESIGN	2025	30,400 - 83,200

DESIGN SPEED = 50 MPH  
 6-LANE DIVIDED HIGH-SPEED SUBURBAN ROADWAY  
 STA. 928+17.22 TO STA. 1054+50.00  
 FROM WEST OF LOCKHART ROAD TO KETTERING ROAD  
 (EXCLUDING AREA FROM STA. 975+88.01 TO STA. 1026+98.44)

\* DITCH DEPTH AND WIDTH VARY  
 SEE CROSS SECTIONS

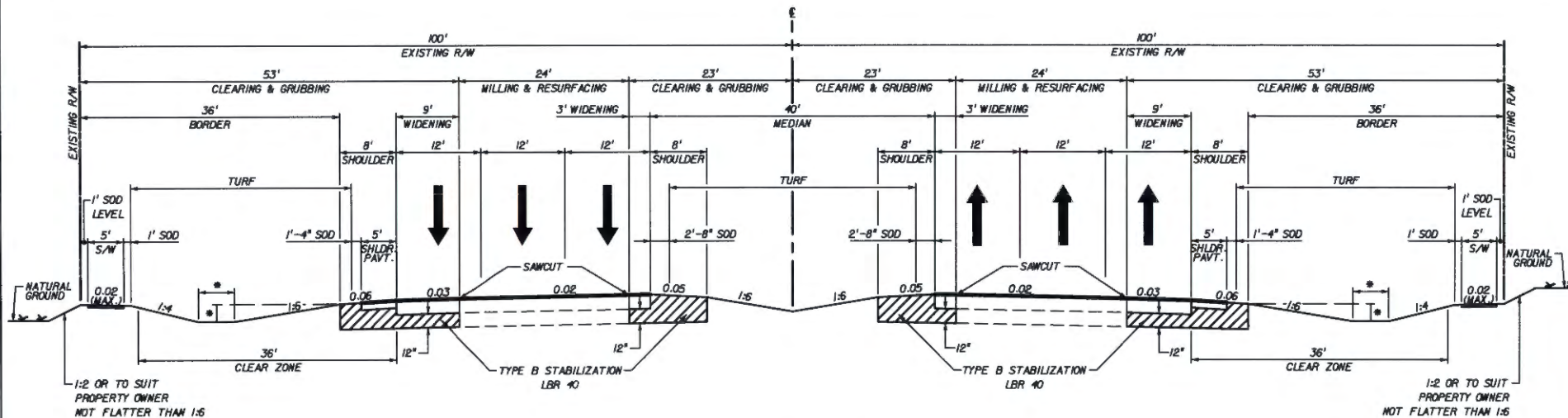
APPROVED BY: <b>DOUGLAS J. REED</b> , P.E., #49291 <i>Douglas J. Reed</i> 1/21/14 STATE OF FLORIDA PROFESSIONAL ENGINEER	<i>aw 1/15/14</i> FDOT CONCURRENCE  <i>Ronald E. [Signature]</i> 1/21/14 Printed Name Date FDOT District Design Engineer	FHW A CONCURRENCE  N/A Printed Name Date FHWA Transportation Engineer
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# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 416732-2-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME HERNANDO  
 SECTION NO. 08070 ROAD DESIGNATION SR 50 (US 98/CORTEZ BOULEVARD) LIMITS/MILEPOST (MP 3.031 - MP 8.543)  
 PROJECT DESCRIPTION WIDENING OF SR 50 (CORTEZ BLVD) FROM WEST OF I-75 TO US 301 (SR 35/TREIMAN BLVD)

## PROPOSED ROADWAY TYPICAL SECTION



### TRAFFIC

YEAR	AADT	
CURRENT*	2013	16,100
OPENING	2015	18,800
DESIGN	2035	45,600

DESIGN SPEED = 65 MPH

6-LANE DIVIDED RURAL ROADWAY  
 STA. 1054+50.00 TO STA. 1158+64.48  
 FROM KETTERING ROAD TO US 98

\* DITCH DEPTH AND WIDTH VARY  
 SEE CROSS SECTIONS

APPROVED BY **DOUGLAS J. REED, P.E., #49291**

*Acc 1/15/14* FDOT CONCURRENCE

FHWA CONCURRENCE

*Ronald A. [Signature]*  
 Printed Name  
 FDOT District Design Engineer

*1/21/14*  
 Date

*N/A*  
 Printed Name  
 FHWA Transportation Engineer

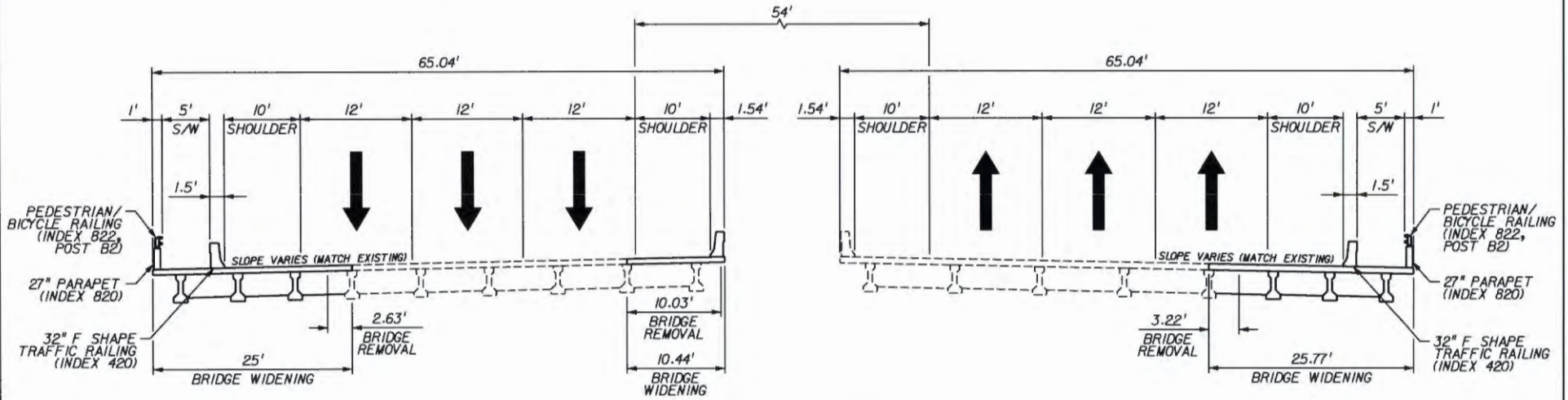
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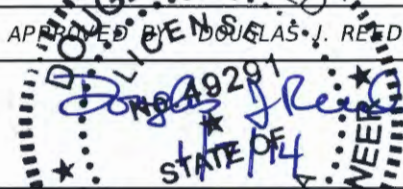
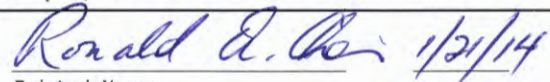
# PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 416732-2-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME HERNANDO  
 SECTION NO. 08070 ROAD DESIGNATION SR 50 (US 98/CORTEZ BOULEVARD) LIMITS/MILEPOST (MP 3.031 - MP 8.543)  
 PROJECT DESCRIPTION WIDENING OF SR 50 (CORTEZ BLVD) FROM WEST OF I-75 TO US 301 (SR 35/TREIMAN BLVD)

## PROPOSED STRUCTURE TYPICAL SECTION



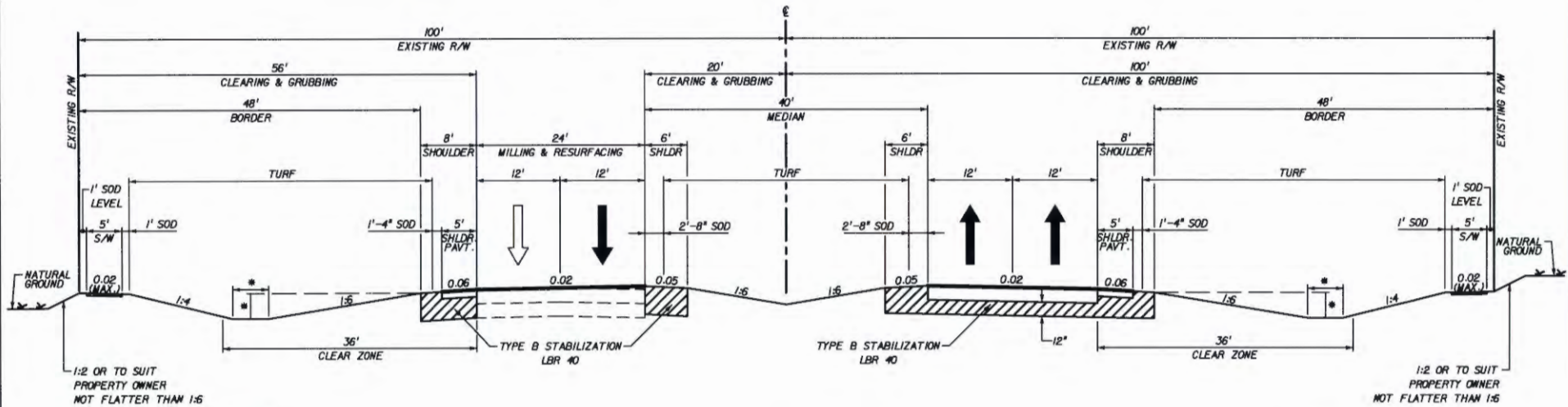
DESIGN SPEED = 65 MPH  
 BRIDGE 080064 (EASTBOUND)  
 AND  
 BRIDGE 080011 (WESTBOUND)  
 OVER WITHLACOOCHEE RIVER

APPROVED BY: <b>DOUGLAS J. REED, P.E., #49291</b> 	SA <u>1/15/14</u> FDOT CONCURRENCE  Printed Name: <u>Ronald E. Coe</u> Date: <u>1/21/14</u> FDOT District Design Engineer	FHWA CONCURRENCE <u>N/A</u> Printed Name: <u>N/A</u> Date: _____ FHWA Transportation Engineer
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FINANCIAL PROJECT ID 416732-2-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME HERNANDO  
 SECTION NO. 08070 ROAD DESIGNATION SR 50 (US 98/CORTEZ BOULEVARD) LIMITS/MILEPOST (MP 3.031 - MP 8.543)  
 PROJECT DESCRIPTION WIDENING OF SR 50 (CORTEZ BLVD) FROM WEST OF I-75 TO US 301 (SR 35/TREIMAN BLVD)

## PROPOSED ROADWAY TYPICAL SECTION



TRAFFIC		
YEAR	AADT	
CURRENT*	2013	8,300
OPENING	2015	9,300
DESIGN	2035	19,600

DESIGN SPEED = 65 MPH  
 4-LANE DIVIDED RURAL ROADWAY  
 STA. 1158+64.48 TO STA. 1269+42.06  
 FROM US 98 TO EAST OF US 301

\* DITCH DEPTH AND WIDTH VARY  
 SEE CROSS SECTIONS

APPROVED BY: <u>DOUGLAS J. REED, P.E., #49291</u>	<u>Jan 1-15-14</u> FDOT CONCURRENCE	FHWA CONCURRENCE
	<u>Ronald A. Coe</u> Printed Name FDOT District Design Engineer	<u>N/A</u> Printed Name FHWA Transportation Engineer
	<u>1/21/14</u> Date	 Date