

FLORIDA DEPARTMENT OF TRANSPORTATION (FDOT)

Preliminary Engineering Report

SR 33 Project Development & Environment (PD&E) Study

From Old Combee Road to North of Tomkow Road

POLK COUNTY, FLORIDA

PREPARED FOR:



District One
801 North Broadway Av.
Bartow, Florida 33830

ETDM Number: 13188
Financial Management Number: 430185-1-22-01
Federal Aid Project No.: To Be Determined



PRELIMINARY ENGINEERING REPORT

Florida Department of Transportation (FDOT)
District One

SR 33 Project Development & Environment (PD&E) Study
From Old Combee Road to North of Tomkow Road
Polk County, Florida

ETDM Number: 13188

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This Preliminary Engineering Report (PER) contains detailed engineering information that fulfills the purpose and need for the proposed action. The environmental document is a Type 2 Categorical Exclusion (June 2014).

August 4, 2014

Date

David S. Dangel

David S. Dangel, P.E.
Professional Engineer No. 46580

PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida practicing with **Inwood Consulting Engineers, Inc.**, and that I have supervised the preparation of and approved the analysis, findings, opinions, conclusions, and technical advice reported in:

REPORT: Preliminary Engineering Report
PROJECT: State Road 33 PD&E Study
LOCATION: From Old Combee Road to North of Tomkow Road, Polk County
FINANCIAL PROJECT NO.: 430185-1-22-01
CLIENT: Florida Department of Transportation – District One
District Environmental Management Office

The following duly authorized engineering business performed the engineering work represented by this report:

Inwood Consulting Engineers, Inc.
3000 Dovera Drive, Suite 200
Oviedo, Florida 32765
Telephone: (407) 971-8850
Florida Certificate of Authorization: 7074

This report includes a summary of data collection efforts, corridor analysis and conceptual design analysis for State Road 33 from Old Combee Road to North of Tomkow Road in Polk County.

I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through design standards and criteria set forth by the federal, state, and local regulatory agencies as well as professional judgment and experience.

Signature: David S. Dangel
Name: David S. Dangel, P.E.
P.E. Number: 46580
Date: August 4, 2014

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Acronyms

AADT	Annual Average Daily Traffic
AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
AN	Advance Notification
APE	Area of Potential Effect
CR	County Road
CDP	Comprehensive Development Plan
CEQ	Council on Environmental Quality
CFA	Core Foraging Area
CFR	Code of Federal Regulations
CFRR	Central Florida Railroad
CRAS	Cultural Resource Assessment Survey
DBI	Ditch Bottom Inlet
ERP	Environmental Resource Permit
ETDM	Efficient Transportation Decision Making
FAC	Florida Administrative Code
FS	Florida Statutes
FDEP	Florida Department of Environmental Protection
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FLUCCS	Florida Land Use Classification and Forms Cover System
FFWCC	Florida Fish and Wildlife Conservation Commission
GIS	Geographic Information System
HCM	Highway Capacity Manual
HCS	Highway Capacity Software
HOA	Homeowner Association
ITS	Intelligent Transportation System
LOS	Level of Service
LRE	Long Range Estimate
LRTP	Long Range Transportation Plan
MOT	Maintenance of Traffic
MPO	Metropolitan Planning Organization
NAAQS	National Ambient Air Quality Standards

NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act
NHWE	Normal High Water Elevation
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSR	Noise Study Report
NWI	National Wetland Inventory
PD&E	Project Development and Environment
PIP	Public Involvement Plan
PTR	Project Traffic Report
RCI	Roadway Characteristics Inventory
SWFWMD	Southwest Florida Water Management District
SHPO	State Historic Preservation Office
SHS	State Highway System
SHWE	Seasonal High Water Elevation
SIP	State Implementation Plan
SIS	Strategic Intermodal System
SJRWMD	St. Johns River Water Management District
SLD	Straight Line Diagram
SR	State Road
TIP	Transportation Improvement Program
TNM	Traffic Noise Model
TPO	Transportation Planning Organization
TSMO	Transportation Systems Management and Operations
TSP	Transit Signal Priority
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service

Executive Summary

The Florida Department of Transportation (FDOT) has completed a Project Development and Environment (PD&E) Study to evaluate the proposed widening of State Road (SR) 33 from Old Combee Road to North of Tomkow Road in Polk County. The total project length is approximately 4.3 miles. The project limits and proposed design segments are shown in Figure ES-1.

Existing Conditions

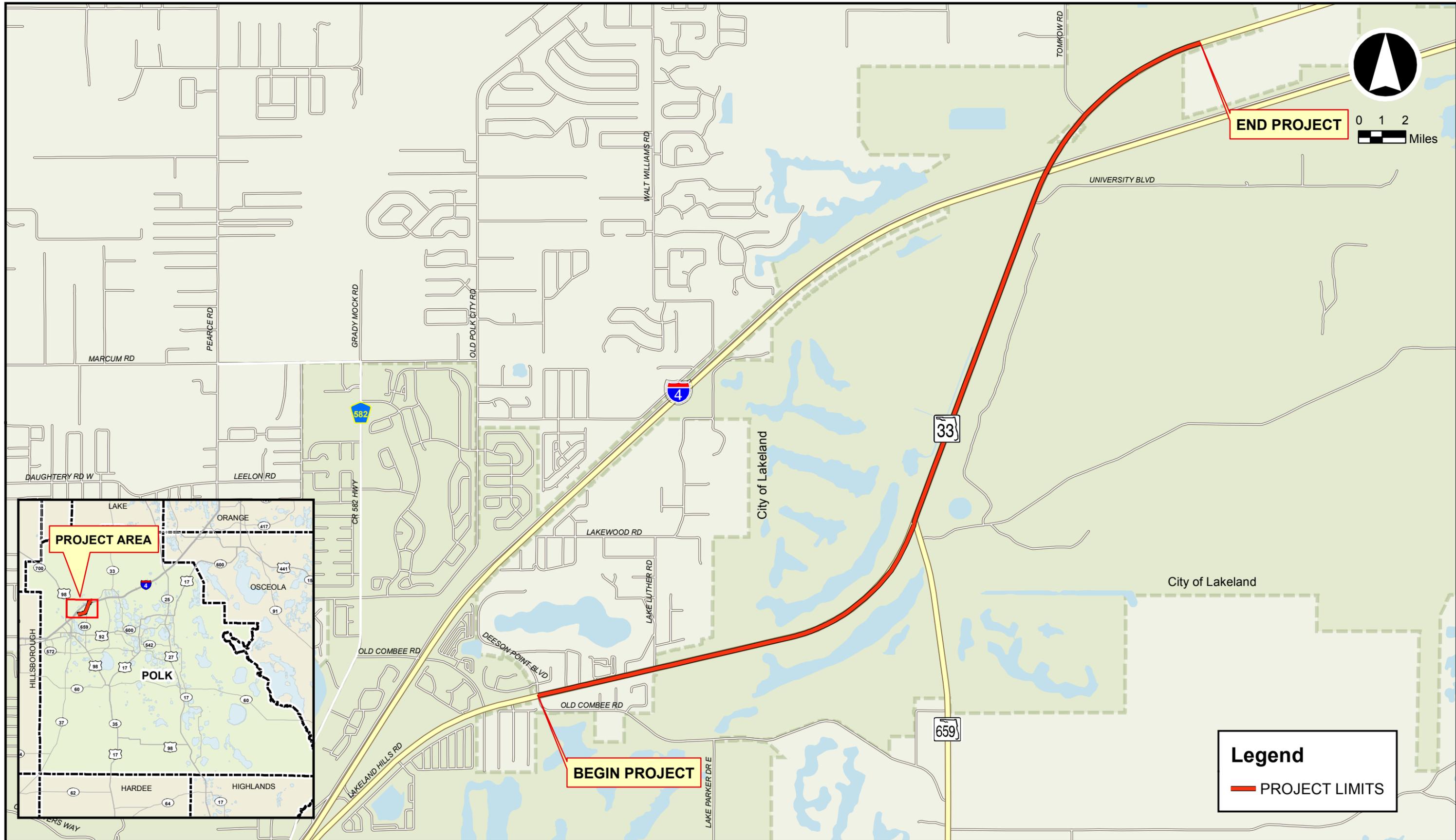
SR 33 serves as a primary north-south connection between Lakeland and I-4. The project will improve the functional viability of SR 33 as a local and regional travel alternative to I-4. SR 33 provides connectivity to University Boulevard, which serves the planned Williams Development of Regional Impact (DRI), Polk Commerce Center DRI, and the future Florida Polytechnic University. University Boulevard and SR 33 will serve as the most direct link between these new residential/commercial centers and north/central Lakeland.

SR 33 is classified as an Urban Minor Arterial within the project study area and is classified by FDOT as Access Classification 4. The existing SR 33 typical section is a two-lane undivided rural roadway. The existing roadway consists of two 12-foot travel lanes and five-foot paved outside shoulders. Stormwater is collected in swales along the outside of the roadway. Currently, no bicycle lanes or sidewalks exist on SR 33 within the project limits, other than a segment of sidewalk along the west side of SR 33 adjacent to the Bridgewater development. The existing posted speeds vary from 45 mph to 60 mph. The existing right-of-way width within the SR 33 PD&E Study limits is 200 feet, with the centerline offset to the west of center by 20 feet.

Need for Project

The primary purpose of this project is to increase the capacity of SR 33 from Old Combee Road to North of Tomkow Road to meet the projected future travel demand. According to the *Design Traffic Technical Memorandum (AIM Engineering & Surveying, Inc., November 2013)*, in the design year of 2036, the existing two-lane SR 33 is projected to operate at a Level of Service (LOS) E or F without improvements. Additionally, many of the unsignalized intersections, including the I-4 on and off ramps, are expected to operate at unacceptable levels of service without improvements to SR 33.

The need for the project is based on improving Level of Service (LOS) through additional capacity, enhancing safety conditions, emergency evacuation, maintaining system linkage, growth management planning, modal interrelationships, and improving existing roadway deficiencies. These primary and secondary criteria are explained in the following pages.



PRIMARY CRITERIA

Capacity

This project provides increased capacity along SR 33 to meet the projected future travel demand. The existing roadway LOS along SR 33 ranges from “B” to “E” with volumes ranging from 5,900 to 12,400 AADT. The Polk County Transportation Planning Organization’s 2035 Financially Feasible Long Range Transportation Planning model was used to develop future traffic volumes. With the planned future growth in this area these volumes are expected to increase to 22,600 to 34,500 AADT by 2036 amounting to a roadway LOS “E” or “F”. The proposed widening to four lanes will allow SR 33 to meet future travel demand at an acceptable LOS “D” or better and continue to serve as an important regional arterial. Transportation Systems Management & Operations type improvements will not adequately address future travel demand needs.

SECONDARY CRITERIA

Safety

The crash history along SR 33 within the study limits was reviewed from 2007 through 2011. A total of 93 crashes occurred which included four fatalities, 48 injury crashes and 41 property damage only crashes. The actual crash rate of 0.989 crashes per million vehicle miles of travel is higher than the statewide average for similar roadways of 0.876 crashes per million vehicle miles of travel. More than half of the crashes occurred within the influence of the I-4/SR 33 interchange. Many of the crashes on SR 33 are types that are associated with congestion and the proposed widening of SR 33, reconstruction of the I-4/SR 33 interchange and addition of turn lanes at intersections is expected to improve safety along the corridor.

Emergency Evacuation

SR 33 is designated as a hurricane evacuation route by the Florida Division of Emergency Management. The proposed enhancement will increase the capacity of traffic that can be evacuated during an emergency event and improve emergency response times. The capacity improvement will also enhance accessibility to other evacuation routes like Interstate 4.

Area Wide Network/System Linkage

The project will improve the functional viability of SR 33 as a local and regional travel alternative to Interstate 4. SR 33 provides connectivity to University Boulevard, a committed new four lane road serving the planned Williams DRI, Polk Commerce Center DRI, and future Polytechnic University campus. University Boulevard and SR 33 will be the most direct link between these new residential and commercial centers and north and central Lakeland.

Growth Management Planning

Traffic on SR 33 is expected to increase due to projected population and employment growth both along the corridor and in the region. Population in the project area is expected to increase from 37,945 in 2007 to 79,659 in 2035 and employment is expected to increase from 8,771 to 41,131 over the same time frame.

Modal Interrelationships

This project includes provisions for multimodal interface with transit through the typical section that will allow for bus stop shelter pads along both sides of SR 33 within the project limits. The proposed improvements include bicycle lane accommodations (paved shoulders), a sidewalk along the west side of SR 33 and a 12-foot-wide shared use path along the east side of the roadway. The resulting multimodal improvements will help to improve multimodal connections between neighborhoods immediately adjacent to the project and destinations nearby.

Roadway Deficiencies

Improvements to the SR 33 interchange with I-4 are also required. Currently, I-4 crosses over SR 33 with two parallel, three-lane bridges. There are deficiencies with the existing interchange. First, the existing vertical clearance over SR 33 does not meet the minimum required 16 feet 6 inches of clearance and is as low as 14 feet 9 inches. Maintaining this substandard vertical clearance would require the approval of a design exception. Second, the pier footings have less than the minimum required depth of cover of 3 feet with cover depths as shallow as approximately 1.9 feet. The horizontal clearance between the center pier and the intermediate piers will not accommodate the future four-lane roadway. Finally, the existing k values for the crest and sag vertical curves on I-4 approaching SR 33 are appropriate for 55 mph and 60 mph design speeds, but not for the 70 mph design speed required for the interstate.

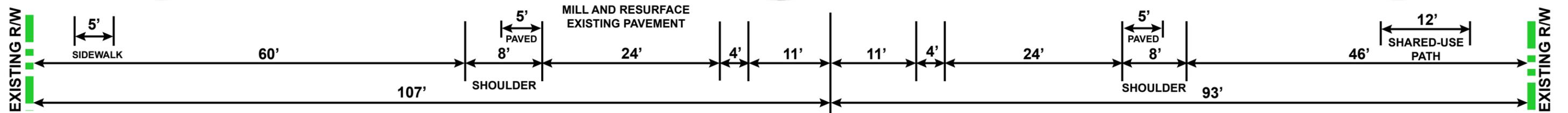
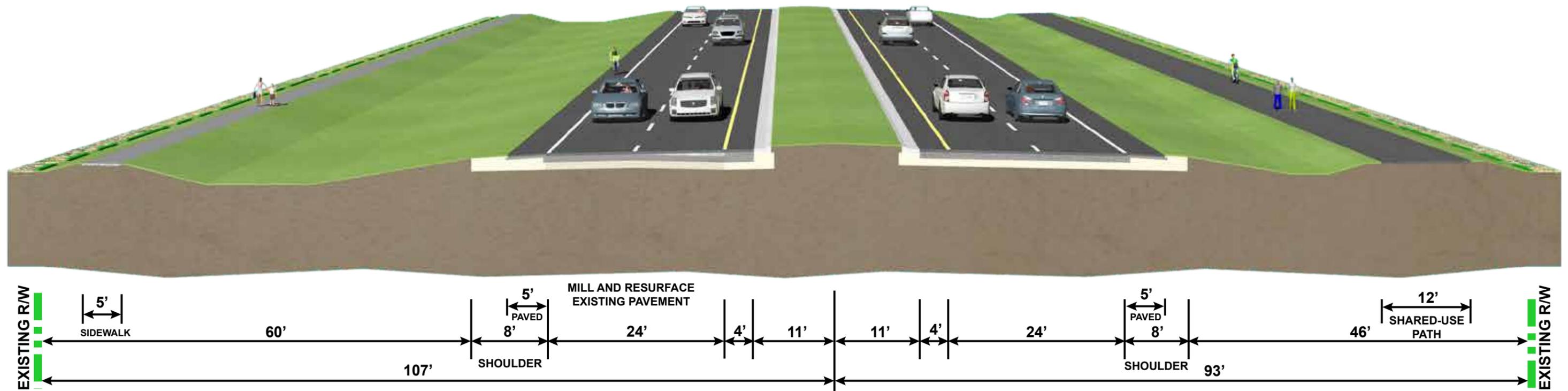
Recommended Build Alternative

SR 33 Mainline

The pavement saving alternative was selected as the recommended build alternative for the mainline roadway widening to meet the documented purpose and need for the project. This alternative is estimated to cost approximately \$2.8 million less than the full reconstruction alternative. The pavement saving alternative involves maintaining the existing two-lane roadway as the two future southbound lanes and constructing the two future northbound lanes to the east of the existing roadway. The proposed mainline improvements can be constructed within the existing 200 feet of right-of-way.

The proposed roadway typical section for this project is a suburban typical section that would include two 12-foot travel lanes in each direction separated by a 30-foot median. The proposed improvements also include a four-foot inside paved shoulder and a five-foot outside paved shoulder in each direction. An open drainage system will collect stormwater runoff and convey it to linear swales. A 12-foot-wide shared-use path is proposed along the east side of the road from the beginning of the project to University Boulevard. A five-foot sidewalk is planned along the west side of the road throughout the project limits and along the east side of the road from University Boulevard to north of Tomkow Road. This typical section can be constructed within the existing 200 feet of right-of-way. The design speed for this typical section is 55 miles per hour (mph). Figure ES-2 shows the proposed pavement saving typical section.

SUBURBAN PAVEMENT SAVING ALTERNATIVE



Florida Department of Transportation
District 1

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PROPOSED PAVEMENT SAVING TYPICAL SECTION

Figure
ES-2

I-4/SR 33 Interchange

FDOT recommends the diamond interchange alternative over the diverging diamond alternative for the I-4/SR 33 interchange improvement. The crossover movements associated with the diverging diamond interchange require a dramatic reduction in speed from the SR 33 mainline to the crossover curves which causes concern for vehicle safety through the interchange. Right-of-way will need to be acquired for the interchange improvements.

The Diamond Interchange concept is illustrated in Figure ES-3. Dual left-turn lanes are provided on both the eastbound and westbound I-4 off-ramps and dual right-turn lanes are provided on the eastbound I-4 off-ramp. In addition, dual left turn lanes are also provided on northbound SR 33 at the entrance to the westbound I-4 on-ramp. The eastbound off-ramp deceleration lane is increased from 215 feet to 300 feet. This improvement alternative provides a 2,850-foot crest vertical curve that has a k value of 506 and two 600-foot approach sag vertical curves that have k values of 206. These vertical curves allow for a maximum design speed of 70 mph. The vertical clearance of I-4 over SR 33 is also increased to 16 feet 6 inches to meet the minimum requirements of FDOT's Plan Preparation Manual. The typical section for SR 33 under I-4 is illustrated in Figure ES-4.

Project Planning Consistency

Table ES-1 shows the planned implementation schedule by design segment.

**Table ES-1
Funding Summary**

Phase	Time Frame (Fiscal Year)	Estimated Cost	Funding Source
Preliminary Engineering (Final Design)	2014**	\$7,350,000	State and Federal
Right-of-Way	2019**	\$4,900,000	State and Federal
Construction	2021-2025*	\$66,000,000***	State and Federal
TOTAL		\$78,250,000	

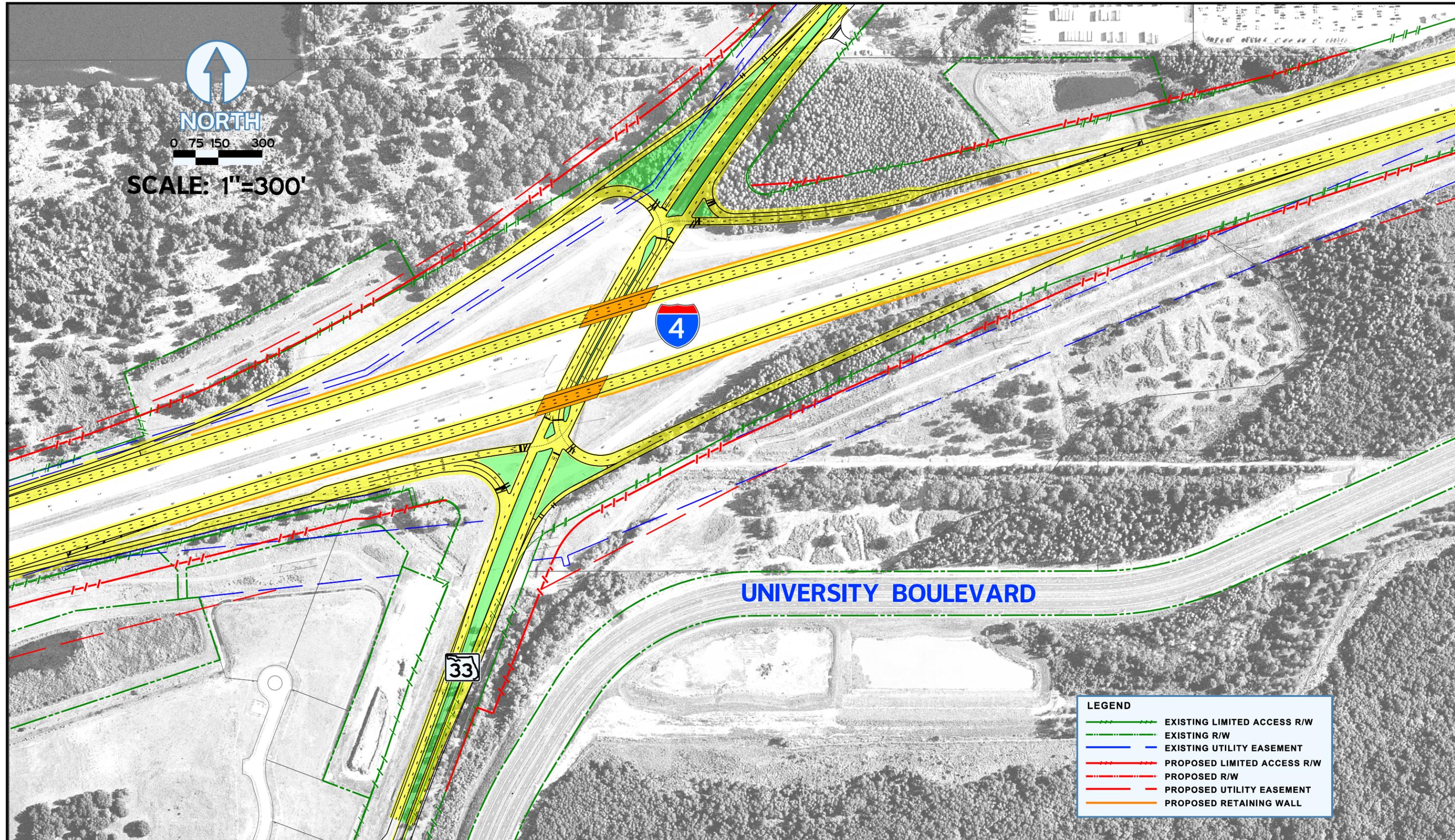
Sources: Adopted Polk TPO 2013/14-2017/18 TIP, Approved FDOT STIP, *Adopted Polk TPO 2035 Mobility Vision Plan, **FDOT's Five-Year Work Program, ***SR 33 PD&E Study estimates.



NORTH

0 75 150 300

SCALE: 1"=300'



LEGEND	
	EXISTING LIMITED ACCESS R/W
	EXISTING R/W
	EXISTING UTILITY EASEMENT
	PROPOSED LIMITED ACCESS R/W
	PROPOSED R/W
	PROPOSED UTILITY EASEMENT
	PROPOSED RETAINING WALL

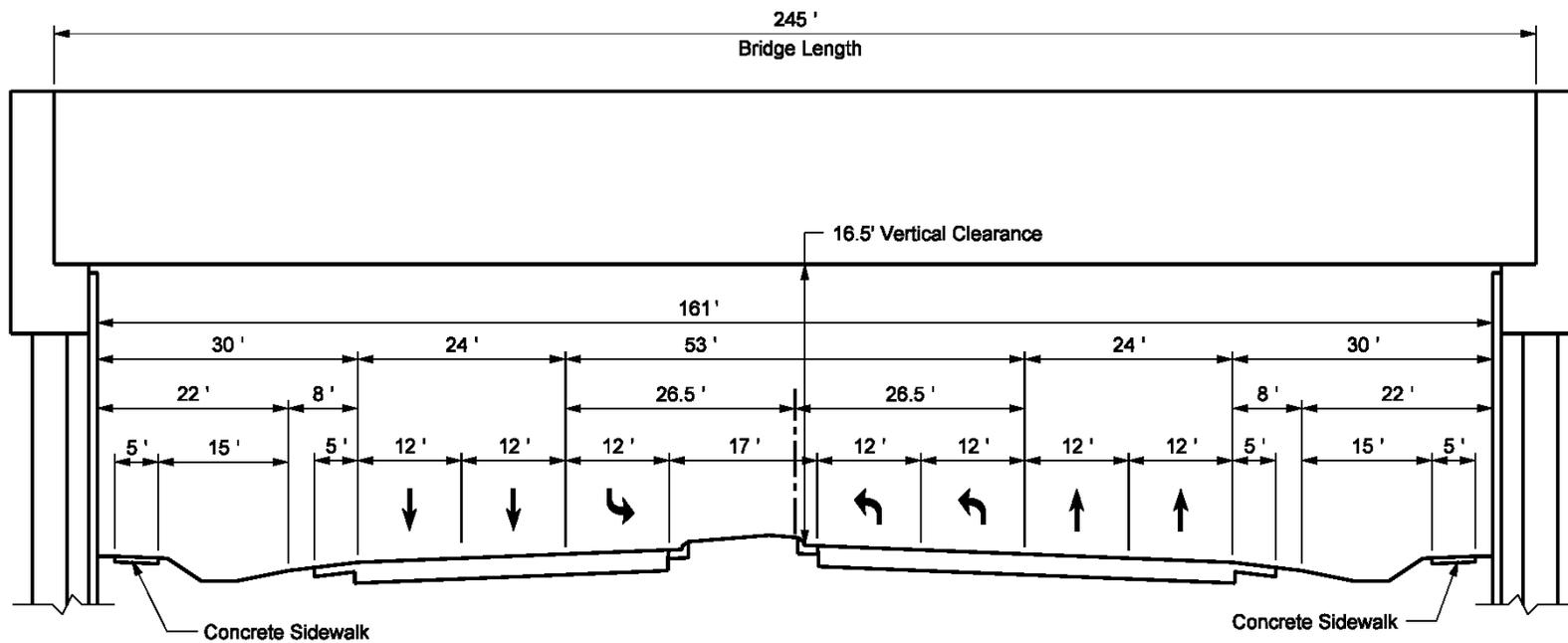


FDOT Florida Department of Transportation
District 1

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Federal Aid Project No: N/A

**SR 33 AND I-4 INTERCHANGE ALTERNATIVE
DIAMOND INTERCHANGE**

**Figure
ES-3**



The project is currently funded for the preliminary engineering and right-of-way phases using a combination of state and federal funding sources. The construction phase is not currently funded in FDOT's Adopted Five-Year Work Program. Documentation of funding for this project can be found in the adopted Polk TPO's 2013/14 to 2017/18 TIP, the FDOT STIP for Fiscal Years (FY) 2014-2017, and the Polk TPO's 2035 Mobility Vision Plan. Right-of-way is currently funded in FDOT's Tentative Five-Year Work Program in FY 2019. The TIP and STIP will be updated to include this funding in October of 2014 subsequent to adoption of the Five-Year Work Program. The Polk 2035 Mobility Vision Plan was amended to include right-of-way funding in FY 2016-2020 for the mainline. Although construction is not yet funded in FDOT's Tentative Five-Year Work Program, the Polk 2035 Mobility Vision Plan was amended to include construction in FY 2021-2025. This project is also funded in the TPO's 2035 LRTP Cost Feasible Plan (CFP) with the exception of right-of-way and construction for the I-4/SR 33 interchange. District One Planning Office staff will coordinate the needed LRTP amendments when appropriate. Table 1-2 summarizes the planned implementation schedule of this project.

Based on recent guidance provided by FHWA dated January 2013, Planning Consistency Requirements have been met for this project as the next phase for the entire PD&E Study project limits is reflected in the STIP/TIP, i.e. design.

Project Cost Estimate

Construction costs were estimated for the recommended alternative using the FDOT Long Range Estimate (LRE) program for the year 2014. The most recent LRE is provided in Appendix E.

Environmental Considerations

The potential impacts on the natural environment, cultural resources, communities, and other environmental considerations are summarized below.

Natural Environment

Floodplains

This project will impact the 100-year floodplain through longitudinal impacts resulting from filling the floodplain areas associated with isolated wetlands, wetland systems, and depressional areas and transverse impacts resulting from the extension and replacement of the existing cross drain culverts. The preferred improvements will impact approximately 5.1 acre-feet of floodplain.

It has been determined that there is no regulatory floodway involvement within the project limits and that the project will not support base floodplain development that is incompatible with existing floodplain management programs. The floodplain encroachments associated with this project are classified as minimal and there is not expected to be any change in the flood risk as a result of this project.

Wetlands

The preferred alternative may impact 17.8 acres of wetlands. Based on the findings of the *Wetland Evaluation Report (WER)*, it was determined that there is no practical alternative to the proposed construction in wetlands and that the proposed action includes all practical measures to minimize harm to wetlands.

Final determination of jurisdictional wetland areas and mitigation requirements will occur between FDOT and the regulatory agencies during the final design phase of this project. Wetland impacts that result from the construction of this project will be mitigated pursuant to 373.4137 F.S. to satisfy all mitigation requirements of Part IV, Chapter 373 and 3 U.S.C. 1344.

Wildlife and Habitat

An *Endangered Species Biological Assessment* (Scheda Ecological Associates, Inc., November 2013) (ESBA) was prepared for this project to document current environmental conditions along the corridor and potential impacts to wildlife, habitat, or listed species; evaluate the project area's current potential to support species listed as endangered, threatened or of special concern; identify current permitting and regulatory agency coordination requirements for the project; and request comments from regulatory agencies with jurisdiction over the study.

The proposed project corridor falls within the designated USFWS Consultation Areas (CA) for five federally-listed wildlife species. Wildlife consultation areas include the Audubon's crested caracara, Everglades snail kite, Florida scrub jay, sand skink, and blue-tailed mole skink. The latter two species are incorporated into a singular consultation area defined as the "Skink Consultation Area" by USFWS. In addition to the USFWS Consultation Areas described above, the project corridor is located within the Core Foraging Area (CFA) of six wood stork colonies.

FDOT determined that the proposed widening of SR 33 will have "No Effect" on the Florida grasshopper sparrow (*Ammodramus savannarum floridanus*) and Florida bonneted bat (*Eumops floridanus*). The project will also have "No Effect" on the state-listed Florida burrowing owl (*Athene cunicularia floridana*), Florida sandhill crane (*Grus canadensis pratensis*), southeastern American kestrel (*Falco sparverius paulus*), gopher tortoise (*Gopherus polyphemus*), Florida mouse (*Podomys floridanus*), gopher frog (*Lithobates capito*), Florida pine snake (*Pituophis melanoleucus mugitus*), Sherman's fox squirrel (*Sciurus niger shermani*) or any stated listed plants or wading birds.

The proposed project "May Affect, But is Not Likely to Adversely Affect" Audubon's crested caracara (*Polyborus plancus audubonii*), Everglades snail kite (*Rostrhamus sociabilis plumbeus*), Florida scrub jay (*Aphelocoma coerulescens*), wood stork (*Mycteria americana*), eastern indigo snake (*Drymarchon corais couperi*), sand skink (*Neoseps reynoldsi*) and blue-tailed mole skink (*Eumeces egregius lividus*), and numerous federally listed plant species that could occur within the project corridor.

The ESBA was submitted to the US Fish and Wildlife Service and they have indicated their concurrence with these findings in a letter dated November 14, 2013. The effect determination for the state-listed species was concurred with by the FFWCC in a letter dated December 12, 2013. The FFWCC's concurrence is further clarified in an e-mail dated December 16, 2013. This correspondence is included in Appendix C.

Cultural Environment

Historic/Archaeological

Historic Sites/Districts

A *Cultural Resource Assessment Survey (CRAS) (Southeastern Archaeological Research, Inc. (SEARCH), September 2013) (CRAS)* was prepared for the project. As a result of the assessment, 50 resources were documented within the Area of Potential Effect (APE). These included 32 previously recorded historic structures, 16 newly recorded historic resources, one previously recorded resource group, and one newly recorded resource group; none were recommended eligible for inclusion in the NRHP. No NRHP-eligible or listed resources were identified within the SR 33 APE. The CRAS was submitted to FHWA on September 25, 2013 for review and transmittal to SHPO. FHWA and SHPO concurred with the findings and recommendations in a letter received November 12, 2013. The FHWA and SHPO concurrence letter is included in Appendix C.

Archaeological Sites

A total of 82 shovel tests were conducted within the Area of Potential Effect (APE). None of the shovel tests yielded cultural material. The CRAS was submitted to FHWA on September 25, 2013 for review and transmittal to SHPO. FHWA and SHPO concurred with the findings and recommendations in a letter received November 12, 2013. The FHWA and SHPO concurrence letter is included in Appendix C.

Social Environment

Social

This project has been developed without regard to race, color, national origin, age, sex, religion, disability, or family status. Title VI provides that no person shall be, on the grounds of race, color, religion, sex, age, national origin, disability or family status, be excluded from participating in, be denied the benefits of, or be otherwise subject to discrimination under any program of the federal, state or local government. No comments have been received during this study regarding conflicts with Title VI or related statutes. Furthermore, the project is not anticipated to negatively affect community resources important to elderly persons, disabled individuals, non-drivers, transit-dependent individuals, or minorities.

Relocation Potential

The preferred alternative will not result in any residential or business displacements, but it will require the acquisition of right-of-way in the I-4 interchange area. FDOT will carry out a right-of-way acquisition and relocation program in accordance with Florida Statute 339.09 and the Uniform Relocation and Real Property Acquisition Policies Act of 1970 (Public Law 91-646, as amended by Public Law 100-17). FDOT produced brochures that describe in detail the Department's relocation assistance program and right-of-way acquisition program called "Your Relocation: Residential", "Your Relocation: Business, Farms and Nonprofit Organizations", "Your Relocation: Signs", and "The Real Estate Acquisition Process." Each of these brochures were made available and distributed as needed at the public information workshop and the public hearing, and were made available upon request to any interested person.

Other Effects

Noise

The 63 evaluated noise-sensitive sites comprised 62 residences (located within the Grey Moss Manor Subdivision, Lake Deeson Village Mobile Home Park, Deeson Manor Subdivision, Landings Apartments, Spanish Oaks Subdivision, Cambry Subdivision, Snow Wood Subdivision, and residences east of I-4) and the pool at the Landings Apartments.

The results of the analysis indicate that existing (2012) exterior traffic noise levels range from 47.6 to 62.6 dB(A), levels that do not approach, meet, or exceed the Noise Abatement Criteria (NAC). In the future (2036) with the improvements (Build) traffic noise levels are predicted to approach, meet, or exceed the NAC at 37 receptors. Notably, when compared to the existing condition, traffic noise levels are not predicted to increase more than 10 dB(A) above existing conditions at any of the evaluated sites. As such, the project would not substantially increase traffic noise (i.e., increase traffic noise 15 dB(A) or more).

Noise abatement measures were considered for the 37 impacted receptors (36 residences and the pool). The measures were traffic management, alternative roadway alignments, and noise barriers. The results of the evaluation indicate that although feasible, traffic management and an alternative roadway alignment(s) are not reasonable methods of reducing predicted traffic noise impacts at the impacted receptors. The results of the analysis performed to evaluate noise barriers indicates that barriers would reduce traffic noise at least the minimum required reduction at 32 of the 37 impacted receptors at a cost below the reasonable limit at two locations:

- Barrier 1: Residences located within the Grey Moss Subdivision and Lake Deeson Village Mobile Home Park from West of Wood Circle W. to Lake Luther Road (Sites 2-20, 26-27)
- Barrier 4: Residences located within the Spanish Oaks, Cambry, and Snow Wood Subdivisions (Sites 47-57)

FDOT is committed to the construction of noise barriers at the locations above contingent upon the following conditions:

- Detailed noise analysis during the final design process supports the need for, and the feasibility and reasonableness of, providing the barriers as abatement.
- The detailed analysis demonstrates that the cost of the noise barrier will not exceed the cost reasonable criterion.
- The residents/property owners benefitted by a noise barrier desire that a noise barrier be constructed.
- All safety and engineering conflicts or issues related to construction of a noise barrier are resolved.

Land uses adjacent to SR 33 are identified on the FDOT listing of noise- and vibration-sensitive sites (e.g., residential use). Construction of the proposed roadway improvements is not expected to have any significant noise or vibration impact. If sensitive land uses develop adjacent to the roadway prior to construction, increased potential for noise or vibration impacts could result. It is anticipated that the application of the FDOT Standard Specifications for Road and Bridge Construction will minimize or

eliminate potential construction noise and vibration impacts. However, should unanticipated noise or vibration issues arise during the construction process, the Project Engineer, in coordination with the District Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

Land uses such as residences, auditoriums, hotels/motels, libraries, recreational areas, and parks are considered incompatible with highway noise levels that exceed the NAC. To reduce the possibility of additional traffic noise-related impacts, noise level contours were developed for the future improved roadway facility. These noise contours delineate the extent of the predicted traffic noise impact area from the improved roadway's edge-of-travel lane for activity categories of land use. Local officials will be provided a copy of the *Final Noise Study Report (KB Environmental Sciences, Inc., December 2013)* to promote compatibility between any future land development in the project area.

Contamination

A Level I contamination evaluation was conducted and documented in a *Contamination Screening Evaluation Report (CSER) (Tierra, Inc., December 2013)* for this project. The environmental screening has resulted in identification of seven sites that may present the potential for petroleum contamination or hazardous materials. Two of these sites have been given a "Medium" ranking and five sites have been given a "Low" ranking for contamination potential. The two Medium ranked sites are:

- Saddle Creek Phosphate Mine – Reclaimed Strip Mine located along the east side of SR 33 north of SR 659
- Lakeland Water Utilities Lift Station located north of SR 33 and SR 659

The preferred alternative will not require the acquisition of right-of-way from either of these two potential contamination sites.

Section 1.0

Summary of Project

1.1 Summary

This *Preliminary Engineering Report* (PER) contains detailed engineering information that fulfills the purpose and need for the widening of State Road 33 (SR 33) from Old Combee Road to north of Tomkow Road in Polk County, Florida. SR 33 serves as a primary north-south connection between Lakeland and I-4. The total project length is approximately 4.3 miles. The environmental document is a Type 2 Categorical Exclusion.

1.2 Commitments

The Florida Department of Transportation (FDOT) makes the following commitments:

1. Eastern indigo snake: The standard FDOT Construction Precautions for the eastern indigo snake will be adhered to during construction of the project.
2. Sand Skink: If Pond 1 becomes a preferred alternative, the FDOT will commit to a coverboard survey of this pond site before construction begins.
3. Florida sandhill crane: The FDOT will re-survey appropriate habitats for the Florida sandhill crane prior to permitting and construction of the project. Additionally, coordination with FWC will be initiated, as appropriate.
4. Bald eagle: Given the possibility of new nests being identified by the FWC during yearly surveys, the FDOT will commit to re-surveying the project area prior to construction. If any active nests within the 660-foot protection zone are identified, the FDOT will act in accordance with the BGEPA (16 U.S.C. 668-668d), as amended, the MBTA (16 U.S.C. 703-712) and Chapter 68A-16.002, FS.
5. Gopher tortoise: Due to the presence of gopher tortoise habitat within the project footprint and observed burrows adjacent to the existing roadway, a gopher tortoise survey in appropriate habitat within construction limits (including roadway footprint and stormwater management sites) will be performed prior to construction. FDOT will secure any relocation permits needed for this species during the design and construction phases of the project.
6. Protected plants: If protected plant species are observed within the proposed impact areas during the design and permitting phase, coordination will be initiated with the FDACS or other appropriate agency to allow for relocation to adjacent habitat or other suitable protected lands, prior to construction.

-
7. Impacts to wetlands within the project footprint may be unavoidable, and require mitigation. Compensatory mitigation for wetland impacts associated with this project will be compensated for pursuant to Part IV, § 373, F.S. and 33 U.S.C. 1344.
 8. FDOT is committed to the construction of Noise Barrier 1 (west of Wood Circle West to Lake Luther Road) and Noise Barrier 4 (adjacent to Spanish Oaks, Cambry and Snow Wood subdivisions), as identified in the Noise Study Report, contingent upon the following:
 - Detailed noise analysis during the final design process supports the need for, and the feasibility and reasonableness of, providing the barriers as abatement;
 - The detailed analysis demonstrates that the cost of the noise barriers will not exceed the cost reasonable limit;
 - The residents/property owners benefitted by the noise barriers desire that a noise barrier be constructed; and
 - All safety and engineering conflicts or issues related to construction of the noise barriers are resolved.
 9. FDOT will coordinate with the City of Lakeland regarding roadway crosswalk material, hardscape design at the I-4/SR 33 interchange and other aesthetic considerations during the design phase of the project.
 10. FDOT will coordinate with Lakeland Area Mass Transit during the design phase regarding accommodations for future bus shelters and connections to the proposed sidewalk and shared-use path.
 11. FDOT will coordinate with the Southwest Florida Water Management District (SWFWMD) to ensure that the most current FEMA floodplain boundaries are used when calculating floodplain impacts during the design phase of the project.

1.3 Recommendations

Based on engineering and economic factors, FDOT recommends the pavement saving alternative as the build alternative for the mainline roadway widening to meet the documented purpose and need for the project. The pavement saving typical section is proposed for the entire project corridor. This alternative is estimated to cost approximately \$2.8 million less than the full reconstruction alternative. The pavement saving alternative involves maintaining the existing two-lane roadway as the two future southbound lanes and constructing the two future northbound lanes to the east of the existing roadway. The proposed mainline improvements can be constructed within the existing 200 feet of right-of-way.

FDOT recommends the diamond interchange alternative over the diverging diamond alternative for the I-4/SR 33 interchange improvement. The crossover movements associated with the diverging diamond interchange require a dramatic reduction in speed from the SR 33 mainline to the crossover curves which causes concern for vehicle safety through the interchange. Additionally, the diamond interchange operates better during the off peak period because traffic on the SR 33 mainline will always have to be stopped in one direction with the diverging diamond interchange, even when there is no traffic on the ramps. Right-of-way will need to be acquired for the interchange improvements.

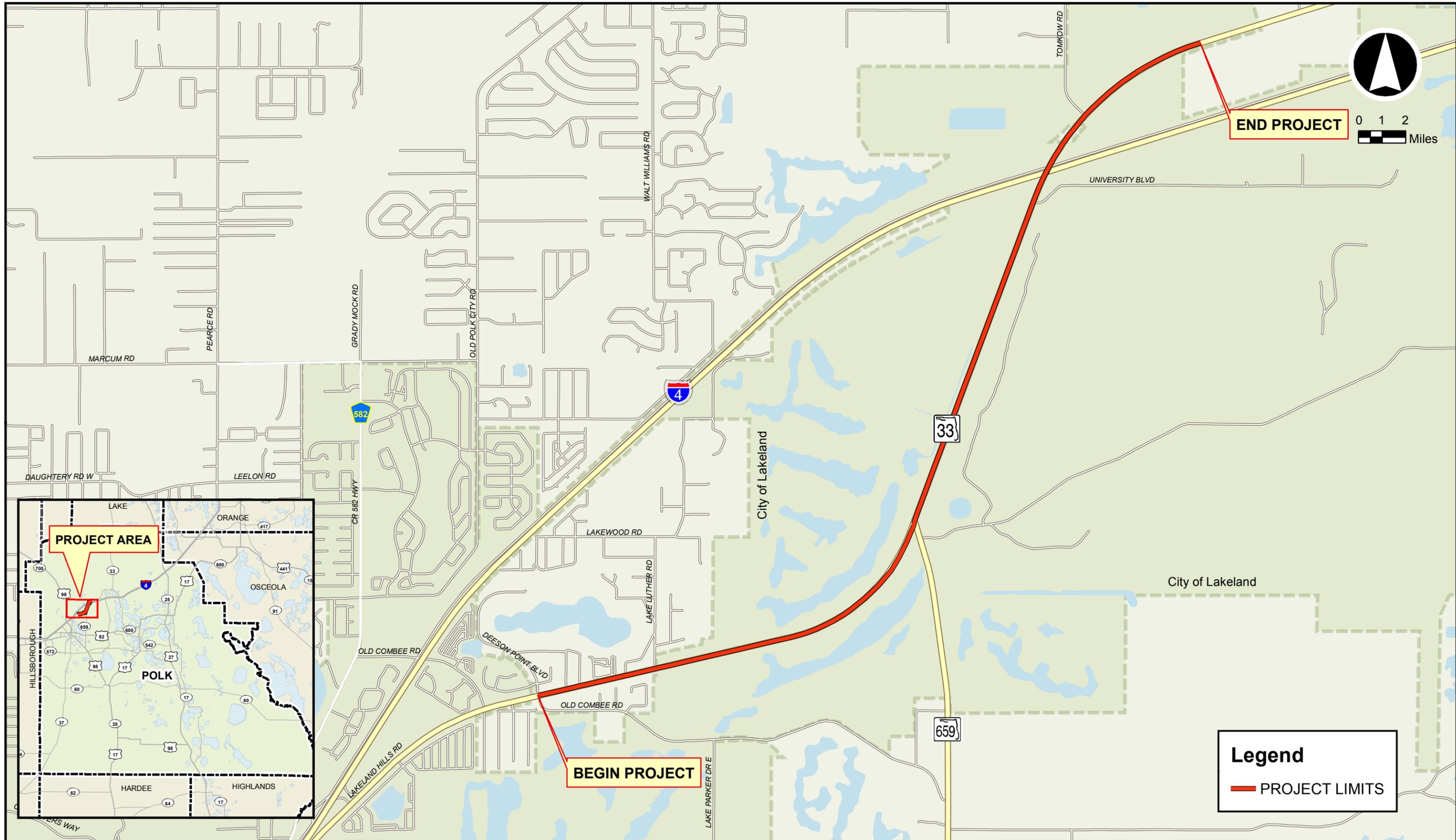
An interim interchange improvement analysis was conducted to determine whether interim improvements at the I-4/SR 33 interchange could be provided at a reasonable cost. The alternatives evaluated include lowering SR 33 under I-4 and raising I-4 over SR 33. FDOT recommends that the interim interchange improvement no longer be considered for the following reasons: the cost of the interim improvement is approximately two-thirds the cost of the ultimate I-4 interchange improvement, the interim improvement does not address the insufficient horizontal distance between the center pier and the outside piers under I-4, and the interim improvement is expected to fail in traffic capacity by the year 2022.

1.4 Description of the Proposed Action

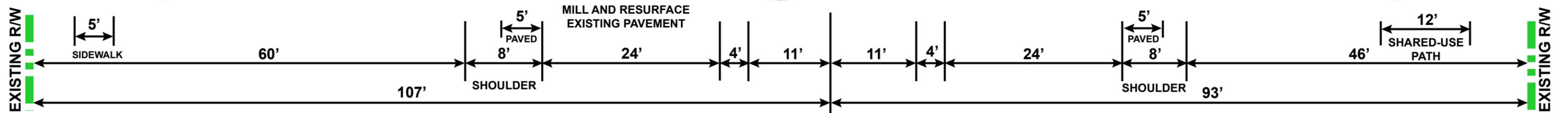
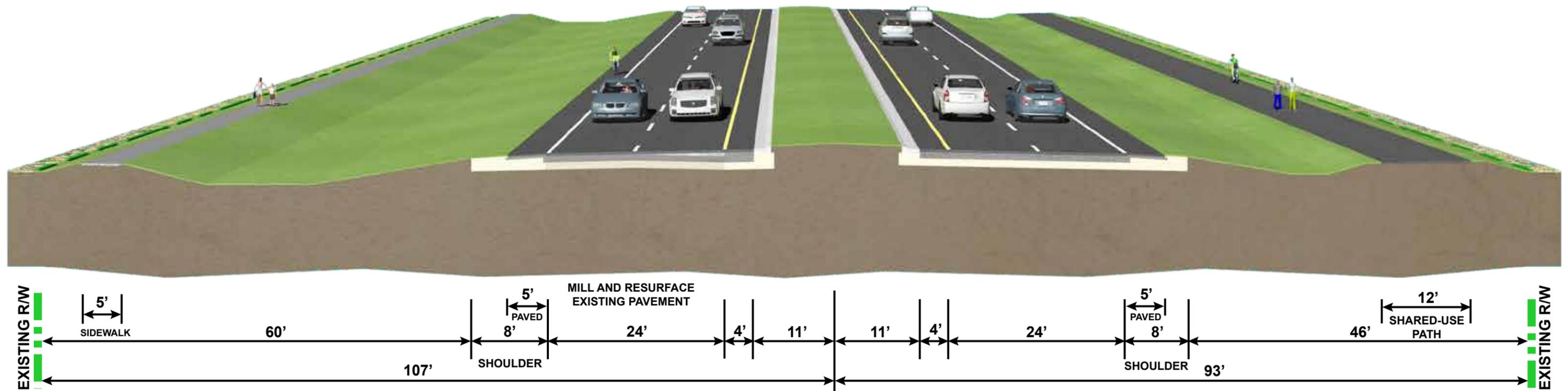
FDOT, District One, is conducting a Project Development and Environment (PD&E) Study regarding the proposed widening of SR 33 in Polk County. The limits of this project on SR 33 are from Old Combee Road to north of Tomkow Road, which is a distance of approximately 4.3 miles. The location and limits of this study are shown in the project location map as Figure 1-1.

The proposed action includes capacity improvements consisting of widening SR 33 from a two-lane undivided roadway to a four-lane divided roadway. Reconstruction of the SR 33 interchange with I-4 is also proposed. The interchange improvements will involve replacing the Interstate 4 (I-4) bridges over SR 33 and reconstructing portions of I-4 approaching the interchange. A standard diamond interchange concept is proposed.

The proposed roadway typical section for this project is a suburban typical section that would include two 12-foot travel lanes in each direction separated by a 30-foot median. The proposed improvements also include a four-foot inside paved shoulder and a five-foot outside paved shoulder in each direction. An open drainage system will collect stormwater runoff and convey it to linear swales. A 12-foot-wide shared-use path is proposed along the east side of the road from the beginning of the project to University Boulevard. A five-foot sidewalk is planned along the west side of the road throughout the project limits and along the east side of the road from University Boulevard to north of Tomkow Road. This typical section can be constructed within the existing 200 feet of right-of-way. The design speed for this typical section is 55 miles per hour (mph). The proposed concept involves saving the existing roadway to serve as half of the future four-lane roadway. Figure 1-2 shows the proposed pavement saving typical section.



SUBURBAN PAVEMENT SAVING ALTERNATIVE



Section 2.0

Existing Conditions

The existing conditions for SR 33 within the project limits were identified from GIS data, available as-built construction plans, FDOT Roadway Characteristics Inventory (RCI), straight-line diagrams (SLD), right-of-way maps, and field reviews conducted by the project team.

2.1 Typical Section

The existing SR 33 typical section is a two-lane undivided rural roadway. The existing roadway consists of two 12-foot travel lanes and five-foot paved outside shoulders. Stormwater is collected in swales along the outside of the roadway. The existing posted speeds vary from 45 mph to 60 mph.

Currently, no bicycle lanes or sidewalks exist on SR 33 within the project limits, other than a segment of sidewalk along the west side of SR 33 adjacent to the Bridgewater development. The existing roadway typical section is shown in Figure 2-1 and includes a listing of the location of the existing sidewalk.

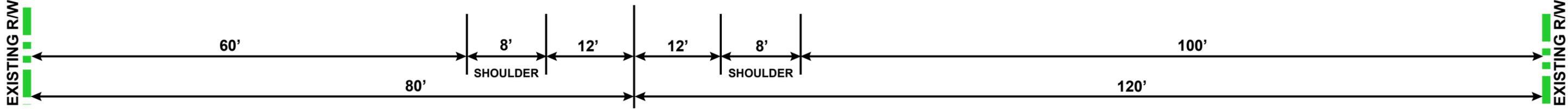
2.2 Roadway Right-of-Way

SR 33 is located within 200 feet of right-of-way, with the centerline offset to the west of center by 20 feet. It is anticipated that the mainline roadway widening can occur within the existing right-of-way. Existing right-of-way for SR 33 within the project limits is shown in the *Preliminary Concept Plans* located in Appendix A.

2.3 Roadway Classification

Currently, SR 33 is functionally classified by FDOT as an Urban Minor Arterial within the project study area and is classified by FDOT as Access Classification 4. With the addition of a median, the Access Classification is proposed to be changed to Access Classification 3. An Access Classification 3 roadway utilizes raised medians to provide separation between travel lanes and restrict the number of median openings. The minimum median opening spacing allowed under Access Classification 3 criteria is 2,640 feet for a full median opening and 1,320 feet for a directional median opening.

EXISTING ROADWAY CONDITION
RURAL 2-LANE



2.4 Existing Land Use

Existing parcel data, in the form of GIS shapefiles from Polk County and FDOT right-of-way maps were used to determine the property lines within the project area. These property lines are shown in the *Preliminary Concept Plans* located in Appendix A.

The widening of SR 33 is located within the City of Lakeland and unincorporated Polk County. Existing land use is a mix of single and multi-family residential from the beginning of the project to University Boulevard and commercial/industrial from University Boulevard to north of Tomkow Road. Figure 2-2 shows the existing land use along the corridor.

The City of Lakeland Year 2030 Future Land-Use Map shows the planned land use for this corridor as a mix of single and multi-family residential west of University Boulevard and commercial/industrial from University Boulevard to north of Tomkow Road. Figure 2-3 shows the future land uses along the corridor.

2.5 Horizontal and Vertical Alignment

The existing horizontal and vertical alignments of SR 33 and I-4 were determined by reviewing existing as-built construction plans and the FDOT straight line diagrams. Within the project limits, the SR 33 horizontal alignment consists of three tangent segments connected by two horizontal curves, as detailed in Table 2-1 below. The existing I-4 horizontal alignment within the project limits consists of a horizontal curve and a tangent segment, shown in Table 2-2 below.

**Table 2-1
Existing Horizontal Alignment of SR 33**

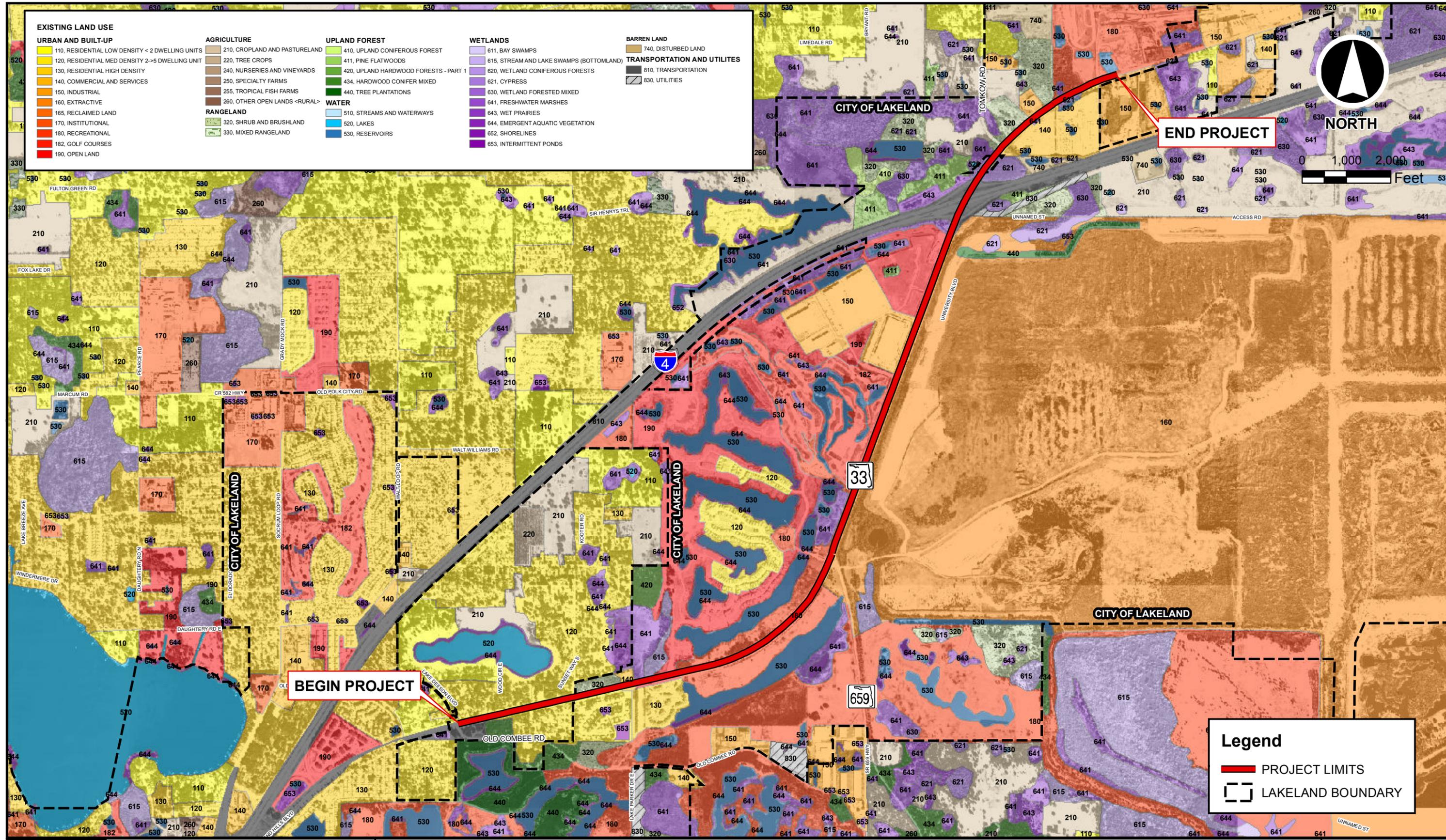
	Roadway Bearing	PI Mile Post ⁽¹⁾	Deflection Angle and Direction	Degree of Curvature	Curve Radius	Curve Length	Super-elevation (ft/ft)
Tangent	N 77°07' 00" E						
Curve 1		6.477	56° 30' 00" (LT)	1° 30' 00"	3,819 ft.	3,766 ft.	0.043
Tangent	N 20°37' 00" E						
Curve 2		8.853	52° 16' 00" (RT)	1° 00' 00"	5,729 ft.	5,227 ft.	0.025
Tangent	N 72°53' 00" E						

(1) – Stationing referenced to FDOT Straight Line Diagram (Roadway ID 16070000).

**Table 2-2
Existing Horizontal Alignment of I-4**

	Roadway Bearing	PI Mile Post ⁽¹⁾	Deflection Angle and Direction	Degree of Curvature	Curve Radius	Curve Length	Super-elevation (ft/ft)
Curve 1		11.500	25° 24' 43" (RT)	0° 30' 00"	11,459 ft.	5,082.39 ft.	RC
Tangent	S 86° 39' 23" E						

(1) – Stationing referenced to FDOT Straight Line Diagram (Roadway ID 16320000).

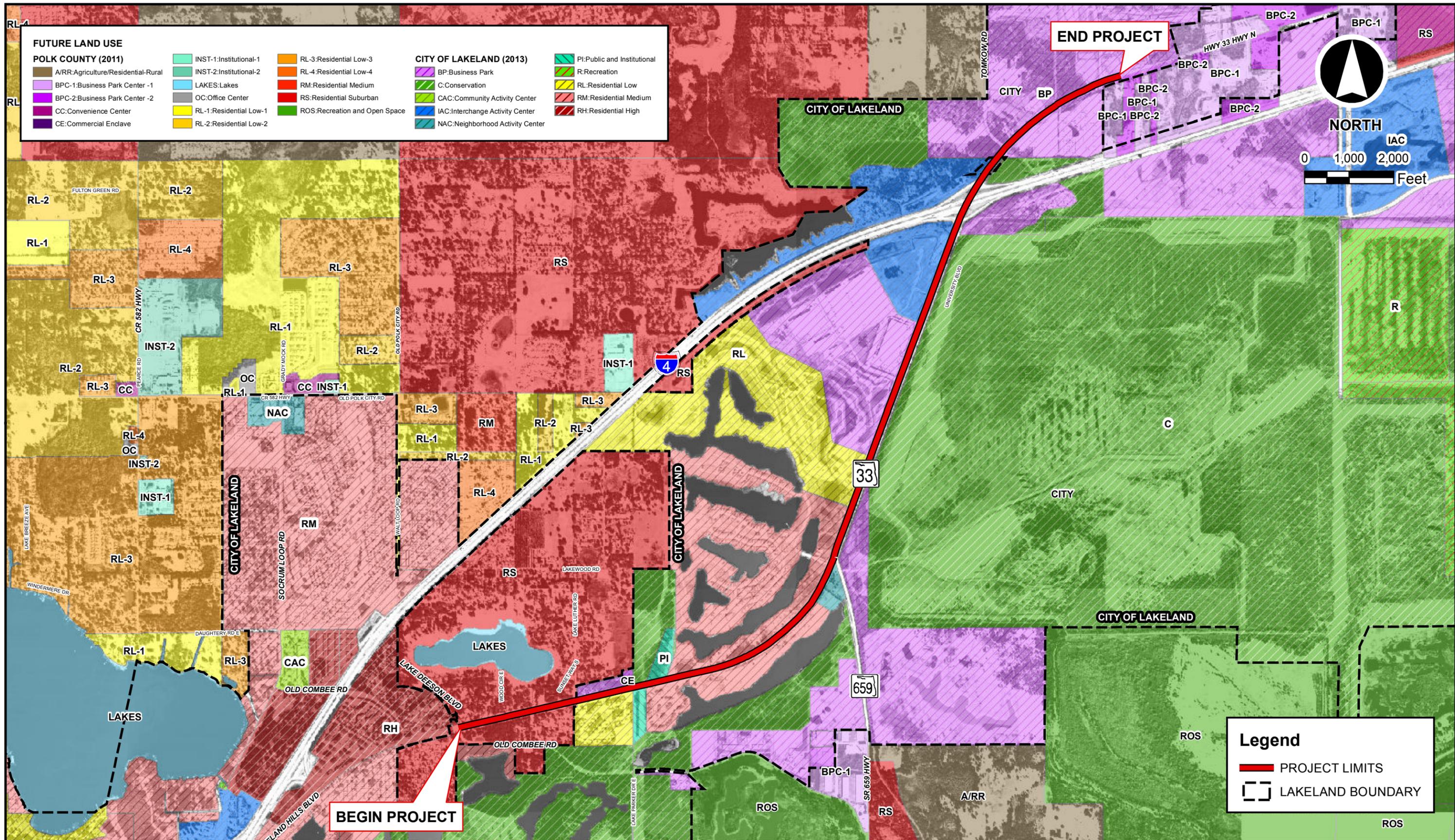


State Road 33 PD&E Study
 from Old Combee Road
 to North of Tomkow Road
 Polk County, Florida

Financial Project ID: 430185-1-22-01
 Federal Project No: N/A

EXISTING LAND USE MAP

Figure 2-2



FUTURE LAND USE POLK COUNTY (2011)		CITY OF LAKELAND (2013)	
A/RR: Agriculture/Residential-Rural	INST-1: Institutional-1	BP: Business Park	PI: Public and Institutional
BPC-1: Business Park Center -1	INST-2: Institutional-2	C: Conservation	R: Recreation
BPC-2: Business Park Center -2	LAKES: Lakes	CAC: Community Activity Center	RL: Residential Low
CC: Convenience Center	OC: Office Center	IAC: Interchange Activity Center	RM: Residential Medium
CE: Commercial Enclave	RL-1: Residential Low-1	NAC: Neighborhood Activity Center	RH: Residential High
	RL-2: Residential Low-2		
	RL-3: Residential Low-3		
	RL-4: Residential Low-4		
	RM: Residential Medium		
	RS: Residential Suburban		
	ROS: Recreation and Open Space		

Legend	
	PROJECT LIMITS
	LAKELAND BOUNDARY

The existing profile for SR 33 is relatively flat within the project limits. The existing I-4 profile over SR 33 consists of three vertical curves (sag, crest, sag) and does not meet current design criteria standards for a 70 mph design speed. The existing vertical curve geometry is provided in Table 2-3 below.

**Table 2-3
Existing Vertical Alignment**

PVI Station ⁽¹⁾	Grade Differential (Sag or Crest)	K Value	Curve Length
1110+25.00	3.00° (Sag)	167	500 ft.
1120+25.00	6.00° (Crest)	250	1,500 ft.
1130+55.00	3.00° (Sag)	167	500 ft.

(1) – Stationing referenced to the baseline of construction as shown on the *Preliminary Concept Plans* located in Appendix A.

2.6 Pedestrian Accommodations

There is an existing sidewalk along the west side of SR 33 between Village Lakes Boulevard and First Park Boulevard. There are no other sidewalks provided along SR 33 within the study limits.

2.7 Bicycle Facilities

Currently, no designated bicycle lanes are provided along SR 33 within the project limits. There are paved shoulders along both sides of SR 33 that can accommodate bicyclists.

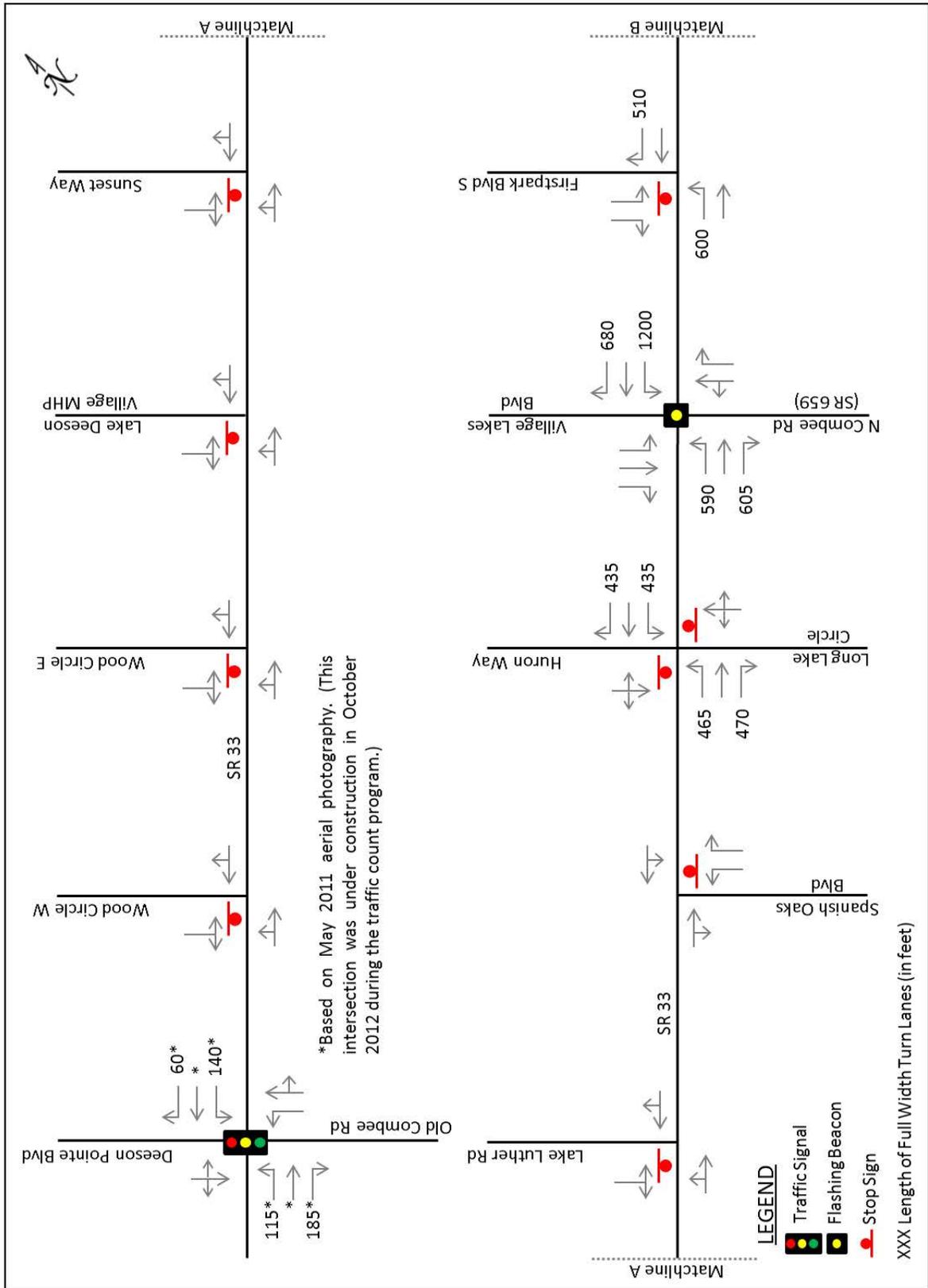
2.8 Lighting

There is no continuous roadway lighting along SR 33 within the limits of the project. There is high mast lighting provided within the I-4/SR 33 interchange.

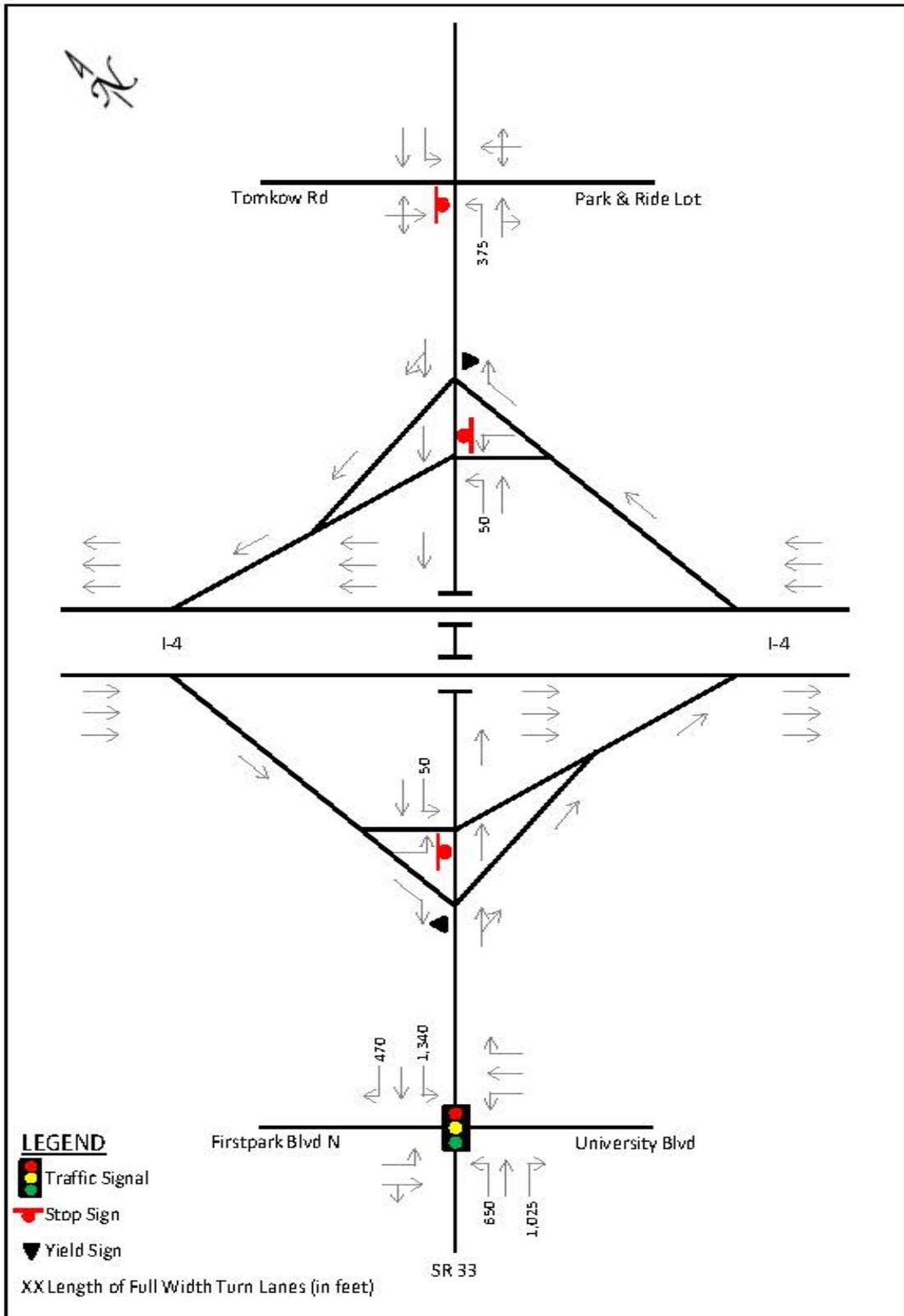
2.9 Intersection Layout

Five main intersections exist within the project limits at SR 659, University Boulevard, I-4 eastbound ramps, I-4 westbound ramps and Tomkow Road. Figures 2-4 and 2-5 show the existing lane configurations for these intersections on SR 33.

**Figure 2-4
Existing Year (2013) Intersection Geometry**



**Figure 2-5
Existing Year (2013) Intersection Geometry (I-4 Interchange)**



2.10 Traffic Signals

There are three signalized intersections on SR 33 within the limits of the study. The signalized intersections are the intersections of SR 33 with Old Combee Road (full traffic signal), SR 659/North Combee Road (flashing signal), and SR 33 with University Boulevard (full traffic signal operating as a flashing signal currently). Details of the existing operating conditions and phasing of the University Boulevard signalized intersection are documented in the *SR 33 Project Traffic Report (AIM Engineering and Surveying, Inc., November 2013)*.

2.11 Design and Posted Speed

The existing posted speeds vary from 45 mph to 60 mph. Approaching the project from the west, SR 33 is posted at 45 mph east of Old Combee Road. The posted speed limit then increases to 55 mph and then to 60 mph prior to the intersection at SR 659/North Combee Road. The posted speed limit remains 60 mph through the remainder of the project. The existing operating speeds vary from 55 to 62 mph within the project limits.

Two meetings were held with FDOT design staff and traffic operations staff to determine the appropriate design speed to be used for development of the preliminary concept plans for this project. The alternative roadway typical sections that would be considered during the study were also discussed. The first meeting was held on August 7, 2012 with FDOT design staff and the decision to consider both a rural (65 mph design speed) and high speed suburban (55 mph design speed) typical section were discussed. A second meeting was held on August 9, 2012 with FDOT traffic operations staff, and it was decided that a 65 mph design speed would not be appropriate for this corridor due to the construction of Florida Polytechnic University and other development that is expected to follow along the corridor; therefore, a 55 mph design speed was selected for this project.

2.12 Railroad Crossing

There are no railroad crossings located within the project limits.

2.13 Drainage System Inventory

The project is located entirely within the Withlacoochee River sub-basin of the Orange Hammock River Watershed as defined by the Southwest Florida Water Management District (SWFWMD). Although the project lies entirely within the Withlacoochee River sub-basin, SR 33 currently outfalls to three different sub-basins within the project limits: Lake Deeson, Withlacoochee River, and Saddle Creek. Lake Deeson is a closed basin located north of SR 33 near Old Combee Road. The general flow pattern within the Withlacoochee River basin is north towards the Withlacoochee River. Saddle Creek is located south of SR 33, and the general flow pattern for this basin is south towards Peace River. Each outfall

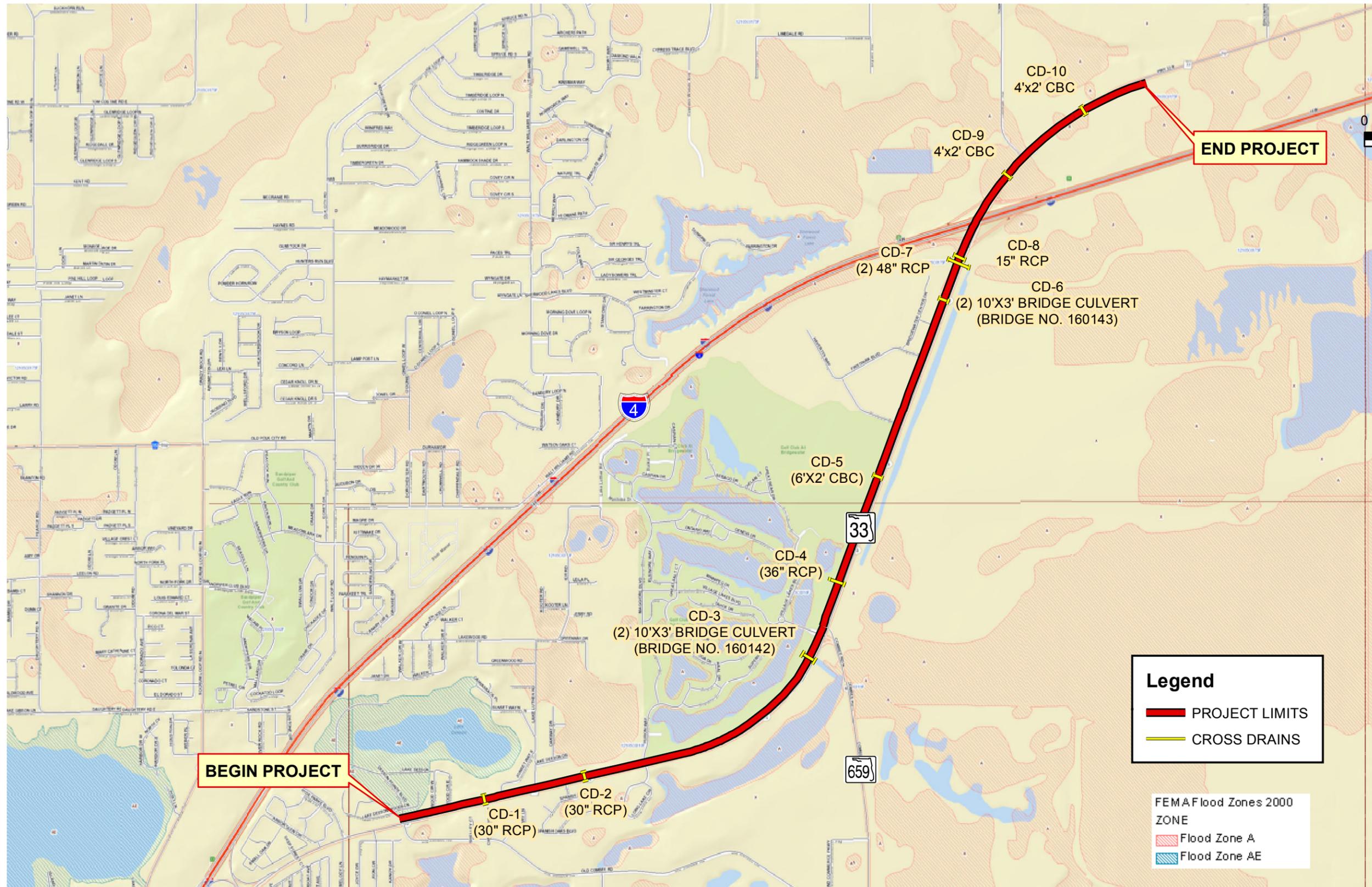
sub-basin has its own Waterbody ID (WBID), which is summarized below. It should be noted that Lake Deeson and Saddle Creek are verified as Impaired based on the current FDEP 303(d) list.

- WBID 1449A – Lake Deeson – Per the current 303(d) list, this WBID is listed as Impaired for Nutrients. With the Group 4 assessment, it was assessed for Dissolved Oxygen as not Impaired.
- WBID 1449 – Orange Hammock – Per the current 303(d) list, this WBID is not listed as Impaired for Nutrients or Dissolved Oxygen. With the Group 3, Cycle 2 assessment, it was assessed for Dissolved Oxygen and Nutrients (Chlorophyll-a) as having insufficient data, although Chl-a indicates this waterbody is not Impaired.
- WBID 1497 – Saddle Creek – Per the current 303(d) list, this WBID is listed as Impaired for Nutrients and Dissolved Oxygen within the Group 3 assessment.

There are eight existing cross drains and two existing bridge culverts within the project limits allowing for conveyance of off-site and on-site runoff. A summary of the existing cross drains and bridge culverts is provided in Table 2-4. The existing cross drain and bridge culvert locations are shown in Figure 2-6.

Table 2-4
Summary of Existing Cross Drains and Bridge Culverts

Structure Number	FDOT Milepost	Description
CD-1	5.309	Single 30" RCP
CD-2	5.694	Single 30" RCP
CD-3 (Bridge No. 160142)	6.693	Double 10'x3' Bridge Culvert
CD-4	6.996	Single 36" RCP
CD-5	7.416	Single 6'x2' Concrete Box Culvert
CD-6 (Bridge No. 160143)	8.123	Double 10'x3' Bridge Culvert
CD-7	8.275	Double 48" RCP
CD-8	8.284	Single 15" RCP
CD-9	8.656	Single 4'x2' Concrete Box Culvert
CD-10	9.036	Single 4'x2' Concrete Box Culvert



2.14 Location Hydraulics

The Federal Emergency Management Agency (FEMA) has developed a Flood Insurance Rate Map (FIRM) for the study area. The relevant, and most current FIRM panel numbers are 12105C0175F and 12105C0310F for Polk County, Florida, dated December 20, 2000. The majority of the project and potential pond sites lies outside of the FEMA floodplain areas. A portion of the project area is located within six designated floodplain areas: FIA-1, FIA-2, FIA-3, FIA-4, FIA-5, and FIA-6 (Zone A – 100-year floodplain with no base flood elevations determined). The floodplain elevation was estimated based on overlaying the FEMA flood maps on top of one-foot LiDAR contours. Based on this methodology, the 100-year flood stage was estimated to be at 134.0 ft NAVD for FIA-1, 138.0 ft NAVD for FIA-5, and 136.0 ft NAVD for FIA-6. For FIA-2, FIA-3, and FIA-4, the 100-year flood stage elevation of 134.0 ft NAVD is based on the Flood Data Sheet for the existing double 6'x4' concrete box culvert located in the 2003 I-4 roadway construction plans. Floodplain impacts are to be expected due to the SR 33 widening and the proposed I-4 and SR 33 interchange reconstruction. In addition, the floodplain impacts and compensation for FIA-2, FIA-3, and FIA-4 are considered together as one floodplain since they are all connected to the same floodplain boundary. It should also be noted that per a telephone conversation with FDOT Bartow Operation Maintenance Center Manager, SR 33 has no historical flooding issues within the project limits.

Furthermore, based on coordination with SWFWMD, the water management district is currently developing the Polk City Watershed Model; a model that depicts the existing drainage conditions for the 100-year storm event within Polk City, FL. SWFWMD indicated that the model drainage boundary is just outside the SR 33 project limits. It is expected that when the model is approved this year (2014), new floodplain boundaries for the model drainage boundary and the surrounding area will be published. The floodplain boundaries in the surrounding area of the model drainage boundary would also be revised based on existing land use and soil data. Since the SR 33 project limits are located within the surrounding area of the model drainage boundary, the effective floodplain boundaries shown in this report may change in 2014. Additional coordination with SWFWMD is recommended to ensure that the most current FEMA floodplain boundaries are used when calculating floodplain impacts during the design phase of the project.

2.15 Traffic Data

A *Project Traffic Report* (AIM Engineering & Surveying, Inc., November 2013) was prepared for this project and includes information on the existing roadway conditions, future roadway conditions and proposed improvements needed to adequately serve future design year 2036 traffic volumes on SR 33.

2.15.1 Design Characteristics

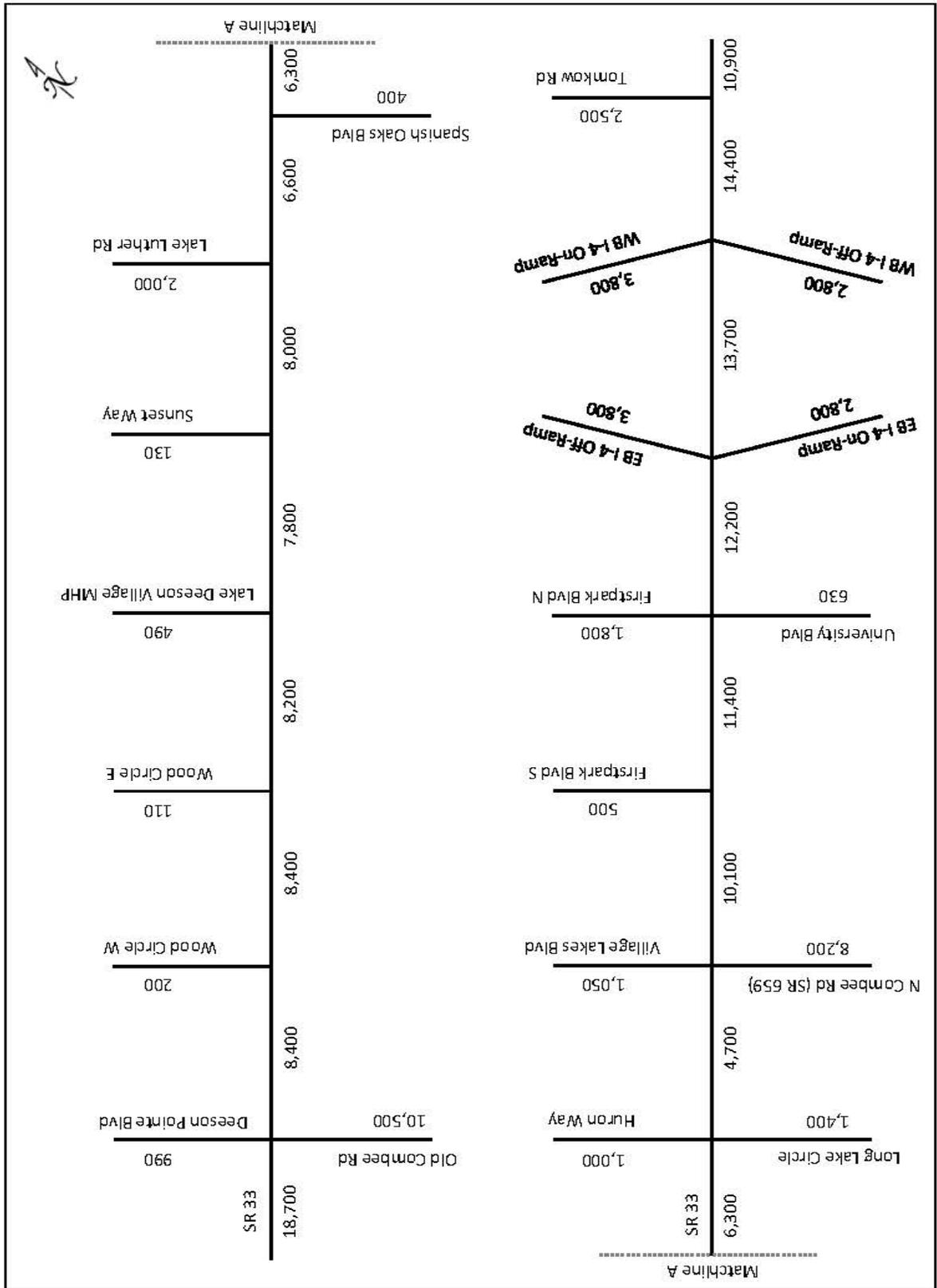
The design factors used to convert the daily traffic projections to peak hour projections were based on the design factors that exist today. These characteristics include the following:

-
- A K30 factor of 9.0% was used to develop future year peak hour volumes.
 - A D30 factor of 53.0% was used for I-4 and a D30 factor of 55.4% was used for SR 33 to develop future year peak hour traffic volumes.
 - A T24 factor of 13.0% was determined to be appropriate for the SR 33 traffic analysis. The T factor for the peak hour was assumed to be 50% of the T24 value; therefore, the T peak hour factor of 6.5% was used to develop the future year peak hour traffic volumes.

2.15.2 Existing Traffic Volumes

Existing Year (2012) Average Annual Daily Traffic (AADT) volumes are shown in Figure 2-7.

Figure 2-7
Existing Year (2012) Average Annual Daily Traffic (AADT)



2.15.3 Existing Year (2012) Level of Service Analysis

The SR 33 roadway segments were analyzed using the 2010 Highway Capacity Manual software (HCS). With two exceptions, all of the SR 33 roadway segments are operating at LOS D or better in both peak and off-peak travel directions during the peak hours. LOS E conditions are occurring on the segment between the westbound I-4 on/off ramps and Tomkow Road in the peak travel directions (southbound in the AM peak hour and northbound in the PM peak hour). Table 2-5 summarizes the existing roadway segment levels of service.

**Table 2-5
Existing Year (2012) Peak Hour Roadway Segment Operations**

AM PEAK HOUR								
Segment		Two-Way Volume	Directional Volume	V/C ⁽¹⁾	PTSF ⁽²⁾	ATS ⁽³⁾	% FFS ⁽⁴⁾	LOS ⁽⁵⁾
From	To							
Old Combee Road/ Deeson Pointe Boulevard	Lake Luther Road	582	399 (WB)	0.29	66.7%	40.9	85.1%	B
			183 (EB)	0.13	38.1%	41.6	86.7%	B
Lake Luther Road	Spanish Oaks Boulevard	464	295 (WB)	0.21	43.1%	44.4	88.8%	B
			169 (EB)	0.12	38.6%	44.3	88.5%	B
Spanish Oaks Boulevard	Huron Way/ Long Lake Circle	439	277 (WB)	0.20	64.9%	51.9	86.6%	C
			162 (EB)	0.12	43.2%	51.8	86.4%	B
Huron Way/ Long Lake Circle	N. Combee Road/ Village Lakes Boulevard	328	185 (SB)	0.13	56.7%	53.1	88.5%	C
			143 (NB)	0.10	44.7%	53.2	88.6%	B
N. Combee Road/ Village Lakes Boulevard	Firstpark Boulevard N./ University Boulevard	737	433 (SB)	0.29	69.4%	55.2	85.2%	D
			304 (NB)	0.21	56.4%	55.8	86.1%	C
Firstpark Boulevard N./ University Boulevard	EB I-4 On-/Off-Ramps	731	426 (SB)	0.28	69.8%	54.8	84.9%	D
			305 (NB)	0.21	56.4%	55.4	86.0%	C
EB I-4 On-/Off-Ramps	WB I-4 On-/Off-Ramps	765	441 (SB)	0.29	70.7%	55.2	84.9%	D
			324 (NB)	0.22	58.5%	55.8	85.9%	C
WB I-4 On-/Off-Ramps	Tomkow Road	917	632 (SB)	0.41	81.3%	53.7	82.6%	E
			285 (NB)	0.19	50.4%	55.3	85.0%	C
PM PEAK HOUR								
Segment		Two-Way Volume	Directional Volume	V/C ⁽¹⁾	PTSF ⁽²⁾	ATS ⁽³⁾	% FFS ⁽⁴⁾	LOS ⁽⁵⁾
From	To							
Old Combee Road/ Deeson Pointe Boulevard	Lake Luther Road	683	281 (WB)	0.19	52.0%	41.1	85.5%	B
			402 (EB)	0.26	64.4%	40.9	85.2%	B
Lake Luther Road	Spanish Oaks Boulevard	563	257 (WB)	0.17	40.2%	44.0	87.9%	B
			306 (EB)	0.20	56.8%	43.7	87.4%	B
Spanish Oaks Boulevard	Huron Way/ Long Lake Circle	561	256 (WB)	0.17	56.8%	52.1	86.9%	C
			305 (EB)	0.20	65.0%	51.0	85.1%	C
Huron Way/ Long Lake Circle	N. Combee Road/ Village Lakes Boulevard	406	209 (SB)	0.14	56.8%	52.5	87.5%	C
			197 (NB)	0.13	52.7%	52.8	88.0%	C
N. Combee Road/ Village Lakes Boulevard	Firstpark Boulevard N./ University Boulevard	779	314 (SB)	0.21	55.5%	55.8	86.2%	C
			465 (NB)	0.30	72.8%	54.9	84.8%	D
Firstpark Boulevard N./ University Boulevard	EB I-4 On-/Off-Ramps	821	315 (SB)	0.21	55.7%	55.3	85.7%	C
			506 (NB)	0.32	75.4%	54.2	84.0%	D
EB I-4 On-/Off-Ramps	WB I-4 On-/Off-Ramps	942	308 (SB)	0.20	52.0%	55.2	85.0%	C
			634 (NB)	0.40	79.8%	53.8	82.7%	D
WB I-4 On-/Off-Ramps	Tomkow Road	995	364 (SB)	0.24	58.4%	54.8	84.3%	C
			631 (NB)	0.40	80.6%	53.7	82.7%	E

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Percent Time Spent Following

⁽³⁾ Average Travel Speed (miles/hour)

⁽⁴⁾ Percent of Free-Flow Speed

⁽⁵⁾ Level of Service

The SR 33 roadway unsignalized intersection analyses were conducted for 13 intersections along SR 33 within the project limits using 2010 HCS. The results of the AM and PM peak hour unsignalized intersection analyses are summarized in Table 2-6. A majority of the movements are operating at LOS C or better during both peak hours. In the am peak hour, there are three movements operating at LOS D and one movement operating at LOS E. These specific movements are:

- Eastbound Village Lakes Boulevard left turn movement (LOS E)
- Eastbound Village Lakes Boulevard through movement (LOS D)
- Westbound N. Combee Road left turn and through movements (LOS D)

The average AM peak hour vehicle delays associated with these movements range from approximately 25 seconds/vehicle to 40 seconds/vehicle. In the PM peak hour, there are three movements operating at LOS D and four movements operating at LOS E. These specific movement are:

- Eastbound Village Lakes Boulevard left turn movement (LOS E)
- Eastbound Firstpark Boulevard N. left turn movement (LOS D)
- Eastbound I-4 off ramp left turn movement (LOS D)
- Westbound I-4 off ramp left turn movement (LOS D)
- Northbound left turn, through, and right turn movements from the park-and-ride lot (LOS E)

**Table 2-6
Existing Year (2012) Peak Hour Intersection Operations**

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
Wood Circle W.	Eastbound	L/T	0.00	8.3	A	0.01	7.9	A
	Southbound	L/R	0.04	11.6	B	0.02	10.7	B
Wood Circle E.	Eastbound	L/T	0.00	9.1	A	0.01	7.9	A
	Southbound	L/R	0.01	14.4	B	0.01	12.0	B
Lake Deeson Village MHP	Eastbound	L/T	0.00	0.0	N/A	0.01	7.9	A
	Southbound	L/R	0.03	12.5	B	0.02	13.1	B
Sunset Way	Eastbound	L/T	0.01	8.3	A	0.00	7.9	A
	Southbound	L/R	0.02	11.4	B	0.01	12.0	B
Lake Luther Road	Eastbound	L/T	0.03	8.1	A	0.08	8.1	A
	Southbound	L/R	0.29	13.1	B	0.12	11.3	B
Spanish Oaks Boulevard	Westbound	L/T	0.00	8.0	A	0.00	7.9	A
	Northbound	L	0.05	12.9	B	0.03	13.2	B
	Northbound	R	0.01	9.3	A	0.02	10.1	B
Huron Way/ Long Lake Circle	Eastbound	L/T/R	0.08	9.8	A	0.05	9.7	A
	Westbound	L/T/R	0.20	13.4	B	0.14	15.1	C
	Northbound	L	0.02	7.7	A	0.04	7.7	A
	Southbound	L	0.00	7.5	A	0.01	7.8	A
North Combee Road/ Village Lakes Boulevard	Eastbound	L	0.25	40.4	E	0.08	36.3	E
	Eastbound	T	0.14	25.1	D	0.05	18.0	C
	Eastbound	R	0.04	9.2	A	0.03	9.2	A
	Westbound	L/T	0.11	26.4	D	0.29	23.5	C
	Westbound	R	0.24	10.2	B	0.41	12.0	B
	Northbound	L	0.01	7.7	A	0.02	7.6	A
Firstpark Boulevard S.	Eastbound	L	0.07	18.6	C	0.06	15.8	C
	Eastbound	R	0.02	11.4	B	0.03	10.2	B
	Northbound	L	0.04	8.4	A	0.00	7.9	A
University Boulevard/ Firstpark Boulevard N.	Eastbound	L	0.19	24.0	C	0.24	25.2	D
	Eastbound	T/R	0.02	10.5	B	0.07	11.2	B
	Westbound	L	0.26	21.2	C	0.09	20.3	C
	Westbound	T	0.02	16.7	C	0.00	0.0	N/A
	Westbound	R	0.01	9.8	A	0.09	11.7	B
	Northbound	L	0.01	8.2	A	0.00	8.3	A
	Southbound	L	0.02	8.0	A	0.02	8.4	A
I-4 Eastbound Ramps	Eastbound	L	0.41	20.0	C	0.63	27.2	D
	Eastbound	R	0.13	11.9	B	0.07	24.8	C
	Southbound	L	0.06	7.9	A	0.03	8.4	A
I-4 Westbound Ramps	Westbound	L	0.30	19.6	C	0.50	27.1	D
	Westbound	R	0.04	10.1	B	0.23	14.2	B
	Northbound	L	0.08	8.9	A	0.08	8.0	A
Tomkow Road	Eastbound	L	0.04	8.4	A	0.14	8.4	A
	Westbound	L	0.00	7.8	A	0.00	8.3	A
	Northbound	L/T/R	0.05	23.0	C	0.17	36.0	E
	Southbound	L/T/R	0.43	16.6	C	0.18	14.5	B

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Average Delay (seconds/vehicle)

⁽³⁾ Level of Service

2.16 Crash Data and Safety Analysis

Crash records were reviewed over a five-year period from 2007 to 2011 for SR 33 between Old Combee Road and Tomkow Road and I-4 east and west of SR 33. Table 2-7 summarizes the number of crashes, fatalities, and injuries that occurred each year from 2007 to 2011. The table divides the crashes by SR 33 mainline, the I-4 on/off ramps, and the I-4 mainline. There were a total of 205 crashes that involved 336 vehicles, which resulted in four fatalities and 135 injuries.

**Table 2-7
Crash History (2007 to 2011)**

Roadway	Year	No. of Crashes	No. of Vehicles	No. of Fatalities	No. of Injuries
SR 33 ⁽¹⁾	2007	18	31	1	13
	2008	20	37	1	16
	2009	16	29	1	13
	2010	10	17	0	7
	2011	6	12	1	11
	Subtotal		70	126	4
I-4 On/Off Ramps	2007	1	1	0	1
	2008	5	10	0	3
	2009	10	19	0	13
	2010	2	3	0	0
	2011	3	6	0	3
	Subtotal		21	39	0
I-4 Mainline ⁽²⁾	2007	20	32	0	15
	2008	22	30	0	11
	2009	28	42	0	9
	2010	25	39	0	7
	2011	19	28	0	13
	Subtotal		114	171	0
Total		205	336	4	135

(1) – From Milepost 4.993 to Milepost 9.208

(2) – From Milepost 11.882 to Milepost 12.832

Table 2-8 summarizes the crashes by lighting condition, weather conditions, and the condition of the roadway surface at the time of the crashes. The information in this table shows that a majority of crashes occurred during daylight conditions (67.8%), during non-rainy weather (79.5%), and on dry pavement conditions (71.7%). This information indicates that a majority of crashes were not influenced by poor visibility or wet/slippery roadway conditions.

**Table 2-8
Crash Conditions (2007 – 2011)**

Lighting		
Condition	No. of Occurrences	% of Occurrences
Daylight	139	67.80%
Dark (Street Light)	30	14.63%
Dark (No Street Light)	23	11.22%
Dusk	8	3.90%
Dawn	5	2.44%
Total	205	100.00%
Weather		
Condition	No. of Occurrences	% of Occurrences
Clear	106	51.71%
Cloudy	57	27.80%
Rain	40	19.51%
Fog	2	0.98%
Total	205	100.00%
Road Surface		
Condition	No. of Occurrences	% of Occurrences
Dry	147	71.71%
Wet	58	28.29%
Slippery	0	0.00%
Total	205	100.00%

Table 2-9 summarizes the crashes by crash type along SR 33, at the I-4 on/off ramps, and on the I-4 mainline. The highest percentage of crashes on SR 33 were angle, left turn, and rear-end crashes. At the I-4 on/off ramps, a large majority (52.38%) of the crashes were rear-end type crashes. These intersections are currently unsignalized, and there are no acceleration/deceleration lanes provided on SR 33 for right turn movements. This type of crash is often the most common type of crash on diamond interchange ramps at unsignalized intersections. This is indicative of insufficient turn lanes on SR 33 through the interchange. Along the I-4 mainline through the interchange area, the highest percentage of crashes were hit guardrail, rear end, and angle crashes.

The actual crash rate on I-4 from 2007 through 2011 was 0.980 crashes per million vehicle miles of travel. The statewide average crash rate for urban interstate facilities during this same five-year period was 0.685 crashes per million vehicle miles of travel. In comparison, this section of I-4 within the study area has experienced a higher crash rate than the statewide average for similar facilities. The actual crash rate on the portion of SR 33 within the immediate interchange area (i.e., from Milepost 8.288 to Milepost 8.590) for the years 2007 through 2011 was 7.105 crashes per million vehicle miles of travel. The statewide average crash rate for similar facilities during this same five-year period was 2.514 crashes per million vehicle miles of travel; therefore, the actual crash rate for this portion of SR 33 is almost three times higher than the statewide average.

**Table 2-9
Crash Types (2007-2011)**

SR 33		
Crash Type	No. of Occurrences	% of Occurrences
Angle	19	27.14%
Rear end	10	14.29%
Left turn	10	14.29%
Hit guardrail/barrier	5	7.14%
Sideswipe	4	5.71%
Hit fixed object	4	5.71%
Hit sign/sign post	3	4.29%
Overtaken	2	2.86%
Head on	2	2.86%
Ran into ditch/culvert	1	1.43%
Unspecified	10	14.29%
Total	70	100.00%
I-4 On/Off Ramps		
Crash Type	No. of Occurrences	% of Occurrences
Rear end	11	52.38%
Angle	3	14.29%
Backed into	2	9.52%
Hit concrete barrier wall	2	9.52%
Hit fence	1	4.76%
Ran into ditch/culvert	1	4.76%
Head on	1	4.76%
Total	21	100.00%
I-4 Mainline		
Crash Type	No. of Occurrences	% of Occurrences
Hit guardrail	27	23.68%
Rear end	15	13.16%
Angle	13	11.40%
Sideswipe	9	7.89%
Overtaken	7	6.14%
Hit concrete barrier wall	6	5.26%
Ran into ditch/culvert	5	4.39%
Hit fence	4	3.51%
Hit movable object on road	4	3.51%
Hit motor vehicle on side of road	3	2.63%
Hit other fixed object	2	1.75%
Cargo loss	2	1.75%
Separation of units	2	1.75%
Hit sign/sign post	1	0.88%
Hit bridge/pier/abutment	1	0.88%
Hit animal	1	0.88%
Unspecified	12	10.53%
Total	114	100.00%

2.17 Utilities

Base maps were sent to utility providers with a request to provide information on existing and planned utilities. Table 2-10 summarizes the utility owner, location, and type of utilities present within the project corridor.

**Table 2-10
Existing Utilities in the Study Area**

Utility Company	Facility	Description
Bright House Networks	Coax Cable and Fiber	Bright House maintains aerial cable and fiber on the City of Lakeland's pole line with buried service facilities throughout the project.
Verizon Florida	Communications	Verizon maintains buried communication facilities throughout the project. A Verizon duct system begins on the west side of SR 33 from Old Combee Road to just north of Spanish Oaks Boulevard where the duct system crosses to the east of SR 33 through the project terminus. Verizon also maintains facilities along the west side of SR 33 that continue down Village Lake Boulevard.
City of Lakeland – Electric	Transmissions and Distribution Power	The City maintains transmission facilities (69 kV to 230 kV) along the west and east sides of SR 33 from Old Combee Road to just north of Spanish Oaks Boulevard where transmission continues along the east side of SR 33 to I-4 where they travel in an easement along the south side of I-4 right-of-way. The City also has distribution facilities (<50 kV) under built on the transmission poles located along the east side of SR 33 for the project limits.
Orlando Utilities Commission	Transmission Power	Orlando Utilities Commission (OUC) maintains transmission facilities (230 kV) in an easement that crosses SR 33 south of Huron Way. The facility then continues to the north to I-4 where it runs along the east side of the I-4 right-of-way.
City of Lakeland – Water/Sewer	Water/Sewer	The City maintains a 16-inch ductile iron water main along the east side of SR 33 from Old Combee Road to North Combee where it transitions to a 36-inch and travels along the west side of SR 33 to the I-4 Interchange. A 18-inch PVC force main enters the project just north of Spanish Oaks Boulevard and travels along the west side of SR 33 to approximately North Combee Road where it transitions to 12-inch and continues through the project limits.
City of Lakeland – Gas	Gas Main	The City of Lakeland has a 16-inch high pressure gas main that enters the project just north of Spanish Oaks Boulevard and continues along the west side of SR 33 to Tomkow Road.

**Table 2-10
Existing Utilities in the Study Area
Continued**

Utility Company	Facility	Description
Florida Gas Transmission - Gas	Transmission Gas Main	Florida Gas Transmission (FGT) has a 6-inch main that enters the project at North Combee Road and travels north along the west side of SR 33 to the end of the project. FGT also maintains a 22-inch gas main along the same side as the 6-inch main from the I-4 interchange to the end of the project. Both FGT mains are located within the existing right-of-way. The 22-inch gas main is in an easement within the FDOT right-of-way that has been subordinated to FDOT. The 6-inch main is in the FDOT right-of-way by permit.
Cox Cable	Coax Cable and Fiber	Cox Cable maintains aerial cable and fiber from Old Combee Road to Spanish Oaks Boulevard where it transitions to underground and terminates at Long Lake Circle. Cox cable also crosses SR 33 at the North Combee Road Intersection.

2.18 Soils and Geotechnical Data

The soils encountered along the project limits consist of Hydrological Soil Group (HSG) A, B, B/D, C, and D soils. Type A soils have a high infiltration rate with a low water table. Type B soils have a moderate infiltration rate with a low water table. Type C soils are considered to have a slow infiltration rate with a moderate water table level. Type B/D and D soils are very poorly drained or poorly drained soils with high water tables. According to the Soil Survey, there are 13 different soil types located along the project limits. Table 2-11 summarizes and lists the soil types and relevant information. The ground water depth varies from >6' below - +2.0' above the existing ground throughout the project. According to the soil survey, there are some areas on SR 33 where the high water table is above the ground surface during certain months of the year.

**Table 2-11
USDA NRCS Soil Survey Information**

Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
3	Candler sand, 0 to 5 percent slopes	>6.0	N/A	A	0-80	SP, SP-SM	A-3
6	Eaton mucky fine sand, depressional	+2-0	Jun-Oct	D	0-6 6-29	SP-SM SM, SP-SM	

**Table 2-11
USDA NRCS Soil Survey Information
Continued**

Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
					29-33 33-80	SC SC, CL, CH	A-3, A-2-4 A-2-4, A-3 A-7, A-4, A-6 A-7
7	Pomona fine sand	0-1.0	June-Oct	B/D	0-6 6-21 21-26 26-48 48-73 73-80	SP, SP-SM SP, SP-SM SP-SM, SM SP, SP-SM, SM SC, SM-SC, SM N/A	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-2, A-4, A-6 N/A
9	Lynne sand	0-1.0	June-Oct	B/D	0-5 5-21 21-28 28-33 33-80	SP, SP-SM SP, SP-SM SP-SM, SM SP-SM SC, CH, CL	A-3 A-3 A-3, A-2-4 A-3, A-2-4 A-6, A-7
12	Neilhurst sand, 1 to 5 percent slopes	>6.0	N/A	A	0-80	SP, SP-SM	A-3, A-2-4
15	Tavares fine sand, 0 to 5 percent slopes	3.5-6.0	June-Dec	A	0-80	SP, SP-SM	A-3
17	Smyrna and Myakka fine sands	0-1.0	Jun-Oct	B/D	0-12 12-25 25-42 42-48 48-80	SP, SP-SM SM, SP-SM SP, SP-SM SM, SP-SM SP, SP-SM	A-3, A-2-4 A-3, A-2-4 A-3 A-3, A-2-4 A-3
22	Pomello fine sand	2.0-3.5	Jul-Nov	C	0-48 48-63 63-80	SP, SP-SM SP-SM, SM SP, SP-SM	A-3 A-3, A-2-4 A-3
29	St. Lucie fine sand, 0 to 5 percent sands	>6.0	N/A	A	0-80	SP	A-3
35	Hontoon muck	+2-0	Jan-Dec	D	0-75 75-80	PT N/A	A-8 N/A
51	Pomona-Urban land complex	0-1.0	Jun-Oct	B/D	0-6 6-21 21-26 26-48	SP, SP-SM SP, SP-SM SP-SM, SM SP, SP-SM	A-3, A-2-4 A-3, A-2-4 A-3, A-2-4 A-3, A-2-4

Table 2-11
USDA NRCS Soil Survey Information
Continued

Soil No.	Polk County USDA Soil Name	Seasonal High Ground Water		HSG	Soil Classification		
		Depth* (feet)	Duration (months)		Depth (inches)	Unified	AASHTO
					48-73 73-80	SC, SM-SC, SM N/A	A-2, A-4, A-6 N/A
68	Arents, 0 to 5 percent slopes	4.0-6.0	Jun-Oct	B	Not Available	Not Available	Not Available
99	Water	N/A	N/A	N/A	N/A	N/A	N/A

*Seasonal High Groundwater Table: Depth is referenced below existing grade, except where indicated as "+".

A *Preliminary Geotechnical Report* (Tierra, Inc., August 2013) was prepared for this project which included field investigation and borings to determine the estimated seasonal high groundwater tables along SR 33. The seasonal high groundwater table results are summarized in Table 2-12.

Table 2-12
Summary of Seasonal High Groundwater Table Estimates for SR 33

Boring Number	Boring Location ⁽¹⁾		Boring Depth ⁽²⁾ (feet)	Date Boring Performed/ Groundwater Table Recorded	Groundwater Table Depth Below Ground Surface (feet)	Estimated Seasonal High Groundwater Table Depth Below Ground Surface (feet) ⁽⁴⁾	USDA Soil Survey		Ground Surface Depth Below Edge of Pavement (feet)	Groundwater Table Depth Below Edge of Pavement (feet)	Estimated Seasonal High Groundwater Table Depth Below Edge of Pavement (feet)
	Station	Offset					Soil Map Unit	Seasonal High Groundwater Table Depth ⁽³⁾ (feet)			
SH-1	1272+80	80 LT	9.5	11/19/2012	GNE ⁽⁵⁾	>6.0	3	>6.0	4.3 ⁽⁷⁾	>10 ⁽⁷⁾	>10 ⁽⁷⁾
SH-2	1337+10	7 RT	6	11/19/2012	3.6	2.0	68	2.0-4.0	3.2 ⁽⁷⁾	6.8 ⁽⁷⁾	5.2 ⁽⁷⁾
SH-3	1401+08	107 LT	7	11/19/2012	4.2	2.0	68	2.0-4.0	3.2 ⁽⁷⁾	7.4 ⁽⁷⁾	5.2 ⁽⁷⁾
AB-1	1441+05	245 RT	5	1/3/2012	4.5	1.5	7	3.5-6.0	3.8 ⁽⁷⁾	8.3 ⁽⁷⁾	5.3 ⁽⁷⁾
AB-2	1442+90	150 LT	5	1/3/2012	4.0	2.0	7	3.5-6.0	5.3 ⁽⁸⁾	9.3 ⁽⁸⁾	7.3 ⁽⁸⁾
AB-3	1445+50	430 RT	5	1/3/2012	GNE ⁽⁵⁾	1.5	7	3.5-6.0	4.2 ⁽⁸⁾	>9.2 ⁽⁸⁾	5.7 ⁽⁸⁾
SH-4	1446+78	32 RT	5	11/19/2012	3.4	2.0	7	3.5-6.0	2.0 ⁽⁷⁾	5.4 ⁽⁷⁾	4.0 ⁽⁷⁾
AB-4	1450+18	32 LT	7	1/3/2012	6.0	2.0	7	3.5-6.0	0.8 ⁽⁷⁾	6.8 ⁽⁷⁾	2.8 ⁽⁷⁾
SH-5	1451+42	25 RT	7	11/19/2012	4.4	2.0	7	3.5-6.0	1.4 ⁽⁷⁾	5.8 ⁽⁷⁾	3.4 ⁽⁷⁾
AB-5	1454+20	120 RT	5	1/3/2012	2.5	ABG ⁽⁶⁾	35	+2.0-0	3.6 ⁽⁸⁾	6.1 ⁽⁸⁾	<3.6 ⁽⁸⁾
AB-6	1453+70	115 LT	5	1/3/2012	4.0	0.5	35	+2.0-0	4.4 ⁽⁸⁾	8.4 ⁽⁸⁾	4.9 ⁽⁸⁾
SH-6	1457+60	70 LT	7	11/19/2012	4.2	0.5	35	+2.0-0	3.5 ⁽⁷⁾	7.7 ⁽⁷⁾	4.0 ⁽⁷⁾
SH-7	1472+30	70 LT	7	11/19/2012	4.2	1.0	6	+2.0-0	3.3 ⁽⁷⁾	7.5 ⁽⁷⁾	4.3 ⁽⁷⁾

⁽¹⁾ Station and Offset of the borings were estimated from the S.R. 33 survey baseline provided by Inwood Consulting Engineers.

⁽²⁾ Depth below existing grades at time of field services.

⁽³⁾ Seasonal high groundwater table depth as reported in the Soil Survey of Polk County, Florida published by the USDA NRCS.

⁽⁴⁾ Seasonal high groundwater table depth estimated based on soil stratigraphy, measured groundwater levels from the borings, and the Polk County, Florida USDA NRCS Soil Survey information.

⁽⁵⁾ GNE indicates groundwater table not encountered within depth of boring performed.

⁽⁶⁾ ABG: At or above existing ground surface (SHGWT should be determined by the project biologist utilizing biological indicators).

⁽⁷⁾ Referenced from SR 33 EOP.

⁽⁸⁾ Referenced from adjacent ramp EOP.

2.19 Existing Bridges

The existing I-4 twin bridges over SR 33 are approximately 223 feet long and consist of four spans. The two center spans over SR 33 are 60'-8" each, while the two flanking spans over slope pavement are approximately 50'-9" each. The bridges are constructed on a 1,500-foot-long crest vertical curve with 3.0 percent approach and departure grades. The I-4 horizontal alignment crosses over SR 33 at a 45 degree skew. The existing 1,500-foot crest vertical curve has a k value of 250 which allows for a design speed of 55 mph, based on the PPM volume 1, while the two 500-foot approach sag vertical curves have a k value of 167 which allows for a design speed of 60 mph. The minimum k values needed for a 70 mph interstate are 506 for a crest vertical curve and 206 for a sag vertical curve.

Originally constructed in 1961, the twin bridges provide a clear roadway width of 28 feet, which accommodates two lanes of traffic in each direction on I-4. Both bridges were widened in 2004 to provide for an additional traffic lane and wider shoulders on I-4. Currently, the clear roadway width is 56 feet and is striped for three 12-foot travel lanes and 10-foot paved shoulders on both sides. 32" F-shape barriers are provided adjacent to the shoulders.

The westbound I-4 bridge, No. 160181, provides a 15-foot minimum vertical clearance over SR 33 while the eastbound bridge, No. 160182, provides a 14-foot 9 inch minimum vertical clearance over SR 33.

General condition: The description of the overall existing bridge condition is based on FDOT's Bridge Management System *Bridge Inspection Report* and the *Comprehensive Inventory Data Report (CIDR)*. The latest biennial routine inspection for both bridges was performed on July 26, 2012.

Westbound bridge, No. 160181, currently has a *structure inventory and appraisal* sufficiency rating of 96.4 out of 100, with a health index of 89.11 out of 100. Eastbound bridge, No. 160182, currently has a *structure inventory and appraisal* sufficiency rating of 96.4 out of 100 with a health index of 88.60 out of 100. The sufficiency rating is a method of evaluating highway bridge data by calculating factors to obtain a numeric value, which is indicative of bridge sufficiency to remain in service. The sufficiency rating includes the following applicable primary factors:

1. Structural adequacy and safety including:
 - a. Superstructure condition
 - b. Substructure condition
 - c. Load carrying capacity
2. Serviceability and functional obsolescence including:
 - a. Deck condition
 - b. Overall structural condition
 - c. Roadway geometry
 - d. Traffic volume
3. Essentiality for public use including:
 - a. Traffic volume
 - b. Detour length
 - c. Probability of bridge closure

The health index is an assessment of a bridge's condition based on the bridge's economic worth, determined from an element level inspection. The health index makes it possible to ascertain the structural quality of the bridge. A lower health index means that more work would be required to improve the bridge to an ideal condition. A health index below 85 generally indicates that some repairs are needed, although it doesn't mean the bridge is unsafe. A low health index may also indicate that it would be more economical to replace the bridge than to repair it.

The National Bridge Inventory (NBI) ratings from the most recent bridge inspection reports indicate the overall condition rating of the deck, superstructure, and substructure is considered *good* (i.e., some minor problems) for both bridges.

Performance: These bridges have been in service for nearly 51 years. At the time of construction, it was customary to design a bridge with an anticipated service life of 50 years. They are located on the federal interstate highway system; therefore they carry a high volume of traffic and a high volume of heavily loaded truck traffic.

Load capacity: The load carrying capacity for both bridges was reevaluated in 2003 during the widening project. According to the load ratings, these structures do not require posting for load restrictions. Therefore, there are no load restrictions posted.

Safety features: The typical sections for both structures meet current standards for roadside safety in terms of geometry and impact resistance; however, they do not meet the current minimum vertical clearance criteria of 16'-6" above a roadway as shown in FDOT's Plans Preparation Manual.

Existing deficiencies: The existing vertical clearance for the interchange is as low as 14 feet 9 inches. If the vertical clearance is going to be improved, direction was provided by FDOT to increase it to a minimum of 16 feet 6 inches.

The second issue is related to the existing cover over the pier footings. The existing bridge piers have footers that are buried beneath the ground/road. The required minimum depth of cover over pier footings is three feet; however, the existing cover is as shallow as 1.892 feet.

The third issue through the interchange is the existing horizontal distance available between the center pier and the intermediate piers that is needed for the SR 33 roadway improvements. There are approximately 40 feet of horizontal clearance in the northbound and southbound directions under the I-4 bridges, which is insufficient to provide the required through and turn lanes needed for the proposed four-lane improvement to SR 33.

Section 3.0

Planning Phase/Corridor Analysis

Consistent with FDOT's ETDM process, the proposed project was evaluated during the ETDM programming screen (ETDM #13188). Through ETDM, early agency and public comments were obtained to provide project information on potentially environmentally sensitive areas and identification of project issues. The *ETDM Programming Summary Report* (dated March 26, 2014) is available on the ETDM public web site (<https://etdmpub.fla-etat.org/est/>). Based on the ETDM Programming Summary Report, six categories of assessed degree of effect were determined as above "Minimal." These included Water Quality and Quantity, Wetlands, Wildlife and Habitat, Historical and Archeological Sites, Aesthetics, and Social and were originally evaluated by ETDM as a "Moderate" potential effect. A copy of the *ETDM Summary Report* is included in Appendix C.

The capacity needs of this project are from Old Combee Road to north of Tomkow Road. The corridor is located in an area that will experience growth around the I-4 interchange with the opening of Florida Polytechnic Institute to the east of SR 33. Sufficient right-of-way exists to widen SR 33 within the existing corridor. Because of the high level of impacts any alternative corridor would have on the existing commercial and residential development in the area, and the consideration of interchange spacing for a new interchange with I-4, the existing SR 33 corridor was the only corridor considered for this project.

Section 4.0

Project Design Standards

Design and construction criteria for the proposed improvements to SR 33 must adhere to FDOT standards for the design of such roadways and also must comply with recommended standard practices as set forth in the following documents:

- Manual on Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways, State of Florida.
- Plans Preparation Manual, Florida Department of Transportation
- A Policy on Geometric Design of Highways and Streets, AASHTO
- A Policy on the Design of Urban Highways and Arterial Streets, AASHTO
- Drainage Manual, Florida Department of Transportation
- Manual on Uniform Traffic Control Devices, Federal Highway Administration
- Roadway and Traffic Design Standards, Florida Department of Transportation
- Highway Capacity Manual, Transportation Research Board
- Quality/Level of Service Handbook, Florida Department of Transportation

Table 4-1 includes the design criteria for the proposed roadway improvement alternatives. All criteria are subject to change and only current criteria will be used during the final design phase.

Table 4-1
Roadway Design Criteria (SR 33)

DESIGN ELEMENT	CRITERIA	SOURCE
Design Speed	55 mph	PPM Table 1.9.1
Roadway Classification	Urban Minor Arterial	SLD
Design Vehicle	WB-62FL	PPM Section 1.12
Access Management	Class 3	
Connection Spacing	660 ft.	PPM Table 1.8.2
Median Opening Spacing Directional	1320 ft.	PPM Table 1.8.2
Median Opening Spacing Full	2640 ft.	PPM Table 1.8.2

**Table 4-1
Roadway Design Criteria (SR 33)
Continued**

DESIGN ELEMENT	CRITERIA	SOURCE
Signal Spacing	2640 ft.	PPM Table 1.8.2
A. Typical Section		
Number of Lanes	4	Typical Section
Lane Width	12	PPM Table 2.1.1
Bike Lane	5 ft. Paved Shoulders 5 ft. keyhole adjacent to right turn lane	PPM Table 2.1.2
Sidewalk Width	5 ft. with utility strip / 6 ft. without utility strip	PPM Section 8.3.1
Minimum Median Width	30 ft.	PPM Section 2.16.4
Roadway Cross Slope (Inside Lane)	0.02	PPM Figure 2.1.1
Roadway Cross Slope (Outside Lane)	0.02	
Border (from outside edge of traveled way)	35 ft.	PPM Section 2.16.7
Roadside Slopes		
Front Slope	1:6	PPM Table 2.4.1
Back Slope	1:4	PPM Table 2.4.1
Transverse Slope	1:4	PPM Table 2.4.1
Driveway Grades		FDOT Standard Index 515
Commercial	10%	
Residential	28%	
Max Breakover	14%	
B. Horizontal Geometry		
Maximum Superelevation	0.05	PPM Section 2.16.10
Minimum Superelevation Transition Length	100 ft.	PPM Table 2.9.3
Superelevation Transition Slope Rate	1:225	PPM Table 2.9.3
Superelevation Transition		
On Tangent	80%	PPM Section 2.9
On Curve	20%	
Maximum Deflection (no curve)	1°00'00" (with C&G) 0°45'00" (without C&G)	PPM Table 2.8.1a
Minimum Stopping Sight Distance	495 ft.	PPM Table 2.7.1
Maximum Curvature	5°00'00"	PPM Table 2.8.3
Maximum Curvature Using Normal Cross Slope	0°30'	PPM Table 2.8.4
Length of Horizontal Curve		
Desirable	15V (V=Design Speed) = 825 ft.	PPM Table 2.8.2a
Minimum	400 ft.	PPM Table 2.8.2a
C. Vertical Geometry		
Maximum Grade	5%	PPM Table 2.16.8
Minimum Grade	0.30%	PPM Table 2.6.4
Minimum Distance Between VPI's	250 ft.	PPM Table 2.6.4
Maximum Change in Grade (No Vertical Curve)	0.50%	PPM Table 2.6.2
Minimum Crest Vertical Curve	K=185	PPM Table 2.8.5

**Table 4-1
Roadway Design Criteria (SR 33)
Continued**

DESIGN ELEMENT	CRITERIA	SOURCE
Minimum Length (3V)	350 ft.	
Minimum Sag Vertical Curve	K=115	
Minimum Length (3V)	250 ft.	PPM Table 2.8.6
Base Clearance Above Base Clearance Water Elevation	3 ft.	PPM Table 2.6.3
D. Turn Lanes & Queue Length		
Queue Length Minimum	50 ft.	PPM Section 2.13.2
Total Decel Distance	L = 350 ft.	Standard Index 301
Clearance Distance	L1 = 125 ft.	Standard Index 301
Brake to Stop Distance	L2 = 225 ft.	Standard Index 301
Taper Length (Single Left)	$\Delta = 50$ ft	Standard Index 301
Taper Length (Dual Left)	$\Delta = 100$ ft	Standard Index 301
E. Roadway Clearance and Offsets		
Vertical Clearance Overhead Sign Structures	17 ft. 6 in.	PPM Table 2.10.2
Vertical Clearance Signals	17 ft. 6 in.	PPM Table 2.10.2
Light Pole Offset	20 ft. from travel lane 14 ft. from auxiliary lane	PPM Table 2.11.2
Utility Offset	Outside of clear zone	PPM Table 2.11.3
Signal Pole Offset	Outside of clear zone	PPM Table 2.11.4
Trees Offset	Outside of clear zone	PPM Table 2.11.5
Bridge Piers and Abutments	Outside of clear zone	PPM Table 2.11.6
Other Obstacles Offset	Outside of clear zone	PPM Table 2.11.9
Recoverable Terrain	30 ft.	PPM Table 2.11.11
NOTES:		

(1) Plans Preparation Manual, 2014, FDOT

(2) Design Standards FY 2014, FDOT

**Table 4-2
Roadway Design Criteria (I-4 Mainline)**

DESIGN ELEMENT	CRITERIA	SOURCE
Design Speed	70 mph	PPM Table 1.9.2
Roadway Classification	Urban Principal Arterial - Interstate	SLD
Design Vehicle	WB-62FL	PPM Section 1.12
Access Management	Class 1	Table 1.8.1
Interchange Spacing	2.0 mi	PPM Table 1.8.1
A. Typical Section		
Number of Lanes	6	Typical Section
Lane Width	12	PPM Table 2.1.1
Minimum Median Width	64 ft.	PPM Table 2.2.1

**Table 4-2
Roadway Design Criteria (I-4 Mainline)
Continued**

DESIGN ELEMENT	CRITERIA	SOURCE
	84 ft.	I-4 Ultimate Typical Section
Roadway Cross Slope (Inside & Middle Lane)	0.02	PPM Figure 2.1.1
Roadway Cross Slope (Outside Lanes)	0.03	
Border (from outside edge of traveled way)	94 ft.	PPM Table 2.5.3
Roadside Slopes		
Front Slope	1:6 to Clear zone	PPM Table 2.4.1
Back Slope	1:4	PPM Table 2.4.1
Transverse Slope	1:10	PPM Table 2.4.1
B. Horizontal Geometry		
Maximum Superelevation	0.10	PPM Table 2.9.1
Minimum Superelevation Transition Length	100 ft.	PPM Table 2.9.3
Superelevation Transition Slope Rate	1:200	PPM Table 2.9.3
Superelevation Transition		PPM Section 2.9
On Tangent	80%	
On Curve	20%	
B. Horizontal Geometry – Cont'd.		
Maximum Deflection (no curve)	0°45'00"	PPM Table 2.8.1a
Minimum Stopping Sight Distance	820 ft.	PPM Table 2.7.1
Maximum Curvature	3°30'	PPM Table 2.8.3
Maximum Curvature Using Normal Cross Slope	0°15'	PPM Table 2.8.4
Length of Horizontal Curve		
Desirable	30V (V=Design Speed) = 2100 ft.	PPM Table 2.8.2a
Minimum	15V (V=Design Speed) = 1050 ft.	PPM Table 2.8.2a
C. Vertical Geometry		
Maximum Grade	3%	PPM Table 2.6.1
Maximum Change in Grade (No Vertical Curve)	0.20%	PPM Table 2.6.2
Minimum Crest Vertical Curve	K=506	PPM Table 2.8.5
Minimum Length	1000 ft. Open Highway 1800 ft. within interchanges	
Minimum Sag Vertical Curve	K=206	
Minimum Length	800 ft.	PPM Table 2.8.6
Base Clearance Above Base Clearance Water Elevation	3 ft.	PPM Table 2.6.3
E. Roadway Clearance and Offsets		
Vertical Clearance Overhead Sign Structures	17 ft. 6 in.	PPM Table 2.10.2
Light Pole Offset	20 ft. from travel lane 14 ft from auxiliary lane	PPM Table 2.11.2
Utility Offset	Outside of clear zone	PPM Table 2.11.3
Trees Offset	Outside of clear zone	PPM Table 2.11.5
Other Obstacles Offset	Outside of clear zone	PPM Table 2.11.9

**Table 4-2
Roadway Design Criteria (I-4 Mainline)
Continued**

DESIGN ELEMENT	CRITERIA	SOURCE
Recoverable Terrain	36 ft.	PPM Table 2.11.11
NOTES:		

(1) Plans Preparation Manual, 2014, FDOT

(2) Design Standards FY 2014, FDOT

**Table 4-3
Roadway Design Criteria (I-4 Ramps)**

DESIGN ELEMENT	CRITERIA	SOURCE
Design Speed	55 mph	Build Alternative
Roadway Classification	Interstate	SLD
Design Vehicle	WB-62FL	PPM Section 1.12
A. Typical Section		
Number of Lanes	1 & 2	Typical Section
Lane Width	15 ft. (one lane) 24 ft. (two lane)	PPM Table 2.1.3
Border (from outside edge of traveled way)	94 ft.	PPM Table 2.5.3
Roadside Slopes		
Front Slope	1:6 to Clear zone	PPM Table 2.4.1
Back Slope	1:4	PPM Table 2.4.1
Transverse Slope	1:10	PPM Table 2.4.1
B. Horizontal Geometry		
Maximum Superelevation	0.10	PPM Table 2.9.1
Minimum Superelevation Transition Length	100 ft.	PPM Table 2.9.3
Superelevation Transition Slope Rate	1:225	PPM Table 2.9.3
Superelevation Transition		
On Tangent	80%	PPM Section 2.9
Within Curve	20%	
Maximum Deflection (no curve)	0°45'00"	PPM Table 2.8.1a
Minimum Stopping Sight Distance	570 ft.	PPM Table 2.7.1
Maximum Curvature	5°00'00"	PPM Table 2.8.3
Maximum Curvature Using Normal Cross Slope	0°30'	PPM Table 2.8.4
Length of Horizontal Curve		
Desirable	15V (V=Design Speed) = 825 ft.	PPM Table 2.8.2a
Minimum	400 ft.	PPM Table 2.8.2a
C. Vertical Geometry		
Maximum Grade	5%	PPM Table 2.6.1
Maximum Change in Grade (No Vertical Curve)	0.50	PPM Table 2.6.2

**Table 4-3
Roadway Design Criteria (I-4 Ramps)
Continued**

DESIGN ELEMENT	CRITERIA	SOURCE
Minimum Crest Vertical Curve	K= 245 (interstate terminals) K= 185 (all others)	PPM Table 2.8.5
Minimum Length	350 ft.	
Minimum Sag Vertical Curve	K= 136 (interstate terminals) K= 115 (all others)	PPM Table 2.8.6
Minimum Length	250 ft.	
Base Clearance Above Base Clearance Water Elevation	2 ft. (proper) 1ft. (low point at cross roads)	PPM Table 2.6.3
E. Roadway Clearance and Offsets		
Vertical Clearance Overhead Sign Structures	17 ft. 6 in.	PPM Table 2.10.2
Light Pole Offset	20 ft. from travel lane 14 ft. from auxiliary lane	PPM Table 2.11.2
Utility Offset	Outside of clear zone	PPM Table 2.11.3
Signal Pole Offset	Outside of clear zone	PPM Table 2.11.4
Trees Offset	Outside of clear zone	PPM Table 2.11.5
Other Obstacles Offset	Outside of clear zone	PPM Table 2.11.9
Recoverable Terrain	30 ft.	PPM Table 2.11.11
NOTES:		

(1) Plans Preparation Manual, 2014, FDOT

(2) Design Standards FY 2014, FDOT

Section 5.0

Alternatives Analysis

The objective of the alternatives analysis process is to identify technically and environmentally sound alternatives to provide a safe transportation facility that meets the purpose and need of the project, is acceptable to the community, minimizes impacts on the environment, and that is cost effective. The process results in the selection of a Proposed Alternative, which can be advanced to the design phase. This section summarizes the alternatives considered for this project.

Several alternatives were evaluated to determine if they can meet the purpose and needs of this project. These alternatives include the following:

- 'No-Build' Alternative
- Transportation Systems Management and Operations (TSMO)
- Multi-modal Alternatives
- Construction ('Build') Alternatives

In conducting the alternatives analysis, a full range of typical section, intersection, and alignment alternatives were first identified to meet the identified capacity needs. These alternatives were developed with consideration of future traffic needs, input from the public, input from local governments, and from standard engineering practice, including compliance with requirements of the Americans with Disabilities Act (ADA).

5.1 'No-Build' Alternative

The 'No-Build' Alternative assumes that no modifications or improvements will be implemented for the mainline of SR 33 or the I-4/SR 33 interchange. The primary advantages of the 'No-Build' alternative are that it does not directly require any capital or expenditure of state/federal transportation trust funds, and it produces no physical or social impacts.

The 'No-Build' Alternative will remain under consideration throughout the alternatives analysis and evaluation process.

5.1.1 Advantages

Certain advantages would be associated with the implementation of the 'No-Build' Alternative:

- No acquisition of right-of-way
- No design, right-of-way, or construction costs

-
- No inconvenience to the traveling public and property owners during construction
 - No impacts to utilities
 - Reduced impacts to the adjacent natural, physical, and human environment

5.1.2 Disadvantages

The potential disadvantages of the 'No-Build' Alternative include:

- It is not consistent with the Polk Transportation Planning Organization (TPO) Long Range Transportation Plan (LRTP) or the City of Lakeland Comprehensive Plan.
- Does not improve multi-modal mobility.
- Results in reduced LOS and increased traffic congestion.
- Due to increased congestion, motor vehicle crashes, property damage, injuries, and fatalities may increase.
- Emergency vehicle access is degraded.
- User costs are increased due to congestion.

5.2 Transportation Systems Management and Operations (TSMO)

TSMO alternatives involve improvements designed to maximize the utilization and efficiency of the existing facility through improved system and demand management. The various TSMO options generally include traffic signal and intersection improvements, access management, and transit improvements. The additional capacity required to meet the projected traffic volumes along SR 33 in the design year cannot be provided solely through the implementation of TSMO improvements; however, the TSMO strategies of access management and intersection improvements are included as part of the 'Build' Alternatives for the corridor.

5.3 Multi-Modal Alternatives

Based on the projected traffic demand, there are no standalone multi-modal alternatives that would meet the purpose and need for the project; however, multi-modal accommodations have been coordinated with this project. Lakeland Area Mass Transit District's Citrus Connection Route 3 includes a portion of SR 33 up to Old Combee Road. The segment of SR 33 from Old Combee Road to University Boulevard is identified as a Long Term Potential Transit Oriented Corridor in the City of Lakeland's Comprehensive Plan.

Lakeland Area Mass Transit (Citrus Connection) has identified proposed bus stop ADA pad locations along SR 33 within the project limits as identified in Table 5-1.

Table 5-1 Proposed Future Bus Stop Locations

Outbound (Northbound) on SR 33	Inbound (Southbound) on SR 33
SR 33 @ Spanish Oaks Boulevard	SR 33 @ Firstpark Boulevard
SR 33 @ The Landings	SR 33 @ Village Lakes Boulevard
SR 33 @ University Boulevard	SR 33 @ Huron Way
	SR 33 @ Spanish Oaks Boulevard
	SR 33 @ Sunset Way

As part of the proposed roadway improvements, pedestrians and bicyclists will be accommodated through the area. Currently, no bicycle lanes or sidewalks exist on SR 33 within the project limits, other than a segment of sidewalk along the west side of SR 33 adjacent to the Bridgewater development. All 'Build' Alternatives will provide a continuous five-foot sidewalk on the west side of the road through the project limits and on the east side of the road from University Boulevard to north of Tomkow Road. A 12-foot-wide shared-use path would be provided along the east side of SR 33 from the beginning of the project to University Boulevard where it would connect to the shared-use path along University Boulevard. Pedestrian features will be designed and constructed in accordance with applicable accessibility standards. All 'Build' Alternatives considered for this project will provide bicycle accommodations.

5.4 Evaluation of Traffic Needs

5.4.1 Future Traffic Volumes

The development of traffic projections for SR33 began with a review of the Polk County TPO's 2007 Base Year travel demand model and 2035 Financially Feasible Long Range Transportation Plan model (commonly referred to as the 2035 Mobility Vision Plan model). As a result of these reviews, several modifications were made to the models to more accurately reflect actual roadway conditions, existing land use and employment, and future land use and employment projections. The detailed analysis of the models and an explanation of the changes made to the model are included in the *Project Traffic Report (AIM Engineering & Surveying, Inc., November 2013)*. The design year (2036) volumes were extrapolated from the 2035 model volumes. The traffic factors identified in Section 2.1.16 were then used to develop peak hour traffic volumes.

5.4.1.1 'No-Build' Alternative Traffic and Levels of Service

The SR 33 roadway segments located between Old Combee Road/Deeson Pointe Boulevard and Lake Luther Road and between N. Combee Road/Village Lakes Boulevard and University Boulevard/Firstpark Boulevard N. are projected to operate at LOS F in both travel directions during the AM and PM peak hours. The other six roadway segments are all projected to operate at LOS E in both travel directions during the AM and PM peak hours; therefore, the entire study corridor is projected to operate at unacceptable levels of service in the design year. This demonstrates the need to widen SR 33 to four lanes so that LOS D or better operations can be provided on this roadway through the design year 2036.

**Table 5-2
Design Year 2036 Roadway Segment Levels of Service – ‘No-Build’**

AM PEAK HOUR								
Segment		Two-Way Volume	Directional Volume	V/C ⁽¹⁾	PTSF ⁽²⁾	ATS ⁽³⁾	% FFS ⁽⁴⁾	LOS ⁽⁵⁾
From	To							
Old Combee Road/ Deeson Pointe Blvd	Lake Luther Road	3,112	1,726 (WB)	1.07	97.6%	22.2	46.3%	F
			1,386 (EB)	0.86	93.7%	22.2	46.3%	F
Lake Luther Road	Spanish Oaks Boulevard	2,684	1,491 (WB)	0.92	93.6%	27.7	55.4%	E
			1,193 (EB)	0.74	90.9%	27.7	55.4%	E
Spanish Oaks Boulevard	Huron Way/ Long Lake Circle	2,657	1,472 (WB)	0.91	95.5%	37.4	62.4%	E
			1,185 (EB)	0.73	91.8%	37.6	62.6%	E
Huron Way/ Long Lake Circle	N. Combee Road/ Village Lakes Boulevard	2,655	1,471 (SB)	0.91	95.5%	37.4	62.3%	E
			1,184 (NB)	0.73	91.6%	37.6	62.7%	E
N. Combee Road/ Village Lakes Boulevard	Firstpark Boulevard N./ University Boulevard	3,056	1,693 (SB)	1.05	97.9%	39.2	60.3%	F
			1,363 (NB)	0.84	94.2%	39.0	60.3%	F
Firstpark Boulevard N./ University Boulevard	EB I-4 On-/Off-Ramps	2,718	1,506 (SB)	0.93	96.2%	41.3	64.0%	E
			1,212 (NB)	0.75	92.4%	41.5	64.3%	E
EB I-4 On-/Off-Ramps	WB I-4 On-/Off-Ramps	2,132	1,120 (SB)	0.69	91.1%	46.4	71.4%	E
			1,012 (NB)	0.63	88.3%	46.5	71.5%	E
WB I-4 On-/Off-Ramps	Tomkow Road	1,921	1,097 (SB)	0.68	90.3%	47.9	73.7%	E
			824 (NB)	0.51	83.2%	48.2	74.1%	E
PM PEAK HOUR								
Segment		Two-Way Volume	Directional Volume	V/C ⁽¹⁾	PTSF ⁽²⁾	ATS ⁽³⁾	% FFS ⁽⁴⁾	LOS ⁽⁵⁾
From	To							
Old Combee Road/ Deeson Pointe Blvd	Lake Luther Road	3,109	1,384 (WB)	0.86	93.9%	22.2	46.3%	F
			1,725 (EB)	1.07	97.4%	22.2	46.3%	F
Lake Luther Road	Spanish Oaks Boulevard	2,684	1,193 (WB)	0.74	90.0%	27.7	55.4%	E
			1,491 (EB)	0.92	94.8%	27.7	55.4%	E
Spanish Oaks Boulevard	Huron Way/ Long Lake Circle	2,657	1,185 (WB)	0.73	91.6%	37.6	62.6%	E
			1,472 (EB)	0.91	95.7%	37.3	62.1%	E
Huron Way/ Long Lake Circle	N. Combee Road/ Village Lakes Boulevard	2,655	1,184 (SB)	0.73	91.7%	37.6	62.6%	E
			1,471 (NB)	0.91	95.4%	37.4	62.4%	E
N. Combee Road/ Village Lakes Boulevard	Firstpark Boulevard N./ University Boulevard	3,056	1,363 (SB)	0.84	94.1%	39.1	60.4%	F
			1,693 (NB)	1.05	98.0%	38.9	60.1%	F
Firstpark Boulevard N./ University Boulevard	EB I-4 On-/Off-Ramps	2,730	1,217 (SB)	0.75	92.5%	41.4	64.2%	E
			1,513 (NB)	0.94	96.3%	41.2	63.8%	E
EB I-4 On-/Off-Ramps	WB I-4 On-/Off-Ramps	2,469	1,004 (SB)	0.62	87.8%	44.0	67.7%	E
			1,465 (NB)	0.91	94.8%	43.7	67.2%	E
WB I-4 On-/Off-Ramps	Tomkow Road	1,915	820 (SB)	0.51	83.1%	48.2	74.2%	E
			1,095 (NB)	0.68	90.3%	48.0	73.8%	E

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Percent Time Spent Following

⁽³⁾ Average Travel Speed (miles/hour)

⁽⁴⁾ Percent of Free-Flow Speed

⁽⁵⁾ Level of Service

**Table 5-3
Design Year 2036 Unsignalized Intersection Levels of Service – ‘No-Build’**

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
Wood Circle W.	Eastbound	L	0.01	15.7	C	0.02	12.8	B
	Southbound	L/R	0.30	129.7	F	0.24	131.1	F
Wood Circle E.	Eastbound	L/T	0.01	15.7	C	0.02	12.8	B
	Southbound	L/R	0.56	349.9	F	0.32	231.9	F
Lake Deeson Village MHP	Eastbound	L/T	0.01	15.6	C	0.03	12.9	B
	Southbound	L/R	0.59	304.6	F	1.54	857.4	F
Sunset Way	Eastbound	L/T	0.02	15.7	C	0.01	12.8	B
	Southbound	L/R	0.50	225.0	F	0.63	358.0	F
Lake Luther Road	Eastbound	L/T	0.81	41.3	E	0.66	23.4	C
	Southbound	L/R	70.86	32,468.0	F	40.64	18,498.0	F
Spanish Oaks Boulevard	Westbound	L/T	0.01	11.5	B	0.02	13.6	B
	Northbound	L	1.14	507.2	F	0.75	381.6	F
	Northbound	R	0.04	22.5	C	0.06	32.3	D
Huron Way/ Long Lake Circle	Eastbound	L/T/R	19.79	8,978.0	F	24.08	10,948.0	F
	Westbound	L/T/R	28.67	14,794.0	F	11.80	6,274.0	F
	Northbound	L	0.32	17.3	C	0.23	13.4	B
	Southbound	L	0.03	10.8	B	0.04	12.7	B
N. Combee Road/ Village Lakes Boulevard	Eastbound	L	*	**	F	*	**	F
	Eastbound	T	*	**	F	33.00	21,067.0	F
	Eastbound	R	1.36	229.9	F	0.67	36.3	E
	Westbound	L/T	*	**	F	*	**	F
	Westbound	R	1.31	192.6	F	2.35	654.8	F
	Northbound	L	0.41	16.0	C	0.41	14.2	B
Firstpark Boulevard S.	Eastbound	L	8.14	4,240.0	F	3.50	1,867.0	F
	Eastbound	R	0.47	68.5	F	0.38	37.8	E
	Northbound	L	0.19	18.1	C	0.09	13.6	B
I-4 EB Ramps	Eastbound	L	3.58	1,249.0	F	5.34	2,040.0	F
	Eastbound	R	2.01	792.4	F	1.06	1,284.0	F
	Southbound	L	0.19	10.0	B	0.15	11.5	B
I-4 WB Ramps	Westbound	L	9.22	3,832.0	F	*	**	F
	Westbound	R	0.28	3,171.0	F	0.47	***	F
	Northbound	L	0.34	10.9	B	0.48	11.3	B
Tomkow Road	Eastbound	L	0.34	11.6	B	0.42	11.6	B
	Westbound	L	0.01	8.6	A	0.00	9.2	A
	Northbound	L/T/R	*	**	F	2.00	1,145.0	F
	Southbound	L/T/R	2.19	592.0	F	1.90	475.8	F

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Average Delay (seconds/vehicle)

⁽³⁾ Level of Service

* Theoretically, the capacity for this movement is equal to zero. Therefore, the v/c ratio is infinite.

** No estimate of delay is provided since the v/c ratio is infinite.

*** No estimate of delay is provided since the v/c ratio for the westbound left-turn movement is infinite.

Table 5-4 Design Year 2036 Signalized Intersection Levels of Service – ‘No-Build’

AM Peak Hour			PM Peak Hour		
V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
SR 33 at Old Combee Road/Deeson Pointe Boulevard					
N/A	45.9	D	N/A	38.5	D

AM Peak Hour			PM Peak Hour		
V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
SR 33 at University Boulevard/Firstpark Boulevard N.					
N/A	182.9	F	N/A	190.6	F

- (1) Volume-to-Capacity Ratio
- (2) Average Delay (seconds/vehicle)
- (3) Level of Service

5.4.1.2 Build Alternative Traffic and Levels of Service

Figures 5-1 through 5-5 show the projected Future Year 2036 ‘Build’ AM and PM peak hour volumes, respectively. The corresponding AM and PM peak hour LOS for the roadway segments, unsignalized intersections, and signalized intersections are summarized in Tables 5-5, 5-6, and 5-7.

The SR 33 roadway segments are projected to operate at LOS D or better during the design year 2036 with SR 33 as a four-lane roadway. Several unsignalized intersections are projected to operate at a failing LOS during the design year and were analyzed as signalized intersections. Each of these signalized intersections is projected to operate at LOS D or better during the AM and PM peak hours in the design year. The decision to install traffic signals at one or more of these existing unsignalized intersections will be made during the final design phase of the project.

5.4.1.3 Roundabout Considerations

As part of the analysis process, roundabouts were considered at several intersections. These include SR 659, University Boulevard, I-4 eastbound on/off ramp, I-4 westbound on/off ramp, and Tomkow Road. An intersection operational analysis was conducted to compare the expected design year 2036 LOS of each intersection with a traditional signalized intersection layout versus a roundabout layout. The results indicated that the roundabouts would operate at a failing LOS at all of the intersections, except for the realigned Tomkow Road intersection. The expected LOS for the traditional intersection at the realigned Tomkow Road intersection is projected at LOS A, while the LOS for the roundabout is projected at LOS B. It was decided that a roundabout would only be further investigated at the realigned Tomkow Road intersection.

Preliminary intersection designs for both options at the realigned Tomkow Road intersection were developed and it was determined that the roundabout concept would require the acquisition of new right-of-way, while the traditional intersection would not. A right-of-way cost estimate for the additional right-of-way for the roundabout was prepared and resulted in an estimate of \$520,000. Since the roundabout is projected to operate at a LOS worse than the traditional intersection and would also require the acquisition of right-of-way at a cost of \$520,000, the traditional intersection layout is recommended.

Figure 5-1
Design Year 2036 AM Peak Hour Volumes – Build Alternative

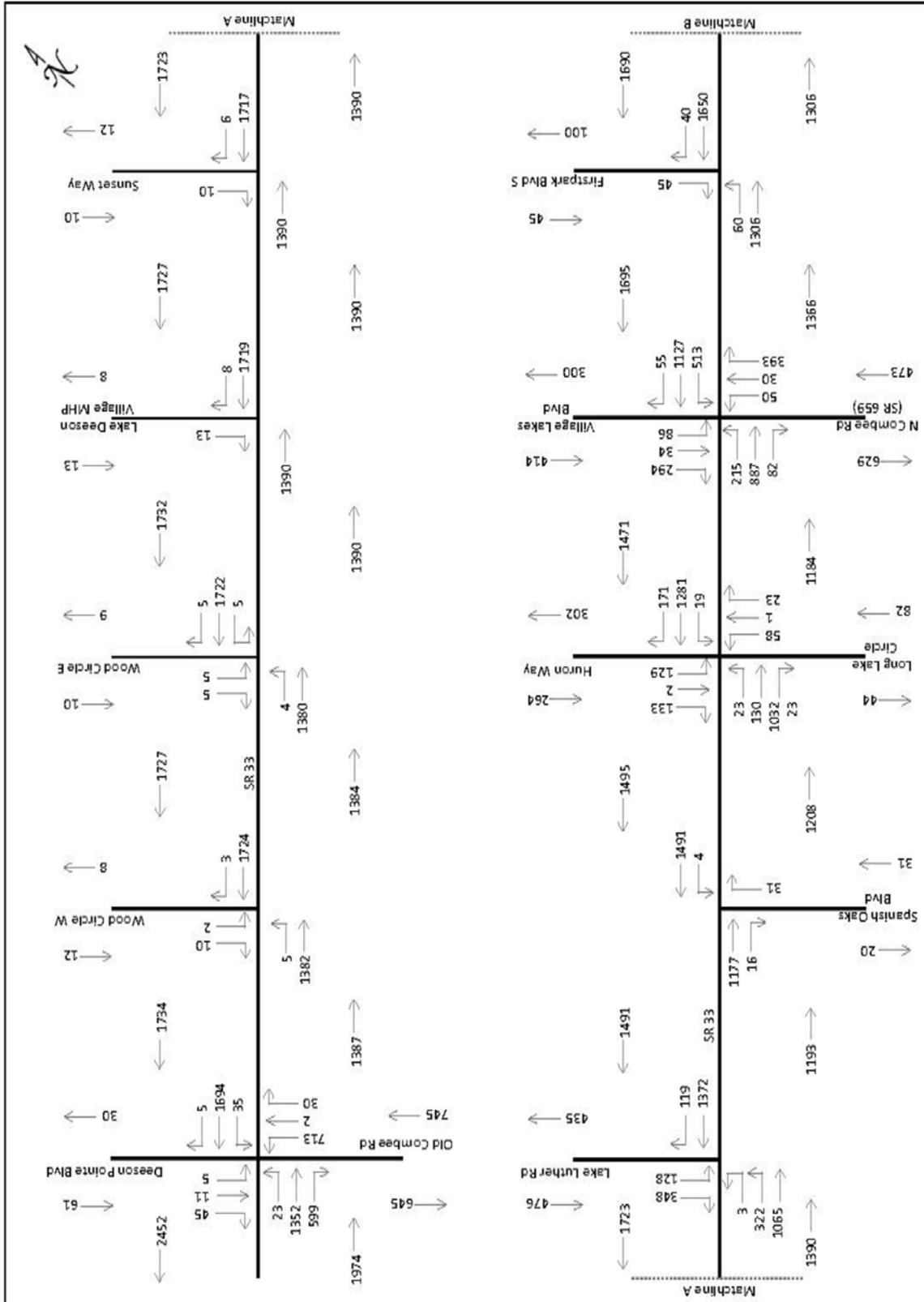


Figure 5-2
Design Year 2036 AM Peak Hour Volumes – Build Alternative (I-4 Interchange)

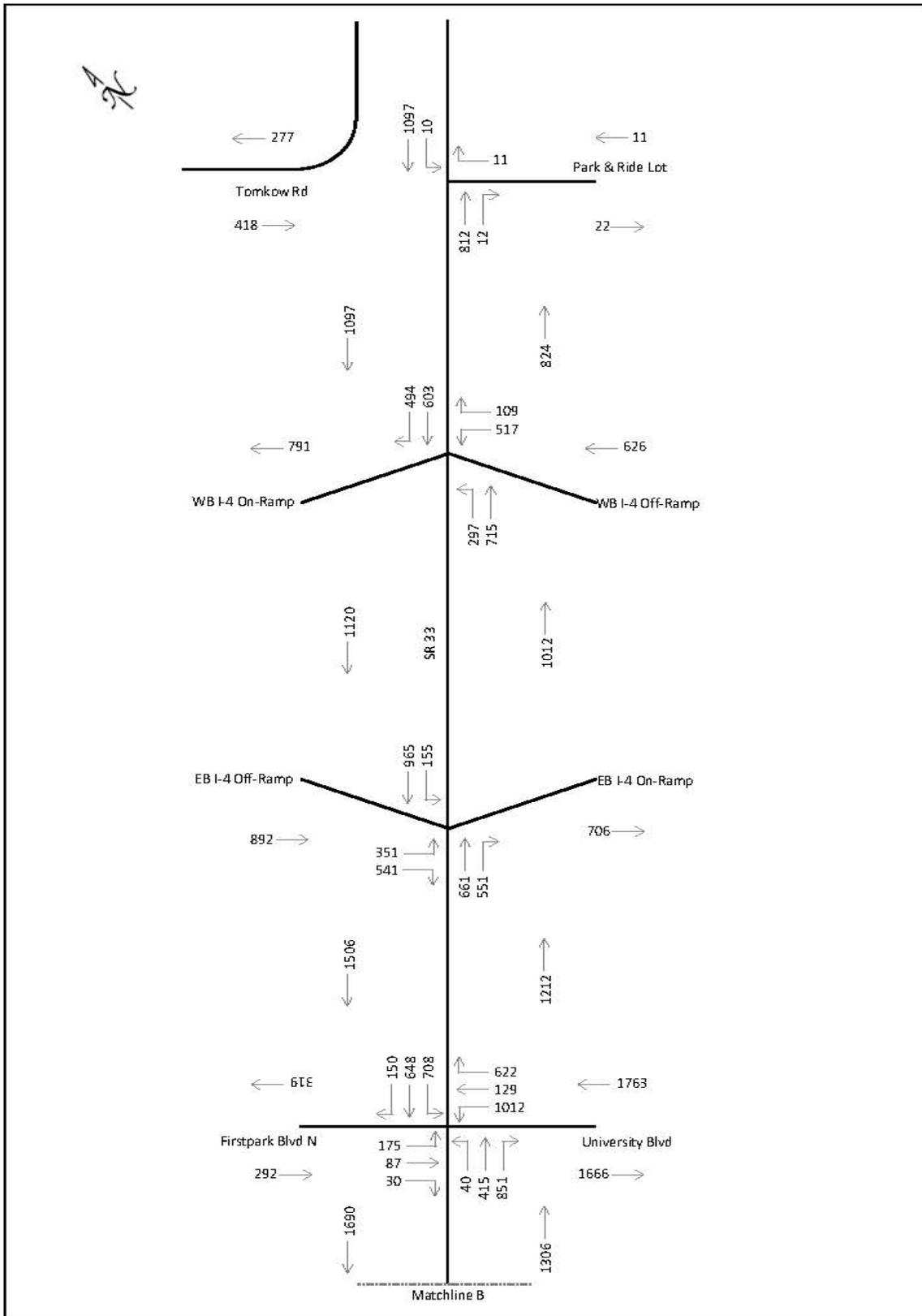


Figure 5-3
Design Year 2036 PM Peak Hour Volumes – Build Alternative

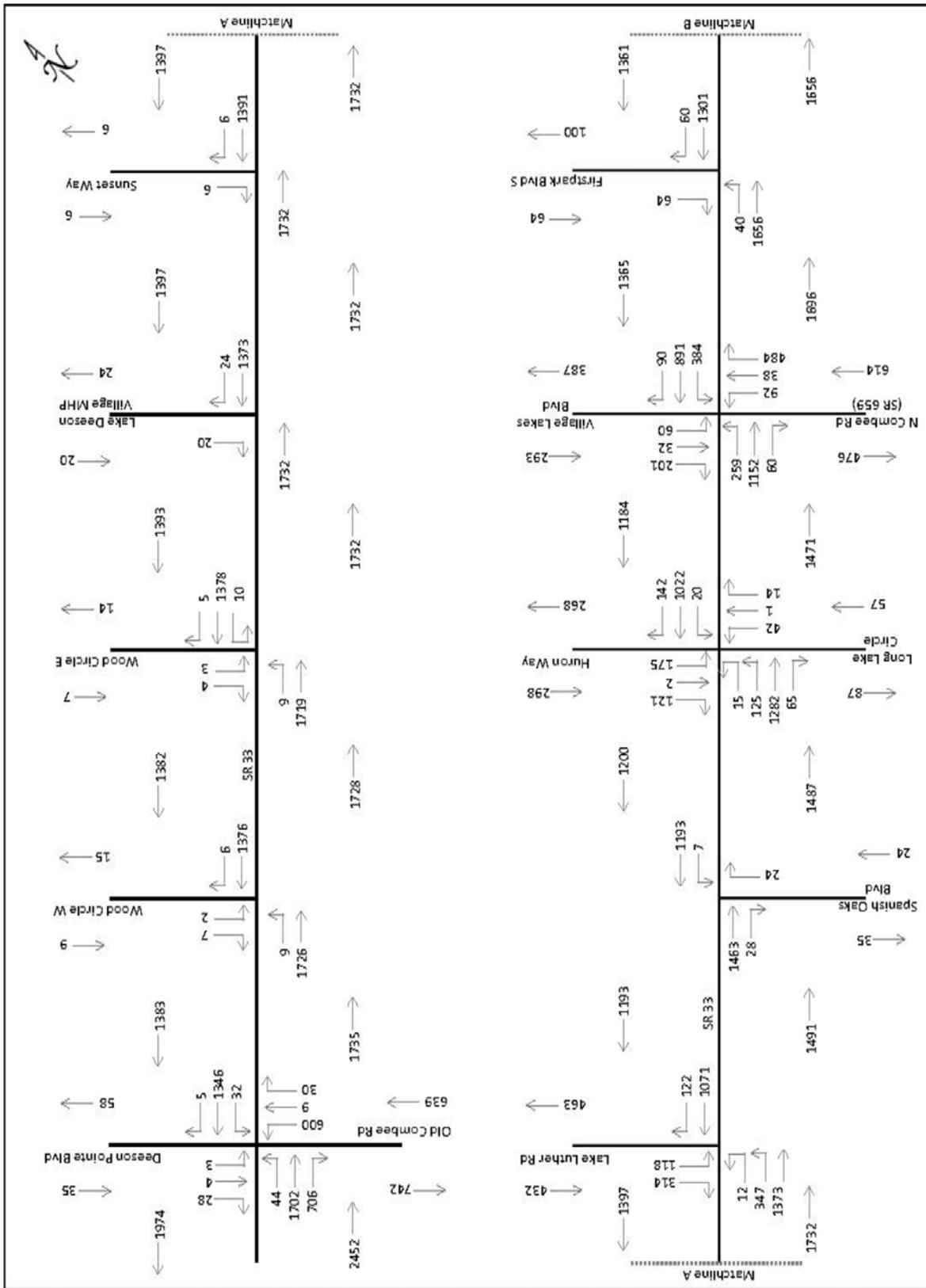


Figure 5-4
Design Year 2036 PM Peak Hour Volumes – Build Alternative (I-4 Interchange)

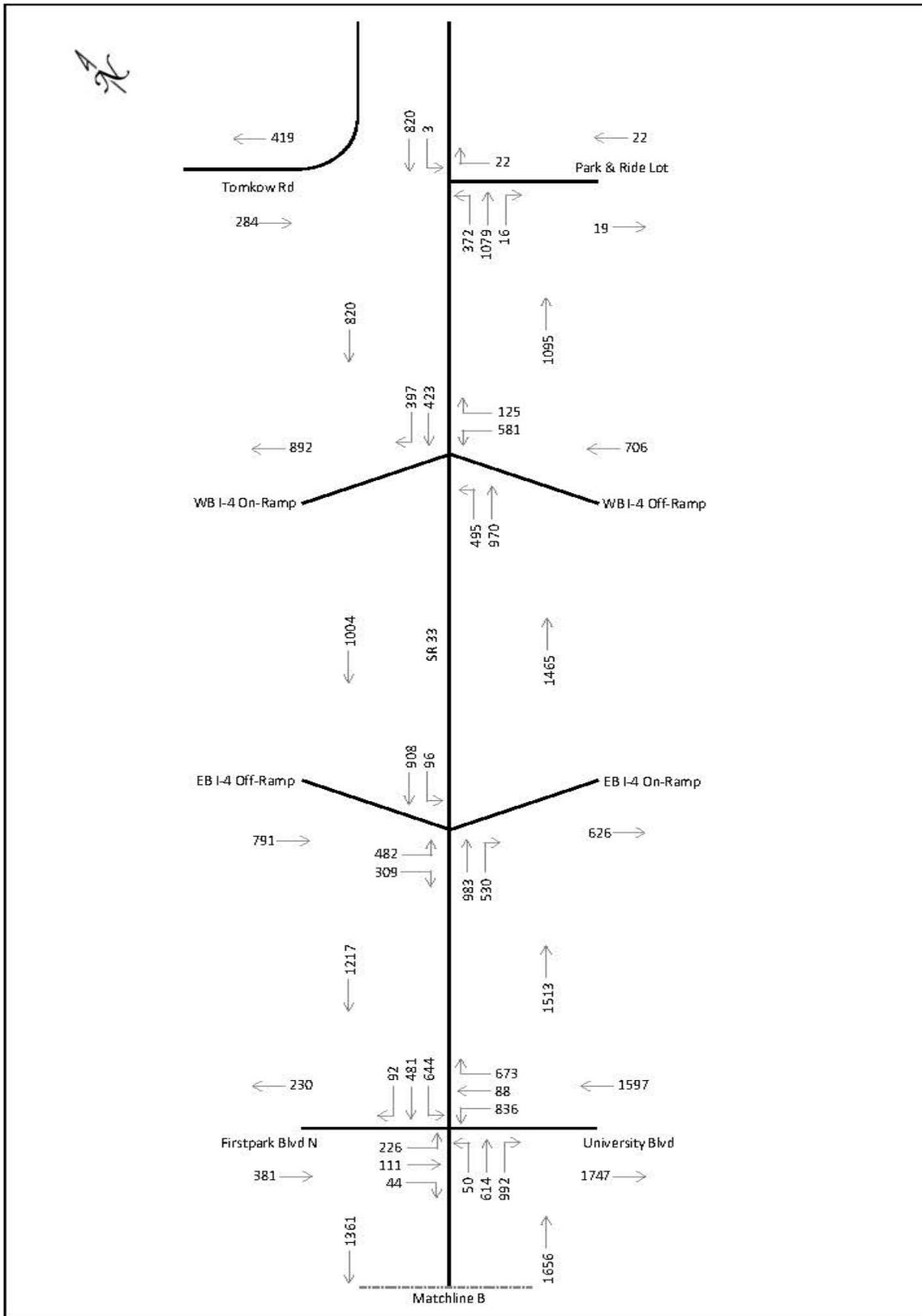
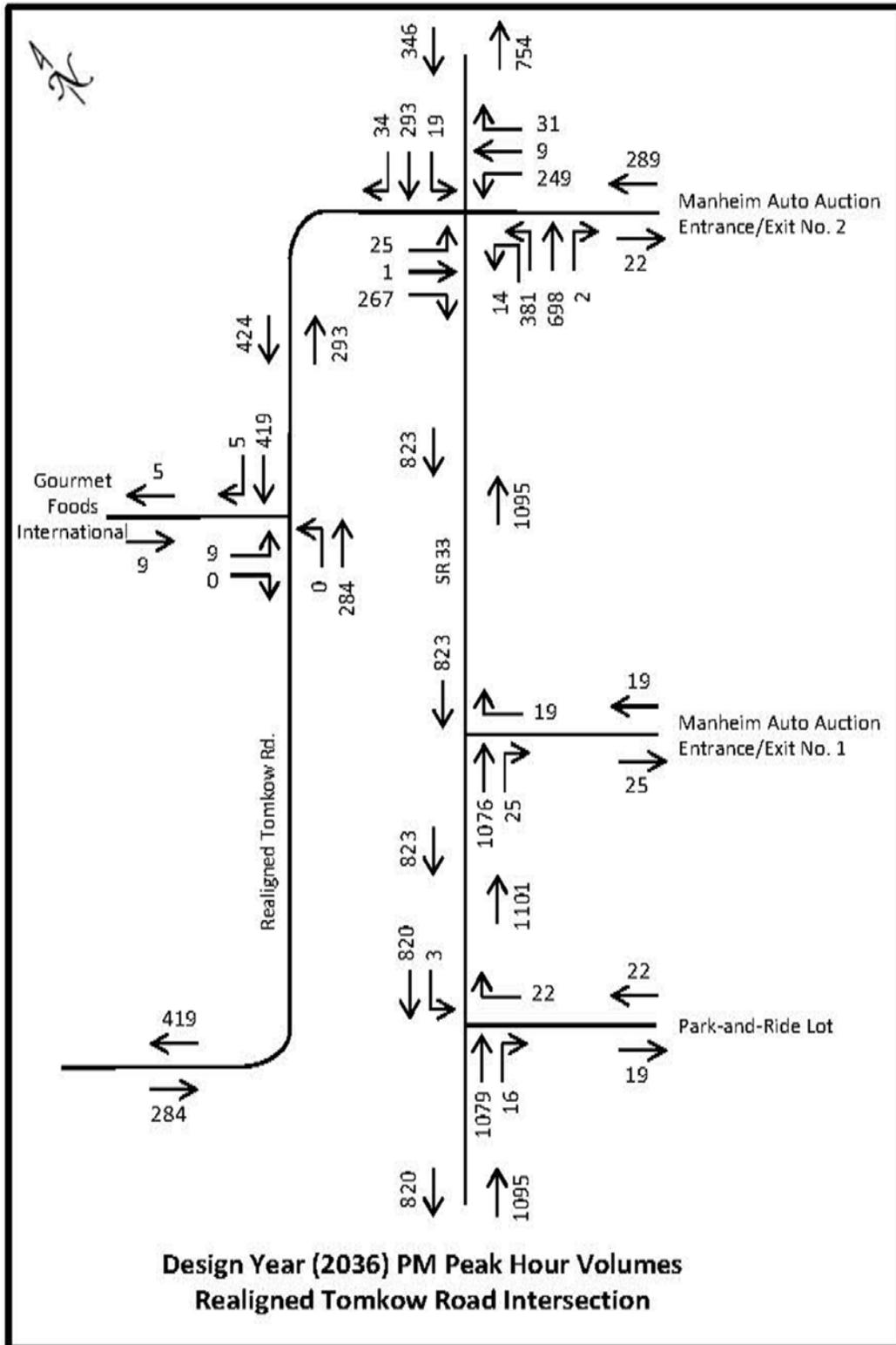


Figure 5-5
Design Year 2036 PM Peak Hour Volumes – Build Alternative
(Realigned Tomkow Road Intersection)



**Table 5-5
Design Year 2036 Roadway Segment Levels of Service – Build**

Segment		AM Peak Hour			PM Peak Hour		
From	To	Travel Speed	LOS	Travel Speed	LOS		
Old Combee Road	Lake Luther Road	EB	36.1	B	EB	32.4	C
		WB	24.1	D	WB	27.3	C
Lake Luther Road	Huron Way/ Long Lake Circle	EB	26.4	C	EB	20.5	D
		WB	22.2	D	WB	20.9	D
Huron Way/ Long Lake Circle	N. Combee Road/ Village Lakes Boulevard	NB	28.4	C	NB	28.4	C
		SB	29.1	C	SB	33.4	B
N. Combee Road/ Village Lakes Boulevard	University Boulevard/ Firstpark Boulevard N.	NB	28.2	C	NB	27.5	C
		SB	33.7	B	SB	36.3	B
University Boulevard/ Firstpark Boulevard N.	EB I-4 On-/Off-Ramps	NB	29.8	C	NB	32.2	C
		SB	23.7	D	SB	26.2	C
EB I-4 On-/Off-Ramps	WB I-4 On-/Off-Ramps	NB	25.2	C	NB	23.4	D
		SB	23.6	D	SB	24.2	D
WB I-4 On-/Off-Ramps	Relocated Tomkow Road/ Auto Auction Driveway	N/A		N/A	EB	37.6	B
					WB	30.8	C
Overall Corridor		EB/NB	29.0	C	EB/NB	28.5	C
		WB/SB	27.3	C	WB/SB	29.6	C

**Table 5-6
Design Year 2036 Unsignalized Intersection Levels of Service – Build**

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
Wood Circle W.	Eastbound	L	0.01	15.7	C	0.02	12.8	B
	Southbound	L/R	0.05	21.4	C	0.03	18.6	C
Wood Circle E.	Eastbound	L	0.01	15.7	C	0.02	12.8	B
	Westbound	U	0.01	12.7	B	0.03	15.7	C
	Southbound	L/R	0.07	32.5	D	0.04	23.7	C
Lake Deeson Village MHP	Southbound	R	0.04	16.1	C	0.05	14.0	B
Sunset Way	Southbound	R	0.03	16.0	C	0.01	13.6	B
Lake Luther Road	Eastbound	L	0.85	47.5	E	0.71	26.3	D
	Westbound	L	0.00	0.0	N/A	0.00	0.0	N/A
	Southbound	L/R	5.88	2,294.0	F	3.88	1,372.0	F
Spanish Oaks Boulevard	Westbound	L	0.01	11.5	B	0.02	13.6	B
	Northbound	R	0.07	12.9	B	0.06	14.7	B
Huron Way/ Long Lake Circle	Eastbound	L/T/R	*	**	F	2.22	622.5	F
	Westbound	L/T/R	*	**	F	0.83	160.5	F
	Northbound	L	0.39	18.9	C	0.27	13.9	B
	Southbound	L	0.03	10.8	B	0.04	12.7	B
N. Combee Road/ Village Lakes Boulevard	Eastbound	L	*	**	F	*	**	F
	Eastbound	T	*	**	F	*	**	F
	Eastbound	R	0.62	23.6	C	0.36	14.6	B
	Westbound	L/T	*	**	F	*	**	F
	Westbound	R	0.71	25.1	D	1.06	86.7	F
	Northbound	L	0.42	16.4	C	0.42	14.4	B
Firstpark Boulevard S.	Eastbound	R	0.15	18.0	C	0.15	14.3	B
	Northbound	L	0.19	18.7	C	0.09	13.9	B
I-4 EB Ramps	Eastbound	L	2.82	890.6	F	3.23	1,063.0	F
	Eastbound	R	1.04	396.3	F	0.57	655.5	F
	Southbound	L	0.19	10.1	B	0.16	11.7	B
I-4 WB Ramps	Westbound	L	5.28	2,009.0	F	17.46	7,621.0	F
	Westbound	R	0.17	1,663.0	F	0.24	6,278.0	F
	Northbound	L	0.34	11.0	B	0.48	11.4	B
Park-and-Ride Lot	Westbound	L	0.01	9.6	A	0.00	10.9	B
	Northbound	R	0.02	10.8	B	0.04	12.2	B
Relocated Tomkow Road/ Auto Auction	Eastbound	L	N/A	N/A	N/A	0.35	9.7	A
	Westbound	L	N/A	N/A	N/A	0.02	9.2	A
	Northbound	L/T/R	N/A	N/A	N/A	5.22	2,042.0	F
	Southbound	L/T	N/A	N/A	N/A	0.35	75.1	F
	Southbound	R	N/A	N/A	N/A	0.32	11.0	B

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Average Delay (seconds/vehicle)

⁽³⁾ Level of Service

* Theoretically, the capacity for this movement is equal to zero. Therefore, the v/c ratio is infinite.

** No estimate of delay is provided since the v/c ratio is infinite.

**Table 5-7
Design Year 2036 Signalized Intersection Levels of Service – Build**

AM Peak Hour			PM Peak Hour		
V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
SR 33 at Old Combee Road/Deeson Pointe Boulevard					
N/A	37.9	D	N/A	39.4	D
SR 33 at Lake Luther Road					
N/A	46.8	D	N/A	35.2	D
SR 33 at Huron Way/Long Lake Circle					
N/A	36.2	D	N/A	38.0	D
SR 33 at N. Combee Road/Village Lakes Boulevard					
N/A	38.1	D	N/A	37.8	D
SR 33 at University Boulevard/Firstpark Boulevard N.					
N/A	43.8	D	N/A	43.8	D
SR 33 at I-4 Eastbound Off-Ramp					
N/A	15.4	B	N/A	14.4	B
SR 33 at I-4 Westbound Off-Ramp					
N/A	17.8	B	N/A	19.3	B
SR 33 at Tomkow Road (Realigned)					
N/A	36.2	D	N/A	38.0	D

- ⁽¹⁾ Volume-to-Capacity Ratio
- ⁽²⁾ Average Delay (seconds/vehicle)
- ⁽³⁾ Level of Service

5.5 Roadway Widening Alternatives

The results of the traffic analysis identified the need to widen SR 33 to four lanes. In addition, through a review of current operating speeds on SR 33, a review of future development, and coordination with FDOT's design and traffic operations staff, two four-lane roadway improvement alternatives were considered. Both alternatives are high-speed suburban roadways; however, one alternative considers full reconstruction of SR 33 and the other considers saving the existing pavement to serve as half of the future four-lane roadway.

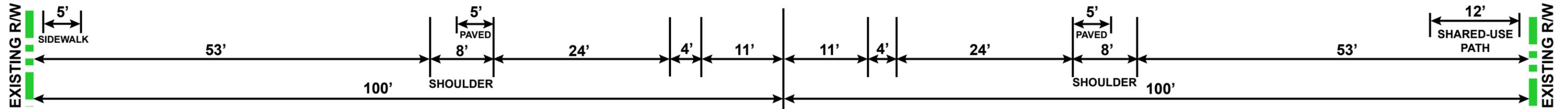
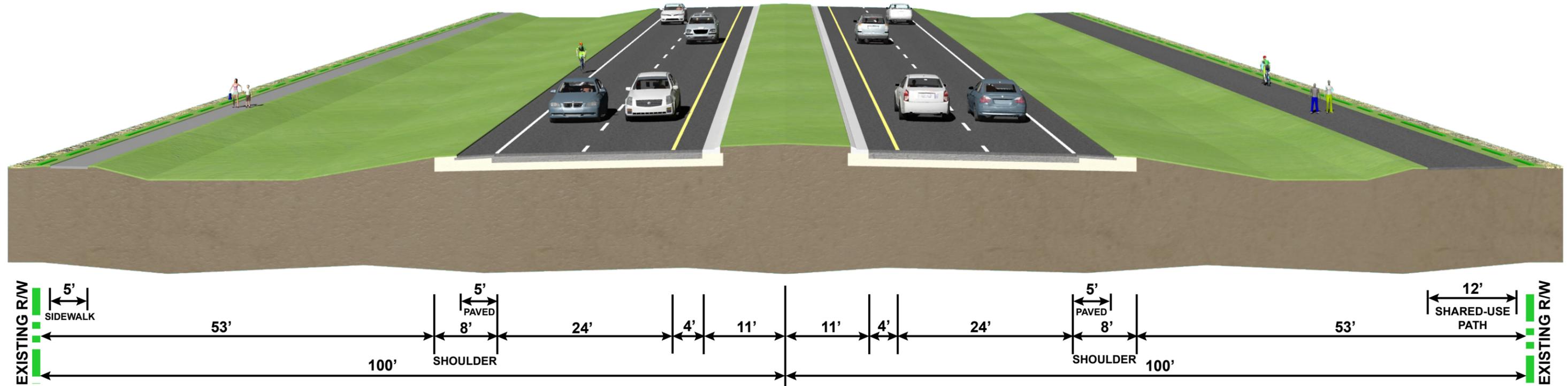
5.5.1 Full Reconstruction Alternative

The full reconstruction alternative includes removing the existing two-lane roadway and constructing the proposed four-lane suburban roadway centered within the existing 200 feet of right-of-way. The proposed full reconstruction typical section includes two, 12-foot travel lanes in each direction separated by a 30-foot median. Four-foot inside paved shoulders and eight-foot outside shoulders (5 feet paved) would be provided in each direction. A 12-foot-wide shared-use path is proposed along the east side of the road from the beginning of the project to University Boulevard. North of University Boulevard, a five-foot sidewalk would be provided along the east side of the road. A five-foot sidewalk is proposed along the west side of the road through the entire project limits. Stormwater runoff would be collected and treated in roadside swales. This typical section can be constructed within the existing 200 feet of right-of-way. Figure 5-6 illustrates the full reconstruction typical section.

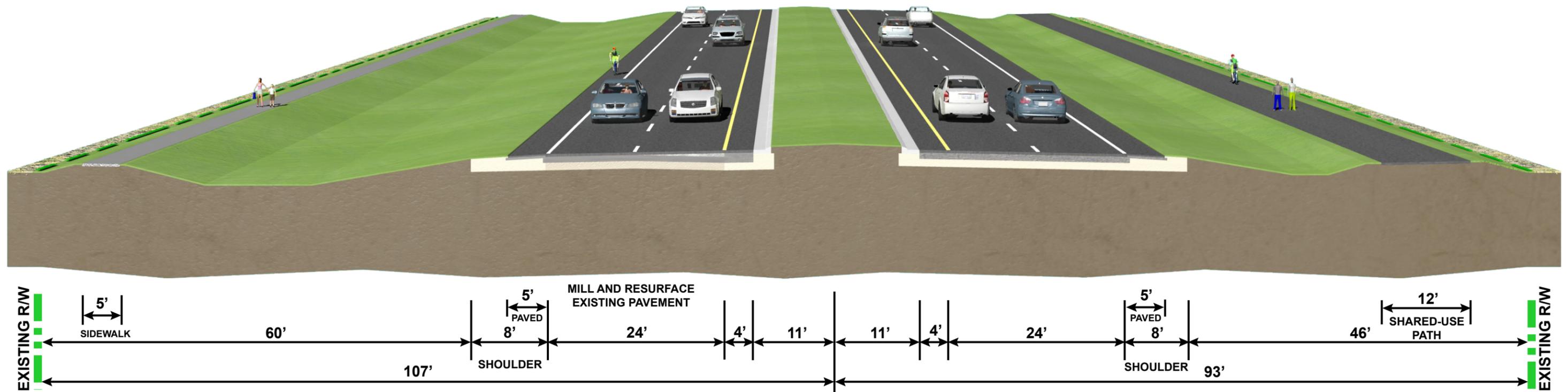
5.5.2 Pavement Saving Alternative

The pavement saving alternative includes maintaining the existing two-lane roadway as the two future southbound lanes. The existing two-lane roadway is offset from the centerline by approximately 20 feet, which helps the pavement saving option to fit within the existing right-of-way while maintaining all required horizontal clearances. This pavement saving alternative includes two, 12-foot lanes in each direction separated by a 30-foot median. Pavement overbuild would be required along the inside lane of the southbound lanes to correct the cross slope. Four-foot inside paved shoulders and eight-foot outside shoulders (five feet paved) would be provided in each direction. A 12-foot-wide shared-use path is proposed along the east side of the road from the beginning of the project to University Boulevard. North of University Boulevard, a five-foot sidewalk would be provided along the east side of the road. A five-foot sidewalk is proposed along the west side of the road through the entire project limits. Stormwater runoff would be collected and treated in roadside swales. This typical section can be constructed within the existing 200 feet of right-of-way. Figure 5-7 illustrates the pavement saving typical section.

SUBURBAN FULL RECONSTRUCTION ALTERNATIVE



SUBURBAN PAVEMENT SAVING ALTERNATIVE



Florida Department of Transportation
District 1

State Road 33 PD&E Study
from Old Combee Road to North of Tomkow Road
 Polk County, Florida
 Financial Project ID: 430185-1-22-01
 Federal Aid Project No: TBD

PROPOSED PAVEMENT SAVING TYPICAL SECTION

Figure
5-7

5.6 I-4/SR 33 Interchange Improvement Alternatives

5.6.1 Interim Improvement Evaluation

An analysis was conducted to determine whether an interim improvement at the I-4/SR 33 interchange could be provided at a reasonable cost. In addition to capacity improvement to SR 33 under I-4, there would also need to be improvements made to improve the existing substandard vertical clearance of I-4 over SR 33. In order to achieve the minimum vertical clearance of 16 feet 6 inches feet under the I-4 bridges, two interim improvement alternatives were considered. These involve lowering the SR 33 profile under I-4 or raising the I-4 bridges over SR 33. These two improvement alternatives are described below.

Alternative A – Lowering SR 33

The existing minimum vertical clearance under I-4 at SR 33 is 14 feet 9 inches. In order to achieve the proposed 16'-6" of vertical clearance, SR 33 would need to be lowered by at least 1.1 feet; however, this cannot be achieved because of conflicts with the existing footings. The required minimum depth of cover over pier footings is three feet. In the existing condition, the footers are buried beneath the existing ground/road as shallow as 1.892 feet. In addition, the area has high groundwater levels. Therefore, lowering SR 33 while providing four through lanes under I-4 is not feasible due to cover issues, and this option will no longer be considered.

Alternative B – Raising I-4 over SR 33

With consideration of the sub-standard depth of cover over the pier footings, the alternative to raise I-4 over SR 33 includes providing the minimum 16'-6" of vertical clearance, but also includes raising SR 33 to increase the depth of cover over the pier footings to three feet. This will require that I-4 be raised a minimum of 2.71 feet over SR 33. As noted earlier, the existing sag and crest vertical curves on I-4 approaching and over SR 33 do not meet current design standards for a 70 mph interstate design speed, and raising the bridges over SR 33 will make these vertical curves worse; therefore, alternative B will also need to consider reconstructing the approaches to the SR 33 bridges on I-4 to bring the profile up to meet current design standards and extending the ramp connections to I-4 from SR 33. Figure 5-8 illustrates the existing and proposed profile for I-4 over SR 33.

Figure 5-8 shows the extent of reconstruction of I-4, including the ramps to SR 33 that will be required to raise the existing bridges while maintaining traffic on I-4.

A cost estimate was prepared for Alternative B and also for the ultimate I-4 interchange concept to help determine the viability of providing an interim improvement for the interchange. The costs shown in Table 5-8 include roadway construction, mobilization, maintenance of traffic costs, and project unknowns.

**Table 5-8
Comparison of Interchange Improvement Alternatives**

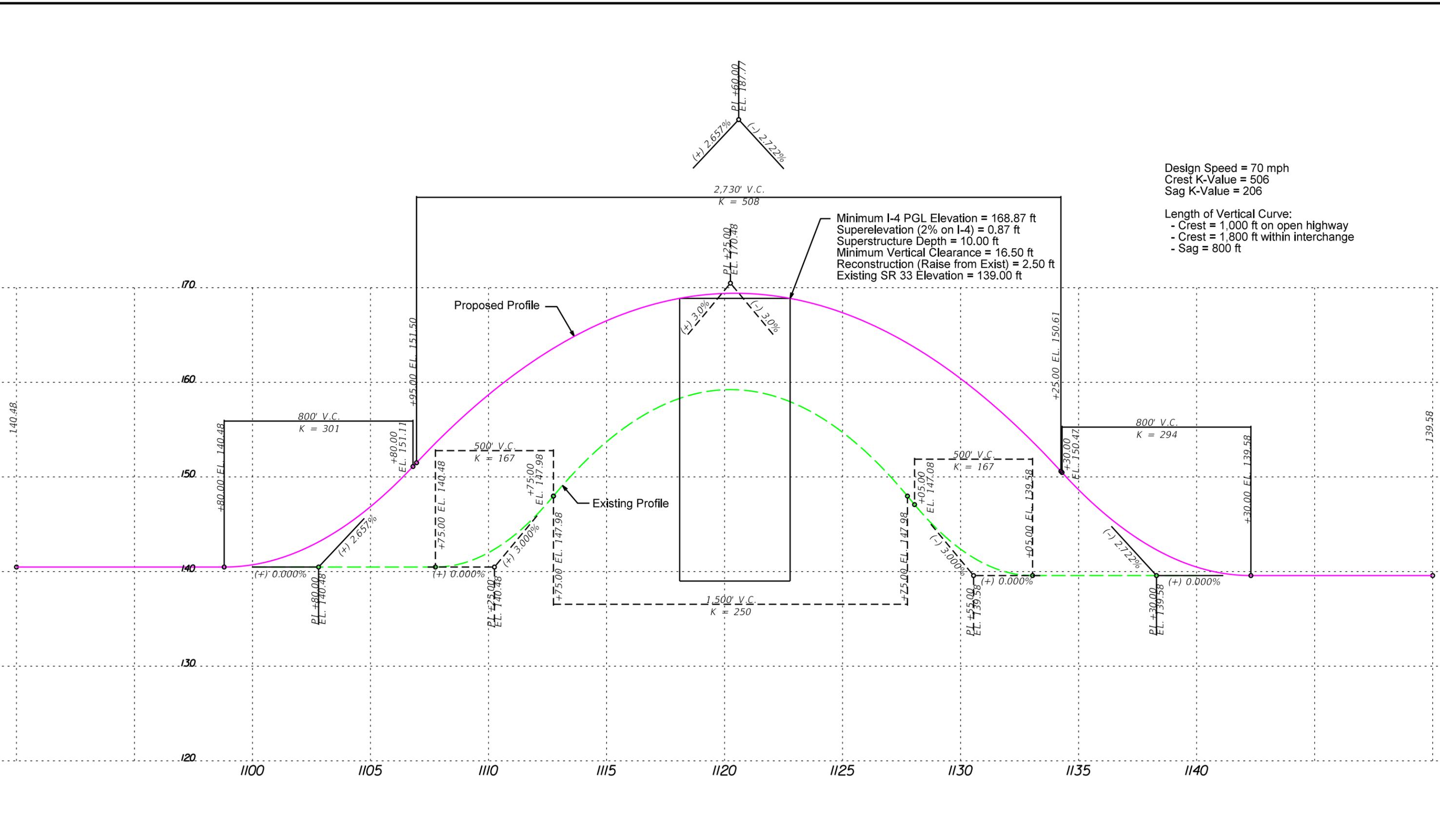
Evaluation Criteria	Interim Interchange Improvement (Alternative B)	Ultimate Diamond Interchange Improvement
Vertical clearance exception required	No	No
Consistency with I-4 PD&E ⁽¹⁾	No	Yes
Acceptable LOS in year 2022 ⁽²⁾	No	Yes ⁽³⁾
Preliminary construction costs		
I-4 mainline	\$8,010,000	\$14,610,000
I-4 ramps	\$3,060,000	\$6,490,000
SR 33	\$1,330,000	\$3,650,000
MOT	\$4,100,000	\$3,140,000
Mobilization	\$1,650,000	\$2,790,000
Unknowns	\$4,540,000	\$7,670,000
Total construction cost⁽⁴⁾	\$22,700,000	\$38,400,000

1. This is based on the I-4 PD&E Study
2. LOS estimates are based on traffic volumes from the interchange improvement analysis report for the SR 33 and I-4 interchange dated august 2009.
3. Acceptable LOS through the design year 2036.
4. Construction cost is based on per mile models (January 2012 costs). Other unit costs were based on January 2012 through August 2012 costs, except for the temporary barrier wall.

Interim I-4 Interchange Improvement vs. Ultimate I-4 Interchange Improvement

The initial concept to consider salvaging the existing I-4 bridges as an interim improvement will require a significant amount of roadway construction/reconstruction to correct vertical clearance over SR 33, cover over the bridge footings, and crest and sag k values on I-4. The cost of the interim improvement is approximately two-thirds the cost of the ultimate I-4 interchange improvement; however, the interim improvement does not address the insufficient horizontal distance between the center pier and the outside piers under I-4, which will not allow for the necessary four-lane widening with turn lanes on SR 33 under I-4. The LOS of the interim I-4 interchange improvement is expected to fail in traffic capacity by the year 2022. Figure 5-9 shows the I-4/SR 33 Interim Interchange Improvement.

Based on the analysis conducted, it is recommended that an interim interchange improvement no longer be considered. The cost to construct the interim improvement is \$22,700,000 for a concept that will only operate at an acceptable LOS until the year 2022. When the time to design and build the interim improvement is considered, the interim improvement would only operate at an acceptable LOS for 5-6 years. Also, the interim improvement is not compatible with the ultimate diamond interchange and ultimate I-4 improvements, so there would be no future benefit realized with the interim improvement, and the interim improvement costs would be lost.



Design Speed = 70 mph
 Crest K-Value = 506
 Sag K-Value = 206

Length of Vertical Curve:
 - Crest = 1,000 ft on open highway
 - Crest = 1,800 ft within interchange
 - Sag = 800 ft

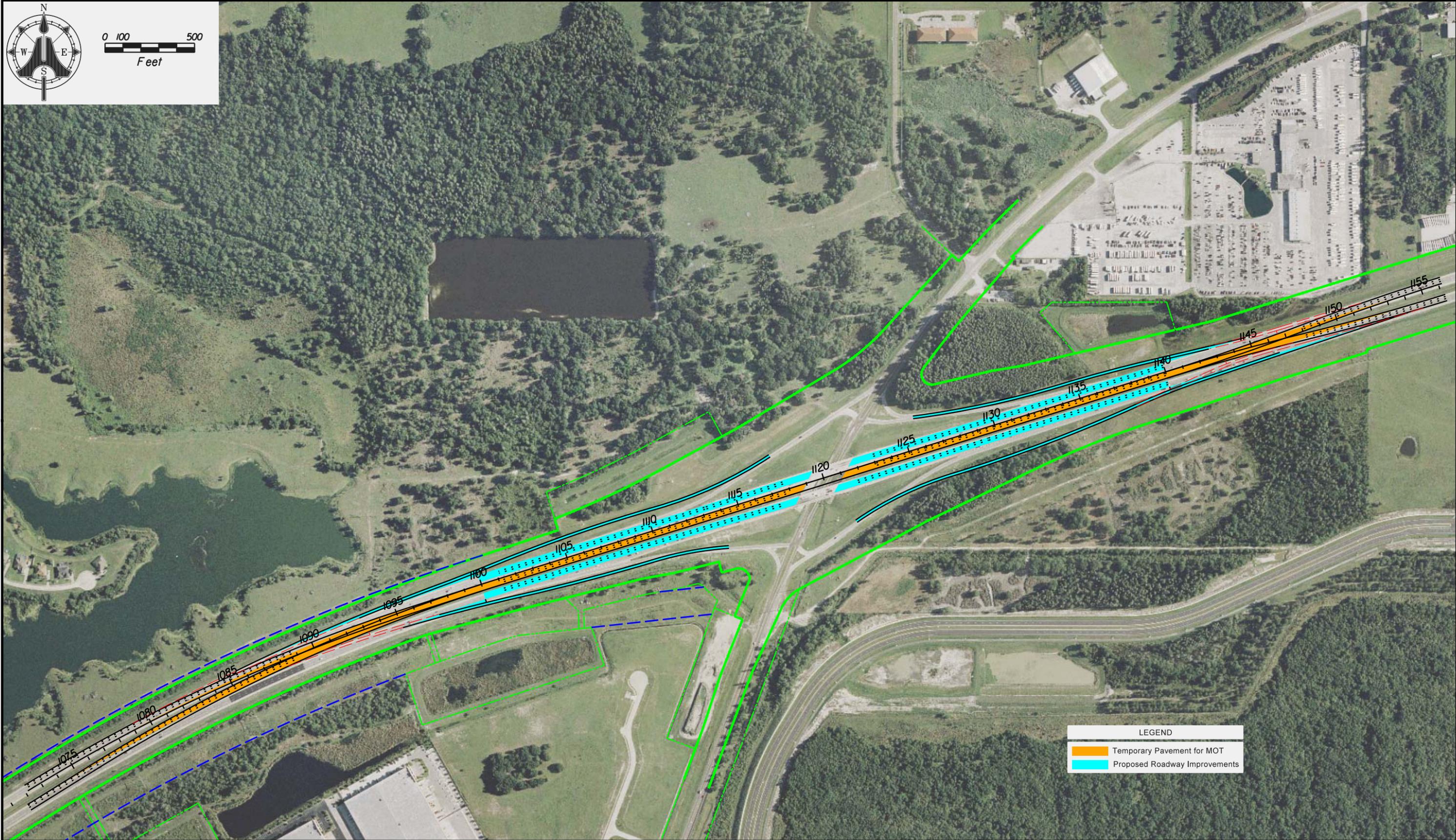
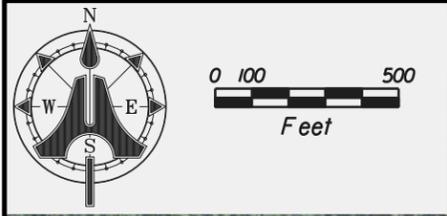
Minimum I-4 PGL Elevation = 168.87 ft
 Superlevation (2% on I-4) = 0.87 ft
 Superstructure Depth = 10.00 ft
 Minimum Vertical Clearance = 16.50 ft
 Reconstruction (Raise from Exist) = 2.50 ft
 Existing SR 33 Elevation = 139.00 ft

State Road 33 PD&E Study
 from Old Combee Road
 to North of Tomkow Road
 Polk County, Florida
 Financial Project ID: 430185-1-22-01
 Federal Aid Project No: N/A

EXISTING AND PROPOSED I-4 PROFILE OVER SR 33

Figure 5-8





LEGEND

- Temporary Pavement for MOT
- Proposed Roadway Improvements

5.6.2 I-4/SR 33 Interchange Build Alternatives Considered

Through coordination with FDOT Central Office and FHWA, it was determined that the I-4/SR 33 interchange analysis would be documented in a Non-Interchange Access Request (Non-IAR) per the 2013 Interchange Access Request User's Guide, Section 1.5.5. An *Interchange Operational Analysis Report (IOAR) Not Requiring FHWA Approval* (AIM Engineering and Surveying, Inc., March 2014) was prepared to document the interchange alternatives analysis process. The IOAR is included in Appendix D. Two alternatives for the I-4/SR 33 interchange were developed and analyzed. One alternative is the reconstruction of the existing diamond interchange as a diamond interchange. The second alternative is the reconstruction of the existing interchange with a diverging diamond interchange.

5.6.2.1 Diamond Interchange

The Diamond Interchange concept is illustrated in Figure 5-10. Dual left-turn lanes are provided on both the eastbound and westbound I-4 off-ramps and dual right-turn lanes are provided on the eastbound I-4 off-ramp. In addition, dual left turn lanes are also provided on northbound SR 33 at the entrance to the westbound I-4 on-ramp. The eastbound off-ramp deceleration lane is increased from 215 feet to 300 feet. This improvement alternative provides a 2,850-foot crest vertical curve that has a k value of 506 and two 600-foot approach sag vertical curves that have k values of 206. These vertical curves allow for a maximum design speed of 70 mph. The vertical clearance of I-4 over SR 33 is also increased to 16 feet 6 inches to meet the minimum requirements of FDOT's Plan Preparation Manual. The typical section for SR 33 under I-4 is illustrated in Figure 5-11.

The IOAR includes an analysis of the future year levels of service for the ramp merge/diverge areas and for the interchange ramp intersections. Based on this analysis, the merge/diverge areas are all going to operate at LOS D or better in the design year 2036. Both I-4 ramp terminal intersections are projected to operate at LOS B in the design year. Details of the operational analyses are included in the IOAR in Appendix D.

5.6.2.2 Diverging Diamond Interchange

The Diverging Diamond Interchange concept is illustrated in Figure 5-12. Dual left-turn lanes are provided on both the eastbound and westbound I-4 off-ramps and dual right-turn lanes are provided on the eastbound I-4 off-ramp. The eastbound off-ramp deceleration lane is increased from 215 feet to 300 feet. This improvement alternative provides the same profile and vertical clearance over SR 33 as the Diamond Interchange alternative. The typical section for SR 33 under I-4 is illustrated in Figure 5-13.

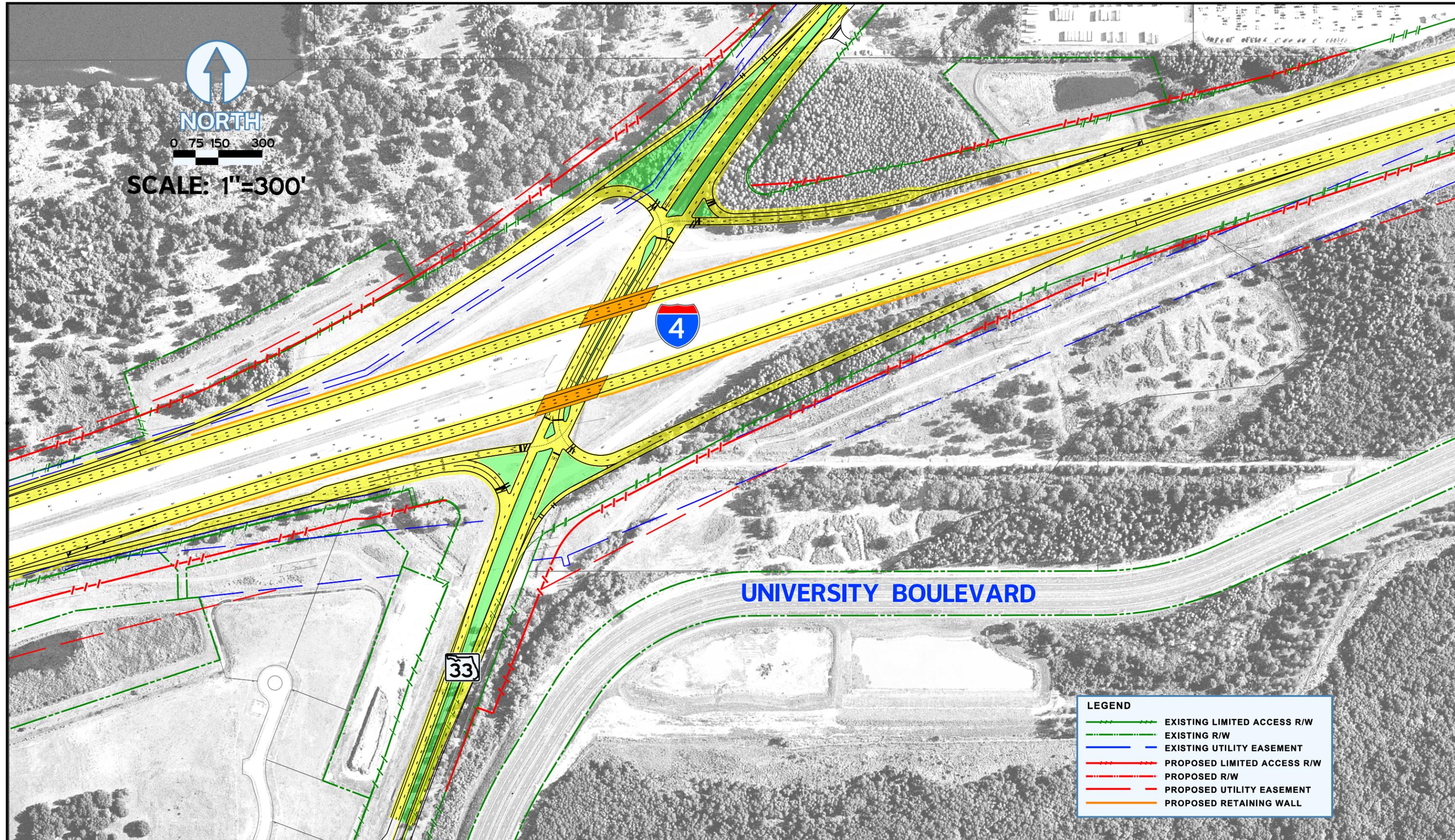
For the Diverging Diamond Interchange alternative, the merge/diverge areas are all going to operate at LOS D or better in the design year 2036. Both I-4 ramp terminal intersections are projected to operate at LOS B in the design year. Details of the operational analyses are included in the IOAR in Appendix D.



NORTH

0 75 150 300

SCALE: 1"=300'



LEGEND	
	EXISTING LIMITED ACCESS R/W
	EXISTING R/W
	EXISTING UTILITY EASEMENT
	PROPOSED LIMITED ACCESS R/W
	PROPOSED R/W
	PROPOSED UTILITY EASEMENT
	PROPOSED RETAINING WALL

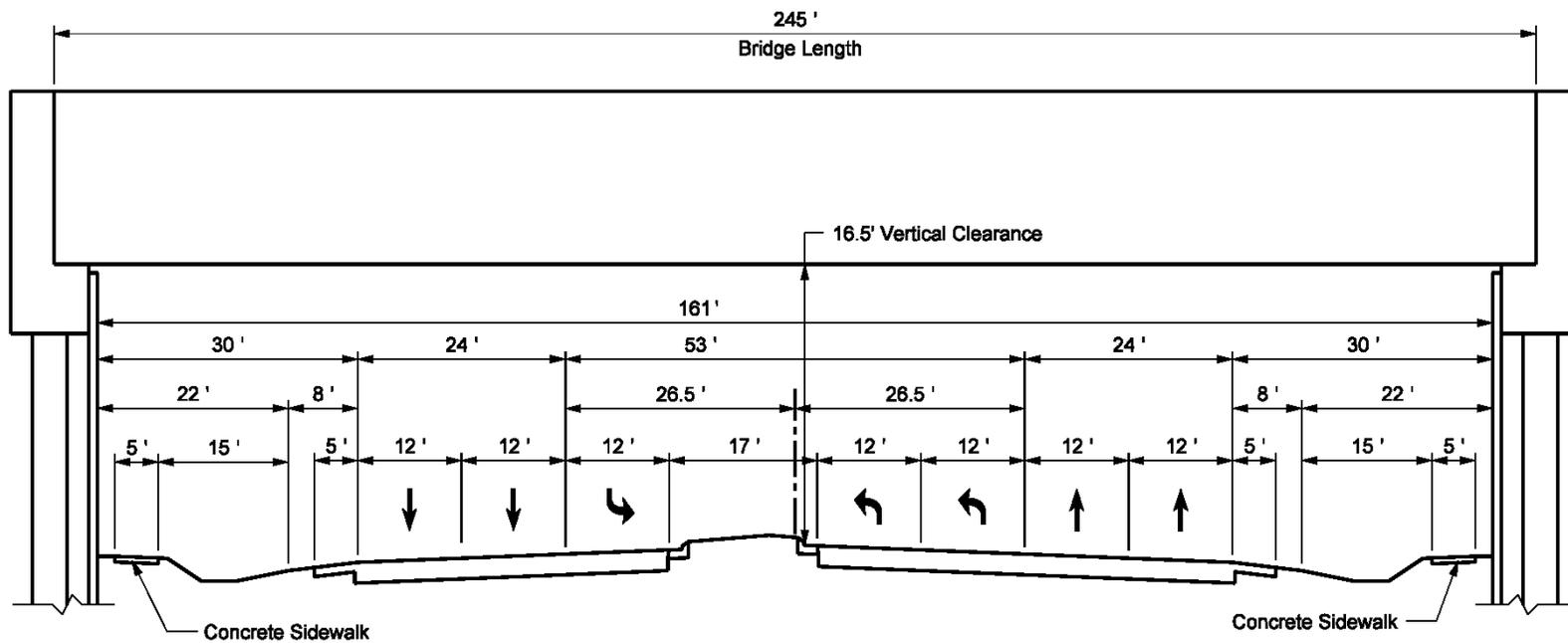


FDOT Florida Department of Transportation
District 1

State Road 33 PD&E Study
from Old Combee Road to North of Tomkow Road
Polk County, Florida
Financial Project ID: 430185-1-22-01
Federal Aid Project No: N/A

**SR 33 AND I-4 INTERCHANGE ALTERNATIVE
DIAMOND INTERCHANGE**

**Figure
5-10**

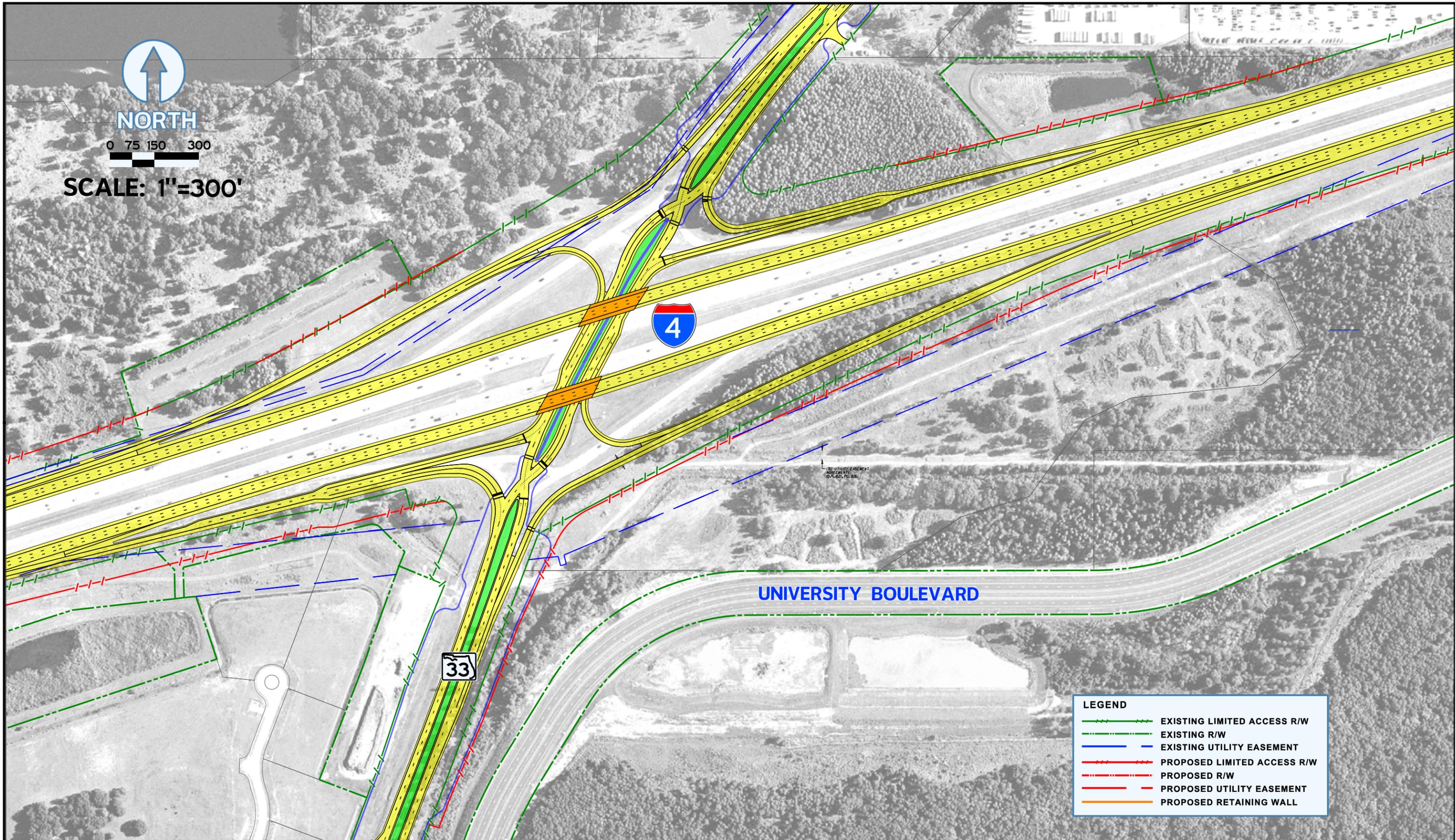




NORTH

0 75 150 300

SCALE: 1"=300'



LEGEND	
	EXISTING LIMITED ACCESS R/W
	EXISTING R/W
	EXISTING UTILITY EASEMENT
	PROPOSED LIMITED ACCESS R/W
	PROPOSED R/W
	PROPOSED UTILITY EASEMENT
	PROPOSED RETAINING WALL

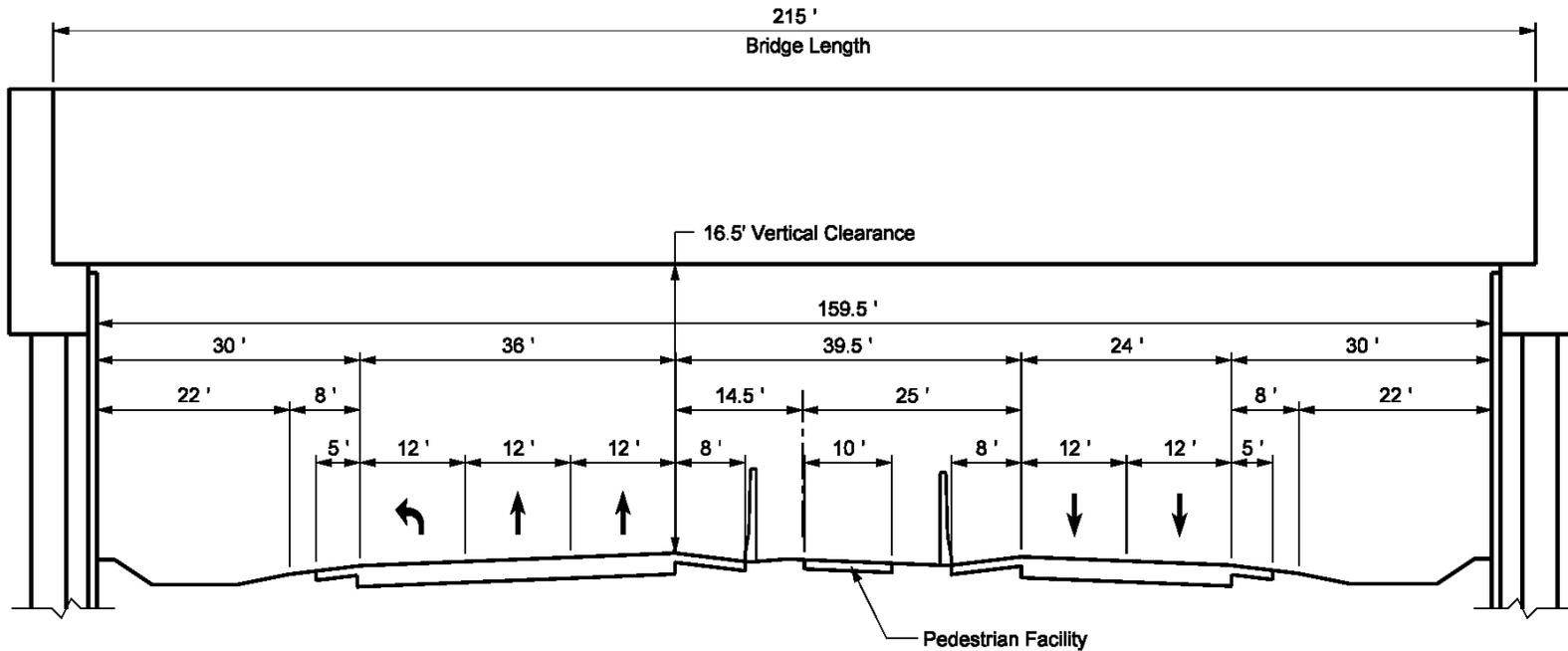


FDOT Florida Department of Transportation
District 1

State Road 33 PD&E Study
from Old Combee Road to North of Tomkow Road
Polk County, Florida
Financial Project ID: 430185-1-22-01
Federal Aid Project No: N/A

**SR 33 AND I-4 INTERCHANGE ALTERNATIVE
DIVERGING DIAMOND INTERCHANGE**

**Figure
5-12**



5.7 Alternatives Evaluation

In order to compare the SR 33 mainline widening alternatives, the costs and impacts of the pavement saving and full reconstruction typical sections were determined and documented in a comparative evaluation matrix. This evaluation matrix is included as Table 5-9.

5.7.1 SR 33 Mainline Improvements

Both SR 33 widening alternatives can be constructed within the existing FDOT right-of-way with an exception for some areas around the I-4 interchange; therefore, the anticipated impacts of each alternative are almost identical. The biggest difference between the two alternatives is the construction cost. The full reconstruction alternative is estimated to cost approximately \$2.8 million more than the option that re-uses the existing roadway as half of the future four-lane roadway.

5.7.2 I-4/SR 33 Interchange Improvements

The IOAR documents the expected future operating conditions for the diamond and the diverging diamond interchange alternatives. Since they are expected to operate at nearly the same LOS in the future, other factors were considered when comparing the two alternatives. These include design speed of SR 33 through the interchange, construction costs, and consideration of driver expectancy.

The crossover movements associated with the diverging diamond interchange require that the design speed of SR 33 be reduced from 55 mph for the mainline to 30 mph for the crossover curves. This dramatic reduction in design speed causes concern for vehicle safety through the interchange. Additionally, the diamond interchange operates better during the off peak period because traffic on the SR 33 mainline will always have to be stopped in one direction with the diverging diamond interchange, even when there is no traffic on the ramps. The construction costs for both alternatives are similar, but the diverging diamond interchange is slightly less costly because the bridges over SR 33 are shorter than what is required for the diamond interchange alternative. Based on these factors, the diamond interchange was selected as the preferred interchange alternative.

A single span bridge for I-4 over SR 33 and a two-span bridge with a center pier were considered. Table 5-10 provides the comparison of the different structures that would be required with each option.

Table 5-9

SR 33 PD&E Study
 From Old Combee Road to North of Tomkow Road
Alternatives Evaluation Matrix

Evaluation Criteria	No-build alternative	Segment 1	Segment 2
		Old Combee Road to University Boulevard	University Boulevard to north of Tomkow Road
		Alternative 1 - pavement saving	Alternative 1 - pavement saving with diamond interchange
Relocations			
Number of residential relocations	0	0	0
Number of business relocations	0	0	0
Number of parcels impacted	0	0	23
Engineering Issues			
Save existing pavement	Yes	Yes	Yes
Natural, Environmental & Physical Impacts			
Threatened and endangered species	None	Low	Low
Archaeological/historical sites	None	None	None
Potential high or medium ranked contamination sites	None	2	0
Wetlands (acres)	None	3.1	14.6
Floodplains (acre-feet)	None	0.80	4.33
Potential Section 4(f) resources	None	None	None
Noise	None	Moderate	Low
Social & neighborhood	None	Low	Low
Estimated Costs (Present Day Costs)			
Design	No cost	\$2,560,000	\$4,854,000
Road right-of-way	No cost	\$0	\$5,246,000
Pond right-of-way	No cost	\$0	\$0
Wetland mitigation	No cost	\$218,900	\$1,248,400
Roadway construction	No cost	\$8,892,700	\$37,176,900
Utility relocation	No cost	\$0	\$20,000,000
CEI (15% of construction)	No cost	\$1,334,000	\$5,577,000
Total cost	No cost	\$13,006,000	\$74,102,000

Cost estimates were provided in December of 2013 and presented at the public hearing on February 27, 2014.

Table 5-10 Comparison of Single Span vs. Two-Span Bridge Structures

Interchange Alternative	Span	Beam Type	SR 33 Median Width	Span Length	Structure Length	Superstructure Depth
Diamond	Single	Steel Plate Girder	53'	245'	245'	10'
	Two	FIB 54	61.5'	130'	260'	5.5'

A detailed comparison of one span versus two spans will be completed during the design phase when details needed to accurately complete the analysis will be available. In general, costs for a simple span pre-stressed beam bridge can range from \$66 to \$145 per square foot, where a simple span steel plate girder bridge can range from \$125 to \$142 per square foot. Therefore, for the purposes of this study, and taking account of the overall construction cost of the project, the cost difference between each type of structure is considered negligible. Table 5-11 includes a qualitative comparison of the costs for the single and two-span bridge options.

**Table 5-11
Comparison of Single Span vs. Two-span Bridge**

Pay Item	Span	
	Single	Two
Bridge Length	-	More Cost
Number of Piers	-	More Cost
Retaining Wall	More Cost (taller str.)	-
Embankment	More Cost (taller str.)	-
Median Barrier Wall on SR 33	N/A	More Cost
Median Crash Cushion on SR 33	N/A	More Cost

For the purpose of this study, and based on the comparisons and assumptions above, a single span bridge over SR 33 is proposed. However, this analysis will be reevaluated during the design phase when design level survey information is available.

5.8 Preliminary Drainage Evaluation

5.8.1 Water Quality Impact Evaluation

The project is located entirely within the Withlacoochee River sub-basin of the Orange Hammock River Watershed as defined by the SWFWMD. Although the project lies entirely within the Withlacoochee River sub-basin, SR 33 currently outfalls to three different sub-basins within the project limits: Lake Deeson, Withlacoochee River, and Saddle Creek. Lake Deeson is a closed basin located north of SR 33 near Old Combee road. The general flow pattern within the Withlacoochee River basin is north towards the Withlacoochee River. Saddle Creek is located south of SR 33, and the general flow pattern for this basin is south towards the Peace River.

Each outfall sub-basin has its own Waterbody ID (WBID), which is summarized below. It should be noted that Lake Deeson and Saddle Creek are verified as Impaired based on the current FDEP 303(d) list.

- WBID 1449A – Lake Deeson – Per the current 303(d) list, this WBID is listed as Impaired for Nutrients. With the Group 4 assessment, it was assessed for Dissolved Oxygen as not Impaired.
- WBID 1449 – Orange Hammock – Per the current 303(d) list, this WBID is not listed as Impaired for Nutrients or Dissolved Oxygen. With the Group 3, Cycle 2 assessment, it was assessed for Dissolved Oxygen and Nutrients (Chlorophyll-a) as having insufficient data, although Chl-a indicates this waterbody is not Impaired.
- WBID 1497 – Saddle Creek – Per the current 303(d) list, this WBID is listed as Impaired for Nutrients and Dissolved Oxygen within the Group 3 assessment.

The proposed stormwater facility design will include, at a minimum, the water quantity requirements for water quality impacts as required by SWFWMD in Chapter 40D-4, F.A.C.

5.8.2 Proposed Stormwater Management

A *Conceptual Pond Siting Report* (Inwood Consulting Engineers, Inc., August 2013) was prepared for this project and provides a detailed discussion of the proposed stormwater management approach. The project has been divided into a total of eight roadway drainage basins, one (1) existing/permitted basin and seven (7) proposed basins, within the project limits. One (1) off-site pond alternative for basins 1 through 4 and 6 has been analyzed to determine the location of stormwater treatment sites. The ponds were sized to accommodate the on-site and off-site runoff within the stormwater management facility. It should be noted that for Basin 2, it is proposed to use the existing pond south of SR 33 as a joint use facility as an additional alternative to accommodate the on-site and off-site runoff.

In addition to the off-site pond alternative, dry linear treatment for each basin was analyzed to determine the feasibility of using dry linear retention swales along the roadway within the existing FDOT right-of-way. The linear swales were sized to accommodate the on-site and off-site runoff and were analyzed for recovery in order to meet the SWFWMD criterion: total treatment volume to recover within 72 hours. For this pond alternative, only the pavement savings roadway typical section option was considered.

The design of the stormwater management facilities for the project is governed by the rules and criteria established by SWFWMD and FDOT. According to SWFWMD, the post development peak rate for open basins must not exceed the pre-development peak rate of discharge from the site for the 25-year/24-hour design storm event. For water quality treatment of the stormwater runoff, 1 inch of runoff from the directly connected impervious area (DCIA) will be used for wet detention. For dry retention, one-half inch of runoff from the DCIA will be used for water quality. The SWFWMD treatment criterion is per the Environmental Resource Permit (ERP), Part B, Basis of Review, Section 5.8, Alterations to Existing Public Roadway Projects.

No right-of-way acquisition for off-site pond sites is anticipated.

5.8.3 Location Hydraulics Report

A *Location Hydraulics Report* (Inwood Consulting Engineers, Inc., August 2013) was prepared for this project. This project will impact the 100-year floodplain in two ways;

1. Longitudinal impacts resulting from filling the floodplain areas associated with isolated wetlands, wetland systems, and depressional areas.
2. Transverse impacts resulting from the extension and replacement of the existing cross drain culverts.

The longitudinal impacts cannot be avoided because the floodplains associated with the water bodies extend both north and south of the proposed alignment. The floodplain impact area was quantified based on the estimated FEMA 100-year flood stage and the existing ground elevation from one-foot contours from LiDAR. To be conservative, it was assumed that any filling from the proposed roadway outside of the existing roadway was quantified as floodplain impacts. It is anticipated that the project will impact a total of 5.13 ac-ft. of the 100-year floodplain with the roadway improvements. Please refer to Table 5-12 for a summary of floodplain impacts and compensation. During the final design phase of the project, every effort should be taken to minimize the floodplain impacts.

Table 5-12
Summary of Floodplain Impacts and Compensation

Floodplain Impact Area (FIA)	Floodplain Impacts (ac-ft)	Floodplain Compensation (ac-ft)
FIA-1	0.80	0.97
FIA-2	1.05	2.04
FIA-3	0.29	0.10
FIA-4	2.50	1.71
Sub-Total	4.64	4.82
FIA-5	0.47	0.50
FIA-6	0.02	0.02
Total	5.13	5.34

The transverse impacts resulting from the extension or replacement of the culverts are analyzed in the PD&E phase of the project. It is expected that impacts will occur to the existing floodplain associated with the extension of CD-9. CD-1 through CD-8 and CD-10 are proposed to be extended due to the roadway widening; however, their associated drainage areas are not located within the floodplain area.

No additional right-of-way is proposed in this area to compensate for the loss of storage created by the extension. The extensions themselves provide volume within the pipes, and it is possible to provide compensation within the existing right-of-way through excavated areas; however, during the final design phase of the project, every necessary action should be taken to minimize upstream impacts. To minimize upstream impacts, FDOT design criteria for conveyance systems (e.g., culverts) allow no significant increase in flood stages at the upstream end of the structures.

The culvert extensions for seven cross drains and two bridge culverts were analyzed for existing and proposed condition performances. It should be noted that CD-4 was not analyzed for existing and proposed condition performances because the existing pipe serves as an existing outfall structure west of SR 33 for the Bridgewater Management System (SWFWMD Permit No. 49021375.006) and is not considered a cross drain that drains off-site runoff. The extension of CD-4 is proposed to match the existing pipe size. The existing cross drain and bridge culvert locations are shown in Figure 2-6.

The analysis at all culvert extensions showed roadway overtopping in the existing conditions during the 500-year (greatest flood) storm event. CD-1 was found to have 0.1-foot increase, CD-7 was found to have 0.07-foot increase, and CD-6 was found to have 0.23-foot increase in headwater during the 50-year (design flood) storm event. Since the headwater increase for CD-1 and CD-7 is less than 0.1-foot, matching the existing pipe size is proposed. Although CD-6 has a headwater increase greater than 0.23 feet, CD-6 is also proposed to match the existing pipe size.

Based on historical SR 33 drainage maps, CD-6 was originally constructed in an effort to connect existing wetlands west and east of SR 33; however, the connection of these wetlands has been severed over time by the construction of the Bridgewater commercial/industrial area (west of SR 33) and University Boulevard (east of SR 33). CD-6 currently only drains minimal off-site runoff and SR 33 on-site runoff to the existing canal that ultimately outfalls to Saddle Creek; therefore, the 0.23-foot headwater increase is insignificant compared to the cost of upsizing the double 10-foot x 3-foot bridge culvert.

The proposed alternative is to upsize three cross drains which showed deficiency or higher headwater during the 100-year storm event with higher capacity structures to ensure no rise in headwater elevation to minimize any transverse impacts. During the final design phase of the project, every necessary action should be taken to minimize upstream impacts.

It should be noted that these proposed cross drains were sized and analyzed based on best engineering judgments, assumptions, and limited available data. During the design phase, each cross drain should be analyzed for existing and proposed conditions with more defined data and designed to ensure no conflicts with the proposed roadway and no significant increase in headwater elevation. Also, a more detailed inspection of the cross drains will be necessary to verify their structural integrity and assess the need for complete reconstruction. Based on the cross drains analysis, it is concluded the transverse impacts resulting from the extension of the culverts are minimal.

The floodplain is located in a low density, non-urbanized area, and the encroachments area is classified as “minimal.” Minimal encroachments on a floodplain occur when there is a floodplain involvement, but the impacts on human life, transportation facilities, and natural and beneficial floodplain values are not significant and can be resolved with minimal efforts. Normally, these minimal efforts to address the impacts will consist of applying FDOT’s drainage design standards and following SWFWMD’s procedures to achieve results that will not increase or significantly change the flood elevations and/or limits.

There is no change in flood “Risk” associated with this project. The proposed floodplain encroachments are classified as “minimal.” The encroachments will not have a significant potential for interruption or termination of transportation facilities needed for emergency vehicles or used as an evacuation route. In addition, no significant adverse impacts on natural and beneficial floodplain values are anticipated and no significant impacts to highway users are expected.

The proposed cross drains will perform hydraulically in a manner equal to or greater than the existing condition, and backwater surface elevations are not expected to increase. As a result, 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 in emergency evacuation routes. Therefore, it has been determined that this encroachment is not significant.

5.9 Intersections

5.9.1 Proposed Intersection Improvements

The *Project Traffic Report (AIM Engineering & Surveying, Inc., November 2013)* prepared for this study includes intersection improvements identified in Figures 5-14 and 5-15. As a result of coordination with FDOT Traffic Operations, the City of Lakeland, and public input, some changes to the proposed geometry were made in the final concepts. These are identified in Table 5-13.

The intersection queue length estimates included in the *Project Traffic Report* are shown in Table 5-14 for the AM peak hour and Table 5-15 for the PM peak hour.

Table 5-13
Revisions to Intersection Improvements from the Project Traffic Report

Intersecting Roadway	Recommendation from Project Traffic Report	Final Recommendation Included in the Concept Plans
Old Combee Road/Deeson Pointe Boulevard	Improvements proposed on each leg of intersection	This intersection was improved with the widening of SR 33 to the west of Old Combee Road. No additional improvements are proposed.
Wood Circle West	Eastbound left turn lane	No eastbound left turn lane will be provided because there will not be a median opening at this intersection.
Firstpark Boulevard North/University Boulevard	Dual northbound left turn lanes and an exclusive southbound left turn lane	No improvements are proposed to either side street at this intersection.

5.10 Proposed Alternative Summary

5.10.1 Preliminary Design Components

As discussed in Sections 5.4, 5.5, and 5.6 of this report, the proposed alternative for this project is to widen SR 33 to four lanes utilizing the pavement saving typical section as shown in Figure 5-7, reconstructing the I-4 interchange with the diamond configuration as shown in Figure 5-10, and modifying the existing intersections as shown in Figures 5-14 and 5-15. These improvements are shown in the *Preliminary Concept Plans* located in Appendix A.

5.11 Value Engineering

A value engineering study was not completed for this study.

**Figure 5-14
Build Alternative Proposed Intersection Geometry**

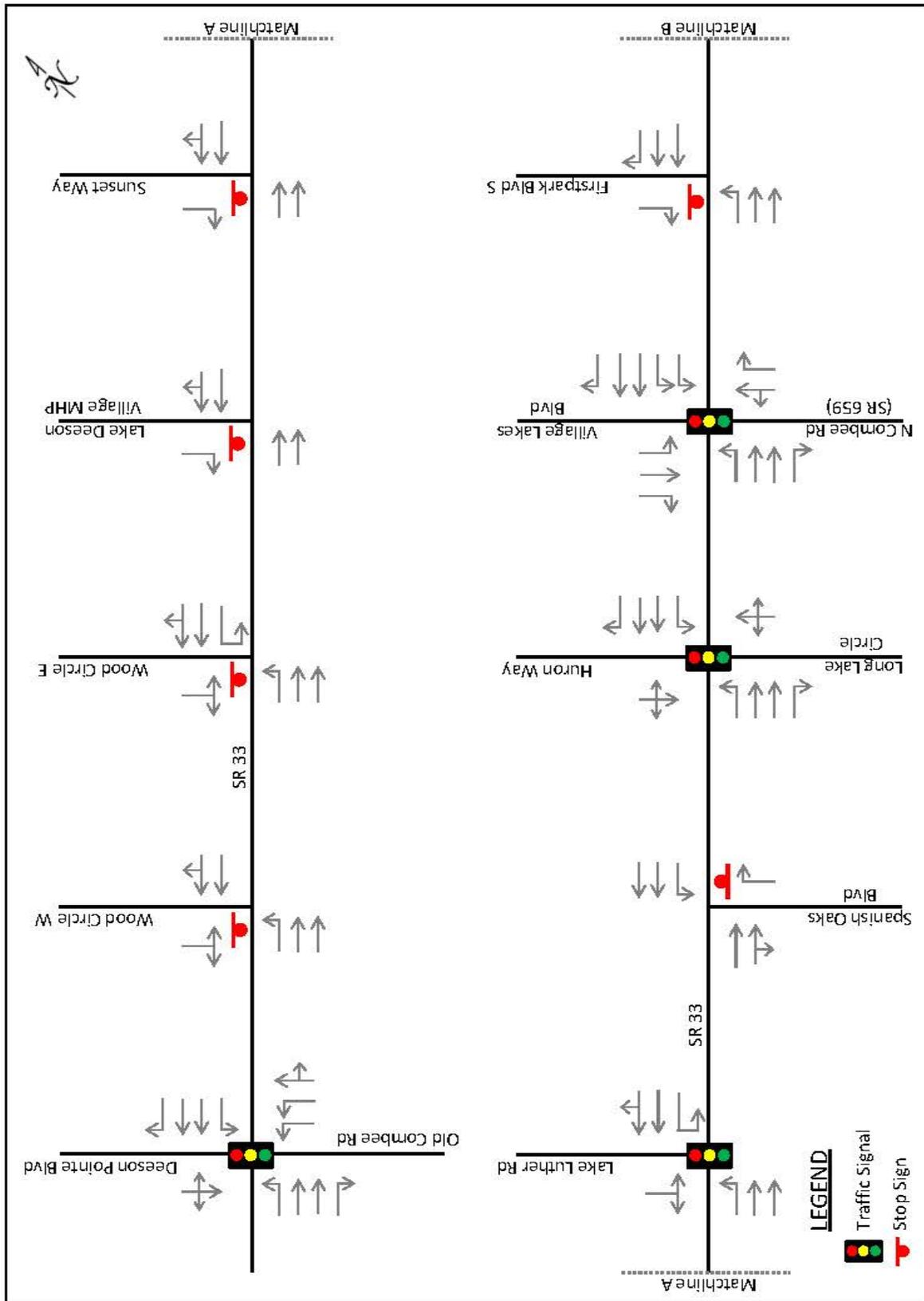
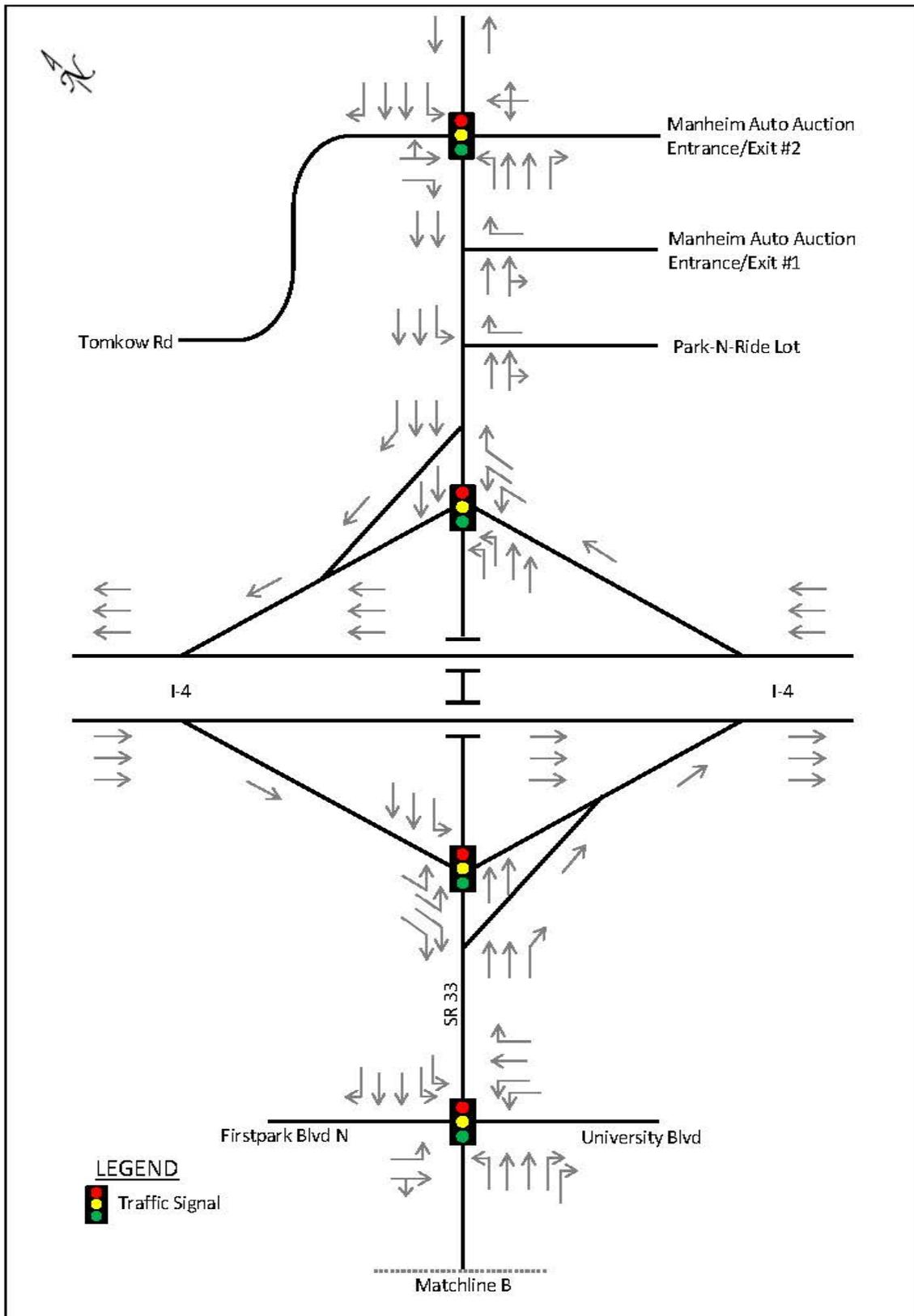


Figure 5-15
Build Alternative Proposed Intersection Geometry (I-4 Interchange)



**Table 5-14
Design Year (2036) AM Peak Hour Queue Length Estimates – Build Alternative**

Intersection	Movement	Volume	G/C Ratio	Cycle Length	No. of Lanes	Per Lane Volume	Percent Trucks	Adj. Factor	Calculated Queue Length ⁽¹⁾	Rounded Queue Length ⁽²⁾	50th % Queue based on HCS output	Calculated Queue Length ⁽³⁾	Rounded Queue Length ⁽²⁾
Lake Luther Road	EB LT	325	0.65	120	1	325	0.05	2	199.06	200	11.7	585	600
	EB TH	1065	0.67	120	2	532.5	0.05	2	307.52	325	6.1	305	325
	WB UT	0	0.47	120	1	0	0.05	2	0.00	0	0.0	0	0
	WB TH/RT	1491	0.47	120	2	745.5	0.05	2	691.45	700	19.9	995	1000
Huron Way/ Long Lake Circle	NB LT	153	0.13	100	1	153	0.05	2	194.12	200	3.9	195	200
	NB TH	1032	0.44	100	2	516	0.05	2	421.40	425	9.1	455	475
	NB RT	23	0.44	100	1	23	0.00	2	17.89	25	0.3	15	25
	SB LT	19	0.09	100	1	19	0.00	2	24.01	25	0.4	20	25
N. Combee Road/ Village Lakes Boulevard	SB TH	1281	0.40	100	2	640.5	0.05	2	560.44	575	16.1	805	825
	SB RT	171	0.40	100	1	171	0.05	2	149.63	150	2.6	130	150
	NB LT	215	0.43	120	1	215	0.05	2	214.46	225	4.1	205	225
	NB TH	887	0.31	120	2	443.5	0.05	2	535.53	550	12.5	625	625
University Boulevard/ Firstpark Boulevard N.	NB RT	82	0.31	120	1	82	0.05	2	99.02	100	1.7	85	100
	SB LT	513	0.24	120	2	256.5	0.07	2	347.64	350	6.9	345	350
	SB TH	1127	0.42	120	2	563.5	0.07	2	582.85	600	14.1	705	725
	SB RT	55	0.42	120	1	55	0.05	2	55.83	75	0.9	45	50
EB I-4 On-/Off-Ramps	NB LT	40	0.05	140	1	40	0.07	2	79.06	100	1.5	75	75
	NB TH	415	0.19	140	2	207.5	0.07	2	349.69	350	7.4	370	375
	NB RT	851	0.53	140	2	425.5	0.07	2	416.08	425	5.6	280	300
	SB LT	708	0.24	140	2	354	0.07	2	559.75	575	14.1	705	725
WB I-4 On-/Off-Ramps	SB TH	648	0.38	140	2	324	0.07	2	417.94	425	8.8	440	450
	SB RT	150	0.49	140	1	150	0.07	2	159.16	175	1.3	65	75
	EB LT	351	0.23	70	2	175.5	0.07	2	140.58	150	2.5	125	125
	EB RT	541	0.23	70	2	270.5	0.07	2	216.67	225	2.4	120	125
WB I-4 On-/Off-Ramps	NB TH	661	0.34	70	2	330.5	0.07	2	226.92	250	4.0	200	200
	NB RT	551	N/A	70	1	551	0.07	2	0.00	0	0.0	0	0
	SB LT	155	0.60	70	1	155	0.07	2	64.50	75	0.7	35	50
	SB TH	965	0.63	70	2	482.5	0.07	2	185.72	200	2.7	135	150
WB I-4 On-/Off-Ramps	WB LT	517	0.23	70	2	258.5	0.07	2	207.06	225	4.2	210	225
	WB RT	109	0.23	70	1	109	0.07	2	87.31	100	0.7	35	50
	NB LT	297	0.23	70	2	148.5	0.07	2	118.95	125	1.9	95	100
	NB TH	715	0.63	70	2	357.5	0.07	2	137.60	150	1.7	85	100
WB I-4 On-/Off-Ramps	SB TH	603	0.33	70	2	301.5	0.07	2	210.14	225	3.7	185	200
	SB RT	494	N/A	70	1	494	0.07	2	0.00	0	0.0	0	0

⁽¹⁾ Calculated Queue Length = [Per Lane Volume x (1 - G/C Ratio) x (1 + Percent Trucks) x Adjustment Factor x 25] / (3600 / Cycle Length)

⁽²⁾ Rounded up to the next highest 25-foot increment

⁽³⁾ Calculated Queue Length = 2 x 25 x (50th-percentile back of queue estimate based on 2010 HCS analysis)

**Table 5-15
Design Year (2036) PM Peak Hour Queue Length Estimates – Build Alternative**

Intersection	Movement	Volume	G/C Ratio	Cycle Length	No. of Lanes	Per Lane Volume	Percent Trucks	Adj. Factor	Calculated Queue Length ⁽¹⁾	Rounded Queue Length ⁽²⁾	50th % Queue based on HCS output	Calculated Queue Length ⁽³⁾	Rounded Queue Length ⁽²⁾
Lake Luther Road	EB LT	359	0.61	120	1	359	0.05	2	245.02	250	13.7	685	700
	EB TH	1373	0.62	120	2	686.5	0.05	2	456.52	475	11.1	555	575
	WB UT	0	0.00	120	1	0	0.05	2	0.00	0	0.0	0	0
	WB TH/RT	1193	0.42	120	2	596.5	0.05	2	605.45	625	16.3	815	825
Huron Way/ Long Lake Circle	NB LT	140	0.10	100	1	140	0.05	2	183.75	200	4.5	225	225
	NB TH	1282	0.41	100	2	641	0.05	2	551.53	575	16.3	815	825
	NB RT	65	0.41	100	1	65	0.00	2	53.26	75	0.9	45	50
	SB LT	20	0.10	100	1	20	0.00	2	25.00	25	0.4	20	25
N. Combee Road/ Village Lakes Boulevard	SB TH	1022	0.41	100	2	511	0.05	2	439.67	450	10.0	500	500
	SB RT	142	0.41	100	1	142	0.05	2	122.18	125	2.1	105	125
	NB LT	259	0.48	120	1	259	0.05	2	235.69	250	4.4	220	225
	NB TH	1152	0.37	120	2	576	0.05	2	635.04	650	17.3	865	875
University Boulevard/ Firstpark Boulevard N.	NB RT	60	0.37	120	1	60	0.05	2	66.15	75	1.1	55	75
	SB LT	384	0.21	120	2	192	0.07	2	270.50	275	5.1	255	275
	SB TH	891	0.46	120	2	445.5	0.07	2	429.02	450	9.1	455	475
	SB RT	90	0.56	120	1	90	0.05	2	69.30	75	1.1	55	75
EB I-4 On-/Off-Ramps	NB LT	50	0.23	140	1	50	0.07	2	80.10	100	1.5	75	75
	NB TH	614	0.24	140	2	307	0.07	2	485.44	500	11.6	580	600
	NB RT	992	0.53	140	2	496	0.07	2	485.02	500	6.2	310	325
	SB LT	644	0.23	140	2	322	0.07	2	515.85	525	12.5	625	625
WB I-4 On-/Off-Ramps	SB TH	481	0.42	140	2	240.5	0.07	2	290.22	300	5.5	275	275
	SB RT	92	0.53	140	1	92	0.07	2	89.96	100	0.3	15	25
	EB LT	482	0.23	70	2	241	0.07	2	193.04	200	3.8	190	200
	EB RT	309	0.23	70	2	154.5	0.07	2	123.76	125	0.6	30	50
WB I-4 On-/Off-Ramps	NB TH	983	0.47	70	2	491.5	0.07	2	270.99	275	5.0	250	250
	NB RT	530	N/A	70	1	530	0.07	2	0.00	0	0.0	0	0
	SB LT	96	0.60	70	1	96	0.07	2	39.95	50	0.4	20	25
	SB TH	908	0.63	70	2	454	0.07	2	174.75	175	2.4	120	125
WB I-4 On-/Off-Ramps	WB LT	581	0.23	70	2	290.5	0.07	2	232.69	250	5.1	255	275
	WB RT	125	0.23	70	1	125	0.07	2	100.13	100	0.9	45	50
	NB LT	495	0.23	70	2	247.5	0.07	2	198.25	200	3.7	185	200
	NB TH	970	0.63	70	2	485	0.07	2	186.68	200	2.8	140	150
WB I-4 On-/Off-Ramps	SB TH	423	0.33	70	2	211.5	0.07	2	147.41	150	2.4	120	125
	SB RT	397	N/A	70	1	397	0.07	2	0.00	0	0.0	0	0

⁽¹⁾ Calculated Queue Length = [Per Lane Volume x (1-G/C Ratio) x (1 + Percent Trucks) x Adjustment Factor x 25]/(3600/Cycle Length)]

⁽²⁾ Rounded up to the next highest 25-foot increment

⁽³⁾ Calculated Queue Length = 2 x 25 x (50th-percentile back of queue estimate based on 2010 HCS analysis)

Section 6.0

Design Details of the Recommended Alternative

6.1 Typical Sections

The proposed improvement to SR 33 utilizes a four-lane, high speed suburban typical section with a design speed of 55 mph. The proposed concept includes saving/overbuilding the existing roadway to serve as the future southbound lanes of SR 33. It is anticipated that a portion of SR 33 through the interchange area will need to be reconstructed. The improvements to I-4 will include reconstruction of the six-lane interstate typical section with a 70 mph design speed. The signed *Typical Section Package* for the proposed alternative is included in Appendix B.

6.2 Intersection Geometry

The proposed intersection geometry was discussed in Section 5.9 of this report and shown in Figures 5-14 and 5-15. The *Preliminary Concept Plans* located in Appendix A show the proposed intersection geometry for the project.

Design Phase Suggestions: At the intersection of SR 33 and SR 659, dual left turn lanes are needed in the southbound direction from SR 33 to SR 659. It is recommended that one of these left turn lanes be striped out since SR 659 only has one receiving lane. At the SR 33 intersection with University Boulevard, dual northbound right turn lanes are proposed on SR 33; however, the need for the second right turn lane does not occur until after 2030, so it is proposed that the second right turn lane not be constructed with the initial SR 33 improvements.

6.3 Right-of-Way and Relocations

Currently, SR 33 is located within 200 feet of right-of-way. The proposed widening of SR 33 can generally be constructed within the existing right-of-way. There will be the need for some minor right-of-way acquisition for the dual right turn lanes that are proposed in the northbound direction at University Boulevard and in each of the four quadrants of the I-4 interchange. Consideration was given to the construction of structural retaining walls along the interchange ramps to avoid right-of-way acquisition; however, it was estimated that the cost of the walls would exceed the cost of right-of-way acquisition by roughly \$4.5 million. The cost to construct retaining walls on all of the ramps was estimated at approximately \$9.7 million. The cost of the right-of-way acquisition was estimated at approximately \$5.2 million. Also, it is recommended that no right-of-way be acquired for the returns at the SR 659 intersection.

The *Preliminary Concept Plans* located in Appendix A show the anticipated right-of-way acquisition. The proposed roadway improvements will not displace any residences or businesses within the community.

Design Considerations: Access to three trailers in the Lake Deeson trailer park will be maintained within FDOT’s right-of-way.

6.4 Cost Estimate

Construction costs were estimated using the FDOT Long Range Estimate (LRE) program. Table 6-1 shows the estimated costs for the proposed alternative. The FDOT LRE construction costs are provided in Appendix E.

**Table 6-1
Proposed Alternative Estimated Costs**

	Segment 1 Old Combee Road to west of University Boulevard	Segment 2 West of University Boulevard to north of Tomkow Road
Construction		
<i>Roadway and Drainage</i>	\$10,804,800	\$43,904,500
<i>Utilities (in easements)</i>	\$0	\$20,000,000
Subtotal Construction Costs	\$10,804,800	\$63,904,500
Design	\$2,560,000	\$4,854,000
Wetland Mitigation	\$218,900	\$1,248,400
Construction Engineering and Inspection (%15)	\$1,333,900	\$5,576,500
Right-of-Way	\$0	\$5,246,000
Total	\$14,918,000	\$80,829,000

Notes: Construction costs were estimated using the FDOT Long Range Estimate (LRE) program in June 2014 and based on Preliminary Concept Plans located in Appendix A. Total values are rounded.

6.5 Schedule and Planning Consistency

SR 33 from Old Combee Road to north of Tomkow Road is consistent with Polk Transportation Planning Organization’s (TPO) 2013/14 to 2017/18 Transportation Improvement Program (TIP), the FDOT State Transportation Improvement Program (STIP) for Fiscal Years (FY) 2014-2017, and the Polk TPO’s 2035 Mobility Vision Plan. Planning consistency documents and a concurrency letter from the Polk TPO are included in the *Type 2 Categorical Exclusion* (June 2014).

The project is currently funded for the preliminary engineering and right-of-way phases using a combination of state and federal funding sources. The construction phase is not currently funded in FDOT’s Adopted Five-Year Work Program. Documentation of funding for this project can be found in the adopted Polk TPO’s 2013/14 to 2017/18 TIP, the FDOT STIP for Fiscal Years (FY) 2014-2017, and the Polk TPO’s 2035 Mobility Vision Plan. Right-of-way is currently funded in FDOT’s Tentative Five-Year Work Program in FY 2019. The TIP and STIP will be updated to include this funding in October of 2014 subsequent to adoption of the Five-Year Work Program. The Polk 2035 Mobility Vision Plan was amended to include right-of-way funding in FY 2016-2020 for the mainline. Although construction is not yet funded in FDOT’s Tentative Five-Year Work Program, the Polk 2035 Mobility Vision Plan was

amended to include construction in FY 2021-2025. Based on recent guidance provided by FHWA dated January 2013, Planning Consistency Requirements have been met for this project as the next phase for the entire PD&E Study project limits is reflected in the STIP/TIP, i.e. design. This project is also funded in the TPO's 2035 LRTP Cost Feasible Plan (CFP) with the exception of right-of-way and construction for the I-4/SR 33 interchange. District One Planning Office staff will coordinate the needed LRTP amendments when appropriate. Table 6-2 summarizes the planned implementation schedule of this project.

**Table 6-2
Funding Summary**

Phase	Time Frame (Fiscal Year)	Estimated Cost	Funding Source
Preliminary Engineering (Final Design)	2014**	\$7,350,000	State and Federal
Right-of-Way	2019**	\$4,900,000	State and Federal
Construction	2021-2025*	\$66,000,000***	State and Federal
TOTAL	-	\$78,250,000	-

Based on recent guidance provided by FHWA dated January 2013, Planning Consistency Requirements have been met for this project as the next phase for the entire PD&E Study project limits is reflected in the STIP/TIP, i.e. design.

6.6 Bicycle and Pedestrian Accommodations

Bicycle and pedestrian facilities, including sidewalks and construction of fully compliant ADA pedestrian features will have a beneficial impact on cyclists and pedestrians. Provisions for bicycles include the inclusion of a five-foot paved shoulder along both sides of the road. A 12-foot-wide shared-use path is also proposed along the east side of SR 33 from Old Combee Road to University Boulevard. A five-foot sidewalk is proposed along the west side of SR 33 through the project limits and also along the east side of SR 33 from University Boulevard to north of Tomkow Road.

6.7 Multi-Modal Accommodations

Multi-modal accommodations are discussed in Section 5.3 of this report. Transit services are not currently provided along this segment of SR 33; however, it is anticipated that transit service will be expanded along SR 33 up to University Boulevard and to the new Florida Polytechnic University in the future.

6.8 Utility Impacts

All anticipated utility impacts occur within the existing SR 33 right-of-way and I-4 limited access right-of-way. The majority of the utility impacts that are outlined in this section are due to the construction

of the proposed stormwater ditches, linear swales, and I-4 bridge structures. Other than roadway crossings, existing utilities that will be located under the proposed pavement are also identified as to be relocated. Table 6-3 summarizes the anticipated costs of the utility relocations on the project. A description of the impacts that were evaluated to generate the estimated relocation costs follows:

City of Lakeland Water/Sewer

Minor impacts are anticipated for the City's water and sewer facilities throughout the project. These conflicts will include areas of relocation and/or adjustment due to the excavation of the drainage ditches and linear swales. The impacts may consist of direct conflicts to inadequate cover of the existing mains. Potential relocation is also expected at the proposed I-4 bridge structures over SR 33.

City of Lakeland Electric

The City of Lakeland Electric transmission and distribution pole line located along the east side of SR 33 will be intermittently impacted by the new shared-use path located from Deeson Pointe Boulevard and First Park Boulevard.

City of Lakeland Electric-Gas

Minor impacts are anticipated for the City's gas facilities throughout the project. These conflicts will include areas of relocation and/or adjustment due to the excavation of the drainage ditches and linear swales. The impacts may consist of direct conflicts to inadequate cover of the existing mains.

Bright House Networks

The majority of Bright House Networks' facilities are located on the existing Lakeland Electric pole line. Bright House facilities will require relocation to the new Lakeland Electric poles installed on the project.

Cox Communications

The majority of Cox Communications' facilities are located on the existing Lakeland Electric pole line. Cox Communication facilities will require relocation to the new Lakeland Electric poles installed on the project.

Florida Gas Transmission

Impacts to Florida Gas Transmission's (FGT) existing 22-inch high pressure gas main and existing 6-inch gas main are anticipated with the construction of the I-4/SR 33 interchange improvements.

Verizon

The majority of Verizon's existing manhole and duct system will be located under the proposed SR 33 pavement and will require relocation per FDOT practices for utility facilities located under state roads. The facilities are not in direct conflict with the proposed roadway work, and Verizon may request an exception for the facilities to remain under the proposed pavement during the design phase of the project. For the purpose of this report, the facilities will be identified as requiring relocation.

Orlando Utilities Commission

There are no impacts anticipated with Orlando Utilities Commission transmission facilities on the project.

**Table 6-3
Utilities in the Study Area**

Owner	Utility	Estimated Relocation Cost
Bright House Networks	CATV	\$15,000
City of Lakeland Water/Sewer*	Water/Sewer	\$120,000
City of Lakeland Electric*	Trans./Dist. Power	\$350,000
City of Lakeland Electric-Gas*	Gas	\$50,000
Cox Communications	Communication	\$10,000
Florida Gas Transmission	Gas	\$20,000,000
Orlando Utilities Commission*	Trans. Power	\$0
Verizon	Communications	\$550,000
Total		\$21,095,000

* Portions of facilities located in easement.

1. Information contained in this table is based on best available information and should be considered preliminary until verified through design survey during the design phase.

6.9 Temporary Traffic Control Concepts

The temporary traffic control associated with the expansion of SR 33 will be a three-phase operation. During phase one, two-lane, two-way traffic will be maintained on the existing roadway, and for the future northbound lanes, shared-use path and sidewalk will be constructed. Installation of drainage structures, lateral pipe crossings, and construction of portions of the linear swales will be necessary to maintain positive drainage. Phase two will maintain two-lane, two-way traffic on the newly constructed northbound lanes. The existing roadway will be milled, overbuilt, resurfaced, and widened. The sidewalk and the remaining drainage structures will also be installed. Phase three will involve the completion of the median, placement of the friction course, and final striping of the roadway. Additional considerations include the potential need for temporary signal installations to control traffic at University Boulevard and the I-4 ramps.

Construction of the I-4/SR 33 interchange and ramps will be more challenging. Generally, traffic will be maintained on the existing I-4 alignment while the new eastbound and westbound lanes are constructed. Temporary ramp connections will be necessary to maintain on-off movements in all four quadrants of the interchange. Additional complications may arise due to the increased profile grade associated with new I-4 travel lanes (relative to the existing lanes). It is anticipated that temporary sheet piling or wire face walls will be necessary (between the existing and proposed I-4 lanes) to temporarily retain the embankment associated with the new lanes. Construction of the bridges will also impact traffic on SR 33 as motorists cannot be below the bridges while the new beams are set in place. The final bridge design and presence/absence of a central pier will determine the impacts to SR 33. Temporary

diversions, detours, and or road closures may be necessary during beam placement operations. The existing high mast lighting must be maintained until the proposed lighting is installed. If construction operations do not allow for this, provisions for temporary lighting will be necessary. The final phase of interchange construction will include the removal of the existing roadway and bridge structures.

6.10 Drainage

Based on the *Conceptual Pond Siting Report* (Inwood Consulting Engineers, Inc., August 2013) prepared for this project, the proposed stormwater treatment system will consist of a series of linear treatment swales along the west side of SR 33 within the existing road right-of-way. This analysis was based on existing roadway plans and preliminary data and should be verified during the design phase.

6.11 Access Management

SR 33 is currently classified by FDOT as Access Classification 4. Through coordination with FDOT Traffic Operations and the City of Lakeland, the Access Classification is proposed to be changed to Class 3. An Access Class 3 roadway utilizes raised medians to provide separation between travel lanes and restrict the number of median openings. The minimum median opening spacing allowed under Access Class 3 criteria is 2,640 feet for a full median opening and 1,320 feet for a directional median opening. Table 6-4 identifies the locations of the proposed full and directional median openings. The concept plans in Appendix A include the full and directional median openings identified in Table 6-4.

Access in the area east of the realigned Tomkow Road intersection with SR 33 should be reevaluated as the planned development in that area occurs. The Rockefeller Park of Commerce site plan includes a note that the developer of the site will participate in good faith regarding the development of a cross access easement for ingress and egress to the property to the east (Lakeland Raceway property).

6.12 Design Variations/Exceptions

No design variations or exceptions were prepared during this PD&E Study for the Proposed Alternative; however, a design variation for base clearance may be required for a portion of SR 33 north of I-4 due to high groundwater conditions. This determination will be made during the design phase of the project when detailed survey and geotechnical investigations are completed.

6.13 Horizontal and Vertical Alignment

The proposed alignment for SR 33 utilizes the existing roadway as half of the future four-lane divided roadway; therefore, it closely follows the existing horizontal alignment. The existing horizontal curves adhere to the design criteria for a 55 mph high speed suburban roadway, and no design variations are proposed for the horizontal alignment. The proposed horizontal geometry is shown in the concept plans located in Appendix A. Based on the LiDAR data obtained for the study, the existing profile is

predominately flat and can be matched for the new westbound lanes. A split profile may be required through Curve 1 to ensure that gutter grade is achieved on the low side of the super elevated curve for the new westbound roadway. The roadway profile will need to be raised approximately +1.5 feet from station 1431+50 to station 1466+75, due to a high ground water table and the reconstruction of the I-4 bridges over SR 33.

The proposed horizontal alignment for I-4 utilizes the existing I-4 horizontal geometry. The one existing horizontal curve located within the project limits adheres to the design criteria for a 70 mph rural freeway, and no design variations are proposed for the horizontal alignment. The existing vertical geometry, where I-4 crosses SR 33, consists of a sag, crest and sag vertical curves that do not meet design criteria for the proposed 70 mph design speed and will need to be reconstructed. The proposed vertical geometry is shown in Figure 5-8 located in Section 5.0.

**Table 6-4
Proposed Full and Directional Median Openings**

SR 33 PD&E Study Revised Access Management Plan - Existing Tomkow Road Location (Access Management Class 3)				
Street Name	Station	Opening type	Spacing (feet)	+/- 10%
Old Combee Rd./Deeson Pointe Blvd.	1265+75	Full/Signal	950	no
Wood Circle East	1275+25	Dual directional	1725	yes
Lake Luther Road	1292+50	Full	630	no
Spanish Oak Blvd.	1298+80	WB directional	1620	yes
Long Lake Cir./Huron Way	1315+00	Full	4620	yes
CR 659/Village Lakes Blvd.	1361+20	Full/Signal	4430	yes
First Park Blvd.	1405+50	EB directional	1330	yes
University Blvd.	1418+80	Full/Signal	2540	yes
I-4 EB Ramps	1444+20	Full	930	no
I-4 WB Ramps	1453+50	Full	900	no
Park and Ride lot	1462+50	WB directional	1530	yes
Tomkow Road/Auto Auction entrance	1477+80	Full	1140	no
Speedway/Auto Auction 3rd driveway	1489+20	EB directional		

6.14 Environmental Impacts

6.14.1 Cultural Resources and Recreational Facilities

6.14.1.1 Historic and Archaeological

A *Cultural Resource Assessment Survey (Southeastern Archaeological Research, Inc. (SEARCH), September 2013)* (CRAS), including literature review and field survey, was prepared for the project. The purpose of this CRAS was to locate and evaluate archaeological and historic resources within the area of potential effect (APE) and to assess eligibility for inclusion in the National Register of Historic Places (NRHP).

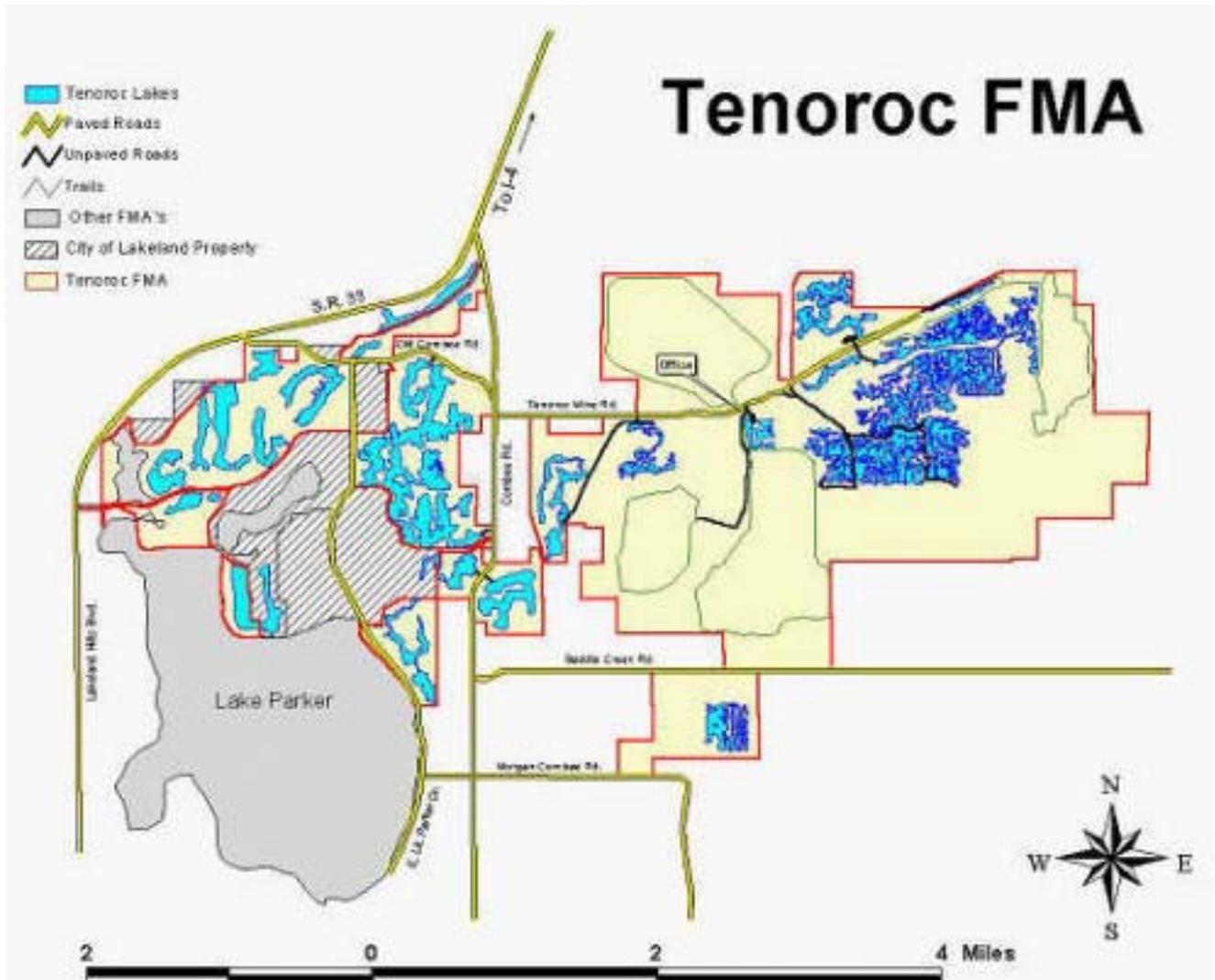
A total of 82 shovel tests were excavated within the APE, including 12 within the proposed pond areas. Three of the proposed ponds in the vicinity of the I-4/SR 33 interchange were not subjected to archaeological survey due to their very low archaeological potential (e.g., existing pavement, subsurface disturbance, standing water, negative results of previous surveys). None of the shovel tests yielded cultural material. Additionally, SEARCH architectural historians documented 50 resources within the APE. These included 32 previously recorded historic structures, 16 newly recorded historic resources, one previously recorded resource group, and one newly recorded resource group; none were recommended eligible for inclusion in the NRHP. No NRHP-eligible or -listed resources were identified within the SR 33 APE. The State Historic Preservation Officer (SHPO) concurred with this finding on November 18, 2013. The FHWA and SHPO concurrence letters are included in Appendix C.

6.14.1.2 Parks and Recreational Facilities

There is one recreational area adjacent to the SR 33 corridor called the Tenoroc Fish Management Area (FMA). This is a 7,444-acre facility that is located east of SR 33, south of University Boulevard and is bisected by SR 659. Figure 6-1 illustrates the location of the Tenoroc FMA in relation to SR 33.

A *Section 4(f) Determination of Applicability (Inwood Consulting Engineers, Inc., October 2013)* (DOA) was prepared for this facility. FHWA determined that the Tenoroc FMA is a Section 4(f) resource. The proposed improvements to SR 33 will not result in any direct or indirect impacts to the Tenoroc FMA or use of the Tenoroc FMA. The e-mail from FHWA which confirms that the proposed improvements do not have a Section 4(f) use of the Tenoroc FMA resource is included in Appendix C.

Figure 6-1
Teneroc Fish Management Area Map



6.14.2 Natural Resources

6.14.2.1 Farmlands

As a result of the ETDM screening early in the planning process, the NRCS determined that there are no prime or unique farmlands along the project corridor and that a formal Farmlands Impact Evaluation was not required for this project

6.14.2.2 Wetlands

A *Wetland Evaluation Report (WER)* (Inwood Consulting Engineers, Inc., October 2013) was prepared for this project. Wetland and surface water habitats were encountered throughout the right-of-way, and impacts to wetlands and surface waters will result from the proposed improvements. Wetland habitats identified within the study area include: stream and lake swamps, cypress, wetland forested mixed, freshwater marshes, wet prairies, emergent aquatic vegetation, and intermittent ponds.

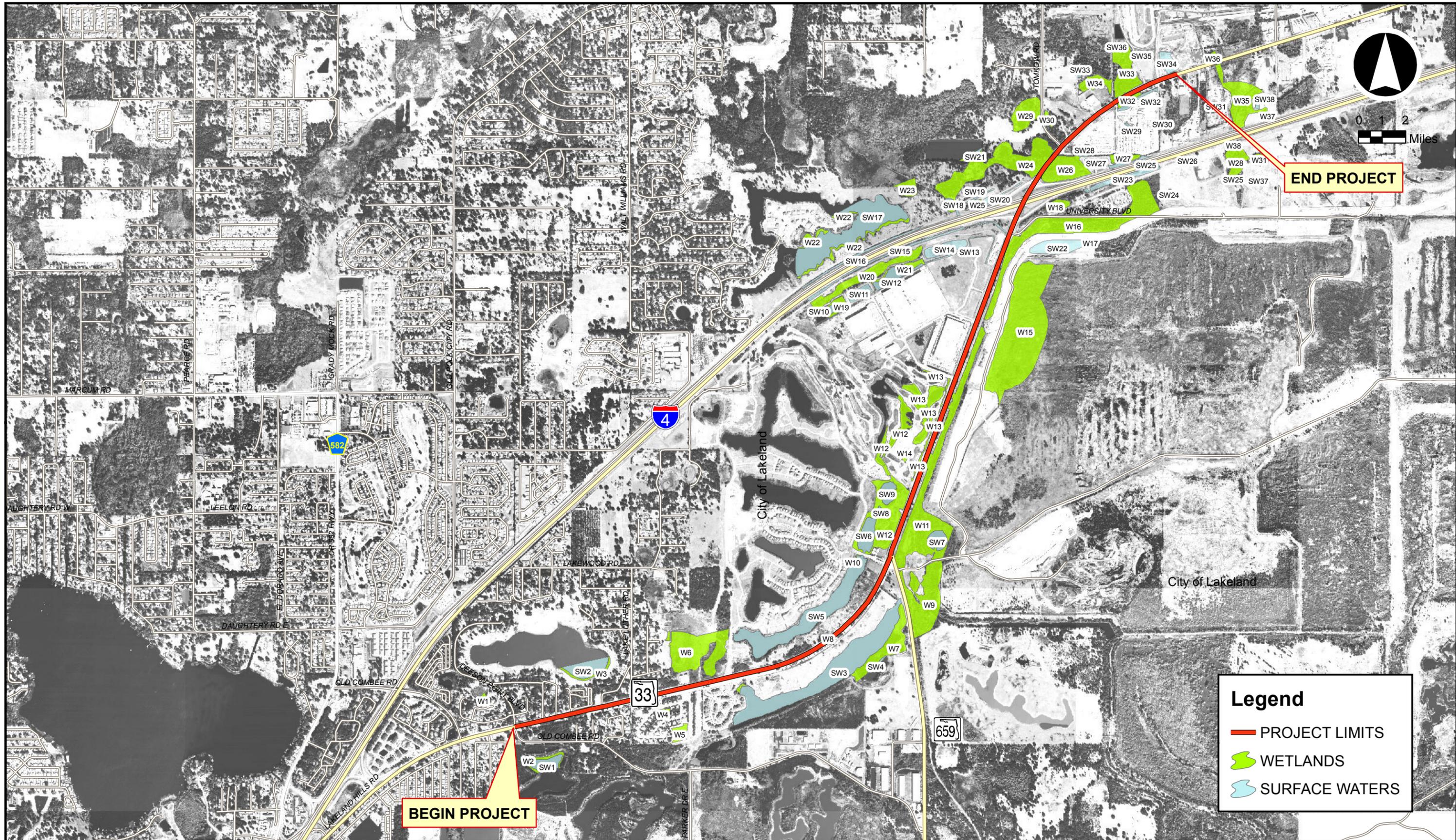
The proposed mainline improvements will result in 4.67 acres of impacts to wetlands within the right-of-way. The 'No-Build' alternative would result in no additional wetland/surface water impacts. Direct wetland impacts associated with the interchange improvements are estimated to be 13.12 acres for the diamond interchange. Based on the findings of the WER, it was determined that:

1. The proposed project will have no significant short-term or long-term adverse impacts to wetlands;
2. There is no practical alternative to the proposed construction in wetlands
3. All practicable measures have been taken to minimize harm to wetlands.

The Uniform Mitigation Assessment Methodology (UMAM) was utilized to determine the functional losses associated with the unavoidable impacts to wetlands and surface waters. All affected wetlands within the project area are of moderate to low quality. Functional losses resulting from the project were calculated to be 1.85 functional units for the SR 33 mainline widening and 6.31 functional units for the proposed interchange improvement. Wetland impacts which will result from the construction of this project will be mitigated pursuant to Section 373.4137, F.S. to satisfy all mitigation requirements of Part IV. Chapter 373, F.S. and 33 U.S.C. s.1344.

Both the SWFWMD and the U.S. Army Corps of Engineers (USACE) were notified of the project through the Efficient Transportation Decision Making Process (ETDM, Project #13188). Both agencies acknowledged the presence of wetlands within the project corridor, and that FDOT will need to demonstrate avoidance and minimization of wetland impacts and provide appropriate mitigation to offset unavoidable adverse impacts to wetlands.

Figure 6-2 shows the location of wetlands relative to the project corridor and pond sites. The wetlands shown on Figure 6-2 are a combination of the SWFWMD wetland shapefile and field verified wetlands.



Florida Department of Transportation
District 1

State Road 33 PD&E Study

from Old Combee Road to North of Tomkow Road
Polk County, Florida

Financial Project ID: 430185-1-22-01
Federal Project No: N/A

WETLANDS MAP

Figure 6-2

6.14.2.3 Outstanding Florida Waters and Aquatic Preserves

There are no Outstanding Florida Waters (OFW) or Aquatic Preserves within the project limits.

6.14.2.4 Wildlife and Habitat

An *Endangered Species Biological Assessment* (Scheda Ecological Associates, Inc., November 2013) was prepared for this project as part of the interagency coordination required under Section 7 of the Endangered Species Act (ESA) of 1973 as amended, state threatened and endangered species regulations (Ch. 379.2291, Florida Statutes (FS) and Ch. 68A-27, Florida Administrative Code (FAC) and per the requirements of Part 2, Chapter 27 of the FDOT PD&E Manual.

The proposed project corridor falls within the designated USFWS Consultation Areas (CA) for five federally-listed wildlife species. Wildlife consultation areas include the Audubon's crested caracara, Everglades snail kite, Florida scrub jay, sand skink, and blue-tailed mole skink. The latter two species are incorporated into a singular consultation area defined as the "Skink Consultation Area" by USFWS. In addition to the USFWS Consultation Areas described above, the project corridor is located within the Core Foraging Area (CFA) of six wood stork colonies.

It has been determined that the proposed project "may affect, but is not likely to adversely affect" the following federally-listed species:

- Audubon's crested caracara
- Everglades snail kite
- Florida scrub-jay
- Wood stork
- Eastern indigo snake
- Sand skink and blue-tailed mole skink
- Federally listed plants
- Perforate reindeer lichen

The proposed project will have "no effect" on the following federally-listed species:

- Florida grasshopper sparrow
- Florida bonneted bat

The project was submitted to the USFWS and they have indicated their concurrence with these findings in a letter dated November 14, 2013. The effect determination for the state-listed species was concurred with by the FFWCC in a letter dated December 12, 2013. The FFWCC's concurrence is further clarified in an e-mail dated December 16, 2013. These concurrence letters and e-mail are included in Appendix C.

6.14.3 Physical Resources

6.14.3.1 Noise Barriers

The traffic noise analysis was performed following FDOT procedures that comply with Title 23 Code of Federal Regulations (CFR), Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise. The evaluation uses methodologies established by FDOT and documented in the PD&E Manual, Part 2, Chapter 17 (May 2011). The prediction of existing and future traffic noise levels with and without the roadway improvements was performed using FHWA's Traffic Noise Model (TNM Version 2.5).

The 63 evaluated noise-sensitive sites comprised 62 residences (located within the Grey Moss Manor Subdivision, Lake Deeson Village Mobile Home Park, Deeson Manor Subdivision, Landings Apartments, Spanish Oaks Subdivision, Cambry Subdivision, Snow Wood Subdivision, and residences east of I-4) and the pool at the Landings Apartments.

The results of the analysis indicate that existing (2012) exterior traffic noise levels range from 47.6 to 62.6 dB(A), levels that do not approach, meet, or exceed the Noise Abatement Criteria (NAC). With the exception of one receptor for which the predicted level approaches the NAC, future (2036) noise levels without the proposed improvements (No-Build) also do not approach, meet, or exceed the NAC. In the future (2036) with the improvements (Build) traffic noise levels are predicted to approach, meet, or exceed the NAC at 37 receptors. Notably, when compared to the existing condition, traffic noise levels are not predicted to increase more than 10 dB(A) above existing conditions at any of the evaluated sites. As such, the project would not substantially increase traffic noise (i.e., increase traffic noise 15 dB(A) or more).

Noise abatement measures were considered for the 37 impacted receptors (36 residences and the pool). The measures were traffic management, alternative roadway alignments, and noise barriers. The results of the evaluation indicate that although feasible, traffic management and an alternative roadway alignment(s) are not reasonable methods of reducing predicted traffic noise impacts at the impacted receptors. The results of the analysis performed to evaluate noise barriers indicates that barriers would reduce traffic noise at least the minimum required reduction at 32 of the 37 impacted receptors at a cost below the reasonable limit at two locations:

- Barrier 1: Residences located within the Grey Moss Subdivision and Lake Deeson Village Mobile Home Park from West of Wood Circle W. to Lake Luther Road (Sites 2-20, 26-27)
- Barrier 4: Residences located within the Spanish Oaks, Cambry, and Snow Wood Subdivisions (Sites 47-57)

Statement of Likelihood

FDOT is committed to the construction of noise barriers at the locations above contingent upon the following conditions:

- Detailed noise analysis during the final design process supports the need for, and the feasibility and reasonableness of, providing the barriers as abatement.

-
- The detailed analysis demonstrates that the cost of the noise barrier will not exceed the cost reasonable criterion.
 - The residents/property owners benefitted by a noise barrier desire that a noise barrier be constructed.
 - All safety and engineering conflicts or issues related to construction of a noise barrier are resolved.

Land uses adjacent SR 33 are identified on the FDOT listing of noise- and vibration-sensitive sites (e.g., residential use). Construction of the proposed roadway improvements is not expected to have any significant noise or vibration impact. If sensitive land uses develop adjacent to the roadway prior to construction, increased potential for noise or vibration impacts could result. It is anticipated that the application of the **FDOT Standard Specifications for Road and Bridge Construction** will minimize or eliminate potential construction noise and vibration impacts. However, should unanticipated noise or vibration issues arise during the construction process, the Project Engineer, in coordination with the District Noise Specialist and the Contractor, will investigate additional methods of controlling these impacts.

6.14.3.2 Air Quality

The project is located in an area that has been designated as attainment for all of the National Ambient Air Quality Standards established by the Clean Air Act of 1990 and subsequent amendments; therefore, demonstration of conformity with a state implementation plan is not required for this project.

Construction activities may cause minor short-term air quality effects in the form of dust from earthwork and unpaved roads and smoke from open burning. These effects will be minimized by adherence to all state and local regulations and to the latest edition of the FDOT Standard Specifications for Road and Bridge Construction.

Green House Gasses (GHG) cause a global phenomenon in which heat is trapped in the earth's atmosphere. Because atmospheric concentration of GHGs continues to climb, our planet will continue to experience climate-related phenomena. For example, warmer global temperatures can cause changes in precipitation and sea levels. The burning of fossil fuels and other human activities are adding to the concentration of GHGs in the atmosphere. Many GHGs remain in the atmosphere for time periods ranging from decades to centuries.

To date, no national standards have been established regarding GHGs, nor has United States Environmental Protection Agency (EPA) established criteria or thresholds for ambient GHG emissions pursuant to its authority to establish motor vehicle emission standards for CO₂ under the Clean Air Act. GHGs are different from other air pollutants evaluated in the Federal environmental reviews because their impacts are not localized or regional due to their rapid dispersion into the global atmosphere, which is characteristic of these gases. The affected environment for CO₂ and other GHG emissions is the entire planet. In addition, from a quantitative perspective, global climate change is the cumulative result of numerous and varied emissions sources (in terms of both absolute numbers and types), each of which

makes a relatively small addition to global atmospheric GHG concentrations. In contrast to broad scale actions such as actions involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the GHG emissions impacts for a particular transportation project. Furthermore, presently there is no scientific methodology for attributing specific climatological changes to a particular transportation project's emissions.

Under NEPA, detailed environmental analysis should be focused on issues that are significant and meaningful to decision-making (40 CFR 1500.1(b), 1500.2(b), 1500.4(g), and 1501.7). FHWA has concluded, based on the nature of GHG emissions and the exceedingly small potential GHG impacts of the proposed action that the GHG emissions from the proposed action will not result in "reasonably foreseeable significant adverse impacts on the human environment" (40 CFR 1502.22(b)). The GHG emission from the project build alternatives will be insignificant, and will not play a meaningful role in a determination of the environmentally preferable alternative or the selection of the preferred alternative. More detailed information on GHG emissions "is not essential to a reasoned choice among reasonable alternatives" (40 CFR 1502.22(a)) or to making a decision in the best overall public interest based on a balanced consideration of transportation, economic, social, and environmental needs and impacts (23 CFR 771.105(b)).

This document does not incorporate an analysis of the GHG emissions or climate change effects of each of the alternatives because the potential change in GHG emissions is very small in the context of the affected environment. Because of the insignificance of the GHG impacts, those local impacts will not be meaningful to a decision on the environmentally preferable alternative or to a choice among alternatives. For these reasons, no alternatives-level GHG analysis has been performed for this project.

6.14.3.3 Contamination

A *Contamination Screening Evaluation Report* (Tierra, November 2013) was prepared for this project. The environmental screening has resulted in seven sites that may present the potential for petroleum contamination or hazardous materials. Two of these sites have been given a "Medium" ranking and five sites have been given a "Low" ranking for contamination potential. Table 6-5 presents the risk rankings assigned to each site as a result of the contamination screening.

**Table 6-5
Contamination Risk Rankings of Potentially Contaminated Sites**

Map ID	Facility Name	Facility ID	Petroleum or Hazardous	Hazard Ranking
1	Lakeland Water Utilities, Lift Station	N/A	Petroleum	Medium
2	Saddle Creek Phosphate Mine, Agrico Chemical Co. Reclaimed Strip Mine	8624455, FLD980727192, FLD000622506, FL# 000305, Site #25269, COM_31196	Petroleum	Medium
3	Bridgewater Golf Course	N/A	Arsenic, Pesticides / Herbicides	Low
4	JC Penny Distribution	N/A	Petroleum, Hazardous Waste	Low
5	TIIT-FDOT Ops Polk Sub Main Yard, Former Tank Location	8943985	Petroleum	Low
6	Gourmet Food Distribution	N/A	Petroleum, Hazardous Waste	Low
7	Lakeland Auto Auction	8628555, FLD98211441, Site #5224	Petroleum, Hazardous Waste	Low

6.14.3.4 Aesthetics and Landscaping

Aesthetics are an important consideration in any transportation project. 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/or enhances the natural, environmental, scenic and aesthetic values of the area. The City of Lakeland is interested in aesthetic features for the I-4/SR 33 interchange because the City considers it a gateway into the City. Coordination with the City regarding aesthetic features for the interchange area and the remainder of the SR 33 corridor is recommended during the design phase.

6.14.3.5 Lighting Analysis

A continuous roadway lighting system does not exist along SR 33. There is high mast lighting provided at the I-4 interchange. The scope of this PD&E Study did not include the preparation of a Lighting Justification Report; however roadway lighting was included in the construction cost estimates. Roadway lighting should be evaluated during the design phase of this project.

6.14.4 Social Resources

6.14.4.1 Economics

Traffic on SR 33 is expected to increase due to projected population and employment growth both along the corridor and in the region. Population in the project area is expected to increase from 37,945 in 2007 to 79,659 in 2035 and employment is expected to increase from 8,771 to 41,131 over the same time frame.

This project provides increased capacity along SR 33 to meet the projected future travel demand. The existing roadway LOS along SR 33 ranges from “B” to “E” with volumes ranging from 5,900 to 12,400 AADT. The Polk County Transportation Planning Organization’s 2035 Financially Feasible Long Range Transportation Planning model was used to develop future traffic volumes. With the planned future growth in this area these volumes are expected to increase to 22,600 to 34,500 AADT by 2036 amounting to a roadway LOS “E” or “F”. The proposed widening to four lanes will allow SR 33 to meet future travel demand at an acceptable LOS “D” or better and continue to serve as an important regional arterial. Transportation Systems Management & Operations type improvements will not adequately address future travel demand needs.

6.14.4.2 Land Use

The widening of SR 33 is located within the City of Lakeland and unincorporated Polk County. Existing land use is a mix of single and multi-family residential from the beginning of the project to University Boulevard and commercial/industrial from University Boulevard to north of Tomkow Road. Figure 2-2 shows the existing land use along the corridor.

The City of Lakeland Year 2030 Future Land-Use Map shows the planned land use for this corridor as a mix of single and multi-family residential west of University Boulevard and commercial/industrial from University Boulevard to north of Tomkow Road. Figure 2-3 shows the future land uses along the corridor.

6.14.4.3 Relocation

The preferred alternative will not result in any residential or business displacements, but it will require the acquisition of right-of-way in the I-4 interchange area. FDOT will carry out a right-of-way acquisition and relocation program in accordance with Florida Statute 339.09 and the Uniform Relocation and Real Property Acquisition Policies Act of 1970 (Public Law 91-646, as amended by Public Law 100-17). FDOT produced brochures that describe in detail the Department’s relocation assistance program and right-of-way acquisition program called “Your Relocation: Residential”, “Your Relocation: Business, Farms and Nonprofit Organizations”, “Your Relocation: Signs”, and “The Real Estate Acquisition Process.” Each of these brochures were made available and distributed as needed at the public information workshop and the public hearing, and were made available upon request to any interested person.

6.14.4.4 Social

The PD&E study was conducted in accordance with Title VI of the Civil Rights Act of 1964 and related statutes. Title VI provides that no person shall be, on the grounds of race, color, religion, sex, age, national origin, disability or family status, be excluded from participating in, be denied the benefits of, or be otherwise subject to discrimination under any program of the federal, state or local government. No comments have been received during this study regarding conflicts with Title VI or related statutes. Furthermore, the project is not anticipated to negatively affect community resources important to elderly persons, disabled individuals, non-drivers, transit-dependent individuals, or minorities.

Community Facilities

Typically, community facilities typically serve the needs of the surrounding area and provide a focal point for adjacent neighborhoods and communities. Community facilities include churches, cemeteries, schools, parks, recreational facilities, and public buildings and facilities (i.e., community centers, health care, and social service facilities). There is a park-and-ride lot and a golf course (Golf Club at Bridgewater, currently closed until further notice) located along the project corridor. The University Boulevard/Research Way Trail connects with SR 33. In addition, a fire station (Lakeland Fire Station #6) is located along SR 33, southwest of the project. Figure 6-3 shows the locations of the community facilities in the vicinity of the project.

6.15 Related Transportation Projects

City of Lakeland Projects:

1. *Recorded Right-of-Way Reservation Agreement for the "Bridgewater Collector" Corridor between Firstpark Boulevard and Walt Williams Road, north of Interstate 4*

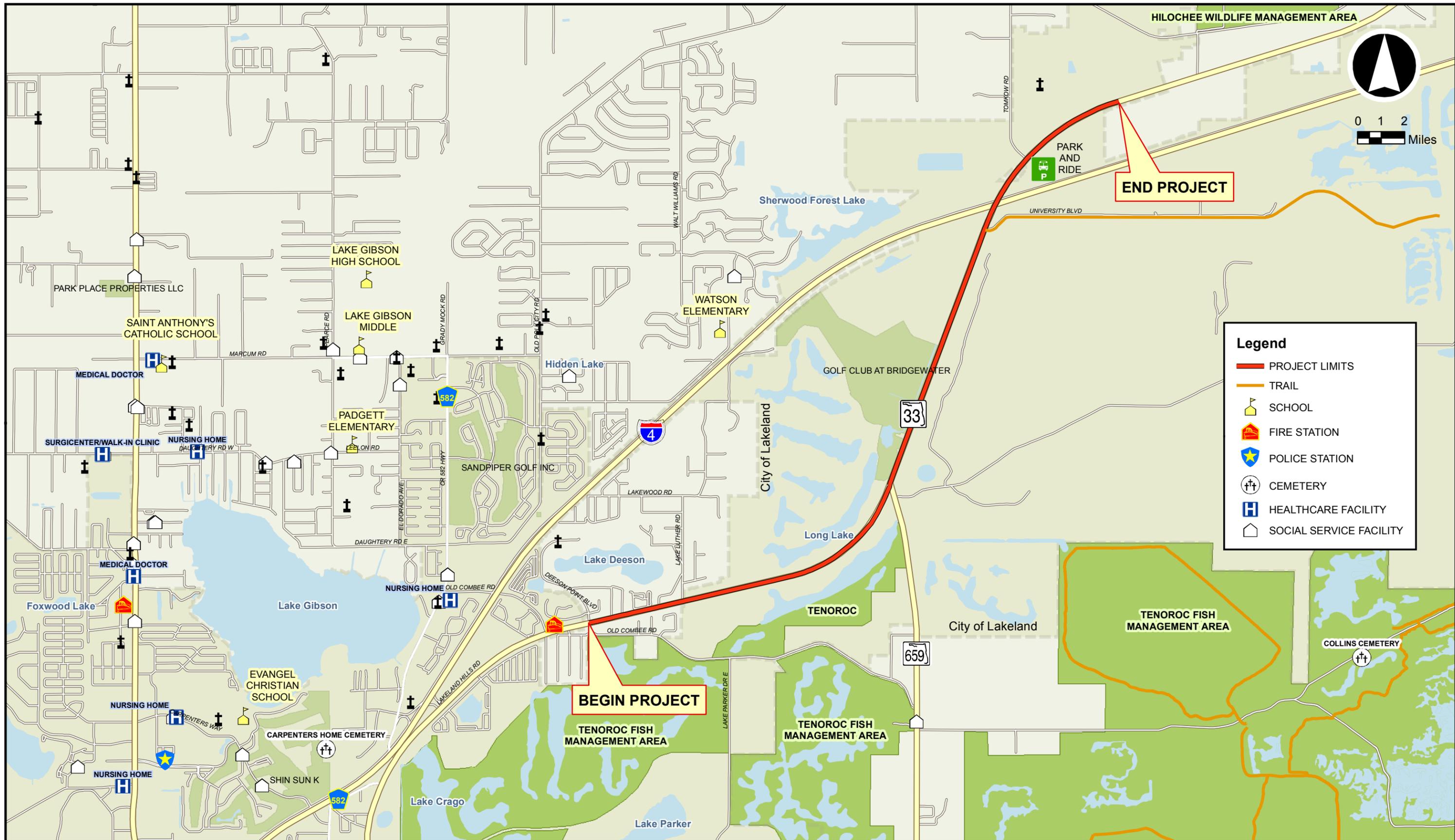
This Reservation Agreement is intended to reserve a collector road corridor until 7/31/21, allowing time for the City to conduct an alignment study. Other potential alignments could also be considered outside of the reservation area. The Bridgewater Collector Road corridor is a requirement of the Bridgewater DRI Development Order (included in the 2007 Notice of Proposed Change (NOPC)). If a road corridor is determined to not be feasible, it is possible that a bicycle/pedestrian trail could be implemented instead.

2. *Draft Tenoroc Trail Master Plan*

The draft Tenoroc Trail Master Plan map depicts alternative regional trail alignments that include connections to SR 33. The Master Plan shows the SR 33 PD&E Study Trail connecting to the new University Boulevard Trail located south of I-4.

3. *Recorded First Amendment to Bridgewater Development Agreement*

This agreement contains a requirement for \$30,000 payment for transit facilities on SR 33, adjacent to the Bridgewater DRI. Payment has been received by the City of Lakeland.



6.16 Public Involvement

A *Comments and Coordination Report* was prepared for this project to fully document the public and stakeholder involvement conducted for this project.

6.16.1 Public Involvement Plan

A *Public Involvement Plan* (PIP) has been developed and was approved on June 26, 2012. The PIP is being implemented in compliance with Part 1, Chapter 11 of the FDOT PD&E Manual; Florida Statute 339.155; Executive Orders 11990 and 11988; Council on Environmental Quality Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (NEPA) and 23 CFR 771. Section 3.0 of this report summarizes the agency coordination that occurred through the ETDM process, the Advance Notification (AN) process, and the public involvement efforts. The *Comments and Coordination Report* is part of the project file and it will be included in the support documents on the project website.

6.16.2 ETDM Screening

The Florida Department of Transportation (FDOT) conducted an early environmental screening of the proposed SR 33 improvements through the Efficient Transportation Decision Making (ETDM) process. The Programming Screen ETAT review was initiated on April 14, 2011. None of the reviewing ETAT members submitted a Degree of Effect (DOE) of "5" for Dispute Resolution. The Programming Screen Summary Report was published on August 10, 2011. It was re-published on September 7, 2011 to reflect the summary DOE coordination with applicable agencies for the relocation and secondary and cumulative effects resource issues. The summary report was re-published again on March 26, 2014 to include the Type 2 Categorical Exclusion Class of Action determination from FHWA.

6.16.3 Advance Notification

The Florida Department of Transportation (FDOT) initiated early project coordination through distribution of an Advance Notification (AN) package to the Florida State Clearinghouse and local and Federal agencies, in accordance with Executive Order 95-359. The Advance Notification (AN) package was originally prepared and mailed on April 11, 2011. The FDOT received notification that the Clearinghouse received the AN, and forwarded the package to the appropriate agencies.

6.16.4 Newsletters

Newsletters were mailed to public officials, property owners, and interested citizens per the approved PIP. The first issue was published and distributed in July 2012 and informed the public of the start of the project, including a discussion of the study process and schedule. This issue also stressed the need for public input and provided information on points of contact within FDOT regarding citizen comments and concerns. The second issue, published and distributed in September 2013, presented an overview of the study progress to date and served as notification of the public information alternatives workshop. The third issue was published in February 2014 and notified the public of the public hearing. A final newsletter was mailed in July 2014 to inform the public of the final results of the study.

6.16.5 Polk TPO Meetings

An informational presentation was made to the Polk Transportation Planning Organization (TPO) Technical Advisory Committee (TAC) on November 21, 2013. The Executive Director of the Polk TPO requested an update be made to him instead of making a presentation to the TPO Board. The presentation to the TAC provided an overview of the study to date, a summary of the alternatives workshop and input received from the public, an overview of the proposed improvements, information on project funding and the upcoming schedule for the PD&E Study. A second presentation was made to the Polk TPO TAC on March 27, 2014. The same presentation was given to the Polk TPO Board on April 10, 2014. This presentation provided the results of the study to date, a summary of the public hearing and input received from the public, an overview of the proposed improvements, and an update on the project funding. FDOT also requested a letter from the Polk TPO Board stating that the preferred improvement is consistent with their Long Range Transportation Plan. The Board provided this letter on April 24, 2014. The letter is included in Appendix C.

6.16.6 City of Lakeland Meeting

A meeting was held with the City of Lakeland staff on April 30, 2013 at the City of Lakeland offices. Several staff members representing different disciplines within the City attended the meeting. This meeting included a presentation by Inwood and AIM to provide an overview of the study limits, the traffic analysis, the proposed improvements that would be considered, the I-4 interchange analysis, access management, drainage analysis, environmental analysis, and project schedule. A copy of these meeting minutes is included in Appendix C.

6.16.7 Other Stakeholder Meetings

Coordination meetings were held with other stakeholders including a property owner who owns much of the land around the I-4 interchange and the Manheim Lakeland Auto Auction.

6.16.8 Website

At the onset of the PD&E Study, a project website (www.sr33polk.com) was created for the project and updated monthly. The project website included information explaining the PD&E Study process, a monthly project overview, the project location, the project schedule, study team contact information,

information regarding public involvement activities, copies of the project newsletters, results of the study, and the opportunity to submit public comment.

6.16.9 Alternatives Workshop

The Alternatives Workshop was held on September 24, 2013 at the Believer's Fellowship Word of Faith Church located at 5240 North Socrum Loop Road in Lakeland, Florida. The workshop provided attendees an overview of the alternatives under consideration, the status of the study to date, and provided an opportunity for the public to ask questions and provide input into the alternatives selection process. The meeting was conducted as an informal open house from 5:00 PM to 7:00 PM. An informational project video ran continuously during the open house in a separate room. Notifications to the meeting included direct mailing of newsletters, a display advertisement in The Ledger newspaper, an advertisement in the Florida Administrative Register, notification on the project website and a press release. As attendees entered the workshop, they were asked to sign in and were given a project information handout, comment form, and copy of the most recent SR 33 newsletter. The workshop was held in an open house format with members of the study team available to answer questions and discuss the project one-on-one with attendees. In addition, separate tables were setup for attendees to sit down and fill out comment forms. Detail regarding comments received is included in the *Comments and Coordination Report*. No opposition to the widening of SR 33 was documented.

6.16.10 Public Hearing

The Public Hearing was held on Thursday, February 27, 2014 at the Peggy Brown Building, which is located at 215 South Lake Avenue, Lakeland, Florida. Based on those attendees who signed the sign-in form, 25 citizens and one elected official attended this hearing. The purpose of this hearing was to present to the public the proposed improvements and obtain comments prior to finalizing the recommendations. The format of this hearing was an open house to informally answer questions and receive comments, followed by a formal presentation and video at 6:30 p.m. In addition, visual displays were available for review. The hearing provided an overview of the proposed alternative and the costs and impacts of the proposed improvement. In addition, an opportunity for the public to make formal statements or ask questions regarding the study was provided. Detail regarding comments received is included in the *Comments and Coordination Report*. No substantial opposition to the widening of SR 33 was documented, although stated concerns were primarily regarding noise and environmental impacts.

Section 7.0 References

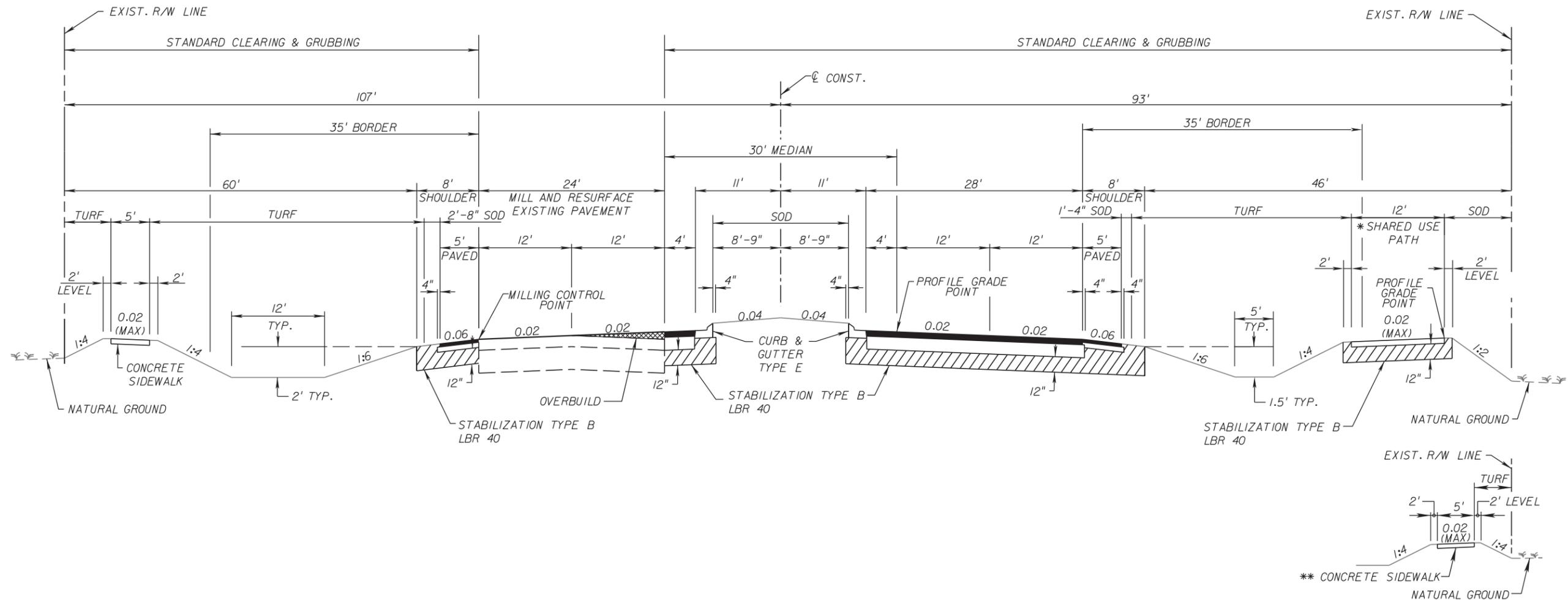
7.1 List of Technical Reports and Memoranda Completed for the Project

The following Technical Reports and Memoranda were prepared as part of this PD&E Study and were used to provide the technical analysis necessary to develop and select the proposed alternative.

- Cultural Resource Assessment Study (CRAS) – Southeastern Archeological Research, Inc. (SEARCH), September 2013
- Contamination Screening Evaluation Report – Tierra, Inc., December 2013
- Pond Siting Report – Inwood Consulting Engineers, Inc., December 2013
- Location Hydraulics Report – Inwood Consulting Engineers, Inc., December 2013
- Wetlands Evaluation Report – Inwood Consulting Engineers, Inc., January 2013
- Endangered Species Biological Assessment – Scheda Ecological Consultants, Inc., November 2013
- Section 4(f) Determination of Applicability – Inwood Consulting Engineers, Inc., October 2013
- Noise Study Report (NSR) – KB Environmental Sciences, Inc., December 2013
- Air Quality Technical Memorandum – KB Environmental Sciences, Inc., December 2013
- Geotechnical Report – Tierra, Inc., August 2013
- Project Traffic Report (PTR) – AIM Engineering & Surveying, Inc., November 2013
- Interchange Operational Analysis Report (IOAR) Report Not Requiring FHWA Approval – AIM Engineering & Surveying, Inc., March 2014
- Water Quality Impact Evaluation (WQIE) checklist – Inwood Consulting Engineers, Inc., August 2013

Appendix A

PRELIMINARY CONCEPT PLANS



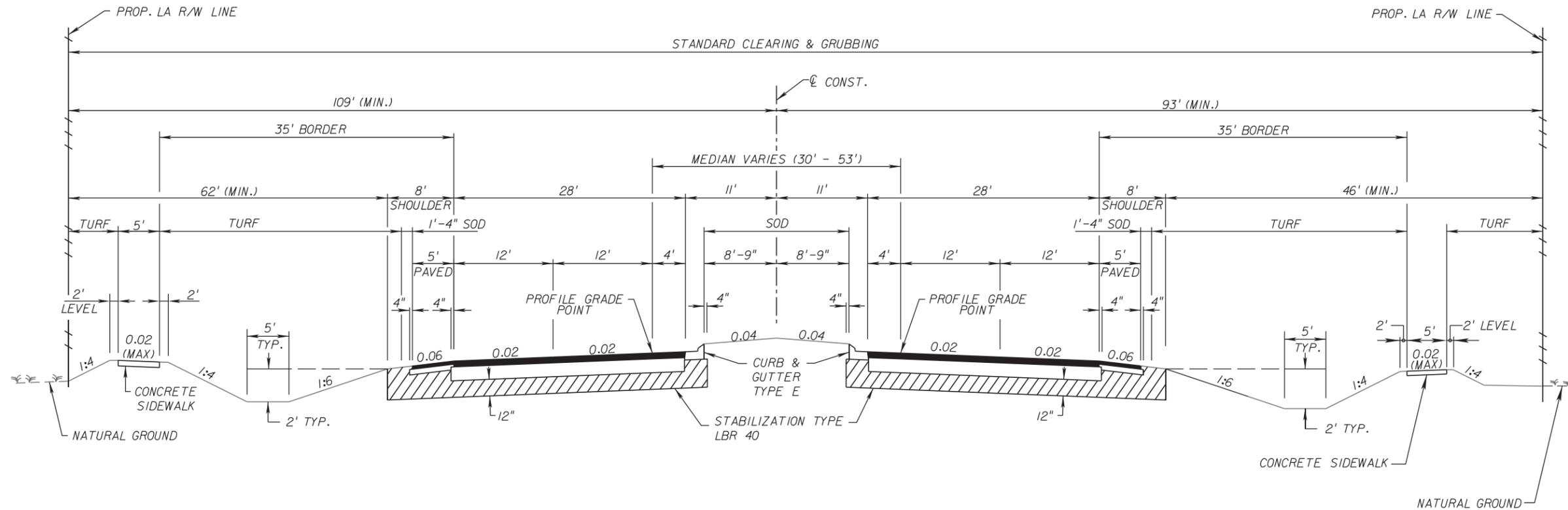
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 SR 33
 HIGH SPEED SUBURBAN
 DS = 55 MPH

STA. 1271+80.00 TO STA. 1431+44.00
 STA. 1466+66.00 TO STA. 1481+34.72

* STA. 1271+80.00 TO 1418+43.00
 ** STA. 1419+50.00 TO 1431+44.00
 ** STA. 1466+66.00 TO 1481+34.72

REVISIONS				ENGINEER OF RECORD Mark D. Hales, PE PE No. 62430 Inwood Consulting Engineers, Inc. Certificate of Authorization No. 7074 3000 Dovera Drive, Suite 200, Oviedo, Florida 32765 P 407.971.8850	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO. 1
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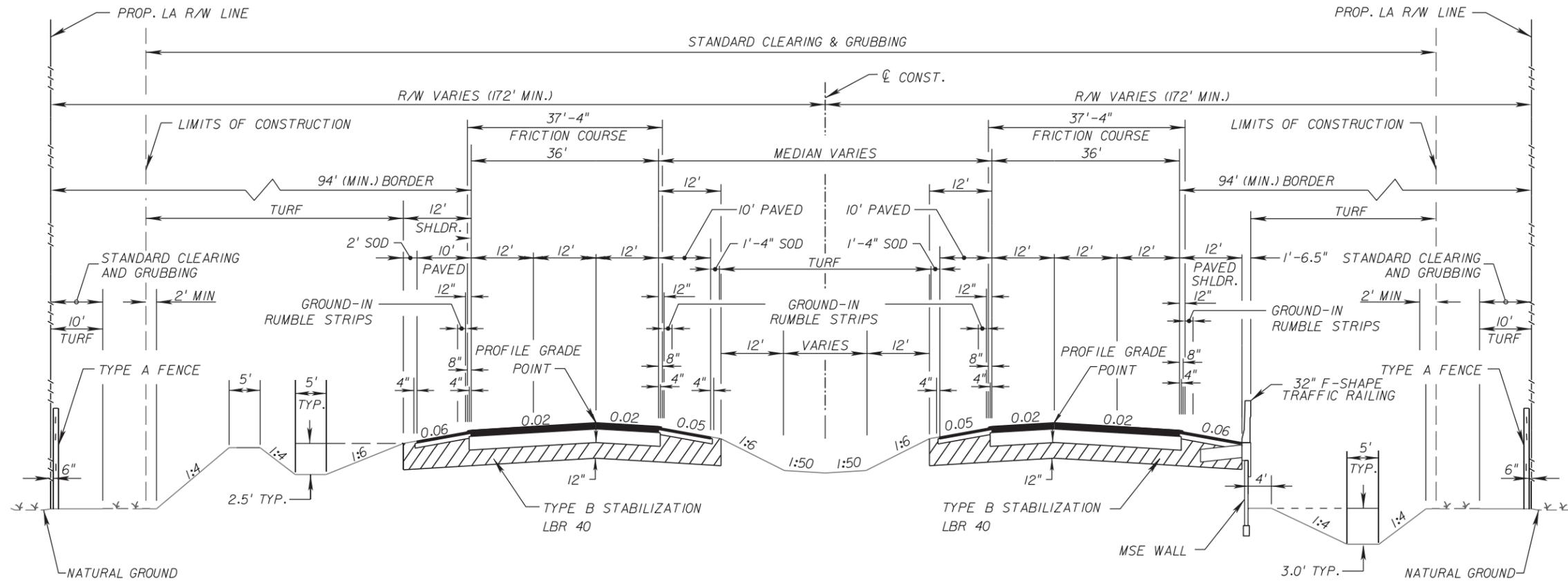
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 SR 33
 HIGH SR33 SPEED SUBURBAN
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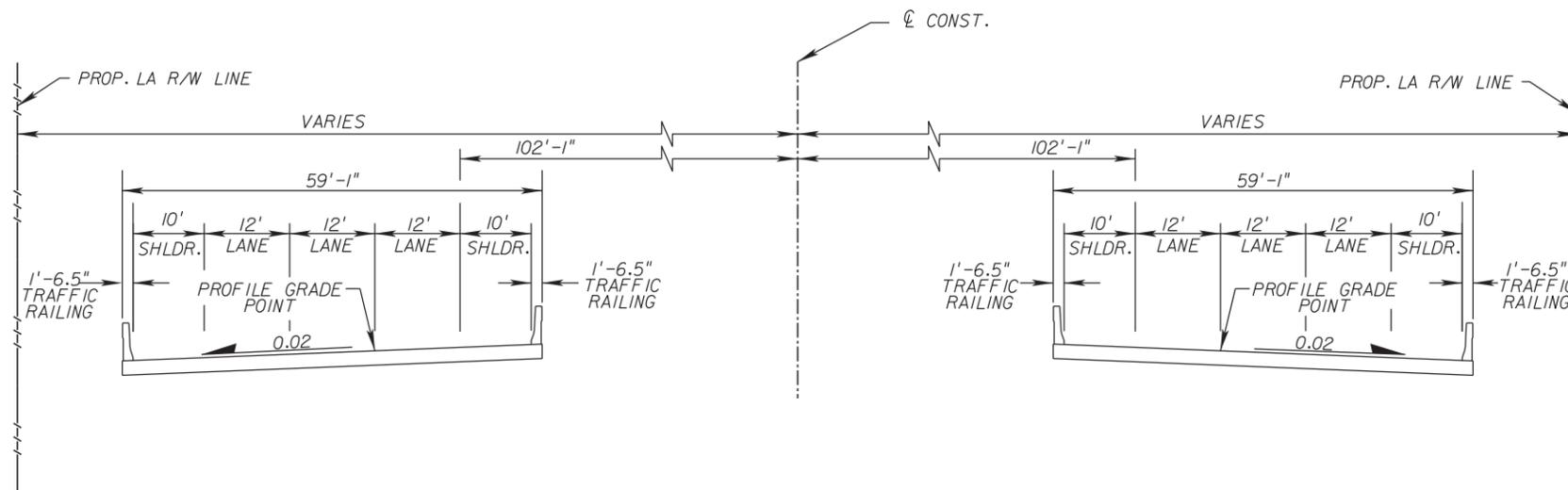


TYPICAL #3
 1-4 MAINLINE
 DS = 70 MPH

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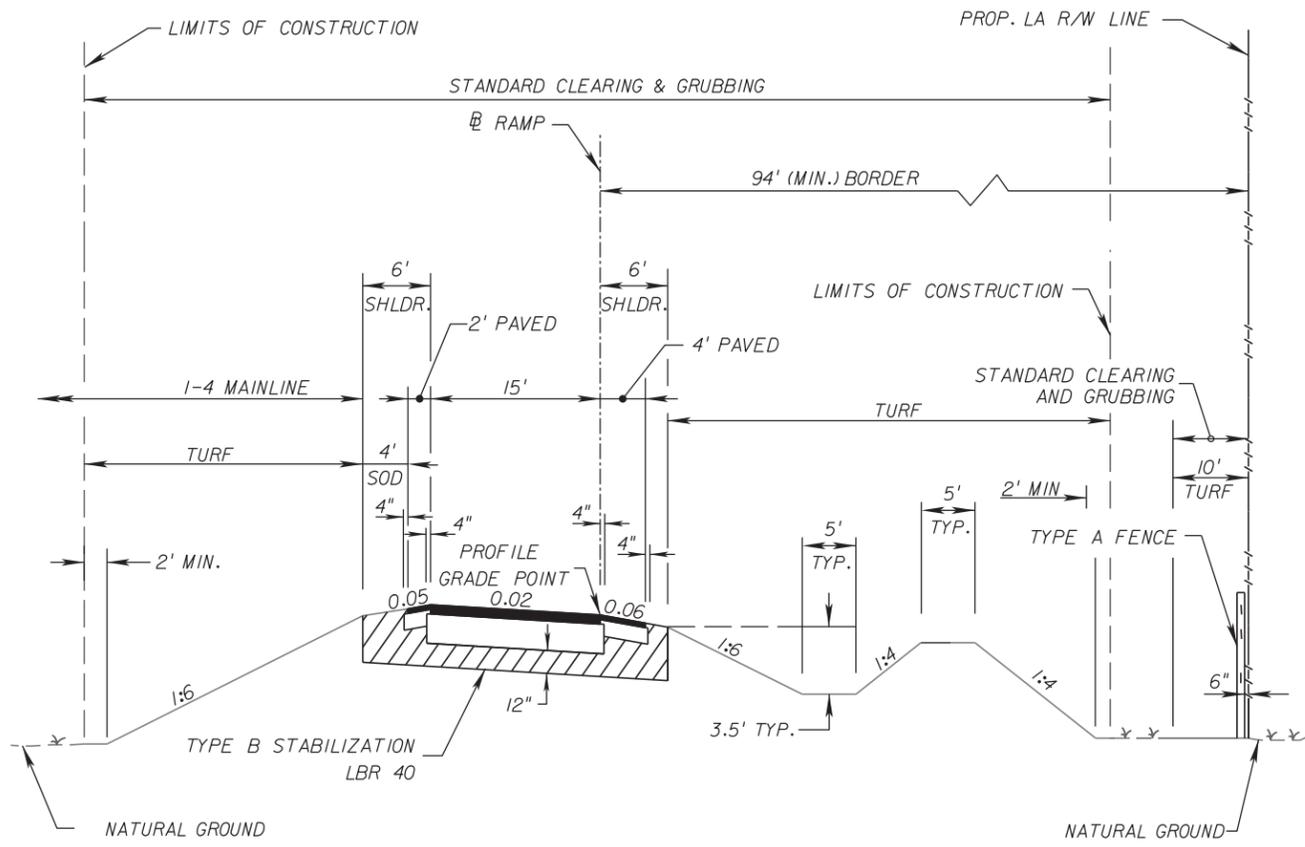


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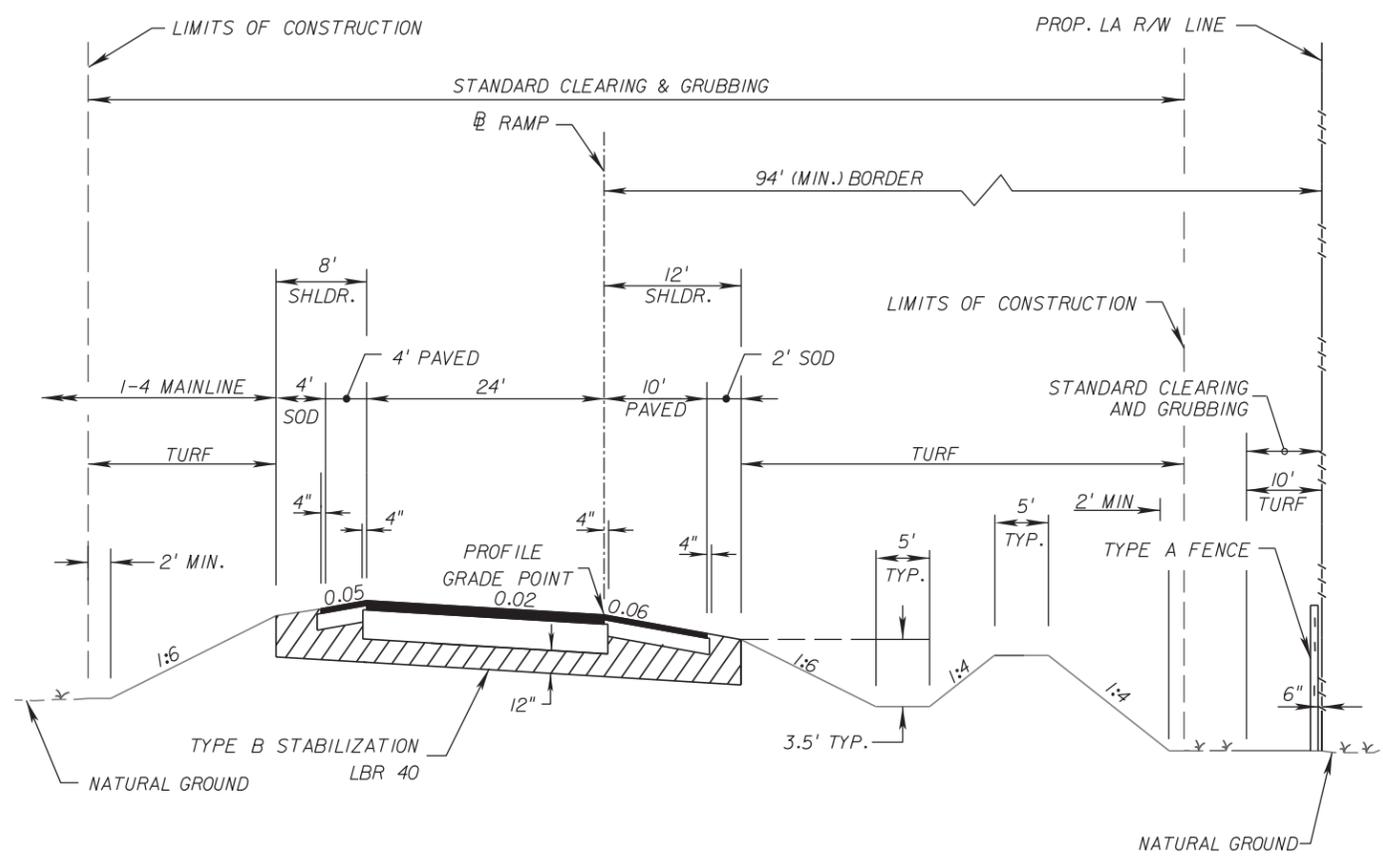
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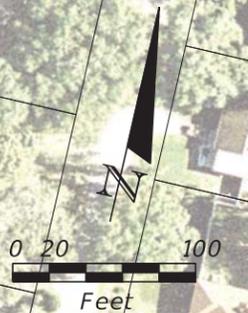
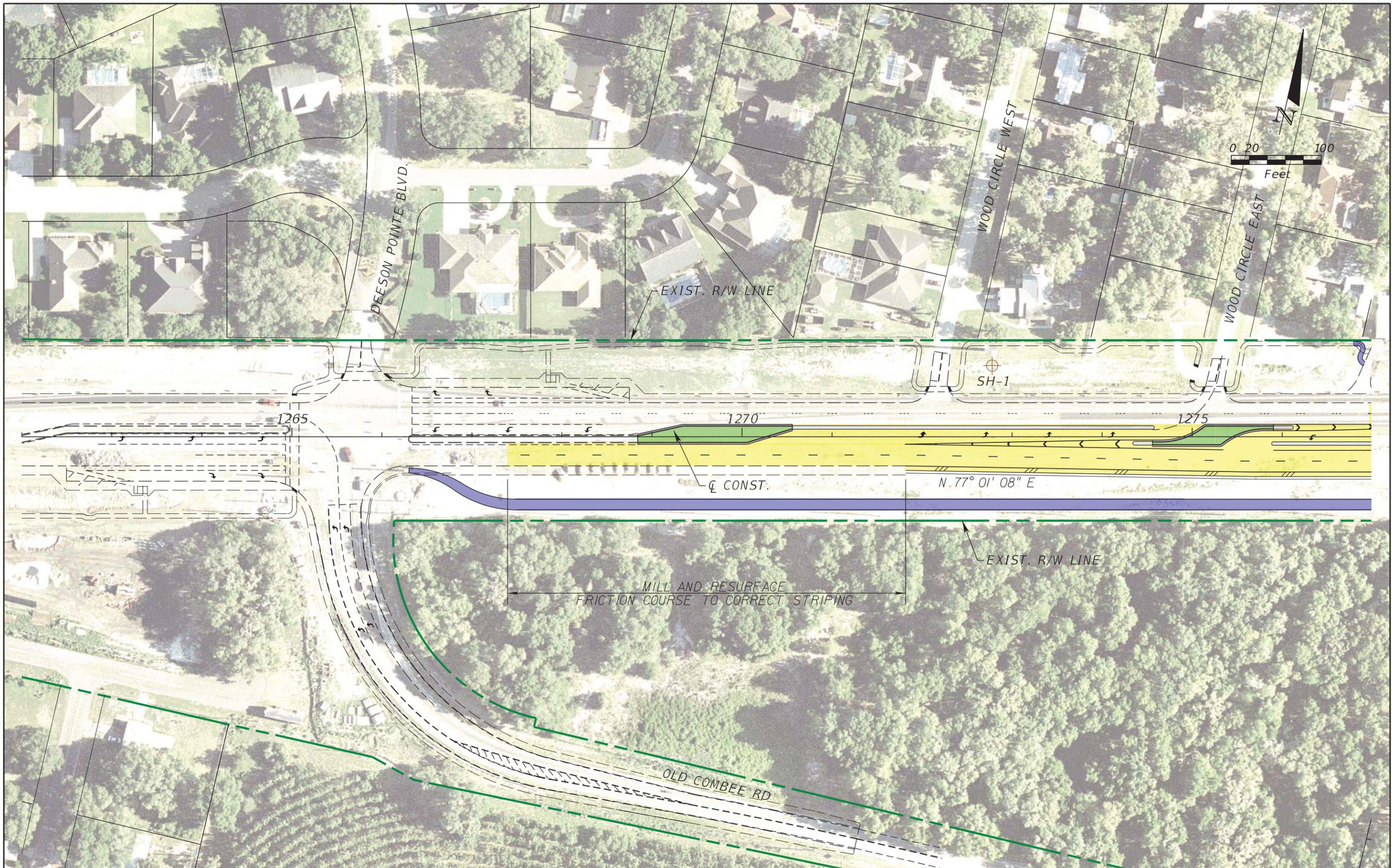
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TYPICAL #6
 1-4 TWO LANE RAMP
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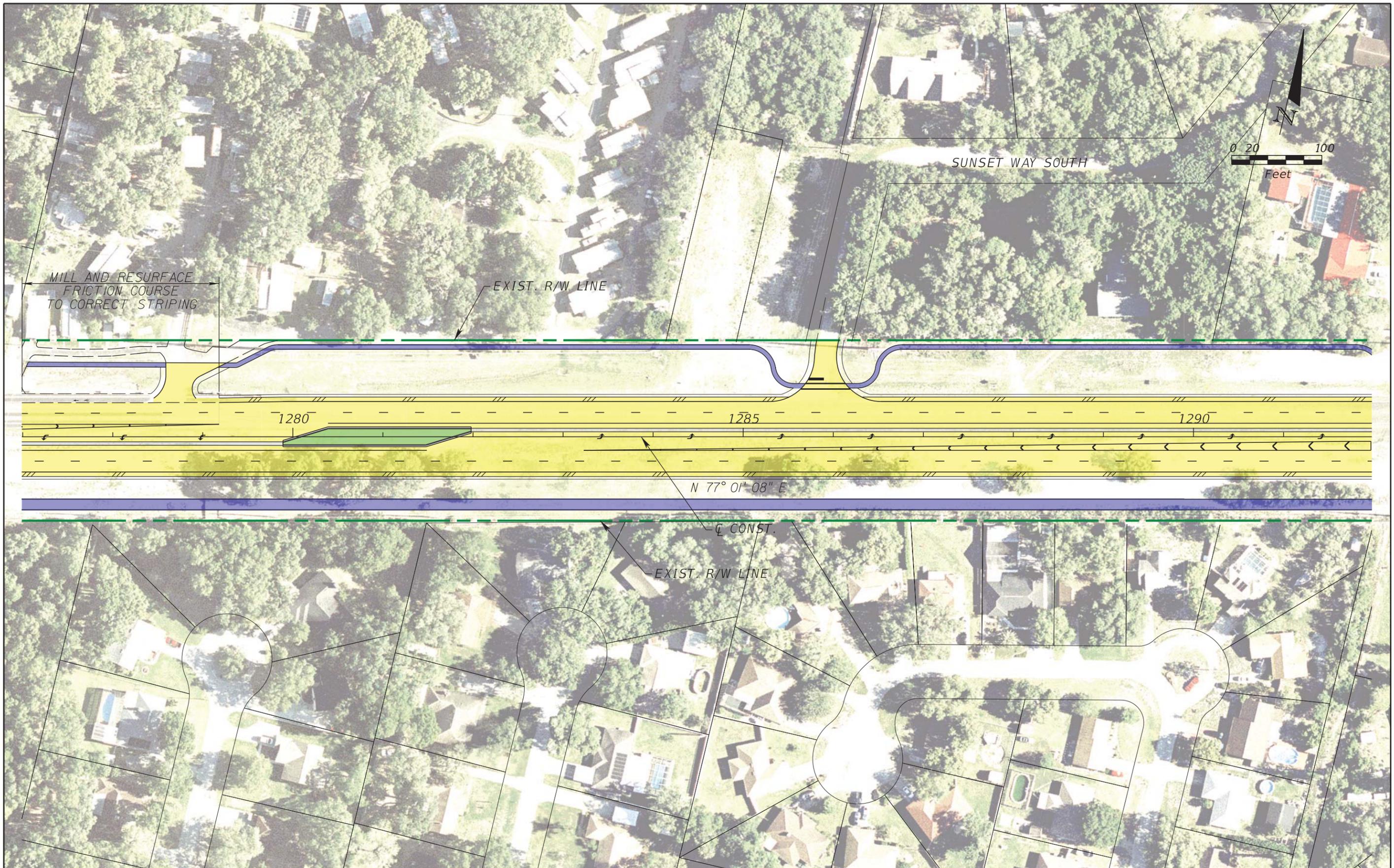
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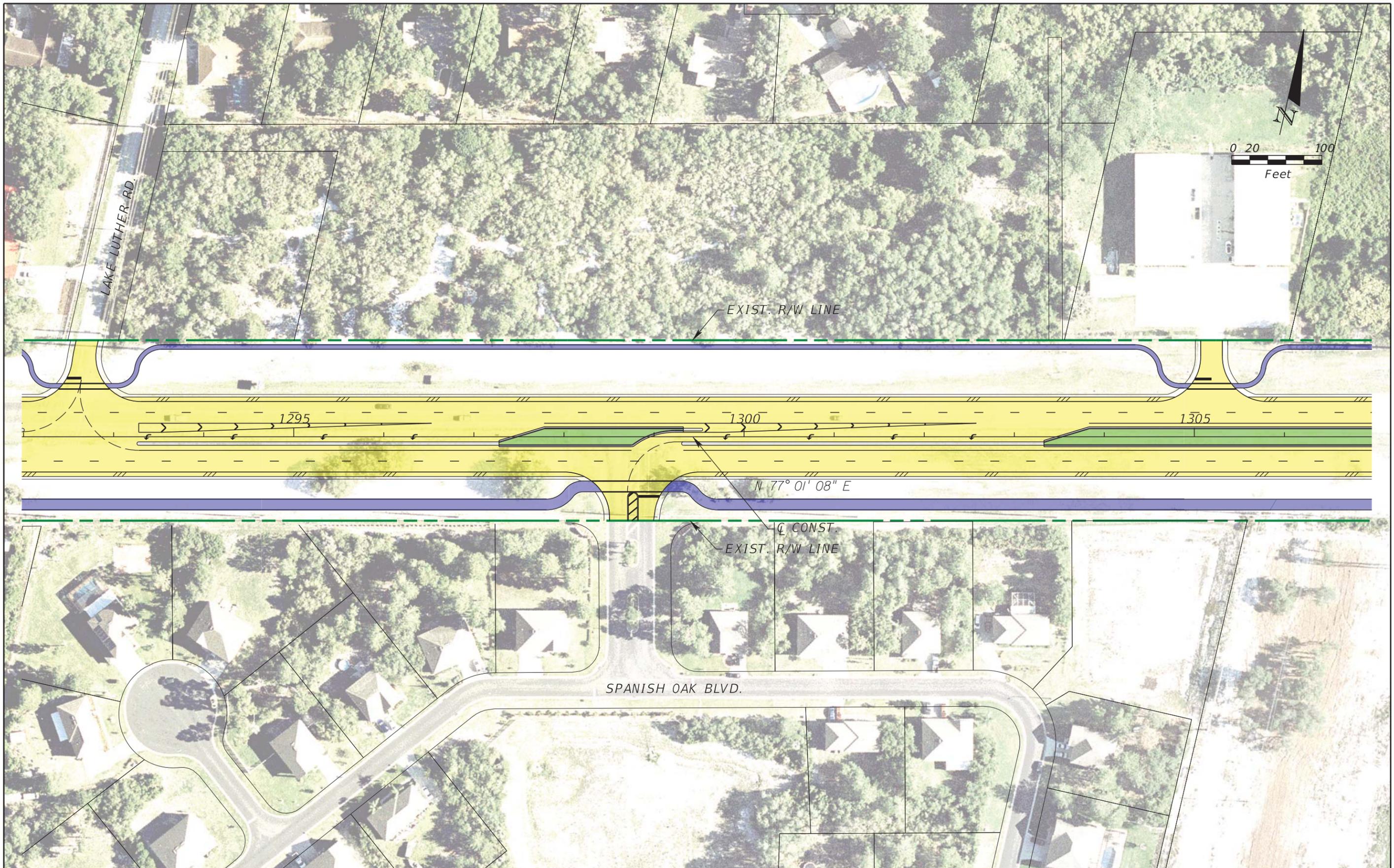
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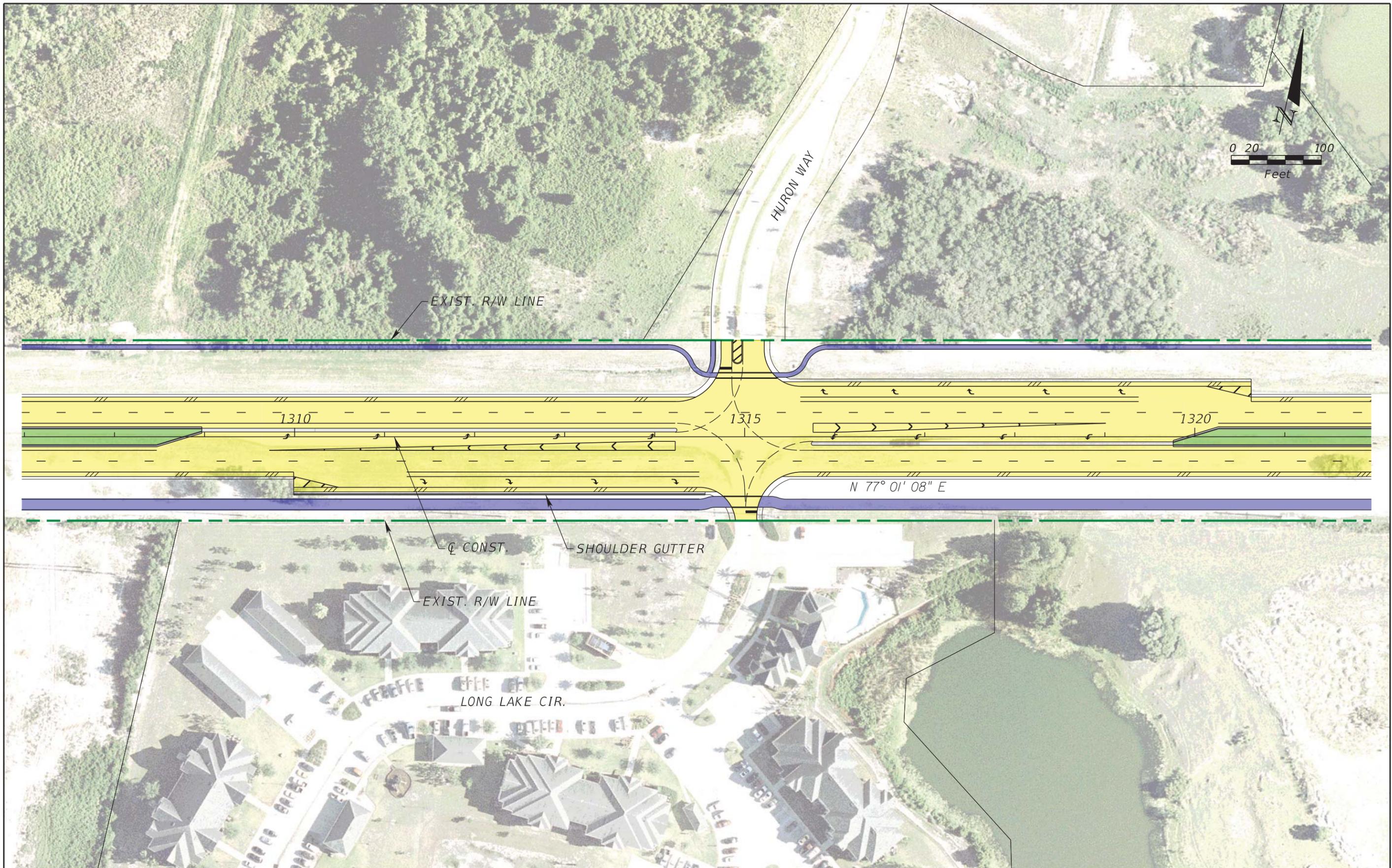
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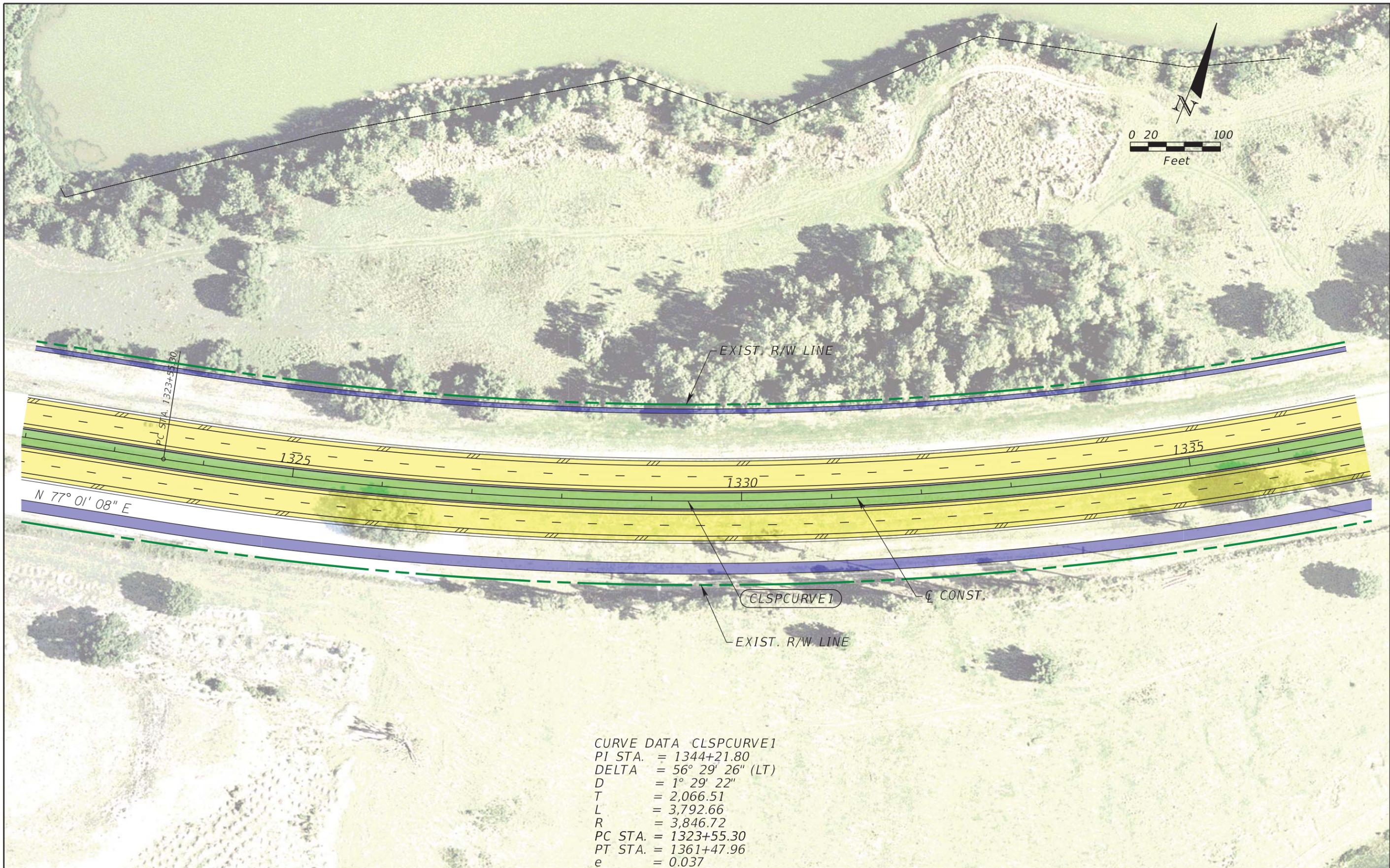
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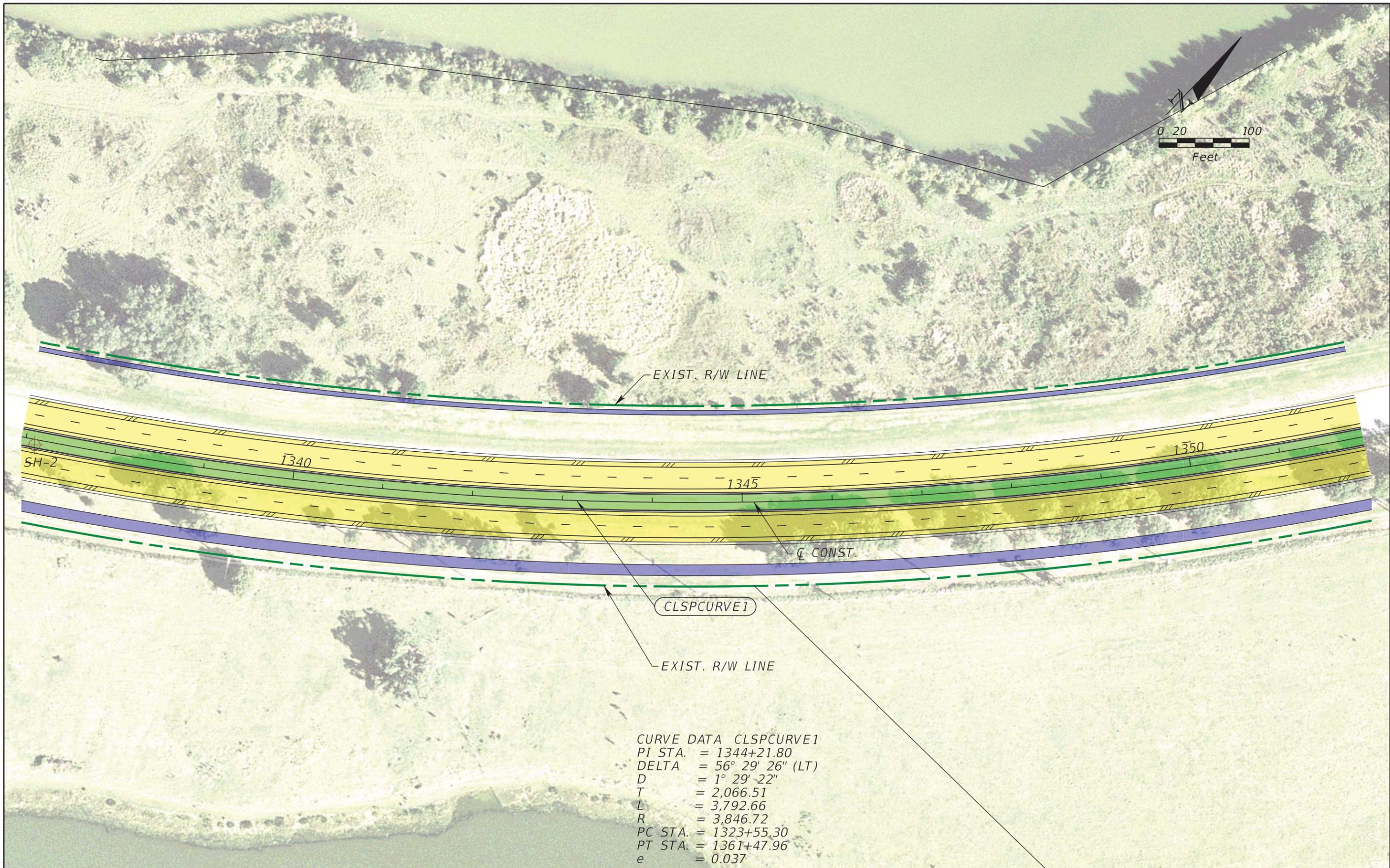
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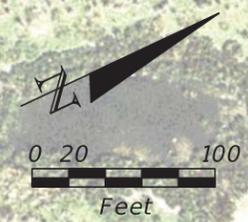
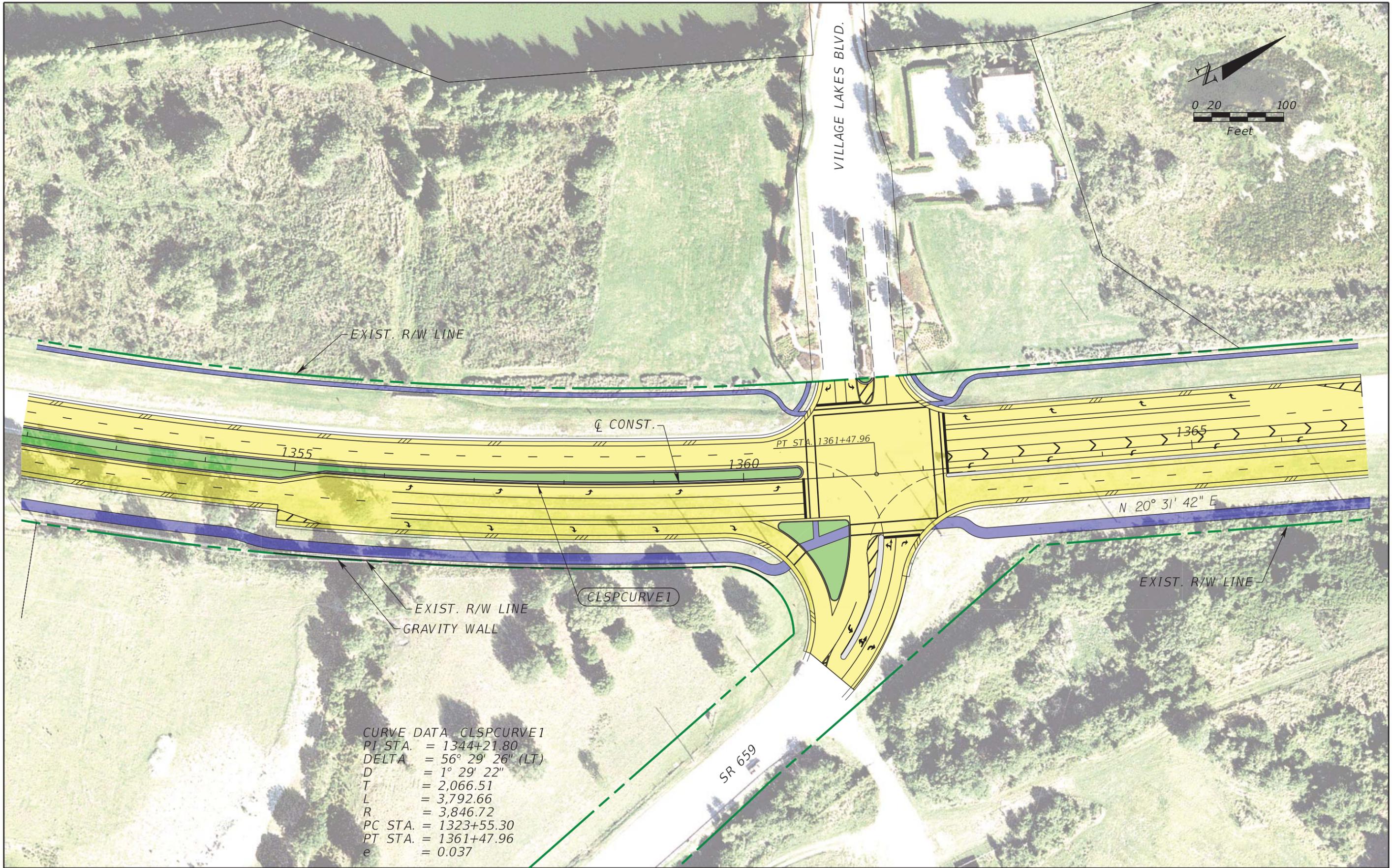
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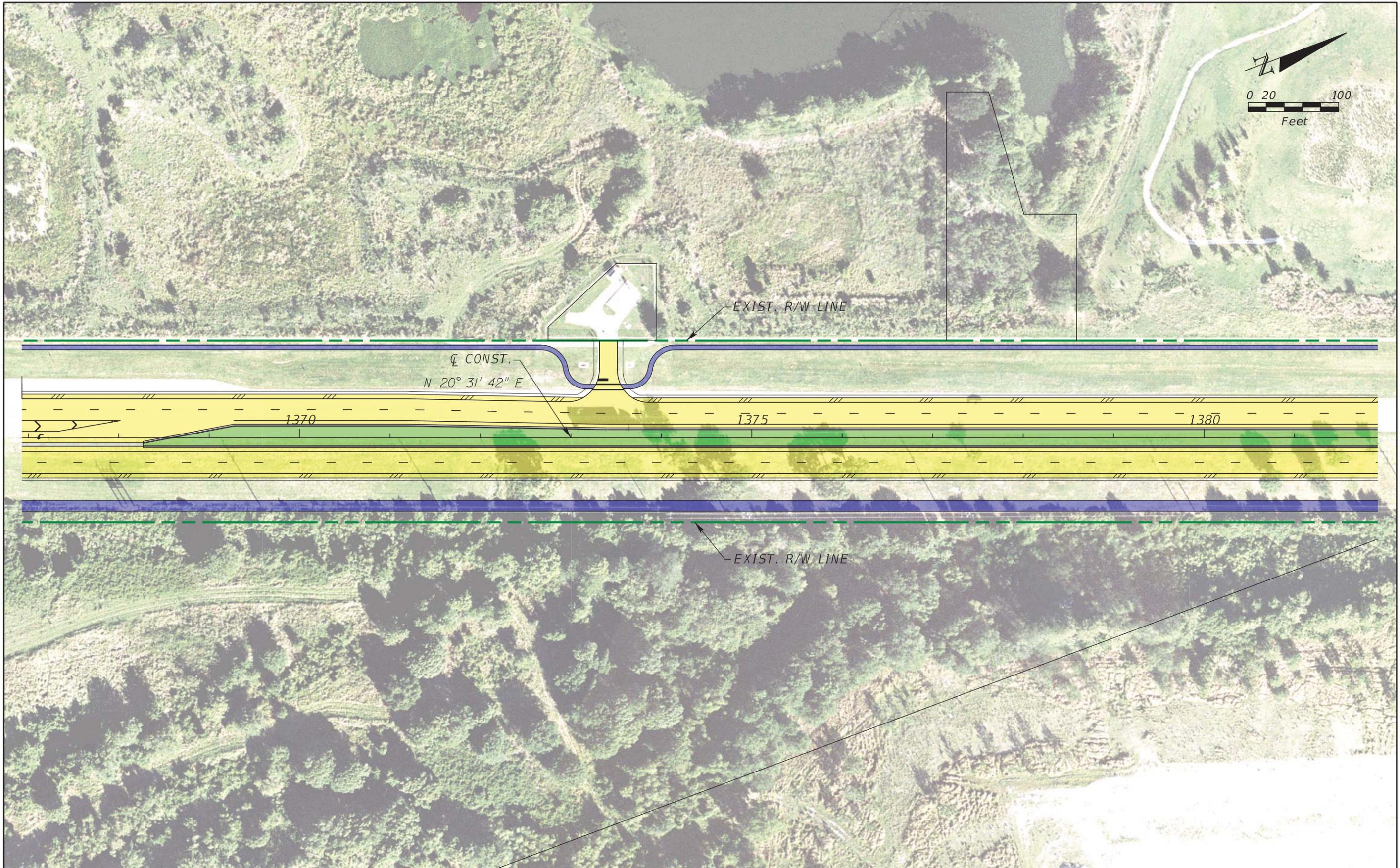
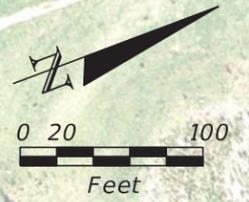
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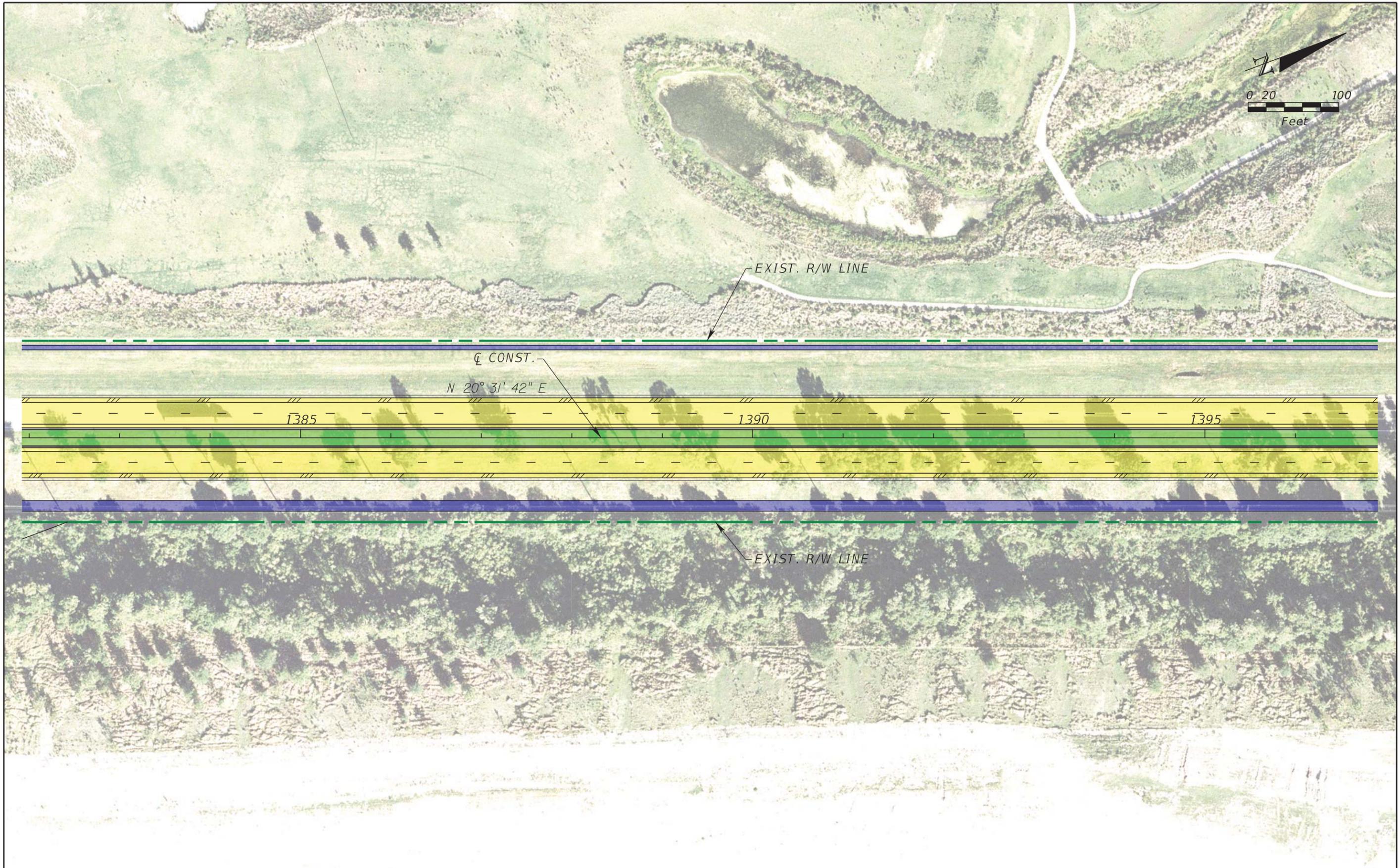
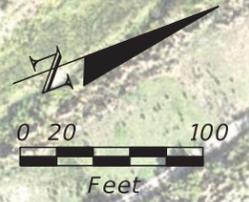
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 Inwood Consulting Engineers, Inc.
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 P 407.971.8850

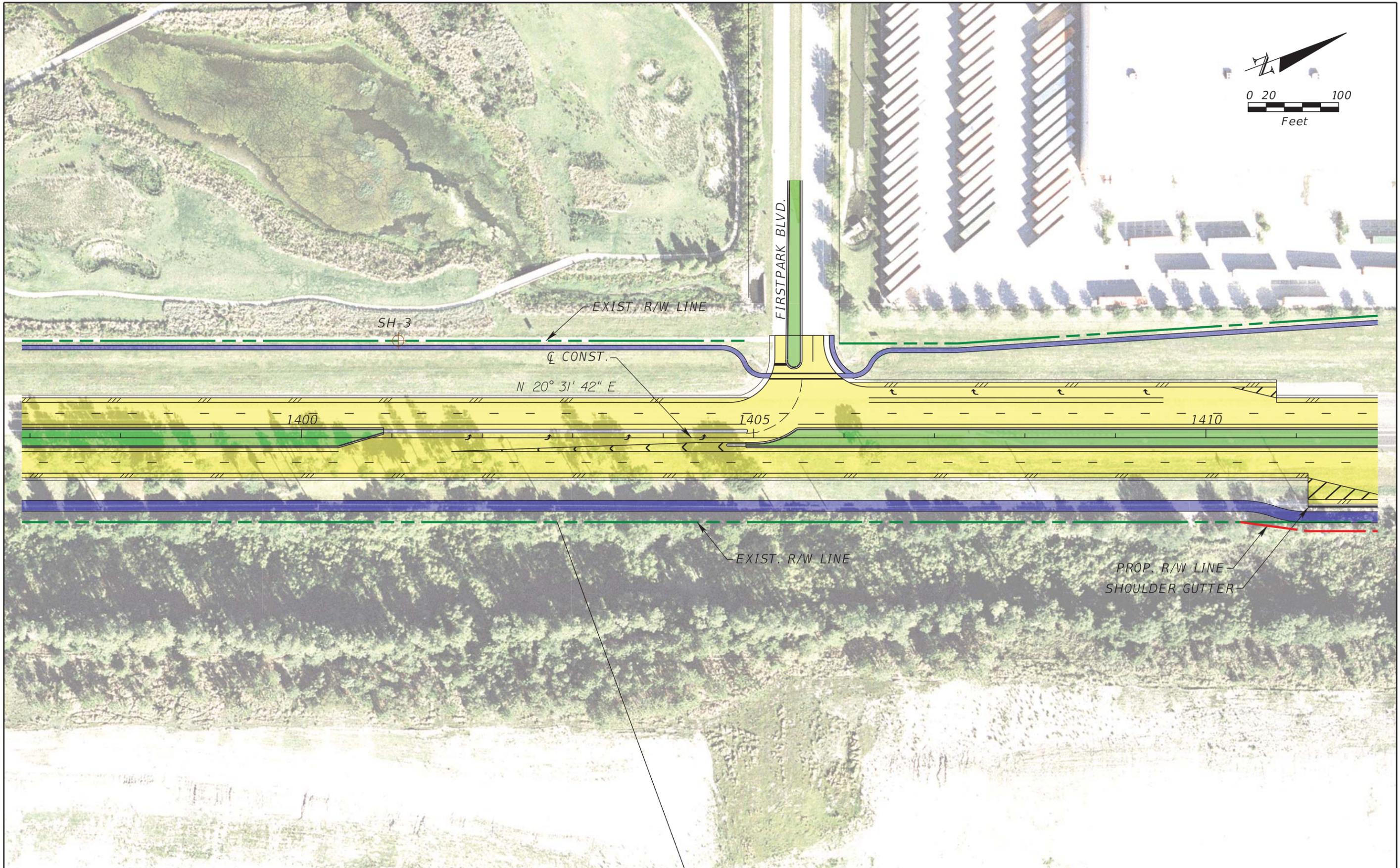
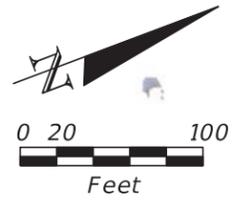


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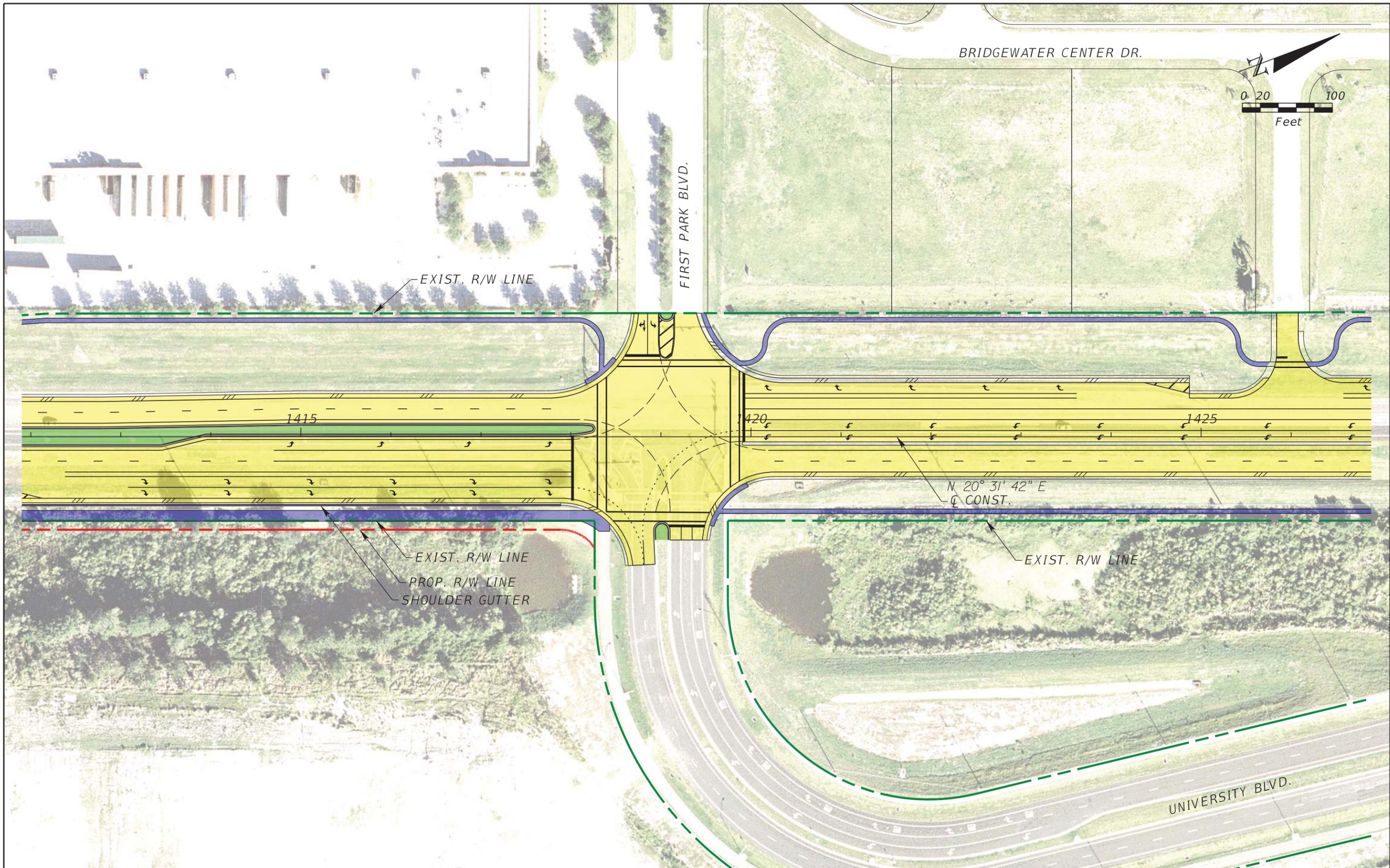


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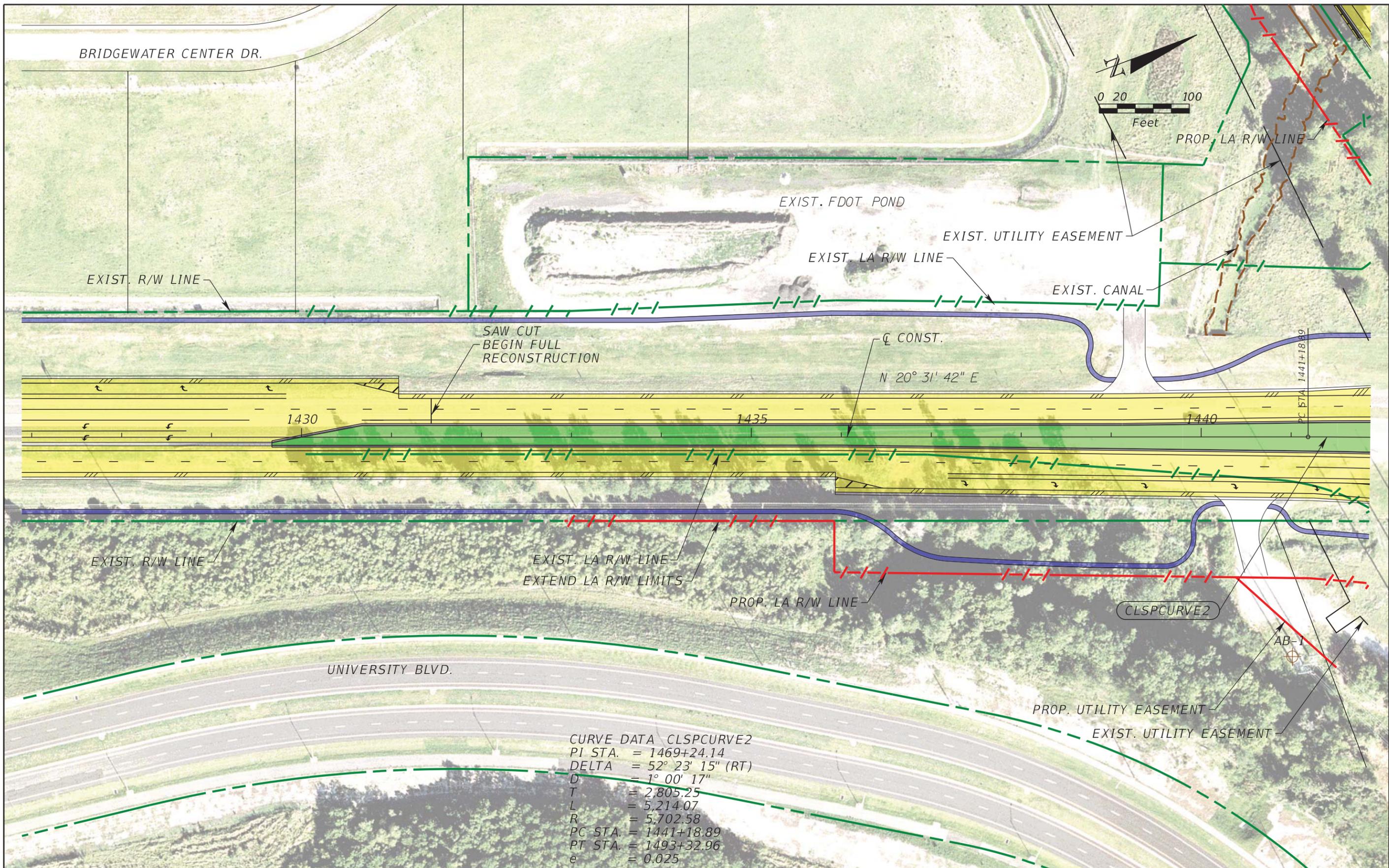


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					33	POLK	430185-1-22-01	



REVISIONS				ENGINEER OF RECORD Mark D. Hales, PE PE No. 62430 Inwood Consulting Engineers, Inc. Certificate of Authorization No. 7074 3000 Dovera Drive, Suite 200, Oviedo, Florida 32765 P 407.971.8850	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO. 16
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
					33	POLK	430185-1-22-01	

PROPOSED IMPROVEMENT



CURVE DATA CLSPCURVE2

PI STA.	= 1469+24.14
DELTA	= 52° 23' 15" (RT)
D	= 1° 00' 17"
T	= 2,805.25
L	= 5,214.07
R	= 5,702.58
PC STA.	= 1441+18.89
PT STA.	= 1493+32.96
e	= 0.025

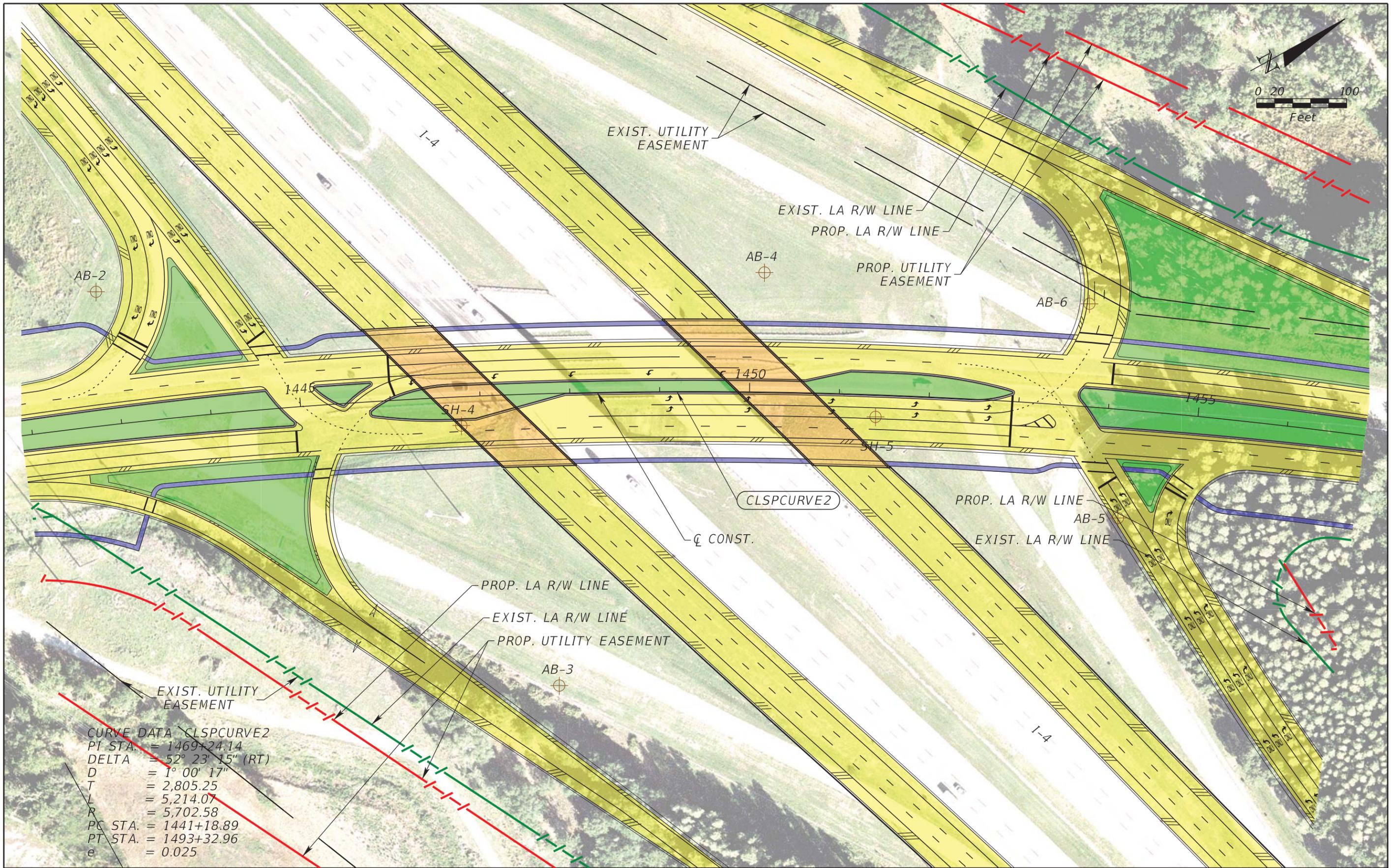
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
 Mark D. Hales, PE
 PE No. 62430
 Inwood Consulting Engineers, Inc.
 Certificate of Authorization No. 7074
 3000 Dovera Drive, Suite 200, Oviedo, Florida 32765
 P 407.971.8850

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
33	POLK	430185-1-22-01

PROPOSED IMPROVEMENT

SHEET NO.
17



CURVE DATA CLSPCURVE2
 PI STA. = 1469+24.14
 DELTA = 52° 23' 15" (RT)
 D = 1° 00' 17"
 T = 2,805.25
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 R = 5,702.58
 PC STA. = 1441+18.89
 PT STA. = 1493+32.96
 e = 0.025

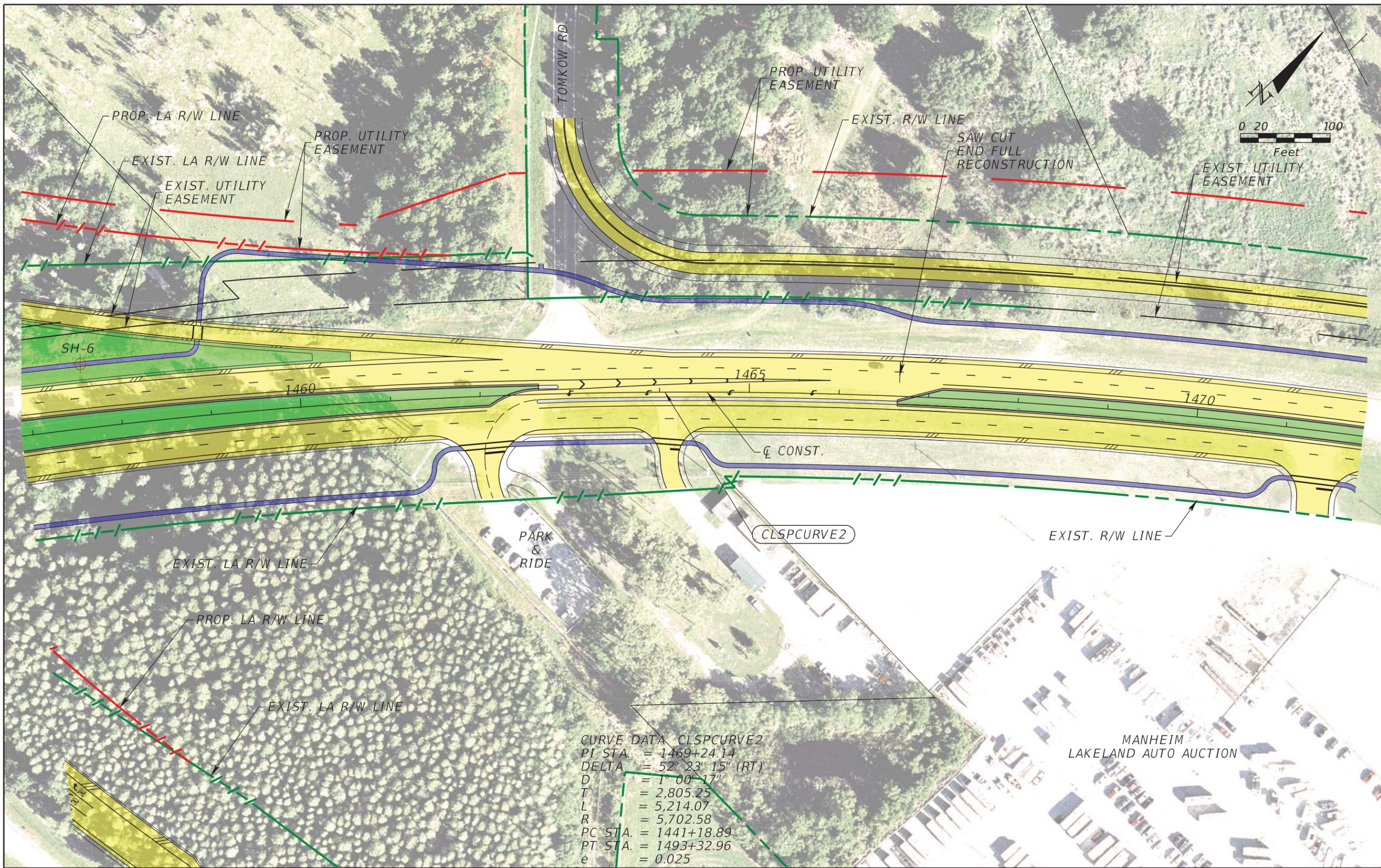
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
 Mark D. Hales, PE
 PE No. 62430
 Inwood Consulting Engineers, Inc.
 Certificate of Authorization No. 7074
 3000 Dovera Drive, Suite 200, Oviedo, Florida 32765
 P 407.971.8850

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
33	POLK	430185-1-22-01

PROPOSED IMPROVEMENT

SHEET NO.
 18



CURVE DATA CLSPCURVE2
 PI STA. = 1469+24.14
 DELTA = 52° 23' 15" (RT)
 D = 1° 00' 17"
 T = 2,805.25
 L = 5,214.07
 R = 5,702.58
 PC STA. = 1441+18.89
 PT STA. = 1493+32.96
 e = 0.025

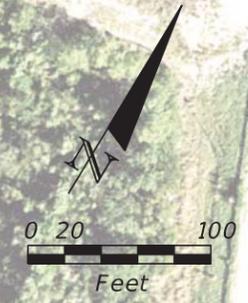
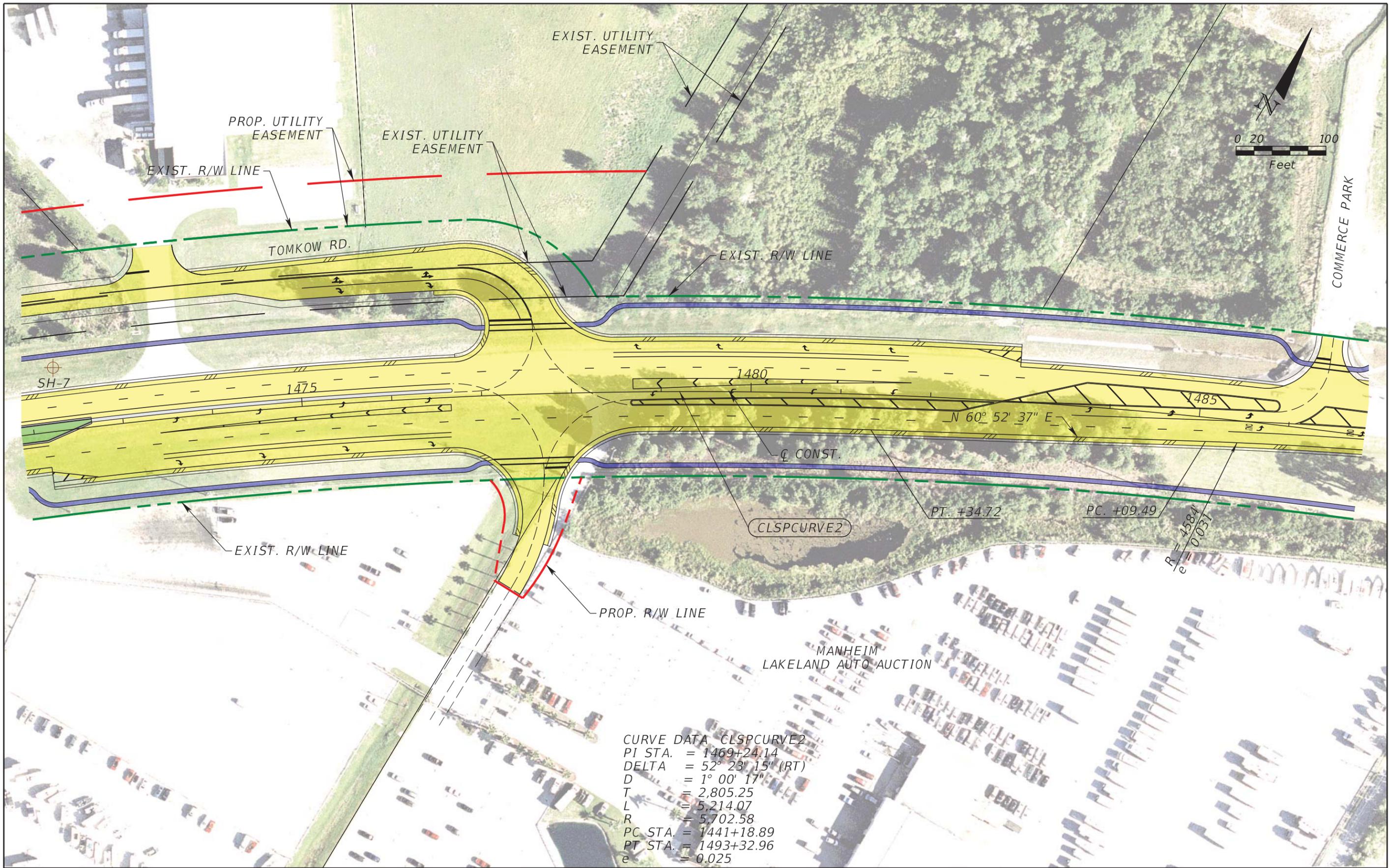
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
 Mark D. Hales, PE
 PE No. 62430
 Inwood Consulting Engineers, Inc.
 Certificate of Authorization No. 7074
 3000 Dovera Drive, Suite 200, Oviedo, Florida 32765
 P 407.971.8850

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
33	POLK	430185-1-22-01

PROPOSED IMPROVEMENT

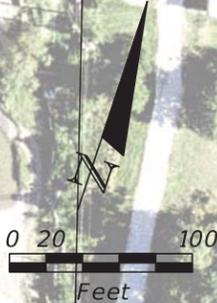
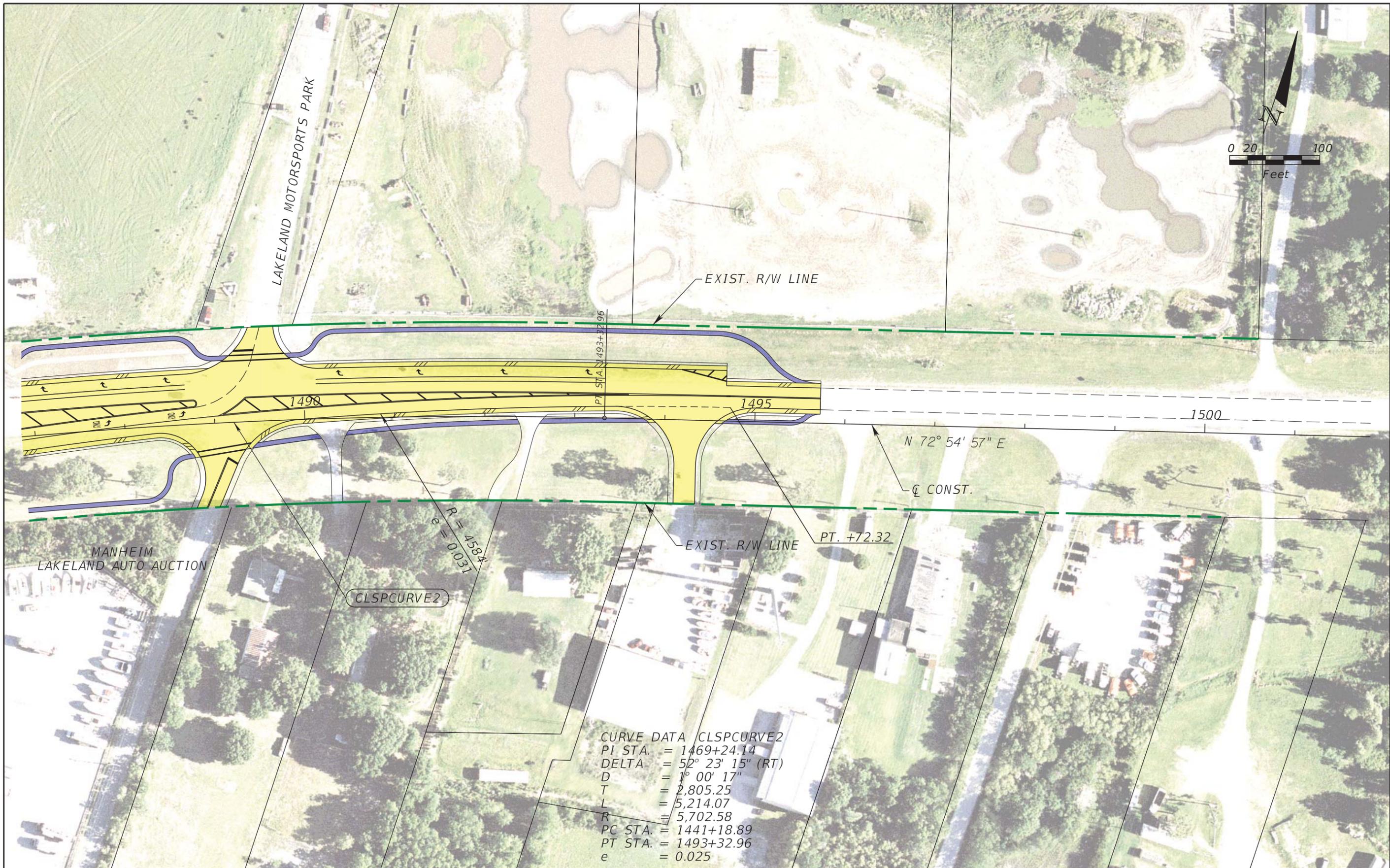
SHEET NO.
19



CURVE DATA CLSPCURVE2
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 T = 2,805.25
 L = 5,214.07
 R = 5,702.58
 PC STA. = 1441+18.89
 PT STA. = 1493+32.96
 e = -0.025

REVISIONS				ENGINEER OF RECORD Mark D. Hales, PE PE No. 62430 Inwood Consulting Engineers, Inc. Certificate of Authorization No. 7074 3000 Dovera Drive, Suite 200, Oviedo, Florida 32765 P 407.971.8850	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO. 20
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
					33	POLK	430185-1-22-01	

PROPOSED IMPROVEMENT



CURVE DATA CLSPCURVE2
 PI STA. = 1469+24.14
 DELTA = 52° 23' 15" (RT)
 D = 1° 00' 17"
 T = 2,805.25
 L = 5,214.07
 R = 5,702.58
 PC STA. = 1441+18.89
 PT STA. = 1493+32.96
 e = 0.025

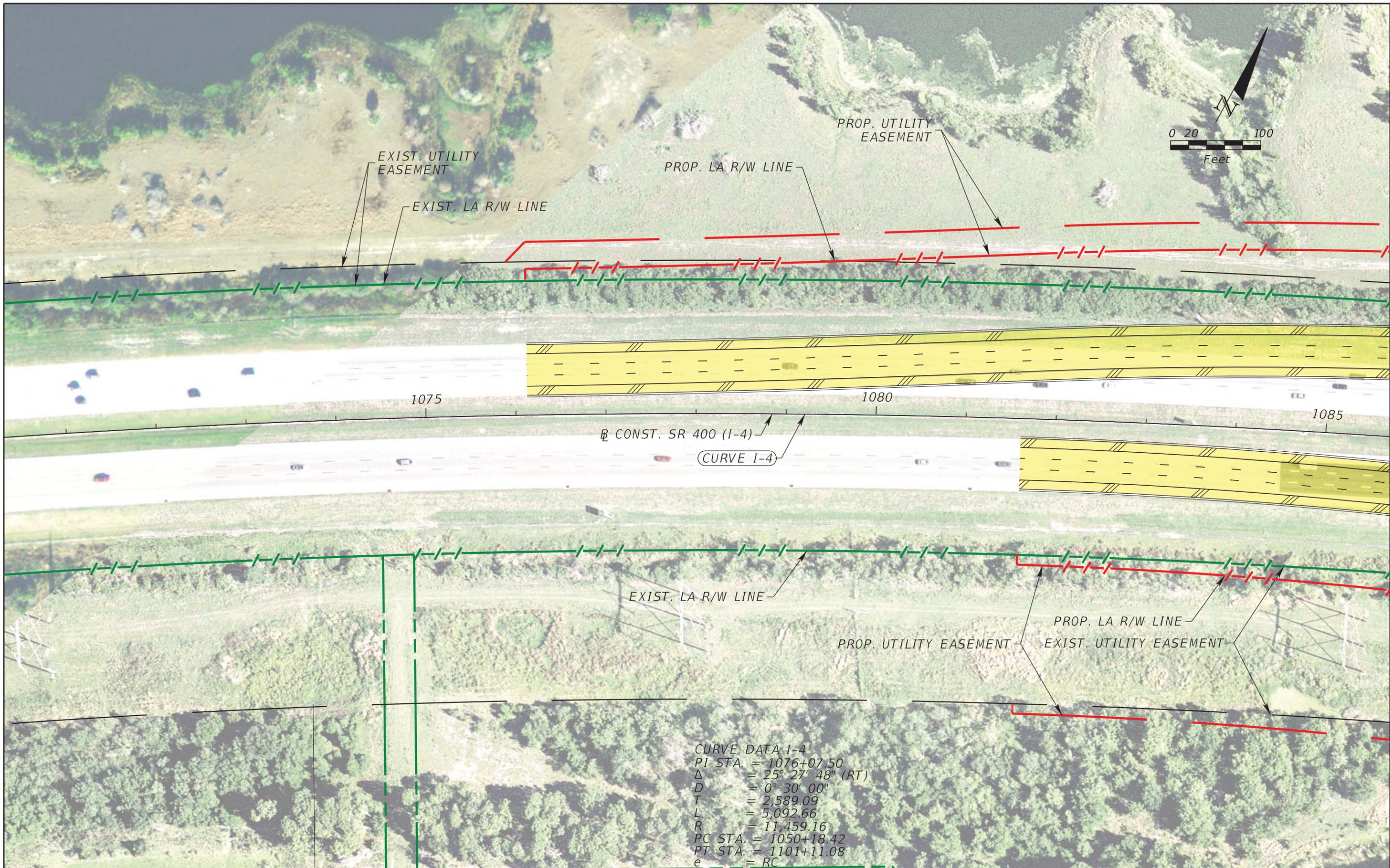
REVISIONS	
DATE	DESCRIPTION

ENGINEER OF RECORD
 Mark D. Hales, PE
 PE No. 62430
 Inwood Consulting Engineers, Inc.
 Certificate of Authorization No. 7074
 3000 Dovera Drive, Suite 200, Oviedo, Florida 32765
 P 407.971.8850

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
33	POLK	430185-1-22-01

PROPOSED IMPROVEMENT

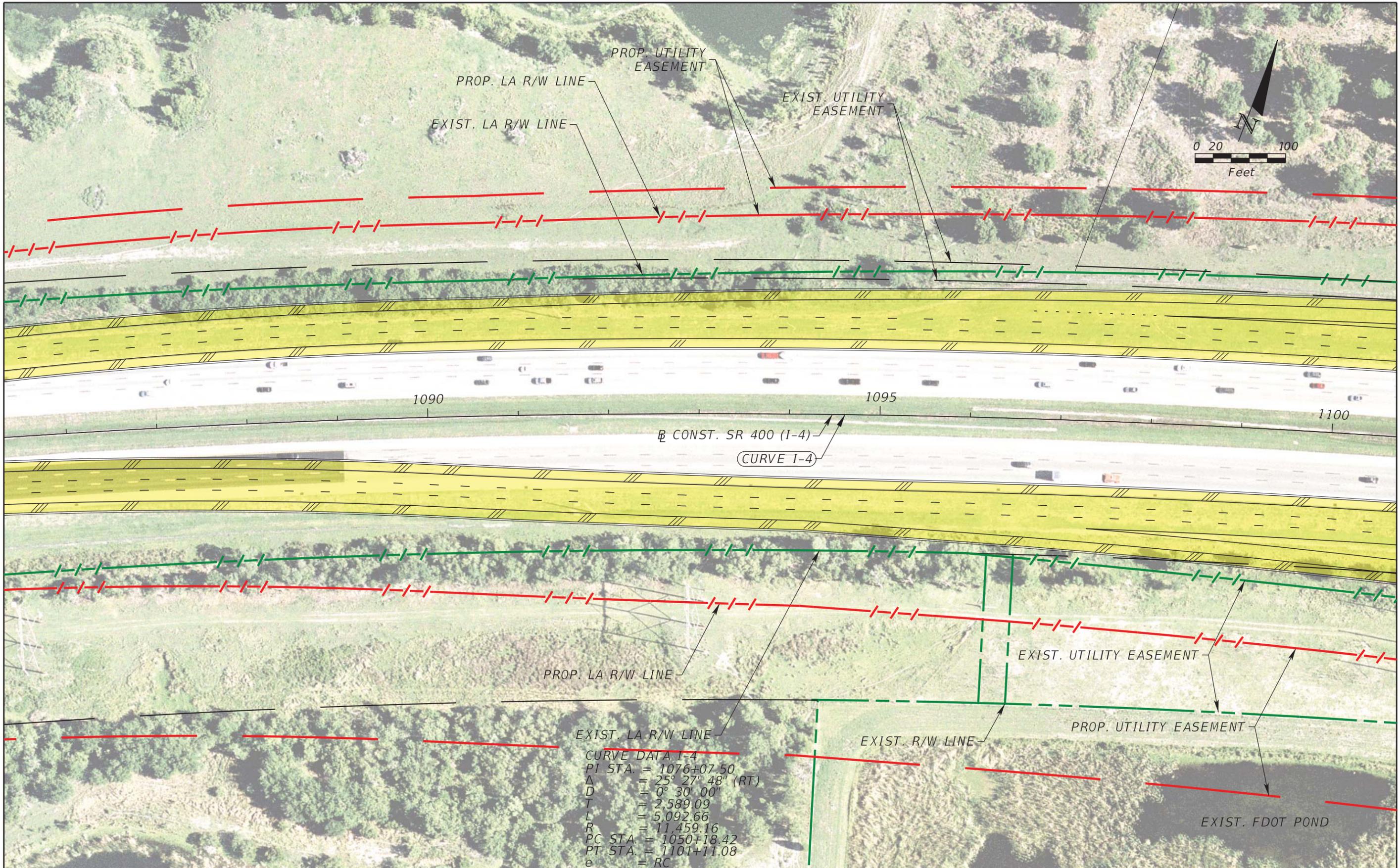
SHEET NO.
 21



CURVE DATA I-4
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 Δ = 25° 27' 48" (RT)
 D = 0° 30' 00"
 T = 2,589.09
 L = 5,092.66
 R = 11,459.16
 PC STA. = 1050+18.42
 PT STA. = 1101+11.08
 e = RC

REVISIONS				ENGINEER OF RECORD Erik J. Fleming, PE PE No. 56685 AIM Engineering & Surveying, Inc. 3802 Corporex Park Drive Suite 225, Florida 33619 P 813.627.4144	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO. 22
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
					33	POLK	430185-1-22-01	

PROPOSED IMPROVEMENT



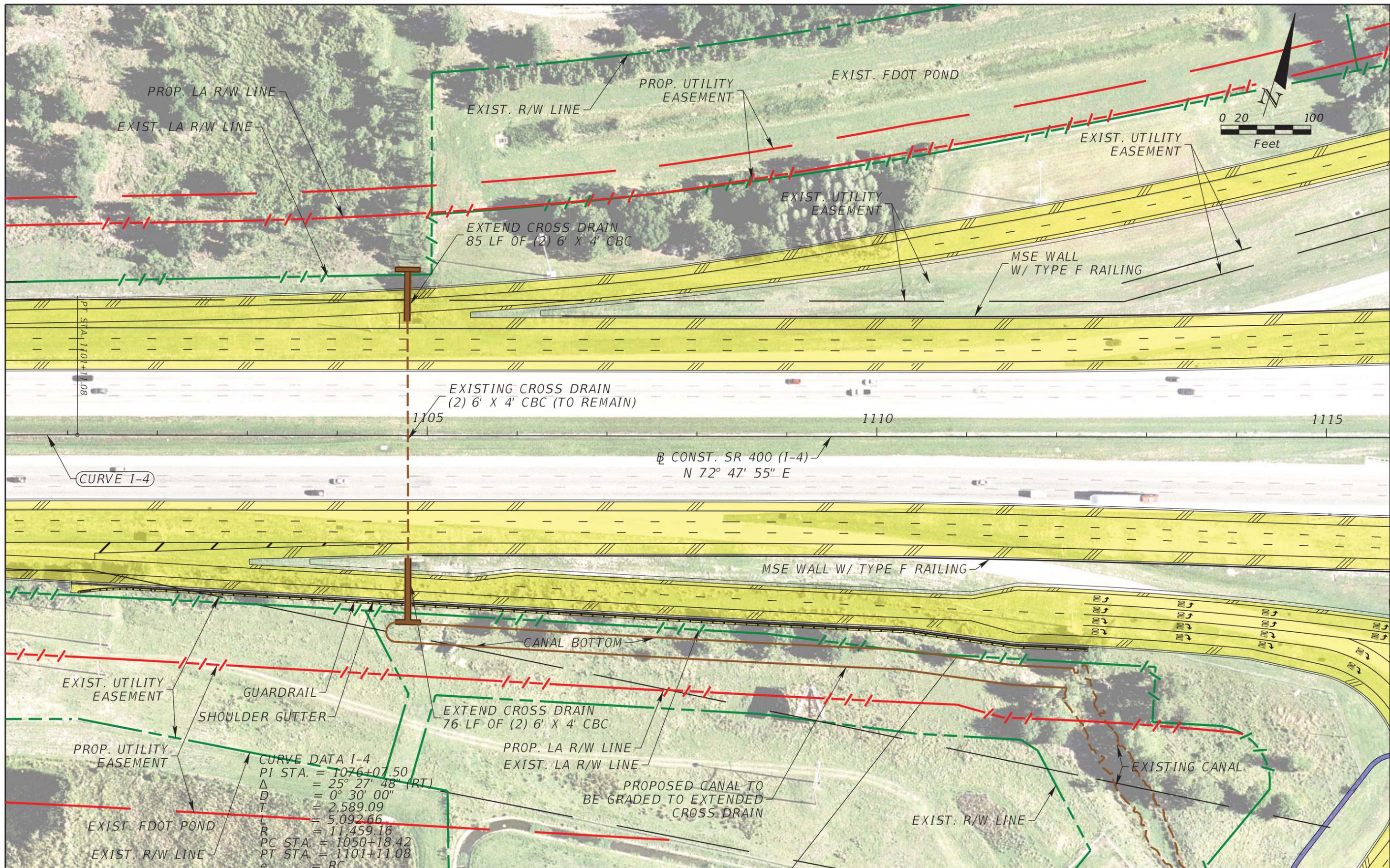
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
 Erik J. Fleming, PE
 PE No. 56685
 AIM Engineering & Surveying, Inc.
 3802 Corporex Park Drive
 Suite 225, Florida 33619
 P 813.627.4144

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
33	POLK	430185-1-22-01

PROPOSED IMPROVEMENT

SHEET NO.
 23



CURVE DATA I-4
 PI STA. = 1076+07.50
 Δ = 25° 27' 48" (RT)
 D = 0° 30' 00"
 T = 2,589.09
 L = 5,092.66
 R = 11,459.16
 PC STA. = 1050+18.42
 PT STA. = 1101+11.08
 P = RC

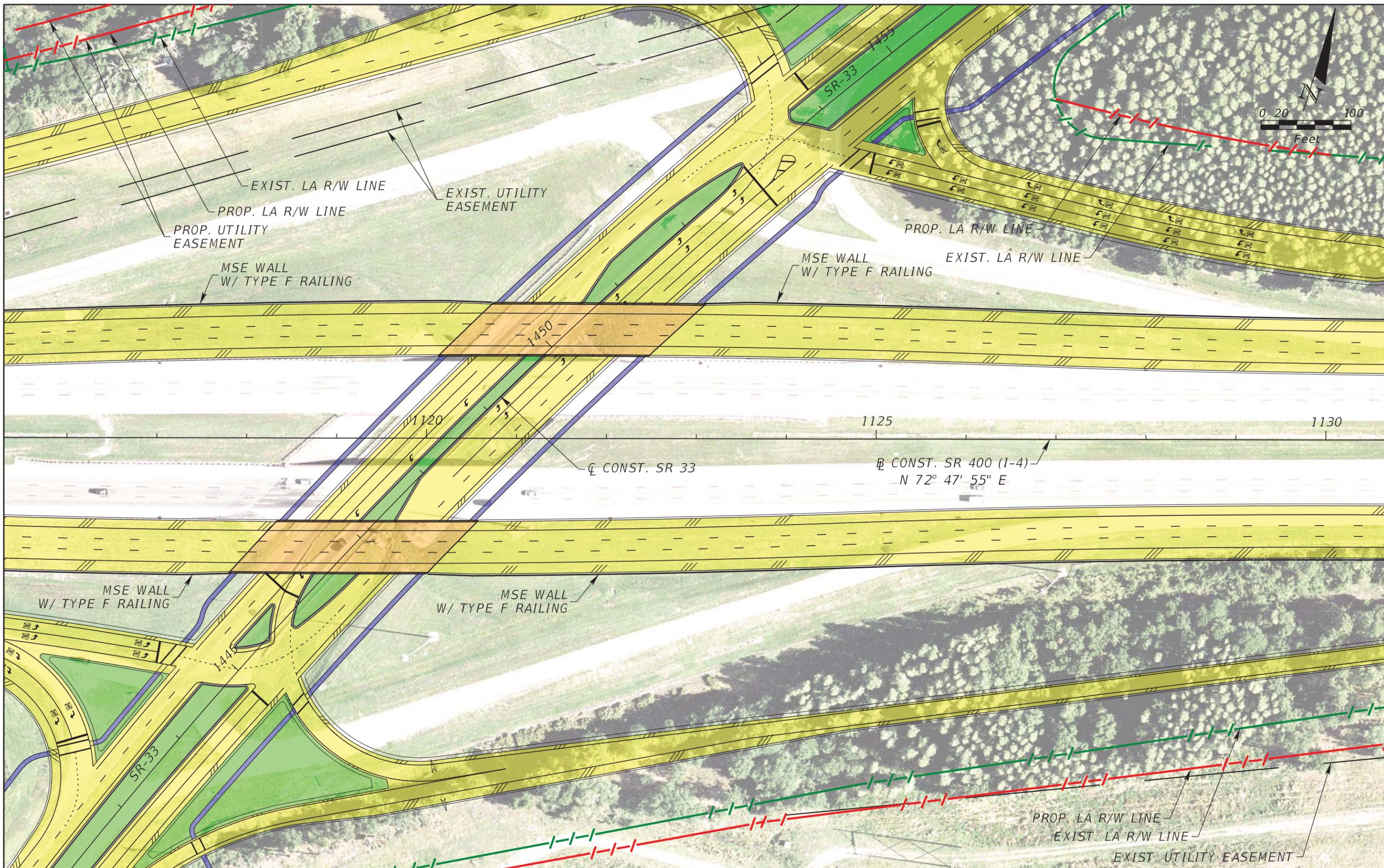
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
 Erik J. Fleming, PE
 PE No. 56685
 AIM Engineering & Surveying, Inc.
 3802 Corporex Park Drive
 Suite 225, Florida 33619
 P 813.627.4144

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
33	POLK	430185-1-22-01

PROPOSED IMPROVEMENT

SHEET NO.
24



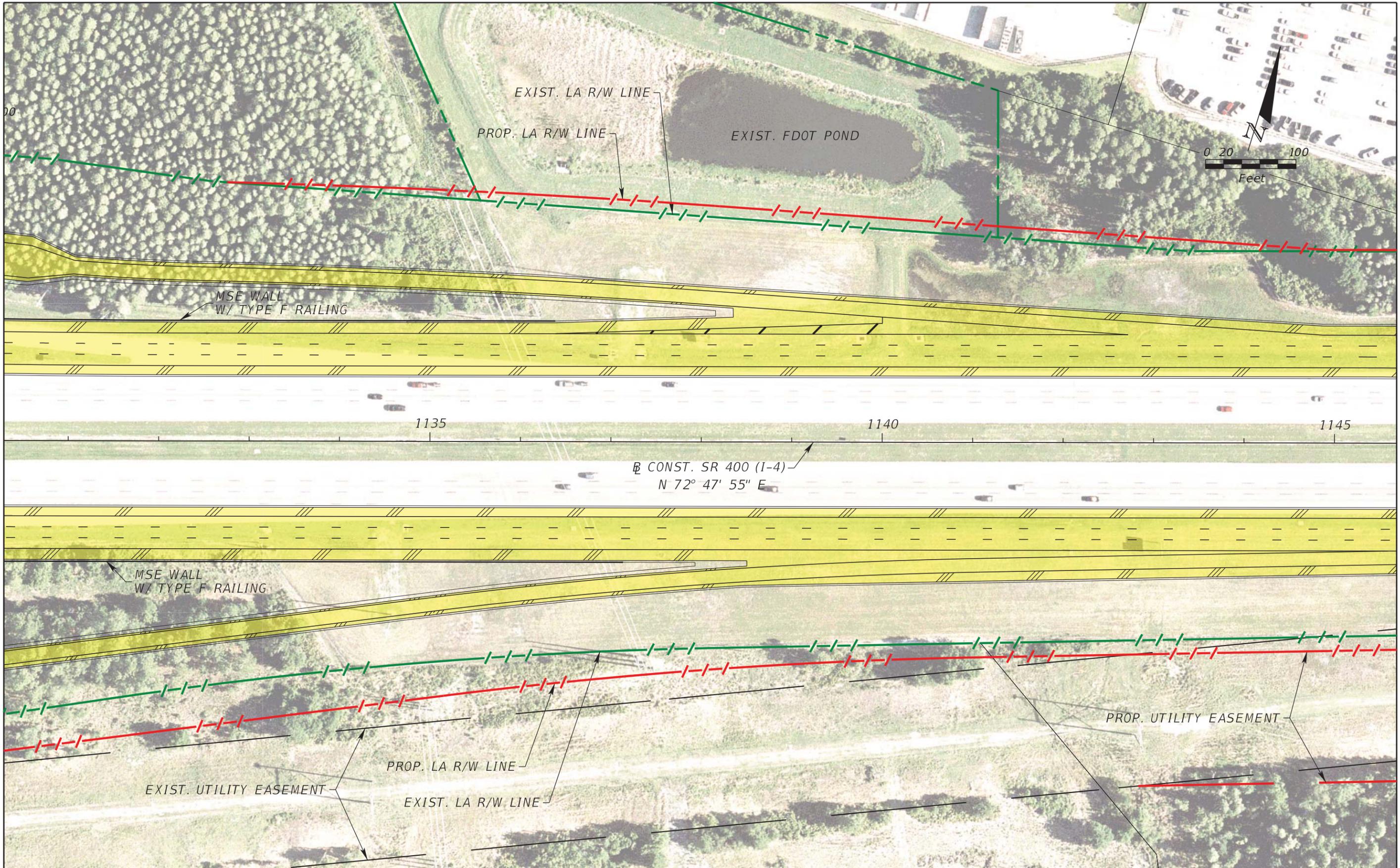
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
 Erik J. Fleming, PE
 PE No. 56685
 AIM Engineering & Surveying, Inc.
 3802 Corporex Park Drive
 Suite 225, Florida 33619
 P 813.627.4144

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
33	POLK	430185-1-22-01

PROPOSED IMPROVEMENT

SHEET NO.
25



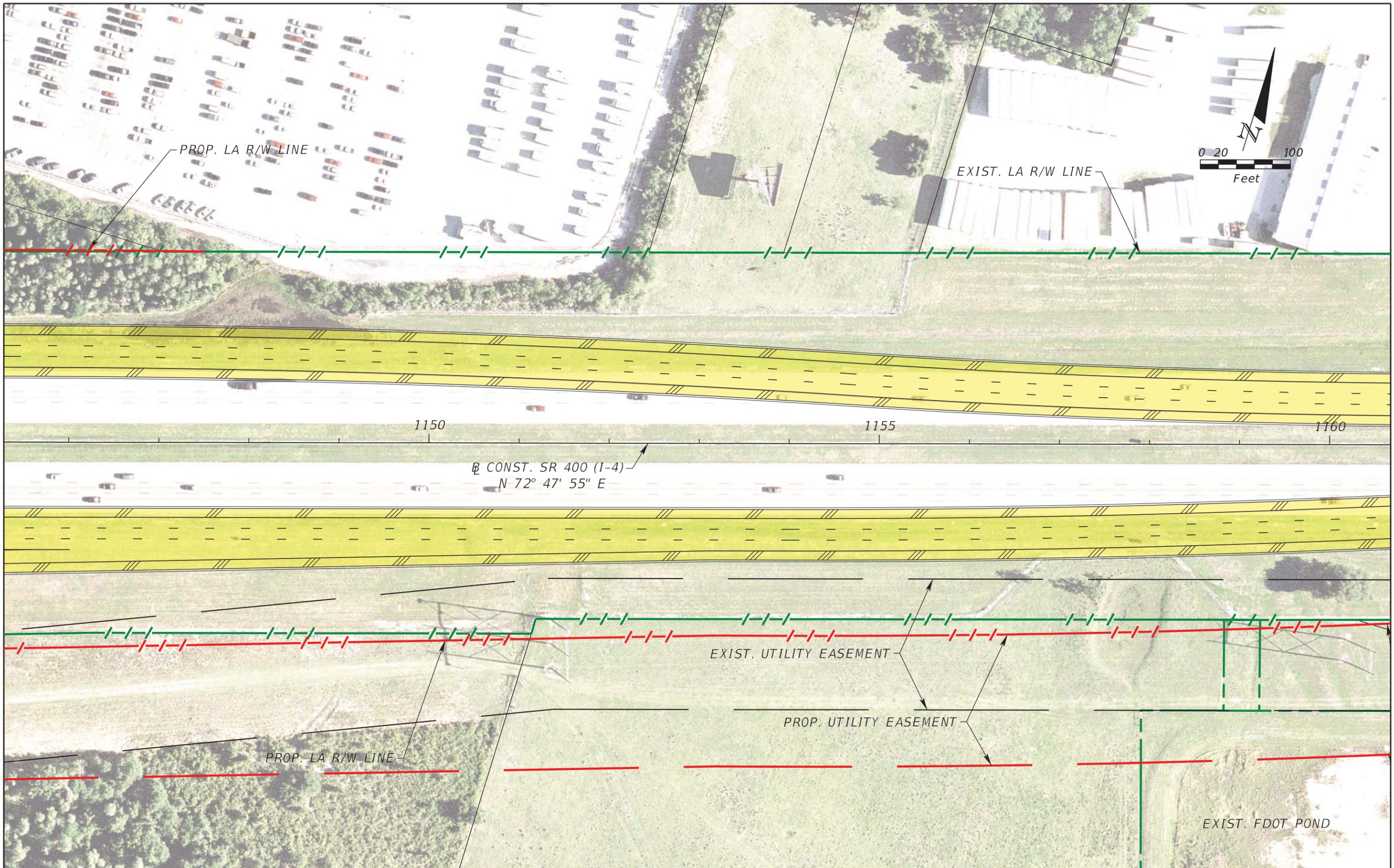
REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

ENGINEER OF RECORD
 Erik J. Fleming, PE
 PE No. 56685
 AIM Engineering & Surveying, Inc.
 3802 Corporex Park Drive
 Suite 225, Florida 33619
 P 813.627.4144

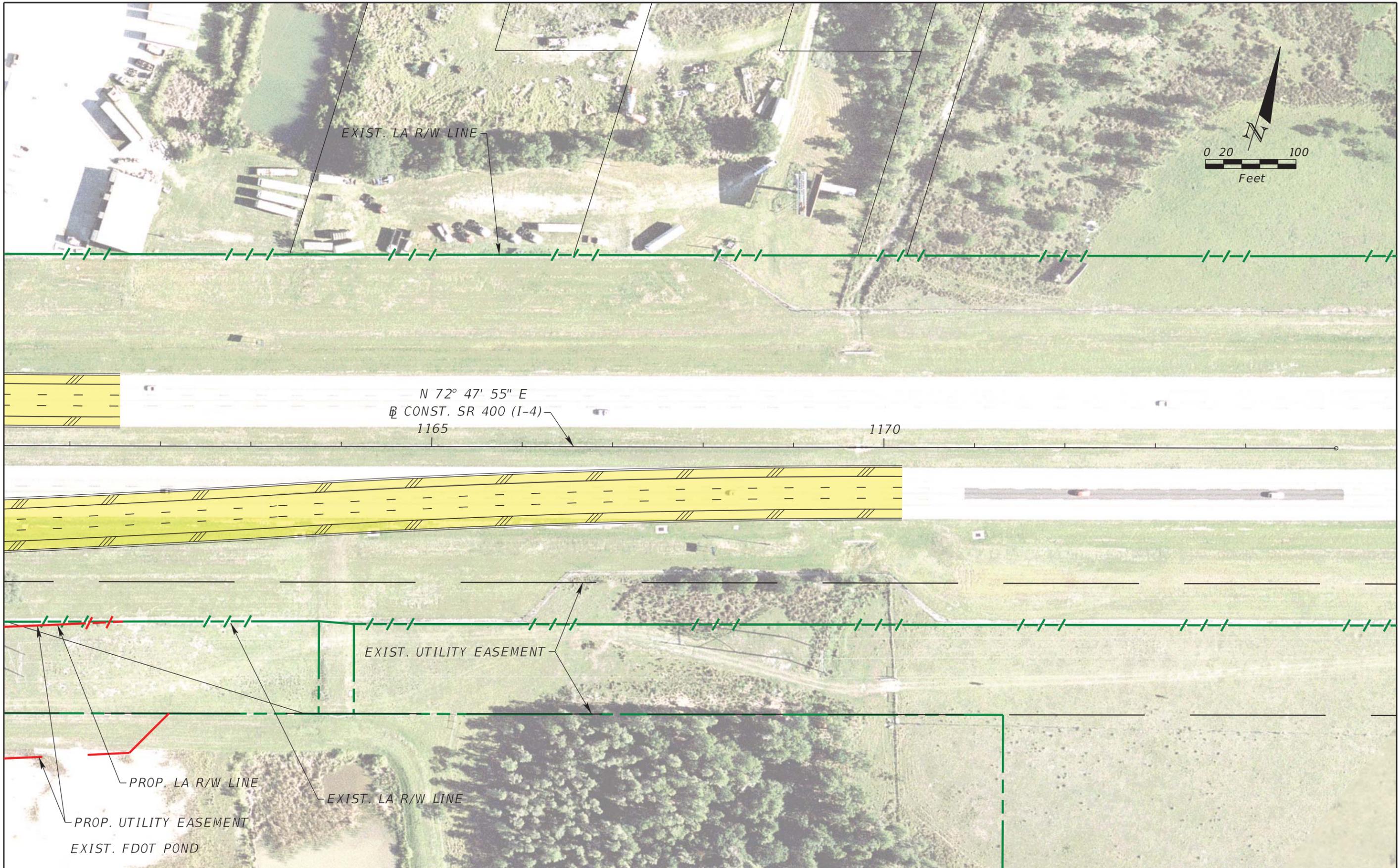
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
33	POLK	430185-1-22-01

PROPOSED IMPROVEMENT

SHEET NO.
26



REVISIONS				ENGINEER OF RECORD Erik J. Fleming, PE PE No. 56685 AIM Engineering & Surveying, Inc. 3802 Corporex Park Drive Suite 225, Florida 33619 P 813.627.4144	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			PROPOSED IMPROVEMENT	SHEET NO. 27
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID		
						33	POLK		430185-1-22-01



REVISIONS				ENGINEER OF RECORD Erik J. Fleming, PE PE No. 56685 AIM Engineering & Surveying, Inc. 3802 Corporex Park Drive Suite 225, Florida 33619 P 813.627.4144	STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			SHEET NO. 28
DATE	DESCRIPTION	DATE	DESCRIPTION		ROAD NO.	COUNTY	FINANCIAL PROJECT ID	
					33	POLK	430185-1-22-01	

PROPOSED IMPROVEMENT

Appendix B

TYPICAL SECTION PACKAGE

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

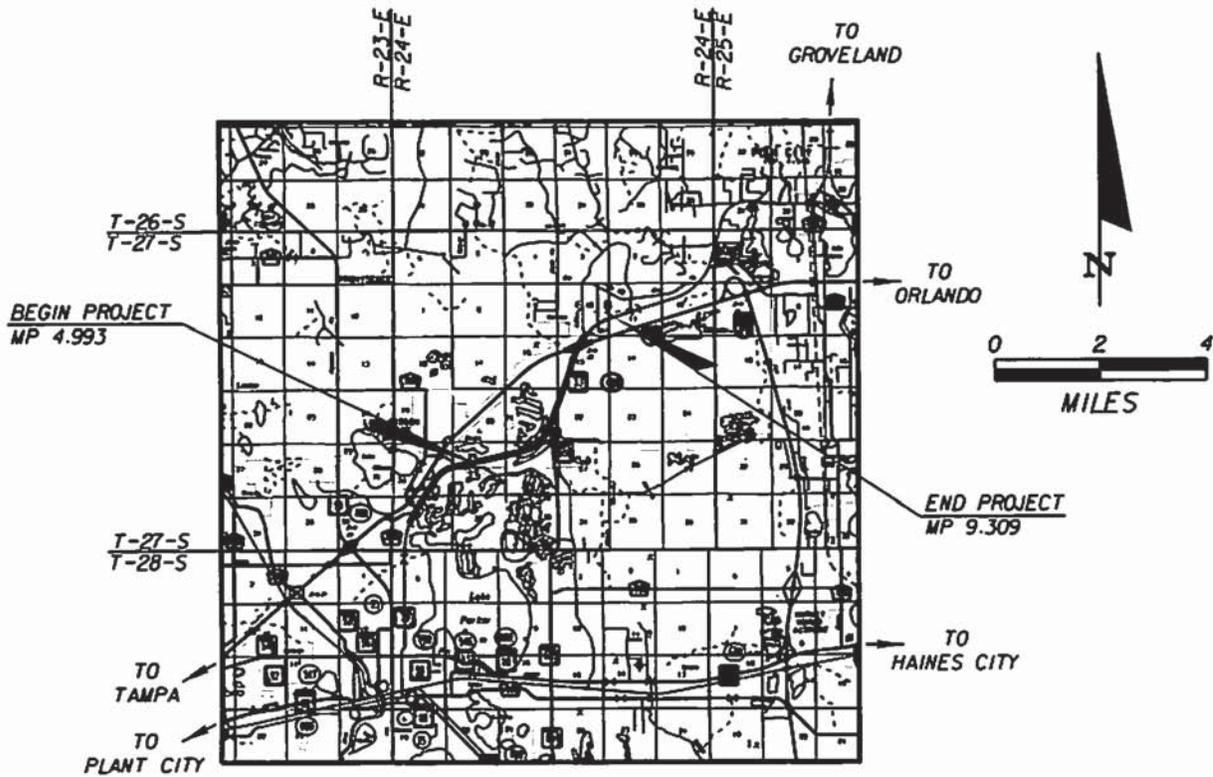
TYPICAL SECTION PACKAGE

FINANCIAL PROJECT ID 430185-1-22-01

POLK COUNTY (16070000)

SR 33

FROM OLD COMBEE RD. TO NORTH OF TOMKOW RD.



INWOOD CONSULTING ENGINEERS
3000 Dovera Drive, Suite 200
Oviedo, Florida 32765
Contract No. C9608
Vendor Number F593216593003
Certificate of Authorization No. 7074
p 407.971.8850 f 407.971.8955

PROJECT LIMITS BASED ON \mathcal{C} OF CONSTRUCTION

LENGTH OF PROJECT		
	LINEAR FEET	MILES
ROADWAY	22,788.48	4.316
BRIDGES	0.00	0.000
NET LENGTH OF PROJECT	22,788.48	4.316
EXCEPTIONS	0.00	0.000
GROSS LENGTH OF PROJECT	22,788.48	4.316

FDOT PROJECT MANAGER: ANTONE SHERRARD

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 430185-1-22-01 COUNTY (SECTION) POLK (16070000)
 PROJECT DESCRIPTION SR 33 FROM OLD COMBEE RD. TO NORTH OF TOMKOW RD.

PROJECT CONTROLS

FUNCTIONAL CLASSIFICATION

- () RURAL
 (X) URBAN
 () FREEWAY/EXPWY. () MAJOR COLL.
 () PRINCIPAL ART. () MINOR COLL.
 (X) MINOR ART. () LOCAL

HIGHWAY SYSTEM

- Yes No
 () (X) NATIONAL HIGHWAY SYSTEM
 () (X) FLORIDA INTRASTATE HIGHWAY SYSTEM
 () (X) STRATEGIC INTERMODAL SYSTEM
 (X) () STATE HIGHWAY SYSTEM
 () (X) OFF STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

- () 1 - FREEWAY
 () 2 - RESTRICTIVE w/Service Roads
 () 3 - RESTRICTIVE w/660 ft. Connection Spacing
 () 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing
 (X) 5 - RESTRICTIVE w/440 ft. Connection Spacing
 () 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
 () 7 - BOTH MEDIAN TYPES

TRAFFIC

	YEAR	AADT	DISTRIBUTION	
CURRENT	<u>2012</u>	<u>12400</u>	K	9.0 %
OPENING	<u>2016</u>	<u>14400</u>	D	55.4 %
DESIGN	<u>2036</u>	<u>34500</u>	T ₂₄	13.0 %
DESIGN SPEED	<u>55 MPH</u>			
POSTED SPEED	<u>55 MPH</u>			

CRITERIA

- (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)

DESIGN SPEED APPROVALS

B.A. Masing
 B.A. MASING, P.E.
 DISTRICT DESIGN ENGINEER

1-22-14
DATE

L.K. Wandam
 L.K. WANDAM, P.E.
 DISTRICT TRAFFIC OPERATIONS ENGINEER

01/16/14
DATE

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:

N/A

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

I-4 BRIDGE OVER SR 33 (MP 8.359 - MP 8.513) (BRIDGE NUMBERS 160181 & 160182)

LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:

BRIGHT HOUSE NETWORK
 FLORIDA GAS TRANSMISSION
 VERIZON FLORIDA INC.
 CITY OF LAKELAND ELECTRIC
 CITY OF LAKELAND GAS
 MCI

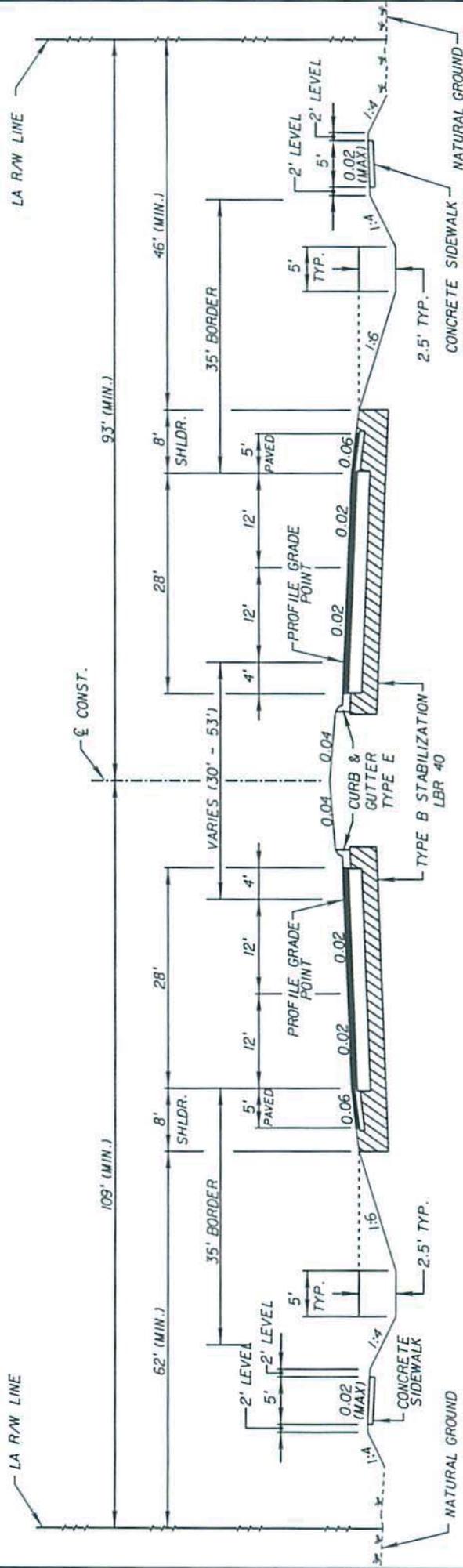
LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:

N/A

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 430185-1-22-01 FEDERAL AID PROJECT NO. NZA COUNTY NAME POLK
 SECTION NO. 1607.0000 ROAD DESIGNATION SR 33 LIMITS/MILEPOST MP 4.993 TO MP 9.309
 PROJECT DESCRIPTION WIDENING OF SR 33 FROM OLD COMBEE ROAD TO NORTH OF TOMKOW ROAD FROM A TWO LANE UNDIVIDED FACILITY TO A FOUR LANE DIVIDED FACILITY.

PROPOSED ROADWAY TYPICAL SECTION



MP 7.004 TO MP 8.472

FDOT CONCURRENCE

William A. Hartmann
 WILLIAM HARTMANN, P.E.
 District Project Development Engineer

1/16/14
 Date

FDOT CONCURRENCE

L.K. Nandam
 L.K. NANDAM, P.E.
 FDOT District Traffic Operations Engineer

01/16/14
 Date

FDOT CONCURRENCE

B.A. Masling
 B.A. MASING, P.E.
 District Design Engineer

1-16-14
 Date

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 430185-1-22-01 COUNTY (SECTION) POLK (16070000)
 PROJECT DESCRIPTION I-4 FROM EAST OF SR33 INTERCHANGE TO WEST OF SR33 INTERCHANGE

PROJECT CONTROLS

<u>FUNCTIONAL CLASSIFICATION</u>	<u>HIGHWAY SYSTEM</u>
(X) RURAL	Yes No
() URBAN	(X) () NATIONAL HIGHWAY SYSTEM
(X) FREEWAY/EXPWY. () MAJOR COLL.	(X) () FLORIDA INTRASTATE HIGHWAY SYSTEM
() PRINCIPAL ART. () MINOR COLL.	(X) () STRATEGIC INTERMODAL SYSTEM
() MINOR ART. () LOCAL	(X) () STATE HIGHWAY SYSTEM
	() (X) OFF STATE HIGHWAY SYSTEM

<u>ACCESS CLASSIFICATION</u>	<u>TRAFFIC</u>
(X) 1 - FREEWAY	YEAR AADT
() 2 - RESTRICTIVE w/Service Roads	CURRENT <u>2012</u> <u>70000</u>
() 3 - RESTRICTIVE w/660 ft. Connection Spacing	OPENING <u>2016</u> <u>77400</u>
() 4 - NON-RESTRICTIVE w/2640 ft. Signal Spacing	DESIGN <u>2036</u> <u>114800</u>
() 5 - RESTRICTIVE w/440 ft. Connection Spacing	
() 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing	<u>DISTRIBUTION</u>
() 7 - BOTH MEDIAN TYPES	DESIGN SPEED <u>70 MPH</u> K 9.0 %
	POSTED SPEED <u>70 MPH</u> D 53.0 %
	T ₂₄ 13.0 %

<u>CRITERIA</u>	<u>DESIGN SPEED APPROVALS</u>
(X) NEW CONSTRUCTION / RECONSTRUCTION	<u>B.A. Masling</u> <u>1-16-14</u>
() RRR INTERSTATE / FREEWAY	B.A. MASING, P.E. DATE
() RRR NON-INTERSTATE / FREEWAY	DISTRICT DESIGN ENGINEER
() TDLC / NEW CONSTRUCTION / RECONSTRUCTION	<u>L.K. Wandam</u> <u>01/16/14</u>
() TDLC / RRR	L.K. WANDAM, P.E. DATE
() MANUAL OF UNIFORM MINIMUM STANDARDS (FLORIDA GREENBOOK) (OFF-STATE HIGHWAY SYSTEM ONLY)	DISTRICT TRAFFIC OPERATIONS ENGINEER

LIST ANY POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION ELEMENTS:
 N/A

LIST MAJOR STRUCTURES LOCATION/DESCRIPTION - REQUIRING INDEPENDENT STRUCTURE DESIGN:
 I-4 BRIDGE OVER SR 33 (MP 8.359 - MP 8.513) (BRIDGE NUMBERS 160181 & 160182)

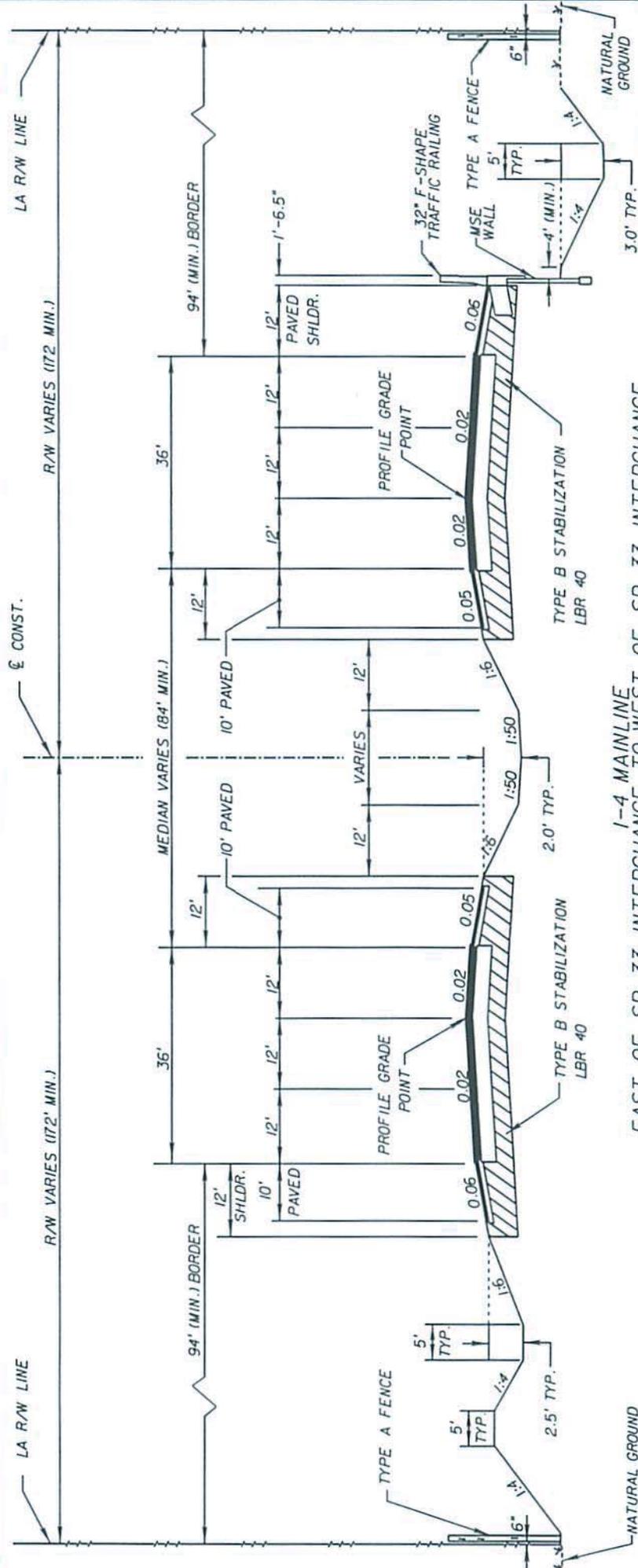
LIST MAJOR UTILITIES WITHIN PROJECT CORRIDOR:
 BRIGHT HOUSE NETWORK
 FLORIDA GAS TRANSMISSION
 VERIZON FLORIDA INC.
 CITY OF LAKELAND ELECTRIC
 CITY OF LAKELAND GAS
 MCI

LIST OTHER INFORMATION PERTINENT TO DESIGN OF PROJECT:
 N/A

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 430185-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME POLK
 SECTION NO. 16020000 ROAD DESIGNATION SR 33 LIMITS/MILEPOST MP 4.993 TO MP 9.309
 PROJECT DESCRIPTION WIDENING OF SR 33 FROM OLD COMBEF ROAD TO NORTH OF TOMKOW ROAD FROM A TWO LANE UNDIVIDED FACILITY TO A FOUR LANE DIVIDED FACILITY.

PROPOSED ROADWAY TYPICAL SECTION



FDOT CONCURRENCE
William A. Hartmann
 WILLIAM HARTMANN, P.E.
 District Project Development Engineer
 Date 1/16/14

FDOT CONCURRENCE
L.K. Nandam
 L.K. NANDAM, P.E.
 FDOT District Traffic Operations Engineer
 Date 01/16/14

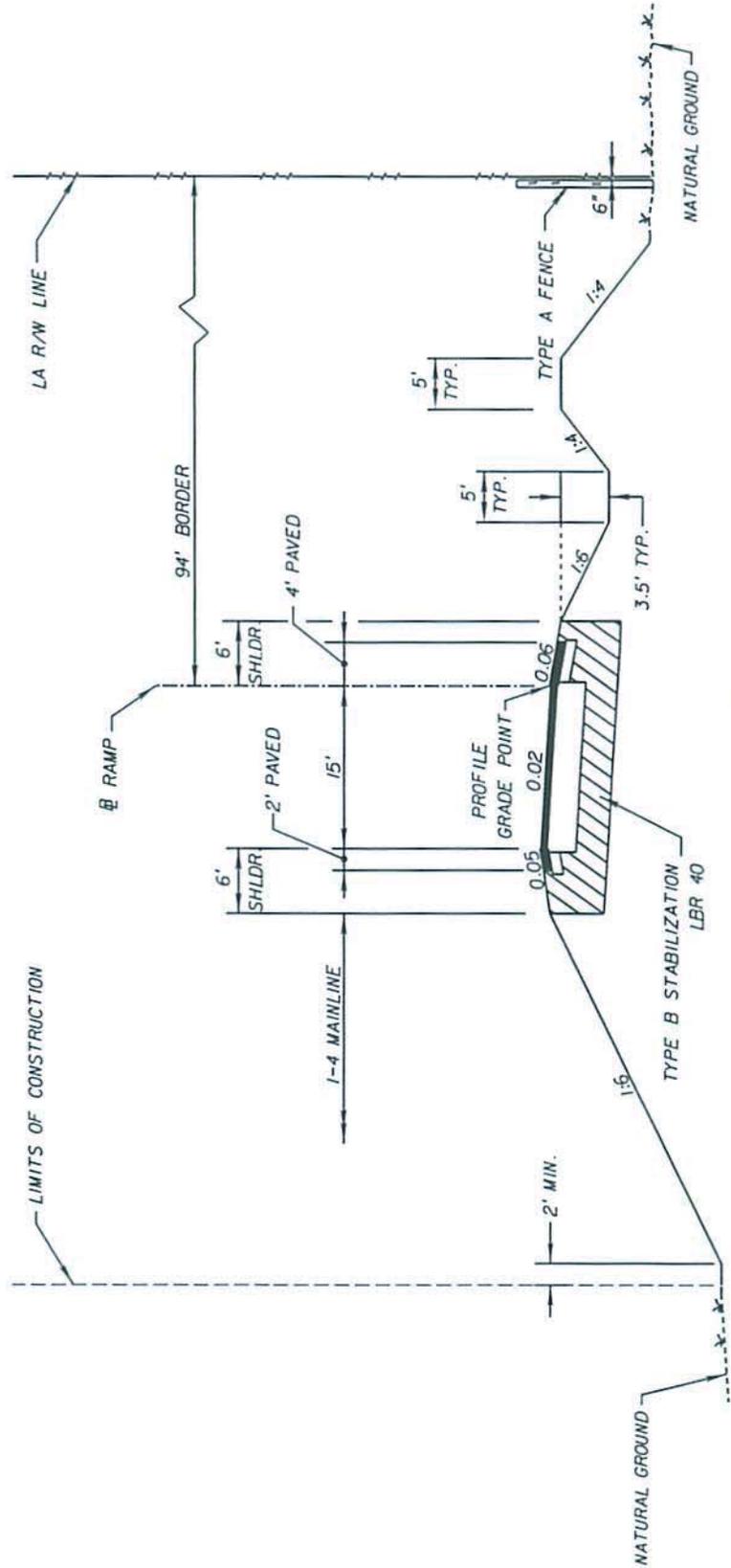
FDOT CONCURRENCE
B.A. Masang
 B.A. MASANG, P.E.
 District Design Engineer
 Date 1-16-14

EAST OF SR 33 INTERCHANGE TO WEST OF SR 33 INTERCHANGE
 1-4 MAINLINE

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 430185-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME POLK
 SECTION NO. 16020000 ROAD DESIGNATION SR 33 LIMITS/MILEPOST MP 4.993 TO MP 9.309
 PROJECT DESCRIPTION WIDENING OF SR 33 FROM OLD COMBEE ROAD TO NORTH OF TOMKOW ROAD FROM A TWO LANE UNDIVIDED FACILITY TO A FOUR LANE DIVIDED FACILITY.

PROPOSED ROADWAY TYPICAL SECTION



FDOT CONCURRENCE

William D. Hartmann
 WILLIAM HARTMANN, P.E.
 District Project Development Engineer
 Date 1/16/14

FDOT CONCURRENCE

L. K. Nandam
 L.K. NANDAM, P.E.
 FDOT District Traffic Operations Engineer
 Date 01/16/14

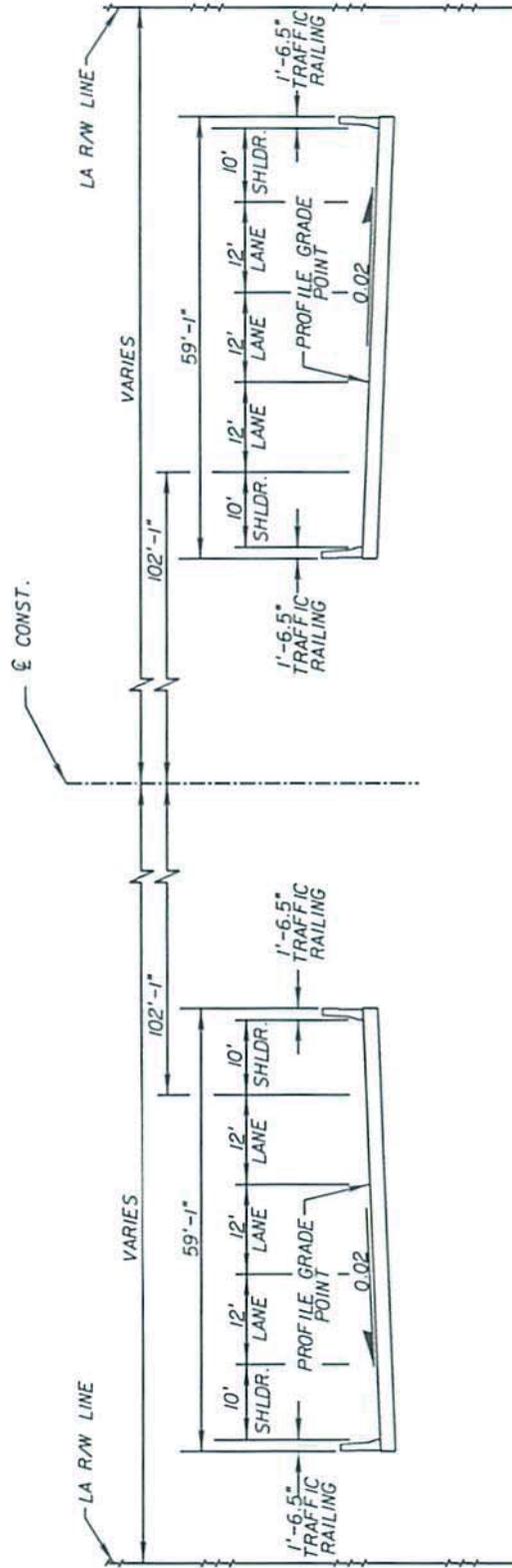
FDOT CONCURRENCE

B.A. Masling
 B.A. MASING, P.E.
 District Design Engineer
 Date 1-16-14

PROJECT IDENTIFICATION

FINANCIAL PROJECT ID 430185-1-22-01 FEDERAL AID PROJECT NO. N/A COUNTY NAME POLK
 SECTION NO. 160Z0000 ROAD DESIGNATION SR 33 LIMITS/MILEPOST MP 4.993 TO MP 9.309
 PROJECT DESCRIPTION WIDENING OF SR 33 FROM OLD COMBEE ROAD TO NORTH OF TOMKOW ROAD FROM A TWO LANE UNDIVIDED FACILITY TO A FOUR LANE DIVIDED FACILITY.

PROPOSED ROADWAY TYPICAL SECTION



I-4 BRIDGE OVER SR 33

FDOT CONCURRENCE <i>William A. Hartmann</i> WILLIAM HARTMANN, P.E. District Project Development Engineer	FDOT CONCURRENCE <i>L. K. Nandam</i> L.K. NANDAM, P.E. FDOT District Traffic Operations Engineer	FDOT CONCURRENCE <i>B.A. Masling</i> B.A. MASING, P.E. District Design Engineer
Date <u>11/6/14</u>	Date <u>01/16/14</u>	Date <u>1-16-14</u>

Appendix C

AGENCY CORRESPONDENCE

FHWA and SHPO Clearance Letter

FFWCC Concurrence Letter

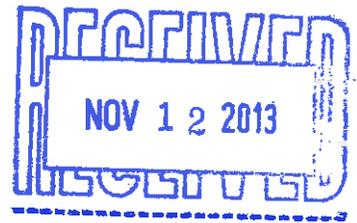
FHWA E-mail Confirming No Use of Tenoroc FMA

FWS Letter

Polk TPO Consistency Letter

City of Lakeland Meeting Minutes

ETDM Programming Summary Report



Florida Department of Transportation

RICK SCOTT
GOVERNOR

801 N. Broadway Avenue
Bartow, Florida 33830

ANANTH PRASAD, P.E.
SECRETARY

September 25, 2013

Mr. Joseph Sullivan
Federal Highway Administration
545 John Knox Road, Suite 200
Tallahassee, FL 32303

RE: Cultural Resource Assessment Survey
State Road 33 from Old Combee Road to North of Tomkow Road,
Polk County, Florida
Financial Project ID No.: 430185-1-22-01

RECEIVED
BUREAU OF
HISTORIC PRESERVATION
2013 OCT 18 A 9:29

A Cultural Resource Assessment Survey (CRAS) was conducted for a portion of SR 33 from Old Combee Road to North of Tomkow Road in Polk County, as part of the Florida Department of Transportation's (FDOT) Project Development and Environment (PD&E) Study for proposed improvements to SR 33. The PD&E study is evaluating the widening of the existing two-lane undivided roadway to a four-lane divided roadway (**Figure 1 of CRAS**), a distance of approximately 4.3 miles; the reconstruction of the SR33/Interstate 4 interchange; and the addition of retention ponds. The archaeological area of potential effects (APE) for this project is defined as the existing and new right-of-way (ROW) including the eight proposed pond footprints and the historical APE was defined as the archaeological APE and the immediate view shed within a 328-foot buffer around the current right-of-way.

Enclosed you will find the following documents:

For FHWA:

- One original copy of the CRAS (September 2013)
- One CD containing the CRAS report and appendices

For State Historic Preservation Officer (SHPO):

- One original copy of the CRAS (September 2013)
- Thirty-two updated FMSF form (8PO7489-8PO7491, 8PO7495-8PO7524)
- Sixteen FMSF forms for historic resources (8PO7683-8PO7699)
- One Completed Survey Log
- One CD containing the CRAS report and appendices, FMSF forms and photos

The field work was conducted in accordance with the FDOT's PD&E Manual and the research plan and field methodology follow the Florida Division of Historical Resources standards and guidelines as described in the *Cultural Resource Management Standards and Operational Manual*. Historical background research, including a review of the National Register of Historic Places (NRHP), indicated the presence of 32 previously recorded historic buildings (8PO7489-8PO7491, 8PO7496-8PO7524) and one previously recorded resource group (8PO7495). FMSF forms were updated for these previously recorded resources. Sixteen FMSF forms were prepared for the newly identified buildings (8PO7683-

Mr. Joseph Sullivan, FHWA
CRAS SR 33 from Old Combee Road
To North of Tomkow Road, Polk County, Florida
Financial Project ID No.: 430185-1-22-01
September 25, 2013
Page 2 of 3

8PO7698) and one FMSF form was prepared for newly recorded resource group 8PO7699. None of the previously and newly recorded historic resources is considered potentially eligible for the NRHP, either individually or as part of a district.

The project area was deemed to have a variable potential for the discovery of prehistoric and historic archaeological sites. Background research indicated that no archaeological sites had been previously recorded in the APE. As a result of the current field survey, no historic or prehistoric archaeological sites were recorded.

This information is being provided in accordance with the provisions of the National Historic Preservation Act of 1966 (as amended), which are implemented by the procedures contained in 36 CFR, Part 800, as well as the provisions contained in the revised Chapter 267, *Florida Statutes*.

Please process the attached report and accompanying documentation and then forward a copy of the CRAS, the FMSF forms, and Survey Log to the SHPO for their concurrence. The second copy of the report and CD are for your files. If you have any questions, or if I may be of assistance, please contact me via email at martin.horwitz@dot.state.fl.us or by phone at (863) 519-2805.

Sincerely,

A handwritten signature in black ink that reads "Martin Horwitz". The signature is written in a cursive style with a long, sweeping underline.

Martin Horwitz
Environmental Project Manager
FDOT District 1

Mr. Joseph Sullivan, FHWA
CRAS SR 33 from Old Combee Road
To North of Tomkow Road, Polk County, Florida
Financial Project ID No.: 430185-1-22-01
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Page 3 of 3

The FHWA finds the attached Cultural Resources Assessment Report complete and sufficient and A approves/ does not approve the above recommendations and findings.

The FHWA requests the SHPO's opinion on the sufficiency of the attached report and the SHPO's opinion on the recommendations and findings contained in this cover letter and in the comment block below.

FHWA Comments:

for
 David Hawk
Mr. David Hawk
Acting Division Administrator
Florida Division
Federal Highway Administration

 10-16-13
Date

The Florida State Historic Preservation Officer finds the attached Cultural Resources Assessment Report complete and sufficient and ✓ concurs/ does not concur with the recommendations and findings provided in this cover letter for SHPO/DHR Project File Number 2013-4713 .

for
 Robert F. Bendus
Mr. Robert F. Bendus, Director
State Historic Preservation Officer
Florida Division of Historical Resources

 11/5/13
Date



December 12, 2013

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Mr. Martin Horwitz
Environmental Project Manager
Florida Department of Transportation (FDOT) District One
801 North Broadway Avenue
Bartow, FL 33830
Martin.Horwitz@DOT.state.fl.us

Re: SR 33 multi-laning from Old Combee Road to north of Tomkow Road, Polk County, Endangered Species Biological Assessment

Dear Mr. Horwitz:

The Florida Fish and Wildlife Conservation Commission (FWC) staff has reviewed the Endangered Species Biological Assessment (ESBA) for the above-referenced project, prepared as part of the Project Development and Environment Study. The FWC reviewed this project in May 2011 as ETDM 13188. We provide the following comments and recommendations for your consideration in accordance with Chapter 379, Florida Statutes and Rule 68A-27, Florida Administrative Code (F.A.C.).

The project involves an evaluation of widening SR 33 from two lanes to four lanes from Old Combee Road to 1,500 feet north of Tomkow Road, a distance of approximately 4.3 miles. The project vicinity is a rural landscape on the outskirts of Lakeland that is rapidly undergoing suburban development.

The ESBA evaluated potential project impacts to 23 wildlife species classified under the Endangered Species Act as Federally Endangered (FE) or Threatened (FT), or by the State of Florida as Threatened (ST) or Species of Special Concern (SSC). Listed species were evaluated based on range and potential appropriate habitat or because the project is within a U.S. Fish and Wildlife Service (USFWS) Consultation Area. The ESBA included: Florida grasshopper sparrow (FE), wood stork (FE), Everglades snail kite (FE), Florida bonneted bat (FE), sand skink (FT), bluetail mole skink (FT), eastern indigo snake (FT), Florida scrub jay (FT), crested caracara (FT), gopher tortoise (ST), southeastern American kestrel (ST), Florida sandhill crane (ST), Florida burrowing owl (SSC), limpkin (SSC), snowy egret (SSC), little blue heron (SSC), tricolored heron (SSC), white ibis (SSC), roseate spoonbill (SSC), gopher frog (SSC), Florida pine snake (SSC), Sherman's fox squirrel (SSC), and Florida mouse (SSC).

Other species evaluated included the bald eagle, which was delisted by state and federal agencies, but this species remains protected under state rule in Section 68A-16.002, F.A.C. and by the federal Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d) and the Florida black bear, which was delisted by the FWC in June 2012. A conservation plan has been developed and approved by the FWC as guidance for further improvement of the conservation status of the bear.

Project materials state that project biologists made a finding of "may affect, but is not likely to adversely affect" for all of the federally listed species except the grasshopper sparrow and bonneted bat, which were classified as "no effect" due to lack of suitable

habitat. For the state-listed species and the black bear and bald eagle, the biologists made a determination of “no effect”. There is the potential for habitat for these species to be impacted, such as for the sandhill crane, the wading birds, and gopher tortoises and their commensals. For these animals, we recommend the determination be modified to reflect these potential impacts.

We support the project commitments for protected species, which include the following:

1. Should a bald eagle nest be built prior to or during construction within 660 feet of the construction limits, precautions will be followed based on the USFWS Bald Eagle Management Guidelines.
2. The standard Florida Department of Transportation (FDOT) Construction Precautions for the eastern Indigo Snake will be followed during construction.
3. Due to the presence of gopher tortoise habitat within and adjacent to the existing right-of-way, a gopher tortoise survey in appropriate habitat will be performed within construction limits prior to construction, and the FDOT will secure any necessary relocation permit from the FWC.

Please reference the FWC's Gopher Tortoise Permitting Guidelines (Revised April 2013 <http://www.myfwc.com/media/1410274/GTPermittingGuidelines.pdf>) for survey methodology and permitting guidance prior to any construction activity. Specific guidance in the permitting guidelines includes methods for avoiding impacts as well as options and state requirements for minimizing, mitigating, and permitting potential impacts of the proposed activities. Any commensal species observed during the burrow excavations should be relocated in accordance with Appendix 9 of the Gopher Tortoise Permitting Guidelines. To the maximum extent possible, the FWC also recommends that all staging and storage areas be sited to avoid impacts to gopher tortoise burrows and their habitat.

4. If Pond 1, which contains potential sand skink habitat, becomes the preferred alternative, the FDOT will commit to a coverboard survey of the pond site before construction begins.
5. The FDOT will re-survey appropriate habitats for Florida sandhill crane nests prior to permitting and construction of the project. The FWC recommends that breeding season (January – June) surveys be conducted in potential nesting habitat throughout the project area. If nests are identified, the FDOT should contact the FWC for consultation and review concerning conservation measures and, if needed, permitting and mitigation requirements pursuant to Rule 68A-27 F.A.C.

Thank you for the opportunity to review the ESBA for the SR 33 project in Polk County. If you need further assistance, please do not hesitate to contact Jane Chabre either by phone at (850) 410-5367 or at FWCConservationPlanningServices@MyFWC.com. If

you have specific technical questions regarding the content of this letter, contact Brian Barnett at (772) 579-9746 or email brian.barnett@MyFWC.com.

Sincerely,

A handwritten signature in blue ink that reads "Jennifer D. Goff". The signature is written in a cursive style.

Jennifer D. Goff
Land Use Planning Program Administrator
Office of Conservation Planning Services

jdg/bb

ENV 1-13-2
SR 33 from Old Combee Rd to N of Tomkow Rd_18339_121213

From: Horwitz, Martin [mailto:Martin.Horwitz@dot.state.fl.us]
Sent: Monday, December 16, 2013 1:48 PM
To: Nathan Chambers
Cc: David Dangel; Jason Houck; Robert Mrykalo; Sherrard, Antone N; Pipkin, Gwen G
Subject: RE: SR 33 ESBA Comments from FWC

Nathan,

I spoke with FWC, Brian Barnett, in regards to FWC's letter. Brian stated that the letter should have stated that they recommend a determination of "may affect, but is not likely to adversely affect". He also stated this is a recommendation that doesn't need to be corrected for this project but should be noted for future ESBA's submitted. In regards to the gopher tortoise commitment, his comment was just for informational purposes and possible future change in wording for future ESBA's and so we don't need to revise the commitments. Lastly, a revised report is not required by FWC.

Therefore based on FWC's direction, I recommend revising the state-listed species determinations from "no effect" to "may affect, but is not likely to adversely affect" since the recommendation is in the SR 33 response letter. I would finalize the ESBA after the revisions to state-listed species determinations but it does not need to be resubmitted to FWC or USFWS.

In regards to the WER, go ahead and start preparing the final WER. I would like 1-hard copy and 1- CD of the report.

Thanks,

Martin Horwitz
Environmental Project Manager

FDOT District 1
801 N. Broadway Avenue
P.O. Box 1249
Bartow, Florida 33830
(863)519-2805

From: Nathan Chambers [mailto:nchambers@inwoodinc.com]
Sent: Friday, December 13, 2013 8:37 AM
To: Horwitz, Martin
Cc: David Dangel; Jason Houck; Robert Mrykalo
Subject: SR 33 ESBA Comments from FWC

Martin,

The FWC requested minor changes to the ESBA in their recent letter. Specifically, they do not agree with the "no effect" determination for the sandhill crane, state-listed wading birds, and the gopher tortoise/commensals. Although they didn't specifically state this, I am assuming they are requesting a determination of "may affect, not likely to adversely affect," as there is potential for these species to occur in the project area.

They also requested that some more detailed language be added to the commitment regarding gopher tortoises (language contained in their response). Can you confirm that you are ok with making the requested changes, which don't substantially affect the project? Do we need to provide a revised report to the FWC requesting concurrence, or submit a letter response indicating that the changes will be incorporated? Alternatively, do we simply incorporate the changes and prepare and submit a final ESBA, including an Appendix with agency comments? Since the affected species are state-listed, I don't see a need to resubmit to USFWS, since we already have concurrence for federally listed species.

Also, in regards to the WER, we have received concurrence from NMFS and FWC. I'd like to prepare the final report, including an Appendix with Agency Comments. How many hard copies of the report do you want?

Nathan E. Chambers

ECOLOGIST

INWOOD CONSULTING ENGINEERS

3000 Dovera Dr., Suite 200, Oviedo, FL 32765

P: 407-971-8850

F: 407-971-8955

inwoodinc.com

David Dangel

From: Horwitz, Martin <Martin.Horwitz@dot.state.fl.us>
Sent: Monday, November 18, 2013 10:27 AM
To: David Dangel
Cc: Sherrard, Antone N
Subject: FW: SR 33 4(f) DOA and use

David,

Please see below for your records.

Martin Horwitz
Environmental Project Manager

FDOT District 1
801 N. Broadway Avenue
P.O. Box 1249
Bartow, Florida 33830
(863)519-2805

From: Cathy.Kendall@dot.gov [mailto:Cathy.Kendall@dot.gov]
Sent: Monday, November 18, 2013 10:12 AM
To: Horwitz, Martin
Cc: Benito.Cunill@dot.gov; Sherrard, Antone N; Pipkin, Gwen G
Subject: RE: SR 33 4(f) DOA and use

Martin,

Thank you for the clarifications. FHWA concurs with the FDOT recommendation and finds that the Fish Management Area is a protected Section 4(f) resource, however, the proposed action (Alternative A-2) does not have a Section 4(f) use of this resource.

If you have any questions concerning this finding, please let me know.

Cathy Kendall, AICP
Acting Director of Technical Services
FHWA - FL, PR and VI
545 John Knox Road, Suite 200
Tallahassee, FL 32303
(850) 553-2225
cathy.kendall@dot.gov

From: Horwitz, Martin [<mailto:Martin.Horwitz@dot.state.fl.us>]
Sent: Wednesday, November 13, 2013 8:34 AM
To: Kendall, Cathy (FHWA)
Cc: Cunill, Benito (FHWA); Sherrard, Antone N; Pipkin, Gwen G
Subject: RE: SR 33 4(f) DOA and use

Good Morning Cathy,

In regards to your question regarding FWC considering if the Tenoroc FMA is a significant recreational area, they did provide an answer stating "it is significant". On the 9/30/2013 letter from FWC in the second paragraph and second sentence, the letter states "It is agreed the proposed strip is small in relation to the overall Tenoroc FMA, but it is significant in that the State's conservation land is to be held in perpetuity."

Also in regards to clarification of whether or not there will be a use of the property, there will be no Section 4(f) use or impact to the Tenoroc FMA. There was a "worst case" full buildout of SR 659 to accept a dual left turn lane from SR 33 (shown on Figure A-1 of DOA) but it is **not** being considered as mentioned in the report. Again this is no longer being considered and it was not shown as an alternative during the SR 33 9/24/2013 workshop. Figure A-2 of DOA shows the proposed intersection improvements which do not involve acquisition of ROW from Tenoroc FMA along SR 659 (aka N. Combee Rd.).

If you need any additional information, please contact me.

Thank you,

Martin Horwitz
Environmental Project Manager

FDOT District 1
801 N. Broadway Avenue
P.O. Box 1249
Bartow, Florida 33830
(863)519-2805

From: Cathy.Kendall@dot.gov [<mailto:Cathy.Kendall@dot.gov>]
Sent: Tuesday, November 12, 2013 6:44 PM
To: Horwitz, Martin
Cc: Benito.Cunill@dot.gov
Subject: SR 33 4(f) DOA and use

Hello Martin,

I have reviewed the Section 4(f) determination of applicability for the SR 33 project.

I found in the Appendix of the packet the letter from the Agency with jurisdiction for the property, but I see they did not answer as to whether or not they consider the property as a significant recreation area (they indicated that the impact to the property may be significant). I was also unclear on the recommendation in your cover letter that states that the project will not use the Tenorac FMA. From the maps that you provided in the packet, as well as the statement from the Agency with Jurisdiction, it seems that the project would take a strip of the Tenorac FMA and potentially constitute a Section 4(f) use.

Can you provide any additional clarification?

Thanks,

Cathy Kendall, AICP
Acting Director of Technical Services
FHWA - FL, PR and VI
545 John Knox Road, Suite 200

Tallahassee, FL 32303
(850) 553-2225
cathy.kendall@dot.gov



2011-CPA-0155

2011-I-0149

Florida Department of Transportation

RICK SCOTT
GOVERNOR

801 North Broadway Avenue
Bartow, FL 33830

ANANTH PRASAD, P.E.
SECRETARY

November 14, 2013

Mr. John Wrublik
United States Fish and Wildlife Service
South Florida Ecological Services Office
1339 20th Street
Vero Beach, FL 32960

RE: Transmittal of Endangered Species Biological Assessment
SR 33 PD&E Study
From Old Combee Road to North of Tomkow Road
FPID No. 430185-1-22-01
Polk County, Florida

Dear Mr. Wrublik:

Please find enclosed the Endangered Species Biological Assessment (ESBA) prepared for the above referenced project. The Florida Department of Transportation (FDOT), on behalf of the Federal Highway Administration (FHWA), is currently conducting a Project Development and Environment (PD&E) Study to evaluate options for the proposed improvements to SR 33 from Old Combee Road to North of Tomkow Road. The PD&E Study will evaluate engineering and environmental data, which will aid in determining impacts, if any, associated with the proposed improvements. The proposed improvements are required to meet existing and projected traffic demands and safety needs. The total project length is approximately 4.3 miles and is located in the following sections:

Township 27 S, Range 24 E, Sections 10, 15, 21, 22, 28, 29, and 30

This ESBA was conducted in accordance with Section 7 of the Endangered Species Act of 1973 to assess potential effects on protected species and their habitats within the project study limits associated with the alternatives for the proposed improvement. As a result of the data collection effort, field review concluded the following for federally protected species:



U.S. Fish and Wildlife Service
1339 20th Street
Vero Beach, Florida 32960
772-562-3909 Fax 772-562-4288

FWS Log No. 2011-CPA-0155

The proposed action is not likely to adversely affect resources protected by the Endangered Species Act of 1973 (Act), as amended (16 U.S.C. 1531 et. seq.).

This fulfills the requirements of section 7 of the Act and further action is not required. If modifications are made to the project, if additional information involving potential effects to listed species becomes available, or if a new species is listed, reinitiation of consultation may be necessary.

Victoria A. Foster
Larry Williams, Field Supervisor

11/29/13
Date

USFWS SFESO Concurrence Justification Form

Worksheet must be completed with Supervisor Approval Prior to sending concurrence.

Project Name: SR 33 from Old Combee Rd. to North of Tomkow Rd.	FWS Fed Activity #: 2011-CPA-0155
Project Location: Lakeland, Polk County, Florida	Lead Agency #: FHWA/FDOT
File Location: L: Project Planning/Activities/2011/polk/CPA 0155	Biologist:
Was GIS Check performed: <input checked="" type="checkbox"/> Yes Date: _____	<input type="checkbox"/> No If No, Why? (please give a brief explanation of why GIS was not needed below).

Species Present in Project Area and Determination made by Action Agency

Species	Determination	Species	Determination
Audubon's Crested Caracara	MANLAA	Wood stork	MANLAA
Everglade snail kite	MANLAA	Florida bonneted bat	NA
Florida scrub-jay	MANLAA	Florida grasshopper sparrow	NA
eastern indigo snake	MANLAA	perforate reindeer lichen	NA
sand skink	MANLAA		
Blue-tailed mole skink	MANLAA		

Justification for Concurrence (sticker recommended)

- Suitable caracara nesting habitat not found in or within 1000 feet of project footprint.

- Suitable snail kite habitat not found in or near project footprint.

- Call surveys for the scrub-jay based on the Service's protocol were conducted in March/April 2013, no scrub-jays observed in or near project footprint.

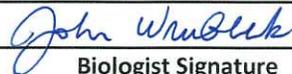
-to minimize impacts to the indigo snake the FDOT has agreed to follow the Standard Protection Measures for the Eastern Indigo Snake. U.S. Fish and Wildlife Service. 2004. Fish and Wildlife Service, South Florida Ecological Services Office; Vero Beach, Florida.

- Cover board surveys conducted for the sand skink based on the Service's protocol were conducted from April 9, 2013 to May 9, 2013, no sand skink tracts were observed.

_project located in CFAs of 3 active wood stork nesting colonies. Project will result in loss of up to 12.19 providing 45.08 kilograms of forage biomass for the wood stork. The FDOT has agreed to offset the amount of wood stork forage biomass lost due to the project through the acquisition of adequate credits at either the Green Swamp Wetland Mitigation Bank or the Withlacoochee Wetland Mitigation Bank.

-suitable habitat for the Florida grasshopper sparrow does not occur in or near the project footprint, project not within geographic range of the Florida bonneted bat (according to FWC range map), reindeer lichen not found on project footprint during pedestrian surveys of site.

Supervisor Questions/Notes

 Biologist Signature	11/19/2013 Date	 Supervisor Signature	11/29/13 Date
--	--------------------	--	------------------



April 24, 2014

Mr. Billy Hattaway, P.E., District Secretary
Florida Department of Transportation
Post Office Box 1249, MS 1-36
Bartow, FL 33831

RE: POLK TPO ENDORSEMENT OF STATE ROAD 33 PROJECT DEVELOPMENT AND ENVIRONMENTAL (PD&E) STUDY

Dear Secretary Hattaway:

At their meeting on April 10, 2014, the Polk Transportation Planning Organization (TPO) Board endorsed the Project Development and Environmental (PD&E) Study's preferred alternative for the widening of State Road 33 from Old Combee Road to north of Tomkow Road as consistent with Polk County's Adopted *2035 Mobility Vision Plan (MVP)*. In evaluating the consistency of the preferred alternative with the *2035 MVP*, the TPO considered the Goals, Objectives and Policies, as well as the project definition, such as the termini and number of lanes, contained in the *2035 MVP*.

Exit 38 Interchange

The need for improving the Exit 38 interchange along with widening of State Road 33 has been, and will continue to be, a high priority of the Polk TPO. Significant increases in automobile and truck traffic are anticipated on State Road 33 and at Exit 38 as a result of nearby development activity associated with the Bridgewater and Williams developments of regional impact (DRI) and the opening of Florida Polytechnic University. The referenced PD&E study includes the reconstruction of the Exit 38 interchange of State Road 33 at Interstate 4. The Department's Work Program also includes funding for the design of this interchange as part of the State Road 33 widening. However, right-of-way and construction phases for the interchange are currently unfunded in FDOT's Work Program, as well as the 2040 Strategic Intermodal System (SIS) Cost-Feasible Plan. It is our understanding FDOT plans to program the right-of-way and construction of the interchange separately from the State Road 33 widening project and that FDOT's Strategic Intermodal System (SIS) funds would likely be used fund these phases. Therefore, the TPO requests the Department to consider adding funding in the 2040 SIS Plan to construct the needed interchange improvements at Exit 38. If possible, the funding should be programmed to more closely coincide with the implementation of the widening of State Road 33.

Letter to Secretary Hattaway
April 24, 2014
Page Two

The Polk TPO looks forward to coordinating with FDOT in the development of future project phases of State Road 33. If you have any questions regarding the TPO's action, please contact Ryan Kordek with TPO staff at (863) 534-6558.

Sincerely,



Commissioner George Lindsey, III
Polk TPO Chairman

GL:RK

cc: TPO Board

Chris Smith, FDOT1
Tony Sherrard, FDOT1
Lawrence Massey, FDOT1
Lori Carlton, FDOT1
Rick Lilyquist, City of Lakeland
Chuck Barmby, City of Lakeland

SR 33 PD&E Study Project Briefing Meeting – City of Lakeland

Mtg. Date: April 30, 2013

Time: 8:30 am

Location: Lakeland City Hall

Project: SR 33 PD&E Study
From Old Combee Rd. to N. of Tomkow Rd.

Attendees: Tony Sherrard – FDOT
Mark Schulz - FDOT
Jeff James – FDOT
Chuck Barmby – City of Lakeland
Greg James – City of Lakeland
David Uria – City of Lakeland
Celeste Deardorff – City of Lakeland
Rick Lilyquist – City of Lakeland
Greg Root – AIM
David Dangel – Inwood Consulting Engineers
Laura Clark – Inwood Consulting Engineers
Jason Houck – Inwood Consulting Engineers
Danon Moxley – FWCC
Tim King – FWCC
Karen Landers – Peace Creek Alliance
George Horvath – Peace Creek Alliance

Tony began the meeting with group introductions. David then gave an overview of the existing conditions along the SR 33 PD&E Study project limits. He noted that requests for locations of existing utilities along SR 33 have been submitted to the utility companies and we are in the process of receiving that information. David then discussed the planned trails/pathways and transit within the project area. Chuck noted that a comprehensive plan amendment was approved to include a path along SR 33 from Old Combee Road to University Boulevard. The old plan only had the path from SR 659 to University Boulevard. Chuck offered to send this information to David. Chuck added that the City will have money to construct transit shelter pads on SR 33 once the Polytechnic University is operational. David stated that the proposed roadway typical sections won't preclude the addition of these transit amenities.

Next, Greg provided a traffic update. He stated that the Polk TPO model does not show that 4 laning of SR 33 is needed, so revisions to the model to better reflect the future land uses associated with several DRI's in the area. The revised model shows a need for the four-laning of SR 33. Greg



added that the draft Methodology Letter of Understanding (MLOU) for the interchange is currently being reviewed by FDOT Central Office. Once Central Office completes their review, the MLOU will be submitted to FHWA for review. Celeste asked how long the process will take, as the Williams DRI is considering changes. Greg stated that approval is tentatively anticipated in late May or early June. Celeste added that the mall at Williams DRI may go away and other development may be proposed. The developer hasn't submitted anything to the City yet, but a meeting was held to discuss this change.

David then explained that a four-lane suburban typical section is being considered. There are two variations of this typical section that will be evaluated. The first one involves saving the existing pavement and constructing two new lanes to the south of the existing lanes. The second option would involve full reconstruction of the roadway.

Next, David explained that an analysis was conducted to determine if an interim interchange improvement could be constructed. There are a few deficiencies with the existing interchange. First, the existing vertical clearance over SR 33 is as low as 14.9 feet. Second, the cover over the existing pier footings is as shallow as 1.89 feet. The minimum cover over pier footings is three feet. Finally, the existing vertical profile of I-4 approaching and crossing over SR 33 is only sufficient for a design speed between 55 and 60 mph. The design speed for I-4 is 70 mph. FHWA stated they would not approve an interim interchange concept that maintains the existing 14.9 feet of vertical clearance. Based on the consideration of costs and length of time that the interim improvement will operate at an acceptable Level of Service (LOS), the interim improvement is no longer being considered. Therefore, in order to get the required vertical clearance, proper pier footing cover depth and to correct the vertical geometry of I-4 over SR 33, significant reconstruction of I-4 and SR 33 would be required. Also, the roadway capacity of the interchange would only be acceptable for a few years after this construction is completed. Therefore, the interim interchange option is no longer being considered.

David then discussed the proposed interchange alternatives. These include a traditional diamond interchange and a diverging diamond interchange. Chuck asked if the Department has constructed a diverging diamond interchange anywhere else. Tony stated that a diverging diamond is under design at University Parkway in Sarasota, but FDOT has not constructed that type of interchange yet. Celeste asked about the benefits of the diverging diamond interchange alternative. Greg stated that it makes sense from a delay and LOS standpoint, but it introduces additional pedestrian conflicts and does not meet driver expectancy. Celeste asked if truck traffic is being considered for the design. Greg indicated that the design vehicle used for this project is a WB-62FL truck.

Next, David discussed the roundabout analysis. He stated that roundabouts were considered at SR 659, University Boulevard, the I-4 ramps and at Tomkow Road. Tomkow Road was determined to be the only feasible location. Celeste asked why a roundabout is recommended at Tomkow Road.

Greg explained that it is not recommended, but would reduce delay and introduce a change in traffic speed, which would likely improve safety. David added that the roundabout is currently being analyzed to observe potential right-of-way impacts. The feasibility of the roundabout from a design standpoint is still being determined. Greg offered to send information regarding roundabout volume thresholds to Celeste.

David indicated that the access classification is going to be changed to access class 3. Because Tomkow Road is too close to the I-4 interchange ramp intersections, a realignment of Tomkow Road is being considered. Chuck noted that an access management plan was developed for the Bridgewater DRI in the mid 80's. He offered to send a copy of the plan to David. Chuck added that the City is trying to maintain strict access control due to truck traffic, development in the area, etc.

David then gave an overview of the drainage analysis. Celeste asked if City-owned land was considered for the pond sites. David stated that government-owned land was evaluated, although he wasn't sure about the specific parcels that Celeste identified on the map. He indicated that the study team will double-check those particular parcels.

Next, Jason provided a summary of the environmental analysis. Celeste noted that mitigation banking was used on University Boulevard and asked if something similar could be done for this project. Jason stated that the project is just outside the mitigation bank service area, but it's still a possibility. Celeste asked if the wood stork is a concern. Jason explained that wood storks can be addressed with the wetland mitigation, so we don't anticipate that they will be an issue.

Chuck asked if the interchange is going to be separated from the overall project if funding becomes available. Tony stated that the concept to break the project into two separate PD&E studies is under consideration. The design is currently funded in FY 2013/2014. David added that it's possible that the Interchange Operational Analysis Report (IOAR) may not be approved by FHWA before this timeframe, which is out of our control.

A second meeting was held to discuss the potential for a wildlife crossing at the SR 33/I-4 interchange to connect Peace River with Green Swamp. Based on discussion regarding the land use on both sides of the interchange, a wildlife crossing doesn't appear to be feasible through the interchange area.

The meeting adjourned at 10:00 am.

cc: All Attendees (via e-mail)

Note: The above reflects the writer's understanding of the contents of the meeting. If any misinterpretations or inaccuracies are included, please contact David Dangel at (407) 971-8850 as soon as possible for resolution and revisions if necessary.



State Road 33

Project Development and Environment Study

From Old Combee Road to north of Tomkow Road
 Financial Project ID: 430185-1-22-01

Project Briefing Meeting - City of Lakeland
 Tuesday, April 30, 2013

Sign-In Sheet

Name (please print)	Organization (please print)	Mailing Address (please print)	E-mail Address/ Phone (please print)
DAVID DANGEL	INWOOD CONSULTING ENGINEERS	3000 DOVERA DRIVE, STE 200 OVIDO, FL 32765	ddangel@inwoodinc.com 407-971-8850
LAURA CLARK	" "	" "	lclark@inwoodinc.com 407-971-8850
Jason Houck	" "	" "	jhouck@inwoodinc.com 407-971-8850
Jeffrey James	FDOT	801 N. Broadway Ave. Bartow FL	Jeffrey W. James@fdot. state.fl.us
TONY SHERRARD	FDOT	" "	anton@sherrard@ dot.state.fl.us 863.519.2304
Mark Schultz	FDOT	" "	mark.schulze@ dot.state.fl.us
Greg Root	AIM Engineering	3802 Corporex Park Dr. Suite 225 Tampa, FL 33619	groot@aimengr.com
Chuck Bandy	City of Lakeland	228 S. MASSACHUSETTS AVENUE LAKELAND, FL 33801	chuck.bandy@lakelandgov.net
David Urin	" "	" "	david.urin@lakelandgov.net
Greg James	City of Lakeland	" "	greg.james@lakelandgov.net



State Road 33

Project Development and Environment Study

From Old Combee Road to north of Tomkow Road
 Financial Project ID: 430185-1-22-01

Project Briefing Meeting - City of Lakeland
 Tuesday, April 30, 2013

Sign-In Sheet

Name (please print)	Organization (please print)	Mailing Address (please print)	E-mail Address/ Phone (please print)
Celeste Deardorff	COL		
Rick Lilyquist	COL-PW		
Damon Moxey	FWCC		Damon.Moxey@myfwc.com 863-648-3990
Tim King	FWC		863 688 9558
KAREN LANDERS	PCA		RES8316@verizon.net
GEORGE HORVATH	PEACE CREEK ALLIANCE		Ghorvath@verizon.net

ETDM Summary Report

Project #13188 - State Road 33: from Old Combee Road to north of Tomkow Road

Final Programming Screen - Published on 03/26/2014

Generated by Gwen Pipkin (on behalf of FDOT District 1)

Printed on: 3/26/2014

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Introduction to Programming Screen Summary Report

The Programming Screen Summary Report shown below is a read-only version of information contained in the Programming Screen Summary Report generated by the ETDM Coordinator for the selected project after completion of the ETAT Programming Screen review. The purpose of the Programming Screen Summary Report is to summarize the results of the ETAT Programming Screen review of the project; provide details concerning agency comments about potential effects to natural, cultural, and community resources; and provide additional documentation of activities related to the Programming Phase for the project. Available information for a Programming Screen Summary Report includes:

- Screening Summary Report chart
- Project Description information (including a summary description of the project, a summary of public comments on the project, and community-desired features identified during public involvement activities)
- Purpose and Need information (including the Purpose and Need Statement and the results of agency reviews of the project Purpose and Need)
- Alternative-specific information, consisting of descriptions of each alternative and associated road segments; an overview of ETAT Programming Screen reviews for each alternative; and agency comments concerning potential effects and degree of effect, by issue, to natural, cultural, and community resources.
- Project Scope information, consisting of general project recommendations resulting from the ETAT Programming Screen review, permits, and technical studies required (if any)
- Class of Action determined for the project
- Dispute Resolution Activity Log (if any)

The legend for the Degree of Effect chart is provided in an appendix to the report.

For complete documentation of the project record, also see the GIS Analysis Results Report published on the same date as the Programming Screen Summary Report.

#13188 State Road 33: from Old Combee Road to north of Tomkow Road

District: District 1

Phase: Programming Screen

County: Polk

From: north of Tomkow Road

Planning Organization: FDOT District 1

To: Old Combee Road

Plan ID: Not Available

Financial Management No.: 43018512201

Federal Involvement: Maintain Federal Eligibility

Contact Information: Gwen G. Pipkin (863) 519-2375 x2375 gwen.pipkin@dot.state.fl.us

Snapshot Data From: Programming Screen Summary Report Re-published on 03/26/2014 by Gwen Pipkin
Issues and Categories are reflective of what was in place at the time of the screening event.

	Natural											Cultural			Community					Secondary and Cumulative Effects	
	Air Quality	Coastal and Marine	Contaminated Sites	Farmlands	Floodplains	Infrastructure	Navigation	Special Designations	Water Quality and Quantity	Wetlands	Wildlife and Habitat	Historic and Archaeological Sites	Recreation Areas	Section 4(f) Potential	Aesthetics	Economic	Land Use	Mobility	Relocation		Social
Alternative #1 From: Old Combee Road To: north of Tomkow Road Re-Published: 03/26/2014 Reviewed from 04/14/2011 to 05/29/2011)	2	0	2	2	2	2	N/A	2	3	3	3	3	1	2	3	1	2	1	2	3	2

Purpose and Need

Purpose and Need

PURPOSE

The capacity improvement project on SR 33 will enhance the connectivity of the local and regional roadway network, provide needed capacity to meet growing travel demand in northeast Lakeland, support population and employment growth in the area, enhance local and regional multimodal connectivity, and augment an existing emergency evacuation route.

The proposed improvements begin at Old Combee Road where it will tie into the recently widened four-lane section of SR 33 and will extend through the I-4 interchange to the area north of Tomkow Road. Tomkow Road is proposed to be realigned away from the I-4 interchange so that the intersection with SR 33 is located outside of the proposed limited access right-of-way.

The need for the project is based on the following criteria:

- > Area Wide Network/System Linkage - Improve the functional viability of SR 33 as a local and regional travel alternative to Interstate 4 and provide connectivity between central Lakeland and emerging developments in the northeast.
- > Growth Management Planning - Improve multimodal access to emerging population and employment centers in northeast Lakeland.
- > Modal Interrelationships - Support future multimodal needs by providing areas for bus stop shelter pads; enhanced pedestrian accessibility and safety, and enhanced bicycle access and mobility.
- > Emergency Evacuation - Increase the volume of residents that can be evacuated during an emergency event.
- > Capacity and Travel Demand - Provide additional roadway capacity on SR 33 to reduce anticipated delays caused by peak hour traffic congestion.
- > Safety - Improve safety by providing exclusive turn lanes, reconstructing the I-4 interchange, separating traffic with a raised median and adding bicycle and pedestrian features.

NEED

Area Wide Network/System Linkage - The project will improve the functional viability of SR 33 as a local and regional travel alternative to Interstate 4. SR 33 provides connectivity to University Boulevard, a committed new four lane road serving the planned Williams DRI, Polk Commerce Center DRI, and future Polytechnic University campus. University Boulevard and SR 33 will be the most direct link between these new residential and commercial centers and north and central Lakeland.

Growth Management Planning - Traffic on SR 33 is expected to increase due to projected population and employment growth both along the corridor and in the region. The table below shows the updated Polk Transportation Planning Organization's 2035 population and employment forecast for 24 adjacent traffic analysis zones.

EXISTING AND FUTURE POPULATION AND EMPLOYMENT GROWTH (2007 TO 2035)

2007 2035 Growth

Population 37,945 79,659 41,714

Employment 8,771 41,131 32,360

Modal Interrelationships - This project includes provisions for multimodal interface with transit through the typical section that will allow for bus stop shelter pads along both sides of SR 33 within the project limits. (These are included as specific payment items in the Bridgewater DRI Development Agreement.) The Polk LRTP shows an unfunded transit need along the SR 33 corridor within the project limits. The proposed improvements include bicycle lane accommodations (paved shoulders), a sidewalk along the east side of SR 33 and a 12-foot wide shared use path along the east side of the roadway. The resulting multimodal improvements will help to improve multimodal connections between neighborhoods immediately adjacent to the project and destinations nearby.

Emergency Evacuation - SR 33 is designated as a hurricane evacuation route by the Florida Division of Emergency Management. The proposed enhancement will increase the capacity of traffic that can be evacuated during an emergency event and improve emergency response times. The capacity improvement will also enhance accessibility to other evacuation routes like Interstate 4.

Capacity/Transportation Demand - This project provides increased capacity along SR 33 to meet the projected future travel demand. The existing roadway LOS along SR 33 ranges from "B" to "E" with volumes ranging from 5,900 to 12,400 AADT. The Polk County Transportation Planning Organization's 2035 Financially Feasible Long Range Transportation Planning model was used to develop future traffic volumes. With the planned future growth in this area these volumes are expected to increase to 22,600 to 34,500 AADT by 2036 amounting to a roadway LOS "E" or "F". The proposed widening to four lanes will allow SR 33 to meet future travel demand

at an acceptable LOS "D" or better and continue to serve as an important regional arterial. Transportation Systems Management & Operations type improvements will not adequately address future travel demand needs.

Safety - The crash history along SR 33 within the study limits was reviewed from 2007 through 2011. A total of 93 crashes occurred which included four fatalities, 48 injury crashes and 41 property damage only crashes. The actual crash rate of 0.989 crashes per million vehicle miles of travel is higher than the statewide average for similar roadways of 0.876 crashes per million vehicle miles of travel. More than half of the crashes occurred within the influence of the SR 33/I-4 interchange. Many of the crashes on SR 33 are types that are associated with congestion and the proposed widening of SR 33, reconstruction of the SR 33/I-4 interchange and addition of turn lanes at intersections is expected to improve safety along the corridor.

Planning Consistency - The project (widening SR 33 from Old Combee Road to north of Tomkow Road) is included in the Capital Improvements Plan and Transportation Element of the City of Lakeland's 2020 Comprehensive Plan. The project is also included in the Polk County Transportation Planning Organization's 2035 Mobility Vision Plan Cost Affordable Plan and FY 2013/14-2017/18 TIP. Finally, the design of the project is included in FDOT's STIP in FY 2014 and FDOT's Five Year Work Program in FY 2014.

Project Description

This capacity improvement project involves the widening of State Road 33 (SR 33) from Old Combee Road/Deeson Pointe Boulevard (milepost 4.993) to north of Tomkow Road (milepost 8.714), in Lakeland, from two lanes to four lanes. SR 33 is a two lane facility with a functional classification of "urban minor arterial." The project is approximately 3.7 miles and will require approximately 155 feet of right-of-way. (See typical section for four lane divided suburban arterial in the "A1 Typical Roadway Sections" document on the ETDM Library on the EST website.) The project is listed in the Polk Transportation Planning Organization's 2035 Cost Affordable L RTP and is displayed as a committed improvement in the City of Lakeland Comprehensive Plan.

Summary of Public Comments

Summary of Public Comments is not available at this time.

Federal Consistency Determination

Date: 05/26/2011

Determination: CONSISTENT with Coastal Zone Management Program.

Additional Consistency Information

- Consistency with Air Quality Conformity is unknown.
- Consistent with Local Government Comp Plan.
- Consistent with MPO Goals and Objectives.

Lead Agency

Federal Highway Administration

Participating and Cooperating Agencies

Participating and Cooperating agencies are not applicable for this class of action.

Exempted Agencies

Agency Name	Justification	Date
Federal Transit Administration	No transit facilities being considered as part of this project.	04/06/2011
Federal Rail Administration	No rail facilities being considered as part of this project.	04/06/2011
US Coast Guard	No navigable waterways in the vicinity of project.	04/06/2011

Community Desired Features

No desired features have been entered into the database. This does not necessarily imply that none have been identified.

User Defined Communities Within 500 Feet

No user defined communities were found within a 500 ft. buffer distance for this project.

Census Places Within 500 Feet

- Lakeland

Purpose and Need Reviews

FL Department of Environmental Protection

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	05/26/2011	Lauren Milligan (lauren.milligan@dep.state.fl.us)	No Purpose and Need comments found.

FL Department of State

Acknowledgment	Date Reviewed	Reviewer	Comments
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Understood	05/27/2011	Alyssa McManus (ammcmanus@dos.state.fl.us)	No Purpose and Need comments found.
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FL Fish and Wildlife Conservation Commission

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	05/18/2011	Scott Sanders (scott.sanders@myfwc.com)	No Purpose and Need comments found.

Federal Highway Administration

Acknowledgment	Date Reviewed	Reviewer	Comments
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National Marine Fisheries Service

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	04/25/2011	David Rydene (David.Rydene@noaa.gov)	No Purpose and Need comments found.

Natural Resources Conservation Service

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	04/18/2011	Rick Robbins (rick.a.robbins@fl.usda.gov)	No Purpose and Need comments found.

Southwest Florida Water Management District

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	05/26/2011	Hank Higginbotham (Hank.Higginbotham@swfwmd.state.fl.us)	No Purpose and Need comments found.

US Army Corps of Engineers

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	05/27/2011	Garett Lips (Garett.G.Lips@usace.army.mil)	No Purpose and Need comments found.

US Environmental Protection Agency

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	06/07/2011	Maher Budeir (budeir.maher@epa.gov)	No Purpose and Need comments found.

US Fish and Wildlife Service

Acknowledgment	Date Reviewed	Reviewer	Comments
Understood	04/25/2011	John Wrublik (john_wrublik@fws.gov)	No Purpose and Need comments found.

The following organizations were notified but did not submit a review of the Purpose and Need:

- FL Department of Agriculture and Consumer Services
- FL Department of Community Affairs
- National Park Service
- Seminole Tribe of Florida

Alternative #1

Alternative Description

Name	From	To	Type	Status	Total Length	Cost	Modes	SIS
Alternative was not named.	Old Combee Road	north of Tomkow Road	Widening	ETAT Review Complete	3.97 mi.		Roadway	N

Segment Description(s)

Location and Length

Segment Record	Segment Name	Facility Name	Beginning Location	Ending Location	Length (mi.)	Roadway Id	BMP	EMP
S-001	S-001	S-001			3.97			

Jurisdiction and Class

Segment Record	Segment Name	Jurisdiction	Urban Service Area	Functional Class
S-001	S-001			

Base Conditions

Segment Record	Segment Name	Year	AADT	Lanes	Config
S-001	S-001				

Interim Plan

Segment Record	Segment Name	Year	AADT	Lanes	Config
S-001	S-001				

Needs Plan

Segment Record	Segment Name	Year	AADT	Lanes	Config
S-001	S-001				

Cost Feasible Plan

Segment Record	Segment Name	Year	AADT	Lanes	Config
S-001	S-001				

Funding Sources

No funding sources found.

Project Effects Overview for Alternative #1

Issue	Degree of Effect	Organization	Date Reviewed
Natural			
Air Quality	0 None	US Environmental Protection Agency	06/07/2011
Coastal and Marine	0 None	Southwest Florida Water Management District	05/26/2011
Coastal and Marine	N/A N/A / No Involvement	National Marine Fisheries Service	04/25/2011
Contaminated Sites	0 None	US Environmental Protection Agency	06/07/2011
Contaminated Sites	0 None	FL Department of Environmental Protection	05/26/2011
Contaminated Sites	2 Minimal	Southwest Florida Water Management District	05/26/2011
Farmlands	2 Minimal	Natural Resources Conservation Service	04/18/2011
Floodplains	2 Minimal	US Environmental Protection Agency	06/07/2011
Floodplains	2 Minimal	Southwest Florida Water Management District	05/26/2011
Infrastructure	2 Minimal	Southwest Florida Water Management District	05/26/2011
Navigation	0 None	US Army Corps of Engineers	08/02/2011

Special Designations	0	None	US Environmental Protection Agency	06/07/2011
Special Designations	2	Minimal	Southwest Florida Water Management District	05/26/2011
Water Quality and Quantity	3	Moderate	US Environmental Protection Agency	06/07/2011
Water Quality and Quantity	2	Minimal	FL Department of Environmental Protection	05/26/2011
Water Quality and Quantity	3	Moderate	Southwest Florida Water Management District	05/26/2011
Wetlands	3	Moderate	US Environmental Protection Agency	06/07/2011
Wetlands	3	Moderate	Federal Highway Administration	06/02/2011
Wetlands	3	Moderate	US Army Corps of Engineers	05/27/2011
Wetlands	2	Minimal	FL Department of Environmental Protection	05/26/2011
Wetlands	3	Moderate	Southwest Florida Water Management District	05/26/2011
Wetlands	N/A	N/A / No Involvement	National Marine Fisheries Service	04/25/2011
Wetlands	3	Moderate	US Fish and Wildlife Service	04/25/2011
Wildlife and Habitat	3	Moderate	Southwest Florida Water Management District	05/26/2011
Wildlife and Habitat	3	Moderate	FL Fish and Wildlife Conservation Commission	05/18/2011
Wildlife and Habitat	3	Moderate	US Fish and Wildlife Service	04/25/2011
Cultural				
Historic and Archaeological Sites	3	Moderate	FL Department of State	05/27/2011
Historic and Archaeological Sites	0	None	Southwest Florida Water Management District	05/26/2011
Historic and Archaeological Sites	3	Moderate	Seminole Tribe of Florida	04/25/2011
Recreation Areas	0	None	US Environmental Protection Agency	06/07/2011
Recreation Areas	1	Enhanced	FL Department of Environmental Protection	05/26/2011
Recreation Areas	0	None	Southwest Florida Water Management District	05/26/2011
Section 4(f) Potential	2	Minimal	Federal Highway Administration	06/02/2011
Community				
Aesthetics	2	Minimal	Federal Highway Administration	06/02/2011
Aesthetics	3	Moderate	FDOT District 1	06/02/2011
Economic	1	Enhanced	FDOT District 1	06/02/2011
Land Use	2	Minimal	Federal Highway Administration	06/02/2011
Land Use	2	Minimal	FDOT District 1	06/02/2011
Mobility	1	Enhanced	FDOT District 1	06/02/2011
Mobility	1	Enhanced	FL Department of Environmental Protection	05/26/2011
Relocation	3	Moderate	Federal Highway Administration	06/02/2011

Relocation	0 None	FDOT District 1	06/02/2011
Social	0 None	US Environmental Protection Agency	06/07/2011
Social	3 Moderate	Federal Highway Administration	06/02/2011
Social	2 Minimal	FDOT District 1	06/02/2011
Secondary and Cumulative			
Secondary and Cumulative Effects	3 Moderate	Southwest Florida Water Management District	05/26/2011

ETAT Reviews and Coordinator Summary: Natural Air Quality

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 08/10/2011 by FDOT District 1

Comments:

The USEPA did not identify any air quality issues associated with this project.

Polk County is not within a designated Air Quality Non-Attainment Area or Maintenance Area for any of the four pollutants - nitrogen oxides, ozone, carbon monoxide, and small particulate matter - specified by the USEPA in National Ambient Air Quality Standards. According to the EST GIS analysis results, however, the project is located within an area identified as noncompliant with 2006-2008 and 2007-2009 ozone standards established by the USEPA and, therefore, considered a 'presumptive nonattainment area' for ozone.

Overall, the project is not expected to result in adverse effects to air quality. Because temporary impacts to air quality may occur during road construction as a result of fugitive dust and exhaust emissions, a Summary DOE of Minimal has been assigned to the Air Quality issue.

Commitments and Responses: An Air Quality Report will not be required for this project.

Technical Study: None.

Degree of Effect: 0 *None* assigned 06/07/2011 by Maher Budeir, US Environmental Protection Agency

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Additional Comments (optional):

CLC Recommendations:

The following organization(s) were expected to but did not submit a review of the Air Quality issue for this alternative: Federal Highway Administration

Coastal and Marine

Project Effects

Coordinator Summary Degree of Effect: 0 *None* assigned 08/10/2011 by FDOT District 1

Comments:

The NMFS conducted a site inspection of the project study area on 22 April 2011 to assess potential concerns to living estuarine and marine resources. The NMFS reported that it does not appear that the project will result in any direct or indirect impacts to NMFS trust resources. Coordination Document: No Involvement.

The SWFWMD did not identify any coastal or marine issues associated with this project. Coordination Document: No Involvement.

The project is not located within a coastal area; therefore, it is not anticipated to affect marine resources. For this reason, a Summary DOE of None has been assigned to the Coastal and Marine issue.

Commitments and Responses: An Essential Fish Habitat (EFH) Assessment will not be included in the scoping recommendations for

this project.

Technical Study: None.

Degree of Effect: 0 *None* assigned 05/26/2011 by Hank Higginbotham, Southwest Florida Water Management District

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: N/A *N/A / No Involvement* assigned 04/25/2011 by David A. Rydene, National Marine Fisheries Service

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:

None.

Comments on Effects to Resources:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the information contained in the Environmental Screening Tool for ETDM Project # 13188. The Florida Department of Transportation District 1 proposes widening US 33 from Old Combee Road to north of Tomkow Road in Polk County, Florida. The road would be widened from two lanes to four lanes

NMFS staff conducted a site inspection of the project area on April 22, 2011, to assess potential concerns regarding living aquatic resources. It does not appear that there will be any direct or indirect impacts to NMFS trust resources. Since the resources affected are not ones for which NMFS is responsible, we have no comment to provide regarding the project's impacts.

Additional Comments (optional):

CLC Recommendations:

The following organization(s) were expected to but did not submit a review of the Coastal and Marine issue for this alternative:
Federal Highway Administration

Contaminated Sites

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 08/10/2011 by FDOT District 1

Comments:

The FDEP did not identify any contamination issues associated with this project.

The SWFWMD reported that while no potentially contaminated sites were observed within the immediate project vicinity during the field assessment conducted on 18 April 2011, the 500-foot project buffer contains multiple onsite sewage treatment facilities (including septic tanks and drain fields). The project is also located within a phosphate mining reclamation area. The SWFWMD stated that there may be unreported contamination sources within the 100-foot to 500-foot project buffers due to the former mining activities within the area. Coordination Document: Permit Required.

The USEPA did not identify any contamination issues associated with this project.

According to the EST GIS analysis results, there are no Brownfield locations, hazardous waste sites, National Priority List sites, nuclear sites, RCRA-regulated facilities, Superfund hazardous waste sites, or Toxic Release Inventory sites located within the 200-foot buffer of this project. In addition, the Onsite Sewage Treatment and Disposal Systems reported through the EST GIS analysis results within the project's 500-foot buffer consist of permitted residential and commercial septic tanks. Based on the fact that the project study area is located within a former phosphate mining region, however, a Contamination Screening Evaluation is recommended for this project. As a result, a Summary DOE of Minimal has been assigned to the Contaminated Sites issue.

Commitments and Responses: Preparation of a Contamination Screening Evaluation Report will be included in the scoping recommendations for this project.

Technical Study: Contamination Screening Evaluation Report.

Degree of Effect: 0 *None* assigned 06/07/2011 by Maher Budeir, US Environmental Protection Agency

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 0 *None* assigned 05/26/2011 by Lauren P. Milligan, FL Department of Environmental Protection

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 2 *Minimal* assigned 05/26/2011 by Hank Higginbotham, Southwest Florida Water Management District

Coordination Document: Permit Required

Coordination Document Comments: The SWFWMD has assigned a Degree of Effect based on their opinion of the potential of this project to result in increased coordination or effort associated with the SWFWMD's regulatory interests and obligations.

To minimize groundwater and surface water pollution potential, it may be helpful to:

1. Confirm the presence or absence of existing potable supply wells, both public and domestic, and identify precisely all potential sources of contamination within the path of construction or in proximity of the proposed surface water management systems;
2. Avoid known contaminated sites where possible in the selection of the project alignment and stormwater runoff facilities;
3. Thoroughly evaluate potential stormwater treatment facility sites for the presence of contamination and eliminate contaminated sites as possible pond sites; and
4. Design and construct stormwater treatment facilities to prevent physical disturbance and water quality impacts to the Floridan Aquifer.

Direct Effects

Identified Resources and Level of Importance:

No potentially contaminated sites were observed on the day of the onsite visit (18APR2011). However, there are multiple onsite sewage treatment facilities (including septic tanks and drain fields) located within 500 feet of the project, and the project area is reclaimed from former phosphate mining activities. There may be additional, unrecorded contaminated sites within the 100-foot to 500-foot buffers for the project.

The project is located in former mining areas and it is possible that there are very local patches of increased vulnerability due to the past disturbance and removal of overburden materials composing the intermediate and surficial aquifers. The project area may be in a Karst area, according to the District publication: "Development of Proposed Environmental Resource Permit Criteria for Sensitive Karst Areas," SWRF, LLC, September 2007.

Regionally, the pollution potential of the Floridan Aquifer is moderate as indicated by DRASTIC scores between 138 and 140 within the 100-foot to 500-foot buffer area. The pollution potential of the intact intermediate aquifer is lower, with DRASTIC scores ranging between 93 and 95; however, the material composing the intermediate aquifer may be absent in some local areas within 500 feet of the project. The DRASTIC score for the intact surficial aquifer is the highest of the three aquifers at approximately 186. Where present, this aquifer system would be the most vulnerable to pollution; however, it may be locally absent within the 500-foot buffer area. The regional DRASTIC scores are consistent with the regional FAVA vulnerability response.

Within 100 - 500 feet of the project, the recharge rate to the Floridan is estimated at 1- 10 inches/year.

Comments on Effects to Resources:

If encountered and disturbed during construction, contaminated soils or other materials could result in surface and/or groundwater pollution. Because of the proximity of Lake Deeson the pollution vulnerability of the Floridan Aquifer, the pollution potential of project construction activities may be high as a result of contamination entering surface or ground water from untreated or under-treated stormwater runoff or the interception of contaminated soils.

Additional Comments (optional):

The SWFWMD has assigned a Degree of Effect based on their opinion of the potential of this project to result in increased coordination or effort associated with the SWFWMD's regulatory interests and obligations.

To minimize groundwater and surface water pollution potential, it may be helpful to:

1. Confirm the presence or absence of existing potable supply wells, both public and domestic, and identify precisely all potential sources of contamination within the path of construction or in proximity of the proposed surface water management systems;
2. Avoid known contaminated sites where possible in the selection of the project alignment and stormwater runoff facilities;
3. Thoroughly evaluate potential stormwater treatment facility sites for the presence of contamination and eliminate contaminated sites as possible pond sites; and
4. Design and construct stormwater treatment facilities to prevent physical disturbance and water quality impacts to the Floridan Aquifer.

CLC Recommendations:

The following organization(s) were expected to but did not submit a review of the Contaminated Sites issue for this alternative: Federal Highway Administration

Farmlands

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 08/10/2011 by FDOT District 1

Comments:

The NRCS commented that no Prime Farmland soils occur within any of the project buffer widths based on the EST GIS analysis results. The NRCS reported, however, that Unique Farmland soils exist within the project area; the amounts range from 12.6 acres within the 100-foot project buffer to 55.4 acres within the 500-foot buffer. The NRCS indicated that while impacts to Farmlands of Unique Importance are restricted to the extreme southwestern part of the project, this area has been converted to residential uses since the soil survey was originally published. As such, the impact to important farmlands is negligible.

According to the EST GIS analysis results, 24.8 acres (12.72%) of Farmland of Unique Importance are located within the 200-foot project buffer. Consistent with the City of Lakeland's Comprehensive Plan and the Polk Transportation Planning Organization's (TPO) 2035 Long Range Transportation Plan (LRTP), the project occurs within an area characterized by open spaces and agricultural land, low to medium density residences, and light industry, with a growing residential and mixed use character. Future land use plans call for increased residential, industrial, and mixed use developments in the area. For these reasons, a Summary DOE of Minimal has been assigned to the Farmlands issue.

Commitments and Responses: A Farmlands Assessment will not be required for this project.

Technical Study: None.

Degree of Effect: 2 *Minimal* assigned 04/18/2011 by Rick Allen Robbins, Natural Resources Conservation Service

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

The USDA-NRCS considers soil map units with important soil properties for agricultural uses to be Prime Farmland. In addition, the USDA-NRCS considers any soils with important soil properties and have significant acreages that are used in the production of commodity crops (such as, cotton, citrus, row crops, specialty crops, nuts, etc.) to be considered as Farmlands of Unique Importance. Nationally, there has been a reduction in the overall amount of Prime and Unique Farmlands through conversion to non-farm uses. This trend has the possibility of impacting the nation's food supply and exporting capabilities.

Comments on Effects to Resources:

Conducting GIS analysis of Prime Farmland (using USDA-NRCS data) and Important (Unique) Farmland Analysis (using 2010 SSURGO data) has resulted in the determination that there are no Prime Farmland Soils at any buffer width. However, there are Unique Farmland soils at all buffer widths within the Project Area. The amounts range from 12.6 acres at the 100' buffer width and 55.4 acres at the 500' buffer width. The impact to Farmlands of Unique Importance is restricted to the extreme southwestern part of the project. This area has been converted to residential uses since the soil survey was originally published. In this circumstance, the impact to important farmlands is negligible. Therefore, we are assigning a Minimal Degree of Impact for this project.

Additional Comments (optional):

CLC Recommendations:

The following organization(s) were expected to but did not submit a review of the Farmlands issue for this alternative: Federal Highway Administration

Floodplains

Project Effects

Coordinator Summary Degree of Effect: 2 Minimal assigned 08/10/2011 by FDOT District 1

Comments:

The SWFWMD commented that approximately 0.019 acre of DFIRM Flood Zone A occurs within the project's 100-foot buffer; this small area extends along the eastern right-of-way of SR 33 and is occupied by a forested wetland of good quality. The SWFWMD also noted that 1.7 acres of Flood Zone A occur within the 200-foot project buffer; the remainder of the project area occurs within Flood Zone X. The SWFWMD additionally mentioned that the project crosses a ditch (approximately 500 feet south of Village Lakes Boulevard) that connects two artificial ponds located east and west of SR 33. The SWFWMD further noted that the addition of fill to this ditch may require floodplain compensation if floodplain stage is altered. Coordination Document: Permit Required.

The USEPA reported that while approximately 1.7 acres of Hazardous Flood Zone is located within the 200-foot project buffer, impact on the floodplain is likely to be minimal. The USEPA indicated that impacts can be minimized by increasing drainage efficiency and coordinating with other agencies to avoid and mitigate.

According to the EST GIS analysis results, only 1.7 acres (0.84%) of the project's 200-foot buffer is located within FEMA Flood Zone A (an area within the 100-year floodplain for which base flood elevations have not been determined). The remaining 193.7 acres (99.16%) of the project's 200-foot buffer occurs within FEMA Flood Zone X (an area determined to be outside of the 100- and 500-year floodplains). Based on the foregoing, a Summary DOE of Minimal has been assigned to the Floodplains issue.

Commitments and Responses: A Floodplains Assessment will be included in the scoping recommendations for this project.

Technical Study: Floodplains Assessment.

Degree of Effect: 2 Minimal assigned 06/07/2011 by Maher Budeir, US Environmental Protection Agency

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

Less than two acres in the 200-foot buffer zone.

Comments on Effects to Resources:

About 1.7 acres of Hazardous Flood Zone is identified to be within the 200 foot buffer. Impact on the floodplain is likely, but is minimal. This impact can be minimized by increasing drainage efficiency and coordinating with other agencies to avoid and mitigate the impact. Areas that will be filled in should be carefully designed to minimize impacts on adjacent properties.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 2 Minimal assigned 05/26/2011 by Hank Higginbotham, Southwest Florida Water Management District

Coordination Document: Permit Required

Coordination Document Comments: The SWFWMD has assigned a Degree of Effect based on their opinion of the potential of this project to result in increased coordination or effort associated with the SWFWMD's regulatory interests and obligations.

If recent, reliable data indicate that floodplain impacts will occur, such impacts can be reduced or eliminated by providing compensation for lost floodplain storage.

For those improvements that may affect the existing cross drainage facilities, a bridge hydraulics report should be prepared and submitted with the Environmental Resource Permit application.

In the future, Polk County and the SWFWMD may update the FEMA Flood Insurance Rate Maps (FIRMs) using limited hydraulic and hydrologic modeling and approximate methods using recent land cover data. These data may be useful in the design of the project.

Direct Effects

Identified Resources and Level of Importance:

Approximately 0.019 acre of DFIRM Zone A occurs within the 100-foot project buffer. This small area extends along the eastern ROW of SR 33 for an approximate length of 400 feet commencing at a point located 191 feet south of the SR 33/Tomkow Rd intersection. This area is occupied by a forested wetland that is of good quality. The remainder of the project appears to be located in Zone X. Within the 200-foot buffer, the area expands to 1.7 acres.

It should be noted that there is potential for the project to affect several other areas of historic basin storage that may require compensation but have not been identified on the FEMA flood plain maps or the map updates. One such area may be the ditch passing under SR-33 at a point 507 feet southwest of the SR-33/Village Lakes Blvd intersection. This ditch connects two artificial ponds that are located on the east and west sides of SR 33.

Comments on Effects to Resources:

If the project were to result in fill placed within a floodplain or historic basin storage area, there would be the potential to raise the floodplain stage or to prolong the duration of flooding.

Additional Comments (optional):

The SWFWMD has assigned a Degree of Effect based on their opinion of the potential of this project to result in increased coordination or effort associated with the SWFWMD's regulatory interests and obligations.

If recent, reliable data indicate that floodplain impacts will occur, such impacts can be reduced or eliminated by providing compensation for lost floodplain storage.

For those improvements that may affect the existing cross drainage facilities, a bridge hydraulics report should be prepared and submitted with the Environmental Resource Permit application.

In the future, Polk County and the SWFWMD may update the FEMA Flood Insurance Rate Maps (FIRMs) using limited hydraulic and hydrologic modeling and approximate methods using recent land cover data. These data may be useful in the design of the project.

CLC Recommendations:

The following organization(s) were expected to but did not submit a review of the Floodplains issue for this alternative: FL Department of Environmental Protection, Federal Highway Administration

Infrastructure

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 08/10/2011 by FDOT District 1

Comments:

The SWFWMD reported that two groundwater sampling wells are located within the 200-foot project buffer; three National Geodetic Survey Benchmarks are also located near the proposed project. The SWFWMD recommends that FDOT contact the SWFWMD Hydrologic Data Section in the Brooksville Office to discuss potential impacts to the data collection sites as the disruption of data collection can adversely affect the quality of long term analysis. Coordination Document: To Be Determined: Further Coordination Required.

According to the EST GIS analysis results, the following infrastructure-related features are present within the 500-foot project buffer: one FDEM fire station, one limited use drinking water well, and 466.4 linear feet of railway (railroad siding). USEPA Water Quality Data Monitoring Stations were only identified within the 5,280-foot project buffer. While a limited number of infrastructure-related features are located within the immediate project vicinity, due to agency concerns regarding potential impacts to data collection sites, a Summary DOE of Minimal has been assigned to the Infrastructure issue.

Commitments and Responses: None.

Technical Study: None.

Degree of Effect: 2 *Minimal* assigned 05/26/2011 by Hank Higginbotham, Southwest Florida Water Management District

Coordination Document: To Be Determined: Further Coordination Required

Coordination Document Comments: The FDOT is encouraged to contact the District's Hydrologic Data Section in the Brooksville headquarters to discuss potential impacts to the District's data collection sites.

Direct Effects

Identified Resources and Level of Importance:

Two groundwater sampling wells (Site IDs: 17568 and 17567) are located within 200-feet of the proposed alternative. Additional infrastructure information is provided below:

SITE_ID SITE_NAME SITE_TYPE1 SITE_PRI_1 SITE_STATUS

17622	SADDLE CREEK WT	Atmospheric Rainfall	Inactive
17569	WILLIAMS POND CLAY MONITOR SURF	Groundwater Well	Inactive
17623	I-4 DEEP WELL NR POLK CITY	Groundwater Well	Inactive
17567	COMBEE ROAD DEEP	Groundwater Well	Active
17674	LAKELAND HILLS DEEP NR LAKELAND	Groundwater Well	Inactive
17568	STATE ROAD 33-COMBEE ROAD SHALLOW	Groundwater Well	Active

The following NGS Benchmarks are located near this proposed SR-33 widening project:

http://www.ngs.noaa.gov/cgi-bin/ds_mark.prl?PidBox=AK1542

http://www.ngs.noaa.gov/cgi-bin/ds_mark.prl?PidBox=AK1540

http://www.ngs.noaa.gov/cgi-bin/ds_mark.prl?PidBox=AK1541

Comments on Effects to Resources:

Disruption of data collection can adversely affect the quality of long term analysis.

Additional Comments (optional):

The FDOT is encouraged to contact the District's Hydrologic Data Section in the Brooksville headquarters to discuss potential impacts to the District's data collection sites.

CLC Recommendations:

The following organization(s) were expected to but did not submit a review of the Infrastructure issue for this alternative: Federal Highway Administration

Navigation

Project Effects

Coordinator Summary Degree of Effect: N/A *N/A / No Involvement* assigned 08/10/2011 by FDOT District 1

Comments:

The USACE did not identify any navigable waterways within the project study area. The USACE stated that the study should ensure navigation will remain unaffected in case an important factor was overlooked. Coordination Document: PD&E Support Document as per PD&E Manual.

The project does not cross any navigable waterways. For this reason, a Summary DOE of N/A / No Involvement has been assigned to the Navigation issue.

Commitments and Responses: A Navigation Study, Bridge Questionnaire, and USCG Bridge Permit will not be required for this project.

Technical Study: None.

Permit: None.

Degree of Effect: 0 *None* assigned 08/02/2011 by Garrett Lips, US Army Corps of Engineers

Coordination Document: PD&E Support Document As Per PD&E Manual

Direct Effects

Identified Resources and Level of Importance:

The EST identified no navigable waterways or marine facilities so the degree of effect should be none for navigation; however, the study should ensure navigation will remain unaffected if the EST overlooked an important factor.

The EST also identified approximately less than 10 acres of NWI wetlands within 200 feet of the roadway corridor, and approximately 28 acres of wetlands within 500 feet of the roadway. The Corps expects the study and design to implement alternatives and design configurations that avoid wetlands to the extent practical. The Corps recommends the FDOT to study not only alternatives that achieve the project purpose and are feasible but also recommend FDOT to consider a design with the smallest environmental footprint from the onset of the study and not to propose overly aggressive sprawling roadway configurations in anticipation of future changes to water quality requirements, for instance. We recommend modest roadway designs with only the minimum, yet safe, travel lane widths and recommend the maximum use of barriers in lieu of wide shoulders or medians, and retaining walls in areas of wetlands to reduce the overall roadway footprint. The Corps agrees with the FHWA project concept of "every day counts" and supports the process to accelerate project delivery and to maximize protection of the environment.

CERP projects: The EST did not identify any CERP project within the area of the proposed project.

Comments on Effects to Resources:

The Corps recommends avoidance of all wetlands and waters where practicable alternatives exist. The impacts must implement measures to minimize impacts to the extent practical. However, if unavoidable impacts are anticipated, the Corps recommends the FDOT to follow the most current regulations regarding compensatory mitigation. Currently, the hierarchy preference is for mitigation bank credit purchase.

Additional Comments (optional):

CLC Recommendations:

The following organization(s) were expected to but did not submit a review of the Navigation issue for this alternative: Federal Highway Administration

Special Designations

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 08/10/2011 by FDOT District 1

Comments:

The SWFWMD reported that the 7,000-acre FWC Tenoroc Fish Management Area occurs approximately 300 feet south of the project, and the northernmost portion of the project (0.02 mile) is located within the Green Swamp Area of Critical State Concern; the area to potentially be affected, however, is located on the extreme edge of the Area of Critical State Concern. The SWFWMD stated that project effects to these resources are expected to be minimal as SR 33 is an existing roadway and the proposed impact areas have previously been disturbed by development. Coordination Document: Permit Required.

The USEPA did not identify any issues associated with resources of special designation for this project.

According to the EST GIS analysis results, the Green Swamp Area of Critical State Concern is the only resource of special designation reported within the 200-foot project buffer. Avoidance and minimization will be addressed during the project's design

and permitting phase, and best management practices will be implemented during project construction activities. In addition, the project study area is located within a previously disturbed region of the Green Swamp along its southern boundary. Therefore, a Summary DOE of Minimal has been assigned to the Special Designations issue.

Commitments and Responses: None.

Technical Study: None.

Degree of Effect: 0 *None* assigned 06/07/2011 by Maher Budeir, US Environmental Protection Agency

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 2 *Minimal* assigned 05/26/2011 by Hank Higginbotham, Southwest Florida Water Management District

Coordination Document: Permit Required

Coordination Document Comments: The SWFWMD has assigned a Degree of Effect based on their opinion of the potential of this project to result in increased coordination or effort associated with the SWFWMD's regulatory and proprietary interests and obligations.

Direct Effects

Identified Resources and Level of Importance:

The 7,000-acre FFWCC Tenoroc Fish Management Area is located 307 feet south of the project in the vicinity of the Old Combee Rd/Deeson Pointe Blvd intersection. The main entrance to the facility is located off CR-33A/CR-659 and is accessed from I-4 Exit 38 (SR33).

Approximately 0.02 mile of the project at the north terminus is located in the Green Swamp Area of Critical Concern. Within this 0.02-mile length, land use/cover includes the northern tip of a 9-acre forested wetland, a driveway into a parking lot, mowed SR 33 ROW and a 0.9-acre disturbed upland forested area.

Most of the project is located within the Withlacoochee Environmental Management Area. Less than 1% of the project (at the west terminus) is located within the Charlotte Harbor Environmental Management Area.

The proposed site is located within an area previously identified as a Sensitive Karst Area (see "Development of Proposed Environmental Resource Permit Criteria for Sensitive Karst Areas" by SWRF, L.L.C. (fka Storm Water Resources of Florida, L.C.) by the Southwest Florida Water Management District, 9/2007)

Comments on Effects to Resources:

Effects are expected to be minimal. SR-33 is an existing facility; the very small area of impact is already disturbed, and the affected area is located on the extreme edge of the Area of Critical Concern.

Additional Comments (optional):

The SWFWMD has assigned a Degree of Effect based on their opinion of the potential of this project to result in increased coordination or effort associated with the SWFWMD's regulatory and proprietary interests and obligations.

CLC Recommendations:

The following organization(s) were expected to but did not submit a review of the Special Designations issue for this alternative: FL Department of Agriculture and Consumer Services, Federal Highway Administration

Water Quality and Quantity

Project Effects

Coordinator Summary Degree of Effect: 3 *Moderate* assigned 08/10/2011 by FDOT District 1

Comments:

The FDEP commented that the project is located within the hydrologic boundaries of the Green Swamp Area of Critical State Concern and that the watershed conditions in the project area are generally good. The FDEP reported that stormwater runoff from the road surface may alter adjacent wetlands and surface waters through increased pollutant loading; therefore, every effort should be made to maximize the treatment of stormwater runoff to prevent ground and surface water contamination. The FDEP recommends that the PD&E study include an evaluation of existing stormwater treatment adequacy and details on future stormwater treatment facilities. Coordination Document: Permit Required.

The SWFWMD reported that the project is located within three impaired basins: Lake Deeson (WBID 1449A), Saddle Creek (WBID 1497), and Lake Tenoroc (WBID 1497C). The SWFWMD noted that the existing swale system associated with SR 33 appears to provide both attenuation and water quality treatment for stormwater runoff; however, the existing culverts need maintenance. Within the project's 200-foot buffer, the SWFWMD identified a stormwater management system that may belong to Arbor Glenn Apartments and a stormwater ditch that drains to Lakeland Harbor Mobile Home Park. The SWFWMD commented that any impacts to the existing stormwater management system will require storage compensation. The SWFWMD also stated that localized patches of increased vulnerability to the three aquifers (Floridan, intermediate, and surficial) may exist due to the former mining activities in the area. The SWFWMD recommends that:

- FDOT refer to the Peace River watershed study to confirm watershed boundaries and obtain the latest topographic information;
- Stormwater ponds be designed as shallow as practical and that geotechnical evaluations be conducted within potential pond sites in order to determine the potential for sinkhole development;
- A pre-application meeting be conducted prior to submittal of the ERP application (Note: an existing pre-application file (#398253) is being maintained at the SWFWMD Brooksville Service Office); and
- FDOT refer to 1) the list of Environmental Resource Permits located within the project's 200-foot buffer and 2) specific studies containing useful water quality and hydrologic information that can be accessed through the SWFWMD's online library during future phases of project development.

Coordination Document: Permit Required.

The USEPA indicated that the project has the potential to increase impervious surface in the area, which will impact the water flow and water quality in the Saddle Creek basin (which includes Lake Gibson, Lake Parker, and Lake Crago); the Green Swamp (Withlacoochee River basin); and several unnamed ponds and ditches. The USEPA stated that stormwater treatment should be optimized to minimize the impact of runoff.

There are no Outstanding Florida Waters or Aquatic Preserves located within the project's 200-foot buffer. While the project will be designed to meet state water quality and quantity standards, a Summary DOE of Moderate has been assigned to the Water Quality and Quantity issue due to the presence of impaired waters within the project study area.

Commitments and Responses: A Water Quality Impact Evaluation (WQIE), per FDOT guidance, will be included in the scoping recommendations for this project.

Technical Study: Water Quality Impact Evaluation (WQIE).
Permit: Environmental Resource Permit.

Degree of Effect: 3 *Moderate* assigned 06/07/2011 by Maher Budeir, US Environmental Protection Agency

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

The Project area impacts the Saddle Creek basin, which also includes Lake Gibson, Lake Parker, Lake Crago, the Green Swamp (Withlacoochee River basin), and several unnamed ponds and ditches.

Comments on Effects to Resources:

The proposed widening will significantly increase the impervious area, therefore will impact the water flow and water quality. Stormwater treatment should be optimized to minimize the impact of runoff on the water bodies listed above. The moderate degree of effect is assigned based on the scale of the project and the potential level of impact.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 2 *Minimal* assigned 05/26/2011 by Lauren P. Milligan, FL Department of Environmental Protection

Coordination Document: Permit Required

Direct Effects

Identified Resources and Level of Importance:

The proposed project is within the hydrologic boundaries of the Green Swamp. The watershed conditions in the project area are generally good. Stormwater runoff from the road surface may alter adjacent wetlands and surface waters through increased pollutant loading. Increased runoff carrying oils, greases, metals, sediment, and other pollutants from the increased impervious surface will be of concern. Natural resource impacts within and adjacent to the proposed road right-of-way will likely include alteration of the existing surface water hydrology and natural drainage patterns, and reduction in flood attenuation capacity of area creeks, ditches, and sloughs as a result of increased impervious surface within the watershed.

Comments on Effects to Resources:

Every effort should be made to maximize the treatment of stormwater runoff from the proposed road project to prevent ground and surface water contamination. Stormwater treatment should be designed to maintain the natural predevelopment hydroperiod and water quality, as well as to protect the natural functions of adjacent wetlands. We recommend that the PD&E study include an evaluation of existing stormwater treatment adequacy and details on the future stormwater treatment facilities. Retro-fitting of stormwater conveyance systems would help reduce impacts to water quality.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 3 *Moderate* assigned 05/26/2011 by Hank Higginbotham, Southwest Florida Water Management District

Coordination Document: Permit Required

Coordination Document Comments:The SWFWMD has assigned a Degree of Effect based on their opinion of the potential of this project to result in increased coordination or effort associated with the SWFWMD's regulatory and proprietary interests and obligations.

According to the "EPA drainage basins" and information from the District and FDEP, Lake Deeson is located in the Withlacoochee River Basin; however, the Polk Water Atlas locates Lake Deeson in the Peace River Basin. Refer to the Peace River watershed study to confirm the watershed boundaries, and latest topographic (LiDAR) information.

Due to the potential for contamination of surface waters and the Floridan Aquifer, it is recommended that the stormwater facilities be designed as shallow as practical and that geotechnical evaluations of specific pond sites be conducted to determine the potential for sinkhole development and direct entry of runoff to the Floridan Aquifer. Discharge from the project's facilities shall not cause or contribute to reduced water quality in Lake Deeson.

Water quality data are available for Lake Deeson from EPA, Polk County Department of Natural Resources and the District. Stage data for Lake Deeson area available from the District's Lake Deeson stage data collection site located at 2806'45.10"N 08155'53.50".

The District will require that stormwater management systems that discharge directly or indirectly into waters not meeting standards, including impaired waters, provide a net improvement condition in the water body in terms of the pollutants that contribute to the water body's impairment. A higher level of treatment may be necessary to assure that permitted facilities meet that requirement (refer to Section 3.3.1.4 of the District's Basis of Review).

Hydrologic and meteorological data are available from four District data collection sites in the general project vicinity which are listed below:

SWFWMD ID #116 LAKE DEESON STAGE;
SWFWMD ID #398 LAKE GIBSON RAINFALL;
SWFWMD ID #910 COMBEE ROAD DEEP WELL; and
SWFWMD ID #1570 SR 33/COMBEE ROAD SHALLOW WELL.

In addition, specific studies that contain useful water quality and hydrologic information have been done by FDEP, the SWFWMD and the USGS. These reports can be accessed through the District's Library at <http://www15.swfwmd.state.fl.us/dbtw-wpd/mywebqbe/librarybasic.htm>. Type in the water body of interest, click on "Submit query" then click on the pull-down menu in the upper left and select "Record Display - Web." Publications of particular relevance include:

Gates, M.T. 2009. Hydrogeologic investigation of the upper Peace River in Polk County, FL. SWFWMD. Brooksville, FL.
Metz, P.A. 2009. Hydrologic conditions that influence streamflow losses in a karst region of the upper Peace River Polk County, FL. USGS. Reston, VA.
Keith & Schnars, Inc. 2003. Saddle Creek watershed management program: Task II Watershed management plan, vols. 1 & 2. SWFWMD. Brooksville, FL.
Spechler, R.M., and Kroening, S.E., 2007. Hydrology of Polk County, Florida: U.S. Geological Survey Scientific Investigations Report 2006-5320. USGS. Reston, VA.114 p.

Projects of the SWFWMD that may be helpful in the PD&E and design phase of the project include:

1. Project K075 - Polk County Watershed Management Plan-Saddle Creek
2. Project K081 - Auburndale-Tenoroc Wetland Improvement Phase Two, and
3. Project N122 - Stormwater Improvements-Flood Protection for Polk County.

The FDOT is encouraged to contact the District's Resource Projects Engineering Section in the Brooksville headquarters to discuss the above referenced projects.

If this project's proprietary authorizations qualify as a project of Heightened Public Concern, additional steps will be required during the review process and prior to ERP approvals.

If this project will require the acquisition of new right-of-way areas, the current rule for eminent domain noticing is 40D-1.603(9), FAC and requires the applicant to provide the noticing to the affected property owners. Additionally, any issued permit may include special conditions prohibiting construction until the FDOT provides evidence of ownership and control.

The District has assigned a pre-application file (PA #398253) for the purpose of tracking its participation in the ETDM review of this project. Previous pre-application files for this SR-33 project include PA #8259, PA #9161 and PA #397628. Pre-application files are maintained at the District's Bartow Service Office. Please refer to the pre-application file when contacting District regulatory staff regarding this project.

Direct Effects

Identified Resources and Level of Importance:

The south terminus of the project occupies a drainage divide between the Withlacoochee River Watershed and the Peace River Watershed. The extreme end of the south terminus is located in the Peace River Basin, specifically the Saddle Creek basin (WBID 1497) which also includes Lake Gibson (WBID 1497D), Lake Parker (WBID 1497B) and Lake Crago (WBID 1497D1). The remainder of the project occupies the Orange Hammock Drain basin (WBID 1449) which contributes flows to the Green Swamp, thence the Withlacoochee River. Also included in the Withlacoochee Basin is the Lake Deeson drainage basin (WBID 1449A), a closed system located within 600 feet of the project.

Other waterbodies within the 500-foot buffer area include several unnamed ponds and ditches.

Surface waterbodies within the project area include: Lake Deeson; Lake Tenoroc and the other ponds on the Tenoroc Fish Management Area which is located 307 feet south of the project; numerous artificial ponds remaining after mining ceased; golf course ponds, and stormwater ponds. Two of the larger artificial ponds are connected under SR 33 by means of a ditch located at a point 507 feet southwest of the SR 33/Village Lakes Blvd intersection. The ditch is approximately 992 feet in length and there is a small weir structure across the ditch at approximately 300 feet northwest of SR 33.

The November 02, 2010 Verified List of Impaired Waters includes the following TMDL information relevant to the District's permitting interests for this project: Lake Deeson basin (WBID 1449A) is impaired for nutrients.

The January 15, 2010 Verified List of Impaired Waters includes the following TMDL information relevant to the District's permitting interests for this project:

Saddle Creek basin (WBID 1497) is impaired for nutrients, coliform bacteria and dissolved oxygen;
Lake Tenoroc basin (WBID 1497C) is impaired for nutrients.

During site visits on 08/11/2010 and 04/18/11, culverts were observed across and near the proposed project. Based on the field reconnaissance, the existing swale system seems to be providing both attenuation and water quality treatment of the runoff from the SR-33. However, the culverts that were observed need maintenance. Erosion and sediment were observed in and at the culverts. The culverts seem to have been modified in the past and may need more modification due to the proposed expansion to four lanes.

At the Melody Lane and Old Combee Road Intersection, an RCP culvert is located across SR-33. Also, a Stormwater Management System that possibly belongs to the Arbor Glenn Apartments is located within the 200 foot proposed segment buffer corridor north of SR-33. To the South, within the 200 foot buffer, a stormwater ditch is located that drains into Lakeland Harbor Mobile Home Park. Provisions must be made in terms of storage compensation should the proposed project affect the stormwater pond.

The proposed alternative is located within 200-feet of several existing Environmental Resource Permits, as follows:

7112.005 - COL East West Road Permit Modification (City of Lakeland)
2832.001 - FDOT SR 33 Widening I-4 to Old Combee Road (Florida Department of Transportation)
19706.000 - THE ATRIUM APARTMENT HOMES (Parke 33-Ph II LLC & Courtyd Etc)
7065.000 - DOT-PARK & RIDE LOT, SR 33 & I-4 (Florida Dept Of Transportation)
2832.000 - DOT-S.R. 33 (Florida Dept Of Transportation)
10752.000 - LAKE DEESON WOODS (North Oaks Partnership)
25559.000 - LAKELAND-FIRE STATION 6 (City Of Lakeland Facilities & Const Mgmt)
21375.002 - FIRST PARK AT BRIDGEWATER PHASE 1 (Fr Development Services Inc)
21375.008 - GATEWAY LAKELAND COMMERCIAL PARK (I-433 Venture LLC)
21375.003 - THE VILLAGES @ BRIDGEWATER-REVISED SWM (View Properties Inc & Board Of Trustees-Internal Imp Trust Fund)
20706.000 - WARNOCK CR 33 WAREHOUSES (Capstone Holdings)
21375.014 - VILLAGES AT BRIDGEWATER PH 2 (Bridgewater Lakeland Developers)
21375.022 - VILLAGES AT BRIDGEWATER (Villages At Bridgewater Community Association Inc.)
21375.001 - BRIDGEWATER PH I (Bridgewater Lakeland Developers)
11896.038 - DOT I-4 WIDENING SECTIONS 3-4 AND 5 (FDOT District One)
21607.000 - LAKELAND CITY OF-NE WATER TRANSMISSION (City Of Lakeland Water Utilities Water Administration)
21375.013 - VILLAGES AT BRIDGEWATER PH I-409 UNITS (Bridgewater Lakeland Developers)
21375.004 - THE VILLAGES @ BRIDGEWATER-PHS I (Bridgewater Lakeland Developers)
21607.001 - LAKELAND CITY OF-NE WATER TRANSMISSION (City Of Lakeland Water Utilities Water Administration)
21375.020 - VILLAGES AT BRIDGEWATER - PH I (Bridgewater Lakeland Dev LLC &)
33549.000 - STATE ROAD 33 SELF STORAGE (33 Self Storage LLC)
25789.001 - SPANISH OAKS (Spanish Oaks Of Central FL LLC)
34389.001 USF Polytechnic Campus
7112.004 East West Road Borrow Areas
7112.006 Williams/USFP Stockpile Area
2832.001 FDOT SR 33 Widening I-4 to Old Combee Road
16851.000 Polk Co. - Lake Deeson Water Management Plan

Hydrogeologically, the project area is characterized by a three-aquifer system that includes the Floridan Aquifer, an intermediate aquifer and the surficial aquifer. The project is located in former mining areas and it is possible that there are localized patches of increased vulnerability due to the past removal of overburden materials composing the intermediate and surficial aquifers. The project area may be in a Karst area, according to the District publication: "Development of Proposed Environmental Resource Permit Criteria for Sensitive Karst Areas," SWRF, LLC, September 2007.

Comments on Effects to Resources:

Impacts associated with the project may include: increased runoff volumes and decreased runoff quality in discharges to Lake Deeson which receives untreated runoff from its immediate medium density residential watershed and from SR 33. Filling within the floodplain or historic basin storage areas may cause or contribute to increased flood stages or durations on Lake Deeson. The project has the potential to result in groundwater contamination from stormwater runoff due to the karstic nature of the project area and the hydrologic disturbances resulting from past mining activity.

Additional Comments (optional):

The SWFWMD has assigned a Degree of Effect based on their opinion of the potential of this project to result in increased coordination or effort associated with the SWFWMD's regulatory and proprietary interests and obligations.

According to the "EPA drainage basins" and information from the District and FDEP, Lake Deeson is located in the Withlacoochee River Basin; however, the Polk Water Atlas locates Lake Deeson in the Peace River Basin. Refer to the Peace River watershed study to confirm the watershed boundaries, and latest topographic (LiDAR) information.

Due to the potential for contamination of surface waters and the Floridan Aquifer, it is recommended that the stormwater facilities be designed as shallow as practical and that geotechnical evaluations of specific pond sites be conducted to determine the potential for sinkhole development and direct entry of runoff to the Floridan Aquifer. Discharge from the project's facilities shall not cause or contribute to reduced water quality in Lake Deeson.

Water quality data are available for Lake Deeson from EPA, Polk County Department of Natural Resources and the District. Stage data for Lake Deeson area available from the District's Lake Deeson stage data collection site located at 2806'45.10"N 08155'53.50".

The District will require that stormwater management systems that discharge directly or indirectly into waters not meeting standards, including impaired waters, provide a net improvement condition in the water body in terms of the pollutants that contribute to the water body's impairment. A higher level of treatment may be necessary to assure that permitted facilities meet that requirement (refer to Section 3.3.1.4 of the District's Basis of Review).

Hydrologic and meteorological data are available from four District data collection sites in the general project vicinity which are listed below:

SWFWMD ID #116 LAKE DEESON STAGE;
SWFWMD ID #398 LAKE GIBSON RAINFALL;
SWFWMD ID #910 COMBEE ROAD DEEP WELL; and
SWFWMD ID #1570 SR 33/COMBEE ROAD SHALLOW WELL.

In addition, specific studies that contain useful water quality and hydrologic information have been done by FDEP, the SWFWMD and the USGS. These reports can be accessed through the District's Library at <http://www15.swfwmd.state.fl.us/dbtw-wpd/mywebqbe/librarybasic.htm>. Type in the water body of interest, click on "Submit query" then click on the pull-down menu in the upper left and select "Record Display - Web." Publications of particular relevance include:

Gates, M.T. 2009. Hydrogeologic investigation of the upper Peace River in Polk County, FL. SWFWMD. Brooksville, FL.
Metz, P.A. 2009. Hydrologic conditions that influence streamflow losses in a karst region of the upper Peace River Polk County, FL. USGS. Reston, VA.
Keith & Schnars, Inc. 2003. Saddle Creek watershed management program: Task II Watershed management plan, vols. 1 & 2. SWFWMD. Brooksville, FL.
Spechler, R.M., and Kroening, S.E., 2007. Hydrology of Polk County, Florida: U.S. Geological Survey Scientific Investigations Report 2006-5320. USGS. Reston, VA.114 p.

Projects of the SWFWMD that may be helpful in the PD&E and design phase of the project include:

1. Project K075 - Polk County Watershed Management Plan-Saddle Creek
2. Project K081 - Auburndale-Tenoroc Wetland Improvement Phase Two, and
3. Project N122 - Stormwater Improvements-Flood Protection for Polk County.

The FDOT is encouraged to contact the District's Resource Projects Engineering Section in the Brooksville headquarters to discuss the above referenced projects.

If this project's proprietary authorizations qualify as a project of Heightened Public Concern, additional steps will be required during the review process and prior to ERP approvals.

If this project will require the acquisition of new right-of-way areas, the current rule for eminent domain noticing is 40D-1.603(9), FAC and requires the applicant to provide the noticing to the affected property owners. Additionally, any issued permit may include special conditions prohibiting construction until the FDOT provides evidence of ownership and control.

The District has assigned a pre-application file (PA #398253) for the purpose of tracking its participation in the ETDM review of this project. Previous pre-application files for this SR-33 project include PA #8259, PA #9161 and PA #397628. Pre-application files are maintained at the District's Bartow Service Office. Please refer to the pre-application file when contacting District regulatory staff regarding this project.

CLC Recommendations:

The following organization(s) were expected to but did not submit a review of the Water Quality and Quantity issue for this alternative: Federal Highway Administration

Wetlands

Project Effects

Coordinator Summary Degree of Effect: 3 *Moderate* assigned 09/07/2011 by FDOT District 1

Comments:

The FDEP reported that there are 38.8 acres of lacustrine wetlands and 28.8 acres of palustrine wetlands within the 500-foot project buffer according to National Wetlands Inventory data. The FDEP stated that the project will likely require an Environmental Resource Permit from the SWFWMD. Coordination Document: Permit Required.

The FHWA reported that the project may result in approximately 8.8 acres of wetland impacts as indicated through SWFWMD data of the EST GIS analysis results. The FHWA stated that avoidance of these potential impacts should be maximized and mitigation of impacts will be necessary. Coordination Document: To Be Determined: Further Coordination Required.

The FWS noted that wetlands are present within the project study area. The FWS stated that unavoidable impacts should be offset through mitigation that fully compensates for the loss of wetland resources. Coordination Document: To Be Determined: Further Coordination Required.

The NMFS restated comments provided for the Coastal and Marine issue.

The SWFWMD commented that 3.3 acres of wetlands could potentially be impacted within the 100-foot project buffer; these wetlands are concentrated primarily near the northern project terminus within a cypress wetland system located along both sides of SR 33. The SWFWMD stated that while the wetland system located on the east side is of good quality, the portion located along the west side of SR 33 has been disturbed by logging and dredging activities. The SWFWMD noted that encroachment into the 200-foot project buffer will increase potential wetland impacts to 9.0 acres (of which 8.0 acres are associated with the cypress wetland system). The SWFWMD additionally reported 0.1 acre of other wetlands within the 100-foot project buffer; these wetlands consist of a herbaceous system located near the intersection of SR 33 and Village Lakes Boulevard and a mixed shrub/forested system located at the intersection of SR 33 and Huron Way. The SWFWMD noted that if construction activities are expanded into the 200-foot project buffer, impacts to these wetland systems will increase to 1.0 acre. The SWFWMD further noted that the project study area is located within the Withlacoochee River and Peace River basins if mitigation within the same basins is necessary. Coordination Document: Permit Required.

The USACE reported that there are less than 10.0 acres of wetlands within the 200-foot project buffer and approximately 28.0 acres of wetlands within the 500-foot project buffer according to National Wetlands Inventory data. The USACE did not identify any CERP projects within the area. The USACE noted that purchase of credits from a mitigation bank is currently the preferred method of achieving compensatory wetland mitigation for unavoidable impacts; avoidance and/or minimization measures must be implemented to the extent practical. Coordination Document: PD&E Support Document as per PD&E Manual.

The USEPA identified over 15.0 acres of wetlands within the 200-foot project buffer and over 60.0 acres within the 500-foot project buffer. The USEPA noted that while impacts to wetlands near the southern terminus of the proposed project may be completely avoided, impacts near the northern terminus may be more difficult to avoid. The USEPA stated that unavoidable impacts should be fully mitigated.

According to the National Wetlands Inventory database, 3.7 acres (1%) of lacustrine wetlands and 4.5 acres (2.29%) of palustrine wetlands are present within the 200-foot project buffer. The FDOT will 1) incorporate avoidance and minimization measures to the greatest extent practicable into the project design, 2) fully mitigate unavoidable adverse wetland impacts as part of the permitting process, and 3) utilize best management practices during project construction. Due to agency concerns of potential adverse wetland impacts resulting from the proposed roadway expansion and the issues associated with providing compensatory wetland mitigation (especially for forested wetlands), however, a Summary DOE of Moderate has been assigned to the Wetlands issue.

Commitments and Responses: Preparation of a Wetlands Evaluation Report will be included in the scoping recommendations for this project.

Technical Study: Wetlands Evaluation Report.
Permit(s): Environmental Resource Permit. / USACE Dredge and Fill Permit.

Degree of Effect: 3 Moderate assigned 06/07/2011 by Maher Budeir, US Environmental Protection Agency

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

Base on EST data, over 15 acres of wetlands within the 200 acre buffer, and over 60 acres within the 500 foot buffer.

Comments on Effects to Resources:

Impact on wetlands varies geographically in the different areas of the project. Impact near the south side of the proposed project may be completely avoided, but impact on wetlands near the northern side may be more difficult to avoid. Unavoidable impact should be fully mitigated.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 3 Moderate assigned 06/02/2011 by Joseph Sullivan, Federal Highway Administration

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

Wetlands provide water treatment, flood attenuation, and wildlife habitat and should and can be avoided during construction if appropriate planning measures are provided.

Comments on Effects to Resources:

Approximately 8.8 acres of wetland impacts are shown in GIS analysis of SWFWMD polygons. Avoidance of these potential impacts should be maximized and mitigation of impacts will be necessary.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 3 *Moderate* assigned 05/27/2011 by Garrett Lips, US Army Corps of Engineers

Coordination Document: PD&E Support Document As Per PD&E Manual

Direct Effects

Identified Resources and Level of Importance:

The EST identified no navigable waterways or marine facilities so the degree of effect should be none for navigation; however, the study should ensure navigation will remain unaffected if the EST overlooked an important factor.

The EST also identified approximately less than 10 acres of NWI wetlands within 200 feet of the roadway corridor, and approximately 28 acres of wetlands within 500 feet of the roadway. The Corps expects the study and design to implement alternatives and design configurations that avoid wetlands to the extent practical. The Corps recommends the FDOT to study not only alternatives that achieve the project purpose and are feasible but also recommend FDOT to consider a design with the smallest environmental footprint from the onset of the study and not to propose overly aggressive sprawling roadway configurations in anticipation of future changes to water quality requirements, for instance. We recommend modest roadway designs with only the minimum, yet safe, travel lane widths and recommend the maximum use of barriers in lieu of wide shoulders or medians, and retaining walls in areas of wetlands to reduce the overall roadway footprint. The Corps agrees with the FHWA project concept of "every day counts" and supports the process to accelerate project delivery and to maximize protection of the environment.

CERP projects: The EST did not identify any CERP project within the area of the proposed project.

Comments on Effects to Resources:

The Corps recommends avoidance of all wetlands and waters where practicable alternatives exist. The impacts must implement measures to minimize impacts to the extent practical. However, if unavoidable impacts are anticipated, the Corps recommends the FDOT to follow the most current regulations regarding compensatory mitigation. Currently, the hierarchy preference is for mitigation bank credit purchase.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 2 *Minimal* assigned 05/26/2011 by Lauren P. Milligan, FL Department of Environmental Protection

Coordination Document: Permit Required

Direct Effects

Identified Resources and Level of Importance:

The National Wetlands Inventory GIS report indicates that there are 38.8 acres of lacustrine and 28.8 acres of palustrine wetlands within the 500-ft. project buffer zone.

Comments on Effects to Resources:

The proposed project will likely require an environmental resource permit (ERP) from the Southwest Florida Water Management District. The ERP applicant will be required to eliminate or reduce the proposed wetland resource impacts of highway construction to the greatest extent practicable:

- Minimization should emphasize avoidance-oriented corridor alignments, wetland fill reductions via pile bridging and steep/vertically retained side slopes, and median width reductions within safety limits.
- Wetlands should not be displaced by the installation of stormwater conveyance and treatment swales; compensatory treatment in adjacent uplands is the preferred alternative.
- After avoidance and minimization have been exhausted, mitigation must be proposed to offset the adverse impacts of the project to existing wetland functions and values. Significant attention is given to forested wetland systems, which are difficult to mitigate.
- The cumulative impacts of concurrent and future transportation improvement projects in the vicinity of the subject project should also be addressed.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 3 *Moderate* assigned 05/26/2011 by Hank Higginbotham, Southwest Florida Water Management District

Coordination Document: Permit Required

Coordination Document Comments: The SWFWMD has assigned a Degree of Effect based on an opinion of the potential of this project to result in increased coordination or effort associated with the SWFWMD's regulatory interests and obligations.

Wetland impacts can be eliminated or reduced by:

1. Adjusting the alignment and cross section to minimize disturbance to wetlands;
2. Implementing strict controls over sediment transport off site during construction;
3. Restricting the staging area and the movement of vehicles and equipment to non-wetland areas;
4. Giving preference to already-disturbed upland locations versus wetland locations for project facilities;
5. Leaving as much native vegetation, as feasible, intact along the right-of-way; and
6. Selecting treatment pond sites outside of wetlands.

Except as provided in Section 3.2.2.1 of the ERP Basis of Review, adequate and appropriate wetland mitigation activities will be

required for unavoidable wetland and surface water impacts associated with the project. The project mitigation needs may be addressed in the FDOT Mitigation Program (Chapter 373.4137, F.S.) which requires the submittal of anticipated wetland and surface water impact information to the SWFWMD. This information is utilized to evaluate mitigation options, followed by nomination and multi-agency approval of the preferred options. These mitigation options typically include enhancement of wetland and upland habitats within existing public lands, public land acquisition followed by habitat improvements, and the purchase of private mitigation bank credits. The SWFWMD may choose to exclude a project in whole or in part if the SWFWMD is unable to identify mitigation that would offset wetland and surface water impacts of the project. Under this scenario, the SWFWMD will coordinate with the FDOT on which impacts can be appropriately mitigated through the program as opposed to separate mitigation conducted independently. Depending on the quantity and quality of the proposed wetland impacts, the SWFWMD may propose purchasing credits from a mitigation bank and/or pursue and propose alternative locations for mitigation. For ERP purposes of mitigating any adverse wetland impacts within the same drainage basin, the project polygon is located within the Withlacoochee River Basin and the Peace River Basin. The SWFWMD requests that the FDOT continue to collaborate on the potential wetland impacts as this project proceeds into future phases, and include the associated impacts on FDOT's annual inventory.

If this project will require the acquisition of new right-of-way areas, the current rule for eminent domain noticing is 40D-1.603(9), FAC and requires the applicant to provide the noticing to the affected property owners. Additionally, any issued permit may include special conditions prohibiting construction until the FDOT provides evidence of ownership and control.

The District has assigned a pre-application file (PA #398253) for the purpose of tracking its participation in the ETDM review of this project. Previous pre-application files for this SR-33 project include PA #8259, PA #9161 and PA #397628. Pre-application files are maintained at the District's Bartow Service Office. Please refer to the pre-application files when contacting District regulatory staff regarding this project.

Direct Effects

Identified Resources and Level of Importance:

Project impacts extending into the 100-foot buffer area have the potential of adversely affecting approximately 3.3 acres of wetland. The most significant areas of wetland that may be affected are located near the north terminus. Here, 3.2 acres of potentially affected wetlands consist of a portion of a 9-acre cypress community on the project's east side that is connected by means of two culverts (one is 24" diameter pipe and the other is 3' x 5' box) to a former cypress community on the west side of the road. The east cypress community is of good quality with reliable physical evidence of appropriate hydroperiods. The west cypress system has been disturbed by dredging and is now a wet prairie/marsh/shrub wetland with most of the cypress trees having been logged out, fallen or standing dead. Expanding project impacts into the 200-foot buffer area increases the acres of wetland potentially affected to a total of 9.0 acres of which 8.0 acres are the wetlands at the north terminus. Of the 9 acres, 4.9 acres of impact potentially would occur to the 9-acre east wetland, representing approximately 40% of this good quality system.

Within the 100-foot buffer area, the other wetlands that would be potentially affected by the project total approximately 0.1 acre and include portions of two small shrub/herbaceous systems on the west side of SR 33 just north of the SR 33/Village Lakes Blvd intersection and a mixed shrub/forested system located on the west side of Huron Way at SR 33. Expanding project impacts into the 200-foot buffer area increases the acres of potential impact to these smaller wetlands to a total of 1.0 acre.

Listed Species (FWC. November 2010. Florida's Endangered and Threatened Species) that are known or expected to utilize the wetlands within 200 feet of the project include: American alligator (SSC), Florida sandhill crane (ST), limpkin (SSC), little blue heron (SSC), snowy egret (SSC), tricolored heron (SSC), white ibis (SSC) and wood stork (FE).

Comments on Effects to Resources:

The most significant impacts would occur to the good quality cypress community located at the north terminus where between 17% and 40% of the wetland could be adversely affected. Impacts to this, and the other, wetlands may include: the further reduction of wetland functions and values relating to wildlife habitat, including known habitat for Listed Species; and the elimination and/or reduction of the water storage function provided by the affected wetlands.

Additional Comments (optional):

The SWFWMD has assigned a Degree of Effect based on an opinion of the potential of this project to result in increased coordination or effort associated with the SWFWMD's regulatory interests and obligations.

Wetland impacts can be eliminated or reduced by:

1. Adjusting the alignment and cross section to minimize disturbance to wetlands;
2. Implementing strict controls over sediment transport off site during construction;
3. Restricting the staging area and the movement of vehicles and equipment to non-wetland areas;
4. Giving preference to already-disturbed upland locations versus wetland locations for project facilities;
5. Leaving as much native vegetation, as feasible, intact along the right-of-way; and
6. Selecting treatment pond sites outside of wetlands.

Except as provided in Section 3.2.2.1 of the ERP Basis of Review, adequate and appropriate wetland mitigation activities will be required for unavoidable wetland and surface water impacts associated with the project. The project mitigation needs may be addressed in the FDOT Mitigation Program (Chapter 373.4137, F.S.) which requires the submittal of anticipated wetland and surface water impact information to the SWFWMD. This information is utilized to evaluate mitigation options, followed by nomination and multi-agency approval of the preferred options. These mitigation options typically include enhancement of wetland and upland habitats within existing public lands, public land acquisition followed by habitat improvements, and the purchase of private mitigation bank credits. The SWFWMD may choose to exclude a project in whole or in part if the SWFWMD is unable to identify mitigation that would offset wetland and surface water impacts of the project. Under this scenario, the SWFWMD will coordinate with the FDOT on which impacts can be appropriately mitigated through the program as opposed to separate mitigation conducted independently. Depending on the quantity and quality of the proposed wetland impacts, the SWFWMD may propose purchasing credits from a mitigation bank and/or pursue and propose alternative locations for mitigation. For ERP purposes of mitigating any adverse wetland impacts within the same drainage basin, the project polygon is located within the Withlacoochee River Basin and the Peace River Basin. The SWFWMD requests that the FDOT continue to collaborate on the potential wetland impacts as this project proceeds into future phases, and include the associated impacts on FDOT's annual inventory.

If this project will require the acquisition of new right-of-way areas, the current rule for eminent domain noticing is 40D-1.603(9), FAC and requires the applicant to provide the noticing to the affected property owners. Additionally, any issued permit may include special conditions prohibiting construction until the FDOT provides evidence of ownership and control.

The District has assigned a pre-application file (PA #398253) for the purpose of tracking its participation in the ETDM review of this project. Previous pre-application files for this SR-33 project include PA #8259, PA #9161 and PA #397628. Pre-application files are maintained at the District's Bartow Service Office. Please refer to the pre-application files when contacting District regulatory staff regarding this project.

CLC Recommendations:

Degree of Effect: N/A N/A / *No Involvement* assigned 04/25/2011 by David A. Rydene, National Marine Fisheries Service

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:

None.

Comments on Effects to Resources:

NOAA's National Marine Fisheries Service (NMFS) has reviewed the information contained in the Environmental Screening Tool for ETDM Project # 13188. The Florida Department of Transportation District 1 proposes widening US 33 from Old Combee Road to north of Tomkow Road in Polk County, Florida. The road would be widened from two lanes to four lanes

NMFS staff conducted a site inspection of the project area on April 22, 2011, to assess potential concerns regarding living aquatic resources. It does not appear that there will be any direct or indirect impacts to NMFS trust resources. Since the resources affected are not ones for which NMFS is responsible, we have no comment to provide regarding the project's impacts.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 3 *Moderate* assigned 04/25/2011 by John Wrublik, US Fish and Wildlife Service

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

Wetlands

Comments on Effects to Resources:

Wetlands provide important habitat for fish and wildlife. Information provided in the Environmental Screening Tool indicates that wetlands are found within the project area. The Service recommends that these valuable resources be avoided to the greatest extent practicable. If impacts to wetlands are unavoidable, the Service recommends the FDOT provide mitigation that fully compensates for the loss of wetland resources.

Additional Comments (optional):

CLC Recommendations:

Wildlife and Habitat

Project Effects

Coordinator Summary Degree of Effect: 3 *Moderate* assigned 08/10/2011 by FDOT District 1

Comments:

The FWC evaluated the 500-foot project buffer for the presence of wildlife and habitat resources and noted that the project is located within a rural area that has undergone recent suburban development. The FWC identified the following habitat types within the 500-foot buffer: Freshwater Marsh, Wet Prairie, Shrub Swamp, Cypress Swamp, Hardwood Swamp, Mixed Wetland Forest, Grassland, Extractive, Dry Prairie, Pinelands, Hardwood Hammock, Sand Pine Scrub, Xeric Oak Scrub, Mixed Hardwood-Pine Forest, and Shrub and Brushland. The FWC also commented that the project study area is located approximately 300 feet north of the Tenoroc Fish Management Area; within FWS Consultation Areas for the Florida scrub-jay, crested caracara, and snail kite; and within the Core Foraging Area (CFA) of six wood stork rookeries. The FWC further noted that the primary wildlife issues associated with this project consist of potential adverse effects to a moderate number of listed species, potential loss of valuable wetland habitat, potential loss of one of the last remnants of the Lakeland Ridge, and potential water quality degradation resulting from additional stormwater runoff. Coordination Document: To Be Determined: Further Coordination Required.

The FWS reviewed its GIS database for recorded locations of federally listed threatened and endangered species on or adjacent to the project study area and stated that the project corridor is located within the CFA of three active wood stork nesting colonies. To

minimize adverse effects to the wood stork, the FWS recommends that any lost foraging habitat resulting from the project be replaced within the CFA of the affected colony. The FWS also stated that for projects that impact five or more acres of wood stork foraging habitat, a functional assessment must be conducted using the FWS' Wood Stork Foraging Analysis Methodology on the foraging habitat to be impacted and the foraging habitat provided as mitigation. The FWS recommends that the FDOT prepare a Biological Assessment during the project's PD&E phase. Coordination Document: To Be Determined: Further Coordination Required.

The SWFWMD reported that native upland habitats comprise 48.0 acres of the 100-foot project buffer and 96.0 acres of the 200-foot project buffer; however, the overall quality of this habitat is medium to poor due to excessive fragmentation. The SWFWMD noted that there is a 5-acre parcel of high-quality xeric oak/sand pine habitat located adjacent to SR 33 at Lake Luther Drive and a moderate-quality xeric community located within a power easement that crosses SR 33 near the same intersection; these communities have a high potential to serve as habitat for the gopher tortoise. The SWFWMD recommends that impacts to these xeric habitats be avoided to the greatest extent practicable. The SWFWMD additionally reported that the project is located within FWS Consultation Areas for the Florida scrub-jay, crested caracara, and snail kite; however, habitat for all but the scrub-jay is extremely limited within the 200-foot project buffer. Coordination Document: Permit Required.

According to the EST GIS analysis results, the project's 200-foot buffer (corridor) is located within FWS Consultation Areas for the Florida scrub-jay, crested caracara, and snail kite although suitable habitat for these species within the project corridor is fragmented and considered low quality. The project study area is also located within the Greater Charlotte Harbor and Withlacoochee River Ecosystem Management Areas, within the CFA of six active nesting wood stork colonies, and within the Green Swamp Florida Forever Board of Trustees (BOT) Project. Due to agency concerns of potential adverse impacts to suitable listed species' habitat and the need for Section 7 Consultation with the FWS, a Summary DOE of Moderate has been assigned to the Wildlife and Habitat issue.

Commitments and Responses: Preparation of an Endangered Species Biological Assessment will be included in the scoping recommendations for this project.

Technical Study: Endangered Species Biological Assessment (ESBA).

Degree of Effect: 3 *Moderate* assigned 05/26/2011 by Hank Higginbotham, Southwest Florida Water Management District

Coordination Document: Permit Required

Coordination Document Comments: The SWFWMD has assigned a Degree of Effect based on an opinion of the potential of this project to result in increased coordination or effort associated with the SWFWMD's regulatory interests and obligations.

Upland wildlife habitat impacts can be eliminated or reduced by:

1. Restricting the staging area and the movement of vehicles and equipment to areas that are already highly disturbed;
2. Consider leaving intact the quality native habitats, particularly the scrub oak/sand pine areas, along the right-of-way;
3. Consider upland enhancement as a mitigation option; and
4. Selecting treatment pond sites out of the scrub oak/sand pine habitat areas.

It is recommended that the FDOT prepare an Endangered Species Biological Assessment (ESBA) and that FDOT consult with the US Fish and Wildlife Service and Florida Fish and Wildlife Conservation Commission to try to eliminate/reduce impacts to Listed Species.

It should be noted that the Florida Fish and Wildlife Conservation Commission revised rules for listing imperiled species. The biological status reviews on these species are now completed. The final reports and recommendations will be presented to the Commission at the June 8/9 meeting in St. Augustine. Until a final review of each species is completed, the existing legal status of species is as listed in the November 2010 publication entitled "Florida's Endangered and Threatened Species." FDOT is encouraged to coordinate with the FFWCC on the status of the species blue-tailed mole skink (FT), Florida pine snake (SSC), Florida sand skink (FT), gopher tortoise (ST), eastern indigo snake (FT), burrowing owl (SSC), southeast American kestrel (ST), Florida sandhill crane (ST), Florida scrub jay (FT), Florida mouse (SSC) and Sherman's fox squirrel (SSC).

Direct Effects

Identified Resources and Level of Importance:

According to the District's 2009 land use data, native upland land cover types not occupied by industrial, residential or utility land uses total 48 acres and 96 acres of the areas within the 100-foot and 200-foot buffer areas, respectively. Overall, the quality of the habitat within the 200-foot buffer is medium to poor in terms of upland wildlife species as a result of the fragmentation of available habitat into very small parcels. One high quality parcel of xeric scrub oak/sand pine community is the five-acre parcel located in the northeast quadrant of the SR 33/Lake Luther Dr intersection. There is also moderate quality xeric habitat on the electrical line ROW that crosses SR 33 0.25 mile east of Lake Luther Dr.

The entire 200-foot buffer area is included within the Consultation Areas for three Listed Species, the Florida scrub jay, crested caracara and snail kite. Habitat for all but the Florida scrub jay is extremely limited within the 200-foot buffer. Scrub jay habitat is available on the five-acre parcel located in the northeast quadrant of the SR 33/Lake Luther Dr intersection.

In view of the geographical range of the project area and the type and quality of the upland habitats available in the project's 100-foot to 200-foot buffer areas, the following Listed Species have been observed or can be expected to be present: blue-tailed mole skink (FT), Florida pine snake (SSC), Florida sand skink (FT), gopher tortoise (ST), eastern indigo snake (FT), burrowing owl (SSC), southeast American kestrel (ST), Florida sandhill crane (ST), Florida scrub jay (FT), Florida mouse (SSC) and Sherman's fox squirrel (SSC).

Comments on Effects to Resources:

This project has the potential to result in adverse impacts to remaining parcels of scrub oak/sand pine habitat that have a high potential to be utilized by Listed Species, particularly gopher tortoise. The five-acre parcel located in the northeast quadrant of the SR 33/Lake Luther Dr intersection is of good quality and it represents a remnant of habitat that formerly was extensive in the area. The loss or disturbance of this parcel should be avoided. That parcel and the other small areas of xeric habitat, such as on the power line ROW provide important habitat for gopher tortoise, a Listed Species known to be present in the vicinity of the project.

Additional Comments (optional):

The SWFWMD has assigned a Degree of Effect based on an opinion of the potential of this project to result in increased coordination or effort associated with the SWFWMD's regulatory interests and obligations.

Upland wildlife habitat impacts can be eliminated or reduced by:

1. Restricting the staging area and the movement of vehicles and equipment to areas that are already highly disturbed;
2. Consider leaving intact the quality native habitats, particularly the scrub oak/sand pine areas, along the right-of-way;
3. Consider upland enhancement as a mitigation option; and
4. Selecting treatment pond sites out of the scrub oak/sand pine habitat areas.

It is recommended that the FDOT prepare an Endangered Species Biological Assessment (ESBA) and that FDOT consult with the US Fish and Wildlife Service and Florida Fish and Wildlife Conservation Commission to try to eliminate/reduce impacts to Listed Species.

It should be noted that the Florida Fish and Wildlife Conservation Commission revised rules for listing imperiled species. The biological status reviews on these species are now completed. The final reports and recommendations will be presented to the Commission at the June 8/9 meeting in St. Augustine. Until a final review of each species is completed, the existing legal status of species is as listed in the November 2010 publication entitled "Florida's Endangered and Threatened Species." FDOT is encouraged to coordinate with the FFWCC on the status of the species blue-tailed mole skink (FT), Florida pine snake (SSC), Florida sand skink (FT), gopher tortoise (ST), eastern indigo snake (FT), burrowing owl (SSC), southeast American kestrel (ST), Florida sandhill crane (ST), Florida scrub jay (FT), Florida mouse (SSC) and Sherman's fox squirrel (SSC).

CLC Recommendations:

Degree of Effect: **3** *Moderate* assigned 05/18/2011 by Scott Sanders, FL Fish and Wildlife Conservation Commission

Coordination Document: To Be Determined: Further Coordination Required

Coordination Document Comments: We recommend that the PD&E Study address natural resources by including the following measures for conserving fish and wildlife and habitat resources that may occur within and adjacent to the project area. Plant community mapping and wildlife surveys for the occurrence of wildlife species listed by the Federal Endangered Species Act as Endangered or Threatened, or by the State of Florida as Threatened or Species of Special Concern should be performed, both along the Right-of-way and within sites proposed for Drainage Retention Areas. Based on the survey results, a plan should be developed to address direct, indirect, and cumulative effects of the project on wildlife and habitat resources, including listed species. Avoidance, minimization, and mitigation measures should also be formulated and implemented. If gopher tortoises are present within any permanent or temporary construction area, a permit should be obtained from the FWC. Drainage Retention Areas and equipment staging areas should be located in previously disturbed sites to avoid habitat destruction or degradation. A compensatory mitigation plan should include the replacement of any wetland, upland, or aquatic habitat lost as a result of the project. This could be achieved by purchasing land, or securing conservation easements over lands adjacent to existing public lands, and by habitat restoration. Replacement habitat for mitigation should be type for type, as productive, and equal to or of higher functional value. We recommend land acquisition and restoration of appropriate tracts adjacent to existing public lands near the project area, or tracts placed under conservation easement or located adjacent to large areas of jurisdictional wetlands that currently serve as regional core habitat areas. Please notify us immediately if the design, extent, or footprint of the current project is modified, as we may choose to provide additional comments and/or recommendations.

We appreciate the opportunity to provide input on highway design and the conservation of fish and wildlife resources. Please contact Brian Barnett at (850) 528-6316 or email brian_barnett@urscorp.com to initiate the process for further overall coordination on this project.

Direct Effects

Identified Resources and Level of Importance:

The Habitat Conservation Scientific Services Section of the Florida Fish and Wildlife Conservation Commission (FWC) has coordinated an agency review of ETDM #13188, Polk County, and provides the following comments related to potential effects to fish and wildlife resources on this Programming Phase project.

The Project Description Summary states that this project involves widening SR 33 from 2 to 4 lanes between Old Combee Road/Deeson Pointe Boulevard and a point north of Tomkow Road, a distance of approximately 3.7 miles. This project extends the proposed four-lane section of SR 33, reviewed as ETDM #13025 in September 2010, further northward through the project limits.

The project area was evaluated for potential fish, wildlife, and habitat resources within 500 feet of the proposed alignment. Our assessment reveals that the project area is a rural landscape on the outskirts of Lakeland that is rapidly undergoing suburban development. The 2003 FWC Habitat and Landcover Grid describes 27.63% of the assessment area as High Impact Urban or Low Impact Urban, but much of the remaining area has been developed in the years subsequent to that classification. Wetland or aquatic land cover types in the assessment area include Freshwater Marsh and Wet Prairie, Shrub Swamp, Cypress Swamp, Hardwood Swamp, Mixed Wetland Forest and Open Water. The mostly remnant upland land cover types include Grassland, Extractive (phosphate mined land), Dry Prairie, Pinelands, Hardwood Hammocks and Forests, Sand Pine Scrub, Xeric Oak Scrub, Mixed Hardwood-Pine Forest, and Shrub and Brushland.

Based on range and preferred habitat type, the following species listed by the Federal Endangered Species Act and the State of Florida as Federally Endangered (FE), Federally Threatened (FT), State-Threatened (ST), or State Species of Special Concern (SSC) may occur along the project area: gopher frog (SSC), gopher tortoise (ST), Eastern indigo snake (FT), Florida pine snake (SSC), American alligator (FT), limpkin (SSC), snowy egret (SSC), little blue heron (SSC), tricolored heron (SSC), white ibis (SSC), Florida sandhill crane (ST), wood stork (FE), burrowing owl (SSC), Audubon's crested caracara (FT), Southeastern American kestrel (ST), Sherman's fox squirrel (SSC), and Florida mouse (SSC).

The GIS analysis revealed several specific characteristics associated with lands along the project alignment that provide an indication of potential habitat quality or sensitivity that will require field studies to verify the presence or absence of listed wildlife species and the quality of wildlife habitat resources. The Bridgewater Tract of the FWC's Tenoroc Fish Management Area is southeast of this project, and the northeast corner of Tenoroc is approximately 300 feet from the intersection of SR 33 and Old Combee Road. On the FWC's ranking of Potential Habitat Richness, 30.82% of the assessment area is ranked at medium or moderately high, and 2.22% of the area has a high or medium classification for FWC's Strategic Habitat Conservation Areas priority ranking. The project site is within the U.S. Fish and Wildlife Service Consultation Areas for Scrub Jay, Crested Caracara, and Snail Kite, and is within the core foraging area of six wood stork rookeries.

Primary wildlife issues associated with this project include: potential adverse effects to a moderate number of species listed by the Federal Endangered Species Act as Endangered or Threatened, or by the State of Florida as Threatened or Species of Special Concern; potential loss of valuable wetland habitat, particularly the cypress and hardwood swamp adjacent to the road between the Interstate-4 ramps and Tomkow Road; potential loss of one of the last remnants of the Lakeland Ridge, a xeric oak scrub on the north side of SR 33 that extends 0.2 miles east from Lake Luther Road; and potential water quality degradation as a result of additional stormwater runoff from the expanded roadway surface draining into area water bodies, including wetlands and lakes in the Tenoroc Fish Management Area. We recommend further coordination with our agency to develop site-specific stormwater management measures for this project. For technical assistance and coordination on the Tenoroc Fish Management Area, please contact Mr. Danon Moxley of our Division of Freshwater Fisheries Management at (863) 648-3200, very early in the planning process for the Project Development and Environment (PD&E) Study.

Comments on Effects to Resources:

Based on the project information provided, we believe the direct and indirect effects of this project could be moderate, provided wetland and scrub habitat losses are minimized, and stormwater management measures are implemented to protect both the hydrology and quality of receiving wetlands and lakes.

Additional Comments (optional):

We recommend that the PD&E Study address natural resources by including the following measures for conserving fish and wildlife and habitat resources that may occur within and adjacent to the project area. Plant community mapping and wildlife surveys for the occurrence of wildlife species listed by the Federal Endangered Species Act as Endangered or Threatened, or by the State of Florida as Threatened or Species of Special Concern should be performed, both along the Right-of-way and within sites proposed for Drainage Retention Areas. Based on the survey results, a plan should be developed to address direct, indirect, and cumulative effects of the project on wildlife and habitat resources, including listed species. Avoidance, minimization, and mitigation measures should also be formulated and implemented. If gopher tortoises are present within any permanent or temporary construction area, a permit should be obtained from the FWC. Drainage Retention Areas and equipment staging areas should be located in previously disturbed sites to avoid habitat destruction or degradation. A compensatory mitigation plan should include the replacement of any wetland, upland, or aquatic habitat lost as a result of the project. This could be achieved by purchasing land, or securing conservation easements over lands adjacent to existing public lands, and by habitat restoration. Replacement habitat for mitigation should be type for type, as productive, and equal to or of higher functional value. We recommend land acquisition and restoration of appropriate tracts adjacent to existing public lands near the project area, or tracts placed under conservation easement or located adjacent to large areas of jurisdictional wetlands that currently serve as regional core habitat areas. Please notify us immediately if the design, extent, or footprint of the current project is modified, as we may choose to provide additional comments and/or recommendations.

We appreciate the opportunity to provide input on highway design and the conservation of fish and wildlife resources. Please contact Brian Barnett at (850) 528-6316 or email brian_barnett@urscorp.com to initiate the process for further overall coordination on this project.

CLC Recommendations:

Degree of Effect: 3 *Moderate* assigned 04/25/2011 by John Wrublik, US Fish and Wildlife Service

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

Federally-listed species and fish and wildlife resources

Comments on Effects to Resources:

Federally listed species - The Service has reviewed our Geographic Information Systems (GIS) database for recorded locations of federally listed threatened and endangered species on or adjacent to the project study area. The GIS database is a compilation of data received from several sources.

Wood Stork

The project corridor is located in the Core Foraging Areas (within 18.6 miles) of three active nesting colonies of the endangered wood stork (*Mycteria americana*). The Service believes that the loss of wetlands within a CFA due to an action could result in the loss of foraging habitat for the wood stork. To minimize adverse effects to the wood stork, we recommend that any lost foraging habitat resulting from the project be replaced within the CFA of the affected nesting colony. Moreover, wetlands provided as mitigation should adequately replace the wetland functions lost as a result of the action. The Service does not consider the preservation of wetlands, by itself, as adequate compensation for impacts to wood stork foraging habitat, because the habitat lost is not replaced. Accordingly, any wetland mitigation plan proposed should include a restoration, enhancement, or creation component. In some cases, the Service accepts wetlands compensation located outside the CFA of the affected wood stork nesting colony. Specifically, wetland credits purchased from a "Service Approved" mitigation bank located outside of the CFA would be acceptable to the Service, provided that the impacted wetlands occur within the permitted service area of the bank.

For projects that impact 5 or more acres of wood stork foraging habitat, the Service requires a functional assessment be conducted

using our "Wood Stork Foraging Analysis Methodology"(Methodology) on the foraging habitat to be impacted and the foraging habitat provided as mitigation. The Methodology can found in the Service's letter and effect determination key to the U.S. Army Corps of Engineers dated May 18, 2010 (Service Federal Activity Code Number 41420-2007-FA-1494, available upon request).

The Service believes that the following federally listed species have the potential to occur in or near the project site: wood stork, Florida scrub-jay (*Aphelocoma coerulescens*), and eastern indigo snake (*Drymarchon corais couperi*), as well as the federally protected plants listed at the following link: [http://www.fws.gov/verobeach/images/pdflibrary/Polk County3.pdf](http://www.fws.gov/verobeach/images/pdflibrary/Polk%20County3.pdf). Accordingly, the Service recommends that the Florida Department of Transportation (FDOT) prepare a Biological Assessment for the project (as required by 50 CFR 402.12) during the FDOT's Project Development and Environment process.

Fish and Wildlife Resources - Wetlands provide important habitat for fish and wildlife. Information provided in the Environmental Screening Tool indicates that wetlands are found within the project area. The Service recommends that these valuable resources be avoided to the greatest extent practicable. If impacts to wetlands are unavoidable, the Service recommends the FDOT provide mitigation that fully compensates for the loss of wetland resources.

Additional Comments (optional):

CLC Recommendations:

The following organization(s) were expected to but did not submit a review of the Wildlife and Habitat issue for this alternative:
Federal Highway Administration

ETAT Reviews and Coordinator Summary: Cultural

Historic and Archaeological Sites

Project Effects

Coordinator Summary Degree of Effect: 3 *Moderate* assigned 08/10/2011 by FDOT District 1

Comments:

No review was submitted by the FHWA or the Miccosukee Tribe of Indians. The FDOS noted that many cultural resource surveys have been conducted within a 100 foot buffer of the project corridor but none were specifically conducted for the current project. They also note that no significant historic sites and no archaeological sites were identified within a 500 foot buffer of the project corridor. However, there are five bridges located within the project corridor. No National Register of Historic Places (National Register) -eligible or listed sites were identified within a half mile of the project corridor. According to FDOS, there is a potential for archaeological sites within the project corridor. They recommended that a Cultural Resource Assessment Survey (CRAS) be conducted to locate and assess any cultural resources that may be present.

The Seminole Tribe of Florida noted the absence of a systematic cultural resource assessment survey of the project corridor and requested a survey be conducted in order to determine effects to archaeological sites. The STOF-THPO asked to review the results of the CRAS before commenting on possible effects to archaeological sites within the project corridor

A review of the Florida Master Site File (FMSF) GIS data revealed that 10 previous surveys intersect the project corridor. A cultural resource reconnaissance survey conducted in January 2011 overlaps with the western end of the project corridor between Old Combee Road and the eastern boundary of Lake Deeson Village. No comprehensive archeological or historic resource survey of the project corridor has been completed.

The FMSF listed no archaeological sites, six previously recorded historic resources, and one historic resource group within 500 feet of the project corridor. The resource group is the post-WW II era Lake Deeson Village trailer park (8PO7495) located at 5210 SR 33 in Lakeland. The six previously recorded historic resources and the resource group were evaluated by the SHPO as ineligible for inclusion in the National Register of Historic Places (National Register) on February 24, 2011.

A review of the Polk property appraiser data revealed a total of 83 parcels adjacent to the project corridor, 4 of which had historic build dates.

A review of the City of Lakeland Archaeological Site Potential map indicates that the project corridor is located within an area that was not identified as having a high archaeological potential.

An analysis of the 1849 General Land Office plat map and surveyors' notes illustrates this area as predominantly 3rd rate pine interspersed with ponds. The plat maps also illustrate an unnamed road within or adjacent to the project corridor which the surveyors' notes refer to as "old road". No other features suggestive of any type of settlement or encampment are illustrated. The historic aerials depict the area around the project corridor as covered with lakes, ponds, and wetlands interspersed with higher ground, consistent with the ponds and pineland illustrated in the historic plats and referred to in the surveyors' notes. According to the soil map, most of the project corridor is located in excessively to moderately well drained soils, with a few areas of poorly drained soils.

Based on this analysis, a Summary DOE of Moderate has been assigned to the Historic and Archaeological Sites issue.

Commitments and Responses: A comprehensive archaeological and historic resource survey has not been completed for the project corridor. Therefore, preparation of a Cultural Resource Assessment Survey (CRAS), as per the PD&E Manual, is recommended. This survey will serve to verify the location, integrity, and eligibility of previously unrecorded historical resources that have recently

reached the 50 year historic threshold, as well as confirm the low archaeological potential of the unsurveyed area of the corridor suggested by this analysis. Because the City of Lakeland is included in the current DOS list of Certified Local Governments, coordination Office is recommended to identify any local resources or areas of concern.

Section 4(f) Potential Impacts to Cultural Resources: Based on the results of this analysis, there are no known Section 4(f) impacts to cultural resources.

Degree of Effect: 3 *Moderate* assigned 05/27/2011 by Alyssa McManus, FL Department of State

Coordination Document: No Selection

Coordination Document Comments: after the survey is complete, this office will be able to determine the impact the project will have on cultural resources.

Direct Effects

Identified Resources and Level of Importance:

There are no identified historic sites of significance identified within the project corridor. No National Register eligible or listed sites are identified within a 1/2 mile of the project corridor.

There are five bridges located within the project corridor.

Comments on Effects to Resources:

While there have been many cultural resource surveys within the 100 ft. buffer of this project, none was specifically conducted for this particular project. The 'drive it' feature of the EST shows some structures which appear to be over 50 years of age. These buildings will need to be identified and evaluated to determine eligibility for the National Register, and to determine effects to significant resources, should they be identified.

The bridges that will be replaced as part of this project should be documented for evaluation if they are over 50 years of age. A Florida Master Site File bridge form is available online and will be a good preliminary document to determine these bridges' historical significance.

While there are no identified archaeological sites identified within a 500' buffer of this project corridor, they possibly exist within the areas of this project where the ground will be disturbed. Judgemental subsurface testing should be done to determine the absence or presence of cultural material.

Since potentially significant archaeological sites may be present, it is the request of this office that the project site be subjected to a professional cultural resource survey. The purpose of this survey will be to locate and assess any cultural resources that may be present. The resultant survey shall conform to the specification set forth in Chapter 1A-46, Florida Administrative Code, and will need to be forwarded to the Division of Historical Resources in order to complete the reviewing process for this proposed project and its impacts. The results of the analysis will determine if significant cultural resources would be disturbed by this development. In addition, if significant remains are located, the data described in the report and the consultant's conclusions will assist this office in determining measures that must be taken to avoid, minimize, or mitigate adverse impacts to archaeological sites and historical properties listed, or eligible for listing in the NRHP, or otherwise significant. The Division of Historical Resources does not maintain a list of professional consultants who are qualified to work in the State of Florida and/or who meet The Secretary of the Interior's Historic Preservation Professional Standards [Volume 62, Number 119, page 33707 (June 20, 1997)], ("Professional Qualifications"), or as amended in the future. However, the American Cultural Resources Association (ACRA) maintains a listing of professional consultants (<http://acra-crm.org/index.cfm>). In addition, the Register of Professional Archaeologists (RPA) maintains a membership directory for locating professional archaeologists as well as other professional preservation consultants (<http://www.rpanet.org/>). Many qualified historic preservation/cultural resource management professionals are not members of these organizations, and omission from the directories does not imply that someone does not meet the Secretary's Standards or that the resultant work would not be acceptable.

Additional Comments (optional):

after the survey is complete, this office will be able to determine the impact the project will have on cultural resources.

CLC Recommendations:

Degree of Effect: 0 *None* assigned 05/26/2011 by Hank Higginbotham, Southwest Florida Water Management District

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 3 *Moderate* assigned 04/25/2011 by Elliott York, Seminole Tribe of Florida

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

Due to the presence of several archaeological sites and absence of a systematic Cultural Resources Assessment Survey (CRAS) for the project corridor, the STOF-THPO would like to request a CRAS be conducted in order to determine effects, if any, to archaeological sites within the project area.

Comments on Effects to Resources:

The STOF-THPO would like to review a CRAS before commenting on possible effects to archaeological sites in the project area.

Additional Comments (optional):

CLC Recommendations:

The following organization(s) were expected to but did not submit a review of the Historic and Archaeological Sites issue for this alternative: Federal Highway Administration

Recreation Areas

Project Effects

Coordinator Summary Degree of Effect: 1 *Enhanced* assigned 08/10/2011 by FDOT District 1

Comments:

The FDEP commented that the project is within 500 feet of the Tenoroc Fish Management Area and located within the Green Swamp Florida Forever Board of Trustees (BOT) Project area. The FDEP also reported that the project will 1) provide an opportunity for a much needed trail connection between Lakeland's urban core and the 29-mile General James A. Van Fleet State Trail (which is a key component of the Florida Greenways and Trails System) and 2) complement a number of other pathway projects currently being constructed in the area. The FDEP additionally stated that the Office of Greenways and Trails should be contacted for further information/assistance and noted support for the project by the City of Lakeland's Planning and Zoning Board. Coordination Document: To Be Determined: Further Coordination Required.

The SWFWMD did not identify any issues or potential project effects related to recreation areas/features. Coordination Document: No Involvement.

The USEPA did not identify any issues or potential project effects related to recreation areas/features.

Based on the EST GIS Analysis results, the project is approximately 300 feet north of the Tenoroc Fish Management Area and located within the Green Swamp Florida Forever BOT Project area. Other recreational features that exist in the area are as follows: Golf Club/Course at Bridgewater, Lakeland RV Resort, and recreational trails. According to the City of Lakeland's Comprehensive Plan, the future land use vision of the project area calls for increased residential, industrial, and mixed use developments. The sidewalks and dedicated bicycle lanes (or off-road multi-use trail) to be included in the SR 33 widening will not only support the growth expected along the corridor and provide a connection between Lakeland's urban core and the 29-mile General James A. Van Fleet State Trail, but complement the notable number of recreational features within the vicinity of the project. For these reasons, a Summary DOE of Enhanced has been assigned to the Recreation Areas issue.

Commitments and Responses: A Section 4(f) Determination of Applicability will be included in the scoping recommendations for this project to confirm that potential impacts to features providing recreational opportunities will be minimized to the greatest extent practicable.

Technical Study: Section 4(f) Determination of Applicability.

Degree of Effect: 0 *None* assigned 06/07/2011 by Maher Budeir, US Environmental Protection Agency

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 1 *Enhanced* assigned 05/26/2011 by Lauren P. Milligan, FL Department of Environmental Protection

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

The project is within 500 ft. of the Tenoroc Fish Management Area - co-managed by the Florida Fish and Wildlife Conservation Commission and the DEP's Bureau of Mining and Minerals Regulation. The project is also located within the Green Swamp Florida

Forever BOT Project area.

Comments on Effects to Resources:

The DEP's Office of Greenways and Trails reports that the project provides an opportunity for a much needed trail connection between Lakeland's urban core and the 29-mile General James A. Van Fleet State Trail, which is a key component of the Florida Greenways and Trails System.

-- 12-foot pathways are currently being constructed as part of the East-West Road (University Boulevard) project between SR 33 and SR 570 (Polk Parkway) that is scheduled for completion in early 2012.

-- A multi-use trail is envisioned to be incorporated into the SR 33 design north of SR 659 (Combee Road), thereby providing a connection between Tenoroc Fish Management Area and E-W Road corridors that directly connect with the Van Fleet State Trail.

-- The SR 33 project corridor also parallels a trail corridor that is located on the south side of Long Lake. Given the 200-ft. right-of-way width on SR 33 and existing/planned residential units in the area, a trail could be constructed within the SR 33 design south of SR 659. In fact, the City of Lakeland's Planning and Zoning Board has explicitly requested that a trail be accommodated in a site plan for a utility facility proposed at Maggiore Boulevard/Huron Way.

-- It should also be noted that the City's four-lane improvement on SR 33 adjacent to the PD&E project limits (West of Old Combee/Deeson Point to Interstate 4 at Exit 33) includes sidewalks and dedicated bicycle lanes. Since SR 33 within the project area currently has a 60-mph posted speed limit, a transition from an on-road to off-road facility would certainly be appreciated.

For further information and assistance, please contact Ms. Marsha Connell in the Office of Greenways and Trails at (850) 245-2052.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 0 *None* assigned 05/26/2011 by Hank Higginbotham, Southwest Florida Water Management District

Coordination Document: No Involvement

Direct Effects

Identified Resources and Level of Importance:

Comments on Effects to Resources:

Additional Comments (optional):

CLC Recommendations:

The following organization(s) were expected to but did not submit a review of the Recreation Areas issue for this alternative:
Federal Highway Administration, National Park Service

Section 4(f) Potential

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 08/10/2011 by FDOT District 1

Comments:

The FHWA reported that while at least 8 previous cultural resource surveys have been conducted on or near the project area, per the EST GIS analysis results, portions of the project area were not covered. The FHWA stated that a Cultural Resource Assessment Survey (CRAS) or documentation of a recently conducted CRAS within the project area will be needed. Coordination Document: To Be Determined: Further Coordination Required.

Based on the EST GIS Analysis results, the project is approximately 300 feet north of the Tenoroc Fish Management Area and located within the Green Swamp Florida Forever BOT Project area. Other features that exist which may potentially be protected under the auspices of Section 4(f) include: Golf Club/Course at Bridgewater, Lakeland RV Resort, recreational trails, FDOT RCI bridges, and cultural field survey areas. According to the City of Lakeland's Comprehensive Plan, the future land use vision of the project area calls for increased residential, industrial, and mixed use developments. The sidewalks and dedicated bicycle lanes (or off-road multi-use trail) to be included in the SR 33 widening will not only support the growth expected along the corridor and provide a connection between Lakeland's urban core and the 29-mile General James A. Van Fleet State Trail, but complement the notable number of recreational features within the vicinity of the project. A Section 4(f) DOA, specifically for resources related to recreational and wildlife management uses, will be developed during the Project Development phase and formal Section 4(f) designation will be provided (as necessary), by FHWA, for those Section 4(f) properties bordering the project area of potential effect. A separate Section 4(f) DOA (as part of the Section 106 process) will be developed for those historic, archaeological, and/or tribal resources that have been found to have an "adverse effect" from the proposed project through findings of the CRAS. Due to the fact that the proposed improvements are expected to fit within the existing roadway right-of-way, a Summary DOE of Minimal has been assigned to the Section 4(f) issue.

Commitments and Responses: A Section 4(f) Determination of Applicability will be included in the scoping recommendations for this project to confirm that potential impacts to recreational features and identified historic and archaeological resources will be minimized to the greatest extent practicable.

Technical Study: Section 4(f) Determination of Applicability.

Degree of Effect: 2 Minimal assigned 06/02/2011 by Joseph Sullivan, Federal Highway Administration

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

At least 8 previous cultural resource surveys have been conducted on or near the project area. Per GIS analysis, portions of the project area were not covered by documented surveys. A CRAS will be needed for the project area or please provide documentation of recent CRAS conducted within the project area.

Comments on Effects to Resources:

At least 8 previous cultural resource surveys have been conducted on or near the project area. Per GIS analysis, portions of the project area were not covered by documented surveys. A CRAS will be needed for the project area or please provide documentation of recent CRAS conducted within the project area.

Additional Comments (optional):

CLC Recommendations:

ETAT Reviews and Coordinator Summary: Community

Aesthetics

Project Effects

Coordinator Summary Degree of Effect: 3 Moderate assigned 08/10/2011 by FDOT District 1

Comments:

FDOT noted that the current aesthetic character along the majority of the roadway is a combination of rural and suburban with a mix of natural environment, recreation and residential neighborhoods; however, this character intensifies near the Interstate 4 interchange with business park, light industrial and warehouse-type land uses. For these reasons along with the potential for noise and vibration related impacts anticipated during construction, the presence of community natural resources in the area, and the location of growing residential areas within close proximity, the FDOT recommended an overall project impact degree of effect of moderate. Coordination Document: None.

FHWA stated that there do not appear to be significant changes to current aesthetic conditions. Coordination Document: None.

In the vicinity of the project, SR 33, in part, serves traffic entering and exiting Interstate 4 and in route from the Polk Parkway. The aesthetic character of the area continues to change from rural to suburban residential and mixed-use. There are however growing residential areas and community natural resources within close proximity. Because of this situation coupled with the potential for noise and vibration related impacts anticipated during construction, a Summary DOE of Moderate has been assigned to the Aesthetic issue.

Commitments and Responses: Public outreach regarding project effects and general design concepts related to corridor aesthetics will be conducted during project development.

Technical Study: None.

Degree of Effect: 2 Minimal assigned 06/02/2011 by Joseph Sullivan, Federal Highway Administration

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

No significant changes to current aesthetic conditions.

Comments on Effects to Resources:

No significant changes to current aesthetic conditions.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 3 Moderate assigned 06/02/2011 by Scott Swearingen, FDOT District 1

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

100-Foot Buffer:
Residential Areas - 16.8 acres

Office of Greenways and Trails (OGT) Multi-Use Trails Priorities (High)

500-Foot Buffer:

Residential Areas - 110.0 acres
Mobile Home and RV Parks - Oakridge MHP
FNAI Managed Lands - Tenoroc Fish Management Area

Quarter-Mile (1,320-Foot) Buffer:

Residential Areas - 354.7 acres
Mobile Home and RV Parks - Lakeland RV Resort

Comments on Effects to Resources:

The project area is characterized by open spaces and agricultural land, low to medium density residences, and light industry, with a growing residential and mixed use character. Almost 320 acres within the quarter-mile buffer are designated as conservation land and the Tenoroc Fish Management Area is located within the 500-foot buffer. Within the 100-foot buffer exists an area identified by the Florida Office of Greenways and Trails as a "high" priority multi-use trail as well as the Golf Club at Bridgewater.

The current aesthetic character along the majority of the roadway is a combination of rural and suburban with a mix of natural environment, recreation and residential neighborhoods. This character intensifies near the Interstate 4 interchange with business park, light industrial and warehouse-type land uses. Potential project impacts on community aesthetics, including noise and vibration related impacts (during construction), are anticipated to be moderate due to the nearby presence of community natural resources, the existing land use scale and character along the roadway, and the location of growing residential areas within close proximity to the project.

Additional Comments (optional):

CLC Recommendations:

Potential project impacts on community aesthetics appear to be moderate. Continued public outreach during project development should solicit opinions and preferences from residents regarding project effects and general design concepts related to corridor aesthetics.

Economic

Project Effects

Coordinator Summary Degree of Effect: 1 *Enhanced* assigned 08/10/2011 by FDOT District 1

Comments:

FDOT stated that area residents and businesses are expected to benefit from this project with improved capacity and accessibility. The project enhances the local network and regional connectivity along this section of State Road 33. As future growth occurs within this area of Lakeland, State Road 33 will be able to better accommodate local and shorter-distance regional trips as an alternative to Interstate 4. Coordination Document: None.

The project has the potential to benefit both residents and businesses with improved capacity and accessibility. It enhances both the local network and regional connectivity of State Road 33. Therefore, a Summary DOE of Enhanced has been assigned to the Economic issue.

Commitments and Responses: Public outreach will be conducted to solicit input from residents and businesses which rely on State Road 33 for access.

Technical Study: None.

Degree of Effect: 1 *Enhanced* assigned 06/02/2011 by Scott Swearingen, FDOT District 1

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

100-Foot Buffer:
Residential Areas - 16.8 acres
Commercial Areas - 2.2 acres
Industrial Areas - 7.8 acres
Florida Forever BOT Project - Green Swamp, 36.4 acres

500-Foot Buffer:

Residential Areas - 110.0 acres
Commercial Areas - 8.7 acres
Industrial Areas - 42.2 acres
Bridgewater DRI - 163.5 acres
Future land use:
Residential Area: 220.0 acres
Mixed Use/Urban Village Area: 109.0 acres
Conservation Area: 72.2 acres

Polk County Transit - Bus Route 52

Quarter-Mile (1,320-Foot) Buffer:

- Residential Areas - 354.7 acres
- Commercial Areas - 25.0 acres
- Industrial Areas - 113.7 acres
- Bridgewater DRI - 489.2 acres
- Future land use:
- Residential Area: 509.4 acres
- Mixed Use/Urban Village Area: 334.9 acres
- Conservation Area: 319.6 acres
- Florida Forever BOT Project - Green Swamp, 641.32 acres

One-Mile (5,280-Foot) Buffer:

- Residential Areas - 1316.0 acres
- Bridgewater DRI - 1140.9 acres
- Lake Gibson E Daughtery Road PUD - 15.6 acres
- Airport - Lake Gibson

Comments on Effects to Resources:

State Road 33 in the vicinity of the project area provides access to downtown Lakeland, Interstate 4, and the Polk Parkway (via Interstate 4). The project area consists primarily of currently undeveloped lands, including around 640 acres of the Green Swamp Florida Forever BOT Project within the quarter-mile buffer. Future land use plans call for increased residential, industrial, and mixed use developments in the area at low to medium densities. There are few commercial properties in the project area but a substantial amount of industrial/warehousing space - including the Haverty's distribution center - within the Business Park adjacent to the west side of State Road 33, south of I-4. The project provides greater mobility and accessibility to the existing distribution and planned industrial uses in the corridor.

This project also enhances the local network and regional connectivity along this section of State Road 33. As future growth occurs within this area of Lakeland, State Road 33 will be able to better accommodate local and shorter-distance regional trips as an alternative to Interstate 4.

Additional Comments (optional):

CLC Recommendations:

Area residents and businesses are expected to benefit from this project with improved capacity and accessibility; therefore, the recommended degree of effect is Enhanced. It is also recommended that additional public outreach be conducted to solicit input from residents and businesses which rely on State Road 33 for access.

The following organization(s) were expected to but did not submit a review of the Economic issue for this alternative: Federal Highway Administration

Land Use

Project Effects

Coordinator Summary Degree of Effect: 2 Minimal assigned 08/10/2011 by FDOT District 1

Comments:

FDOT noted that the project area is characterized by open spaces and agricultural land, low to medium density residences, and light industry, with a growing residential and mixed use character. The project is consistent with the Lakeland Comprehensive Plan and is shown as a cost-feasible project in the Polk TPO 2035 LRTP. The project is also considered a committed improvement in the Lakeland Comprehensive Plan's Transportation and Capital Improvement Elements. FDOT stated that impacts to adjacent land uses are anticipated to be minimal, although the increased presence of commuter and non-motorized traffic resulting from growth in residential and mixed use areas may create conflicts between truckers and commuters sharing the corridor. Coordination Document: None.

FHWA stated that if land use changes are proposed they should be identified in appropriate planning documents. Coordination Document: None.

The project area is growing as a suburban residential and mixed-use community. The proposed project improvements appear to be in sync with such growth patterns and trends; however, as motorized and non-motorized traffic increases as a result, so does the potential for conflicts among the various modes sharing the corridor. Also, the project is consistent with and included in all of the appropriate public planning documents. Land use impacts appear to be minimal; therefore, a Summary DOE of Minimal has been assigned to the Land Use issue.

Commitments and Responses: None.

Technical Study: None.

Degree of Effect: 2 Minimal assigned 06/02/2011 by Joseph Sullivan, Federal Highway Administration

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

If land use changes are proposed they should be identified in appropriate planning documents.

Comments on Effects to Resources:

If land use changes are proposed they should be identified in appropriate planning documents.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 2 Minimal assigned 06/02/2011 by Scott Swearengen, FDOT District 1

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

City of Lakeland Comprehensive Plan

Polk Transportation Planning Organization's 2035 Long Range Transportation Plan (LRTP)

100-Foot Buffer:

Residential Areas - 16.8 acres

Commercial Areas - 2.2 acres

Industrial Areas - 7.8 acres

500-Foot Buffer:

Residential Areas - 110.0 acres

Commercial Areas - 8.7 acres

Industrial Areas - 42.2 acres

Transportation Areas (right-of-way) - 34.9 acres

Mobile Home and RV Parks - Oakridge MHP

FNAI Managed Lands - Tenoroc Fish Management Area

Bridgewater DRI - 163.5 acres

Future land use:

Residential Area - 220.0 acres

Mixed Use/Urban Village Area - 109.0 acres

Conservation Area - 72.2 acres

Quarter-Mile (1,320-Foot) Buffer:

Residential Areas - 354.7 acres

Commercial Areas - 25.0 acres

Industrial Areas - 113.7 acres

Bridgewater DRI - 489.2 acres

Future land use:

Residential Area - 509.4 acres

Mixed Use/Urban Village Area - 334.9 acres

Conservation Area - 319.6 acres

Mobile Home and RV Parks - Lakeland RV Resort

Comments on Effects to Resources:

The project area is characterized by open spaces and agricultural land, low to medium density residences, and light industry, with a growing residential and mixed use character. However, almost 320 acres within the quarter-mile buffer are designated as conservation land. Table 2 outlines the existing generalized land uses within the 500-foot project buffer. Agriculture is the dominant land use in the corridor, followed by residential uses and other open spaces.

Table 2. Generalized Land Use (500-Foot Buffer)

500-Foot Buffer

Description Acres Percent*

ACREAGE NOT ZONED FOR AGRICULTURE 56.7 11.35%

AGRICULTURAL 98.7 19.78%

INDUSTRIAL 13.6 2.72%

PARCELS WITH NO VALUES 11.8 2.37%

PUBLIC/SEMI-PUBLIC 2.0 0.39%

RECREATION 38.5 7.72%

RESIDENTIAL 60.7 12.16%

RETAIL/OFFICE 9.4 1.89%

ROW 1.5 0.3%

VACANT NONRESIDENTIAL 43.0 8.62%

VACANT RESIDENTIAL 2.8 0.56%

*Percentages do not add to 100% due to the omission of the transportation right-of-way from the D1 generalized land use inventory

EST - District 1 Generalized Land Use - analysis performed on 5/3/2011

The predominant future land use designations within the 500-foot buffer are Residential Medium, Mixed Use/Activity Center, and

Residential Low. Within the quarter-mile buffer, however, the dominant designations are Mixed Use/Activity Center and Conservation.

The proposed project is consistent with the City of Lakeland's Comprehensive Plan and the Polk Transportation Planning Organization's (TPO) 2035 Long Range Transportation Plan (LRTP). The project is contained within a section of SR 33 identified as a four-lane improvement need and identified as cost feasible in the currently adopted 2035 LRTP. The project is also considered a committed improvement in the City of Lakeland Comprehensive Plan's Transportation and Capital Improvement Elements.

Additional Comments (optional):

CLC Recommendations:

Impacts to adjacent land uses are anticipated to be minimal, although the increased presence of commuter and non-motorized traffic resulting from growth in residential and mixed use areas may create conflicts between truckers and commuters sharing the corridor. It is recommended that community outreach solicit input on potential effects to land uses in the corridor.

The following organization(s) were expected to but did not submit a review of the Land Use issue for this alternative: FL Department of Community Affairs

Mobility

Project Effects

Coordinator Summary Degree of Effect: 1 *Enhanced* assigned 08/10/2011 by FDOT District 1

Comments:

FDEP reported that the project provides an opportunity for a much needed trail connection between Lakeland's urban core and the 29-mile General James A. Van Fleet State Trail, which is a key component of the Florida Greenways and Trails System. They noted that a trail could be constructed within the SR 33 design south of SR 659, and that the City of Lakeland's Planning and Zoning Board has explicitly requested that a trail be accommodated in a site plan for a utility facility proposed at Maggiore Boulevard/Huron Way. Coordination Document: To Be Determined: Further Coordination Required.

FDOT stated that the resulting multimodal improvements from this project along SR 33 will help to improve multimodal connections between neighborhoods immediately adjacent to the project and destinations nearby. The project includes provisions for multimodal interface with transit through the addition of bus pullouts and shelter pads along both sides. Also, the proposed improvements are anticipated to include bicycle lanes and sidewalks along both sides of the roadway. Coordination Document: None.

The project is anticipated to provide mobility improvements for multiple transportation mode types, including vehicular, pedestrian, bicycle and transit, and will strengthen connections to other trails and recreational amenities. Therefore, a summary DOE of Enhanced has been assigned to the Mobility issue.

Commitments and Responses: Public outreach during project development in coordination with the Polk TPO should continue to solicit community opinions and preferences, targeting input from the transportation disadvantaged population, regarding the proposed capacity improvements and mobility options along this segment of State Road 33.

Technical Study: None.

Degree of Effect: 1 *Enhanced* assigned 06/02/2011 by Scott Swearingen, FDOT District 1

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

Identified Resources:

City of Lakeland Comprehensive Plan

Polk Transportation Planning Organization's 2035 Long Range Transportation Plan (LRTP)

100-Foot Buffer:

Residential Areas - 16.8 acres

Lakeland Fire Department Station 6

Office of Greenways and Trails (OGT) Multi-Use Trails Priorities (High)

Crashes (2005-2007) - 90 (3 fatal)

500-Foot Buffer:

Residential Areas - 110.0 acres

Polk County Transit - Bus Route 52

Railroad Siding - 466 feet

Mobile Home and RV Parks - Oakridge MHP

Crashes (2005-2007) - 126 (4 fatal)

Quarter-Mile (1,320-Foot) Buffer:

Residential Areas - 354.7 acres

Mobile Home and RV Parks - Lakeland RV Resort

Railroad Siding - 3,599 feet

One-Mile (5,280-Foot) Buffer:
Railroad Siding - 12,972 feet
FDOH Group Care Facilities (7)
Airport - Lake Gibson

Comments on Effects to Resources:

This project widens State Road 33 from an existing two-lane to a planned four-lane facility utilizing a suburban typical section. It is located in northern Lakeland, with the majority of the project south of Interstate 4 and having an existing interchange with I-4 near the project's northeastern limit. It will extend the existing four-lane section of SR 33 further northward for an additional 3.7 miles approximately.

The proposed improvements to State Road 33 are intended to improve operational capacity to meet mobility needs and to improve the functional viability of this roadway as a local and regional travel alternative to Interstate 4. State Road 33 provides access to nearby areas facilities including the Polk Parkway and downtown Lakeland.

This project includes provisions for multimodal interface with transit through the addition of bus pullouts and shelter pads along both sides of SR 33 within the project limits. (These are included as specific payment items in the Bridgewater DRI Development Agreement.) The Polk LRTP shows an unfunded transit need along the SR 33 corridor within the project limits. The proposed improvements are anticipated to include bicycle lanes and sidewalks along both sides of the roadway. The resulting multimodal improvements will help to improve multimodal connections between neighborhoods immediately adjacent to the project and destinations nearby.

The project is consistent with the City of Lakeland's Comprehensive Plan and the Polk Transportation Planning Organization's (TPO) 2035 Long Range Transportation Plan (LRTP). The project is contained within a section of SR 33 identified as a four-lane improvement need and identified as cost feasible in the currently adopted 2035 LRTP. The project is also considered a committed improvement in the City of Lakeland Comprehensive Plan's Transportation and Capital Improvement Elements.

Additional Comments (optional):

CLC Recommendations:

The project is anticipated to enhance mobility and accessibility for both motorized and non-motorized traffic; however, public outreach in coordination with the Polk TPO should continue to solicit community opinions and preferences, targeting input from the transportation disadvantaged population, regarding the proposed capacity improvements and mobility options along this segment of State Road 33.

Degree of Effect: **1** *Enhanced* assigned 05/26/2011 by Lauren P. Milligan, FL Department of Environmental Protection

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

The project is within 500 ft. of the Tenoroc Fish Management Area - co-managed by the Florida Fish and Wildlife Conservation Commission and the DEP's Bureau of Mining and Minerals Regulation. The project is also located within the Green Swamp Florida Forever BOT Project area.

Comments on Effects to Resources:

The DEP's Office of Greenways and Trails reports that the project provides an opportunity for a much needed trail connection between Lakeland's urban core and the 29-mile General James A. Van Fleet State Trail, which is a key component of the Florida Greenways and Trails System.

-- 12-foot pathways are currently being constructed as part of the East-West Road (University Boulevard) project between SR 33 and SR 570 (Polk Parkway) that is scheduled for completion in early 2012.

-- A multi-use trail is envisioned to be incorporated into the SR 33 design north of SR 659 (Combee Road), thereby providing a connection between Tenoroc Fish Management Area and E-W Road corridors that directly connect with the Van Fleet State Trail.

-- The SR 33 project corridor also parallels a trail corridor that is located on the south side of Long Lake. Given the 200-ft. right-of-way width on SR 33 and existing/planned residential units in the area, a trail could be constructed within the SR 33 design south of SR 659. In fact, the City of Lakeland's Planning and Zoning Board has explicitly requested that a trail be accommodated in a site plan for a utility facility proposed at Maggiore Boulevard/Huron Way.

-- It should also be noted that the City's four-lane improvement on SR 33 adjacent to the PD&E project limits (West of Old Combee/Deeson Point to Interstate 4 at Exit 33) includes sidewalks and dedicated bicycle lanes. Since SR 33 within the project area currently has a 60-mph posted speed limit, a transition from an on-road to off-road facility would certainly be appreciated.

For further information and assistance, please contact Ms. Marsha Connell in the Office of Greenways and Trails at (850) 245-2052.

Additional Comments (optional):

CLC Recommendations:

The following organization(s) were expected to but did not submit a review of the Mobility issue for this alternative: Federal Highway Administration

Relocation

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 09/07/2011 by FDOT District 1

Comments:

FDOT stated that the proposed improvements are expected to fit within the existing public rights-of-way, including the required stormwater treatment facilities and that there is no anticipated need to relocate households or businesses as a result of the project. Coordination Document: None.

FHWA expressed concerns with the existing right-of-way width being adequate to accommodate the project's planned improvements and, therefore, relocations of nearby residences may be necessary. FHWA requested that potential relocations be identified as early in the planning process as possible. Coordination Document: To Be Determined: Further Coordination Required.

The proposed improvements are expected to fit within the existing public rights-of-way, including the required stormwater treatment facilities. There do not appear to be any project-related relocation effects per this project. The FDOT has coordinated with the FHWA in assigning a Summary DOE. The FHWA stated that relocation impacts have not been identified and that further agency and public involvement may be necessary as the project proceeds forward. A summary DOE of Minimal has been assigned to the Relocation issue. If relocation impacts do arise, they should be noted as early in the project development process as possible. Commitments and Responses: Any potential relocations of existing residents due to the project will be identified during project development.

Technical Study: None.

Degree of Effect: 3 *Moderate* assigned 06/02/2011 by Joseph Sullivan, Federal Highway Administration

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

Please ID potential relocations as early in the planning process as possible.

Comments on Effects to Resources:

In some areas apparently less than 200 feet is available for project construction and associated needs. Due to the proximity of private residences to the project area relocations might be necessary and should be identified as early in the planning stages as possible.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 0 *None* assigned 06/02/2011 by Scott Swearingen, FDOT District 1

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

100-Foot Buffer:

Residential Areas - 16.8 acres

Lakeland Fire Department Station 6

Florida Forever BOT Project - Green Swamp, 36.4 acres

Comments on Effects to Resources:

The project area is characterized by open spaces and agricultural land, low to medium density residences, and light industry, with a growing residential and mixed use character. The proposed improvements are expected to fit within the existing public rights-of-way, including the required stormwater treatment facilities. There is no anticipated need to relocate households or businesses as a result of the project.

Additional Comments (optional):

CLC Recommendations:

There are no project-related relocation effects expected. The recommended degree of effect is None.

Social

Project Effects

Coordinator Summary Degree of Effect: 3 *Moderate* assigned 08/10/2011 by FDOT District 1

Comments:

The FDOT noted numerous community facilities within the project study area. With regard to area demographics, the 500-foot and one-mile buffer areas contain a relatively low percentage of African-Americans (32.8%) and Hispanic persons. Also, the percentage of households without a car is relatively low as is the percentage of elderly persons (age 65+). The median family income is higher

than the County average. These statistics indicate a high probability of an overall area population with limited transportation mobility capacity and/or options. Per the FDOT PD&E Manual, Part 1, Chapter 11, Section 11.2.4, public outreach activities targeting minority persons will not be required. This is due to the low percentage of minority persons in the study area. Regardless, FDOT recommended that measures be taken during public involvement to identify potential transportation disadvantaged groups, including the elderly, and ensure they are not disproportionately affected by the project. Coordination Document: None.

FHWA expressed concerns with the existing right-of-way width being adequate to accommodate the project's planned improvements and, therefore, relocations of nearby residences may be necessary. FHWA requested that potential relocations be identified as early in the planning process as possible. Coordination Document: To Be Determined: Further Coordination Required.

The USEPA noted both positive and negative impacts of the project. Positive impacts include better connectivity and accessibility for nearby communities. Negative impacts include general widening and potential increase in traffic volumes. Coordination Document: None.

The project is anticipated to improve capacity, circulation and mobility; however, this could lead to higher traffic volumes and an overall disruption to the social environment. The proposed improvements are expected to fit within the existing public rights-of-way, including the required stormwater treatment facilities. The demographic character of the project study area depicts a relatively less racially and ethnically diverse population that is younger, wealthier and with greater automobile access than Polk County as a whole. Per the FDOT PD&E Manual, Part 1, Chapter 11, Section 11.2.4, if the demographic data indicates that 5% or 1,000 persons or more in a project area speak a language other than English then Limited English Proficiency (LEP) accommodations should be required. Based on available U.S. Census data for the area, such accommodations will not be required for the project. Due to the high level of existing community facilities and residential populations in the area as well as the potential for increased traffic volumes, a summary DOE of Moderate has been assigned to the Social issue.

Commitments and Responses: Community outreach and input regarding the potential effects of this project should continue and measures should be taken during public involvement to identify potential transportation disadvantaged groups, including the elderly, and ensure they are not disproportionately affected by the project. Such outreach and involvement will be conducted during project development.

Technical Study: None.

Degree of Effect: 0 *None* assigned 06/07/2011 by Maher Budeir, US Environmental Protection Agency

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

Over 18% of land within the 200 foot buffer is midium density residential.

Comments on Effects to Resources:

Communities along the corridor will be impacted. The project is likely to positively impact some communities by providing better connectivity and accessibility. The general widening and potenal increase in volume of traffic will present a negative impact. Therefore the degree of effect of "none" is assigned. Further project details during the development and design can determine if the net social impact is positive.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 3 *Moderate* assigned 06/02/2011 by Joseph Sullivan, Federal Highway Administration

Coordination Document: To Be Determined: Further Coordination Required

Direct Effects

Identified Resources and Level of Importance:

Please identify the proposed type and width of road way and number and location of potential or identified relocations that would be necessary.

Comments on Effects to Resources:

In some areas apparently less than 200 feet is available for project construction and associated needs. Due to the proximity of private residences to the project area relocations might be necessary and should be identified as early in the planning stages as possible.

Additional Comments (optional):

CLC Recommendations:

Degree of Effect: 2 *Minimal* assigned 06/02/2011 by Scott Swearngen, FDOT District 1

Coordination Document: No Selection

Direct Effects

Identified Resources and Level of Importance:

100-Foot Buffer:

Residential Areas - 16.8 acres

Lakeland Fire Department Station 6
 Office of Greenways and Trails (OGT) Multi-Use Trails Priorities (High)
 Parcel Derived Park (1 golf course)

200-Foot Buffer:
 Lakeland Motorsports Park

500-Foot Buffer:
 Residential Areas - 110.0 acres
 Mobile Home and RV Parks - Oakridge MHP
 FNAI Managed Lands - Tenoroc Fish Management Area
 Bridgewater DRI - 163.5 acres
 Future land use:
 Residential Area: 220.0 acres
 Mixed Use/Urban Village Area: 109.0 acres
 Conservation Area: 72.2 acres

Quarter-Mile (1,320-Foot) Buffer:
 Residential Areas - 318.7 acres
 Bridgewater DRI - 489.2 acres
 Mobile Home and RV Parks - Lakeland RV Resort
 TLC Family Church (Parcel Derived Religious Center)

One-Mile (5,280-Foot) Buffer:
 Residential Areas - 1316.0 acres
 Bridgewater DRI - 1140.9 acres
 Parcel Derived Schools - School Board of Polk County
 Lake Gibson E Daughtery Road PUD - 15.6 acres
 Religious Centers, Parcel Derived or Geocoded (5)
 Lake Deeson Boat Ramp
 Other Parcel Derived Parks (2 golf courses)
 Health Care Facilities, Parcel Derived or Geocoded (3)
 FDOH Group Care Facilities (7)
 Social Service Facilities, Parcel Derived or Geocoded (10)
 Assisted Housing - Sterling Place
 SHPO Historic Standing Structures - 6230 Lake Luther Road
 Homeowners or Condominium Associations (2)
 Florida Archaeological or Historic Sites (2) - 0.28 acres
 USA International Speedway
 Lakeland Drag Strip
 Airport - Lake Gibson

Comments on Effects to Resources:

Several community facilities exist within close proximity to the project. Facilities within the quarter-mile buffer include a city fire station, an area designated by the OGT as a "high priority" multi-use trail, the Tenoroc Fish Management Area, one religious center, two mobile home/RV parks, and the Lakeland Motorsports Park. There are about 319 acres of medium to high density residential uses within the quarter-mile buffer, or a little less than 23 percent of the total land area within the buffer. Additionally, almost 490 acres of land are planned for development as part of the Bridgewater DRI.

Numerous community facilities exist within the one-mile buffer as listed above.

Table 1 displays the demographic characteristics of the corridor within the 500-foot and one-mile buffers and compares these areas with parallel statistics for the City of Lakeland and Polk County. According to the US Census Bureau data, the one-mile buffer area contains a lower percentage of minority persons, including those claiming Hispanic ethnicity, which is relatively low at 4.7% (compared to 6.4% in Lakeland and 9.7% in all of Polk County). The percentages of persons over the age of 65 and under the age of 18 are similar in the one-mile buffer area to those measures for Polk County as a whole, but the project area appears to contain a generally younger than average population for the City of Lakeland. The percentage of households with no vehicular access is substantially lower than in Polk County or the City of Lakeland, while the project area's median income is notably higher.

Per the FDOT PD&E Manual, Part 1, Chapter 11, Section 11.2.4, if the demographic data indicates that 5% or 1,000 persons or more in a project area speak a language other than English then Limited English Proficiency (LEP) accommodations should be required. Based on the demographic information from the US Census Bureau data, LEP accommodations are not required for this project.

Table 1. Demographic Information

Demographic	500' Buffer	1 Mile Buffer	Lakeland	Polk County
White (Race)	91.9%	90.9%	73.5%	81.0%
African-American (Race)	4.4%	4.9%	21.3%	13.8%
"Other" * (Race)	3.7%	4.2%	5.2%	5.2%
Hispanic (Ethnic Group)	2.8%	4.7%	6.4%	9.7%
Age 65+	14.2%	17.5%	23.0%	18.3%
Under age 18	25.8%	24.4%	21.4%	24.4%
HH w/o car	3.6%	4.7%	10.8%	7.2%
Med. Family Income	\$45,378	\$44,002	\$40,468	\$41,442
Source: US Census Bureau (2000 Data - Polk County)				

* "Other" includes Asian, Native American, Native Hawaiian & Other Pacific Islander Alone, & Other Race.

Additional Comments (optional):

CLC Recommendations:

The potential impacts to the social environment are expected to be minimal. However, it is recommended that community outreach and input regarding the potential effects of this project continues. Measures should be taken during public involvement to identify potential transportation disadvantaged groups, including the elderly, and ensure they are not disproportionately affected by the project.

The following organization(s) were expected to but did not submit a review of the Social issue for this alternative: FL Department of Community Affairs

ETAT Reviews and Coordinator Summary: Secondary and Cumulative

Secondary and Cumulative Effects

Project Effects

Coordinator Summary Degree of Effect: 2 *Minimal* assigned 09/07/2011 by FDOT District 1

Comments:

The SWFWMD stated that the project may result in further loss and/or disturbance of breeding and foraging habitat for listed species and further fragmentation of remaining uplands. The SWFWMD noted that excessive habitat damage can be avoided by restricting construction equipment to previously disturbed areas. The SWFWMD also commented that the use of Low Impact Development techniques may assist in water quality treatment and water quantity management. The SWFWMD recommends that wetland impacts be eliminated or reduced by implementing strict controls over sediment transport offsite during construction and by restricting staging areas to uplands. Coordination Document: Permit Required.

According to the City of Lakeland's Comprehensive Plan, the future land use vision of the project area calls for increased residential, industrial, and mixed use developments. The purpose of this project is to improve the functional viability of SR 33 as a local and regional travel alternative to Interstate 4 to provide needed capacity to meet growing travel demand in northeast Lakeland and support increases in both population and employment in the area. This project is additionally anticipated to augment an existing emergency evacuation route. For these reasons, a Summary DOE of Minimal has been assigned to the Secondary and Cumulative Effects issue. The FDOT has coordinated with the SWFWMD in assigning a Summary DOE. The SWFWMD stated that their determination of any DOE is primarily based on the project's increased coordination & efforts with the FDOT during the future regulatory process (ERP). Therefore, the SWFWMD assigned their recommended DOE due to the increased permitting efforts of the project.

Commitments and Responses: None.

Technical Study: None.

Degree of Effect: 3 *Moderate* assigned 05/26/2011 by Hank Higginbotham, Southwest Florida Water Management District

Coordination Document: Permit Required

At-Risk Resource: Wildlife and Habitat

Comments on Effects: The project's potential impacts on wildlife and habitat include the further elimination and/or disturbance of breeding and foraging areas for listed species and the further dissection and fragmentation of remaining uplands. Increased traffic and increased traffic lane width will increase the potential for wildlife fatalities on SR 33, particularly for gopher tortoises who utilize the remaining patches of suitable habitat adjacent to the project.

Recommended Avoidance, Minimization, and Mitigation Measures: Excessive habitat damage to remaining quality upland habitats can be eliminated by restricting construction equipment to other, disturbed areas.

Recommended Actions to Improve At-Risk Resources: The results from the recommended analysis of road kill potential, particularly of gopher tortoises, should be utilized to eliminate serious impacts to wildlife and habitats.

At-Risk Resource: Water Quality and Quantity

Comments on Effects: The surface water features in the project area have been adversely affected by past land uses, untreated runoff from roadways and agricultural lands, physical disturbances including excavation, ditching, and other activities. The project has the potential to continue to promote both physical and water quality impacts to these aquatic systems.

Recommended Avoidance, Minimization, and Mitigation Measures: Compliance with existing permit requirements, the successful use of erosion and sediment control BMPs, and compliance with applicable TMDL and MFL requirements will help assure that minimum water quality standards are met. Water quantity concerns will also be addressed during the ERP process. In general, limiting or otherwise offsetting encroachment on the ditches, channels, and floodplains in the area can reduce quantity concerns. For groundwater resources, ensure that spillages of petroleum products and other chemicals do not occur during construction, and that stormwater treatment ponds do not intrude into the limerock or penetrate confining material of the aquifer system, either directly or by sinkhole formation. Low impact development strategies may help with water quality treatment as well as water quantity

management.

Recommended Actions to Improve At-Risk Resources: For surface water resources, reduce pollutant loads to the drainage features in the project area by treating stormwater runoff from currently untreated areas, by controlling erosion from the project site, by limiting activities in surface water, by protecting surface water from the ingress of grease and oils from equipment, and by considering restoration strategies at construction sites. Low impact development strategies may help to limit secondary and cumulative impacts.

At-Risk Resource: Wetlands

Comments on Effects: Possible secondary and cumulative impacts to wetlands within the project include the further loss or reduction of the remaining wetlands.

Recommended Avoidance, Minimization, and Mitigation Measures: Wetland impacts can be eliminated or reduced by implementing strict controls over sediment transport off site during construction and by restricting the staging area and the movement of vehicles and equipment to non-wetland areas.

Recommended Actions to Improve At-Risk Resources:

1. Avoid impacts to wetlands wherever feasible;
2. Increase the buffer area around existing wetlands as practicable;
3. Reduce impacts by restoring or enhancing wetland acreage impacted previously by roadway construction.

Eliminated Alternatives

There are no eliminated alternatives for this project.

Project Scope

General Project Recommendations

There are no general project recommendations identified for this project in the EST.

Required Permits

Permit	Type	Conditions	Assigned By	Date
Dredge and Fill Permit	USACE		FDOT District 1	08/10/11
Environmental Resource Permit	State		FDOT District 1	08/10/11

Required Technical Studies

Technical Study Name	Type	Conditions	Assigned By	Date
Contamination Screening Evaluation Report	ENVIRONMENTAL		FDOT District 1	08/10/2011
Endangered Species Biological Assessment	ENVIRONMENTAL		FDOT District 1	08/10/2011
Wetlands Evaluation Report	ENVIRONMENTAL		FDOT District 1	08/10/2011
Cultural Resource Assessment Survey Report	Other		FDOT District 1	08/10/2011
Floodplains Assessment	Other		FDOT District 1	08/10/2011
Section 4f Evaluation	ENVIRONMENTAL	Section 4(f) Determination of Applicability	FDOT District 1	08/10/2011
Water Quality Impact Evaluation (WQIE)	ENVIRONMENTAL		FDOT District 1	08/10/2011

Class of Action

Class of Action Determination

Class of Action	Other Actions	Lead Agency	Cooperating Agencies	Participating Agencies
Categorical Exclusion	Section 4(f) Evaluation Endangered Species Assessment	Federal Highway Administration	Cooperating agencies are not applicable for this class of action.	Participating agencies are not applicable for this class of action.

Class of Action Signatures

Name	Agency	Review Status	Date	ETDM Role
Gwen G. Pipkin	FDOT District 1	ACCEPTED	03/26/2014	FDOT ETDM Coordinator

Comments:

Of the 21 issues examined, none received a Degree of Effect (DOE) of Substantial and only six issues received a DOE of Moderate, including Water Quality and Quantity, Wetlands, Wildlife and Habitat, Historic and Archeological Sites, Aesthetics, and Social. According to agency comments and the EST GIS analysis results, the project study area includes some impaired waters; however, there are no Outstanding Florida Waters or Aquatic Preserves located within the project's 200-foot buffer. Also, according to the National Wetlands Inventory database, 3.7 acres (1%) of lacustrine wetlands and 4.5 acres (2.29%) of palustrine wetlands are present within this same buffer area. The project study area is located within the Greater Charlotte Harbor and Withlacoochee River Ecosystem Management Areas, within the CFA of six active nesting wood stork colonies, and within the Green Swamp Florida Forever Board of Trustees (BOT) Project. There were agency concerns regarding potential adverse impacts to suitable listed species' habitat and the need for Section 7 Consultation with the FWS.

As for Historic and Archeological Sites, the FMSF listed no archaeological sites, six previously recorded historic resources, and one historic resource group within 500 feet of the project corridor. The resource group is the post-WW II era Lake Deeson Village trailer park (8PO7495) located at 5210 SR 33 in Lakeland. The six previously recorded historic resources and the resource group were evaluated by the SHPO as ineligible for inclusion in the National Register of Historic Places (National Register) on February 24, 2011. A review of the Polk property appraiser data revealed a total of 83 parcels adjacent to the project corridor, 4 of which had historic build dates. Finally, a review of the City of Lakeland Archaeological Site Potential map indicates that the project corridor is located within an area that was not identified as having a high archaeological potential. There are growing residential areas and community natural resources within close proximity to the project corridor and the potential for noise and vibration related impacts during construction. Due to the high level of existing community facilities and residential populations in the area there is some concern with the potential for increased traffic volumes. Some limited right-of-way acquisition will be required by the FDOT; however, there will be no residential or business relocations necessary.

After further analysis and documentation during the PD&E Phase of the project, of the six issues that received initial DOE's of Moderate, five are recommended for lower Final DOE classifications ranging from Minimal to None.

Name	Agency	Review Status	Date	ETDM Role
<p>The widening of the existing two-lane undivided segment of SR 33 from Old Combee Rd to north of Tomkow Road to a four-lane divided facility with pedestrian enhancements will enhance connectivity of the local and regional roadway network as well as meet the growing travel demand in northeast Lakeland. The project also supports employment and population growth, enhances multimodal connectivity, and augments and existing emergency evacuation route. The project is included in the Polk TPO's LRTP and TIP as well as the City of Lakeland's Comprehensive Plan, Citywide Pathways Plan and CIP.</p>				
<p>There were no substantial concerns expressed among the 21 resource issues. The project will require limited right-of-way acquisition and no residential or business relations. It will not induce significant impacts to planned growth or land use in the area and will have no significant individual or cumulative environmental impacts. Also, the project will have no significant impacts to travel patterns and has not generated controversy among resource agencies or the public. Therefore, a Type 2 Categorical Exclusion (Type 2 CE) is recommended as the Class of Action.</p>				
Cathy Kendall	Federal Highway Administration	ACCEPTED	03/26/2014	Lead Agency ETAT Member

Comments:

FHWA finds, based on the ETDM review and discussions with FDOT, that the project is not likely to have significant impacts, and therefore a documented categorical exclusion (Type 2 CE) is the appropriate class of action for the project.

The Type CE will address issues identified through the ETAT review and will reflect the extensive coordination that will take place to address potential impacts to wildlife habitat, water resources, and areas with special environmental designations.

Dispute Resolution Activity Log

There are no dispute actions identified for this project in the EST.

Appendices

Preliminary Environmental Discussion Comments

The Preliminary Environmental Discussion (PED) was not implemented until 10/12/2012.

Advance Notification Comments

There are no comments for this project.

GIS Analyses

Since there are so many GIS Analyses available for Project #13188 - State Road 33: from Old Combee Road to north of Tomkow Road, they have not been included in this ETDM Summary Report. GIS Analyses, however, are always available for this project on the Public ETDM Website. Please click on the link below (or copy this link into your Web Browser) in order to view detailed GIS tabular information for this project:

<http://etdmpub.fl.a-etat.org/est/index.jsp?tpID=13188&startPageName=GIS%20Analysis%20Results>

Special Note: Please be sure that when the GIS Analysis Results page loads, the **Programming Screen Summary Report Re-published on 03/26/2014 by Gwen Pipkin Milestone** is selected. GIS Analyses snapshots have been taken for Project #13188 at various points throughout the project's life-cycle, so it is important that you view the correct snapshot.

Project Attachments

There are no attachments for this project.

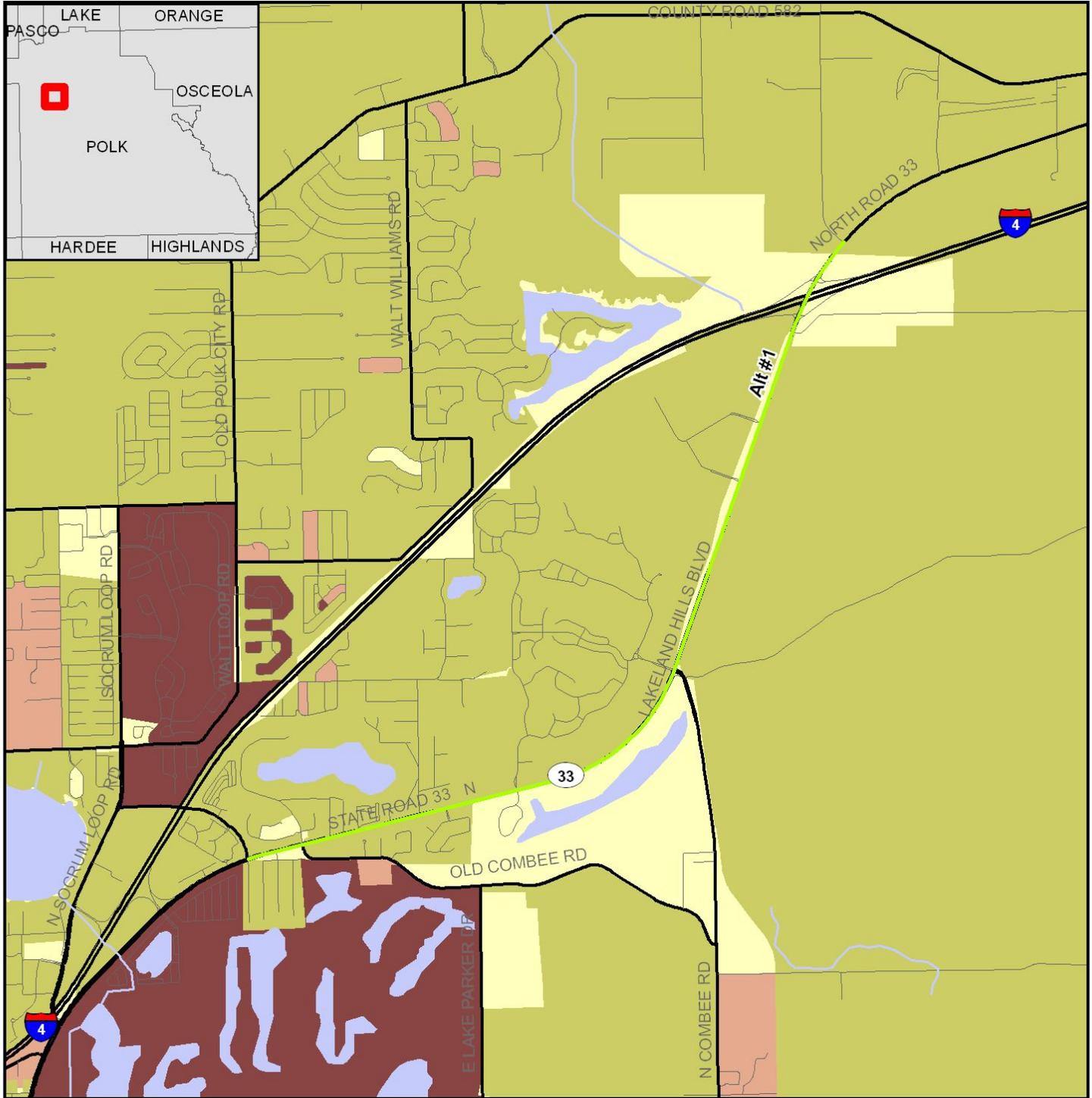
Degree of Effect Legend

Color Code	Meaning	ETAT	Public Involvement
N/A	Not Applicable / No Involvement	There is no presence of the issue in relationship to the project, or the issue is irrelevant in relationship to the proposed transportation action.	
0	None (after 12/5/2005)	The issue is present, but the project will have no impact on the issue; project has no adverse effect on ETAT resources; permit issuance or consultation involves routine interaction with the agency. The <i>None</i> degree of effect is new as of 12/5/2005.	No community opposition to the planned project. No adverse effect on the community.
1	Enhanced	Project has positive effect on the ETAT resource or can reverse a previous adverse effect leading to environmental improvement.	Affected community supports the proposed project. Project has positive effect.
2	Minimal	Project has little adverse effect on ETAT resources. Permit issuance or consultation involves routine interaction with the agency. Low cost options are available to address concerns.	Minimum community opposition to the planned project. Minimum adverse effect on the community.
2	Minimal to None (assigned prior to 12/5/2005)	Project has little adverse effect on ETAT resources. Permit issuance or consultation involves routine interaction with the agency. Low cost options are available to address concerns.	Minimum community opposition to the planned project. Minimum adverse effect on the community.
3	Moderate	Agency resources are affected by the proposed project, but avoidance and minimization options are available and can be addressed during development with a moderated amount of agency involvement and moderate cost impact.	Project has adverse effect on elements of the affected community. Public Involvement is needed to seek alternatives more acceptable to the community. Moderate community interaction will be required during project development.
4	Substantial	The project has substantial adverse effects but ETAT understands the project need and will be able to seek avoidance and minimization or mitigation options during project development. Substantial interaction will be required during project development and permitting.	Project has substantial adverse effects on the community and faces substantial community opposition. Intensive community interaction with focused Public Involvement will be required during project development to address community concerns.
5	Potential Dispute (Planning Screen)	Project may not conform to agency statutory requirements and may not be permitted. Project modification or evaluation of alternatives is required before advancing to the LRTP Programming Screen.	Community strongly opposes the project. Project is not in conformity with local comprehensive plan and has severe negative impact on the affected community.
5	Dispute Resolution (Programming Screen)	Project does not conform to agency statutory requirements and will not be permitted. Dispute resolution is required before the project proceeds to programming.	Community strongly opposes the project. Project is not in conformity with local comprehensive plan and has severe negative impact on the affected community.
	No ETAT Consensus	ETAT members from different agencies assigned a different degree of effect to this project, and the ETDM coordinator has not assigned a summary degree of effect.	
	No ETAT Reviews	No ETAT members have reviewed the corresponding issue for this project, and the ETDM coordinator has not assigned a summary degree of effect.	

Project-Level Hardcopy Maps

13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



0 1 Miles



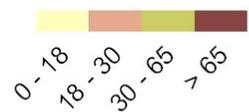
Data Sources:
 US Geological Survey
 FL Department of Transportation
 Geographic Data Technology, Inc.
 US Census Bureau

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Population Age Distribution Map

- ETDM Alternative Point
- ETDM Alternative Terminus
- ETDM Alternative Segment
- ETDM Alternative Polygon
- Major Road
- Local Road or Trail
- Railroad
- River, Stream or Canal
- Water Body

Median Age

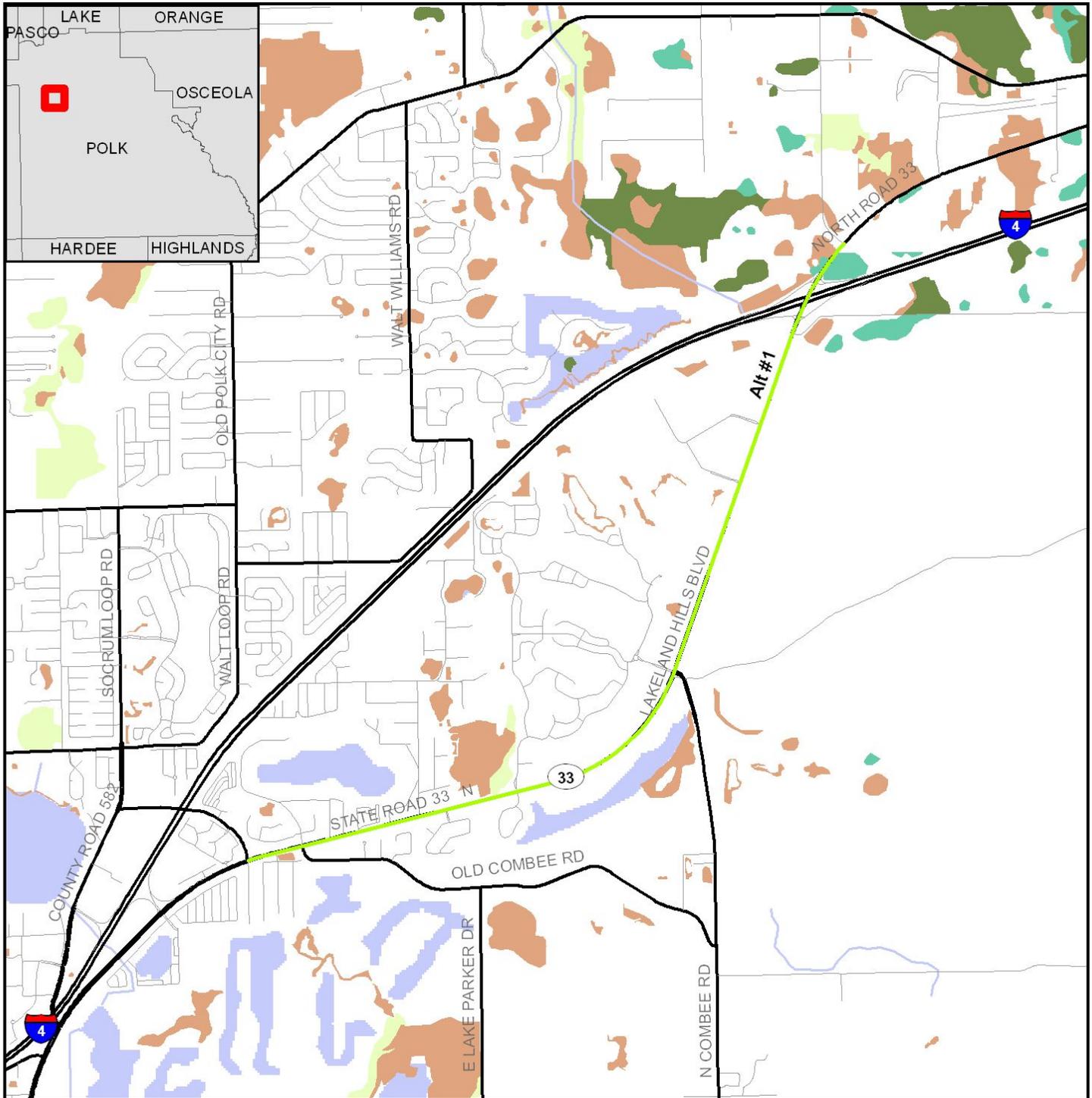


Map Generated on: 4/1/2011



13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



0 0.6 Miles



- ### Coastal and Marine Resource Map
- ETDM Alternative Point
 - ETDM Alternative Terminus
 - ETDM Alternative Segment
 - ETDM Alternative Polygon
 - Major Road
 - Local Road or Trail
 - River, Stream or Canal
 - Water Body
 - Aquatic Preserve
 - Navigable Water Way
 - Continuous Seagrass
 - Discontinuous Seagrass
 - Coastal Barrier Resource Area
 - Swamp or Marsh
 - Exposed Rocky Platform
 - Sand Beach
 - Gravel Beach/Riprap
 - Exposed Tidal Flat
 - Sheltered Tidal Flat
 - Mixed Sand And Gravel Beach
 - Sheltered Rock/Seawall/Vegetated
 - Exposed Vertical Rocky Shore/Seawall

Data Sources: Geographic Data Technology, Inc.; US Geological Survey; Florida Marine Research Institute; Florida Department of Transportation; Florida Department of Environmental Protection; National Oceanic and Atmospheric Association; Florida Water Management Districts

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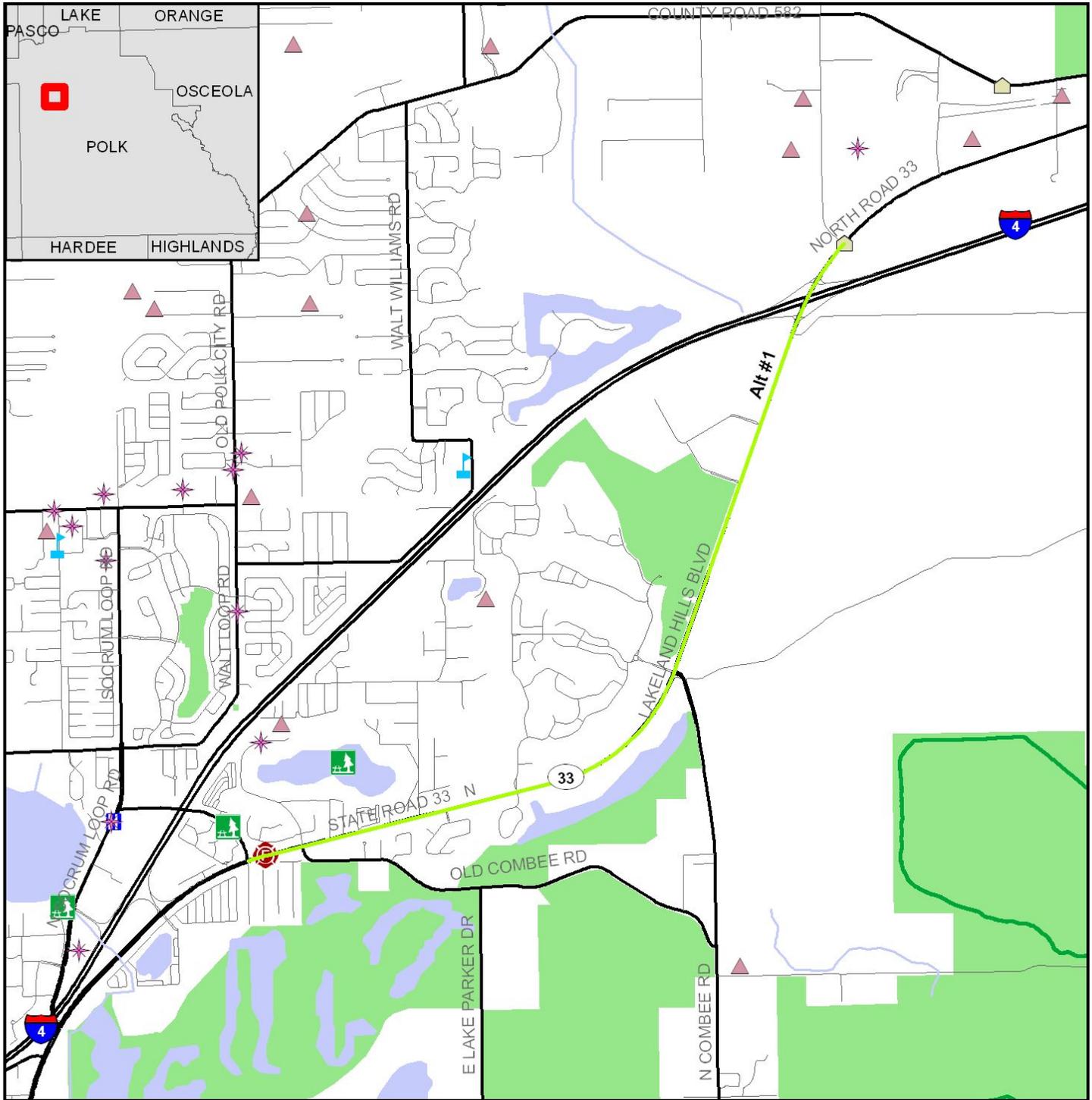


Map Generated on: 4/1/2011



13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



00.09 Miles



- | | | | |
|---------------------------|------------------|------------------------|---------------------------------|
| ETDM Alternative Point | Cemetery | Fire Station | Major Road |
| ETDM Alternative Terminus | Social Service | Health Care | Local Road or Trail |
| ETDM Alternative Segment | Community Center | School | Railroad |
| ETDM Alternative Polygon | Law Enforcement | Park | Community Boundary |
| Government | Place of Worship | River, Stream or Canal | Water Body |
| Civic Center | Cultural Center | Recreational Trail | Conservation or Recreation Area |

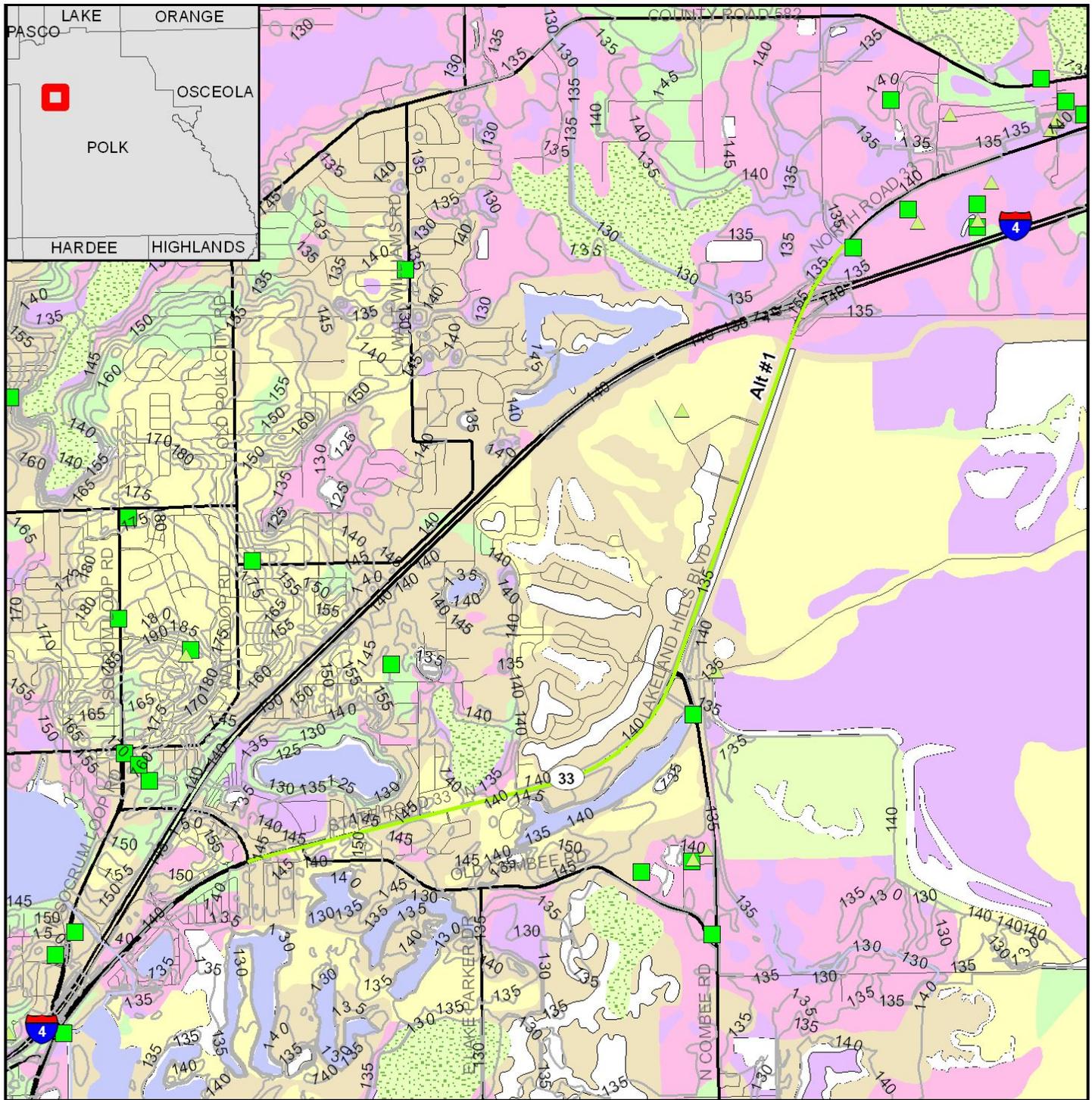
Data Sources:

US Geological Survey; FL Department of Transportation; Geographic Data Technology, Inc.; FL Property Appraisers; FL Natural Areas Inventory



13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



0 0.7 Miles

Potential Contamination Assessment Map



- ETDM Alternative Point
- ETDM Alternative Terminus
- ETDM Alternative Segment
- ETDM Alternative Polygon
- Major Road
- Local Road or Trail
- Railroad
- River, Stream or Canal
- Toxic Release Inventory
- ★ Dry Cleaning Facility
- Solid Waste Facility
- ▨ NPL Remediation Site
- ▲ Hazardous Material Site
- Power Plant
- Superfund Site
- Nuclear Site
- FDEP Tanks
- Brownfield Area
- 5 FT Contour
- Water Body
- Swamp/Marsh

Data Sources:
 Geographic Data Technology, Inc.; US Geological Survey; FL Department of Transportation; FL Department of Environmental Protection;
 FL Water Management Districts; US Environmental Protection Agency; Natural Resource Conservation Service

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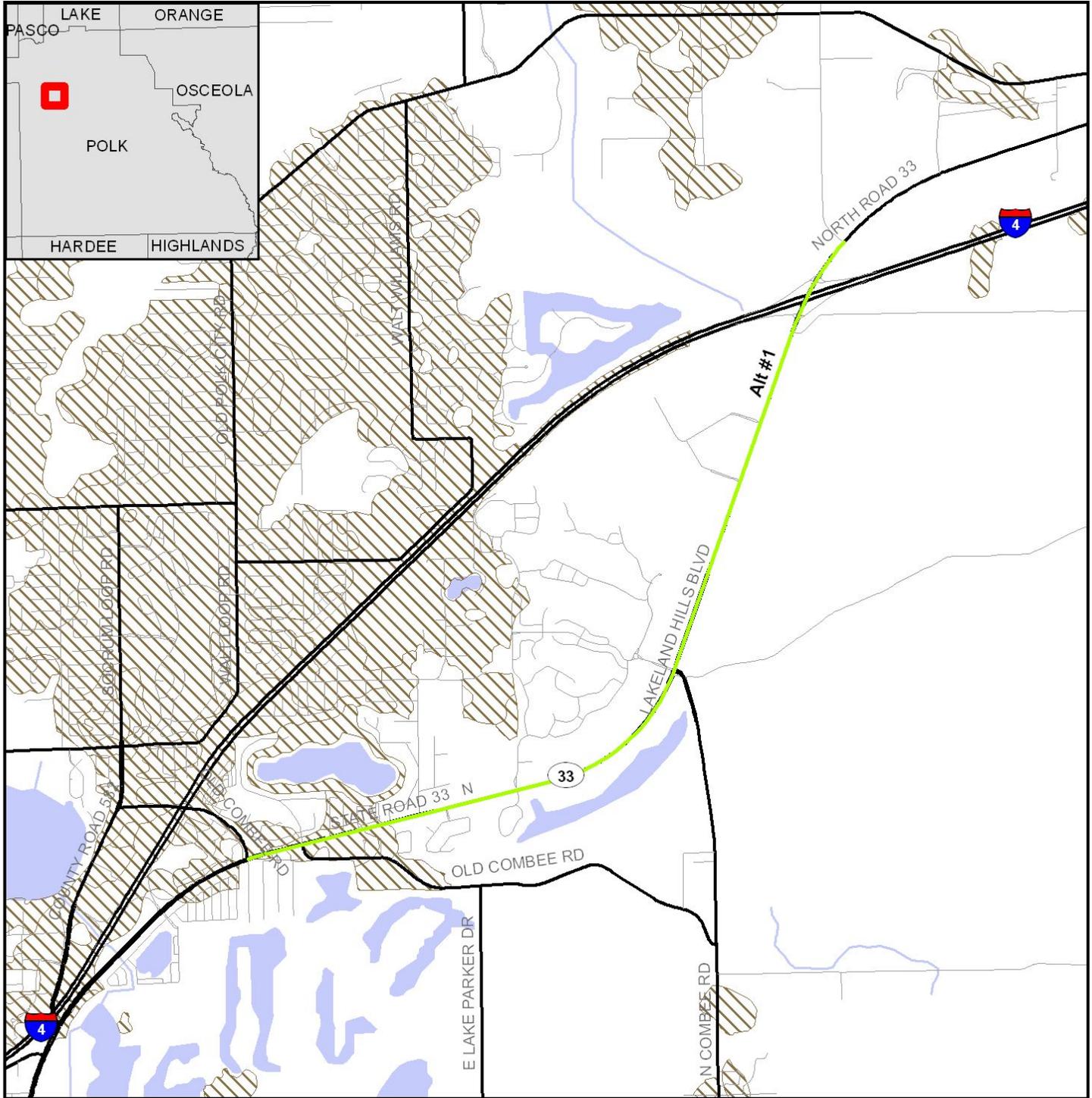


Map Generated on: 4/1/2011



13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



0 0.7 Miles

Farmlands Resource Map



- ETDM Alternative Point
- ETDM Alternative Terminus – Major Road
- ETDM Alternative Segment – Local Road or Trail
- ETDM Alternative Polygon
- River, Stream or Canal
- Prime Farmland Soils
- Roads
- Cropland/Pastureland
- Nurseries/Vineyards
- Specialty Farms
- Tree Crops
- Water Body
- Rural Open Lands

Data Sources: Geographic Data Technology, Inc., Florida Water Management Districts, US Geological Survey, Natural Resources Conservation Services
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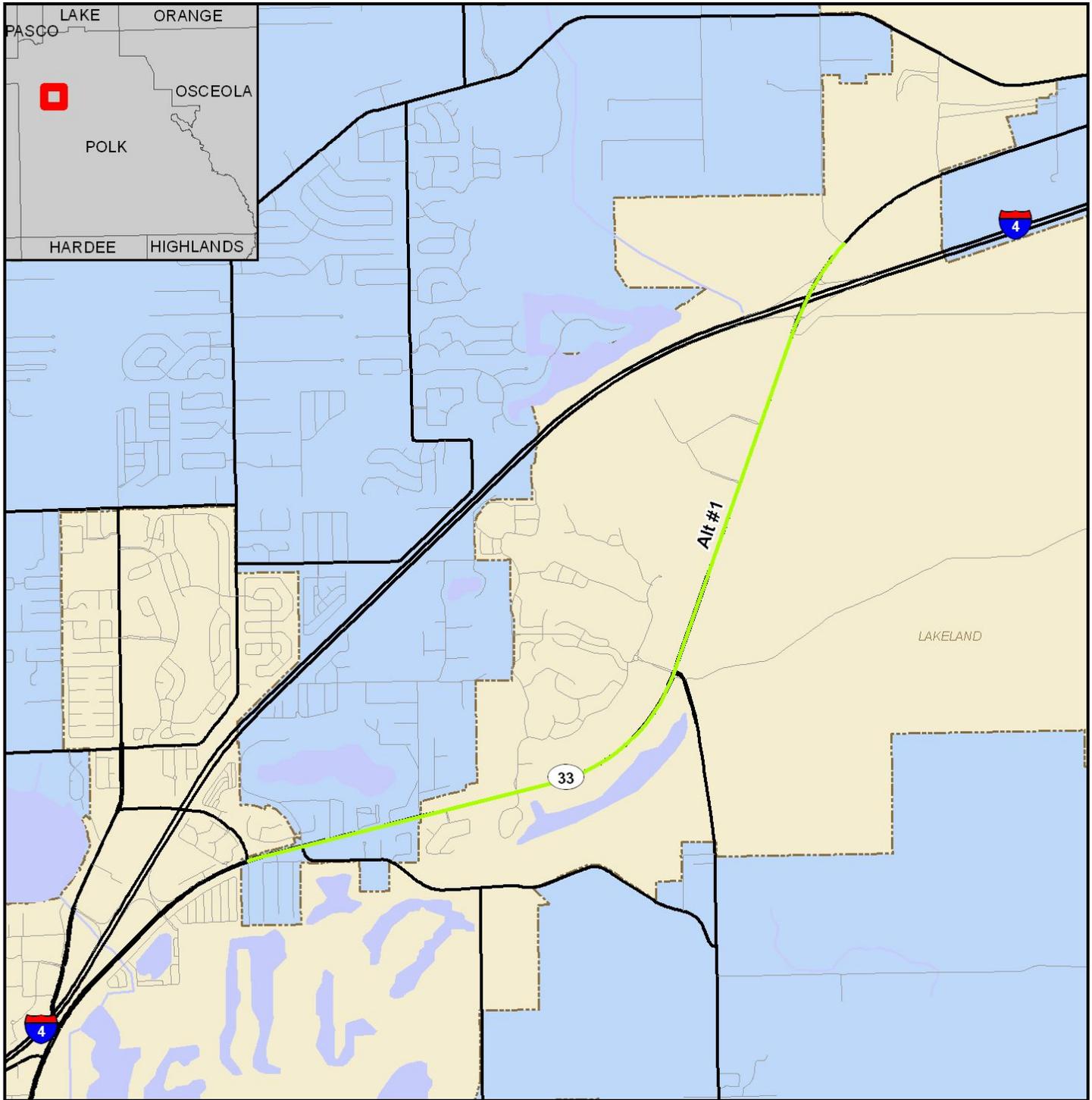


Map Generated on: 4/1/2011

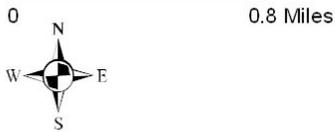


13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



Floodplain Resource Map



- ETDM Alternative Point
- ETDM Alternative Terminus
- ETDM Alternative Segment
- ▨ ETDM Alternative Polygon
- Major Road
- Local Road or Trail
- Railroad
- River, Stream or Canal
- Water Body
- ▭ City Limits
- ▭ County Boundaries
- ▨ Special Flood Hazard Area

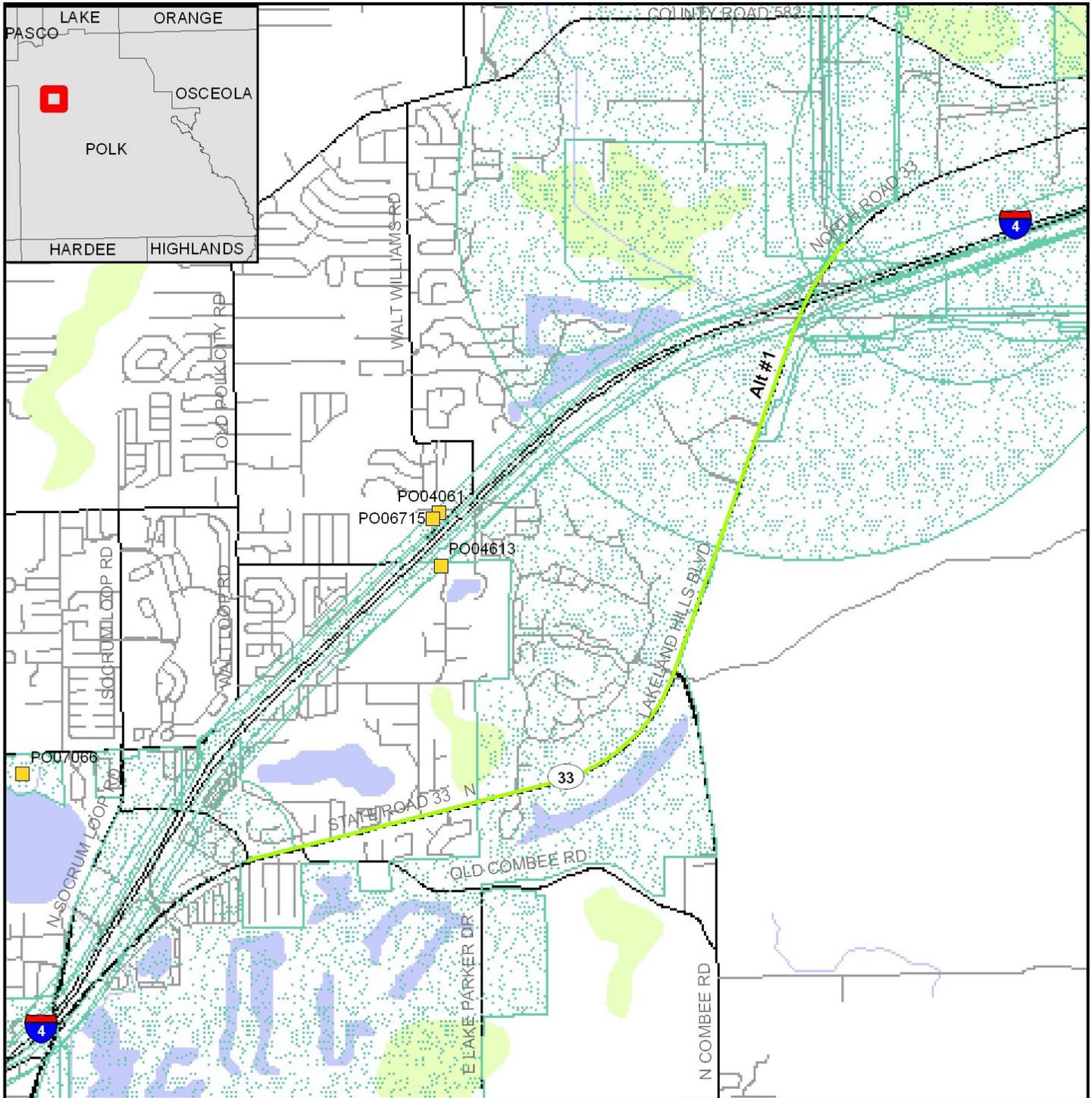
Data Sources:
 Geographic Data Technology, Inc.
 US Geological Survey
 Federal Emergency Management Agency

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13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



0 1 Miles



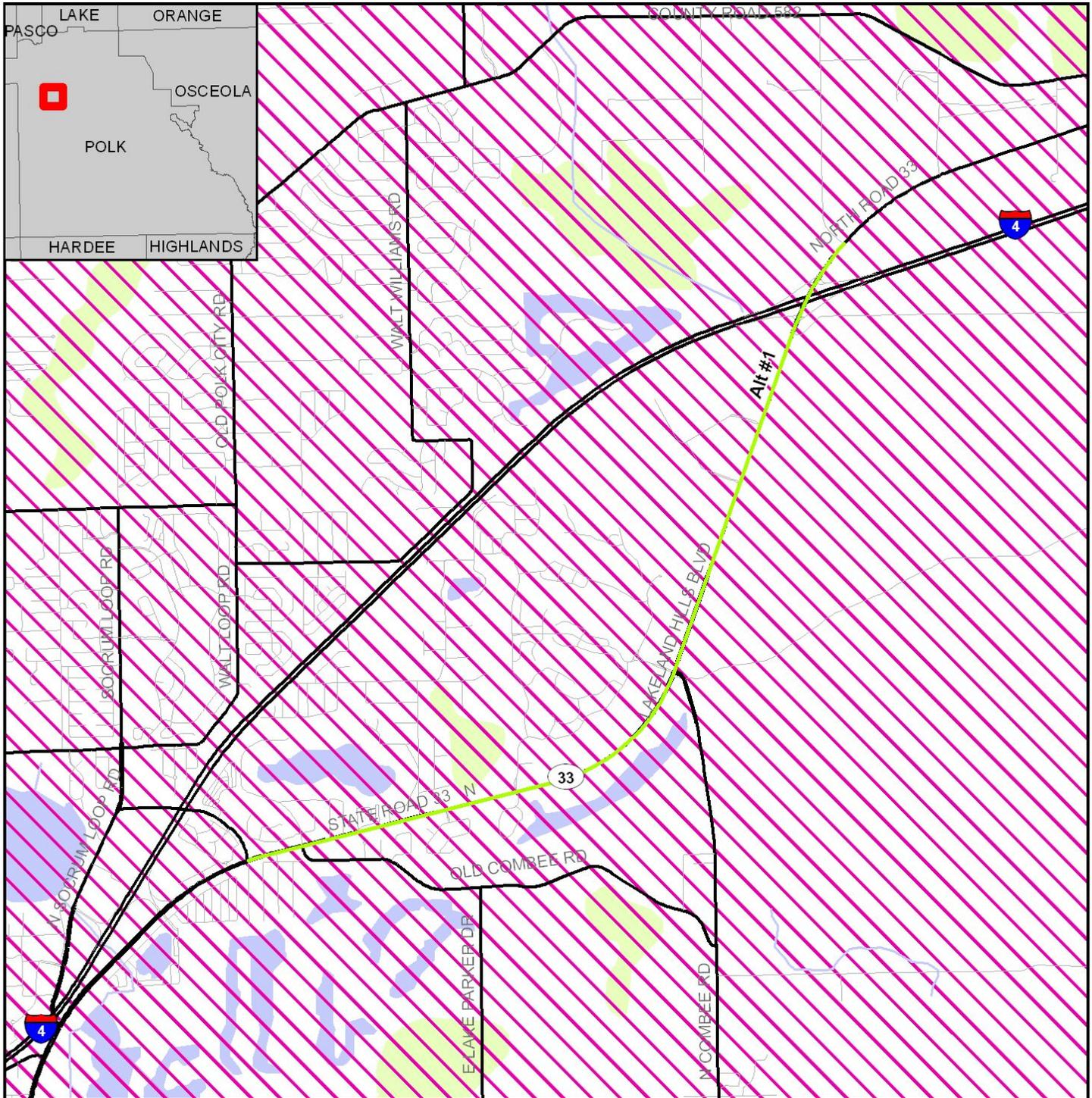
Data Sources:
 Geographic Data Technology, Inc.
 US Geological Survey
 Florida Department of Transportation
 Florida Department of State,
 Bureau of Archaeological Research

- | | | |
|---------------------------|---------------------|-------------------------------------|
| ETDM Alternative Point | Water Body | Historic Cemetery |
| ETDM Alternative Terminus | Swamp/Marsh | Historic Bridge |
| ETDM Alternative Segment | Major Road | Historic Resource Group |
| ETDM Alternative Polygon | Local Road or Trail | Cultural Resource Field Survey Area |
| River, Stream or Canal | Railroad | State Historic Highway |
| Historic Structure | | |

Note: Historic properties depicted on this map represent resources listed in the Florida Master Site File excluding archeological site locations, which, pursuant to Chapter 267.135, Florida Statutes, may be exempt from public record (Chapter 119.07, Florida Statutes). Absence of features on the map does not necessarily indicate an absence of resources in the project vicinity.

13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



Hydrogeology Resource Map

0 0.5 Miles



- ETDM Alternative Point
- ETDM Alternative Terminus
- ETDM Alternative Segment
- ETDM Alternative Polygon
- Major Road
- Local Road or Trail
- River, Stream or Canal
- Water Body
- Swamp/Marsh

- #### Recharge Areas of the Floridan Aquifer
- Discharge 1 TO 5
 - Discharge > 5
 - Discharge < 1
 - Recharge 1 TO 10
 - Recharge > 10
 - Recharge < 1

- #### Geological Epoch
- Oligocene/Miocene
 - Pleistocene
 - Holocene
 - Pleistocene & Holocene
 - Pliocene
 - Pliocene/Pleistocene
 - Miocene
 - Miocene/Pliocene
 - Oligocene

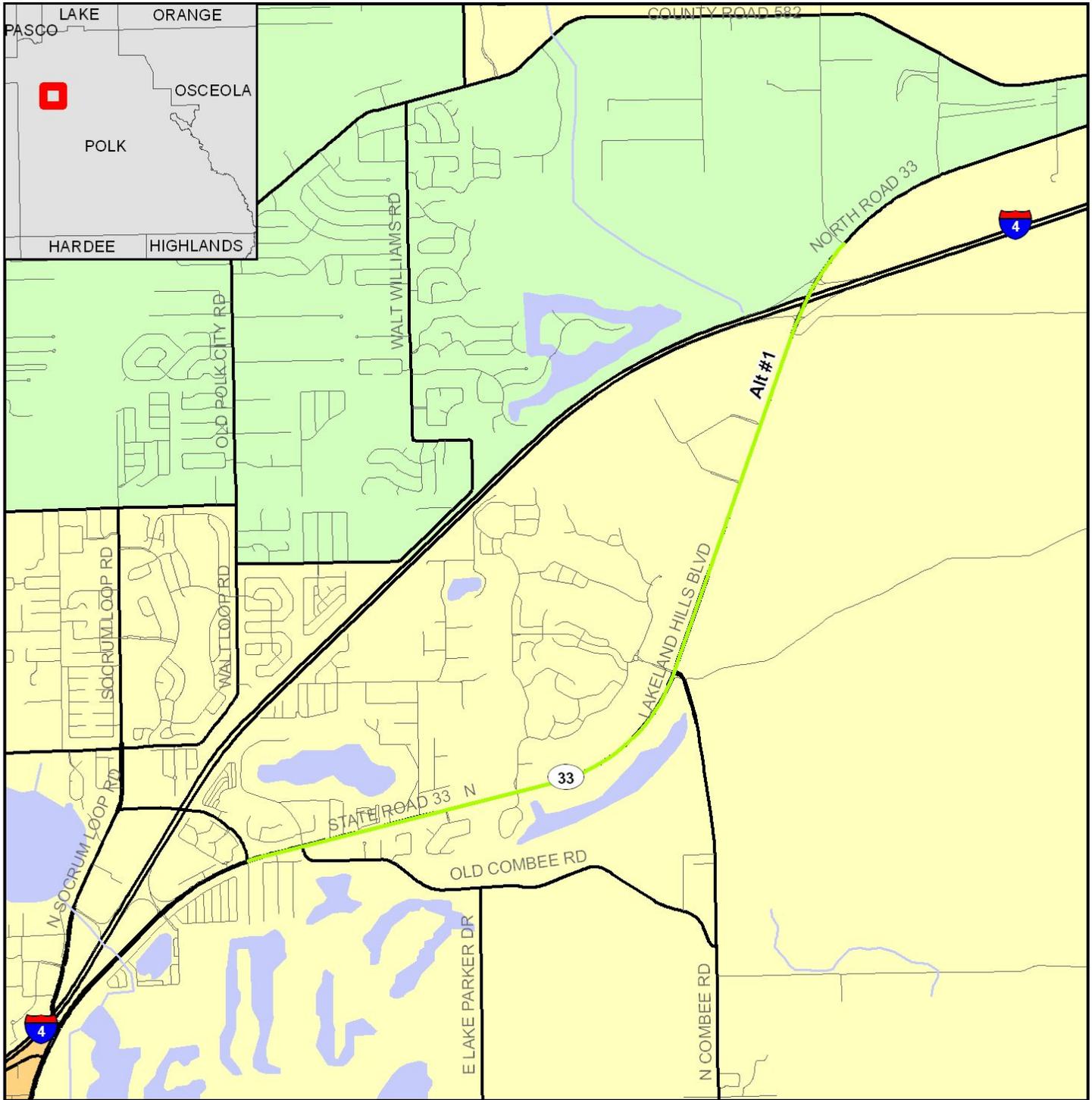
Data Sources: Geographic Data Technology, Inc.; US Geological Survey; Florida Department of Transportation; South West Florida Water Management District; Florida Geological Survey

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13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road

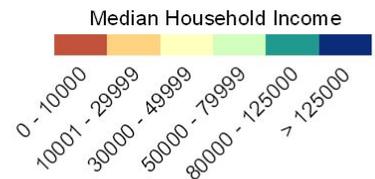


0 1 Miles

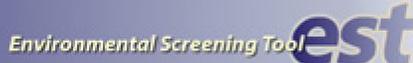


Data Sources:
 US Geological Survey
 FL Department of Transportation
 Geographic Data Technology, Inc.
 US Census Bureau

- ETDM Alternative Point
- ETDM Alternative Terminus
- ETDM Alternative Segment
- ETDM Alternative Polygon
- Major Road
- Local Road or Trail
- Railroad
- River, Stream or Canal
- > 20% Below Poverty
- Water Body



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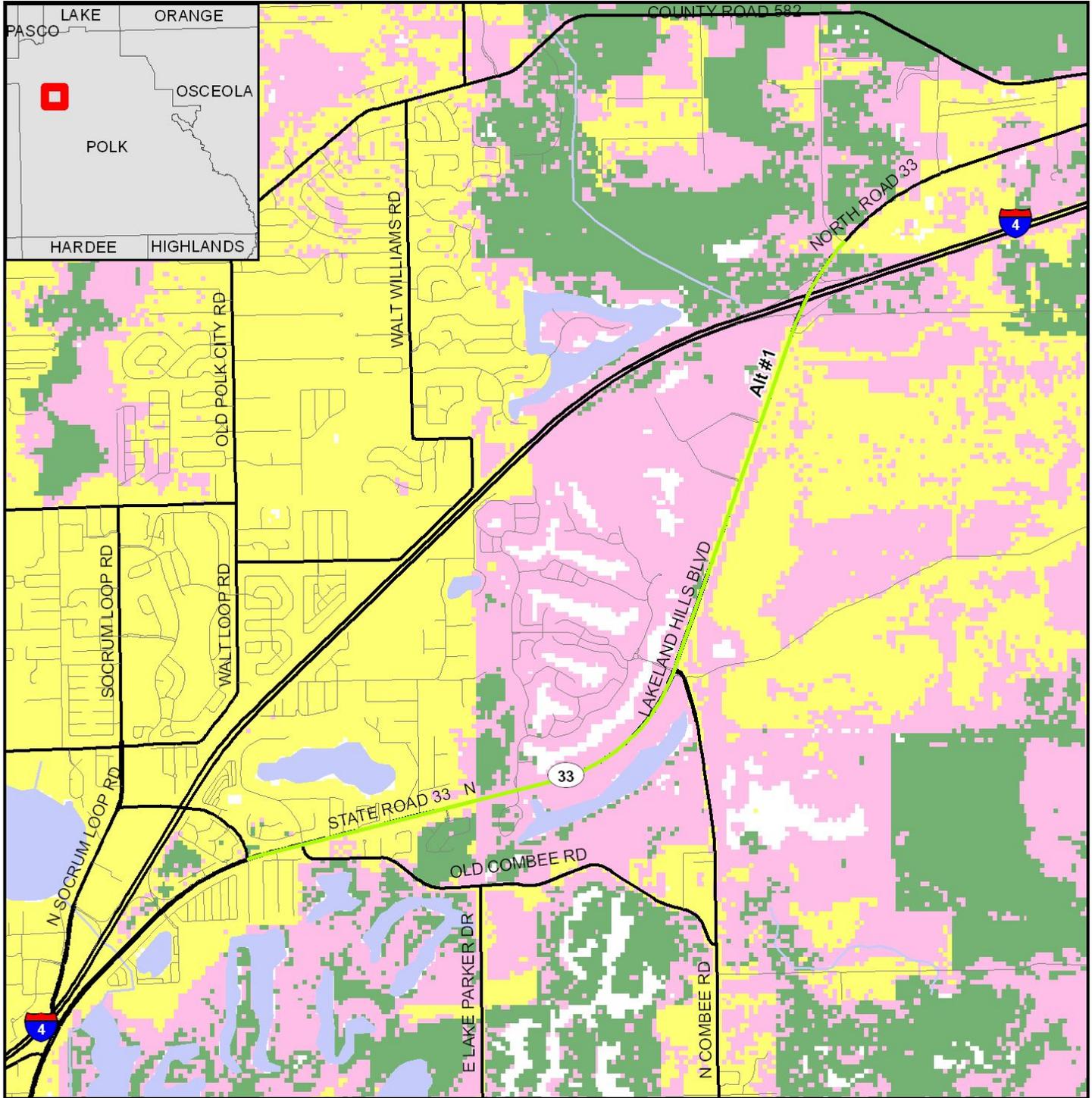


Map Generated on: 4/1/2011



13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



Integrated Wildlife Habitat Ranking System Map

Data Sources:
 Geographic Data Technology, Inc.
 US Geological Survey
 Florida Department of Transportation
 Florida Fish & Wildlife Conservation Commission

- ETDM Alternative Point
- ETDM Alternative Terminus
- ETDM Alternative Segment
- Low Habitat Quality
- Medium Habitat Quality
- High Habitat Quality
- Major Road
- Local Road or Trail
- Railroad
- River, Stream or Canal
- Water Body

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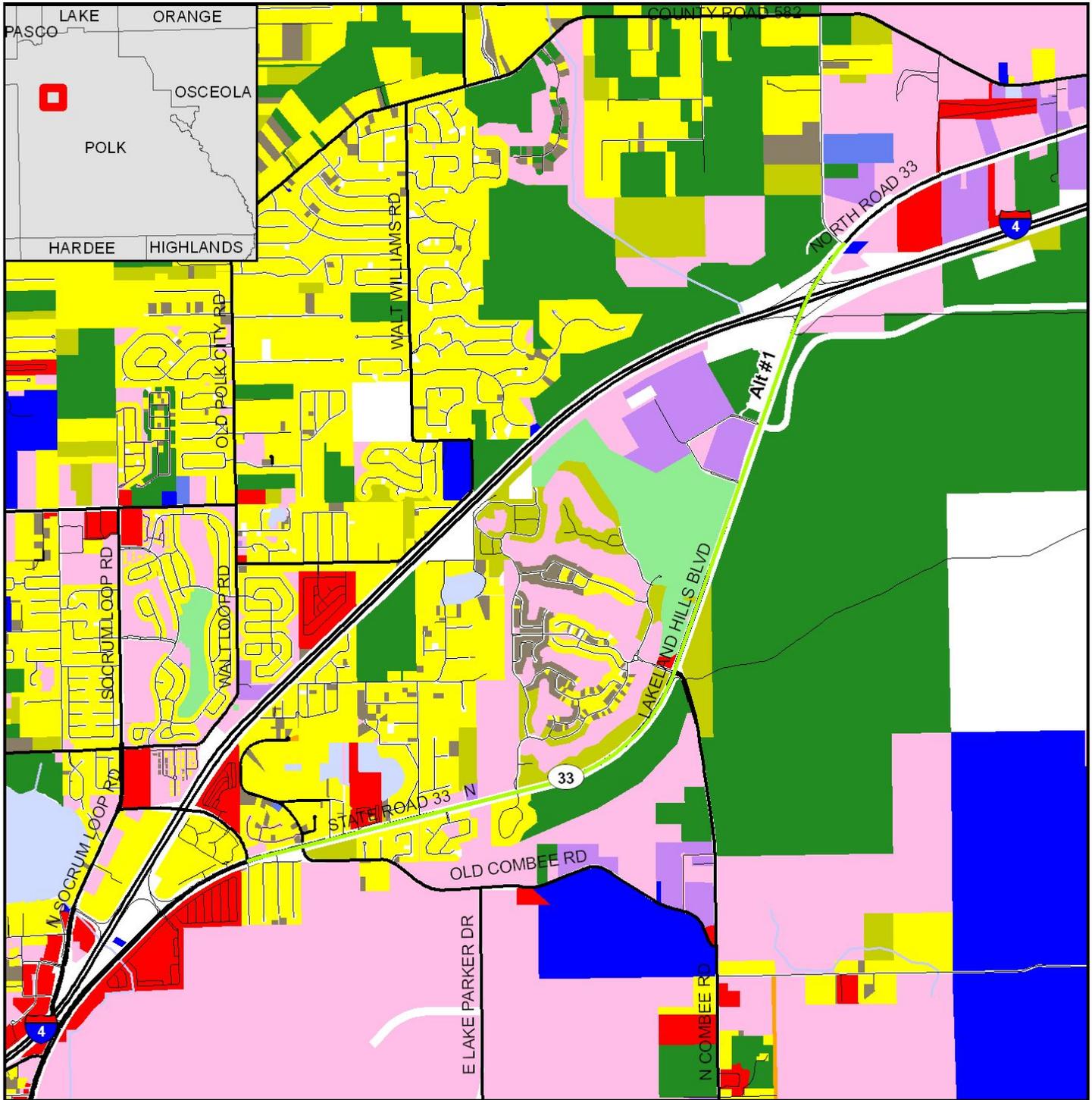


Map Generated on: 4/1/2011



13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



0 0.25 Miles



Data Sources:
 Geographic Data Technology, Inc.
 US Geological Survey
 Florida Department of Revenue
 Florida Department of Transportation
 Florida County Property Appraiser Offices

Land Use Map

- | | | | |
|---------------------------|------------------------|-------------------------|-------------------------|
| ETDM Alternative Point | Railroad | Open (Not Agricultural) | Retail/Office |
| ETDM Alternative Terminus | River, Stream or Canal | Other | Vacant (Residential) |
| ETDM Alternative Segment | Agricultural | Public | Vacant (Nonresidential) |
| ETDM Alternative Polygon | Industrial | Right-of-Way | Water |
| Major Road | Institutional | Recreational | No Data |
| Local Road or Trail | Mining | Residential | |

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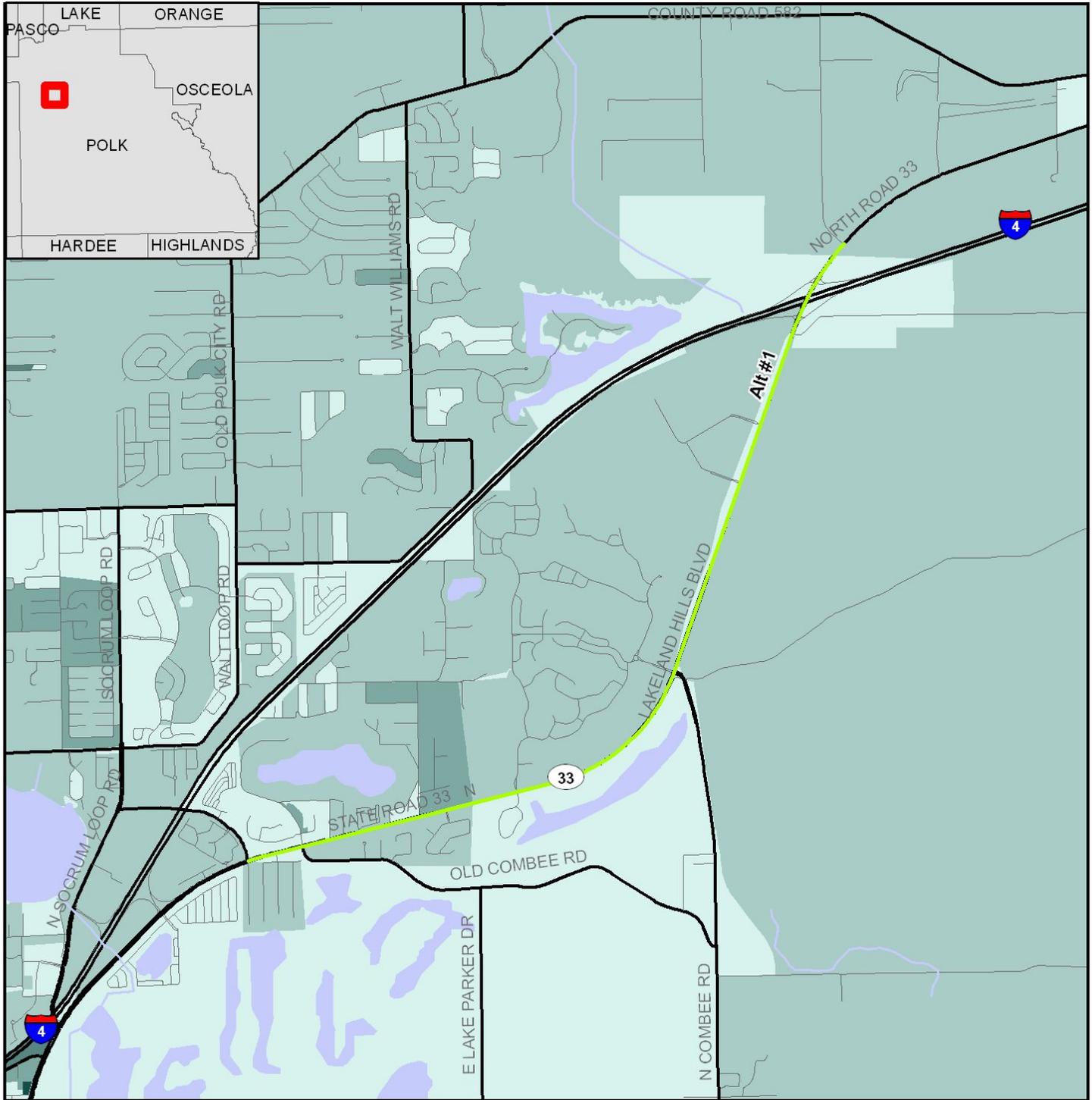


Map Generated on: 4/1/2011



13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



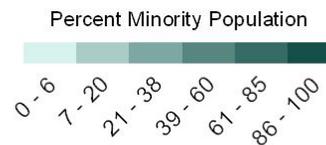
0 0.25 Miles



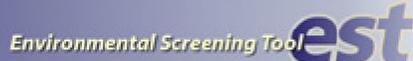
Data Sources:
 US Geological Survey
 FL Department of Transportation
 Geographic Data Technology, Inc.
 US Census Bureau

Minority Population Distribution Map

- ETDM Alternative Point
- ETDM Alternative Terminus
- ETDM Alternative Segment
- ETDM Alternative Polygon
- Major Road
- Local Road or Trail
- Railroad
- River, Stream or Canal
- Water Body



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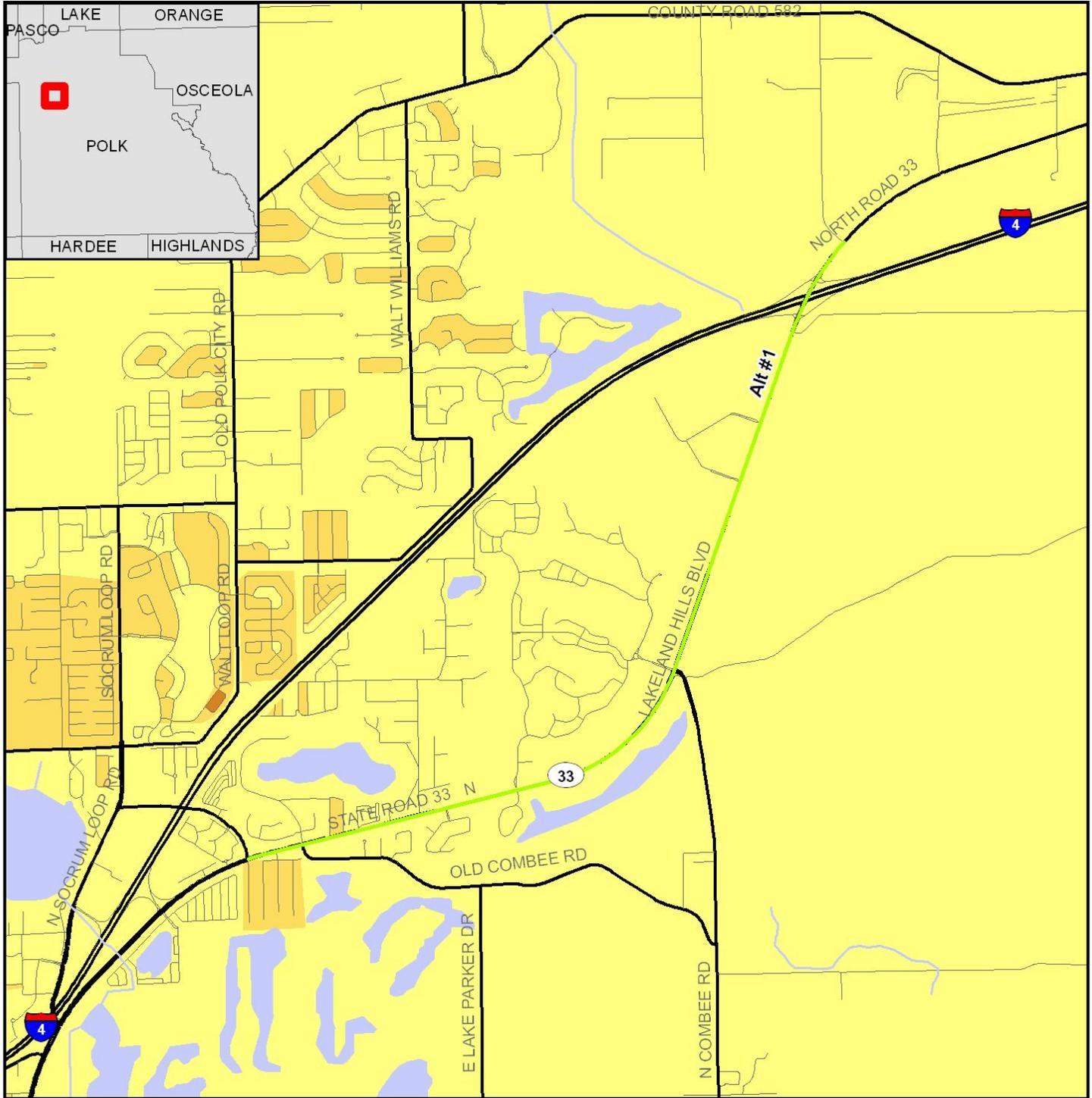


Map Generated on: 4/1/2011



13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



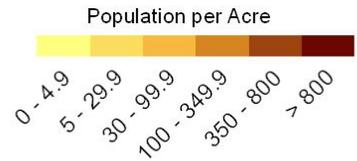
Population Density Map

0 0.25 Miles



Data Sources:
 US Geological Survey
 FL Department of Transportation
 Geographic Data Technology, Inc.
 US Census Bureau

- ETDM Alternative Point
- ETDM Alternative Terminus
- ETDM Alternative Segment
- ▨ ETDM Alternative Polygon
- Major Road
- Local Road or Trail
- Railroad
- River, Stream or Canal
- Water Body



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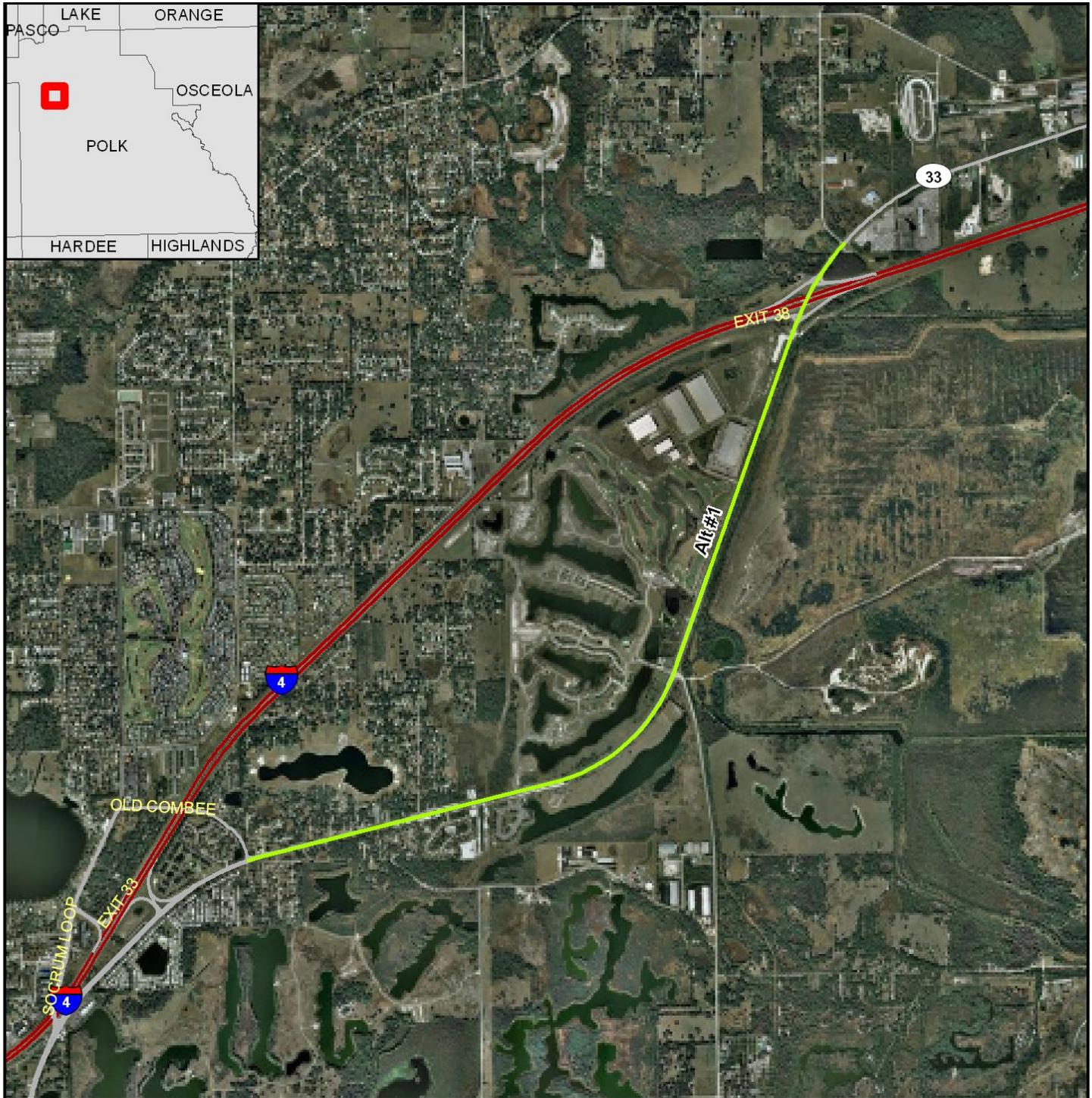


Environmental Screening Tool **est**

Map Generated on: 4/1/2011



13188 State Road 33: from Old Combee Road to north of Tomkow Road north of Tomkow Road to Old Combee Road



Project Aerial Map



- ETDM Alternative Point — Primary and Limited Access Highway
- ETDM Alternative Terminus — Secondary, Unlimited Access Highway
- ETDM Alternative Segment — Other Highway Feature
- ETDM Alternative Polygon

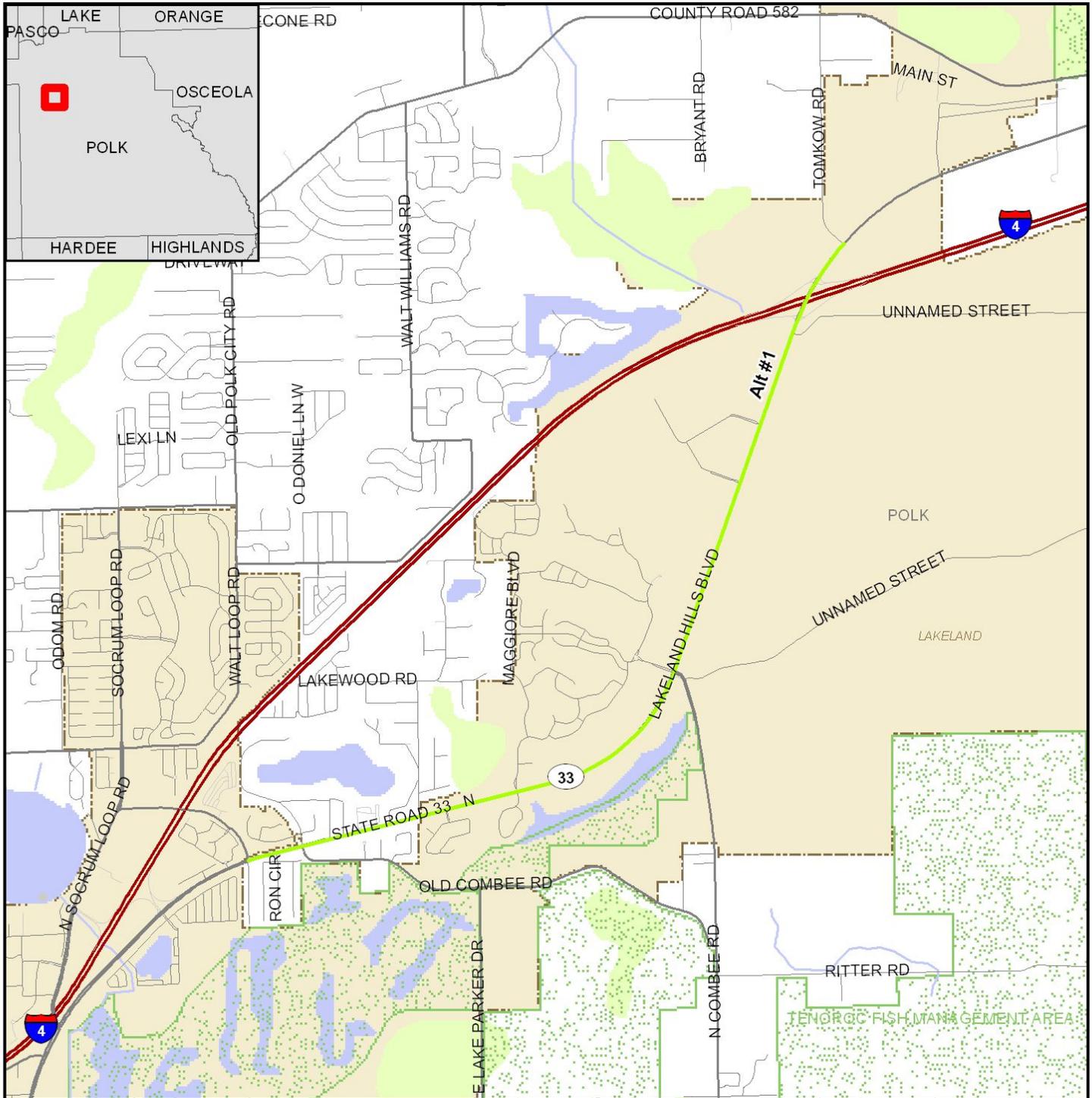
Data Sources:
 Highways - Geographic Data Technology, Inc.
 Digital Orthophotograph - US Geological Survey

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13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



Project Location Map

0 0.5 Miles



Data Sources:

- Geographic Data Technology, Inc.
- US Geological Survey
- US Census Bureau
- County Property Appraisers
- Florida Natural Areas Inventory

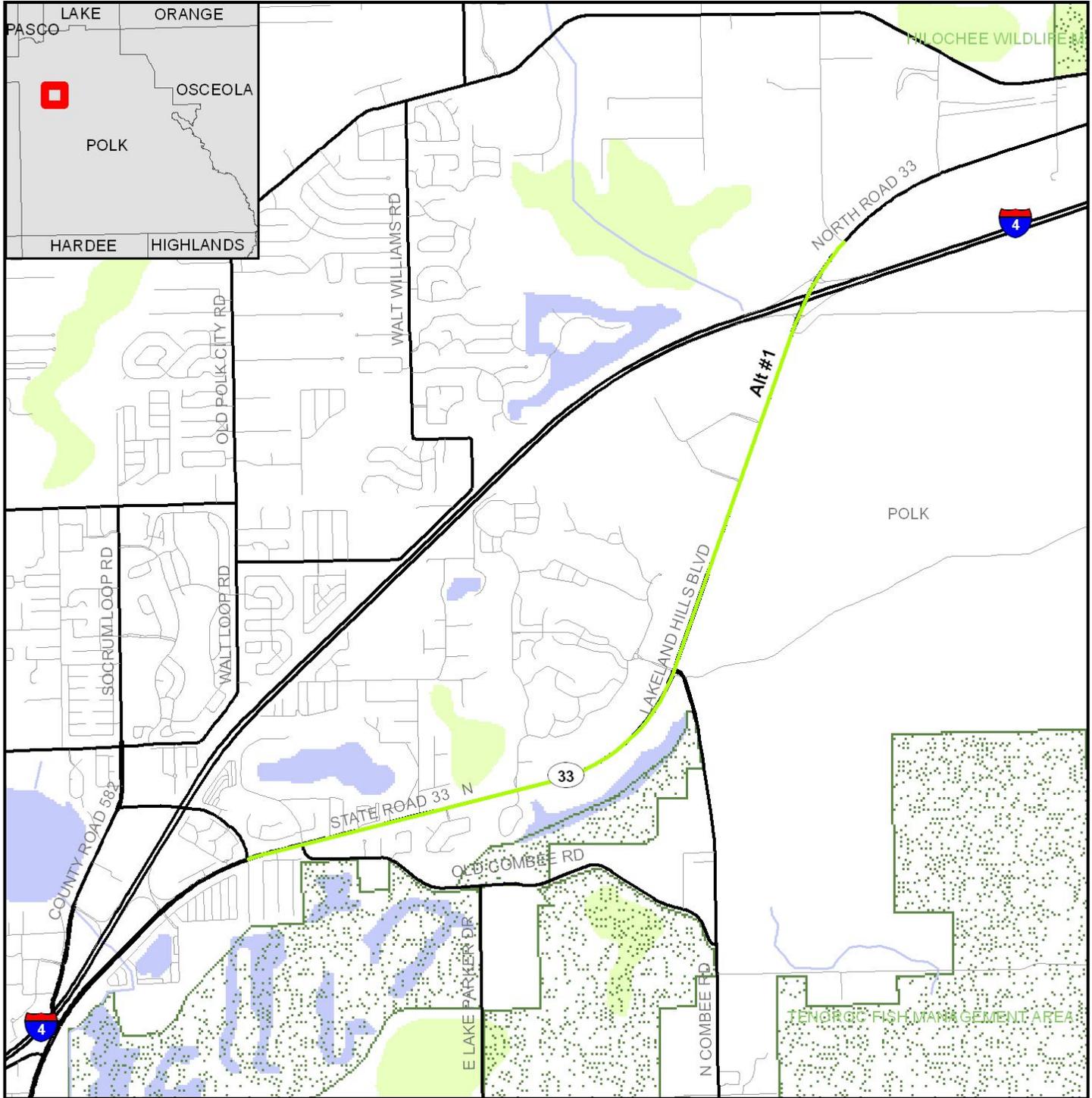
- | | | |
|---------------------------|-------------------------------------|-------------------|
| ETDM Alternative Point | Managed Conservation Lands | Toll Road |
| ETDM Alternative Terminus | Primary and Limited Access Highway | Railroad |
| ETDM Alternative Segment | Secondary, Unlimited Access Highway | Airport |
| ETDM Alternative Polygon | Connecting Road | City Limits |
| River, Stream or Canal | Local Road or Trail | County Boundaries |
| Water Body | Other Roadway Feature | |
| Swamp/Marsh | | |

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13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



Conservation and Recreation Area Map



Data Sources:
 Geographic Data Technology, Inc.
 US Geological Survey
 Florida Natural Areas Inventory

- ETDM Alternative Point
- ETDM Alternative Segment
- ETDM Alternative Polygon
- ETDM Alternative Terminus
- River, Stream or Canal
- Water Body
- Swamp/Marsh
- Conservation or Recreation Area
- Major Road
- Local Road or Trail
- Railroad
- County Boundary

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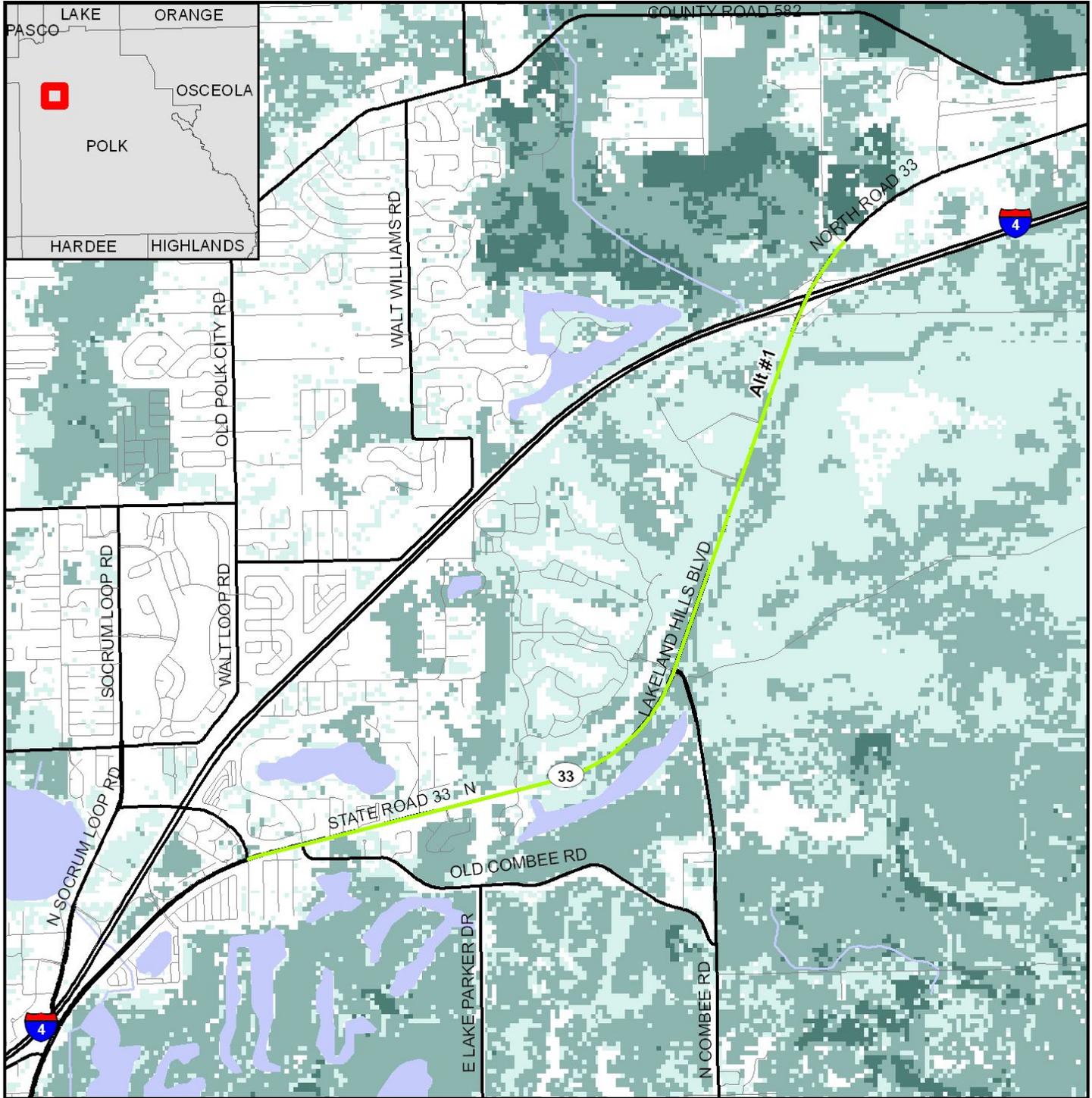


Map Generated on: 4/1/2011



13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



0 0.8 Miles



Species Potential Habitat Model Map

- ETDM Alternative Point
- ETDM Alternative Terminus
- ETDM Alternative Segment
- ETDM Alternative Polygon
- Major Road
- Local Road or Trail
- Railroad
- River, Stream or Canal
- Water Body

Potential Habitat Richness

- 1 - 2 Species
- 3 - 5 Species
- 6 - 8 Species
- 9 - 10 Species
- 11 - 13 Species

Data Sources:
 Geographic Data Technology, Inc.
 US Geological Survey
 Florida Department of Transportation
 Florida Fish & Wildlife Conservation Commission

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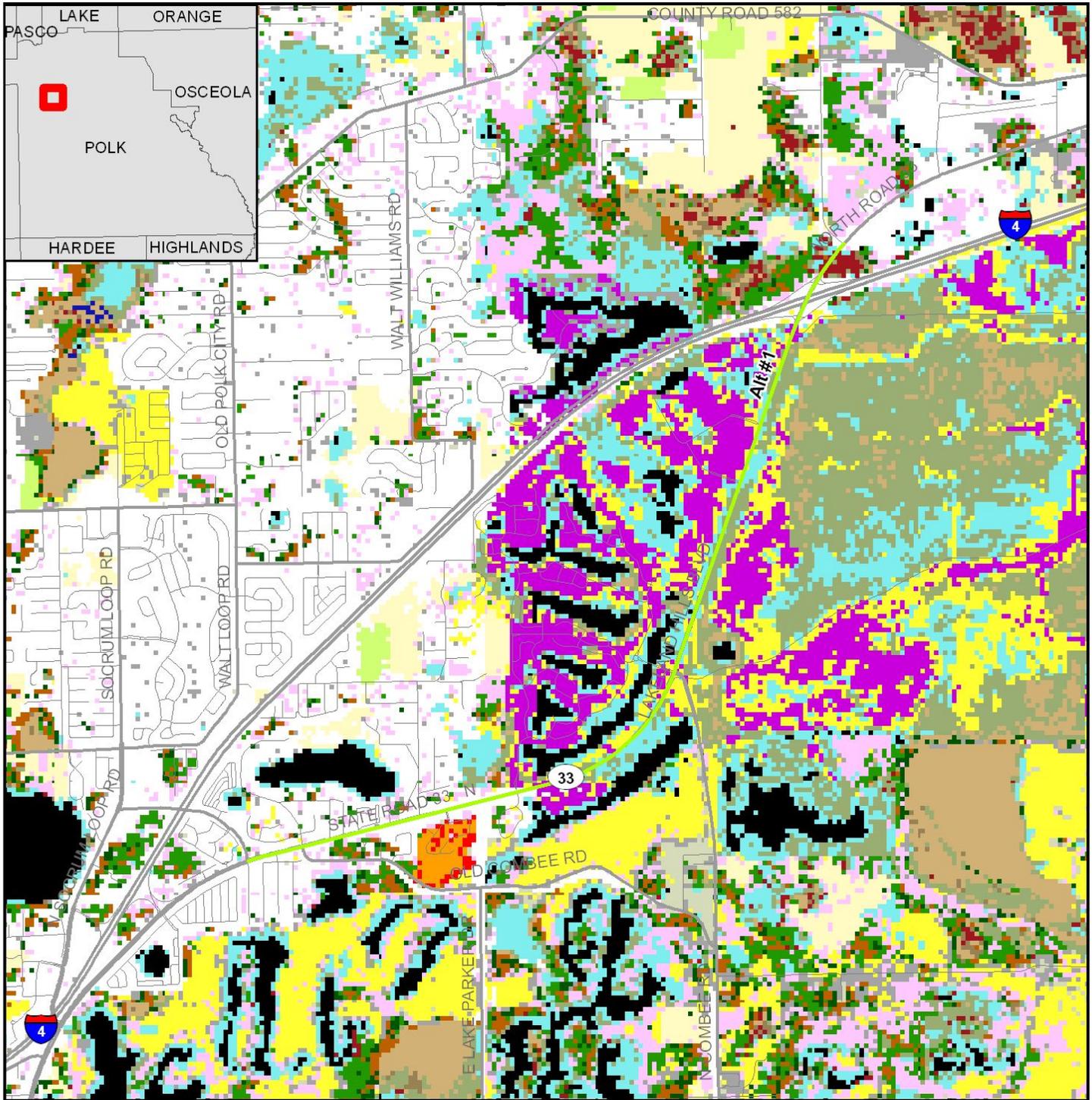


Map Generated on: 4/1/2011



13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



Vegetation and Land Cover Map

- | | | | | | | |
|---------------------------|----------------------------|----------------------------------|----------------------------|---------------------|---------------------|-------------------|
| ETDM Alternative Polygon | Not Classified | Hardwood Hammocks and Forests | Bay Swamp | Mangrove Swamp | Unimproved Pasture | Brazilian Pepper |
| ETDM Alternative Segment | Coastal Strand | Pinelands | Cypress Swamp | Scrub Mangrove | Sugarcane | High Impact Urban |
| ETDM Alternative Terminus | Sand/Beach | Cabbage Palm-live Oak Hammock | Cypress/Pine/Cabbage Palm | Tidal Flats | Citrus | Low Impact Urban |
| ETDM Alternative Point | Xeric Oak Scrub | Tropical Hardwood Hammock | Mixed Wetland Forest | Open Water | Row and Field Crops | Extractive |
| Major Road | Sand Pine Scrub | Freshwater Marsh and Wet Prairie | Hardwood Swamp | Shrub and Brushland | Other Agriculture | |
| Local Road or Trail | Sandhill | Sawgrass Marsh | Hydric Hammock | Grassland | Exotic Plants | |
| | Dry Prairie | Cattail Marsh | Bottomland Hardwood Forest | Bare Soil/Clearcut | Australian Pine | |
| | Mixed Hardwood-pine Forest | Shrub Swamp | Salt Marsh | Improved Pasture | Melaleuca | |

Data Sources:

Geographic Data Technology, Inc.; Florida Department of Transportation; Florida Fish and Wildlife Conservation Commission

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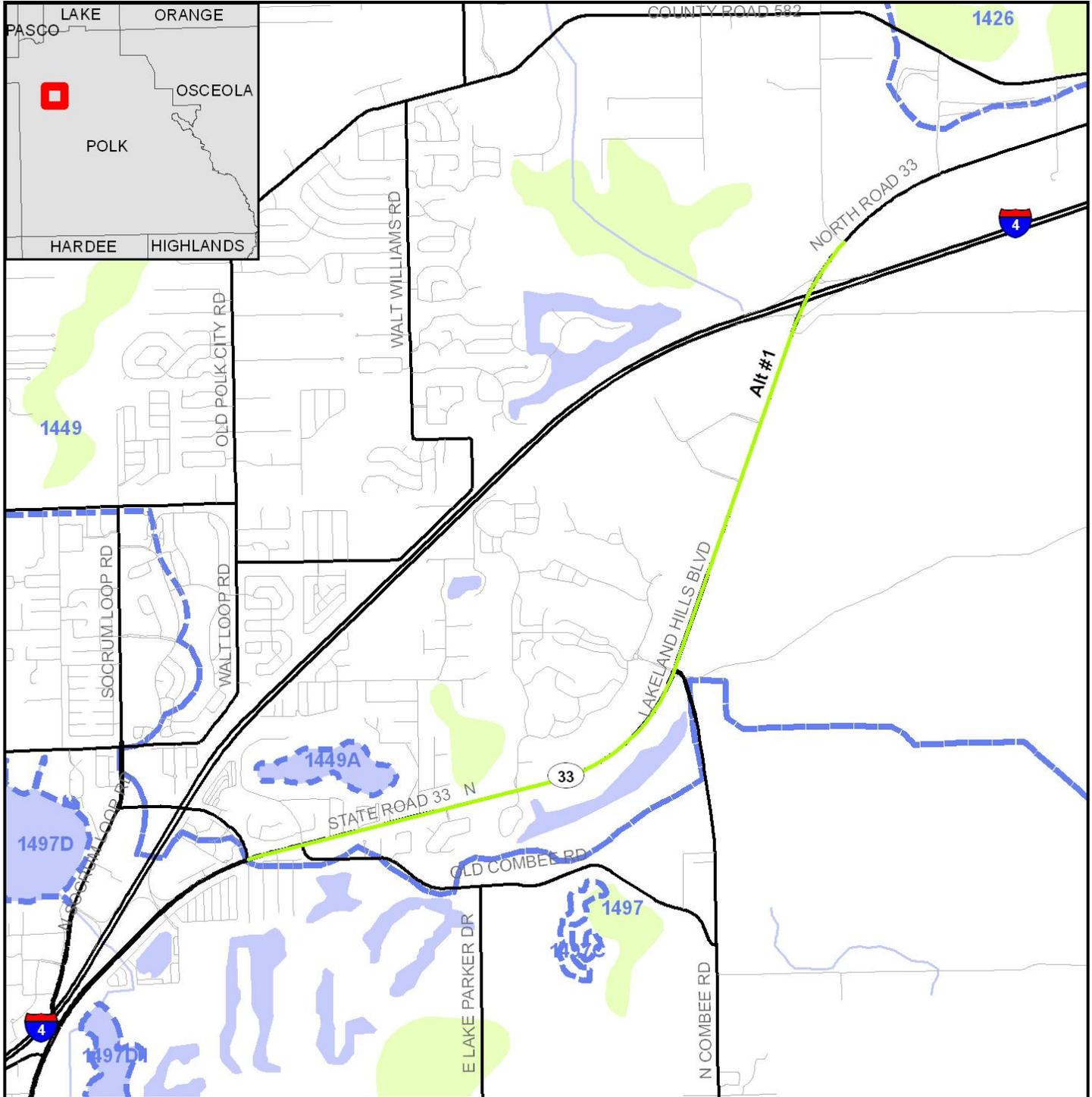


Map Generated on: 4/1/2011



13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



Water Resources Map



- | | | | |
|---------------------------|---------------------|---------------------------|------------------------|
| ETDM Alternative Point | Major Road | 1st Magnitude Spring | Surface Water Class I |
| ETDM Alternative Terminus | Local Road or Trail | River, Stream or Canal | Surface Water Class II |
| ETDM Alternative Segment | Railroad | Navigable Water Way | Water Body |
| ETDM Alternative Polygon | | Drainage Basin | Swamp/Marsh |
| | | Outstanding Florida Water | |

Data Sources:

Geographic Data Technology, Inc. Florida Department of Transportation Florida Geological Survey
 US Geological Survey Florida Department of Environmental Protection US Bureau of Transportation Statistics

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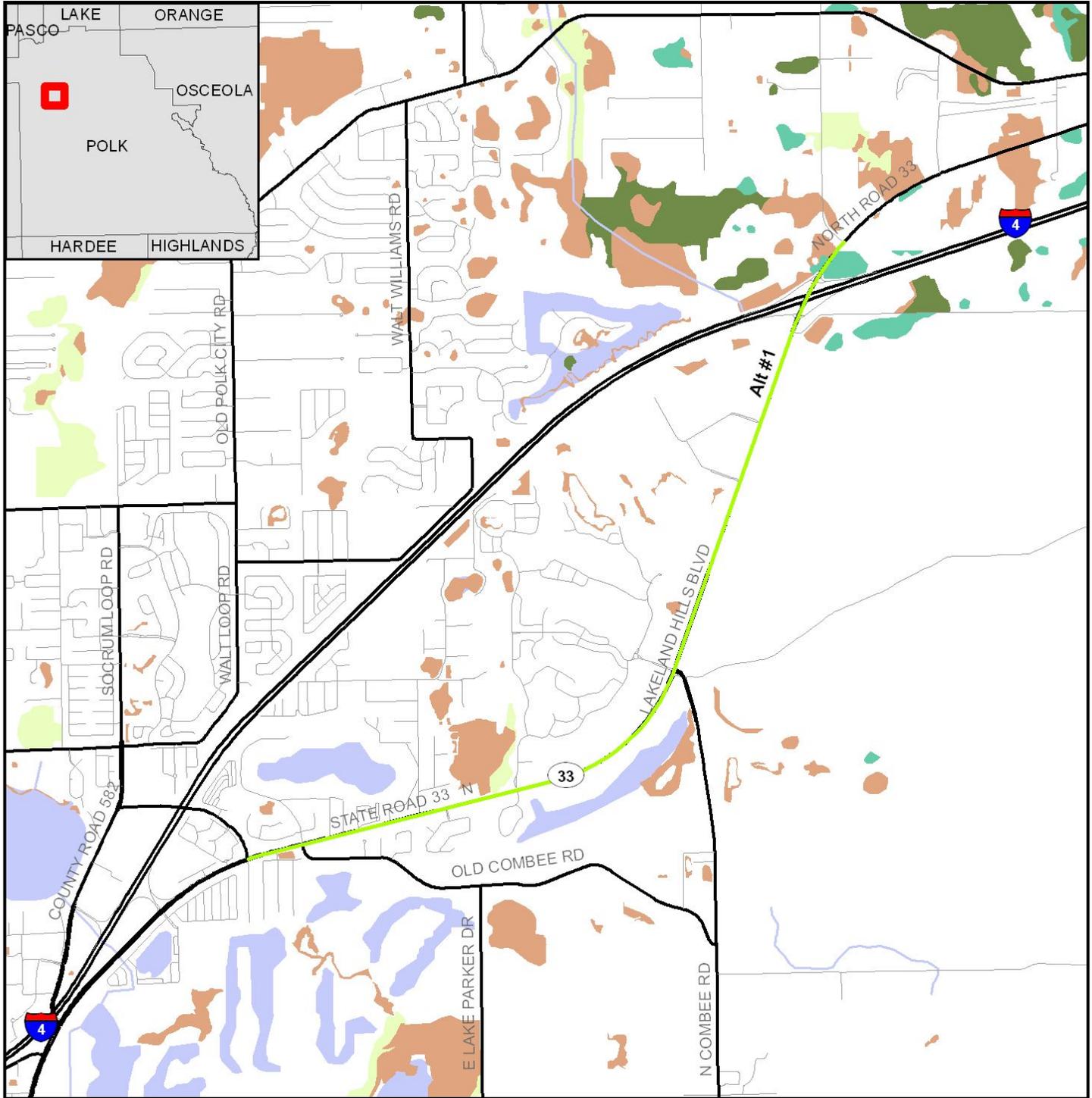


Map Generated on: 4/1/2011



13188 State Road 33: from Old Combee Road to north of Tomkow Road

north of Tomkow Road to Old Combee Road



Wetland Resource Map

0 0.5 Miles



- ETDM Alternative Polygon
- ETDM Alternative Segment
- ETDM Alternative Terminus
- ETDM Alternative Point
- Major Road
- Local Road or Trail
- River, Stream or Canal
- Water Body
- Non-vegetated Wetland
- Vegetated Non-forested Wetland
- Wetland Forested Mixed
- Wetland Coniferous Forest
- Wetland Hardwood Forest

Data Sources: Geographic Data Technology, Inc.; Florida Water Management Districts; US Geological Survey

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Appendix D

I-4/SR 33 INTERCHANGE OPERATIONAL ANALYSIS REPORT (IOAR) Not Requiring FHWA Approval

FINAL

**I-4/SR 33 INTERCHANGE OPERATIONAL
ANALYSIS REPORT (IOAR)
Not Requiring FHWA Approval
Polk County, Florida**



**FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT ONE**

FINANCIAL PROJECT ID: 430185-1-22-01

March 2014

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1.0 INTRODUCTION

1.1 PROJECT LOCATION

The I-4/SR 33 interchange is located within the City of Lakeland incorporated limits in the northwest portion of Polk County. This interchange is located at Mile Marker 37.877 on I-4 and is designated as Exit 38. The I-4/SR 33 interchange is located approximately 2.5 miles to the west of the I-4/Polk Parkway (SR 570) interchange and approximately 3.4 miles to the east of the I-4/Socrum Loop Road (CR 582)/SR 33 interchange. The project location is illustrated in **Figure 1-1**.

1.2 PROJECT BACKGROUND

The I-4/SR 33 interchange was included in the FDOT District One I-4 Project Development & Environment (PD&E) Study that was approved by the Federal Highway Administration (FHWA) in 1999. The FHWA-approved PD&E concept for this interchange was to maintain the current diamond interchange configuration and laneage on SR 33 and widen the I-4 mainline. In the 10-year period following the I-4 PD&E study, several Developments of Regional Impact (DRIs) located in the vicinity of the I-4/SR 33 interchange have been prepared and approved. These DRIs include the Williams DRI, Bridgewater DRI, and Polk Commerce Center DRI. All three of these DRIs are mixed use developments that include single and multi-family residential, retail, and office/business park development.

The Williams DRI is located south of I-4 and east of SR 33 while the Polk Commerce Center DRI is located south of I-4 and east of the Polk Parkway. A majority of the Bridgewater DRI is located south of I-4 and west of SR 33; however, there is also a portion located on the east side of SR 33 (between Old Combee Road and SR 33 to the west of N. Combee Road). In addition, the proposed Rockefeller Group Park of Commerce development is located to the north of SR 33 and to the east of Tomkow Road on the 112-acre site of the former USA International Speedway. This planned development will consist of approximately 1.2 million square feet of warehousing, distribution, and light manufacturing.

In July 2008, FDOT District One initiated a preliminary interchange improvement feasibility study to identify both short-term and long-term improvements for the I-4/SR 33 interchange. This study was initiated at the request of the City of Lakeland due to growing concerns regarding the potential for negative impacts to occur at the existing interchange as a result of these DRI's. This interchange feasibility study was completed in April 2009; however, no subsequent interchange improvement studies were initiated upon the completion of the feasibility study.

In May 2012, FDOT District One initiated a PD&E study for the portion of SR 33 from Old Combee Road to north of Tomkow Road to document the need for widening this roadway, to determine the specific geometric improvements that should be implemented within the study corridor, and to

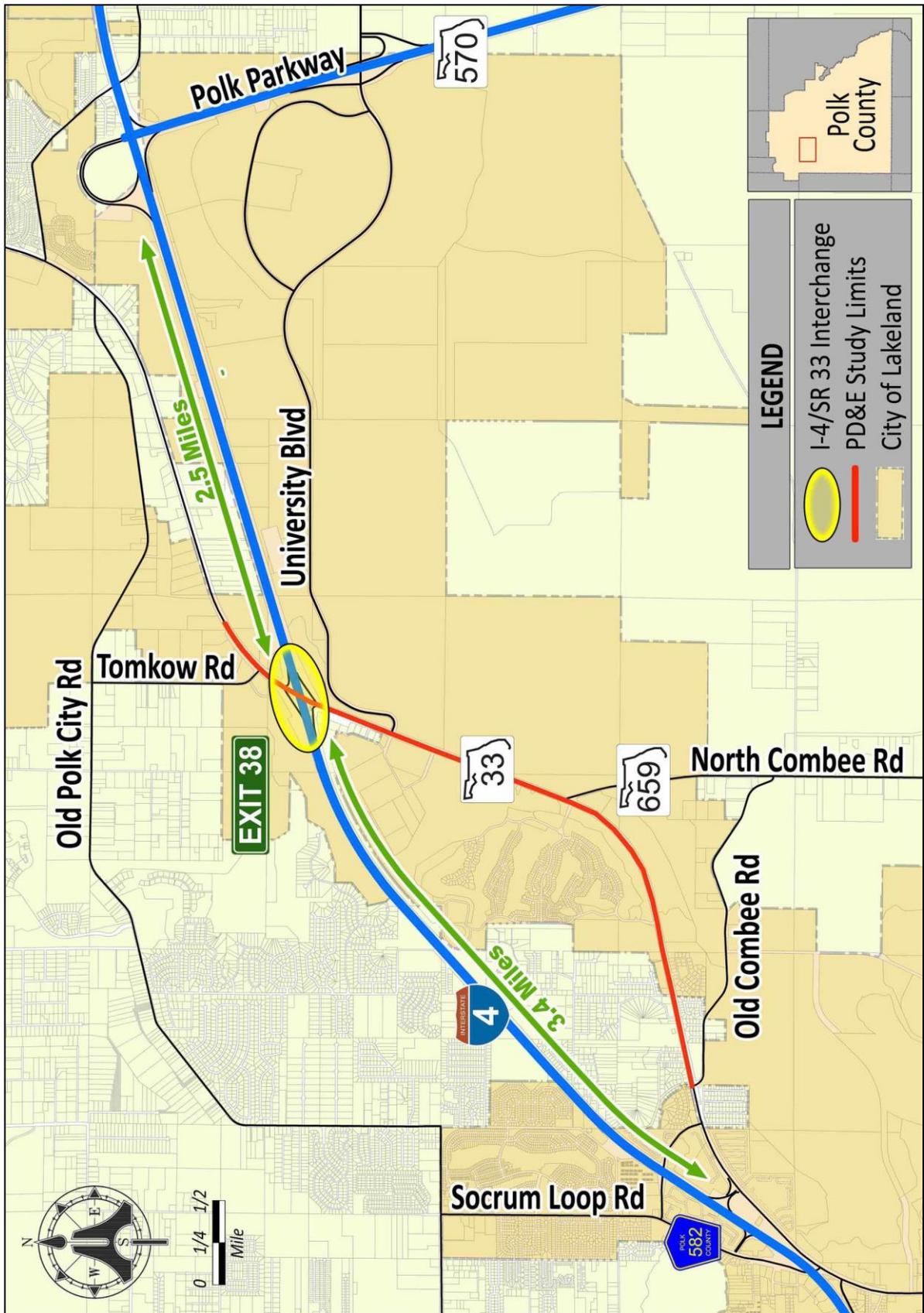


FIGURE 1-1: PROJECT LOCATION MAP

quantify the costs and environmental impacts of the recommended improvements. The SR 33 PD&E study limits include the interchange at I-4; therefore, the development and evaluation of alternative geometric improvements for the interchange was conducted as a part of this study. More recently, District One has programmed the final design of the I-4/SR 33 interchange improvements into FDOT's Approved Five-Year Work Program for FY 2013/2014.

1.3 PROJECT PURPOSE

As the planned development in the vicinity of the existing interchange occurs, the delay experienced by vehicles exiting the I-4 mainline and turning onto SR 33 (as well as the vehicles making the reverse movement) will increase significantly. This increased vehicle delay will result in longer vehicle queues which in turn, increases the potential for more vehicle crashes to occur in the interchange area. The purpose of this report is to document the long-term geometric improvements that should be implemented at the I-4/SR 33 interchange to ensure that this interchange has sufficient capacity to accommodate the future year traffic volumes that are projected to occur due to future residential and commercial development. The provision of additional capacity at this interchange is expected to reduce the potential for any negative impacts to occur on the I-4 ramps, as well as on the I-4 mainline upstream of the interchange off-ramps. This report has been prepared in accordance with FDOT Policy No. 000-525-015-f: Approval of New or Modified Access to Limited Access Facilities, FDOT Procedure No. 525-030-160-g: The Interchange Handbook, and FDOT Procedure No. 525-030-120-g: The Project Traffic Forecasting Handbook.

2.0 EXISTING GEOMETRIC CONDITIONS

2.1 ROADWAY

I-4 is a six-lane divided east-west limited access facility with a posted speed limit of 70 miles per hour (mph). I-4 is functionally classified as an urban principal arterial-interstate. The current median width is approximately 64 feet; however, the distance between the eastbound and westbound bridges in the center of the interchange is 80 feet. The existing right-of-way is generally 300 feet. The 1,500-foot crest vertical curve has a K-value of 250 which only allows for a maximum design speed of 55 mph based on Volume 1 of the FDOT's Plans Preparation Manual (PPM). In addition, the two 500-foot approach sag vertical curves have K-values of 167 which allow for a maximum design speed of 60 mph.

SR 33 is a two-lane undivided roadway both south and north of the I-4 interchange and has a posted speed limit of 60 mph. In general, SR 33 has a southwest-northeast orientation. For the purposes of this report, the portion of SR 33 between University Boulevard/Firstpark Boulevard N. and the westbound I-4 on-/off-ramps will be referred to as a north-south roadway. Since the portion of SR 33 north of the interchange has more of an east-west alignment, this portion will be referred to as an east-west roadway. SR 33 is functionally classified as an urban minor arterial. Within the interchange area, the northbound and southbound SR 33 travel lanes are separated by a raised grass median. Guardrail also exists in the median and on the outside of the travel lanes in the immediate vicinity of the I-4 bridge piers.

The existing I-4/SR 33 interchange is a rural diamond interchange configuration that has single lane on- and off-ramps in all four quadrants. I-4 crosses over SR 33 on a 135°/45° skew angle. Single left-turn and right-turn lanes are provided on SR 33 and on the I-4 off-ramps. The right-turn lanes on both SR 33 and the I-4 off-ramps are channelized. There is approximately 325 feet of left-turn vehicle storage provided on the westbound off-ramp prior to the beginning of the channelized right-turn lane. Based on an average vehicle spacing of 25 feet, the westbound right-turn vehicles are able to access the right-turn lane if the westbound left-turn queue is less than or equal to 13 vehicles. Similarly, there is approximately 125 feet of left-turn vehicle storage provided on the eastbound off-ramp prior to the beginning of the channelized right-turn lane. Based on an average vehicle spacing of 25 feet, the eastbound right-turn vehicles are able to access the right-turn lane if the eastbound left-turn queue is less than or equal to five vehicles.

The distance between the two unsignalized ramp terminal intersections is approximately 800 feet. The left-turn movements from the I-4 off-ramps onto SR 33 operate under stop sign control while the left-turn movements from SR 33 onto the I-4 on-ramps must yield to oncoming vehicles. The southbound left-turn lane for the eastbound I-4 on-ramp and the northbound left-turn lane for the westbound I-4 on-ramp both have approximately 50 feet of full width queue storage and 105 feet of taper. These left-turn lanes do not provide the minimum deceleration length that is required for a 60 mph roadway based on Standard Index 301 of the PPM. All four right-turn movements are channelized and controlled by yield signs. Currently, there are no acceleration/deceleration lanes provided on SR 33 for the right-turn movements. An aerial photograph of the existing I-4/SR 33 interchange is provided in **Figure 2-1**.

The University Boulevard/Firstpark Boulevard N. intersection is a four-legged intersection located approximately 0.48 miles south of the eastbound I-4 ramp terminal intersection. University

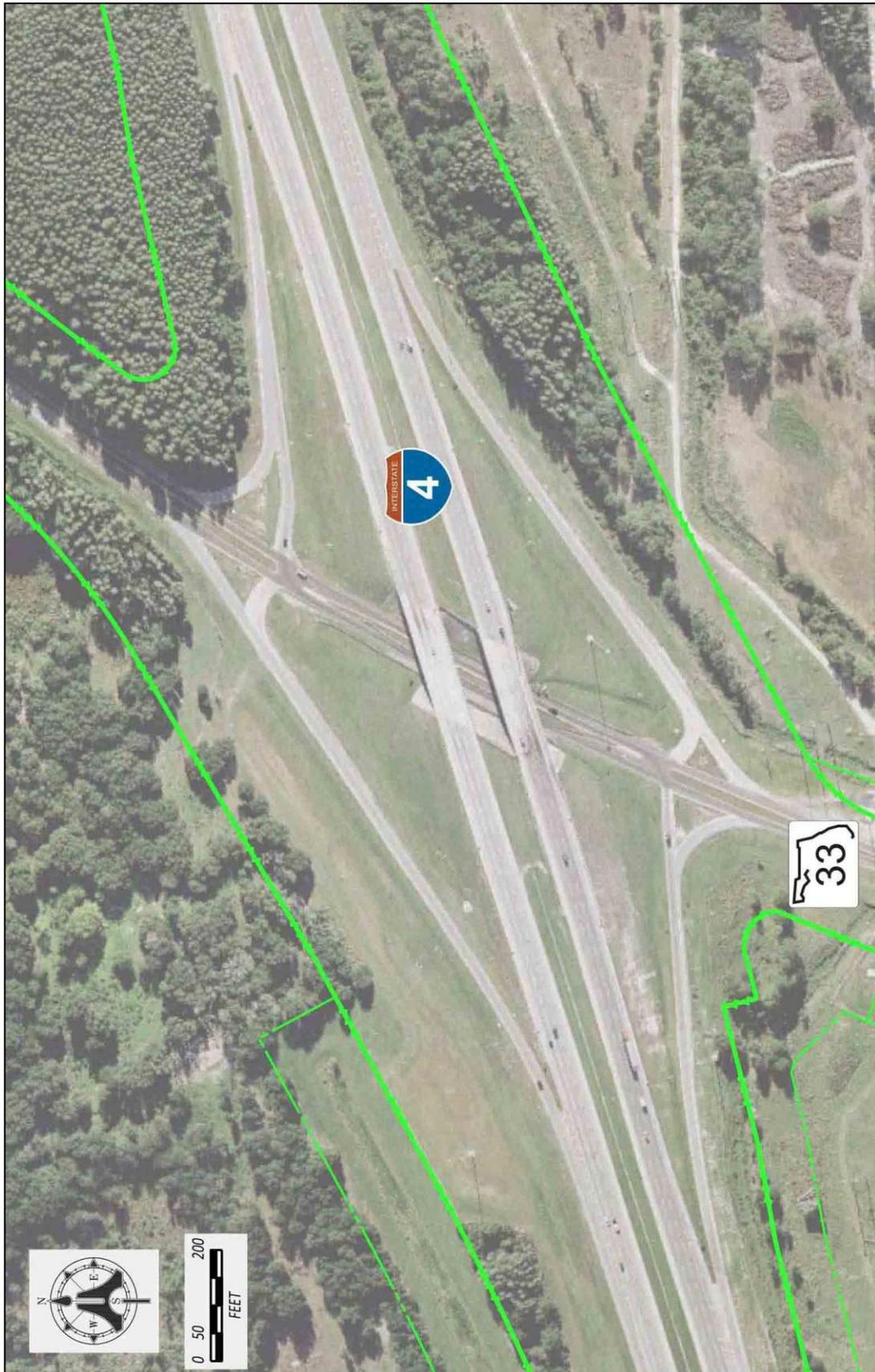


FIGURE 2-1: EXISTING I-4/SR 33 INTERCHANGE

Boulevard is a four-lane divided roadway located to the east of SR 33 that extends over to the Polk Parkway. This roadway was constructed and opened to traffic in 2012 to provide access to the Williams DRI and the USF Polytechnic Campus. Firstpark Boulevard N. is a two-lane undivided roadway located to the west of SR 33 that serves as the northern entrance/exit to the Firstpark at Bridgewater Industrial Park. Approximately 500 feet to the west of the intersection, this roadway transitions to a four-lane divided roadway. There is a traffic signal at this intersection; however, this signal is currently displaying flashing red for University Boulevard and Firstpark Boulevard N. and flashing yellow for SR 33.

The Tomkow Road intersection is an unsignalized T-intersection located approximately 0.20 miles north of the westbound I-4 ramp terminal intersection. Tomkow Road is a two-lane undivided roadway located to the northwest of SR 33 that extends northward to Old Polk City Road. Although Tomkow Road is a T-intersection, there is an entrance/exit to a small park-and-ride lot located on the south side of SR 33 approximately 30 feet to the west of Tomkow Road (centerline-to-centerline). Although there is no dedicated (i.e., marked) left-turn lane at the entrance to the park-and-ride lot, dashed lines extend from the eastbound designated left-turn lane (serving Tomkow Road) all the way across the Tomkow Road intersection and connect to the painted median/traffic separator on the other side of the intersection. Field observations indicated that most of the westbound SR 33 vehicles turning left into this lot were actually turning from this center lane and not from the westbound through lane. Even in the cases when an eastbound left-turn vehicle was waiting to turn onto Tomkow Road, the westbound left-turn vehicles were driving past the eastbound left-turn vehicles and accessing the center lane while waiting to make the left-turn movement (due to the offset of Tomkow Road and the park-and-ride lot entrance). In essence, this lane is operating as a “de-facto” two-way center left-turn lane even though it is not marked as one. **Figure 2-2** depicts the existing laneage for the I-4/SR 33 interchange as well as the University Boulevard/Firstpark Boulevard N. and Tomkow Road intersections.

2.2 BRIDGES

I-4 crosses over SR 33 via two independent structures (i.e., bridges). These structures were first constructed in 1961 and were subsequently widened from four lanes to six lanes in 2004 as a part of the I-4 six-lane Design/Build project that was completed in 2006. The eastbound I-4 bridge (Bridge No. 160182) was last inspected on July 26, 2012 and has a sufficiency rating of 96.4 and a health index of 88.60. The westbound I-4 bridge (Bridge No. 160181) was also last inspected on July 26, 2012 and has a sufficiency rating of 96.4 and a health index of 89.11. Both of these bridges are in good condition relative to their age (i.e., approximately 52 years). The existing vertical clearance over SR 33 is 14.9 feet and satisfies the minimum allowed by AASHTO (i.e., 14 feet) in highly developed urban areas if there is an alternate route that provides 16 feet of clearance. However, this existing vertical clearance is significantly less than the minimum required by the FDOT’s PPM (i.e., 16.5 feet) and as a result, the I-4 bridges are considered to be “functionally obsolete.” It should be noted that a vertical clearance design exception was approved by FHWA during the design of the six-lane bridges. The distance between the center pier and the two outside piers is 40 feet. Currently, the depth of the bridge pier footings is approximately 1.89 feet below grade which does not meet the 3-foot minimum requirement specified in Section 13.5 (Pier Details – Footings) of the Structures Detailing Manual. A typical section of SR 33 under the I-4 bridges is provided in **Figure 2-3**.

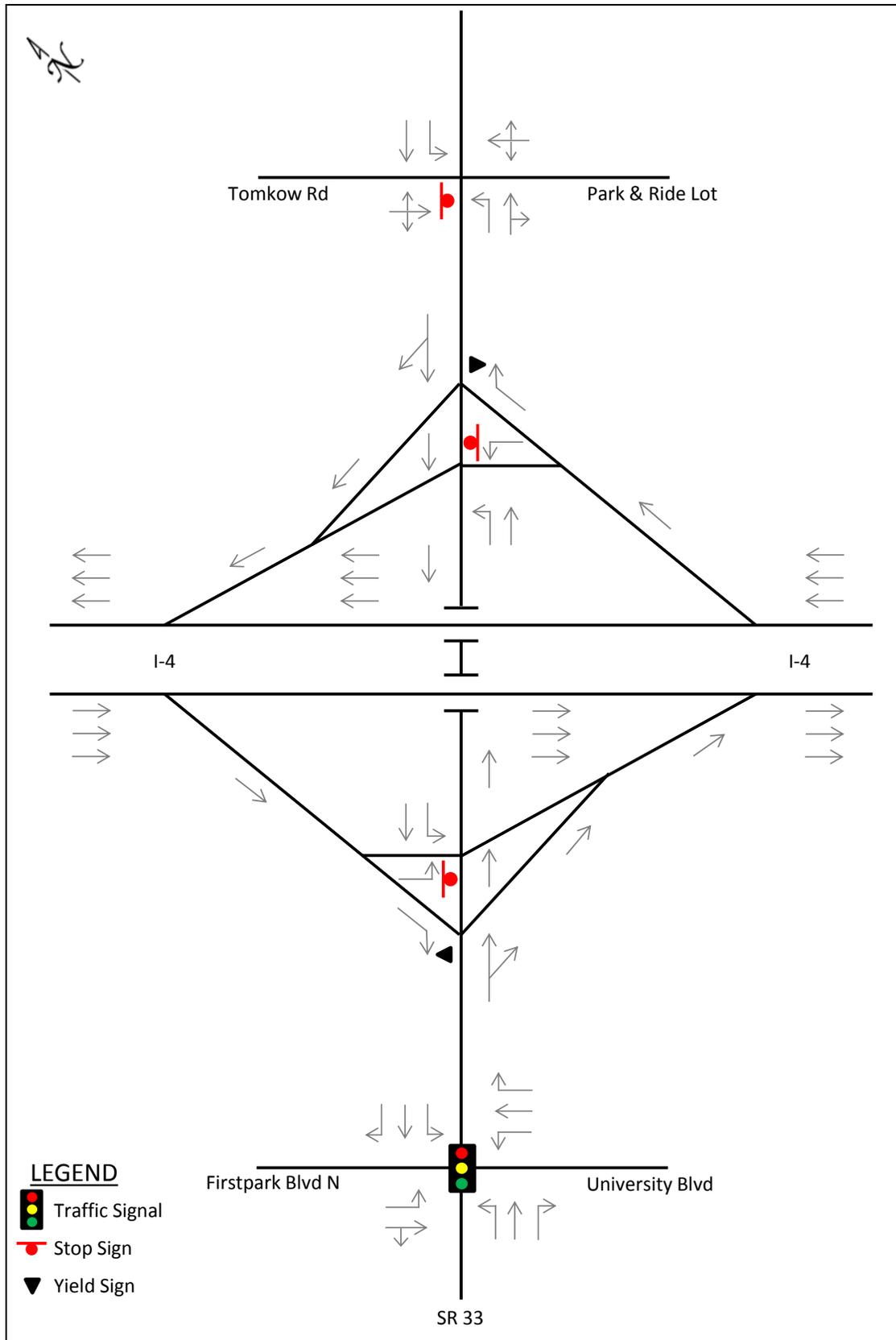


FIGURE 2-2: EXISTING YEAR (2012) INTERCHANGE/INTERSECTION GEOMETRY

3.0 METHODOLOGY

3.1 OVERVIEW

This section documents the methodologies that were used in the preparation of this report including the traffic data collection, travel demand forecasting, and traffic operations analyses. The methodologies that were used are consistent with the Methodology Letter of Understanding (MLOU) that was signed by FHWA on July 30, 2013. A copy of this MLOU is provided in **Appendix A**.

3.2 ANALYSIS YEARS

The analysis years used in this project are as follows:

- Existing Year – 2012
- Opening Year – 2016
- Design Year – 2036

These years correspond to the analysis years that were used in the SR 33 PD&E study. Additional interim year analyses were also conducted to estimate the approximate time frame when the capacity of the existing interchange was exceeded.

3.3 AREA OF INFLUENCE

The area of influence is illustrated in **Figure 3-1**. This area extends along the I-4 mainline from just west of the on-/off-ramps to just east of the on-/off-ramps and includes the ramp merge/diverge areas. The area of influence also extends along SR 33 from the University Boulevard/Firstpark Boulevard N. intersection to the Tomkow Road intersection.

3.4 TRAFFIC DATA COLLECTION/EXISTING TRAFFIC VOLUMES

A traffic count program was previously conducted in September and October of 2012 in support of the SR 33 PD&E study. Twenty-four (24) hour bi-directional volume counts were conducted on September 6, 2012 at the following locations:

- SR 33 south of University Boulevard/Firstpark Boulevard N.
- University Boulevard east of SR 33
- Firstpark Boulevard N. west of SR 33
- SR 33 between University Boulevard/Firstpark Boulevard N. and the eastbound I-4 ramps
- The eastbound I-4 on- and off-ramps
- SR 33 between the eastbound I-4 ramps and the westbound I-4 ramps
- The westbound I-4 on- and off-ramps
- SR 33 between the westbound I-4 ramps and Tomkow Road
- Tomkow Road north of SR 33
- SR 33 east of Tomkow Road

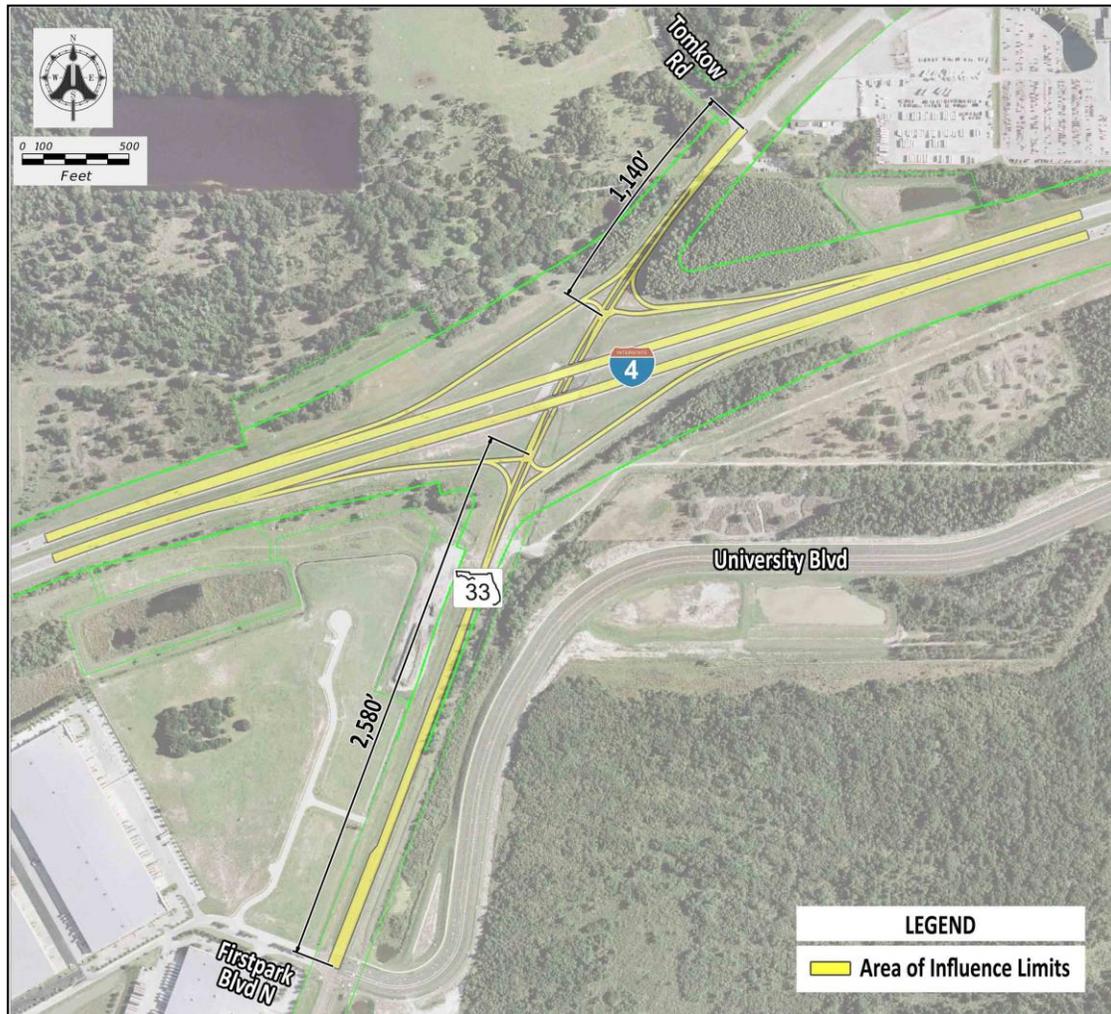


FIGURE 3-1: AREA OF INFLUENCE

A 72-hour vehicle classification count was also conducted on SR 33 north of the N. Combee Road (SR 659) intersection between September 4, 2012 and September 6, 2012. This location is approximately 0.67 miles to the south of University Boulevard/Firstpark Boulevard N. intersection. The bi-directional volume count data and vehicle classification count data is provided in **Appendix B**.

The 2012 Annual Average Daily Traffic (AADT) volumes were calculated by multiplying the 24-hour count data by seasonal and axle adjustment factors. According to the 2012 Peak Season Factor Category Report, the Polk County (Countywide) and I-4 weekly adjustment factors associated with the week of September 2nd through September 8th are equal to 1.07 and 1.09, respectively. These weekly adjustment factors are provided in **Appendix C**. The 2012 Weekly Axle Factor Category Report indicates that the axle adjustment factor for the portion of I-4 from US 98 to the Osceola County line (which includes the I-4/SR 33 interchange) is 0.90. The 72-hour bi-directional vehicle classification count on SR 33 was used to calculate an axle adjustment factor equal to 0.86 which is slightly higher than the 0.82 value contained in the FDOT database. Since the axle adjustment

factor that was calculated using the September 6th vehicle classification count was extremely close to the three-day average axle adjustment factor and all of the 24-hour volume counts were conducted on September 6th; the use of the 0.86 axle adjustment factor was viewed as being more accurate. The axle adjustment factors are also provided in **Appendix C**.

Table 3-1 summarizes the two-way 24-hour volumes obtained from the traffic counts, as well as the estimated 2012 AADT volumes. Since the only “existing” land use located along University Boulevard is the initial phase of the Florida Polytechnic University which is still under construction, a majority of the vehicles that were counted on University Boulevard east of SR 33 were associated with the ongoing construction. Consequently, the use of a weekly adjustment factor greater than 1.00 was not appropriate for this facility at this time.

There are two FDOT portable count stations located on I-4 in the vicinity of the I-4/SR 33 interchange. These count stations are as follows:

- Station No. 160114 (located to the west of the I-4/SR 33 interchange)
- Station No. 160113 (located to the east of the I-4/SR 33 interchange)

In addition, there is also one portable count station located on each of the four interchange ramps. These count stations are as follows:

- Station No. 16320090 (on the eastbound I-4 off-ramp)
- Station No. 16320091 (on the westbound I-4 on-ramp)
- Station No. 16320092 (on the eastbound I-4 on-ramp)
- Station No. 16320093 (on the westbound I-4 off-ramp)

Table 3-2 provides a comparison of the 2012 AADT volumes obtained from the FDOT count stations and the 2012 AADT volumes estimated from the 24-hour traffic counts for the interchange ramps. This table also includes the 2012 I-4 mainline AADT volumes that are associated with the two mainline count stations. A review of **Table 3-2** indicates that the two AADT volumes associated with each ramp are exactly the same for three of the four locations. Although the 2012 westbound on-ramp AADT volume obtained from the FDOT count station is lower than the AADT volume estimated from the traffic count, it is much closer to the 2012 eastbound off-ramp AADT volume. Typically, the AADT volumes on reciprocal ramps at conventional diamond interchanges (i.e., where all movements are allowed) are approximately the same and the FDOT count station volumes at the I-4/SR 33 interchange ramps support this. Consequently, the eastbound off-ramp and westbound on-ramp AADT volumes estimated from the 24-hour traffic counts were averaged and this average value (i.e., 3,800 vpd) was used as the 2012 AADT volume for each of these two ramps.

TABLE 3-1: EXISTING YEAR (2012) AADT VOLUMES

Location	24-Hour Volume	SF ⁽¹⁾	AF ⁽²⁾	AADT Volume	AADT Volume ⁽³⁾
SR 33 south of Firstpark Boulevard N./University Boulevard	10,628	1.07	0.86 ⁽⁴⁾	9,780	9,800
SR 33 between Firstpark Boulevard N./University Boulevard and Eastbound I-4 On-/Off-Ramps	11,381	1.07	0.86 ⁽⁴⁾	10,473	10,500
SR 33 between Eastbound I-4 On-/Off-Ramps and Westbound I-4 On-/Off-Ramps	12,834	1.07	0.86 ⁽⁴⁾	11,810	11,800
SR 33 between Westbound I-4 On-/Off-Ramps and Tomkow Road	13,488	1.07	0.86 ⁽⁴⁾	12,412	12,400
SR 33 east of Tomkow Road	10,187	1.07	0.86 ⁽⁴⁾	9,374	9,400
Firstpark Boulevard N. west of SR 33	1,970	1.07	0.86 ⁽⁴⁾	1,813	1,800
University Boulevard east of SR 33	731	N/A	0.86 ⁽⁴⁾	629	630
Eastbound I-4 Off-Ramp west of SR 33	3,432	1.09	0.90	3,367	3,400
Eastbound I-4 On-Ramp east of SR 33	2,829	1.09	0.90	2,775	2,800
Westbound I-4 Off-Ramp east of SR 33	2,819	1.09	0.90	2,765	2,800
Westbound I-4 On-Ramp west of SR 33	4,332	1.09	0.90	4,250	4,250
Tomkow Road north of SR 33	2,722	1.07	0.86 ⁽⁴⁾	2,505	2,500

⁽¹⁾ 2012 Weekly Seasonal Adjustment Factor obtained from the FDOT Database

⁽²⁾ 2012 Weekly Axle Adjustment Factor obtained from the FDOT Database

⁽³⁾ Rounded AADT Volume

⁽⁴⁾ 2012 Axle Adjustment Factor calculated based on vehicle classification count data obtained between 9/4/2012 and 9/6/2012

The 2012 FDOT count station ramp volumes to and from the east (5,600 vpd) were subtracted from the 2012 FDOT count station volume on the I-4 mainline east of the SR 33 interchange (68,000 vpd) to obtain an estimate of the 2012 AADT volume on I-4 in the “middle” of the interchange. The 2012 FDOT count station ramp volumes to and from the west (7,100 vpd) were subsequently added to this volume resulting in a 2012 AADT volume of 69,500 vpd for the I-4 mainline west of the SR 33 interchange. This volume was significantly lower than the 2012 AADT volume obtained from the FDOT count station on I-4 west of SR 33. A review of the Historical AADT Report for the I-4 mainline east of SR 33 indicated that the 2012 and 2011 AADT volumes were exactly the same. In contrast, a review of the Historical AADT Report for the I-4 mainline west of SR 33 indicated that the 2011 AADT volume was equal to 70,000 vpd. Since the 2011 AADT volume on I-4 to the west of SR 33 compared favorably to the 2012 AADT volume that was obtained by adding and subtracting the 2012 ramp volumes from the 2012 AADT volume on I-4 to the east of SR 33, the 2011 AADT volume was used as the 2012 AADT volume for this location. The 2012 AADT volumes for the study area are graphically illustrated in **Figure 3-2**.

TABLE 3-2: EXISTING AADT VOLUME COMPARISON

Location	2012 FDOT Count Station Volume	2012 Adjusted 24-Hour Count Volume	2012 Final Volume
I-4 West of SR 33	74,000 ⁽¹⁾	N/A	70,000 ⁽³⁾
I-4 East of SR 33	68,000 ⁽²⁾	N/A	68,000 ⁽²⁾
I-4 Eastbound Off-Ramp	3,400	3,400	3,800 ⁽⁴⁾
I-4 Westbound On-Ramp	3,700	4,250	3,800 ⁽⁴⁾
I-4 Westbound Off-Ramp	2,800	2,800	2,800
I-4 Eastbound On-Ramp	2,800	2,800	2,800

⁽¹⁾ 2012 AADT volume from FDOT Count Station No. 160114

⁽²⁾ 2012 AADT volume from FDOT Count Station No. 160113

⁽³⁾ 2011 AADT volume from FDOT Count Station No. 160114

⁽⁴⁾ Calculated as $[(3,400 + 4,250)/2]$

Eight-hour manual turning movement counts were conducted at the study area intersections on October 18, 2012. The turning movement counts were conducted from 6:00 a.m. to 9:00 a.m. and from 1:00 p.m. to 6:00 p.m. The peak hour intersection turning movement count data is provided in **Appendix D**. The 2012 I-4 mainline hourly volumes obtained from the synopsis reports contained in the FDOT's Florida Traffic Online website were used in combination with the 2012 I-4 ramp volumes obtained from the peak hour turning movement counts conducted at the ramp terminal intersections to derive the 2012 a.m. and p.m. peak hour volumes for the I-4/SR 33 interchange. Adjustments were made to the a.m. and p.m. peak hour volumes for balancing purposes. **Figure 3-3** and **Figure 3-4** graphically illustrate the adjusted 2012 a.m. and p.m. peak hour volumes for the study area, respectively.

Eight-hour manual turning movement counts were also conducted at the Gourmet Foods International driveway and the two existing Manheim of Lakeland Auto Auction driveways. Both of these businesses are located to the east of Tomkow Road. Gourmet Foods International is located on the north side of SR 33 while the Auto Auction is located on the south side of SR 33. The Gourmet Foods International turning movement counts were conducted from 6:00 a.m. to 9:00 a.m. and from 1:00 p.m. to 6:00 p.m. on October 25, 2012; while the Auto Auction turning movement counts were conducted on October 3, 2012 from 12:30 p.m. to 8:30 p.m. These counts were conducted to obtain information that could be used during the development of the preliminary SR 33 access management plan. Auctions are only conducted at this location on Wednesdays between the hours of 2:00 p.m. and 8:00 p.m. (although people start arriving on Wednesdays as early as 12:30 p.m.); therefore, the Auto Auction turning movement counts were conducted during the "peak hours" of this land use.

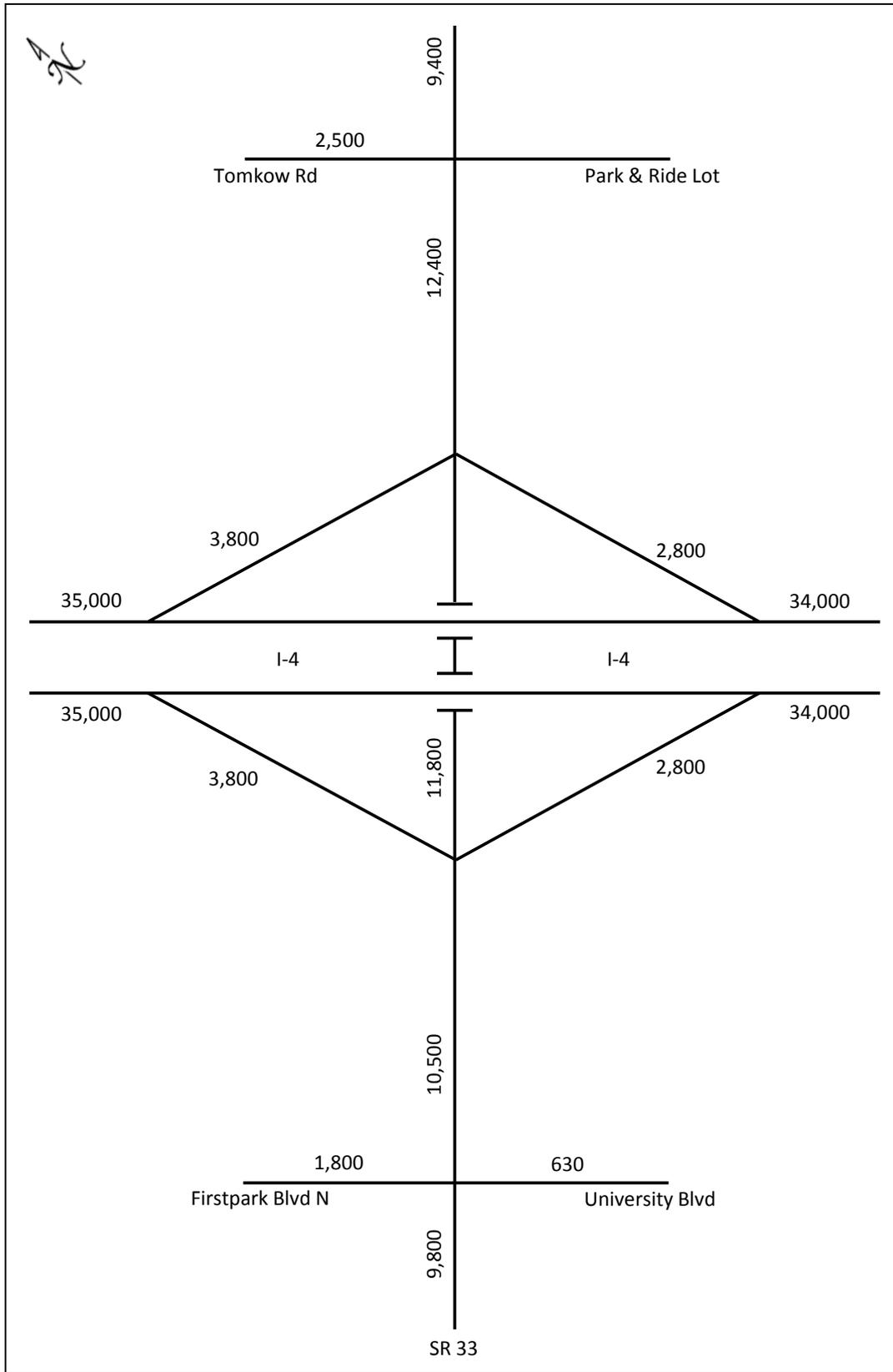


FIGURE 3-2: EXISTING YEAR (2012) AADT VOLUMES

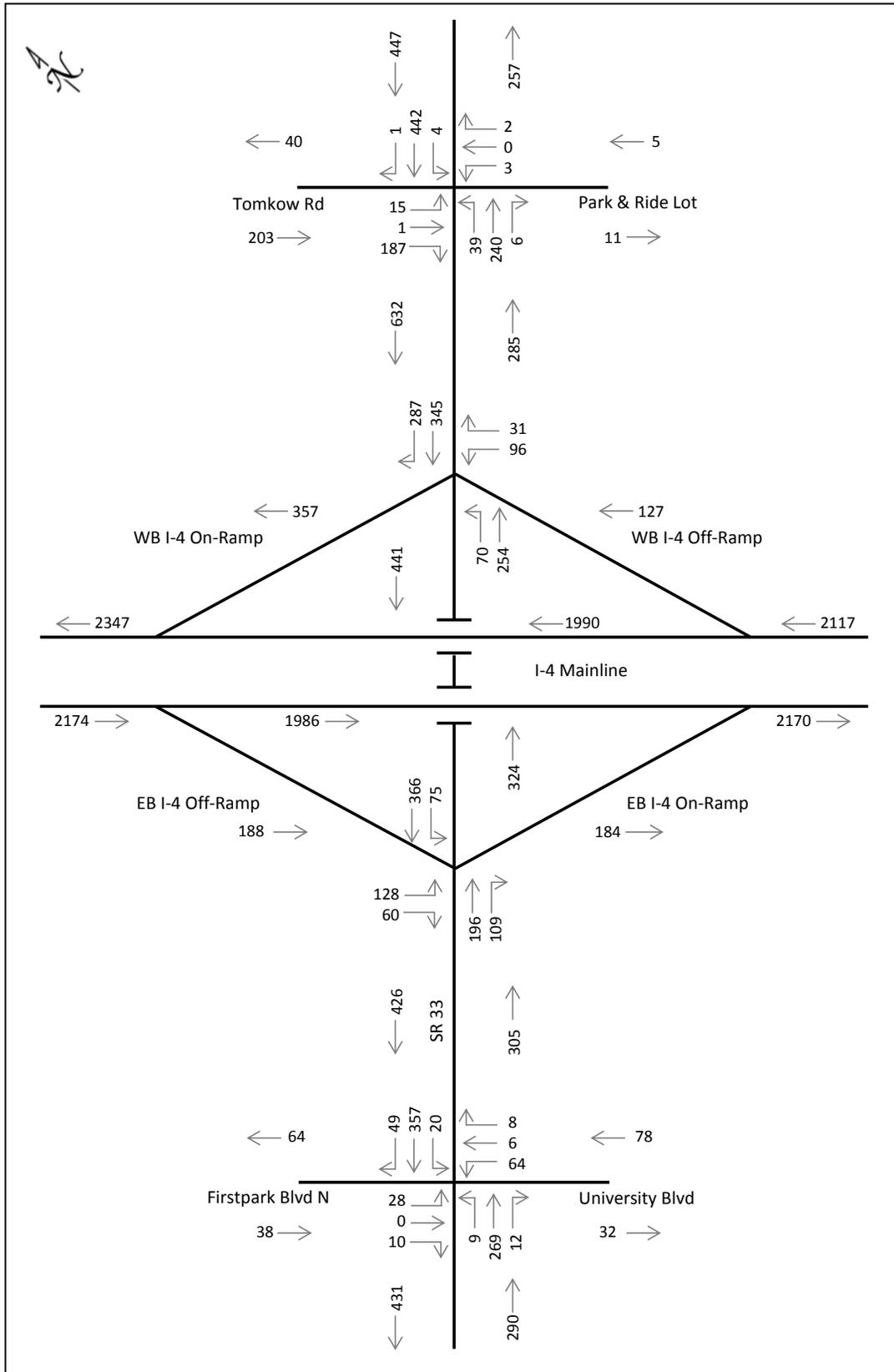


FIGURE 3-3: EXISTING YEAR (2012) AM PEAK HOUR VOLUMES

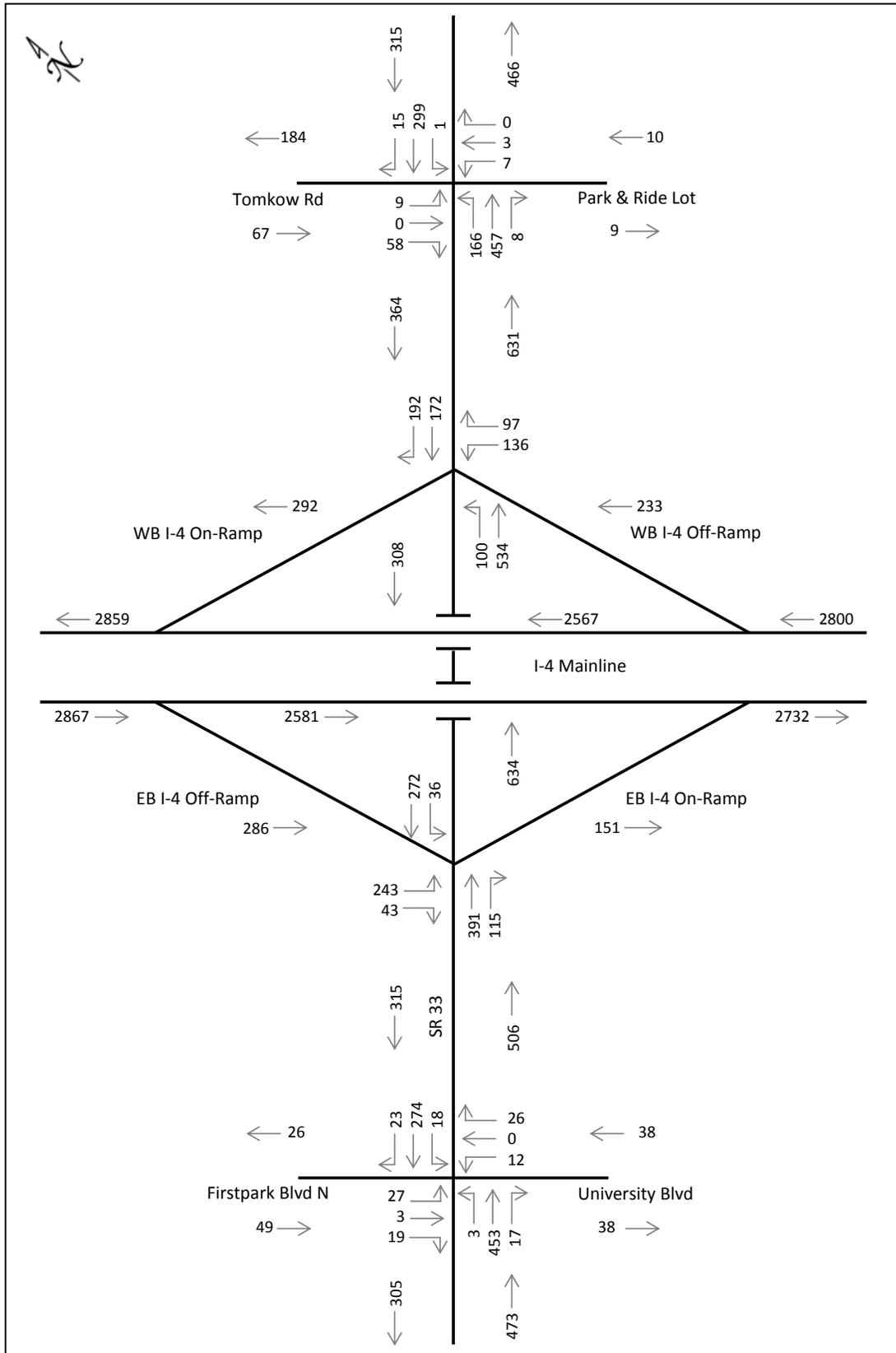


FIGURE 3-4: EXISTING YEAR (2012) PM PEAK HOUR VOLUMES

3.5 TRAFFIC FORECASTING/FUTURE YEAR TRAFFIC VOLUMES

The future year AADT volumes that are documented in this report were originally developed in support of the SR 33 PD&E study. A detailed discussion of the future year traffic forecasting methodology that was employed for the SR 33 PD&E study is contained in the Final SR 33 Travel Demand Forecasting Technical Memorandum (September 2013). A CD containing this technical memorandum is provided in **Appendix E**. This section of the report provides a summary of the overall process that was followed to derive the opening year and design year AADT volumes for the I-4/SR 33 interchange.

The first step in the future year traffic forecasting involved running the Polk County Transportation Planning Organization's (TPO's) 2007 Base Year travel demand model, as well as the TPO's 2035 travel demand model that represents their Cost Feasible Long Range Transportation Plan (which is commonly referred to as the 2035 Mobility Vision Plan). It should be noted that the widening (i.e., four-laning) of SR 33 from east of Old Combee Road/Deeson Pointe Boulevard to east of Tomkow Road is included in the TPO's 2035 Mobility Vision Plan as a cost-feasible transportation improvement. Consequently, the TPO's 2035 travel demand model includes a four-lane SR 33 roadway. The 2007 and 2035 Peak Season Weekday Average Daily Traffic (PSWADT) volumes obtained from these original models were converted to 2035 AADT volumes and reviewed for reasonableness. **Table 3-3** provides a comparison of the 2007 and 2035 model AADT volumes. As indicated in this table, minimal growth in daily traffic was projected to occur for the portion of SR 33 north of the interchange. In addition, the 2035 AADT volumes projected for Tomkow Road north of SR 33 and N. Combee Road south of SR 33 were slightly lower than the 2007 model AADT volumes.

TABLE 3-3: ORIGINAL POLK TPO MODEL AADT VOLUME COMPARISON

Roadway	Location	2007 Polk TPO Model	2035 Polk TPO Model	Increase
SR 33	North of N. Combee Rd.	4,200	18,800	14,600
	South of I-4	4,600	12,100	7,500
	North of I-4	14,300	14,900	600
	East of Tomkow Rd.	9,900	11,100	1,200
I-4*	West of CR 582/SR 33	69,800	98,400	28,600
	West of SR 33	69,400	99,400	30,000
	East of SR 33	64,200	99,200	35,000
	East of Polk Parkway	64,300	105,000	40,700
Old Combee Rd.	South of SR 33	9,600	16,100	6,500
N. Combee Rd.	South of SR 33	4,000	3,800	-200
Tomkow Rd.	North of SR 33	4,300	3,800	-500

*The AADT volumes for I-4 were derived using a Model Output Conversion Factor (MOCF) equal to 0.94

The next step in the future year traffic forecasting involved a review of the validation accuracy associated with the Polk TPO's 2007 Base Year travel demand model. **Table 3-4** provides a comparison of the 2007 AADT volumes obtained from the base year model and the actual 2007 AADT volumes. The 2007 model AADT volumes on SR 33 south and north of the interchange were 4,600 vehicles per day (vpd) and 14,300 vpd, respectively. In contrast, the actual 2007 AADT volumes at these two locations were 9,300 vpd and 12,100 vpd. Consequently, the 2007 base year

TABLE 3-4: 2007 AADT VOLUME COMPARISON – ORIGINAL TPO MODEL VS. REVISED TPO MODEL

Roadway	Location	2007 Actual	2007 Original TPO Model		2007 Revised TPO Model	
		AADT Volume	AADT Volume	% Difference	AADT Volume	% Difference
SR 33	South of I-4	9,300	4,600	-50.5%	6,800	-26.9%
	North of I-4	12,100	14,300	18.2%	15,100	24.8%
I-4*	West of SR 33	75,000	69,400	-7.5%	73,000	-2.7%
	East of SR 33	68,500	64,200	-6.3%	68,500	0.0%
N. Combee Rd.	South of SR 33	6,900	4,000	-42.0%	5,700	-17.4%

* An I-4 specific MOCF of 0.94 was used to calculate these AADT volumes

model was underestimating the volume on SR 33 to the south of the interchange by 4,700 vpd (approximately 51%) and overestimating the volume on SR 33 to the north of the interchange by 2,200 vpd (approximately 18%). In addition, the 2007 model AADT volume on N. Combee Road to the southeast of SR 33 was 4,000 vpd, while the actual 2007 AADT volume was 6,900 vpd. The 2007 base year model was underestimating the volume on this roadway by 2,900 vpd (approximately 42%).

Table 3-4 also illustrates that the original 2007 model AADT volumes on I-4 west and east of the interchange were both lower than the actual 2007 AADT volumes. The 2007 model AADT volume on I-4 west of the interchange was 5,600 vpd (approximately 8%) lower than the actual AADT volume, while the 2007 model AADT volume on I-4 east of the interchange was 4,300 vpd (approximately 6%) lower than the actual AADT volume.

Modifications were made to the original Polk TPO base year model to improve the validation accuracy of the model within the interchange area. These included modifications to the travel demand model roadway network characteristics (i.e., facility types, speeds and capacities), Traffic Analysis Zone (TAZ) structure and centroid connectors, and land use data. The revised 2007 model AADT volumes are also provided in **Table 3-4**. A review of this table indicates that the revised 2007 model AADT volumes are closer to the actual 2007 AADT volumes for four of the five locations.

Modifications were also made to the original Polk TPO 2035 Mobility Vision Plan travel demand model. Some of these modifications were necessary to ensure consistency with the revised base year model while others were necessary to correct roadway network coding errors in the original

Polk TPO 2035 travel demand model. As stated earlier in **Section 1.2** of this report, there are also three Developments of Regional Impact (DRIs) located in close proximity to the I-4/SR 33 interchange. These are the Williams DRI, Bridgewater DRI, and Polk Commerce Center DRI. The Williams DRI is located immediately south of I-4 between SR 33 and the Polk Parkway while the Polk Commerce Center DRI is located immediately east of the Polk Parkway between I-4 and Saddle Creek Road. A majority of the Bridgewater DRI is located on the west side of SR 33 (between SR 33 and I-4); however, there is also a portion located on the east side of SR 33. In addition, the proposed Rockefeller Group Park of Commerce development is located to the north of SR 33 and to the east of Tomkow Road on the site of the former USA International Speedway.

A comparison of the land use data that is included in the DRIs and the Rockefeller Group Park of Commerce and the land use data that was included in the Polk TPO's 2035 model for those TAZs that comprise these planned developments was also conducted. The results of this comparison indicated that the original 2035 model contained significantly lower amounts of land use than the development levels that were contained in the DRI documents. Consequently, some of the land use data contained in the original Polk TPO 2035 model was modified to more accurately reflect the amount of future land use that is anticipated to occur as a result of these large developments.

The revised Polk TPO 2035 travel demand model was run and the 2035 PSWADT volumes were converted to AADT volumes. **Table 3-5** provides a comparison of the revised 2035 model AADT volumes and the original 2035 model AADT volumes. Roadway network plots of the revised 2035 AADT volumes are provided in **Appendix F**. The 2012 AADT volumes that were derived from the PD&E study traffic counts are also included in **Table 3-5**. A review of this table indicates that significantly higher AADT volumes are projected for the I-4 mainline, SR 33, and the I-4/SR 33 interchange ramps with the revised 2035 travel demand model. The 2035 AADT volumes on the I-4 mainline west and east of SR 33 are projected to be 13,600 vpd and 10,000 vpd higher, respectively with the revised 2035 model. Compared to the 2012 AADT volumes for these two locations, the revised 2035 model AADT volumes represent increases of approximately 61% (or 2.6%/year). The revised 2035 model AADT volumes on SR 33 between University Boulevard/Firstpark Boulevard N. and Tomkow Road are between 7,300 vpd and 16,600 vpd higher than the original 2035 model AADT volumes.

Growth trend analyses were conducted for SR 33 using historic AADT volumes obtained from FDOT Count Station Nos. 160118 and 160027. These count stations are located on SR 33 just south and just north of the I-4/SR 33 interchange. These growth trend analyses were conducted based on the AADT volumes recorded for the years 1997 through 2011 as well as the 2012 AADT volumes estimated from the PD&E study traffic counts. The growth trend analyses yielded 2035 AADT volumes equal to 13,000 vpd (south of I-4) and 16,600 vpd (north of I-4). The 2035 volume for SR 33 south of I-4 represents a 24.0% increase over the existing (2012) volume while the 2035 volume for SR 33 north of I-4 represents a 34.0% increase over this same 23-year time period.

TABLE 3-5: 2035 AADT VOLUME COMPARISON

Roadway	Segment		AADT Volume		
			Existing (2012)	Original 2035 TPO Model	Revised 2035 TPO Model
	From	To			
SR 33	N. Combee Rd.	University Blvd.	9,950	20,500	32,900
	University Blvd.	I-4 EB Ramps	10,500	12,100	28,700
	I-4 EB Ramps	I-4 WB Ramps	11,800	13,600	26,700
	I-4 WB Ramps	Tomkow Rd.	12,400	14,900	22,200
	Tomkow Rd.	E. of Tomkow Rd.	9,400	11,100	14,500
University Blvd.	SR 33	Reasearch Way W.	630	12,900	38,600
Tomkow Rd.	SR 33	Old Polk City Rd.	2,500	3,800	7,700
Old Combee Rd.	Lake Parker Dr.	SR 33	10,500	16,100	15,400
N. Combee Rd.	Old Combee Rd.	SR 33	8,200	3,800	12,550
I-4*	CR 582/SR33	SR 33	70,000	99,400	113,000
	SR 33	Polk Parkway East	68,000	99,200	109,200
I-4 Ramps*	EB Off-Ramp		3,400	4,000	9,100
	EB On-Ramp		2,800	3,900	7,100
	WB Off-Ramp		2,800	3,900	7,300
	WB On-Ramp		4,250	4,000	9,100

* The 2035 AADT volumes for these locations were derived using an MOCF equal to 0.94

Copies of these two growth trend analyses are also provided in **Appendix F**. It should be noted that the R² values associated with these growth trend analyses are extremely low (i.e., 25.7% and 33.8%, respectively). This statistic measures how well the linear growth trend equation (i.e., the straight line) “fits” the data points. A review of the graphs of the growth trend analyses indicates that many of the data points (i.e., the historic volumes) are either higher or lower than the volumes that were estimated from the growth trend equation.

Significant increases in both population and employment are projected to occur between 2012 and 2035 for several of the TAZs in the vicinity of the I-4/SR 33 interchange. Given the magnitude of the projected growth in study area population and employment, the 2035 AADT volumes projected for the SR 33 study corridor using the revised 2035 Polk TPO model were viewed as being reasonable.

Growth trend analyses were also conducted for I-4 using historic AADT volumes obtained from FDOT Count Station Nos. 160114 and 160113. As stated earlier in **Section 3.4** of this report, these two count stations are located on I-4 to the west and east of the I-4/SR 33 interchange. The growth trend analyses were conducted based on the AADT volumes recorded for the years 1997 through 2012. The growth trend analyses yielded 2035 AADT volumes equal to 94,700 vpd (west of SR 33) and 97,100 vpd (east of SR 33). The 2035 volume for I-4 west of SR 33 represents a 28% increase over the 23-year period while the 2035 volume for I-4 east of SR 33 represents a 43% increase over this same time period. Copies of these two growth trend analyses are also contained in **Appendix F**.

Although the 2035 I-4 mainline volumes estimated from the growth trend analyses compare favorably to the 2035 volumes estimated from the original 2035 Polk TPO model, the 2035 I-4 ramp volumes estimated from the original Polk TPO model are not significantly higher than the 2012 ramp volumes. Since the historic growth trend analysis methodology is unable to take into account the impact of future land use growth on future travel demand, and significant increases in future year population and employment are projected to occur for several TAZs in the study area; the 2035 AADT volumes projected for the I-4 mainline and the I-4/SR 33 interchange ramps using the revised 2035 Polk TPO model were once again viewed as being the most reasonable future year projections.

Since the design year established for this project is 2036, the design year AADT volumes were derived by extrapolation using the existing (2012) and revised 2035 model AADT volumes. An opening year of 2016 was also established for this project and the opening year AADT volumes were derived through interpolation using the existing (2012) and revised 2035 model AADT volumes. The 2016 and 2036 AADT volumes are graphically illustrated in **Figure 3-5**.

The design year a.m. and p.m. peak hour volumes were derived with the use of the FDOT's TURNS5 software. The 2012 and 2035 AADT volumes were used as input along with a K-factor of 9.0%, D-factors of 53.0% (for I-4) and 55.4% (for SR 33), and the existing peak hour turning movement percentages. The 2036 peak hour volumes obtained from the TURNS5 software were subsequently reviewed for reasonableness. Based on this review it was determined that manual adjustments to the output were appropriate for one or more of the following reasons:

- To increase individual movement volumes that were estimated to be less than the 2012 volumes
- To reduce individual movement volumes that were estimated to be significantly higher than the 2012 volumes (if this significant increase was not viewed as being reasonable)
- To eliminate any differences between departure volumes and approach volumes at adjacent intersections
- To better reflect the design year peak hour K- and D-factors on the I-4 mainline and the interchange on- and off-ramps

The TURNS5 output is provided in **Appendix G**.

The opening year peak hour volumes were subsequently derived by interpolating between the 2012 peak hour volumes and the 2036 peak hour volumes. The opening year peak hour volumes are provided in **Figure 3-6** and **Figure 3-7**, while the design year peak hour volumes are provided in **Figure 3-8** and **Figure 3-9**.

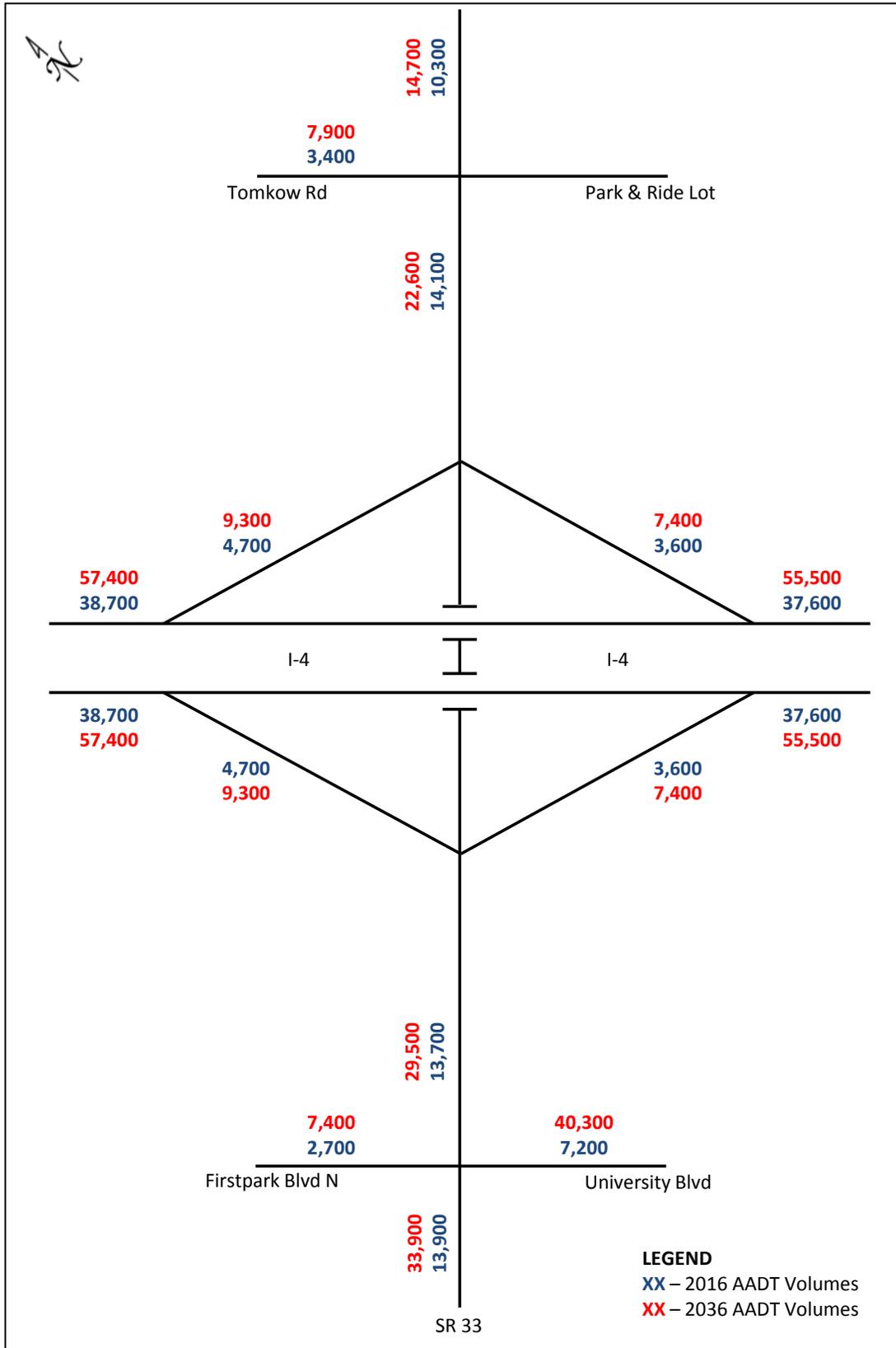


FIGURE 3-5: OPENING YEAR (2016) AND DESIGN YEAR (2036) AADT VOLUMES

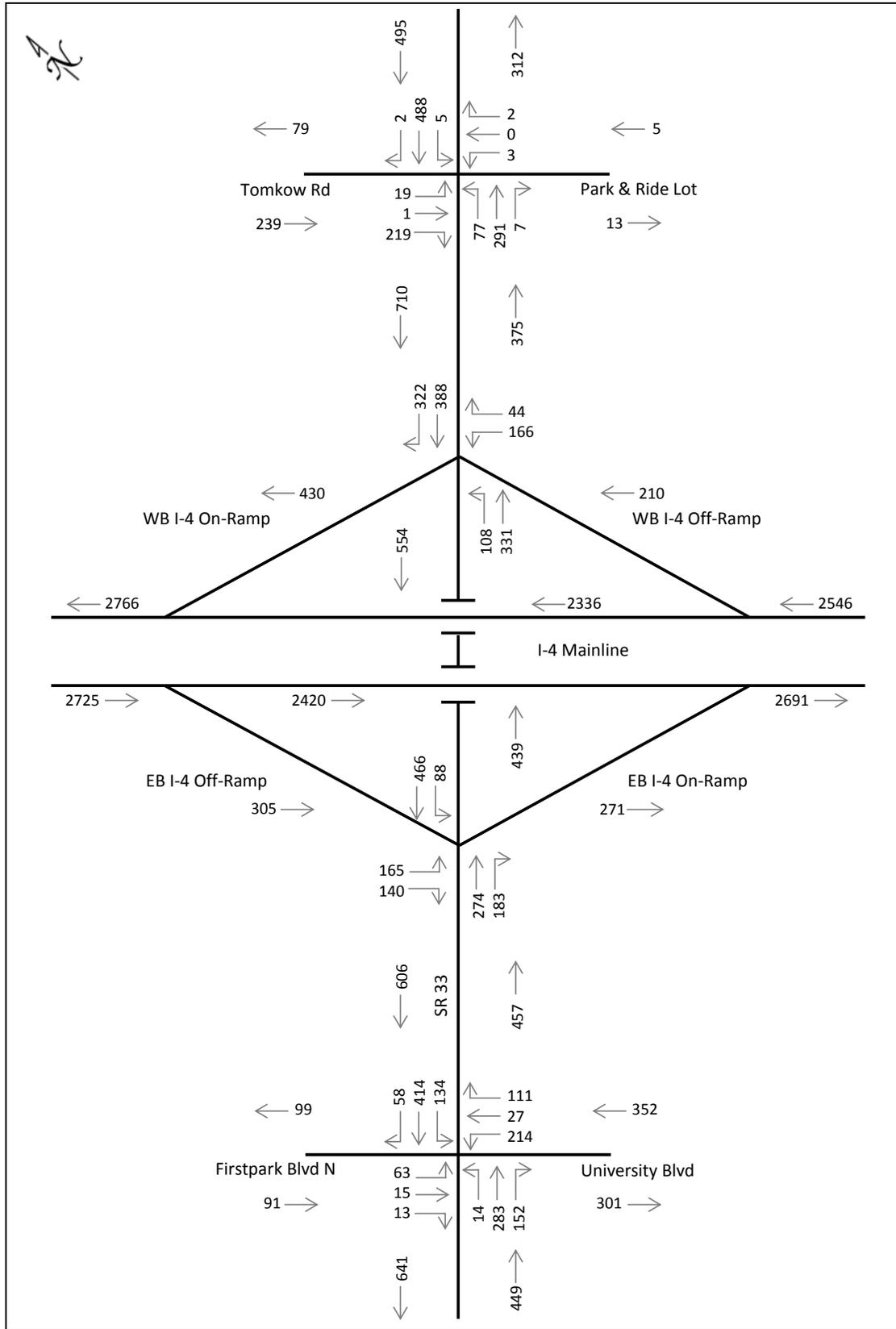


FIGURE 3-6: OPENING YEAR (2016) AM PEAK HOUR VOLUMES

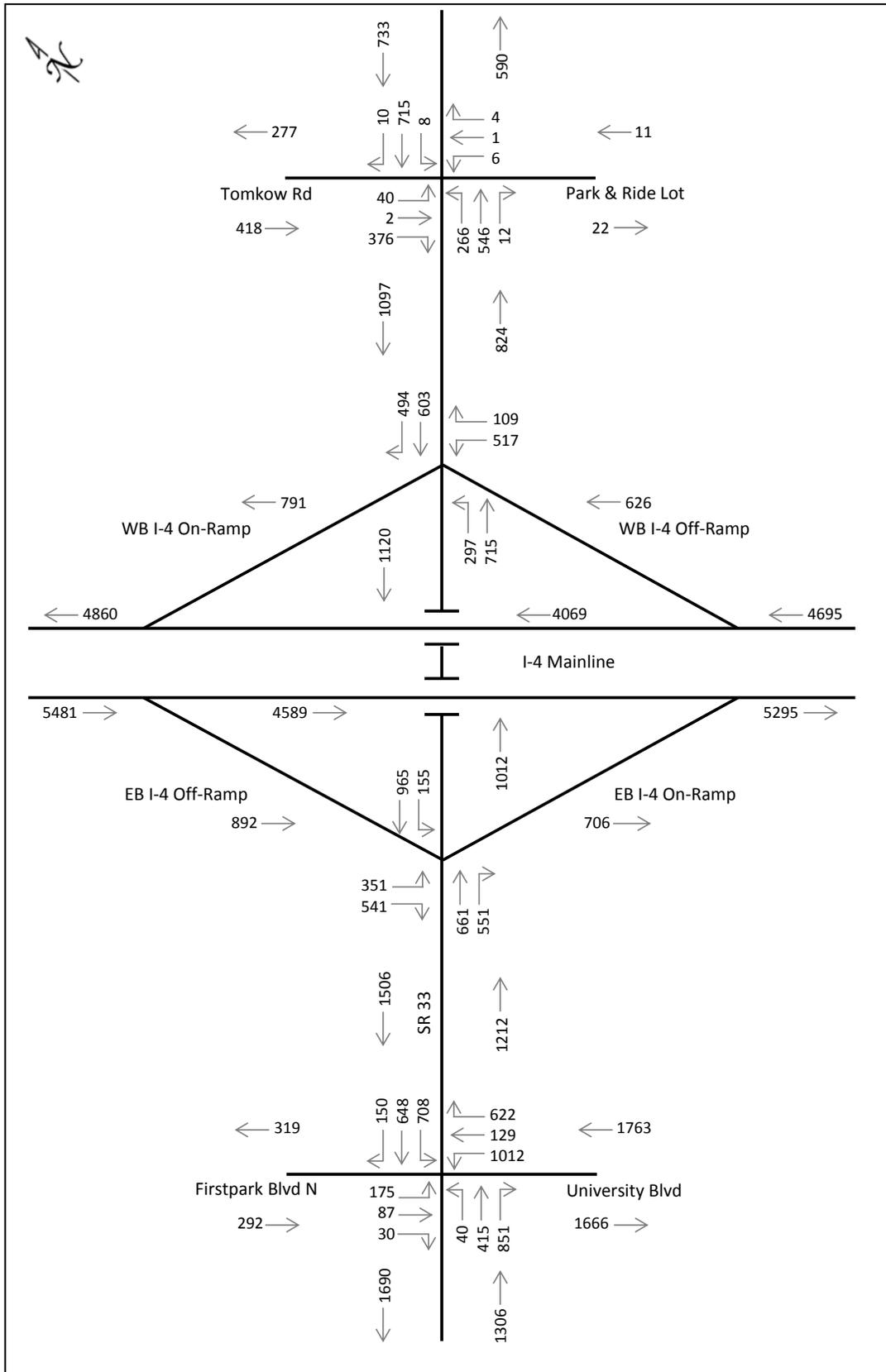


FIGURE 3-8: DESIGN YEAR (2036) AM PEAK HOUR VOLUMES

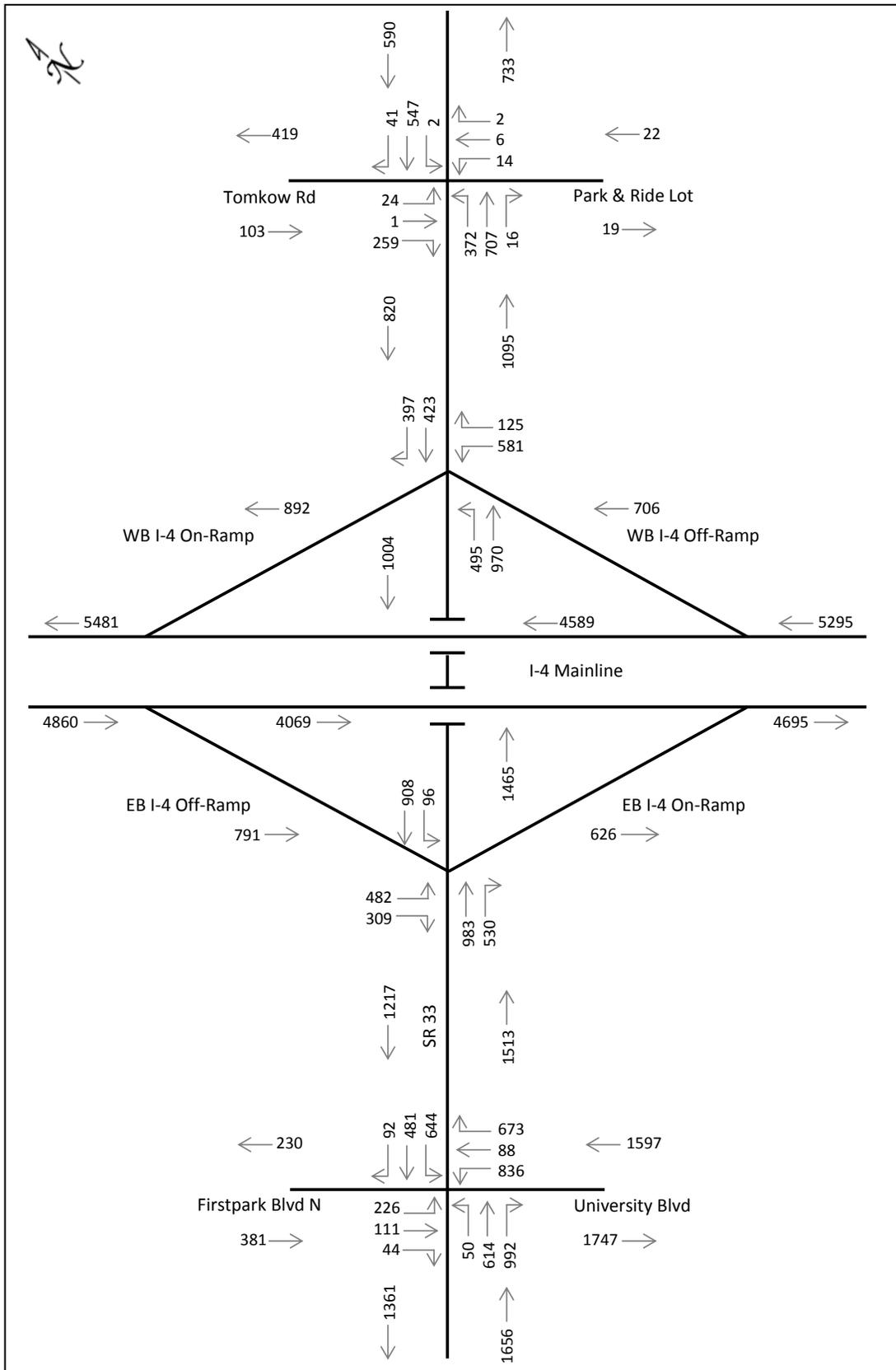


FIGURE 3-9: DESIGN YEAR (2036) PM PEAK HOUR VOLUMES

4.0 EXISTING CONDITIONS TRAFFIC OPERATIONS ANALYSIS

The existing conditions peak hour traffic operations analysis included an analysis of the four interchange ramp merge/diverge areas. The 2010 Highway Capacity Software (HCS) was used to conduct these analyses. The I-4 ramp merge/diverge area analyses were conducted using the following factors:

- Heavy Vehicle Percentage = 7.0%
- Driver Population Factor (f_p) = 1.00
- Peak Hour Factor (PHF) = 0.92
- Mainline Free Flow Speed (FFS) = 70 mph
- Ramp Free Flow Speed (S_{FR}) = 45 mph

The results of the existing conditions I-4 ramp merge/diverge area analyses are summarized in **Table 4-1**. In the a.m. peak hour, all four merge/diverge areas are operating at Level of Service B. In the p.m. peak hour, the two merge areas are operating at Level of Service B while the two diverge areas are operating at Level of Service C. The 2012 ramp merge/diverge area analysis summary sheets are provided in **Appendix H**.

TABLE 4-1: EXISTING YEAR (2012) MERGE/DIVERGE AREA LEVELS OF SERVICE

Location	AM Peak Hour				PM Peak Hour			
	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service
EB I-4 Diverge Area	2,174	188	17.4	B	2,867	286	21.7	C
EB I-4 Merge Area	1,986	184	12.4	B	2,581	151	15.3	B
WB I-4 Diverge Area	2,117	127	16.9	B	2,800	233	21.2	C
WB I-4 Merge Area	1,990	357	13.9	B	2,567	292	16.4	B

The existing conditions peak hour traffic operations analysis also included an analysis of the four intersections located within the area of influence. Since three of the four existing intersections are currently unsignalized and the fourth (i.e., the University Boulevard/Firstpark Boulevard N. intersection) is currently operating under two-way stop control; the 2010 HCS was also used to conduct these analyses. The average existing a.m. and p.m. PHF's that were calculated and used to conduct the roadway segment analyses for the SR 33 PD&E study, were also used for the SR 33 movements in the unsignalized intersection analyses. The specific PHF's calculated from the 2012 turning movement counts were used in the unsignalized intersection analyses for the cross street approaches because many of the cross street approaches are experiencing significant fluctuations in traffic flow (i.e., peaking characteristics) within the peak hour. Similarly, the average a.m. and p.m. peak hour truck percentages that were calculated and used to conduct the SR 33 PD&E study roadway segment analyses were also used for the SR 33 through movements in the unsignalized intersection analyses. The specific peak hour truck percentages that were calculated from the 2012 turning movement counts were used in the unsignalized intersection analyses for all of the other intersection movements.

The results of the existing conditions intersection analyses are summarized in **Table 4-2**. All of the individual movements at the eastbound and westbound I-4 ramp terminal intersections are projected to operate at Level of Service D or better during the a.m. and p.m. peak hours. The two movements that are operating at Level of Service D during the p.m. peak hour are the eastbound and westbound off-ramp left-turn movements.

TABLE 4-2: EXISTING YEAR (2012) PEAK HOUR INTERSECTION OPERATIONS

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
University Boulevard/Firstpark Boulevard N. (unsignalized)	Northbound	LT	0.01	8.2	A	0.00	8.3	A
	Southbound	LT	0.02	8.0	A	0.02	8.4	A
	Eastbound	LT	0.19	24.0	C	0.24	25.2	D
	Eastbound	TH/RT	0.02	10.5	B	0.07	11.2	B
	Westbound	LT	0.26	21.2	C	0.09	20.3	C
	Westbound	TH	0.02	16.7	C	0.00	0.0	N/A
	Westbound	RT	0.01	9.8	A	0.09	11.7	B
I-4 Eastbound Ramps (unsignalized)	Eastbound	LT	0.41	20.0	C	0.63	27.2	D
	Eastbound	RT	0.13	11.9	B	0.07	24.8	C
	Southbound	LT	0.06	7.9	A	0.03	8.4	A
I-4 Westbound Ramps (unsignalized)	Westbound	LT	0.30	19.6	C	0.50	27.1	D
	Westbound	RT	0.04	10.1	B	0.23	14.2	B
	Northbound	LT	0.08	8.9	A	0.08	8.0	A
Tomkow Road (unsignalized)	Eastbound	LT	0.04	8.4	A	0.14	8.4	A
	Westbound	LT	0.00	7.8	A	0.00	8.3	A
	Northbound	LT/TH/RT	0.05	23.0	C	0.17	36.0	E
	Southbound	LT/TH/RT	0.43	16.6	C	0.18	14.5	B

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Average Delay (seconds/vehicle)

⁽³⁾ Level of Service

Queue length observations were also conducted for the eastbound and westbound I-4 off-ramps on October 18, 2012. These observations were conducted on the same day that the eight-hour turning movement counts were conducted at the ramp terminal intersections. The maximum number of queued vehicles that were observed during each 15-minute interval was recorded separately for both the left-turn and right-turn lanes on the off-ramps. These observations are provided in **Appendix D**. The queue length data indicated the following:

- With one exception, the maximum left-turn queues were always greater than or equal to the maximum right-turn queues at both off-ramps.
- The longest left-turn queues recorded during the morning hours at both ramps occurred during the 60-minute period from 7:15 a.m. to 8:15 a.m. The maximum left-turn queues were 10 vehicles on the westbound off-ramp and 5 vehicles on the eastbound off-ramp.
- The longest left-turn queues recorded during the afternoon hours at both ramps occurred during the 60-minute period from 4:15 p.m. to 5:15 p.m. The maximum left-turn queues were 9 vehicles on the westbound off-ramp and 11 vehicles on the eastbound off-ramp.

In addition, the left-turn vehicle queues on the westbound I-4 off-ramp did not prohibit the right-turning vehicles from accessing the right-turn lane at any time during the eight-hour period. In contrast, there were multiple occasions where the left-turn vehicle queues on the eastbound I-4 off-ramp did not allow access to the right-turn lane. All of these occurred during the afternoon hours, with maximum left-turn vehicle queues in the range of 10 to 11 vehicles occurring between 4:15 p.m. and 5:15 p.m. These observations suggested that the p.m. peak hour average vehicle delay for the eastbound right-turn movement that was obtained from the HCS analysis (i.e., 10.7 seconds/vehicle) may be lower than the actual delay.

The existing conditions HCS analyses that were conducted for the I-4 ramp terminal intersections included separate left-turn and right-turn lanes for the eastbound and westbound I-4 off-ramp approaches. As stated earlier in **Section 2.1**, the I-4 off-ramps are single lane ramps that provide channelized right-turn lanes in the vicinity of SR 33. As long as the left-turn vehicle queues do not extend back and block the access to the channelized right-turn lanes, the right-turn vehicle delays are independent of the left-turn vehicle delays. However, once the left-turn vehicle queues block the access to the channelized right-turn lanes, the right-turn vehicle delays become affected by the left-turn vehicle delays and their delays start to approximate the delay associated with a single shared left-turn/right-turn lane. Since the eastbound left-turn queues did extend back and block the access to the eastbound right-turn lane for at least a portion of each 15-minute interval between 4:15 p.m. and 6:00 p.m., the weighted average approach delay value of 24.8 seconds/vehicle was used as the estimate of the average vehicle delay for the eastbound right-turn movement and is included in **Table 4-2**.

With one exception, all of the movements at the University Boulevard/Firstpark Boulevard N. and Tomkow Road intersections are also operating at Level of Service D or better during both peak hours. In the p.m. peak hour, the northbound left-turn, through, and right-turn movements exiting the park-and-ride lot across from Tomkow Road are operating at Level of Service E. The 2012 intersection analysis summary sheets are also provided in **Appendix H**.

5.0 EXISTING CONDITIONS CRASH DATA ANALYSIS

Crash data for the five-year period from January 1, 2007 through December 31, 2011 was obtained from the FDOT's State Safety Office. The SR 33 crash data covered the approximately 0.40-mile portion of the roadway from Milepost 8.237 (approximately 500 feet south of the eastbound I-4 and northbound SR 33 right-turn roadways) to Milepost 8.638 (approximately 500 feet northeast of the westbound I-4 and southbound SR 33 right-turn roadways). The I-4 crash data also covered the 0.95-mile portion of the I-4 mainline from Milepost 11.882 (approximately 0.25 miles to the west of the eastbound I-4 off-ramp) to Milepost 12.832 (approximately 0.25 miles to the east of the westbound I-4 off-ramp), as well as the four interchange ramps.

Table 5-1 summarizes the number of crashes, fatalities, and injuries that occurred during each of the five years between 2007 and 2011. A total of 163 crashes involving 257 vehicles occurred during this five-year period and these crashes resulted in one fatality and 98 injuries. A majority of the crashes (114) occurred on the I-4 mainline; however 28 crashes occurred on SR 33 within the interchange area and another 21 crashes occurred on the I-4 on- and off-ramps.

TABLE 5-1: CRASH HISTORY (2007 – 2011)

Roadway	Year	No. of Crashes	No. of Vehicles	No. of Fatalities	No. of Injuries
SR 33 ⁽¹⁾	2007	8	14	0	4
	2008	7	12	0	9
	2009	7	12	1	4
	2010	4	6	0	3
	2011	2	3	0	3
	Subtotal	28	47	1	23
I-4 On-/Off-Ramps	2007	1	1	0	1
	2008	5	10	0	3
	2009	10	19	0	13
	2010	2	3	0	0
	2011	3	6	0	3
	Subtotal	21	39	0	20
I-4 Mainline ⁽²⁾	2007	20	32	0	15
	2008	22	30	0	11
	2009	28	42	0	9
	2010	25	39	0	7
	2011	19	28	0	13
	Subtotal	114	171	0	55
Total		163	257	1	98

⁽¹⁾ From Milepost 8.237 to Milepost 8.638

⁽²⁾ From Milepost 11.882 to Milepost 12.832

Table 5-2 summarizes the lighting, weather, and roadway surface conditions that were present at the time of the crashes. A review of this table indicates that the majority of the crashes occurred during daylight hours (approximately 72.4%), non-rainy weather (approximately 77.3%) and on dry pavement conditions (approximately 68.7%). Therefore, a majority of the crashes were not influenced by poor visibility and/or slippery roadway surface conditions.

TABLE 5-2: CRASH CONDITIONS (2007 – 2011)

Lighting		
Condition	No. of Occurrences	% of Occurrences
Daylight	118	72.39%
Dark (Street Light)	28	17.18%
Dark (No Street Light)	8	4.91%
Dusk	6	3.68%
Dawn	3	1.84%
Total	163	100.00%
Weather		
Condition	No. of Occurrences	% of Occurrences
Clear	80	49.08%
Cloudy	46	28.22%
Rain	37	22.70%
Fog	0	0.00%
Total	163	100.00%
Road Surface		
Condition	No. of Occurrences	% of Occurrences
Dry	112	68.71%
Wet	51	31.29%
Slippery	0	0.00%
Total	163	100.00%

Table 5-3 summarizes the primary locations of the crashes that occurred within the I-4/SR 33 interchange area. The three highest frequency locations on SR 33 are at the eastbound I-4 right-turn lane onto southbound SR 33, the westbound I-4 right-turn lane onto northbound SR 33, and underneath the two I-4 bridges. These three locations accounted for 50.0% of the total crashes on SR 33 during the five-year period. The one fatality that was recorded during this five-year period occurred at the westbound I-4 right-turn lane onto northbound SR 33. It should be noted that alcohol was involved with this crash. A majority of the interchange ramp crashes occurred on either the eastbound I-4 off-ramp (approximately 61.9%) or the westbound I-4 off-ramp (approximately 23.8%). Approximately 49.0% of the crashes that occurred on the I-4 mainline occurred at one of the four ramp merge/diverge areas, with the eastbound I-4 on-ramp merge area having the highest number of crashes of the four merge/diverge areas (22).

TABLE 5-3: CRASH LOCATIONS (2007 – 2001)

SR 33		
Crash Location	No. of Occurrences	% of Occurrences
EB I-4 Right-Turn Lane (onto SB SR 33)	6	21.43%
WB I-4 Right-Turn Lane (onto NB SR 33)	5	17.86%
Under the I-4 Bridges	3	10.71%
NB SR 33 Right-Turn Lane (onto EB I-4)	2	7.14%
EB I-4 Unsignalized Intersection	2	7.14%
SB SR 33 Right-Turn Lane (onto WB I-4)	1	3.57%
WB I-4 Unsignalized Intersection	0	0.00%
Other Locations	9	32.14%
Total	28	100.00%
I-4 On-/Off-Ramps		
Crash Location	No. of Occurrences	% of Occurrences
EB I-4 Off-Ramp	13	61.90%
WB I-4 Off-Ramp	5	23.81%
EB I-4 On-Ramp	3	14.29%
WB I-4 On-Ramp	0	0.00%
Total	21	100.00%
I-4 Mainline		
Crash Location	No. of Occurrences	% of Occurrences
EB I-4 On-Ramp Merge Area ⁽¹⁾	22	19.30%
WB I-4 On-Ramp Merge Area ⁽¹⁾	15	13.16%
EB I-4 Off-Ramp Diverge Area ⁽¹⁾	14	12.28%
On the SR 33 Bridges	8	7.02%
WB I-4 Off-Ramp Diverge Area ⁽¹⁾	5	4.39%
Other Locations	50	43.86%
Total	114	100.00%

⁽¹⁾ ≤ 500 feet (approximately 0.095 miles) upstream or downstream of the ramp milepost number

Table 5-4 summarizes the types of crashes that occurred within the interchange area. Sixteen of the 28 crashes that occurred on SR 33 (approximately 57.1%) were either angle, left-turn or sideswipe crashes. It is very likely that the existing geometric conditions on SR 33 had an influence on these types of crashes. As stated earlier in **Section 2.0** of this report, both of the ramp terminal intersections are currently unsignalized and there are no acceleration/deceleration lanes provided on SR 33 for the right-turn movements. Approximately 52.4 % of the crashes on the I-4 ramps were

TABLE 5-4: CRASH TYPES (2007 – 2011)

SR 33		
Crash Type	No. of Occurrences	% of Occurrences
Angle	8	28.57%
Left-Turn	6	21.43%
Hit Guardrail	4	14.29%
Sideswipe	2	7.14%
Hit Sign/Sign Post	2	7.14%
Ran Into Ditch/Culvert	1	3.57%
Overtaken	1	3.57%
Hit Fixed Object Above Road	1	3.57%
Unspecified	3	10.71%
Total	28	100.00%
I-4 On-/Off-Ramps		
Crash Type	No. of Occurrences	% of Occurrences
Rear-End	11	52.38%
Angle	3	14.29%
Backed Into	2	9.52%
Hit Concrete Barrier Wall	2	9.52%
Hit Fence	1	4.76%
Ran Into Ditch/Culvert	1	4.76%
Head-On	1	4.76%
Total	21	100.00%
I-4 Mainline		
Crash Type	No. of Occurrences	% of Occurrences
Hit Guardrail	27	23.68%
Rear-End	15	13.16%
Angle	13	11.40%
Sideswipe	9	7.89%
Overtaken	7	6.14%
Hit Concrete Barrier Wall	6	5.26%
Ran Into Ditch/Culvert	5	4.39%
Hit Fence	4	3.51%
Hit Movable Object On Road	4	3.51%
Hit Motor Vehicle on Side of Road	3	2.63%
Hit Other Fixed Object	2	1.75%
Cargo Loss	2	1.75%
Separation of Units	2	1.75%
Hit Sign/Sign Post	1	0.88%
Hit Bridge/Pier/Abutment/Rail	1	0.88%
Hit Animal	1	0.88%
Unspecified	12	10.53%
Total	114	100.00%

rear-end crashes. This type of crash is often the most frequently occurring type of crash on diamond interchange ramps at unsignalized intersections. The two most prevalent types of crashes that occurred on the I-4 mainline in the vicinity of the I-4/SR 33 interchange were guardrail crashes (approximately 23.7 percent) and rear-end crashes (approximately 13.2%). However, it should also be noted that angle crashes and sideswipe crashes combined represent approximately 19.3% of the total I-4 mainline crashes.

The actual crash rate on I-4 for the years 2007 through 2011 was 0.980 crashes per million vehicle-miles of travel. The statewide average crash rate for urban interstate facilities during this same five-year period was 0.685 crashes per million vehicle-miles of travel. Consequently, the section of I-4 within the study area has experienced a higher crash rate than the statewide average for similar facilities. The actual crash rate on the portion of SR 33 within the immediate interchange area (i.e., from Milepost 8.288 to Milepost 8.590) for the years 2007 through 2011 was 7.105 crashes per million vehicle-miles of travel. The statewide average crash rate for similar facilities during this same five-year period was 2.514 crashes per million vehicle-miles of travel. Therefore, the actual crash rate for this portion of SR 33 is almost three times higher than the statewide average.

6.0 ALTERNATIVES CONSIDERED

Four alternative interchanges were evaluated and are documented in this report. These alternatives include one No-Build Alternative, one Transportation Systems Management (TSM) Alternative, and two Build Alternatives. The alternatives are described below:

- **No-Build Alternative** – The existing diamond interchange configuration with the existing laneage on both SR 33 and the I-4 ramps. The existing unsignalized ramp terminal intersections are also maintained.
- **TSM Alternative** – The existing diamond interchange configuration with roundabouts at the ramp terminals. The existing laneage on both SR 33 and the I-4 ramps was maintained, however, the conventional unsignalized intersections at the ramp terminals were replaced with one lane roundabouts.
- **Build Alternative No. 1** – A diamond interchange configuration with four through lanes on SR 33 and additional turn lanes on both SR 33 and the I-4 off-ramps. The ramp terminal intersections are signalized.
- **Build Alternative No. 2** – A diverging diamond interchange configuration with four through lanes on SR 33. The ramp terminal intersections are signalized.

7.0 FUTURE CONDITIONS TRAFFIC OPERATIONS ANALYSIS

With one exception, the opening year (2016) and design year (2036) I-4 ramp merge/diverge area analyses were conducted using the same factors that were incorporated into the Existing Year (2012) analyses. The opening year analyses used a PHF equal to 0.92, while a PHF value of 0.95 was used in the design year analyses.

7.1 NO-BUILD ALTERNATIVE

The No-Build Alternative interchange and intersection geometrics that were analyzed are graphically illustrated in **Figure 7-1**. The results of the No-Build Alternative opening year ramp merge/diverge area analyses are summarized in **Table 7-1**. All four of the merge/diverge areas are projected to operate at Level of Service C or better during both the a.m. and p.m. peak hours in the year 2016. **Table 7-2** summarizes the results of the design year ramp merge/diverge area analyses. Three of the four merge/diverge areas are projected to operate at Level of Service D or better during both the a.m. and p.m. peak hours in the year 2036. The eastbound I-4 off-ramp is projected to operate at Level of Service E in the a.m. peak hour and Level of Service D in the p.m. peak hour. The 2016 and 2036 No-Build Alternative ramp merge/diverge area analysis summary sheets are provided in **Appendix I**.

TABLE 7-1: OPENING YEAR (2016) MERGE/DIVERGE AREA LEVELS OF SERVICE – NO-BUILD ALTERNATIVE

Location	AM Peak Hour				PM Peak Hour			
	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service
EB I-4 Diverge Area	2,725	305	20.9	C	3,199	370	23.7	C
EB I-4 Merge Area	2,420	271	15.4	B	2,829	230	17.3	B
WB I-4 Diverge Area	2,546	210	19.7	B	3,216	311	23.7	C
WB I-4 Merge Area	2,336	430	16.3	B	2,905	392	19.0	B

TABLE 7-2: DESIGN YEAR (2036) MERGE/DIVERGE AREA LEVELS OF SERVICE – NO-BUILD ALTERNATIVE

Location	AM Peak Hour				PM Peak Hour			
	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service
EB I-4 Diverge Area	5,481	892	35.0	E	4,860	791	32.1	D
EB I-4 Merge Area	4,589	706	29.5	D	4,069	626	26.2	C
WB I-4 Diverge Area	4,695	626	31.1	D	5,295	706	33.9	D
WB I-4 Merge Area	4,069	791	27.5	C	4,589	892	31.0	D

The results of the No-Build Alternative opening year intersection analyses are summarized in **Table 7-3**. The No-Build Alternative assumed that the existing unsignalized I-4 ramp terminal intersections would remain in place as well as the existing unsignalized Tomkow Road intersection. These three unsignalized intersections were analyzed using the 2010 HCS. As stated earlier in **Section 2.1**, the

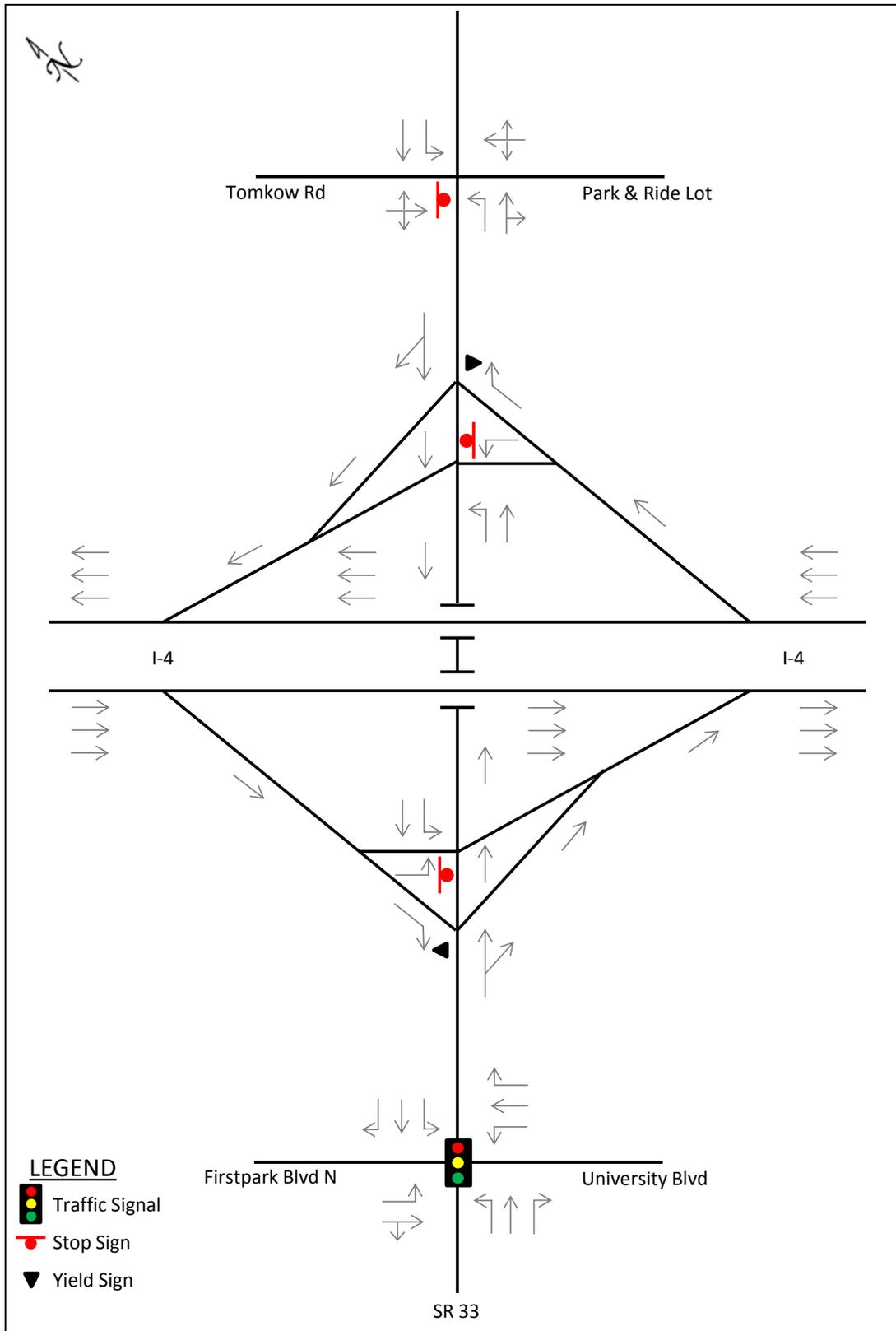


FIGURE 7-1: DESIGN YEAR (2036) INTERCHANGE/INTERSECTION GEOMETRY – NO-BUILD ALTERNATIVE

existing University Boulevard/Firstpark Boulevard N. intersection is currently operating as a two-way stop controlled intersection because the traffic signal that was installed as part of the University Boulevard construction is currently displaying flashing yellow for SR 33 and flashing red for University Boulevard/Firstpark Boulevard N. This intersection was analyzed both as an unsignalized two-way stop controlled intersection and as a signalized intersection. The signalized intersection analysis was conducted using the SYNCHRO software (Version 8).

TABLE 7-3: OPENING YEAR (2016) PEAK HOUR INTERSECTION OPERATIONS – NO-BUILD ALTERNATIVE

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
University Boulevard/Firstpark Boulevard N. (Unsignalized)	Eastbound	LT	1.53	406.5	F	3.20	1,168.0	F
	Eastbound	TH/RT	0.19	24.5	C	0.38	29.0	D
	Westbound	LT	1.94	503.9	F	2.76	879.2	F
	Westbound	TH	0.19	30.6	D	0.17	30.1	D
	Westbound	RT	0.19	11.0	B	0.46	16.5	C
	Northbound	LT	0.01	8.4	A	0.01	8.5	A
	Southbound	LT	0.14	8.9	A	0.14	9.6	A
University Boulevard/Firstpark Boulevard N. (Signalized)	Eastbound	LT	0.24	16.3	B	0.22	17.2	B
	Eastbound	TH/RT	0.06	13.6	B	0.11	14.2	B
	Eastbound	Approach	N/A	15.4	B	N/A	16.1	B
	Westbound	LT	0.47	18.9	B	0.37	19.7	B
	Westbound	TH	0.05	18.5	B	0.04	21.4	C
	Westbound	RT	0.16	0.5	A	0.24	0.9	A
	Westbound	Approach	N/A	13.1	B	N/A	11.3	B
	Northbound	LT	0.07	16.6	B	0.05	13.7	B
	Northbound	TH	0.67	27.9	C	0.83	31.9	C
	Northbound	RT	0.11	0.2	A	0.12	0.1	A
	Northbound	Approach	N/A	18.2	B	N/A	22.9	C
	Southbound	LT	0.31	16.3	B	0.33	16.2	B
	Southbound	TH	0.72	25.5	C	0.44	14.4	B
	Southbound	RT	0.10	0.3	A	0.06	0.2	A
	Southbound	Approach	N/A	21.0	C	N/A	13.8	B
Overall Intersection			N/A	18.0	B	N/A	17.4	B
I-4 Eastbound Ramps (Unsignalized)	Eastbound	LT	0.68	36.7	E	0.94	70.8	F
	Eastbound	RT	0.36	15.9	C	0.16	57.1	F
	Southbound	LT	0.08	8.1	A	0.05	8.7	A
I-4 Westbound Ramps (Unsignalized)	Westbound	LT	0.66	41.1	E	1.07	125.8	F
	Westbound	RT	0.07	10.8	B	0.26	90.2	F
	Northbound	LT	0.12	9.3	A	0.14	8.3	A
Tomkow Road (Unsignalized)	Eastbound	LT	0.08	8.7	A	0.18	8.7	A
	Westbound	LT	0.00	7.9	A	0.00	8.5	A
	Northbound	LT/TH/RT	0.08	35.0	D	0.29	59.7	F
	Southbound	LT/TH/RT	0.58	22.2	C	0.29	16.4	C

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Average Delay (seconds/vehicle)

⁽³⁾ Level of Service

Table 7-3 indicates that the eastbound and westbound left-turn movements at the I-4 ramp terminal intersections are projected to operate at Level of Service E in the a.m. peak hour with v/c ratios equal to 0.68 and 0.66, respectively. In the p.m. peak hour, both of these left-turn movements are projected to operate at Level of Service F with v/c ratios equal to 0.94 and 1.07, respectively. The average p.m. peak hour vehicle delays for the eastbound and westbound left-turn movements were estimated to be approximately 71 seconds/vehicle and 126 seconds/vehicle. In contrast, the initial average p.m. peak hour vehicle delays for the eastbound and westbound right-turn movements were estimated to be approximately 12 seconds/vehicle and 16 seconds/vehicle.

The approach that was used in the existing conditions analysis to obtain a more reasonable estimate of the eastbound off-ramp right-turn vehicle delay in the p.m. peak hour was also used to estimate the p.m. peak hour right-turn vehicle delays in the opening year analyses. Since the westbound left-turn movement is projected to operate over capacity in the p.m. peak hour, this methodology was utilized for the westbound right-turn movement as well as the eastbound right-turn movement. The analysis results indicated that the overall average eastbound and westbound approach delays were estimated to be approximately 57 seconds/vehicle and 90 seconds/vehicle, respectively. The use of these delay values as estimates for the right-turn vehicle delays was viewed as being more reasonable considering the magnitude of the p.m. peak hour v/c ratios for the left-turn movements and the amount of left-turn storage provided between SR 33 and the entrances to the channelized right-turn lanes.

A majority of the movements at the University Boulevard/Firstpark Boulevard N. intersection are projected to operate at Level of Service D or better during both peak hours under two-way stop control. Only the westbound and eastbound left-turn movements from University Boulevard and Firstpark Boulevard N. are projected to operate at Level of Service F. The v/c ratios for both of these movements are projected to be greater than 1.5. All of the movements at this intersection are projected to operate at Level of Service C or better during both peak hours under full signal control. These results indicate that the existing flashing yellow (SR 33)/flashing red (University Boulevard/Firstpark Boulevard N.) operations at this intersection will need to be converted to standard traffic signal operations before the year 2016 to reduce the future delays experienced by the cross street left-turn vehicles.

All of the movements at the Tomkow Road intersection are projected to operate at Level of Service D or better during the a.m. peak hour. In the p.m. peak hour, the northbound left-turn, through, and right-turn movements exiting the park-and-ride lot across from Tomkow Road are projected to operate at Level of Service F. Although these movements are projected to operate at Level of Service F, it should be noted that the northbound volume is very low (i.e., 11 vehicles), and as a result, the v/c ratio is only 0.29.

The results of the No-Build Alternative design year intersection analyses are summarized in **Table 7-4**. The eastbound and westbound left-turn movements at the I-4 ramp terminal intersections are

projected to operate at Level of Service F during both the a.m. and p.m. peak hours. The v/c ratios for these left-turn movements are estimated to be greater than or equal to 3.58. It should be noted that the HCS software was unable to calculate a v/c ratio for the p.m. peak hour westbound left-turn movement since there is no capacity available for this movement. The eastbound and westbound right-turn movements at the I-4 ramp terminal intersections are also expected to operate at Level of Service F during both the a.m. and p.m. peak hours, due in large part, to the severe overcapacity conditions projected for the left-turn movements and the inadequate lengths of the right-turn lanes.

TABLE 7-4: DESIGN YEAR (2036) PEAK HOUR INTERSECTION OPERATIONS – NO-BUILD ALTERNATIVE

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
University Boulevard/Firstpark Boulevard N. (Signalized)	Eastbound	LT	0.68	44.4	D	0.71	45.8	D
	Eastbound	TH/RT	0.78	92.5	F	0.88	103.4	F
	Eastbound	Approach	N/A	63.7	E	N/A	69.1	E
	Westbound	LT	1.63	321.1	F	1.64	372.2	F
	Westbound	TH	0.23	38.4	D	0.20	46.1	D
	Westbound	RT	0.69	13.6	B	0.88	32.0	C
	Westbound	Approach	N/A	192.0	F	N/A	187.3	F
	Northbound	LT	0.46	66.3	E	0.46	55.2	E
	Northbound	TH	1.21	165.7	F	1.34	208.0	F
	Northbound	RT	0.58	1.6	A	0.68	2.5	A
	Northbound	Approach	N/A	55.8	E	N/A	80.3	F
	Southbound	LT	1.61	319.7	F	1.58	309.9	F
	Southbound	TH	0.88	55.1	E	0.61	34.8	C
	Southbound	RT	0.21	4.5	A	0.12	1.9	A
	Southbound	Approach	N/A	174.4	F	N/A	177.9	F
	Overall intersection		N/A	142.3	F	N/A	139.1	F
I-4 Eastbound Ramps (Unsignalized)	Eastbound	LT	3.58	1,249.0	F	5.34	2,040.0	F
	Eastbound	RT	2.01	792.4	F	1.06	1,284.0	F
	Southbound	LT	0.19	10.0	B	0.15	11.5	B
I-4 Westbound Ramps (Unsignalized)	Westbound	LT	9.22	3,832.0	F	*	**	F
	Westbound	RT	0.28	3,171.0	F	0.47	***	F
	Northbound	LT	0.34	10.9	B	0.48	11.3	B
Tomkow Road (Unsignalized)	Eastbound	LT	0.34	11.6	B	0.42	11.6	B
	Westbound	LT	0.01	8.6	A	0.00	9.2	A
	Northbound	LT/TH/RT	*	**	F	2.00	1,145.0	F
	Southbound	LT/TH/RT	2.19	592.0	F	1.90	475.8	F

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Average Delay (seconds/vehicle)

⁽³⁾ Level of Service

* Theoretically, the capacity for this movement is equal to zero; therefore, the v/c ratio is infinite

** No estimate of delay is provided since the v/c ratio is infinite

*** No estimate of delay is provided since the v/c ratio for the westbound left-turn movement is infinite

The University Boulevard/Firstpark Boulevard N. intersection is projected to operate at Level of Service F overall during both the a.m. and p.m. peak hours. In addition, three of the individual movements (i.e., the westbound left-turn, southbound left-turn and northbound through movements) are projected to have v/c ratios greater than 1.2 during both peak hours.

The northbound and southbound approaches at the Tomkow Road intersection are both projected to operate at Level of Service F during the a.m. and p.m. peak hours. Overcapacity conditions are projected to occur during the peak hours since the v/c ratios for both of these approaches are greater than 1.00. These results indicate that a traffic signal may need to be implemented at the existing Tomkow Road intersection prior to or by the design year to continue providing acceptable operations for the cross street movements. The 2016 and 2036 No-Build Alternative intersection analysis summary sheets are also provided in **Appendix I**.

7.2 TSM ALTERNATIVE

The TSM Alternative interchange and intersection geometrics that were analyzed are graphically illustrated in **Figure 7-2**. The results of the TSM Alternative opening year ramp merge/diverge area analyses are summarized in **Table 7-5**. All four of the merge/diverge areas are projected to operate at Level of Service C or better during both the a.m. and p.m. peak hours in the year 2016. **Table 7-6** summarizes the results of the design year ramp merge/diverge area analyses. Three of the four merge/diverge areas are projected to operate at Level of Service D or better during both the a.m.

TABLE 7-5: OPENING YEAR (2016) MERGE/DIVERGE AREA LEVELS OF SERVICE – TSM ALTERNATIVE

Location	AM Peak Hour				PM Peak Hour			
	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service
EB I-4 Diverge Area	2,725	305	20.9	C	3,199	370	23.7	C
EB I-4 Merge Area	2,420	271	15.4	B	2,829	230	17.3	B
WB I-4 Diverge Area	2,546	210	19.7	B	3,216	311	23.7	C
WB I-4 Merge Area	2,336	430	16.3	B	2,905	392	19.0	B

TABLE 7-6: DESIGN YEAR (2036) MERGE/DIVERGE AREA LEVELS OF SERVICE – TSM ALTERNATIVE

Location	AM Peak Hour				PM Peak Hour			
	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service
EB I-4 Diverge Area	5,481	892	35.0	E	4,860	791	32.1	D
EB I-4 Merge Area	4,589	706	29.5	D	4,069	626	26.2	C
WB I-4 Diverge Area	4,695	626	31.1	D	5,295	706	33.9	D
WB I-4 Merge Area	4,069	791	27.5	C	4,589	892	31.0	D

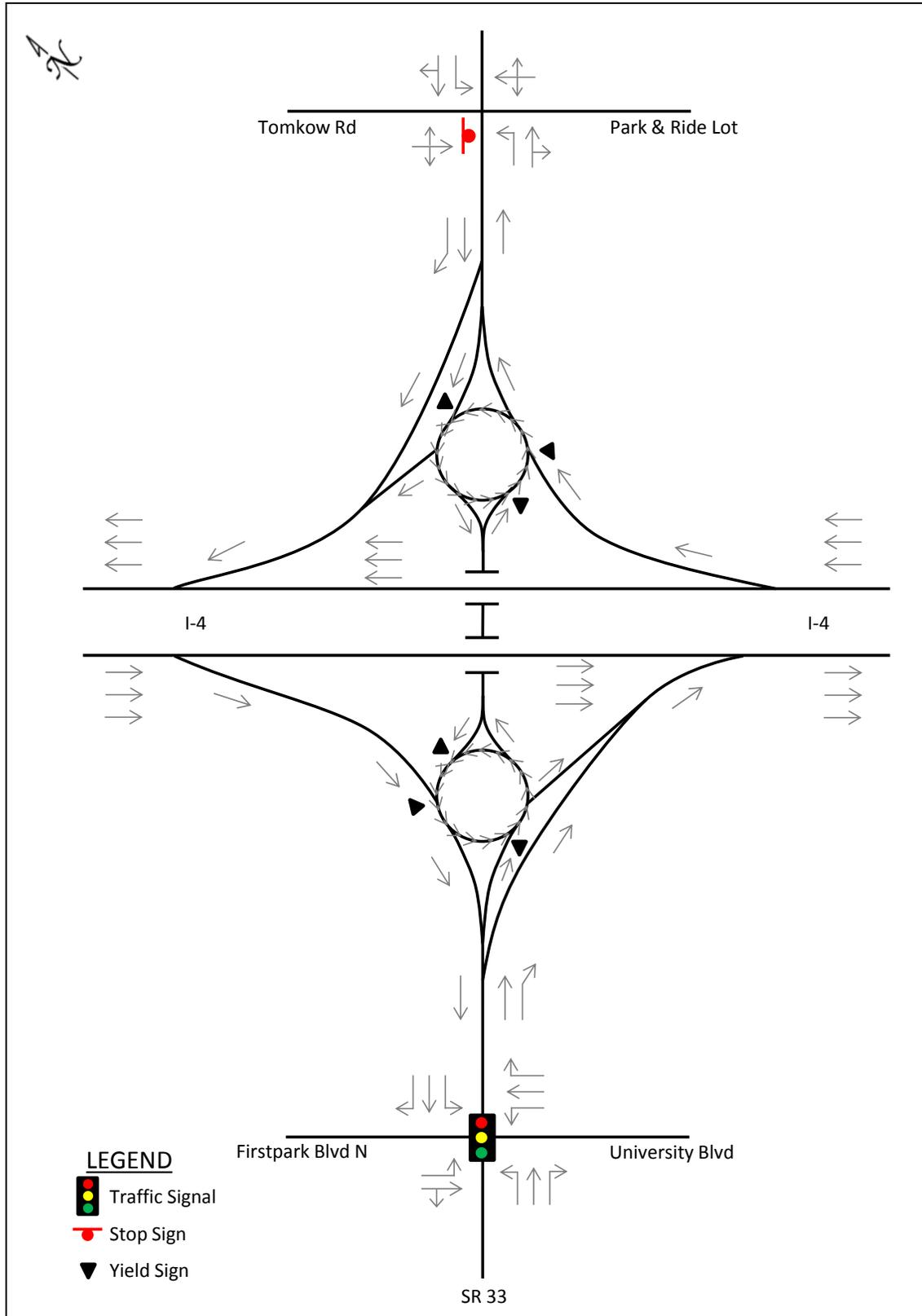


FIGURE 7-2: DESIGN YEAR (2036) INTERCHANGE/INTERSECTION GEOMETRY – TSM ALTERNATIVE

and p.m. peak hours in the year 2036. The eastbound I-4 off-ramp is projected to operate at Level of Service E in the a.m. peak hour and Level of Service D in the p.m. peak hour. The 2016 and 2036 TSM Alternative ramp merge/diverge area analysis summary sheets are provided in **Appendix J**.

The results of the TSM Alternative opening year intersection analyses are summarized in **Table 7-7**. The TSM Alternative assumed that single lane roundabouts would be constructed at the existing I-4 ramp terminal intersections. The existing Tomkow Road intersection was assumed to remain unsignalized while the University Boulevard/Firstpark Boulevard N. intersection was analyzed both as an unsignalized intersection and a signalized intersection.

The initial HCS roundabout analysis results indicated that the southbound approach at the westbound I-4 ramp terminal intersection and the northbound approach at the eastbound I-4 ramp terminal intersection were projected to be overcapacity during the a.m. and p.m. peak hours, respectively. The v/c ratios for the southbound and northbound intersection approaches were estimated to be 1.11 and 1.06, respectively. Consequently, the opening year roundabout analyses were modified to include the provision of yield controlled bypass lanes for the southbound and northbound right-turn movements. The results of these roundabout analyses are summarized in **Table 7-7**. In the a.m. peak hour, all of the movements at both of the ramp terminal intersections are projected to operate at Level of Service D or better. In the p.m. peak hour, the westbound left-turn and right-turn movements are projected to operate at Level of Service E, while all of the other movements are projected to operate at Level of Service C or better.

A majority of the movements at the University Boulevard/Firstpark Boulevard N. intersection are projected to operate at Level of Service D or better during both peak hours under two-way stop control. Only the westbound and eastbound left-turn movements from University Boulevard and Firstpark Boulevard N. are projected to operate at Level of Service F. The v/c ratios for both of these movements are projected to be greater than 1.53. All of the movements at this intersection are projected to operate at Level of Service C or better during both peak hours under full signal control. These results indicate that the existing flashing yellow (SR 33)/flashing red (University Boulevard/Firstpark Boulevard N.) operations at this intersection will need to be converted to standard traffic signal operations before the year 2016 to reduce the future delays experienced by the cross street left-turn vehicles.

In the a.m. peak hour, all of the movements at the Tomkow Road intersection are projected to operate at Level of Service D or better. In the p.m. peak hour, the northbound left-turn, through, and right-turn movements exiting the park-and-ride lot across from Tomkow Road are projected to operate at Level of Service F. Although these movements are projected to operate at Level of Service F, it should be noted that the northbound volume is very low (i.e., 11 vehicles), and as a result, the v/c ratio is only 0.29.

TABLE 7-7: OPENING YEAR (2016) PEAK HOUR INTERSECTION OPERATIONS – TSM ALTERNATIVE

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
University Boulevard/Firstpark Boulevard N. (Unsignalized)	Eastbound	LT	1.53	406.5	F	3.20	1,168.0	F
	Eastbound	TH/RT	0.19	24.5	C	0.38	29.0	D
	Westbound	LT	1.94	503.9	F	2.76	879.2	F
	Westbound	TH	0.19	30.6	D	0.17	30.1	D
	Westbound	RT	0.19	11.0	B	0.46	16.5	C
	Northbound	LT	0.01	8.4	A	0.01	8.5	A
	Southbound	LT	0.14	8.9	A	0.14	9.6	A
University Boulevard/Firstpark Boulevard N. (Signalized)	Eastbound	LT	0.24	16.3	B	0.22	17.2	B
	Eastbound	TH/RT	0.06	13.6	B	0.11	14.2	B
	Eastbound	Approach	N/A	15.4	B	N/A	16.1	B
	Westbound	LT	0.47	18.9	B	0.37	19.7	B
	Westbound	TH	0.05	18.5	B	0.04	21.4	C
	Westbound	RT	0.16	0.5	A	0.24	0.9	A
	Westbound	Approach	N/A	13.1	B	N/A	11.3	B
	Northbound	LT	0.07	16.6	B	0.05	13.7	B
	Northbound	TH	0.67	27.9	C	0.83	31.9	C
	Northbound	RT	0.11	0.2	A	0.12	0.1	A
	Northbound	Approach	N/A	18.2	B	N/A	22.9	C
	Southbound	LT	0.31	16.3	B	0.33	16.2	B
	Southbound	TH	0.72	25.5	C	0.44	14.4	B
	Southbound	RT	0.10	0.3	A	0.06	0.2	A
	Southbound	Approach	N/A	21.0	C	N/A	13.8	B
	Overall Intersection		N/A	18.0	B	N/A	17.4	B
I-4 EB Ramps (Roundabout)	Eastbound	LT	0.69	26.5	D	0.66	20.6	C
	Eastbound	RT	0.69	26.5	D	0.66	20.6	C
	Eastbound	Approach	N/A	26.5	D	N/A	20.6	C
	Northbound	TH	0.41	10.5	B	0.76	23.6	C
	Northbound	RT	0.00	4.1	A	0.00	3.8	A
	Northbound	Approach	N/A	10.5	B	N/A	23.6	C
	Southbound	LT	0.61	12.2	B	0.45	8.6	A
	Southbound	TH	0.61	12.2	B	0.45	8.6	A
	Southbound	Approach	N/A	12.2	B	N/A	8.6	A
		Overall Intersection		N/A	15.6	C	N/A	17.8
I-4 WB Ramps (Roundabout)	Westbound	LT	0.43	13.7	B	0.82	42.0	E
	Westbound	RT	0.43	13.7	B	0.82	42.0	E
	Westbound	Approach	N/A	13.7	B	N/A	42.0	E
	Northbound	LT	0.52	10.5	B	0.82	22.0	C
	Northbound	TH	0.52	10.5	B	0.82	22.0	C
	Northbound	Approach	N/A	10.5	B	N/A	22.0	C
	Southbound	TH	0.63	17.4	C	0.35	10.4	B
	Southbound	RT	0.00	4.4	A	0.00	4.4	A
	Southbound	Approach	N/A	17.4	C	N/A	10.4	B
		Overall Intersection		N/A	13.8	B	N/A	24.9
Tomkow Road (Unsignalized)	Eastbound	LT	0.08	8.7	A	0.18	8.7	A
	Westbound	LT	0.00	7.9	A	0.00	8.5	A
	Southbound	LT/TH/RT	0.08	35.0	D	0.29	59.7	F
	Southbound	LT/TH/RT	0.58	22.2	C	0.29	16.4	C

⁽¹⁾ Volume-to-Capacity Ratio⁽²⁾ Average Delay (seconds/vehicle)⁽³⁾ Level of Service

The results of the TSM Alternative design year intersection analyses are summarized in **Table 7-8**. With two exceptions, all of the movements at the I-4 ramp terminal intersections are projected to operate at Level of Service E or F during both peak hours. Although the northbound and southbound right-turn movements are projected to operate at Level of Service A, the severe overcapacity conditions projected for the northbound and southbound through movements are expected to result in the formation of long through vehicle queues. **Table 7-9** summarizes the design year a.m. and p.m. peak hour 95th-percentile queue length estimates obtained from the HCS roundabout analyses. Based on these queue length estimates, the beginning of the northbound and southbound right-turn bypass lane channelization would need to occur 1,650 feet and 850 feet upstream of the roundabouts.

The severe overcapacity conditions projected for the eastbound and westbound off-ramp movements are also expected to result in the formation of long off-ramp queues. The 95th-percentile a.m. peak hour queue length for the eastbound off-ramp is estimated to be 2,100 feet while the 95th-percentile p.m. peak hour queue length for the westbound off-ramp is estimated to be 1,775 feet. Since the length of the existing off-ramps (as measured from the SR 33 stop bars to the beginning of the I-4 mainline gore areas) is approximately 1,250 feet; the 95th-percentile ramp queues would be expected to extend back onto the I-4 mainline creating an unsafe condition. Although the off-ramp delays and queue lengths could be reduced with the provision of separate yield controlled bypass lanes for the eastbound and westbound right-turn movements, the analysis results provided in **Table 7-8** also indicate that the northbound and southbound left-turn and through movements are projected to be significantly overcapacity during both peak hours. These results help demonstrate the need to widen SR 33 from two lanes to four lanes prior to the year 2036.

The University Boulevard/Firstpark Boulevard N. intersection is projected to operate at Level of Service F overall during both the a.m. and p.m. peak hours. In addition, three of the individual movements (i.e., the westbound left-turn, southbound left-turn and northbound through movements) are projected to have v/c ratios greater than 1.2 during both peak hours.

The northbound and southbound approaches at the Tomkow Road intersection are both projected to operate at Level of Service F during the a.m. and p.m. peak hours. Overcapacity conditions are projected to occur during the peak hours since the v/c ratios for both of these approaches are greater than 1.00. These results indicate that a traffic signal may need to be implemented at the existing Tomkow Road intersection prior to or by the design year to continue providing acceptable operations for the cross street movements. The 2016 and 2036 No-Build Alternative intersection analysis summary sheets are also provided in **Appendix J**.

Additional interim year intersection analyses were conducted for the I-4 ramp terminal intersections to obtain an estimate of the “useful life” of the single lane roundabouts. The additional intersection analyses were conducted for the years 2021 and 2026 and the analysis results are summarized in **Table 7-10** and **Table 7-11**, respectively. In the year 2021, overcapacity conditions are projected to occur for the eastbound off-ramp approach in the a.m. peak hour (with a v/c ratio equal to 1.04) and the westbound off-ramp approach in the p.m. peak hour (with a v/c ratio equal to 1.23).

TABLE 7-8: DESIGN YEAR (2036) PEAK HOUR INTERSECTION OPERATIONS – TSM ALTERNATIVE

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
University Boulevard/Firstpark Boulevard N. (Signalized)	Eastbound	LT	0.68	44.4	D	0.71	45.8	D
	Eastbound	TH/RT	0.78	92.5	F	0.88	103.4	F
	Eastbound	Approach	N/A	63.7	E	N/A	69.1	E
	Westbound	LT	1.63	321.1	F	1.64	372.2	F
	Westbound	TH	0.23	38.4	D	0.20	46.1	D
	Westbound	RT	0.69	13.6	B	0.88	32.0	C
	Westbound	Approach	N/A	192.0	F	N/A	187.3	F
	Northbound	LT	0.46	66.3	E	0.46	55.2	E
	Northbound	TH	1.21	165.7	F	1.34	208.0	F
	Northbound	RT	0.58	1.6	A	0.68	2.5	A
	Northbound	Approach	N/A	55.8	E	N/A	80.3	F
	Southbound	LT	1.61	319.7	F	1.58	309.9	F
	Southbound	TH	0.88	55.1	E	0.61	34.8	C
	Southbound	RT	0.21	4.5	A	0.12	1.9	A
	Approach	N/A	174.4	F	N/A	177.9	F	
	Overall intersection		N/A	142.3	F	N/A	139.1	F
I-4 EB Ramps (Roundabout)	Eastbound	LT	3.14	998.0	F	2.44	681.9	F
	Eastbound	RT	3.14	998.0	F	2.44	681.9	F
	Eastbound	Approach	N/A	998.0	F	N/A	681.9	F
	Northbound	TH	1.16	115.4	F	1.88	420.0	F
	Northbound	RT	0.00	4.1	A	0.00	3.8	A
	Northbound	Approach	N/A	115.4	F	N/A	420.0	F
	Southbound	LT	1.12	83.4	F	1.00	47.8	E
	Southbound	TH	1.12	83.4	F	1.00	47.8	E
	Southbound	Approach	N/A	83.4	F	N/A	47.8	E
	Overall Intersection		N/A	396.6	F	N/A	360.1	F
I-4 WB Ramps (Roundabout)	Westbound	LT	1.95	463.7	F	3.66	1,243.7	F
	Westbound	RT	1.95	463.7	F	3.66	1,243.7	F
	Westbound	Approach	N/A	463.7	F	N/A	1,243.7	F
	Northbound	LT	1.01	49.8	E	1.46	225.8	F
	Northbound	TH	1.01	49.8	E	1.46	225.8	F
	Northbound	Approach	N/A	49.8	E	N/A	225.8	F
	Southbound	TH	1.50	263.3	F	1.42	237.1	F
	Southbound	RT	0.00	4.8	A	0.00	6.0	A
	Southbound	Approach	N/A	263.3	F	N/A	237.1	F
	Overall Intersection		N/A	222.9	F	N/A	504.7	F
Tomkow Road (Unsignalized)	Eastbound	LT	0.34	11.6	B	0.42	11.6	B
	Westbound	LT	0.01	8.6	A	0.00	9.2	A
	Northbound	LT/TH/RT	*	**	F	2.00	1,145.0	F
	Southbound	LT/TH/RT	2.19	592.0	F	1.90	475.8	F

⁽¹⁾ Volume-to-Capacity Ratio⁽²⁾ Average Delay (seconds/vehicle)⁽³⁾ Level of Service

* Theoretically, the capacity for this movement is equal to zero. Therefore, the v/c ratio is infinite.

** No estimate of delay is provided since the v/c ratio is infinite.

TABLE 7-9: DESIGN YEAR (2036) 95TH-PERCENTILE QUEUE LENGTHS – TSM ALTERNATIVE

Intersection	Approach	Movement	AM Peak Hour Queue		PM Peak Hour Queue	
			No. of Vehicles	Feet ⁽¹⁾	No. of Vehicles	Feet ⁽¹⁾
I-4 EB Ramps (Roundabout)	Eastbound	LT/RT	84	2,100	66	1,650
	Northbound	TH	23	575	66	1,650
	Southbound	LT/TH	30	750	20	500
I-4 WB Ramps (Roundabout)	Westbound	LT/RT	46	1,150	71	1,775
	Northbound	LT/TH	21	525	69	1,725
	Southbound	TH	34	850	24	600

⁽¹⁾ Queue length assumes an average vehicle spacing of 25 feet

TABLE 7-10: INTERIM YEAR (2021) PEAK HOUR ROUNDABOUT OPERATIONS – TSM ALTERNATIVE

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
I-4 EB Ramps (Roundabout)	Eastbound	LT	1.04	83.4	F	0.93	50.6	F
	Eastbound	RT	1.04	83.4	F	0.93	50.6	F
	Eastbound	Approach	N/A	83.4	F	N/A	50.6	F
	Northbound	TH	0.55	13.7	B	0.98	54.2	F
	Northbound	RT	0.00	3.9	A	0.00	3.7	A
	Northbound	Approach	N/A	13.7	B	N/A	54.2	F
	Southbound	LT	0.72	15.1	C	0.58	11.0	B
	Southbound	TH	0.72	15.1	C	0.58	11.0	B
	Southbound	Approach	N/A	15.1	C	N/A	11.0	B
	Overall Intersection		N/A	35.1	E	N/A	38.3	E
I-4 WB Ramps (Roundabout)	Westbound	LT	0.64	21.0	C	1.23	159.2	F
	Westbound	RT	0.64	21.0	C	1.23	159.2	F
	Westbound	Approach	N/A	21.0	C	N/A	159.2	F
	Northbound	LT	0.60	11.4	B	0.96	39.3	E
	Northbound	TH	0.60	11.4	B	0.96	39.3	E
	Northbound	Approach	N/A	11.4	B	N/A	39.3	E
	Southbound	TH	0.73	22.6	C	0.51	15.6	C
	Southbound	RT	0.00	4.1	A	0.00	4.6	A
	Southbound	Approach	N/A	22.6	C	N/A	15.6	C
	Overall Intersection		N/A	17.4	C	N/A	65.6	F

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Average Delay (seconds/vehicle)

⁽³⁾ Level of Service

TABLE 7-11: INTERIM YEAR (2026) PEAK HOUR ROUNDABOUT OPERATIONS – TSM ALTERNATIVE

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
I-4 EB Ramps (Roundabout)	Eastbound	LT	1.53	277.4	F	1.29	173.1	F
	Eastbound	RT	1.53	277.4	F	1.29	173.1	F
	Eastbound	Approach	N/A	277.4	F	N/A	173.1	F
	Northbound	TH	0.71	20.8	C	1.23	137.0	F
	Northbound	RT	0.00	3.9	A	0.00	3.7	A
	Northbound	Approach	N/A	20.8	C	N/A	137.0	F
	Southbound	LT	0.84	22.1	C	0.71	14.9	B
	Southbound	TH	0.84	22.1	C	0.71	14.9	B
	Southbound	Approach	N/A	22.1	C	N/A	14.9	B
	Overall Intersection			N/A	102.1	F	N/A	104.4
I-4 WB Ramps (Roundabout)	Westbound	LT	0.94	58.5	F	1.79	398.4	F
	Westbound	RT	0.94	58.5	F	1.79	398.4	F
	Westbound	Approach	N/A	58.5	F	N/A	398.4	F
	Northbound	LT	0.72	15.4	C	1.12	83.4	F
	Northbound	TH	0.72	15.4	C	1.12	83.4	F
	Northbound	Approach	N/A	15.4	C	N/A	83.4	F
	Southbound	TH	0.91	45.8	E	0.72	28.8	D
	Southbound	RT	0.00	4.3	A	0.00	5.0	A
	Southbound	Approach	N/A	45.8	E	N/A	28.8	D
Overall Intersection			N/A	35.6	E	N/A	156.8	F

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Average Delay (seconds/vehicle)

⁽³⁾ Level of Service

These off-ramp approaches are projected to operate at Level of Service F during these peak hours with average delays of approximately 83 seconds/vehicle and 159 seconds/vehicle, respectively. The 2021 p.m. peak hour analyses also indicate that the northbound movements are approaching capacity in the p.m. peak hour. The v/c ratio for the northbound through movement at the eastbound I-4 ramp terminal intersection is estimated to be 0.98 while the v/c ratio for the northbound through and left-turn movements at the westbound I-4 ramp terminal intersection is estimated to be 0.96.

The 2026 p.m. peak hour analyses indicate that the northbound movements are significantly overcapacity. The v/c ratio for the northbound through movement at the eastbound I-4 ramp terminal intersection is estimated to be 1.22 while the v/c ratio for the northbound through and left-turn movements at the westbound I-4 ramp terminal intersection is estimated to be 1.12. These movements are projected to operate at Level of Service F with average delays of approximately 136 seconds/vehicle and 83 seconds/vehicle, respectively. The eastbound off-ramp approach is projected to have v/c ratios equal to 1.53 and 1.29 in the a.m. and p.m. peak hours, while the westbound off-ramp approach is projected to have a v/c ratio equal to 1.79 in the p.m. peak hour. These ramps are projected to have average delays ranging between 173 seconds/vehicle and 398 seconds/vehicle. These results suggest that the capacity of the single lane roundabouts at the I-4/SR 33 interchange will likely be exceeded sometime between the years 2021 and 2022 (i.e., five

or six years after the opening year). The 2021 and 2026 roundabout analysis summary sheets are also provided in **Appendix J**.

7.3 BUILD ALTERNATIVE NO. 1

The Build Alternative No. 1 diamond interchange concept is depicted in **Figure 7-3** and on the plan sheets provided in **Appendix K**. Dual left-turn lanes are provided on both the eastbound and westbound I-4 off-ramps and dual right-turn lanes are provided on the eastbound I-4 off-ramp. In addition, dual left-turn lanes are also provided on northbound SR 33 at the entrance to the westbound I-4 on-ramp. Build Alternative No. 1 also provides a longer deceleration lane on the I-4 mainline for the eastbound off-ramp. The length of this deceleration lane is increased from 215 feet to 300 feet. This alternative interchange improvement concept provides a 2,850-foot crest vertical curve that has a K-value of 506 and two 600-foot approach sag vertical curves that have K-values of 206. These vertical curves allow for a maximum design speed of 70 mph based on Volume 1 of the FDOT's PPM. This interchange concept also provides 16.5 feet of vertical clearance under the I-4 bridges which satisfies the minimum required by the FDOT's PPM. The proposed typical section of SR 33 under the I-4 bridges is provided in **Figure 7-4**.

Build Alternative No. 1 includes improvements to the University Boulevard/Firstpark Boulevard N. intersection. In addition to the two northbound and southbound through lanes, dual left-turn lanes are provided on the southbound and westbound intersection approaches while dual right-turn lanes are provided on the northbound intersection approach. Build Alternative No. 1 also includes a realignment of Tomkow Road. The existing Tomkow Road intersection and the existing entrance/exit to the park-and-ride lot are both currently located within the existing limited access right-of-way for the interchange. The Tomkow Road intersection is located approximately 720 feet north/east of the beginning of the southbound SR 33 right-turn lane onto westbound I-4. Similarly, the park-and-ride lot entrance/exit is located approximately 775 feet north/east of the westbound I-4 right-turn lane onto northbound SR 33. The proposed diamond interchange concept shifts both the southbound SR 33 right-turn lane and the westbound I-4 right-turn lane further to the north/east of their current junctions with the SR 33 mainline. The beginning of the southbound SR 33 right-turn lane is located at the existing Tomkow Road intersection while the stop bar for the westbound I-4 right-turn lane is located approximately 715 feet to the south/west of the park-and-ride lot access.

Although signalization of the westbound I-4 right-turn lane and the Tomkow Road intersection (in combination with prohibiting any right-turn-on-red movements) would eliminate any high-speed merging and weaving conflicts between the right-turn vehicles and the northbound/southbound SR 33 vehicles; the close proximity of these right-turn lanes to the existing Tomkow Road intersection precludes the ability to provide drivers with adequate advanced signing for both Tomkow Road and the westbound I-4 on-ramp. Consequently, Build Alternative No. 1 also includes a realignment of Tomkow Road. Approximately 240 feet north of the existing intersection, Tomkow Road is realigned to run parallel to SR 33 within the existing right-of-way that exists on the north side of SR 33. The relocated SR 33/Tomkow Road intersection is located approximately 1,450 feet east of the existing intersection. The Tomkow Road realignment concept is depicted in **Figure 7-5**.

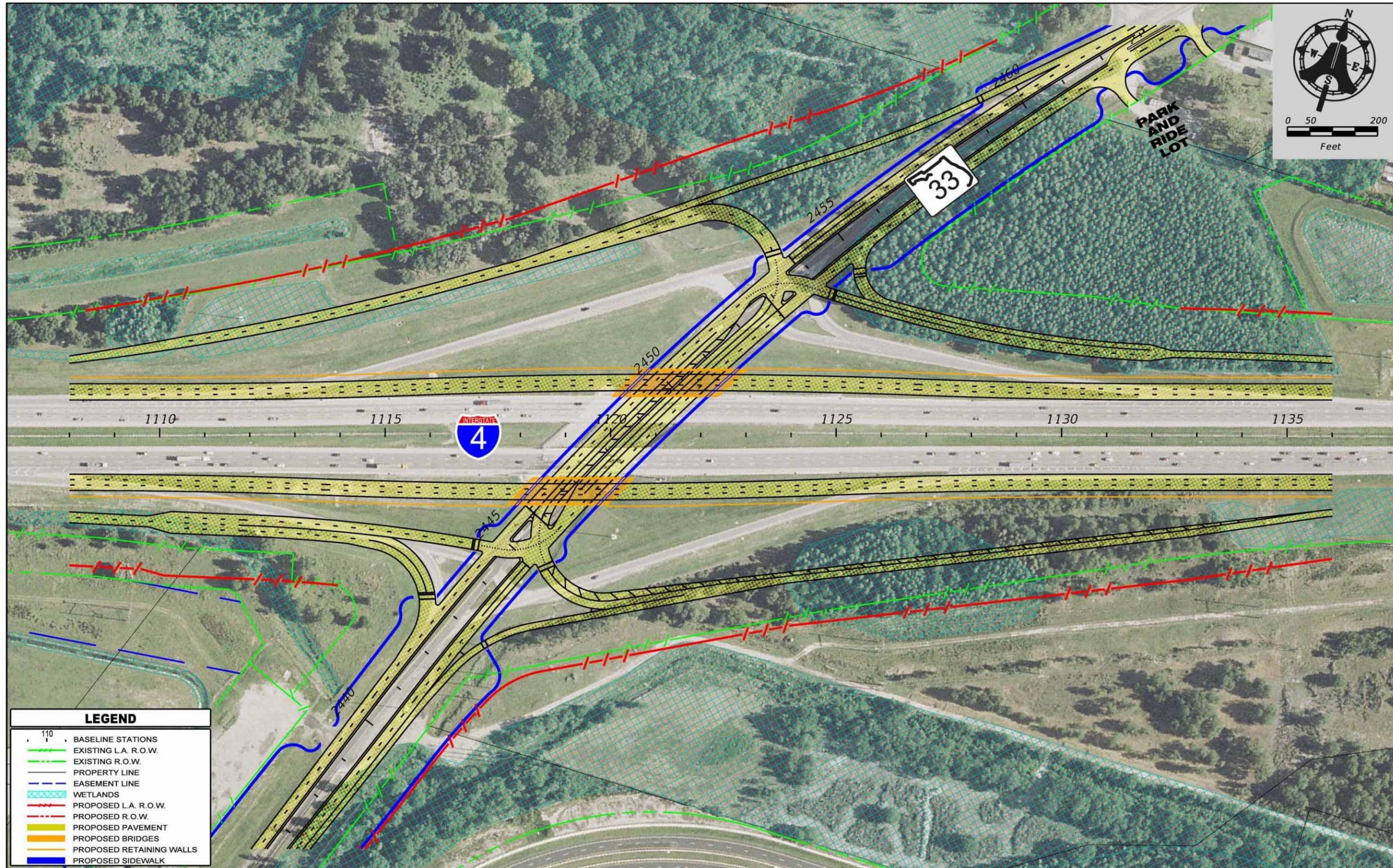


FIGURE 7-3: BUILD ALTERNATIVE NO. 1 (DIAMOND INTERCHANGE)

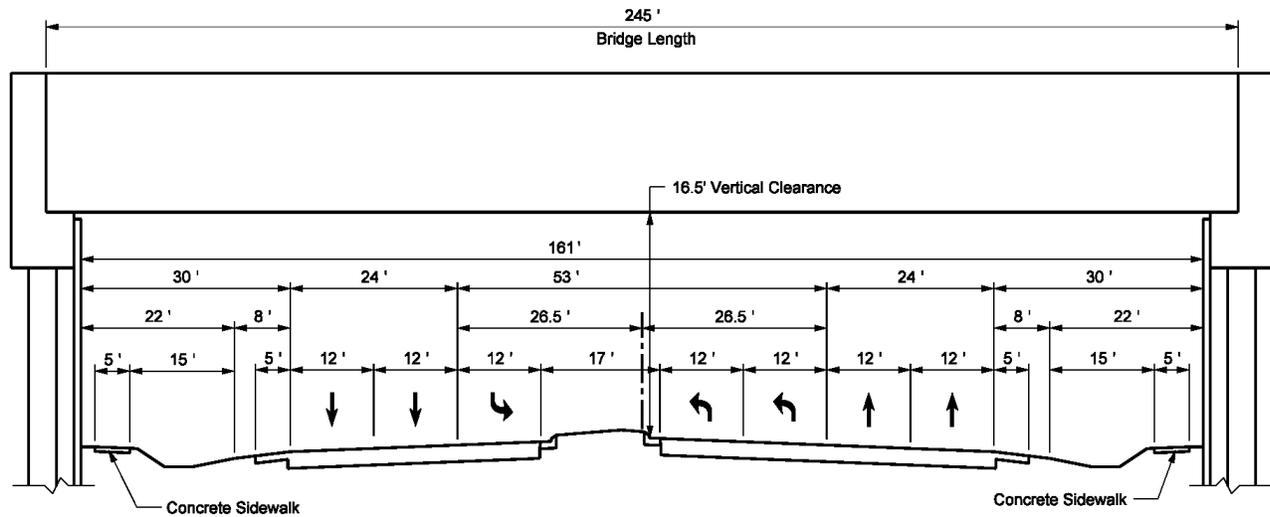


FIGURE 7-4: BUILD ALTERNATIVE NO. 1 PROPOSED TYPICAL SECTION – SR 33 UNDER I-4 LOOKING NORTH

The realigned Tomkow Road intersects SR 33 directly across from the easternmost active entrance/exit to the Auto Auction and a full median opening is proposed for this location. Although the Auto Auction has three connections to SR 33, the easternmost connection is gated and is not currently used by this business. The westernmost Auto Auction entrance/exit would only have right-in/right-out access. A westbound directional median opening is also proposed for the park-and-ride lot entrance to accommodate left-turn movements into this facility. This directional median opening eliminates the need to accommodate U-turn movements at the westbound I-4 ramp terminal intersection.

The peak hour volumes that were used to conduct the relocated Tomkow Road intersection analysis were derived by manually redistributing several of the design year peak hour movement volumes that were previously used to conduct the Tomkow Road intersection analysis for the No-Build (and TSM) Alternative. In addition, a 1.5% per year growth rate was applied to the existing peak hour Auto Auction turning movement volumes to derive the design year peak hour volumes for this land use. Several of these volumes were also manually redistributed to reflect the relocation of the Tomkow Road intersection and the right-in/right-out only access provided at the western Auto Auction driveway. Since a.m. peak hour turning movement counts were not conducted at the Auto Auction driveways, only a p.m. peak hour analysis was conducted for this intersection. As stated earlier in **Section 3.4** of this report, auctions do not start until 2:00 p.m. on Wednesdays and consequently, the volume of traffic entering and exiting this facility during the a.m. peak hour is significantly lower than the p.m. peak hour. Therefore, the design year a.m. peak hour traffic operations would be expected to be significantly better than the p.m. peak hour traffic operations at this intersection. The opening year and design year p.m. peak hour volumes that were used to conduct the analysis of the relocated Tomkow Road intersection are graphically illustrated in **Figure 7-6** and **Figure 7-7**, respectively. The design year interchange and intersection geometrics that were analyzed for Build Alternative No. 1 are graphically illustrated in **Figure 7-8**.

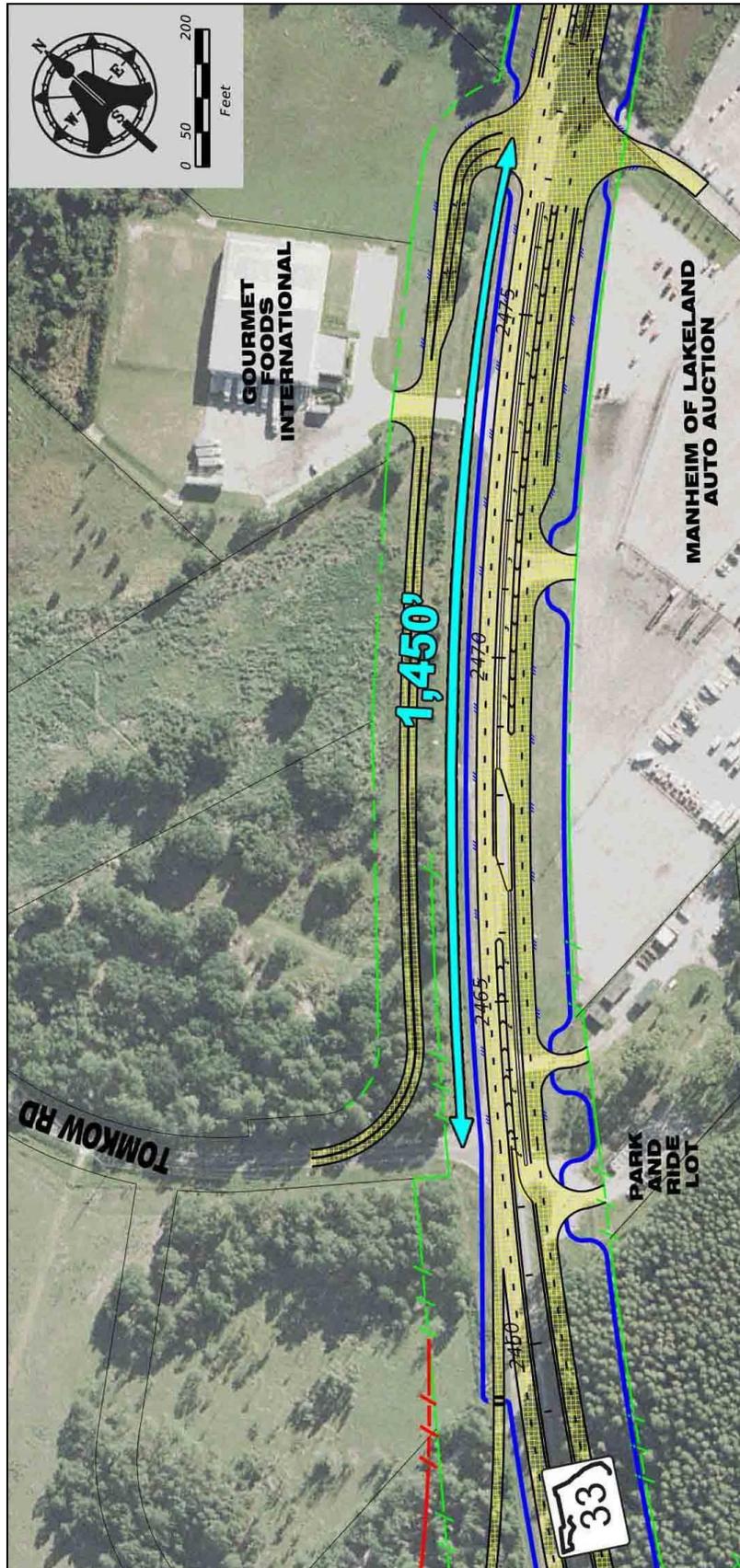


FIGURE 7-5: TOMKOW ROAD REALIGNMENT

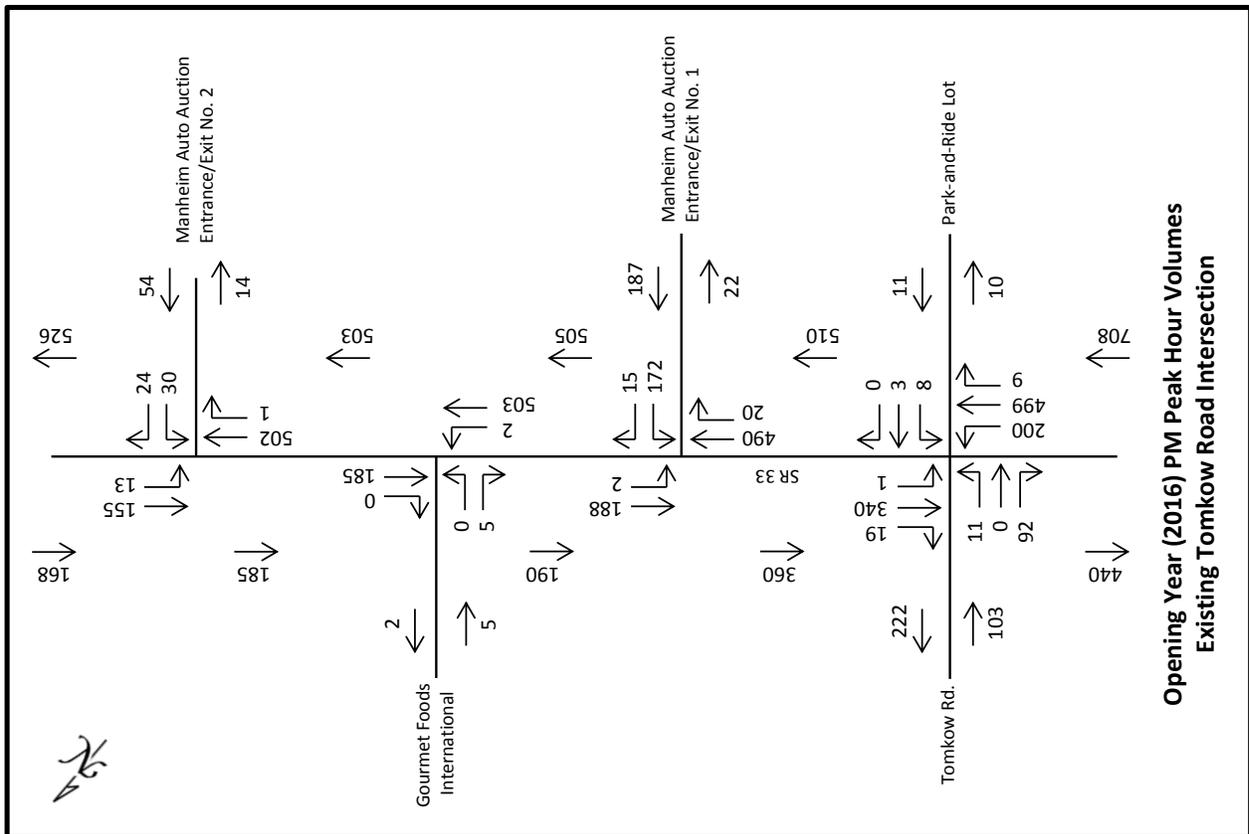
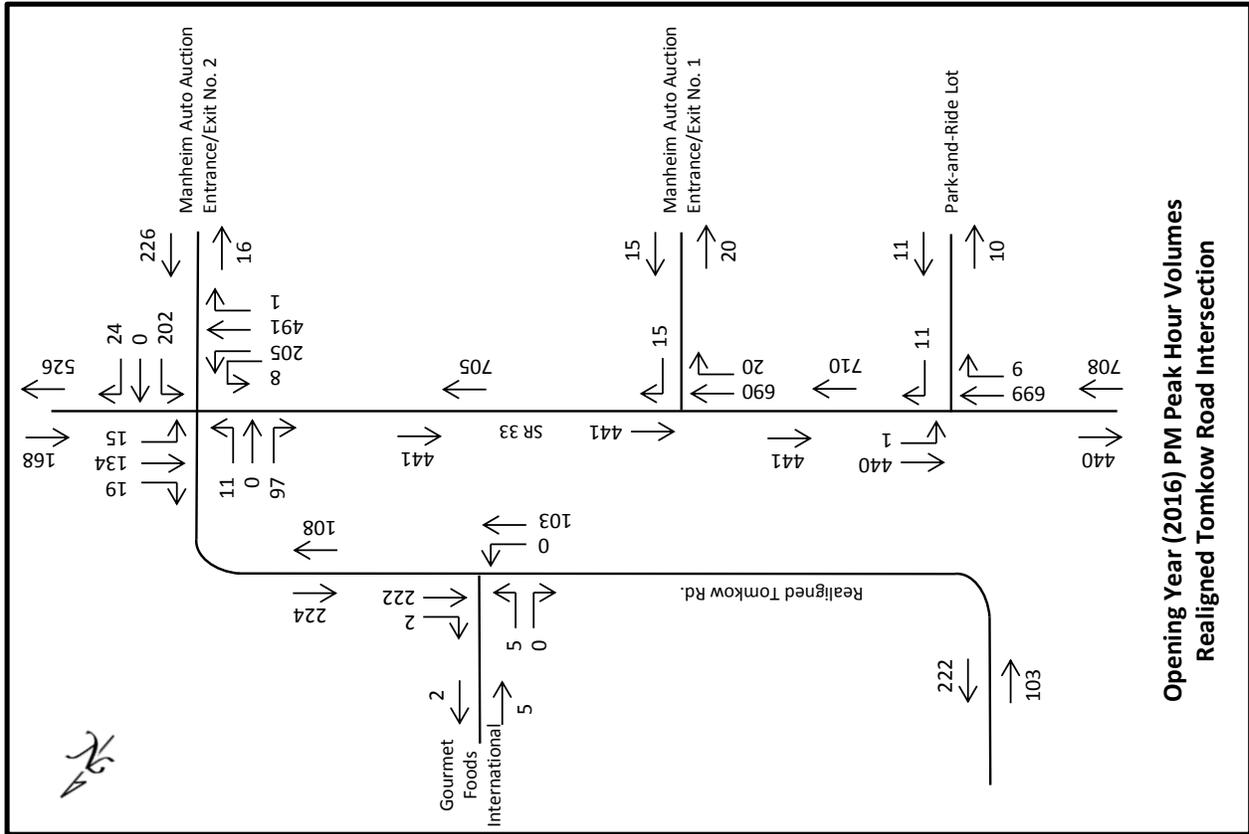


FIGURE 7-6: REDISTRIBUTED OPENING YEAR (2016) PM PEAK HOUR VOLUMES

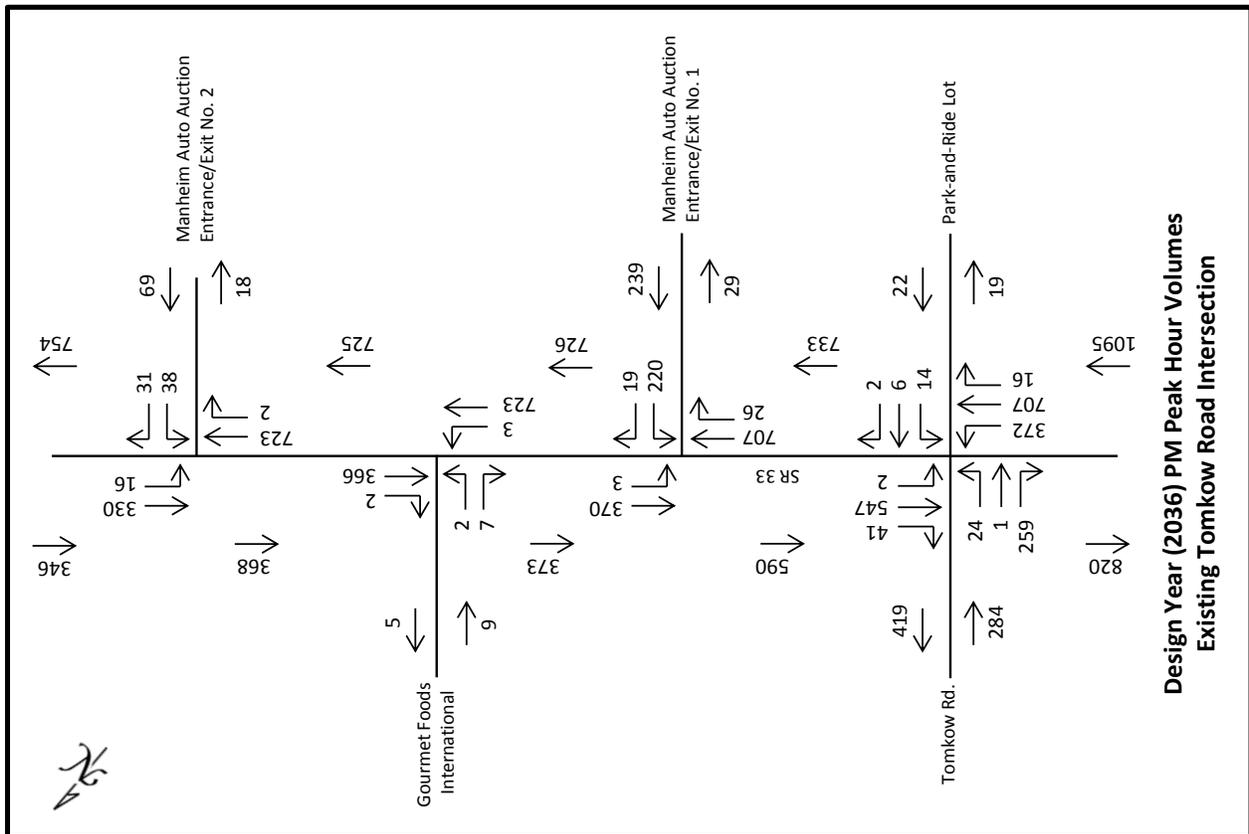
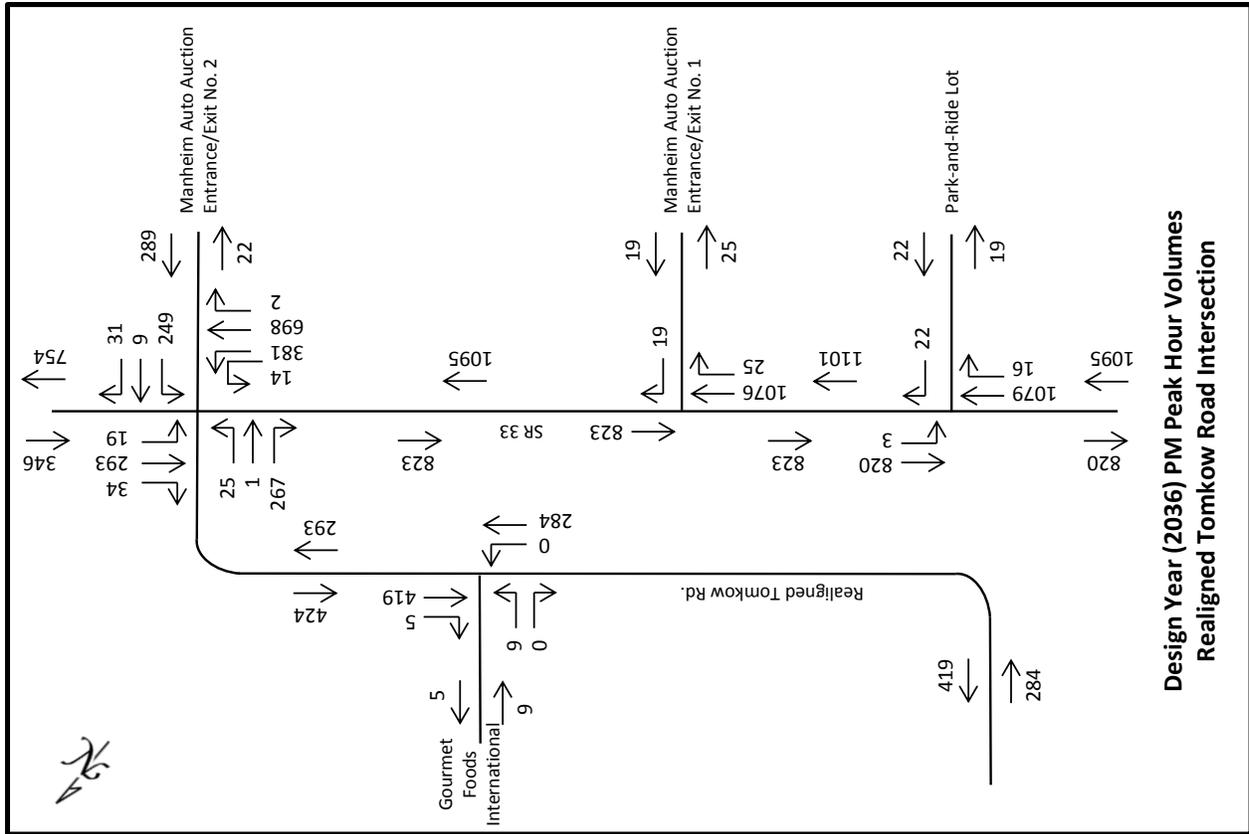


FIGURE 7-7: REDISTRIBUTED DESIGN YEAR (2036) PM PEAK HOUR VOLUMES

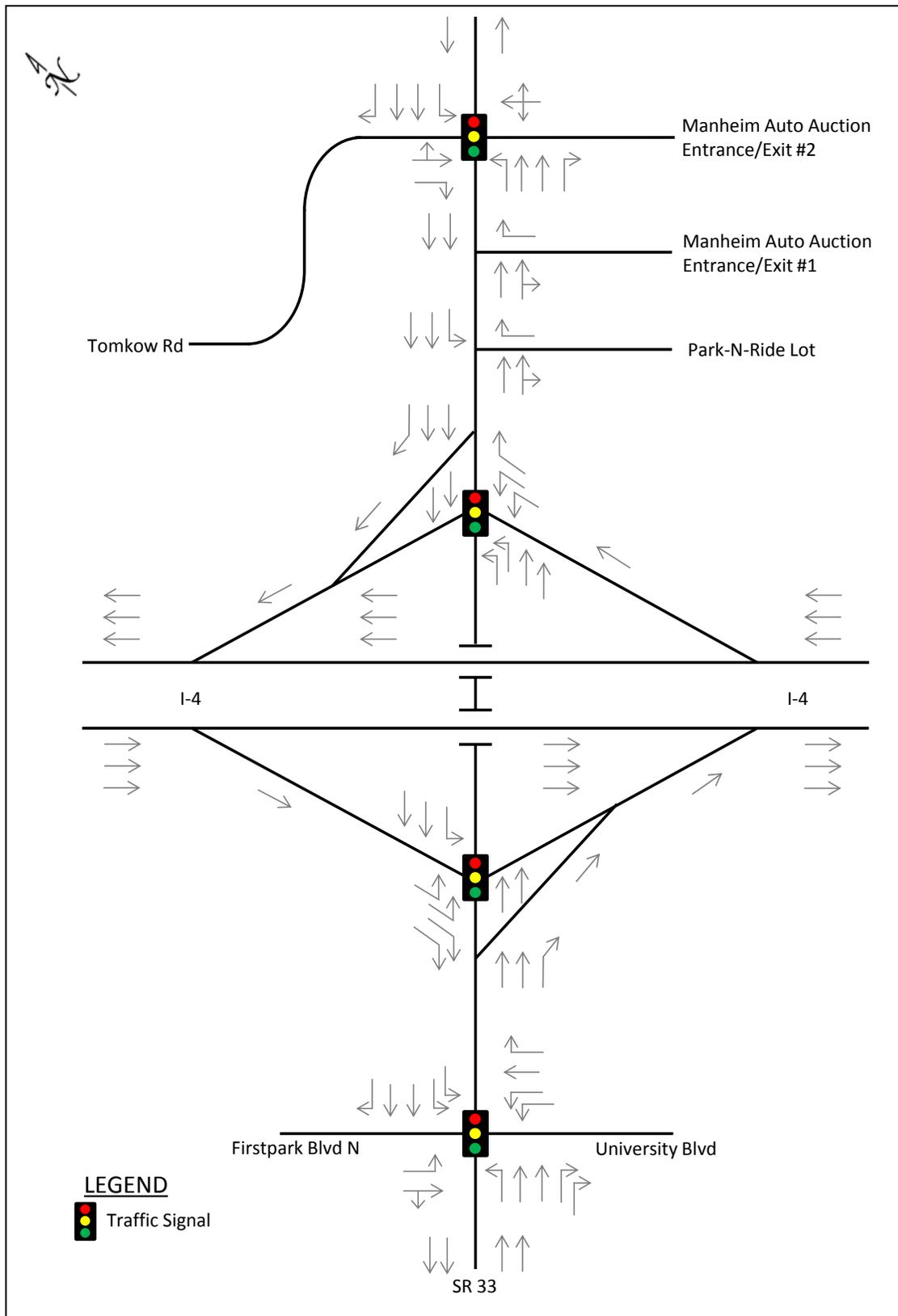


FIGURE 7-8: DESIGN YEAR (2036) INTERCHANGE/INTERSECTION GEOMETRY – BUILD ALTERNATIVE NO. 1

The results of the Build Alternative No. 1 opening year ramp merge/diverge area analyses are summarized in **Table 7-12**. All four of the merge/diverge areas are projected to operate at Level of Service C or better during both the a.m. and p.m. peak hours in the year 2016. **Table 7-13** summarizes the results of the design year ramp merge/diverge area analyses. All four of the merge/diverge areas are projected to operate at Level of Service D or better during both the a.m. and p.m. peak hours in the year 2036. The 2016 and 2036 ramp merge/diverge area analysis summary sheets for Build Alternative No. 1 are provided in **Appendix L**.

TABLE 7-12: OPENING YEAR (2016) MERGE/DIVERGE AREA LEVELS OF SERVICE – BUILD ALTERNATIVE NO. 1

Location	AM Peak Hour				PM Peak Hour			
	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service
EB I-4 Diverge Area	2,725	305	20.1	C	3,199	370	22.9	C
EB I-4 Merge Area	2,420	271	15.4	B	2,829	230	17.3	B
WB I-4 Diverge Area	2,546	210	19.7	B	3,216	311	23.7	C
WB I-4 Merge Area	2,336	430	16.5	B	2,905	392	19.2	B

TABLE 7-13: DESIGN YEAR (2036) MERGE/DIVERGE AREA LEVELS OF SERVICE – BUILD ALTERNATIVE NO. 1

Location	AM Peak Hour				PM Peak Hour			
	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service
EB I-4 Diverge Area	5,481	892	34.2	D	4,860	791	32.1	D
EB I-4 Merge Area	4,589	706	29.5	D	4,069	626	26.2	C
WB I-4 Diverge Area	4,695	626	31.1	D	5,295	706	33.9	D
WB I-4 Merge Area	4,069	791	27.7	C	4,589	892	31.2	D

Signalized intersection analyses were conducted for the I-4 ramp terminal intersections and the University Boulevard/Firstpark Boulevard N. intersection using the SYNCHRO software (Version 8). The realigned Tomkow Road intersection was analyzed as an unsignalized intersection (using the HCS) and as a signalized intersection (using the SYNCHRO software). An unsignalized intersection analysis was also conducted for the directional median opening at the existing park-and-ride lot. The results of the design year intersection analyses conducted for Build Alternative No. 1 are summarized in **Table 7-14**.

Both of the I-4 ramp terminal intersections are projected to operate at Level of Service B overall during the a.m. and p.m. peak hours. With one exception, all of the individual movements at these two intersections are projected to operate at Level of Service C or better during both peak hours. The westbound left-turn movement is projected to operate at Level of Service D during the p.m. peak hour. The University Boulevard/Firstpark Boulevard N. intersection is projected to operate at Level of Service D overall during both the a.m. and p.m. peak hours. There are a few individual movements that are projected to operate at Level of Service E or F during one or both peak hours; however, the v/c ratios associated with these movements are all projected to be less than 1.00.

TABLE 7-14: DESIGN YEAR (2036) PEAK HOUR INTERSECTION OPERATIONS – BUILD ALTERNATIVE NO. 1

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
University Boulevard/Firstpark Boulevard N. (Signalized)	Eastbound	LT	0.64	38.6	D	0.74	46.5	D
	Eastbound	TH/RT	0.70	77.4	E	0.80	84.6	F
	Eastbound	Approach	N/A	54.2	D	N/A	62.0	E
	Westbound	LT	0.93	58.2	E	0.92	63.6	E
	Westbound	TH	0.22	34.7	C	0.18	38.5	D
	Westbound	RT	0.68	11.9	B	0.84	25.6	C
	Westbound	Approach	N/A	40.1	D	N/A	46.2	D
	Northbound	LT	0.34	56.3	E	0.34	48.8	D
	Northbound	TH	0.74	62.3	E	0.81	59.1	E
	Northbound	RT	0.60	11.9	B	0.70	13.6	B
	Northbound	Approach	N/A	29.2	C	N/A	31.6	C
	Southbound	LT	0.92	68.6	E	0.90	67.8	E
	Southbound	TH	0.51	34.2	C	0.34	27.3	C
	Southbound	RT	0.23	5.0	A	0.13	1.7	A
	Approach	N/A	47.4	D	N/A	46.8	D	
	Overall Intersection	N/A	40.3	D	N/A	42.6	D	
I-4 EB Ramps (Signalized)	Eastbound	LT	0.50	25.8	C	0.70	30.7	C
	Eastbound	RT	0.55	4.4	A	0.39	4.5	A
	Eastbound	Approach	N/A	12.8	B	N/A	20.5	C
	Northbound	TH	0.58	20.9	C	0.60	15.0	B
	Northbound	Approach	0.58	20.9	C	0.60	15.0	B
	Southbound	LT	0.30	5.1	A	0.41	16.8	B
	Southbound	TH	0.77	16.3	B	0.82	15.6	B
	Southbound	Approach	N/A	14.7	B	N/A	15.7	B
	Overall Intersection	N/A	15.6	B	N/A	16.8	B	
I-4 WB Ramps (Signalized)	Westbound	LT	0.73	31.4	C	0.84	38.3	D
	Westbound	RT	0.27	6.6	A	0.27	3.1	A
	Westbound	Approach	N/A	27.1	C	N/A	32.1	C
	Northbound	LT	0.56	19.7	B	0.73	18.5	B
	Northbound	TH	0.62	13.2	B	0.59	9.3	A
	Northbound	Approach	N/A	15.1	B	N/A	12.4	B
	Southbound	TH	0.48	18.7	B	0.38	18.9	B
	Southbound	Approach	0.48	18.7	B	0.38	18.9	B
	Overall Intersection	N/A	19.4	B	N/A	18.8	B	
Tomkow Road (Unsignalized)	Eastbound	LT	N/A	N/A	N/A	0.35	9.7	A
	Westbound	LT	N/A	N/A	N/A	0.02	9.2	A
	Northbound	LT/TH/RT	N/A	N/A	N/A	5.22	2,042.0	F
	Southbound	LT/TH	N/A	N/A	N/A	0.35	75.1	F
	Southbound	RT	N/A	N/A	N/A	0.32	11.0	B
Tomkow Road (Signalized)	Eastbound	LT	N/A	N/A	N/A	0.84	29.2	C
	Eastbound	TH	N/A	N/A	N/A	0.44	10.2	B
	Eastbound	RT	N/A	N/A	N/A	0.00	0.0	A
	Eastbound	Approach	N/A	N/A	N/A	N/A	17.0	B
	Westbound	LT	N/A	N/A	N/A	0.06	7.5	A
	Westbound	TH	N/A	N/A	N/A	0.18	8.1	A
	Westbound	RT	N/A	N/A	N/A	0.05	2.8	A
	Westbound	Approach	N/A	N/A	N/A	N/A	7.5	A
	Northbound	LT/TH/RT	N/A	N/A	N/A	0.66	28.7	C
	Southbound	LT/TH	N/A	N/A	N/A	0.06	18.2	B
	Southbound	RT	N/A	N/A	N/A	0.41	4.9	A
	Southbound	Approach	N/A	N/A	N/A	N/A	6.1	A
	Overall Intersection	N/A	N/A	N/A	N/A	15.5	B	

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Average Delay (seconds/vehicle)

⁽³⁾ Level of Service

The results of the p.m. peak hour unsignalized intersection analysis conducted for the realigned Tomkow Road intersection indicate that several movements are projected to operate at Level of Service F. The southbound left-turn and through movements are projected to have an average delay of approximately 75 seconds/vehicle while the northbound left-turn, through, and right-turn movements are projected to have an average delay of 2,042 seconds/vehicle. Although Level of Service F operations are projected for the southbound left-turn and through movements, the v/c ratio associated with these movements is low (i.e., 0.35). The results of the p.m. peak hour signalized intersection analysis conducted for the realigned Tomkow Road intersection indicate that all movements are projected to operate at Level of Service C or better with the implementation of a traffic signal. The 2036 intersection analyses for Build Alternative No. 1 are provided in **Appendix L**.

The opening year interchange and intersection geometrics that were analyzed for Build Alternative No. 1 are graphically illustrated in **Figure 7-9**. Although the FDOT District One Adopted Five-Year Work Program includes funding for the final design of the widening of SR 33 from Old Combee Road to north of Tomkow Road (as well as the interchange improvements), there is currently no construction funding programmed. Consequently, it is likely that the interchange improvements would be constructed prior to the widening of the remaining portion of SR 33. The Build Alternative No. 1 interchange improvement concept plans provided in **Appendix K** incorporate the transition from four lanes to two lanes at the University Boulevard/Firstpark Boulevard N. intersection. In the southbound direction, the inside through lane is terminated as a left-turn only lane. In the northbound direction, the second through lane is added via a free-flow westbound right-turn lane.

The results of the opening year intersection analyses conducted for Build Alternative No. 1 are summarized in **Table 7-15**. Both of the I-4 ramp terminal intersections are projected to operate at Level of Service B or better overall during the a.m. and p.m. peak hours. In addition, all of the individual movements are projected to operate at Level of Service C or better during both peak hours. The University Boulevard/Firstpark Boulevard N. intersection is projected to operate at Level of Service C overall during both the a.m. and p.m. peak hours.

Table 7-15 also indicates that a majority of the movements at the relocated Tomkow Road intersection are projected to operate at Level of Service C or better in the p.m. peak hour with two-way stop control. However, the northbound left-turn, through, and right-turn movements are projected to operate at Level of Service F with an average delay of approximately 422 seconds/vehicle. The v/c ratio for this single shared lane is projected to be 1.81. The results of this analysis indicate that vehicles exiting the Auto Auction could experience significant p.m. peak hour delays in the opening year if this intersection operates as a two-way stop controlled intersection. The results of the p.m. peak hour signalized intersection analysis conducted for the realigned Tomkow Road intersection indicate that all movements are projected to operate at Level of Service C or better with the implementation of a traffic signal. The 2016 intersection analyses for Build Alternative No. 1 are provided in **Appendix L**.

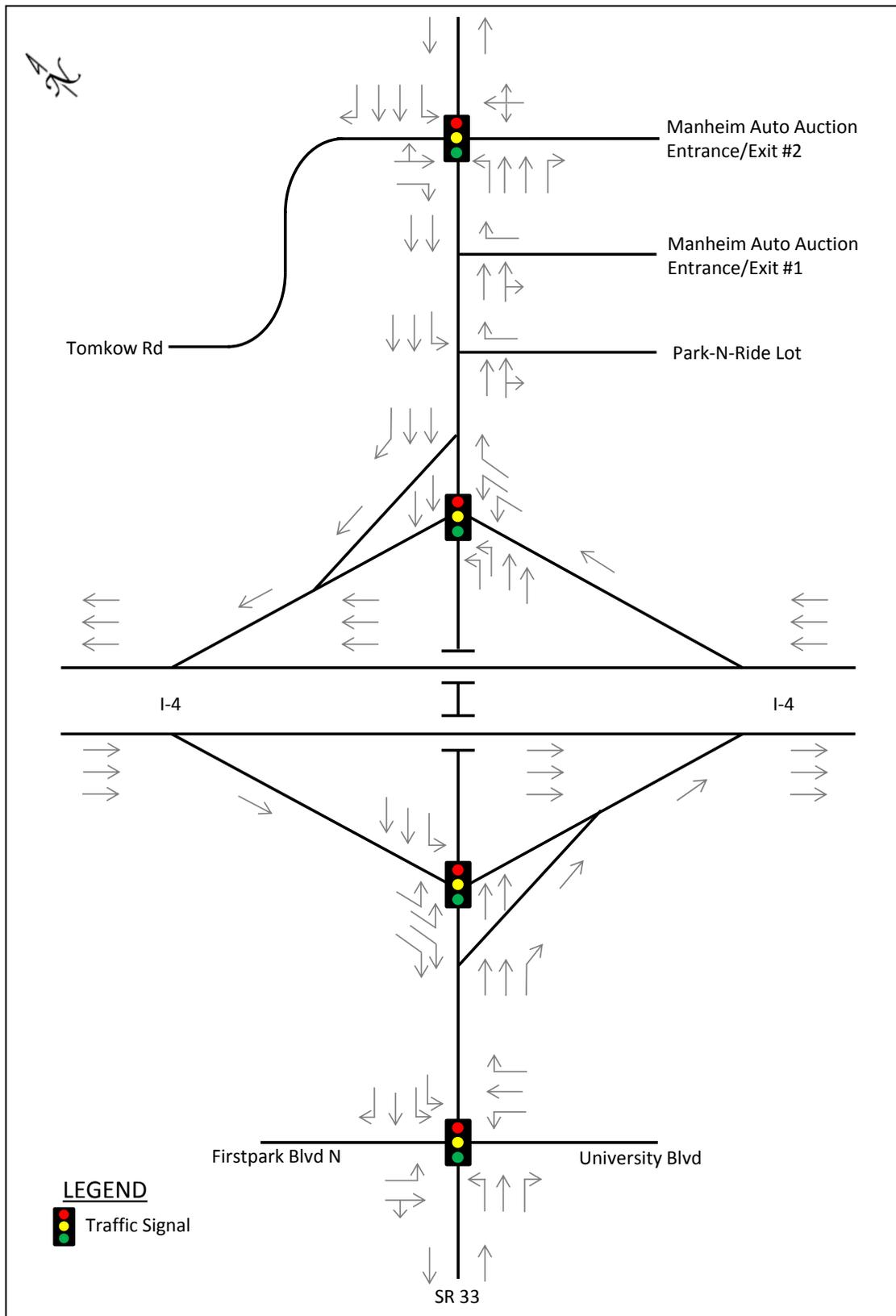


FIGURE 7-9: OPENING YEAR (2016) INTERCHANGE/INTERSECTION GEOMETRY – BUILD ALTERNATIVE NO. 1

TABLE 7-15: OPENING YEAR (2016) PEAK HOUR INTERSECTION OPERATIONS – BUILD ALTERNATIVE NO. 1

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
University Boulevard/Firstpark Boulevard N. (Signalized)	Eastbound	LT	0.24	16.2	B	0.20	17.0	B
	Eastbound	TH/RT	0.06	13.6	B	0.11	14.2	B
	Eastbound	Approach	N/A	15.4	B	N/A	16.0	B
	Westbound	LT	0.51	25.9	C	0.47	34.0	C
	Westbound	TH	0.05	20.0	B	0.04	24.1	C
	Westbound	RT	0.07	0.1	A	0.09	0.1	A
	Westbound	Approach	N/A	17.3	B	N/A	18.2	B
	Northbound	LT	0.07	16.6	B	0.05	13.7	B
	Northbound	TH	0.67	27.8	C	0.83	31.9	C
	Northbound	RT	0.29	3.4	A	0.27	3.5	A
	Northbound	Approach	N/A	19.2	B	N/A	23.8	C
	Southbound	LT	0.52	35.3	D	0.51	38.0	D
	Southbound	TH	0.72	25.4	C	0.44	14.4	B
	Southbound	RT	0.10	0.3	A	0.06	0.2	A
	Approach	N/A	25.2	C	N/A	19.6	B	
	Overall Intersection		N/A	21.0	C	N/A	20.9	C
I-4 EB Ramps (Signalized)	Eastbound	LT	0.39	27.3	C	0.54	27.8	C
	Eastbound	RT	0.31	3.7	A	0.17	0.7	A
	Eastbound	Approach	N/A	16.5	B	N/A	21.4	C
	Northbound	TH	0.20	12.7	B	0.27	8.4	A
	Northbound	Approach	0.20	12.7	B	0.27	8.4	A
	Southbound	LT	0.11	0.5	A	0.12	3.0	A
	Southbound	TH	0.31	5.1	A	0.31	6.8	A
		Approach	N/A	4.4	A	N/A	6.4	A
	Overall Intersection		N/A	9.6	A	N/A	11.5	B
I-4 WB Ramps (Signalized)	Westbound	LT	0.43	28.2	C	0.40	25.3	C
	Westbound	RT	0.13	0.7	A	0.26	1.7	A
	Westbound	Approach	N/A	22.4	C	N/A	17.6	B
	Northbound	LT	0.36	23.8	C	0.31	14.9	B
	Northbound	TH	0.25	5.3	A	0.34	5.7	A
	Northbound	Approach	N/A	9.9	A	N/A	7.7	A
	Southbound	TH	0.26	10.5	B	0.18	15.1	B
	Southbound	Approach	0.26	10.5	B	0.18	15.1	B
	Overall Intersection		N/A	12.6	B	N/A	11.3	B
Tomkow Road (Unsignalized)	Eastbound	LT	N/A	N/A	N/A	0.16	8.0	A
	Westbound	LT	N/A	N/A	N/A	0.01	8.5	A
	Northbound	LT/TH/RT	N/A	N/A	N/A	1.81	421.5	F
	Southbound	LT/TH	N/A	N/A	N/A	0.05	20.7	C
	Southbound	RT	N/A	N/A	N/A	0.12	9.1	A
Tomkow Road (Signalized)	Eastbound	LT	N/A	N/A	N/A	0.61	22.0	C
	Eastbound	TH	N/A	N/A	N/A	0.53	16.2	B
	Eastbound	RT	N/A	N/A	N/A	0.00	0.0	A
	Eastbound	Approach	N/A	N/A	N/A	N/A	17.9	B
	Westbound	LT	N/A	N/A	N/A	0.07	12.0	B
	Westbound	TH	N/A	N/A	N/A	0.14	12.3	B
	Westbound	RT	N/A	N/A	N/A	0.04	3.2	A
	Westbound	Approach	N/A	N/A	N/A	N/A	11.3	B
	Northbound	LT/TH/RT	N/A	N/A	N/A	0.35	10.0	A
	Southbound	LT/TH	N/A	N/A	N/A	0.02	9.3	A
	Southbound	RT	N/A	N/A	N/A	0.12	3.1	A
	Southbound	Approach	N/A	N/A	N/A	N/A	3.8	A
		Overall Intersection		N/A	N/A	N/A	N/A	14.2

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Average Delay (seconds/vehicle)

⁽³⁾ Level of Service

Although the results of the signalized intersection analyses indicate that the cross street vehicle delays at the relocated Tomkow Road intersection are projected to improve significantly with the implementation of traffic signal control, this does not imply that a traffic signal will be provided at this intersection in the opening year or the design year. The decision to install a traffic signal at this intersection will be made during the final design phase of the project and will be based on the results of a traffic signal warrant study conducted by the FDOT.

Additional analyses were conducted to obtain an estimate of the “useful life” of the opening year geometry at the University Boulevard/Firstpark Boulevard N. intersection. The results of these additional analyses indicate that Level of Service D operations are projected for the overall intersection in the year 2026. Approximately 86.0% of the total intersection capacity is projected to be utilized in 2026 during the p.m. peak hour and all of the critical movements are projected to have v/c ratios greater than or equal to 0.97. The 2026 intersection analyses for the University Boulevard/Firstpark Boulevard N. intersection are also provided in **Appendix L**.

7.4 BUILD ALTERNATIVE NO. 2

The Build Alternative No. 2 diverging diamond interchange concept is depicted in **Figure 7-10** and on the plan sheets provided in **Appendix M**. Dual left-turn lanes are provided on both the eastbound and westbound I-4 off-ramps and dual right-turn lanes are provided on the eastbound I-4 off-ramp. Build Alternative No. 2 also provides a 300-foot deceleration lane on the I-4 mainline for the eastbound off-ramp. This alternative interchange improvement concept provides the same vertical profile and vertical clearance over SR 33 that is provided with Build Alternative No. 1. The proposed typical section of SR 33 under the I-4 bridges is illustrated in **Figure 7-11**. The proposed realignment of Tomkow Road that is included in Build Alternative No. 1 is also included in Build Alternative No. 2.

The results of the Build Alternative No. 2 opening year ramp merge/diverge area analyses are summarized in **Table 7-16**. All four of the merge/diverge areas are projected to operate at Level of Service C or better during both the a.m. and p.m. peak hours in the year 2016. **Table 7-17** summarizes the results of the design year ramp merge/diverge area analyses. All four of the merge/diverge areas are projected to operate at Level of Service D or better during both the a.m. and p.m. peak hours in the year 2036. The 2016 and 2036 ramp merge/diverge area analysis summary sheets for Build Alternative No. 2 are provided in **Appendix N**.

Figure 7-12 illustrates the design year interchange and intersection geometrics that were analyzed for Build Alternative No. 2. It should be noted that the University Boulevard/Firstpark Boulevard N. and relocated Tomkow Road intersection geometrics are the same for Build Alternatives No. 1 and No. 2.

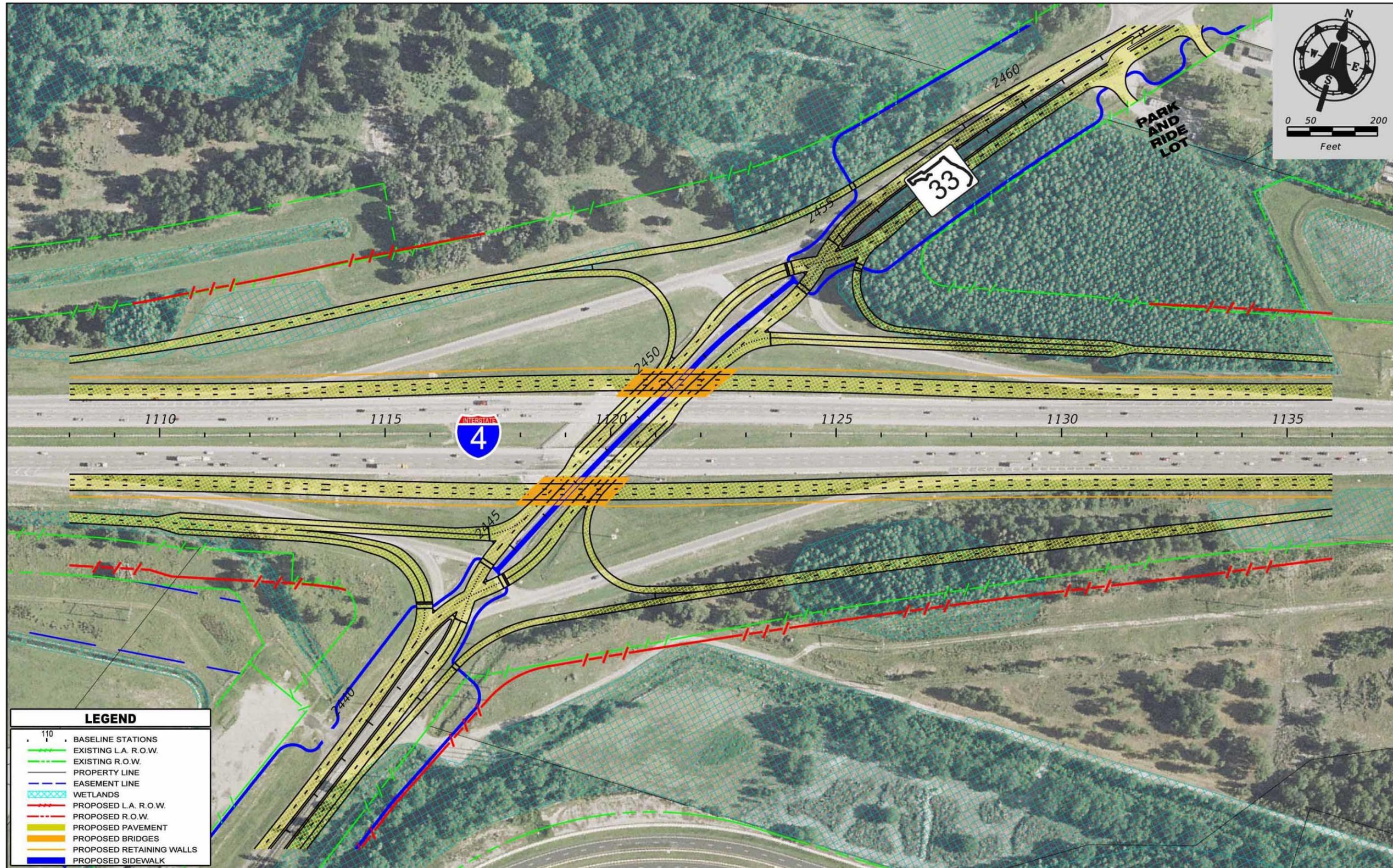


FIGURE 7-10: BUILD ALTERNATIVE NO. 2 (DIVERGING DIAMOND INTERCHANGE)

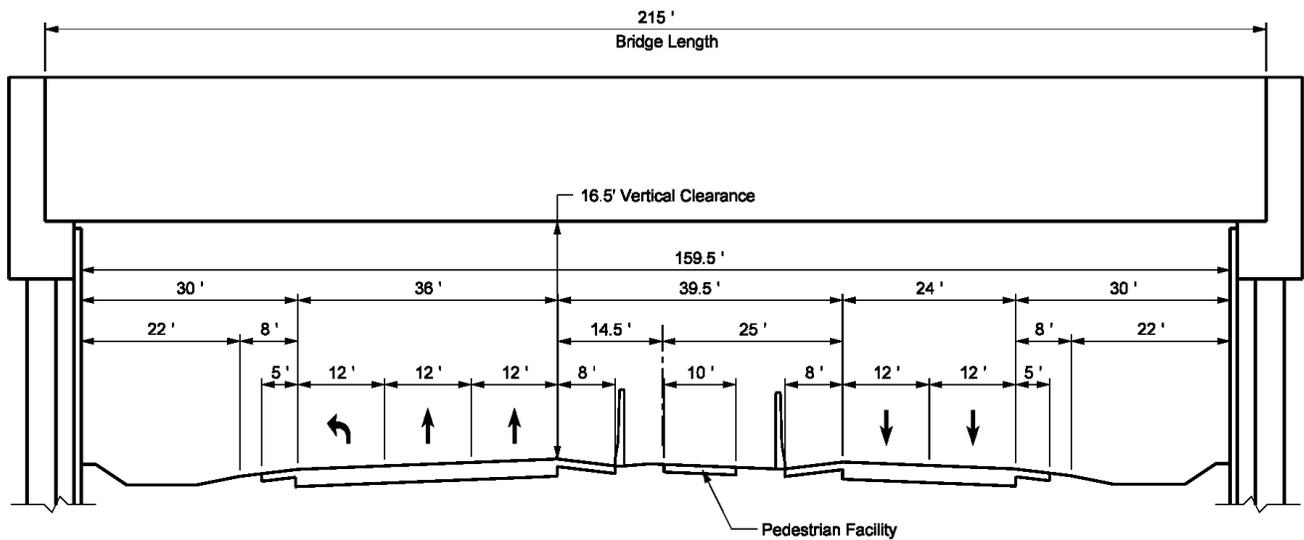


FIGURE 7-11: BUILD ALTERNATIVE NO. 2 PROPOSED TYPICAL SECTION – SR 33 UNDER I-4 LOOKING NORTH

TABLE 7-16: OPENING YEAR (2016) MERGE/DIVERGE AREA LEVELS OF SERVICE – BUILD ALTERNATIVE NO. 2

Location	AM Peak Hour				PM Peak Hour			
	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service
EB I-4 Diverge Area	2,725	305	20.1	C	3,199	370	22.9	C
EB I-4 Merge Area	2,420	271	15.4	B	2,829	230	17.3	B
WB I-4 Diverge Area	2,546	210	19.7	B	3,216	311	23.7	C
WB I-4 Merge Area	2,336	430	16.5	B	2,905	392	19.2	B

TABLE 7-17: DESIGN YEAR (2036) MERGE/DIVERGE AREA LEVELS OF SERVICE – BUILD ALTERNATIVE NO. 2

Location	AM Peak Hour				PM Peak Hour			
	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service	Mainline Volume	Ramp Volume	Density (pc/mi/ln)	Level of Service
EB I-4 Diverge Area	5,481	892	34.2	D	4,860	791	32.1	D
EB I-4 Merge Area	4,589	706	29.5	D	4,069	626	26.2	C
WB I-4 Diverge Area	4,695	626	31.1	D	5,295	706	33.9	D
WB I-4 Merge Area	4,069	791	27.7	C	4,589	892	31.2	D

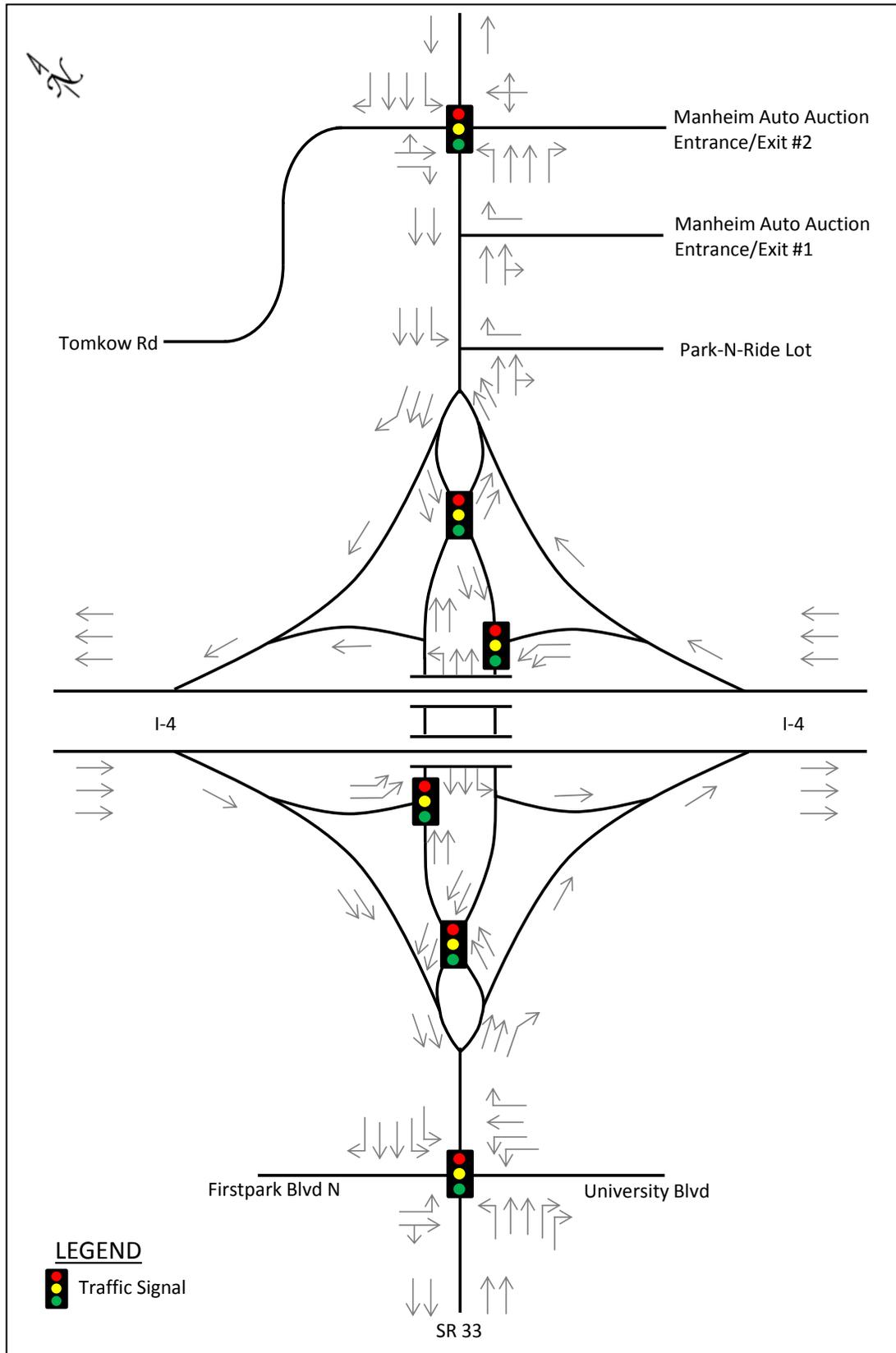


FIGURE 7-12: DESIGN YEAR (2036) INTERCHANGE/INTERSECTION GEOMETRY – BUILD ALTERNATIVE NO. 2

Signalized intersection analyses were conducted for the I-4 ramp terminal intersections and the University Boulevard/Firstpark Boulevard N. intersection using the SYNCHRO software. The realigned Tomkow Road intersection was analyzed as an unsignalized intersection (using the HCS) and as a signalized intersection (using the SYNCHRO software). An unsignalized intersection analysis was also conducted for the directional median opening at the existing park-and-ride lot. The results of the design year intersection analyses conducted for Build Alternative No. 2 are summarized in **Table 7-18**.

Both of the I-4 ramp terminal intersections are projected to operate at Level of Service B overall during the a.m. and p.m. peak hours. In addition, all of the individual movements at these two intersections are projected to operate at Level of Service C or better. Unlike Build Alternative No. 1, there would be no delay for the northbound and southbound SR 33 left-turn movements onto the I-4 ramps with Build Alternative No. 2. The University Boulevard/Firstpark Boulevard N. intersection is projected to operate at Level of Service D overall during both the a.m. and p.m. peak hours. There are a few individual movements that are projected to operate at Level of Service E or F during one or both peak hours; however, the v/c ratios associated with these movements are all projected to be less than 1.00.

The results of the p.m. peak hour unsignalized intersection analysis conducted for the realigned Tomkow Road intersection indicate that several movements are projected to operate at Level of Service F. The southbound left-turn and through movements are projected to have an average delay of approximately 75 seconds/vehicle while the northbound left-turn, through, and right-turn movements are projected to have an average delay of 2,042 seconds/vehicle. Although Level of Service F operations are projected for the southbound left-turn and through movements, the v/c ratio associated with these movements is low (i.e., 0.35). The results of the p.m. peak hour signalized intersection analysis conducted for the realigned Tomkow Road intersection indicate that all movements are projected to operate at Level of Service C or better with the implementation of a traffic signal. The 2016 and 2036 intersection analysis summary sheets for Build Alternative No. 2 are provided in **Appendix N**.

The opening year interchange and intersection geometrics that were analyzed for Build Alternative No. 2 are graphically illustrated in **Figure 7-13**. The Build Alternative No. 2 interchange improvement concept plans provided in **Appendix M** also incorporate the transition from four lanes to two lanes at the University Boulevard/Firstpark Boulevard N. intersection. In the southbound direction, the inside through lane is terminated as a left-turn only lane. In the northbound direction, the second through lane is added via a free-flow westbound right-turn lane. This is the same transitional geometry that was included with Build Alternative No. 1.

The results of the opening year intersection analyses conducted for Build Alternative No. 2 are summarized in **Table 7-19**. Both of the I-4 ramp terminal intersections are projected to operate at Level of Service B or better overall during the a.m. and p.m. peak hours. In addition, all of the individual movements are projected to operate at Level of Service C or better during both peak hours. The University Boulevard/Firstpark Boulevard N. intersection is projected to operate at Level of Service C overall during both the a.m. and p.m. peak hours.

TABLE 7-18: DESIGN YEAR (2036) PEAK HOUR INTERSECTION OPERATIONS – BUILD ALTERNATIVE NO. 2

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
University Boulevard/Firstpark Boulevard N. (Signalized)	Eastbound	LT	0.64	38.6	D	0.74	46.5	D
	Eastbound	TH/RT	0.70	77.4	E	0.80	84.6	F
	Eastbound	Approach	N/A	54.2	D	N/A	62.0	E
	Westbound	LT	0.93	58.2	E	0.92	63.6	E
	Westbound	TH	0.22	34.7	C	0.18	38.5	D
	Westbound	RT	0.68	11.9	B	0.84	25.6	C
	Westbound	Approach	N/A	40.1	D	N/A	46.2	D
	Northbound	LT	0.34	56.3	E	0.34	48.8	D
	Northbound	TH	0.74	62.3	E	0.81	59.1	E
	Northbound	RT	0.60	11.9	B	0.70	13.6	B
	Northbound	Approach	N/A	29.2	C	N/A	31.6	C
	Southbound	LT	0.92	68.6	E	0.90	67.8	E
	Southbound	TH	0.51	34.2	C	0.34	27.3	C
	Southbound	RT	0.23	5.0	A	0.13	1.7	A
	Approach	N/A	47.4	D	N/A	46.8	D	
	Overall Intersection		N/A	40.3	D	N/A	42.6	D
I-4 EB Ramps (Signalized)	Eastbound	LT	0.23	10.9	B	0.39	16.0	B
	Eastbound	RT	0.54	15.7	B	0.26	9.4	A
	Eastbound	Approach	N/A	13.8	B	N/A	13.4	B
	Northbound	TH	0.56	19.5	B	0.67	17.6	B
	Northbound	Approach	0.56	19.5	B	0.67	17.6	B
	Southbound	LT	N/A	N/A	N/A	N/A	N/A	N/A
	Southbound	TH	0.62	11.1	B	0.71	18.7	B
	Southbound	Approach	0.62	11.1	B	0.71	18.7	B
	Overall Intersection		N/A	14.3	B	N/A	16.7	B
I-4 WB Ramps (Signalized)	Westbound	LT	0.45	18.1	B	0.41	13.7	B
	Westbound	RT	0.15	5.1	A	0.22	15.1	B
	Westbound	Approach	N/A	15.8	B	N/A	13.9	B
	Northbound	LT	N/A	N/A	N/A	N/A	N/A	N/A
	Northbound	TH	0.60	28.5	C	0.66	19.3	B
	Northbound	Approach	0.60	28.5	C	0.66	19.3	B
	Southbound	TH	0.39	12.3	B	0.33	15.4	B
	Southbound	Approach	0.39	12.3	B	0.33	15.4	B
	Overall Intersection		N/A	19.4	B	N/A	16.7	B
Tomkow Road (Unsignalized)	Eastbound	LT	N/A	N/A	N/A	0.35	9.7	A
	Westbound	LT	N/A	N/A	N/A	0.02	9.2	A
	Northbound	LT/TH/RT	N/A	N/A	N/A	5.22	2042.0	F
	Southbound	LT/TH	N/A	N/A	N/A	0.35	75.1	F
	Southbound	RT	N/A	N/A	N/A	0.32	11.0	B
Tomkow Road (Signalized)	Eastbound	LT	N/A	N/A	N/A	0.84	29.2	C
	Eastbound	TH	N/A	N/A	N/A	0.44	10.2	B
	Eastbound	RT	N/A	N/A	N/A	0.00	0.0	A
	Eastbound	Approach	N/A	N/A	N/A	N/A	17.0	B
	Westbound	LT	N/A	N/A	N/A	0.06	7.5	A
	Westbound	TH	N/A	N/A	N/A	0.18	8.1	A
	Westbound	RT	N/A	N/A	N/A	0.05	2.8	A
	Westbound	Approach	N/A	N/A	N/A	N/A	7.5	A
	Northbound	LT/TH/RT	N/A	N/A	N/A	0.66	28.7	C
	Southbound	LT/TH	N/A	N/A	N/A	0.06	18.2	B
	Southbound	RT	N/A	N/A	N/A	0.41	4.9	A
	Southbound	Approach	N/A	N/A	N/A	N/A	6.1	A
	Overall Intersection		N/A	N/A	N/A	N/A	15.5	B

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Average Delay (seconds/vehicle)

⁽³⁾ Level of Service

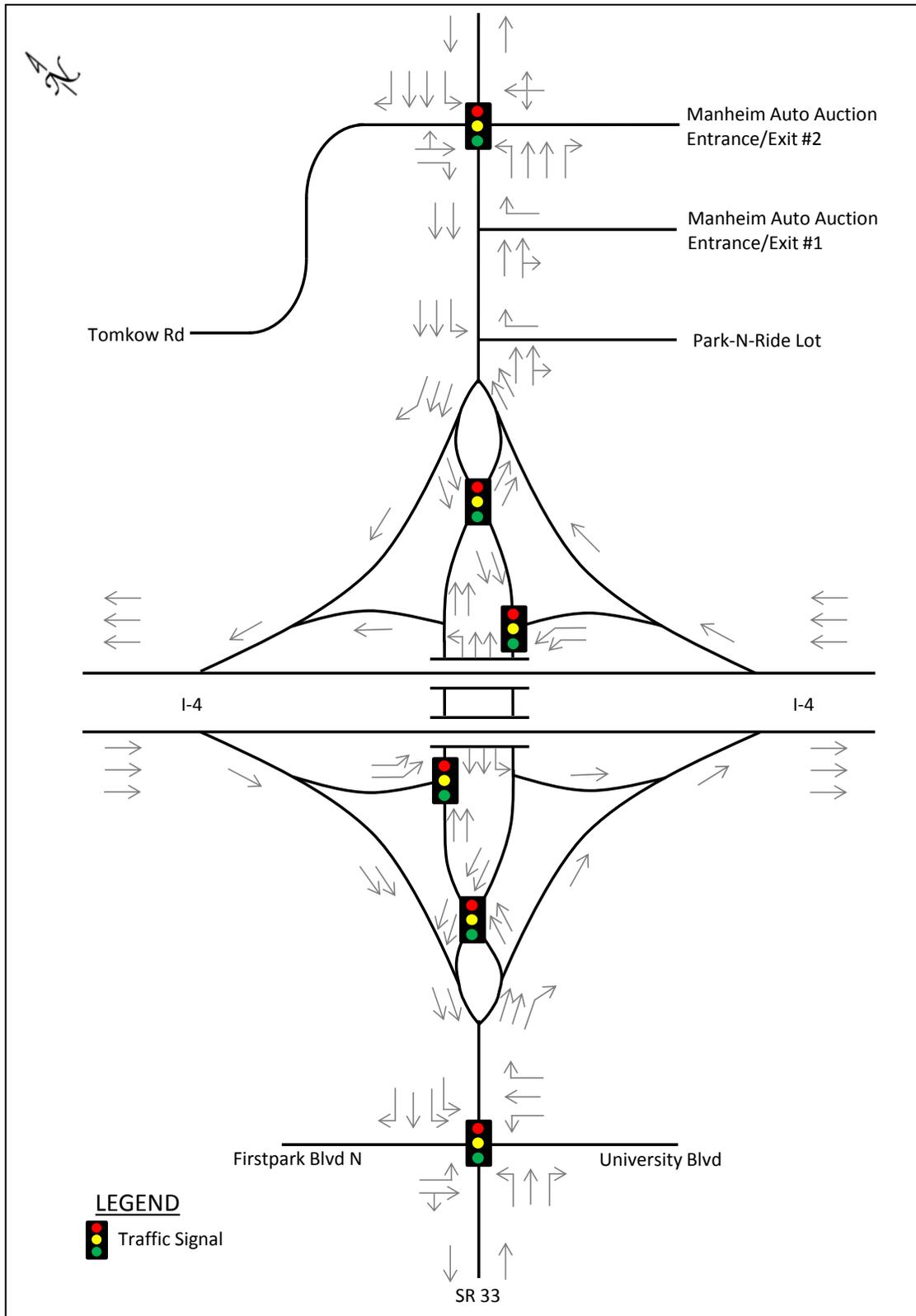


FIGURE 7-13: OPENING YEAR (2016) INTERCHANGE/INTERSECTION GEOMETRY – BUILD ALTERNATIVE NO. 2

TABLE 7-19: OPENING YEAR (2016) PEAK HOUR INTERSECTION OPERATIONS – BUILD ALTERNATIVE NO. 2

Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾	V/C ⁽¹⁾	Delay ⁽²⁾	LOS ⁽³⁾
University Boulevard/Firstpark Boulevard N. (Signalized)	Eastbound	LT	0.24	16.2	B	0.20	17.0	B
	Eastbound	TH/RT	0.06	13.6	B	0.11	14.2	B
	Eastbound	Approach	N/A	15.4	B	N/A	16.0	B
	Westbound	LT	0.51	25.9	C	0.47	34.0	C
	Westbound	TH	0.05	20.0	B	0.04	24.1	C
	Westbound	RT	0.07	0.1	A	0.09	0.1	A
	Westbound	Approach	N/A	17.3	B	N/A	18.2	B
	Northbound	LT	0.07	16.6	B	0.05	13.7	B
	Northbound	TH	0.67	27.8	C	0.83	31.9	C
	Northbound	RT	0.29	3.4	A	0.27	3.5	A
	Northbound	Approach	N/A	19.2	B	N/A	23.8	C
	Southbound	LT	0.52	35.3	D	0.51	38.0	D
	Southbound	TH	0.72	25.4	C	0.44	14.4	B
	Southbound	RT	0.10	0.3	A	0.06	0.2	A
	Approach	N/A	25.2	C	N/A	19.6	B	
	Overall Intersection		N/A	21.0	C	N/A	20.9	C
I-4 EB Ramps (Signalized)	Eastbound	LT	0.10	7.5	A	0.25	14.3	B
	Eastbound	RT	0.17	0.4	A	0.07	0.1	A
	Eastbound	Approach	N/A	4.2	A	N/A	11.0	B
	Northbound	TH	0.37	19.8	B	0.35	12.1	B
	Northbound	Approach	0.37	19.8	B	0.35	12.1	B
	Southbound	LT	N/A	N/A	N/A	N/A	N/A	N/A
	Southbound	TH	0.28	6.6	A	0.32	15.8	B
		Approach	0.28	6.6	A	0.32	15.8	B
	Overall Intersection		N/A	9.4	A	N/A	12.9	B
I-4 WB Ramps (Signalized)	Westbound	LT	0.24	18.1	B	0.15	10.5	B
	Westbound	RT	0.06	8.2	A	0.19	14.5	B
	Westbound	Approach	N/A	16.0	B	N/A	11.8	B
	Northbound	LT	N/A	N/A	N/A	N/A	N/A	N/A
	Northbound	TH	0.45	28.7	C	0.43	11.5	B
	Northbound	Approach	0.45	28.7	C	0.43	11.5	B
	Southbound	TH	0.23	8.0	A	0.18	13.8	B
	Southbound	Approach	0.23	8.0	A	0.18	13.8	B
	Overall Intersection		N/A	17.2	B	N/A	12.0	B
Tomkow Road (Unsignalized)	Eastbound	LT	N/A	N/A	N/A	0.16	8.0	A
	Westbound	LT	N/A	N/A	N/A	0.01	8.5	A
	Northbound	LT/TH/RT	N/A	N/A	N/A	1.81	421.5	F
	Southbound	LT/TH	N/A	N/A	N/A	0.05	20.7	C
	Southbound	RT	N/A	N/A	N/A	0.12	9.1	A
Tomkow Road (Signalized)	Eastbound	LT	N/A	N/A	N/A	0.61	21.9	C
	Eastbound	TH	N/A	N/A	N/A	0.53	16.2	B
	Eastbound	RT	N/A	N/A	N/A	0.00	0.0	A
	Eastbound	Approach	N/A	N/A	N/A	N/A	17.9	B
	Westbound	LT	N/A	N/A	N/A	0.07	12.0	B
	Westbound	TH	N/A	N/A	N/A	0.14	12.3	B
	Westbound	RT	N/A	N/A	N/A	0.04	3.2	A
	Westbound	Approach	N/A	N/A	N/A	N/A	11.3	B
	Northbound	LT/TH/RT	N/A	N/A	N/A	0.35	10.0	A
	Southbound	LT/TH	N/A	N/A	N/A	0.02	9.2	A
	Southbound	RT	N/A	N/A	N/A	0.12	3.1	A
		Approach	N/A	N/A	N/A	N/A	3.7	A
	Overall Intersection		N/A	N/A	N/A	N/A	14.2	B

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Average Delay (seconds/vehicle)

⁽³⁾ Level of Service

Table 7-19 also indicates that a majority of the movements at the relocated Tomkow Road intersection are projected to operate at Level of Service C or better in the p.m. peak hour with two-way stop control. However, the northbound left-turn, through, and right-turn movements are projected to operate at Level of Service F with an average delay of approximately 422 seconds/vehicle. The v/c ratio for this single shared lane is projected to be 1.81. The results of this analysis indicate that vehicles exiting the Auto Auction could experience significant p.m. peak hour delays in the opening year if this intersection operates as a two-way stop controlled intersection. The results of the p.m. peak hour signalized intersection analysis conducted for the realigned Tomkow Road intersection indicate that all movements are projected to operate at Level of Service C or better with the implementation of a traffic signal. The 2016 intersection analyses for Build Alternative No. 2 are provided in **Appendix N**.

Although the results of the signalized intersection analyses indicate that the cross street vehicle delays at the relocated Tomkow Road intersection are projected to improve significantly with the implementation of traffic signal control, this does not imply that a traffic signal will be provided at this intersection in the opening year or the design year. The decision to install a traffic signal at this intersection will be made during the final design phase of the project and will be based on the results of a traffic signal warrant study conducted by the FDOT.

8.0 COMPARATIVE EVALUATION OF ALTERNATIVES

The results of the traffic operations analyses conducted for the No-Build Alternative and the TSM Alternative indicate that Level of Service F operations are projected to occur at both of the I-4 ramp terminal intersections. Consequently, neither of these two alternatives satisfies the purpose and need of the project. **Table 8-1** provides a comparison of the design year peak hour traffic operations projected to occur at the I-4 ramp terminal intersections with Build Alternatives No. 1 and No. 2. The performance measures included in this table are the capacity utilization (expressed as a percentage of the total capacity), maximum v/c ratio, average delay, and level of service.

Table 8-1 indicates that similar operations are projected to occur for both of the Build Alternatives. Build Alternative No. 1 provides more “reserve” (i.e., unused) capacity at the eastbound I-4 ramp terminal intersection while Build Alternative No. 2 provides more reserve capacity at the westbound I-4 ramp terminal. The average a.m. peak hour delays at the westbound I-4 ramp terminal and the average p.m. peak hour delays at the eastbound I-4 ramp terminal are the same for both Build Alternatives. Build Alternative No. 2 is projected to have slightly lower average delays at the eastbound I-4 ramp terminal in the a.m. peak hour (14.3 seconds/vehicle vs. 15.6 seconds/vehicle) and at the westbound I-4 ramp terminal in the p.m. peak hour (16.7 seconds/vehicle vs. 18.8 seconds/vehicle). **Table 8-1** also provides a comparison of the overall average delays for the entire interchange. In the a.m. peak hour, the overall average interchange delay is approximately 16.6 seconds/vehicle for Build Alternative No. 2 and 17.3 seconds/vehicle for Build Alternative No. 1. In the p.m. peak hour, the overall average interchange delay is approximately 16.7 seconds/vehicle for Build Alternative No. 2 and 17.8 seconds/vehicle for Build Alternative No. 1.

Table 8-2 provides a comparison of the design year peak hour 95th-percentile off-ramp queue length estimates obtained from the SYNCHRO analyses. In general, this table indicates that the left-turn vehicle queues are projected to be longer with Build Alternative No. 1 while the right-turn vehicle queues are projected to be longer with Build Alternative No. 2. However, it should be noted that the differences between the 95th-percentile queue length estimates are not significant. None of the off-ramp movement queues are projected to exceed 210 feet in length during either peak hour. Consequently, both Build Alternatives will be able to safely accommodate the design year peak hour vehicle queues on the off-ramps and avoid any potential queuing conditions on the I-4 mainline.

Preliminary cost estimates were developed for both of the Build Alternatives and are summarized in **Table 8-3**. The costs include final design, right-of-way, wetland mitigation, construction, and construction engineering inspection (assumed to be 15.0% of the construction cost). **Table 8-3** indicates that Build Alternative No. 1 is estimated to cost approximately \$51,655,000 while Build Alternative No. 2 is estimated to cost approximately \$51,010,000.

TABLE 8-1: DESIGN YEAR (2036) PEAK HOUR INTERSECTION OPERATIONS COMPARISON

Alternative	Intersection	AM Peak Hour			PM Peak Hour			LOS ⁽²⁾
		Capacity Utilization	Maximum V/C ⁽¹⁾	Avg. Delay (sec/veh)	Capacity Utilization	Maximum V/C ⁽¹⁾	Avg. Delay (sec/veh)	
Build Alternative No. 1	EB I-4 On-/Off-Ramps	53.9%	0.77 (SB TH)	15.6	B	0.82 (SB TH)	16.8	B
	WB I-4 On-/Off-Ramps	52.1%	0.73 (WB LT)	19.4	B	0.84 (WB LT)	18.8	B
Build Alternative No. 2	EB I-4 On-/Off-Ramps	67.5%	0.62 (SB TH)	14.3	B	0.71 (SB TH)	16.7	B
	WB I-4 On-/Off-Ramps	45.9%	0.60 (NB TH)	19.4	B	0.66 (NB TH)	16.7	B

Alternative	Intersection	Peak Hour	EB I-4 On-/Off-Ramps		WB I-4 On-/Off-Ramps		T total Delay (sec)	Avg. Delay (sec/veh)	LOS ⁽²⁾
			Avg. Delay	Volume	Avg. Delay	Volume			
Build Alternative No. 1	Both Intersections	AM Peak	15.6	3,224	19.4	2,735	103,353.40	17.34	B
	Both Intersections	PM Peak	16.8	3,308	18.8	2,991	111,805.20	17.75	B
Build Alternative No. 2	Both Intersections	AM Peak	14.3	3,224	19.4	2,735	99,162.20	16.64	B
	Both Intersections	PM Peak	16.7	3,308	16.7	2,991	105,193.30	16.70	B

⁽¹⁾ Volume-to-Capacity Ratio

⁽²⁾ Level of Service

TABLE 8-2: DESIGN YEAR (2036) PEAK HOUR QUEUE LENGTH COMPARISON

Peak Hour	I-4 Off-Ramp Movement	95% Queue Length (in feet)	
		Build Alternative No. 1	Build Alternative No. 2
AM Peak Hour	EB LT	108	68
	EB RT	39	132
	WB LT	160	129
	WB RT	36	33
PM Peak Hour	EB LT	152	113
	EB RT	31	60
	WB LT	208	124
	WB RT	19	72

TABLE 8-3: PRELIMINARY COST ESTIMATES

Project Component	Build Alternative No. 1 Diamond Interchange	Build Alternative No. 2 Diverging Diamond Interchange
Design	\$4,530,000	\$4,530,000
Right-of-Way Acquisition	\$2,179,000	\$2,167,000
Wetland Mitigation	\$2,206,000	\$2,145,000
Construction Cost	\$37,165,000	\$36,668,000
Construction Engineering & Inspection	\$5,575,000	\$5,500,000
Preliminary Estimate of Total Project Cost	\$51,655,000	\$51,010,000

In addition to the projected peak hour traffic operations and cost estimates associated with the two Build Alternatives, there are several other factors that should be considered. These other considerations include the following:

- SR 33 design speeds within the interchange area
- SR 33 through traffic flow during off-peak hours
- Driver expectancy

Build Alternative No.1 provides for a 55 mph design speed within the interchange area, while Build Alternative No. 2 provides for a 30 mph design speed within the interchange area. The lower design speed associated with Build Alternative No. 2 is due to the horizontal curves that are located in the areas where the northbound and southbound SR 33 lanes cross each other. As previously stated in **Section 2.1** of this report, the existing posted speed limit on SR 33 (including the interchange area) is 60 mph. Although a five (or 10) mph reduction in speed approaching the interchange would likely be viewed as reasonable from the driver's perspective, a 30 mph reduction in speed would likely be viewed by drivers as unreasonable and could increase the potential for speeding to occur as vehicles approach the interchange area. This increased speed could increase the potential for crashes to occur.

During the off-peak hours for the eastbound and westbound I-4 off-ramps, the traffic signals at the ramp terminal intersections with Build Alternative No. 1 can minimize the amount of “green time” that is provided for the off-ramp movements which maximizes the amount of green time that is provided for the SR 33 through movements. This results in fewer stops and longer durations of “free-flow” conditions for both through movements. Although the traffic signals that control the eastbound and westbound I-4 off-ramp movements with Build Alternative No. 2 can be designed to reduce the amount of green time that is provided for these movements during off-peak hours, there will be significantly more stops and more delay for the SR 33 through movements during off-peak hours. This is due to the need to alternate green time between the northbound and southbound through movements at the “cross-over” intersections.

The vehicle movements and traffic signal operations associated with conventional diamond interchanges are well understood by drivers in Polk County since this type of interchange has been in existence for a long time. In addition, since the interchange configuration provided with Build Alternative No. 1 is the same as the existing configuration (with additional laneage being provided on SR 33 and at the ramp terminal intersections), the driver expectancy associated with traveling through this interchange would be extremely high. In contrast, the level of driver expectancy associated with Build Alternative No. 2 would be significantly lower than Build Alternative No. 1 since this type of interchange configuration is not currently in operation anywhere within Polk County. It is possible that the cross-over through movements and traffic signal operations associated with a diverging diamond interchange could cause some wrong way movements to occur due to driver confusion (especially with non-commuter traffic and during the first few months after implementation).

9.0 CONCLUSIONS/RECOMMENDATIONS

Based on the magnitude of the future year traffic volumes that are projected to occur at the I-4/SR 33 interchange; there exists a need to widen SR 33 from two lanes to four lanes and signalize the ramp terminal intersections. Although the overall average peak hour vehicle delays for the interchange are projected to be lower with Build Alternative No. 2 than with Build Alternative No. 1, the magnitude of the differences is small. In the design year, the differences between the overall average peak hour vehicle delays are less than or equal to 1.1 seconds/vehicle. Both Build Alternatives are projected to provide Level of Service B operations at the ramp terminal intersections. The preliminary cost estimate for Build Alternative No. 2 is also lower than the cost estimate for Build Alternative No. 1; however, the magnitude of the cost difference is relatively small (i.e., approximately \$645,000 or 1.3%).

Build Alternative No. 2 has a significantly lower design speed than Build Alternative No. 1 within the interchange area (30 mph vs. 55 mph). The level of driver expectancy associated with Build Alternative No. 2 would be significantly lower than Build Alternative No. 1 since this interchange configuration is not currently in operation anywhere throughout Polk County. Although Build Alternative No. 2 is projected to result in lower vehicle delay during the peak hours, it is also likely that this alternative will result in higher vehicle delay during periods of low ramp volumes due to the need to alternate green time between the northbound and southbound through movements at the cross-over intersections. Although the disadvantages associated with Build Alternative No. 2 are somewhat qualitative in nature, the differences in the vehicle delays and costs estimated for the two Build Alternatives are not significant enough to justify the construction of a diverging diamond interchange at this location. Consequently, the conventional diamond interchange improvement concept (Build Alternative No. 1) is recommended for approval by FDOT.

10.0 CONCEPTUAL FUNDING PLAN/CONSTRUCTION SCHEDULE

FDOT District One is currently funding the SR 33 PD&E study and this study is scheduled for completion in May 2014. District One has also recently programmed the final design phase of the I-4/SR 33 interchange into FDOT's Five-Year Work Program for FY 2013/2014.

Appendix E

LONG RANGE ESTIMATES (LRE)

Date: 6/3/2014 8:44:11 AM

FDOT Long Range Estimating System - Production
R3: Project Details by Sequence Report

Project: 430185-1-22-01**Letting Date:** 11/2020**Description:** SR 33 FROM OLD COMBEE RD TO N OF TOMKOW RD**District:** 01 **County:** 16 POLK **Market Area:** 08 **Units:** English**Contract Class:** 1 **Lump Sum Project:** N **Design/Build:** N **Project Length:** 3.720 MI**Project Manager:** CES-MJB-ANS**Version 20 Project Grand Total****\$10,804,841.39****Description:** June 2014 Unit Cost Update from Version 18 - 6/3/14**Sequence:** 1 WDR - Widen/Resurface, Divided, Rural**Net** 2.557 MI**Length:** 13,500 LF**Description:** Milling and Resurfacing SR 33 From OLD COMBEE ROAD TO South of UNIVERSITY

EARTHWORK COMPONENT

User Input Data

Description	Value
Standard Clearing and Grubbing Limits L/R	100.00 / 100.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	2.560
Top of Structural Course For Begin Section	103.00
Top of Structural Course For End Section	103.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Existing Front Slope L/R	6 to 1 / 6 to 1
Existing Median Slope L/R	6 to 1 / 6 to 1
Existing Median Shoulder Cross Slope L/R	5.00 % / 5.00 %
	6.00 % / 6.00 %

Existing Outside Shoulder Cross Slope L/R	
Front Slope L/R	6 to 1 / 6 to 1
Median Slope L/R	6 to 1 / 6 to 1
Median Shoulder Cross Slope L/R	5.00 % / 5.00 %
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	61.99 AC	\$10,000.00	\$619,900.00

X-Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
120-6	EMBANKMENT	29,166.25 CY	\$7.89	\$230,121.71
Earthwork Component Total				\$850,021.71

ROADWAY COMPONENT**User Input Data**

Description	Value
Number of Lanes	4
Existing Roadway Pavement Width L/R	24.00 / 0.00
Structural Spread Rate	275
Friction Course Spread Rate	80
Widened Outside Pavement Width L/R	0.00 / 24.00
Widened Inside Pavement Width L/R	0.00 / 0.00
Widened Structural Spread Rate	385
Widened Friction Course Spread Rate	80

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	71,999.49 SY	\$3.65	\$262,798.14
285-711	OPTIONAL BASE, BASE GROUP 11	36,494.74 SY	\$16.06	\$586,105.52
327-70-8		35,999.74 SY	\$1.66	\$59,759.57

	MILLING EXIST ASPH PAVT,2 1/2" AVG DEPTH			
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	4,949.96 TN	\$84.42	\$417,875.62
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	6,929.95 TN	\$84.42	\$585,026.38
337-7-5	ASPH CONC FC, INC BIT/RUBBER, FC-5	1,439.99 TN	\$130.37	\$187,731.50
337-7-5	ASPH CONC FC, INC BIT/RUBBER, FC-5	1,439.99 TN	\$130.37	\$187,731.50

X-Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION Comment: For Outside and Inside Shoulders	36,000.00 SY	\$3.65	\$131,400.00
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C Comment: Overbuild	2,817.00 TN	\$84.42	\$237,811.14

Turnouts/Crossovers Subcomponent

Description	Value
Asphalt Adjustment	20.00
Milling Code	N
Stabilization Code	Y
Base Code	Y
Friction Course Code	Y

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	14,399.90 SY	\$3.65	\$52,559.64
285-711	OPTIONAL BASE,BASE GROUP 11	7,298.95 SY	\$16.06	\$117,221.14
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	989.99 TN	\$84.42	\$83,574.96
337-7-5	ASPH CONC FC, INC BIT/RUBBER, FC-5	288.00 TN	\$130.37	\$37,546.56

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other Pavement Type	Y Asphalt

Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	4
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	2

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	1,036.00	EA	\$3.56	\$3,688.16
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	10.23	NM	\$913.97	\$9,349.91
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	5.11	GM	\$345.33	\$1,764.64
711-11-111	THERMOPLASTIC, STD, WHITE, SOLID, 6"	10.23	NM	\$3,957.74	\$40,487.68
711-11-131	THERMOPLASTIC, STD, WHITE, SKIP, 6"	5.11	GM	\$1,171.15	\$5,984.58

Peripherals Subcomponent

Description	Value
Off Road Bike Path(s)	0
Off Road Bike Path Width L/R	0.00 / 12.00
Bike Path Structural Spread Rate	165
Noise Barrier Wall Length	0.00
Noise Barrier Wall Begin Height	0.00
Noise Barrier Wall End Height	0.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	23,999.83	SY	\$3.65	\$87,599.38
285-701	OPTIONAL BASE,BASE GROUP 01	17,999.87	SY	\$13.82	\$248,758.20
334-1-11	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	1,484.99	TN	\$92.67	\$137,614.02
Roadway Component Total					\$3,482,388.24

SHOULDER COMPONENT**User Input Data**

Description	Value
Existing Total Outside Shoulder Width L/R	0.00 / 0.00
New Total Outside Shoulder Width L/R	8.00 / 8.00
Total Outside Shoulder Perf. Turf Width L/R	2.66 / 2.66
Existing Paved Outside Shoulder Width L/R	0.00 / 0.00
New Paved Outside Shoulder Width L/R	5.00 / 5.00
Structural Spread Rate	110
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	T
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	15,989.89	SY	\$8.76	\$140,071.44
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	824.99	TN	\$84.42	\$69,645.66
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	600.00	TN	\$127.19	\$76,314.00
570-1-1	PERFORMANCE TURF	7,979.94	SY	\$1.13	\$9,017.33

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-1-11	CONC CLASS I, RETAINING WALLS	365.00	CY	\$1,305.18	\$476,390.70
520-6	SHOULDER GUTTER-CONCRETE	350.00	LF	\$16.99	\$5,946.50
522-1	CONC SIDEWALK AND DRIVEWAYS, 4" THICK Comment: 5' sidewalk on LT side of roadway	7,500.00	SY	\$25.58	\$191,850.00
570-1-1	PERFORMANCE TURF Comment: 65 LF within border area	97,500.00	SY	\$1.13	\$110,175.00
570-1-2	PERFORMANCE TURF, SOD Comment: 24 LF for Sidewalk tiedown	36,000.00	SY	\$2.22	\$79,920.00

Erosion Control**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	31,049.78	LF	\$1.01	\$31,360.28
104-11	FLOATING TURBIDITY BARRIER	255.68	LF	\$8.53	\$2,180.95
104-12	STAKED TURBIDITY BARRIER- NYL REINF PVC	255.68	LF	\$4.50	\$1,150.56
104-15	SOIL TRACKING PREVENTION DEVICE	3.00	EA	\$1,932.61	\$5,797.83
107-1	LITTER REMOVAL	18.59	AC	\$35.65	\$662.73
107-2	MOWING	18.59	AC	\$45.79	\$851.24
Shoulder Component Total					\$1,201,334.22

MEDIAN COMPONENT

User Input Data

Description	Value
Total Median Width	30.00
Performance Turf Width	17.50
New Total Median Shoulder Width L/R	4.00 / 4.00
New Paved Median Shoulder Width L/R	4.00 / 4.00
Existing Total Median Shoulder Width L/R	0.00 / 0.00
Existing Paved Median Shoulder Width L/R	0.00 / 0.00
Structural Spread Rate	385
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	T
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	12,989.91	SY	\$8.76	\$113,791.61
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	2,309.98	TN	\$84.42	\$195,008.51
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	480.00	TN	\$127.19	\$61,051.20
570-1-1	PERFORMANCE TURF	26,249.81	SY	\$1.13	\$29,662.29

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-7	CONCRETE CURB & GUTTER, TYPE E	22,721.00	LF	\$13.40	\$304,461.40
520-5-11	TRAF SEP CONC-TYPE I, 4' WIDE	4,725.00	LF	\$24.52	\$115,857.00
Median Component Total					\$819,832.01

DRAINAGE COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
430-174-124	PIPE CULV, OPT MATL, ROUND, 24"SD	2,048.00	LF	\$66.57	\$136,335.36
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	344.00	LF	\$104.92	\$36,092.48
430-984-129	MITERED END SECT, OPTIONAL RD, 24" SD	103.00	EA	\$1,138.80	\$117,296.40
570-1-1	PERFORMANCE TURF	1,799.99	SY	\$1.13	\$2,033.99

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-1	CONC CLASS II, CULVERTS	20.11	CY	\$794.33	\$15,973.98
400-4-1	CONC CLASS IV, CULVERTS	470.41	CY	\$1,069.05	\$502,891.81
415-1-6	REINF STEEL- MISCELLANEOUS	19,994.00	LB	\$0.77	\$15,395.38
425-1-351	INLETS, CURB, TYPE P-5, <10'	4.00	EA	\$2,849.26	\$11,397.04
425-1-361	INLETS, CURB, TYPE P-6, <10'	2.00	EA	\$3,225.65	\$6,451.30
425-1-701	INLETS, GUTTER, TYPE S, <10'	2.00	EA	\$2,773.82	\$5,547.64
430-175-118	PIPE CULV, OPT MATL, ROUND, 18"S/CD	312.00	LF	\$39.78	\$12,411.36
430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	856.00	LF	\$47.23	\$40,428.88
430-175-130	PIPE CULV, OPT MATL, ROUND, 30"S/CD	160.00	LF	\$66.29	\$10,606.40
		1.00	EA	\$821.77	\$821.77

430-982-125	MITERED END SECT, OPTIONAL RD, 18" CD				
430-982-133	MITERED END SECT, OPTIONAL RD, 30" CD	2.00 EA	\$1,787.92		\$3,575.84
Drainage Component Total					\$917,259.63

SIGNING COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	6.00	AS	\$305.32	\$1,831.92
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	62.00	AS	\$1,012.87	\$62,797.94
700-1-50	SINGLE POST SIGN, RELOCATE	6.00	AS	\$136.53	\$819.18
700-1-60	SINGLE POST SIGN, REMOVE	62.00	AS	\$25.34	\$1,571.08
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	6.00	AS	\$4,276.20	\$25,657.20
700-2-60	MULTI- POST SIGN, REMOVE	6.00	AS	\$303.31	\$1,819.86
Signing Component Total					\$94,497.18

SIGNALIZATIONS COMPONENT

Signalization 1

Description	Value
Type	4 Lane Mast Arm
Multiplier	1
Description	SR 659

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-1-12	CONDUIT, F& I, UNDERGROUND	750.00	LF	\$3.62	\$2,715.00
630-1-14	CONDUIT,F& I, UG JACKED	250.00	LF	\$12.92	\$3,230.00
632-7-1	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL	1.00	PI	\$3,568.53	\$3,568.53
635-1-11		16.00	EA	\$417.33	\$6,677.28

	PULL & JUNCTION BOX, F&I, PULL BOX			
639-1-22	ELECT POWER SERV,UG,PUR CONT	1.00 AS	\$1,443.18	\$1,443.18
639-2-1	ELECTRICAL SERVICE WIRE	60.00 LF	\$7.56	\$453.60
649-31-103	M/ARM,F&I, WS- 150,SINGLE ARM,W/O LUM- 60	4.00 EA	\$31,147.81	\$124,591.24
650-51-311	TRAFFIC SIGNAL, F&I, 3 SECT, 1 WAY, STD	12.00 AS	\$1,605.00	\$19,260.00
653-191	PEDESTRIAN SIGNAL, F&I, LED-COUNT DWN, 1	8.00 AS	\$492.50	\$3,940.00
660-1-102	LOOP DETECTOR INDUCTIVE, F&I, TYPE 2	12.00 EA	\$164.17	\$1,970.04
660-2-106	LOOP ASSEMBLY, F&I, TYPE F	12.00 AS	\$829.39	\$9,952.68
665-11	PED DET, F&I, DET STA POLE OR CAB MTD	8.00 EA	\$194.76	\$1,558.08
670-5-111	TRAF CNTL ASSEM, F&I, NEMA, 1 PREEMPT	1.00 AS	\$23,209.81	\$23,209.81
700-48-18	SIGN PANELS, F & I, 15 OR <	4.00 EA	\$329.49	\$1,317.96
Signalizations Component Total				\$203,887.40

LANDSCAPING COMPONENT

User Input Data

Description	Value
Cost %	2.50
Component Detail	N

Landscaping Component Total	\$160,520.35
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Sequence 1 Total	\$7,729,740.74
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Sequence: 2 WDR - Widen/Resurface, Divided, Rural**Net** 0.161 MI**Length:** 850 LF**Description:** 850 LF of taper from 4 to 2 Lanes on SR 33**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	100.00 / 100.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.161
Top of Structural Course For Begin Section	103.00
Top of Structural Course For End Section	103.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Existing Front Slope L/R	6 to 1 / 6 to 1
Existing Median Slope L/R	6 to 1 / 6 to 1
Existing Median Shoulder Cross Slope L/R	5.00 % / 5.00 %
Existing Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Front Slope L/R	6 to 1 / 6 to 1
Median Slope L/R	6 to 1 / 6 to 1
Median Shoulder Cross Slope L/R	5.00 % / 5.00 %
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	3.90	AC	\$10,000.00	\$39,000.00

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
120-6	EMBANKMENT	1,382.48	CY	\$7.89	\$10,907.77

Earthwork Component Total

\$49,907.77

ROADWAY COMPONENT
User Input Data

Description	Value
Number of Lanes	3
Existing Roadway Pavement Width L/R	24.00 / 0.00
Structural Spread Rate	275
Friction Course Spread Rate	80
Widened Outside Pavement Width L/R	0.00 / 18.00
Widened Inside Pavement Width L/R	0.00 / 0.00
Widened Structural Spread Rate	385
Widened Friction Course Spread Rate	80

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	3,589.23	SY	\$3.65	\$13,100.69
285-711	OPTIONAL BASE,BASE GROUP 11	1,731.33	SY	\$16.06	\$27,805.16
327-70-8	MILLING EXIST ASPH PAVT,2 1/2" AVG DEPTH	2,266.88	SY	\$1.66	\$3,763.02
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	311.70	TN	\$84.42	\$26,313.71
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	327.28	TN	\$84.42	\$27,628.98
337-7-5	ASPH CONC FC, INC BIT/RUBBER, FC-5	90.68	TN	\$130.37	\$11,821.95
337-7-5	ASPH CONC FC, INC BIT/RUBBER, FC-5	68.01	TN	\$130.37	\$8,866.46

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C Comment: Overbuild	14.90	TN	\$84.42	\$1,257.86

Pavement Marking Subcomponent

Description	Value
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Include Thermo/Tape/Other	Y
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	4
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	1

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	43.00	EA	\$3.56	\$153.08
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.64	NM	\$913.97	\$584.94
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.16	GM	\$345.33	\$55.25
711-11-111	THERMOPLASTIC, STD, WHITE, SOLID, 6"	0.64	NM	\$3,957.74	\$2,532.95
711-11-131	THERMOPLASTIC, STD, WHITE, SKIP, 6"	0.16	GM	\$1,171.15	\$187.38

Peripherals Subcomponent

Description	Value
Off Road Bike Path(s)	0
Off Road Bike Path Width L/R	0.00 / 12.00
Bike Path Structural Spread Rate	165
Noise Barrier Wall Length	0.00
Noise Barrier Wall Begin Height	0.00
Noise Barrier Wall End Height	0.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	1,511.25	SY	\$3.65	\$5,516.06
285-701	OPTIONAL BASE,BASE GROUP 01	1,133.44	SY	\$13.82	\$15,664.14
334-1-11	SUPERPAVE ASPHALTIC CONC, TRAFFIC A	93.51	TN	\$92.67	\$8,665.57
Roadway Component Total					\$153,917.20

SHOULDER COMPONENT

User Input Data

Description	Value
Existing Total Outside Shoulder Width L/R	0.00 / 0.00
New Total Outside Shoulder Width L/R	8.00 / 8.00
Total Outside Shoulder Perf. Turf Width L/R	2.66 / 2.66
Existing Paved Outside Shoulder Width L/R	0.00 / 0.00
New Paved Outside Shoulder Width L/R	5.00 / 5.00
Structural Spread Rate	110
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	T
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	1,006.87	SY	\$8.76	\$8,820.18
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	51.95	TN	\$84.42	\$4,385.62
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	37.78	TN	\$127.19	\$4,805.24
570-1-1	PERFORMANCE TURF	502.49	SY	\$1.13	\$567.81

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
522-1	CONC SIDEWALK AND DRIVEWAYS, 4" THICK	473.00	SY	\$25.58	\$12,099.34
570-1-1	PERFORMANCE TURF Comment: 72 LF within border area	6,800.00	SY	\$1.13	\$7,684.00
570-1-2	PERFORMANCE TURF, SOD Comment: 24 LF for Sidewalk tiedown	2,267.00	SY	\$2.22	\$5,032.74

Erosion Control**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	1,955.18	LF	\$1.01	\$1,974.73

104-11	FLOATING TURBIDITY BARRIER	16.10 LF	\$8.53	\$137.33
104-12	STAKED TURBIDITY BARRIER- NYL REINF PVC	16.10 LF	\$4.50	\$72.45
104-15	SOIL TRACKING PREVENTION DEVICE	1.00 EA	\$1,932.61	\$1,932.61
107-1	LITTER REMOVAL	1.17 AC	\$35.65	\$41.71
107-2	MOWING	1.17 AC	\$45.79	\$53.57
Shoulder Component Total				\$47,607.33

MEDIAN COMPONENT

User Input Data

Description	Value
Total Median Width	15.00
Performance Turf Width	6.50
New Total Median Shoulder Width L/R	2.00 / 2.00
New Paved Median Shoulder Width L/R	0.00 / 0.00
Existing Total Median Shoulder Width L/R	2.00 / 2.00
Existing Paved Median Shoulder Width L/R	0.00 / 0.00
Structural Spread Rate	495
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	T
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
570-1-1	PERFORMANCE TURF	613.95	SY	\$1.13	\$693.76

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-7	CONCRETE CURB & GUTTER, TYPE E	1,360.00	LF	\$13.40	\$18,224.00
Median Component Total					\$18,917.76

DRAINAGE COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	2.90	CY	\$1,322.03	\$3,833.89
430-174-124	PIPE CULV, OPT MATL, ROUND,24"SD	128.00	LF	\$66.57	\$8,520.96
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	16.00	LF	\$104.92	\$1,678.72
430-984-129	MITERED END SECT, OPTIONAL RD, 24" SD	7.00	EA	\$1,138.80	\$7,971.60
570-1-1	PERFORMANCE TURF	113.34	SY	\$1.13	\$128.07
Drainage Component Total					\$22,133.24

SIGNING COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	1.00	AS	\$305.32	\$305.32
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	4.00	AS	\$1,012.87	\$4,051.48
700-1-50	SINGLE POST SIGN, RELOCATE	1.00	AS	\$136.53	\$136.53
700-1-60	SINGLE POST SIGN, REMOVE	4.00	AS	\$25.34	\$101.36
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	1.00	AS	\$4,276.20	\$4,276.20
700-2-60	MULTI- POST SIGN, REMOVE	1.00	AS	\$303.31	\$303.31
Signing Component Total					\$9,174.20

LANDSCAPING COMPONENT**User Input Data**

Description	Value
Cost %	2.50
Component Detail	N

Landscaping Component Total	\$6,064.39
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Sequence 2 Total

\$307,721.89

Date: 6/3/2014 8:44:14 AM

FDOT Long Range Estimating System - Production
R3: Project Details by Sequence Report

Project: 430185-1-22-01**Letting Date:** 11/2020**Description:** SR 33 FROM OLD COMBEE RD TO N OF TOMKOW RD**District:** 01 **County:** 16 POLK **Market Area:** 08 **Units:** English**Contract Class:** 1 **Lump Sum Project:** N **Design/Build:** N **Project Length:** 3.720 MI**Project Manager:** CES-MJB-ANS**Version 20 Project Grand Total** **\$10,804,841.39****Description:** June 2014 Unit Cost Update from Version 18 - 6/3/14

Project Sequences Subtotal **\$8,037,462.63**

102-1	Maintenance of Traffic	10.00 %	\$803,746.26
101-1	Mobilization	10.00 %	\$884,120.89

Project Sequences Total **\$9,725,329.78**

Project Unknowns	10.00 %	\$972,532.98
Design/Build	0.00 %	\$0.00

Non-Bid Components:

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
999-25	INITIAL CONTINGENCY AMOUNT (DO NOT BID)		LS	\$106,978.63	\$106,978.63

Project Non-Bid Subtotal **\$106,978.63****Version 20 Project Grand Total** **\$10,804,841.39**

Date: 6/3/2014 8:41:42 AM

FDOT Long Range Estimating System - Production

R3: Project Details by Sequence Report

Project: 430185-1-22-01

Letting Date: 11/2020

Description: SR 33 FROM OLD COMBEE RD TO N OF TOMKOW RD

District: 01 County: 16 POLK Market Area: 08 Units: English

Contract Class: 1 Lump Sum Project: N Design/Build: N Project Length: 3.720 MI

Project Manager: CES-MJB-ANS

Version 21 Project Grand Total

\$43,904,501.53

Description: June 2014 Unit Cost Update from Version 19 - 6/3/14

Sequence: 1 WDR - Widen/Resurface, Divided, Rural

Net Length: 0.860 MI
4,538 LFDescription: Milling and Resurfacing SR 33 From South of UNIVERSITY TO STA 1431+45 and STA 1466+66
To Tomkow Road

EARTHWORK COMPONENT

User Input Data

Description	Value
Standard Clearing and Grubbing Limits L/R	100.00 / 100.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.860
Top of Structural Course For Begin Section	103.00
Top of Structural Course For End Section	103.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Existing Front Slope L/R	6 to 1 / 6 to 1
Existing Median Slope L/R	6 to 1 / 6 to 1
Existing Median Shoulder Cross Slope L/R	5.00 % / 5.00 %
Existing Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Front Slope L/R	6 to 1 / 6 to 1
Median Slope L/R	6 to 1 / 6 to 1
Median Shoulder Cross Slope L/R	5.00 % / 5.00 %
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	20.85 AC	\$10,000.00	\$208,500.00

X-Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
120-6	EMBANKMENT	9,414.59 CY	\$7.89	\$74,281.12

Earthwork Component Total	\$282,781.12
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ROADWAY COMPONENT

User Input Data

Description	Value
Number of Lanes	4
Existing Roadway Pavement Width L/R	24.00 / 0.00
Structural Spread Rate	275
Friction Course Spread Rate	80
Widened Outside Pavement Width L/R	0.00 / 24.00
Widened Inside Pavement Width L/R	0.00 / 0.00
Widened Structural Spread Rate	495
Widened Friction Course Spread Rate	80

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	24,203.52	SY	\$3.65	\$88,342.85
285-711	OPTIONAL BASE,BASE GROUP 11	12,268.16	SY	\$16.06	\$197,026.65
327-70-8	MILLING EXIST ASPH PAVT,2 1/2" AVG DEPTH	12,101.76	SY	\$1.66	\$20,088.92
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	1,663.99	TN	\$84.42	\$140,474.04
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	2,995.19	TN	\$84.42	\$252,853.94
337-7-5	ASPH CONC FC, INC BIT/RUBBER, FC-5	484.07	TN	\$130.37	\$63,108.21
337-7-5	ASPH CONC FC, INC BIT/RUBBER, FC-5	484.07	TN	\$130.37	\$63,108.21

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION Comment: for 1300' long 12' wide Trail - Includes Inside and Outside Shoulders	14,413.00	SY	\$3.65	\$52,607.45
285-701	OPTIONAL BASE,BASE GROUP 01 Comment: for 1300' long 12' wide Trail	1,733.00	SY	\$13.82	\$23,950.06
334-1-11	SUPERPAVE ASPHALTIC CONC, TRAFFIC A Comment: for 1300' long 12' wide Trail	143.00	TN	\$92.67	\$13,251.81
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C Comment: Overbuild	959.00	TN	\$84.42	\$80,958.78

Turnouts/Crossovers Subcomponent

Description	Value
Asphalt Adjustment	20.00
Milling Code	N
Stabilization Code	Y
Base Code	Y
Friction Course Code	Y

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	4,840.70	SY	\$3.65	\$17,668.56
285-711	OPTIONAL BASE,BASE GROUP 11	2,453.63	SY	\$16.06	\$39,405.30
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	332.80	TN	\$84.42	\$28,094.98

337-7-5	ASPH CONC FC, INC BIT/RUBBER, FC-5	96.81 TN	\$130.37	\$12,621.12
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Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	Y
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	4
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	2

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	348.00 EA	\$3.56	\$1,238.88
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	3.44 NM	\$913.97	\$3,144.06
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	1.72 GM	\$345.33	\$593.97
711-11-111	THERMOPLASTIC, STD, WHITE, SOLID, 6"	3.44 NM	\$3,957.74	\$13,614.63
711-11-131	THERMOPLASTIC, STD, WHITE, SKIP, 6"	1.72 GM	\$1,171.15	\$2,014.38
Roadway Component Total				\$1,114,166.80

SHOULDER COMPONENT**User Input Data**

Description	Value
Existing Total Outside Shoulder Width L/R	0.00 / 0.00
New Total Outside Shoulder Width L/R	8.00 / 8.00
Total Outside Shoulder Perf. Turf Width L/R	2.66 / 2.66
Existing Paved Outside Shoulder Width L/R	0.00 / 0.00
New Paved Outside Shoulder Width L/R	5.00 / 5.00
Structural Spread Rate	110
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	T
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	5,375.20 SY	\$8.76	\$47,086.75
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	277.33 TN	\$84.42	\$23,412.20
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	201.70 TN	\$127.19	\$25,654.22
570-1-1	PERFORMANCE TURF	2,682.56 SY	\$1.13	\$3,031.29

X-Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
520-6	SHOULDER GUTTER- CONCRETE	1,100.00 LF	\$16.99	\$18,689.00
522-1	CONC SIDEWALK AND DRIVEWAYS, 4" THICK	4,320.00 SY	\$25.58	\$110,505.60

570-1-1	Comment: 5' sidewalk PERFORMANCE TURF	36,304.00 SY	\$1.13	\$41,023.52
570-1-2	Comment: 72 LF within border area PERFORMANCE TURF, SOD Comment: 24 LF for Sidewalk tiedown	12,101.00 SY	\$2.22	\$26,864.22

Erosion Control**Pay Items**

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	10,437.77 LF	\$1.01	\$10,542.15
104-11	FLOATING TURBIDITY BARRIER	85.95 LF	\$8.53	\$733.15
104-12	STAKED TURBIDITY BARRIER- NYL REINF PVC	85.95 LF	\$4.50	\$386.78
104-15	SOIL TRACKING PREVENTION DEVICE	1.00 EA	\$1,932.61	\$1,932.61
107-1	LITTER REMOVAL	6.25 AC	\$35.65	\$222.81
107-2	MOWING	6.25 AC	\$45.79	\$286.19
Shoulder Component Total				\$310,370.49

MEDIAN COMPONENT**User Input Data**

Description	Value
Total Median Width	30.00
Performance Turf Width	17.50
New Total Median Shoulder Width L/R	4.00 / 4.00
New Paved Median Shoulder Width L/R	4.00 / 4.00
Existing Total Median Shoulder Width L/R	0.00 / 0.00
Existing Paved Median Shoulder Width L/R	0.00 / 0.00
Structural Spread Rate	385
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	T
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	4,366.72 SY	\$8.76	\$38,252.47
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	776.53 TN	\$84.42	\$65,554.66
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	161.36 TN	\$127.19	\$20,523.38
570-1-1	PERFORMANCE TURF	8,824.20 SY	\$1.13	\$9,971.35

X-Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
520-1-7	CONCRETE CURB & GUTTER, TYPE E	7,498.00 LF	\$13.40	\$100,473.20
520-5-11	TRAF SEP CONC-TYPE I, 4' WIDE	1,578.00 LF	\$24.52	\$38,692.56
Median Component Total				\$273,467.62

DRAINAGE COMPONENT

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	15.47 CY	\$1,322.03	\$20,451.80
430-174-124	PIPE CULV, OPT MATL, ROUND,24"SD	688.00 LF	\$66.57	\$45,800.16
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	72.00 LF	\$104.92	\$7,554.24
430-984-129	MITERED END SECT, OPTIONAL RD, 24" SD	35.00 EA	\$1,138.80	\$39,858.00
570-1-1	PERFORMANCE TURF	605.09 SY	\$1.13	\$683.75

X-Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
400-4-1	CONC CLASS IV, CULVERTS	95.48 CY	\$1,069.05	\$102,072.89
415-1-6	REINF STEEL- MISCELLANEOUS	4,932.00 LB	\$0.77	\$3,797.64
425-1-351	INLETS, CURB, TYPE P-5, <10'	3.00 EA	\$2,849.26	\$8,547.78
425-1-701	INLETS, GUTTER, TYPE S, <10'	6.00 EA	\$2,773.82	\$16,642.92
430-175-118	PIPE CULV, OPT MATL, ROUND, 18"S/CD	1,504.00 LF	\$39.78	\$59,829.12
430-982-125	MITERED END SECT, OPTIONAL RD, 18" CD	1.00 EA	\$821.77	\$821.77
Drainage Component Total				\$306,060.07

SIGNING COMPONENT**Pay Items**

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	2.00 AS	\$305.32	\$610.64
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	21.00 AS	\$1,012.87	\$21,270.27
700-1-50	SINGLE POST SIGN, RELOCATE	2.00 AS	\$136.53	\$273.06
700-1-60	SINGLE POST SIGN, REMOVE	21.00 AS	\$25.34	\$532.14
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	2.00 AS	\$4,276.20	\$8,552.40
700-2-60	MULTI- POST SIGN, REMOVE	2.00 AS	\$303.31	\$606.62
Signing Component Total				\$31,845.13

SIGNALIZATIONS COMPONENT**Signalization 1**

Description	Value
Type	4 Lane Mast Arm
Multiplier	1
Description	University Blvd

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	750.00 LF	\$4.74	\$3,555.00
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	250.00 LF	\$15.49	\$3,872.50
632-7-1	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL	1.00 PI	\$3,568.53	\$3,568.53

635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	16.00 EA	\$512.53	\$8,200.48
639-1-112	ELECTRICAL POWER SRV,F&I,OH,M,PUR BY CON	1.00 AS	\$1,604.87	\$1,604.87
639-2-1	ELECTRICAL SERVICE WIRE	60.00 LF	\$7.56	\$453.60
649-31-103	M/ARM,F&I, WS-150,SINGLE ARM,W/O LUM-60	4.00 EA	\$31,147.81	\$124,591.24
650-1-311	TRAFFIC SIGNAL,F&I,3 SECT,1 WAY,ALUMINUM	12.00 AS	\$897.40	\$10,768.80
653-191	PEDESTRIAN SIGNAL, F&I, LED- COUNT DWN, 1	8.00 AS	\$492.50	\$3,940.00
660-1-102	LOOP DETECTOR INDUCTIVE, F&I, TYPE 2	12.00 EA	\$164.17	\$1,970.04
660-2-106	LOOP ASSEMBLY, F&I, TYPE F	12.00 AS	\$829.39	\$9,952.68
665-1-11	PEDESTRIAN DETECTOR, F&I, STANDARD	8.00 EA	\$214.30	\$1,714.40
670-5-111	TRAF CNTL ASSEM, F&I, NEMA, 1 PREEMPT	1.00 AS	\$23,209.81	\$23,209.81
700-3-101	SIGN PANEL, F&I GM, UP TO 12 SF	4.00 EA	\$238.70	\$954.80
Signalizations Component Total				\$198,356.75

LANDSCAPING COMPONENT

User Input Data

Description	Value
Cost %	2.50
Component Detail	N

Landscaping Component Total	\$50,101.62
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Sequence 1 Total	\$2,567,149.60
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Sequence: 2NDR - New Construction, Divided, Rural**Net Length:** 0.667 MI
3,521 LF**Description:** STA 1431+45 To STA 1466+66**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	100.00 / 100.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.667
Top of Structural Course For Begin Section	105.00
Top of Structural Course For End Section	105.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	6 to 1 / 6 to 1
Median Slope L/R	6 to 1 / 6 to 1
Median Shoulder Cross Slope L/R	5.00 % / 5.00 %
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	16.17	AC	\$10,000.00	\$161,700.00
120-6	EMBANKMENT	58,685.57	CY	\$7.89	\$463,029.15

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
120-4	SUBSOIL EXCAVATION	9,600.00	CY	\$9.21	\$88,416.00
120-6	EMBANKMENT	9,600.00	CY	\$7.89	\$75,744.00

Earthwork Component Total \$788,889.15**ROADWAY COMPONENT****User Input Data**

Description	Value
Number of Lanes	4
Roadway Pavement Width L/R	24.00 / 24.00
Structural Spread Rate	495
Friction Course Spread Rate	80

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	28,169.86	SY	\$3.65	\$102,819.99
285-711	OPTIONAL BASE,BASE GROUP 11	19,296.35	SY	\$16.06	\$309,899.38
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	4,648.03	TN	\$84.42	\$392,386.69
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	751.20	TN	\$127.19	\$95,545.13

Turnouts/Crossovers Subcomponent

Description	Value
Asphalt Adjustment	30.00

Stabilization Code	N
Base Code	Y
Friction Course Code	Y

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
285-711	OPTIONAL BASE,BASE GROUP 11	5,788.90 SY	\$16.06	\$92,969.73
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	1,394.41 TN	\$84.42	\$117,716.09
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	225.36 TN	\$127.19	\$28,663.54

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	Y
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	4
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	2

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	270.00 EA	\$3.56	\$961.20
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	2.67 NM	\$913.97	\$2,440.30
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	1.33 GM	\$345.33	\$459.29
711-15-111	THERMOPLASTIC, STD-OP, WHITE, SOLID, 6"	2.67 NM	\$4,298.20	\$11,476.19
711-15-131	THERMOPLASTIC, STD-OP, WHITE, SKIP, 6"	1.33 GM	\$1,091.17	\$1,451.26

Roadway Component Total

\$1,156,788.79

SHOULDER COMPONENT**User Input Data**

Description	Value
Total Outside Shoulder Width L/R	8.00 / 8.00
Total Outside Shoulder Perf. Turf Width L/R	2.66 / 2.66
Paved Outside Shoulder Width L/R	5.00 / 5.00
Structural Spread Rate	110
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	T
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	4,170.70 SY	\$8.76	\$36,535.33
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	215.19 TN	\$84.42	\$18,166.34
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	156.50 TN	\$127.19	\$19,905.24

570-1-1	PERFORMANCE TURF	2,081.44 SY	\$1.13	\$2,352.03
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X-Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
522-1	CONC SIDEWALK AND DRIVEWAYS, 4" THICK Comment: 5' sidewalk on LT side of roadway	3,912.00 SY	\$25.58	\$100,068.96
570-1-1	PERFORMANCE TURF Comment: 72 LF within border area	28,168.00 SY	\$1.13	\$31,829.84
570-1-2	PERFORMANCE TURF, SOD Comment: 24 LF for sidewalk tiedown	9,389.00 SY	\$2.22	\$20,843.58

Erosion Control**Pay Items**

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	9,155.20 LF	\$1.01	\$9,246.75
104-11	FLOATING TURBIDITY BARRIER	166.73 LF	\$8.53	\$1,422.21
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	166.73 LF	\$4.50	\$750.29
104-15	SOIL TRACKING PREVENTION DEVICE	1.00 EA	\$1,932.61	\$1,932.61
104-18	INLET PROTECTION SYSTEM	5.00 EA	\$72.84	\$364.20
107-1	LITTER REMOVAL	16.17 AC	\$35.65	\$576.46
107-2	MOWING	16.17 AC	\$45.79	\$740.42

Shoulder Component Total

\$244,734.26

MEDIAN COMPONENT**User Input Data**

Description	Value
Total Median Width	30.00
Performance Turf Width	17.50
Total Median Shoulder Width L/R	4.00 / 4.00
Paved Median Shoulder Width L/R	4.00 / 4.00
Structural Spread Rate	495
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	T
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	3,388.21 SY	\$8.76	\$29,680.72
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	774.67 TN	\$84.42	\$65,397.64
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	125.20 TN	\$127.19	\$15,924.19
570-1-1	PERFORMANCE TURF	6,846.84 SY	\$1.13	\$7,736.93

X-Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
520-1-7	CONCRETE CURB & GUTTER, TYPE E	6,042.00 LF	\$13.40	\$80,962.80
520-5-11	TRAF SEP CONC-TYPE I, 4' WIDE	1,000.00 LF	\$24.52	\$24,520.00

Median Component Total

\$224,222.28

DRAINAGE COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	12.00	CY	\$1,322.03	\$15,864.36
425-1-551	INLETS, DT BOT, TYPE E, <10'	5.00	EA	\$2,972.83	\$14,864.15
430-174-124	PIPE CULV, OPT MATL, ROUND, 24"SD	536.00	LF	\$66.57	\$35,681.52
430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	1,256.00	LF	\$47.23	\$59,320.88
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	200.00	LF	\$104.92	\$20,984.00
430-984-129	MITERED END SECT, OPTIONAL RD, 24" SD	27.00	EA	\$1,138.80	\$30,747.60
524-1-1	CONCRETE DITCH PAVT, NR, 3"	1,333.80	SY	\$37.24	\$49,670.71
570-1-1	PERFORMANCE TURF	469.50	SY	\$1.13	\$530.54

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-1	CONC CLASS II, CULVERTS	13.50	CY	\$794.33	\$10,723.46
400-4-1	CONC CLASS IV, CULVERTS	490.22	CY	\$1,069.05	\$524,069.69
415-1-6	REINF STEEL- MISCELLANEOUS	21,084.00	LB	\$0.77	\$16,234.68
425-1-351	INLETS, CURB, TYPE P-5, <10'	8.00	EA	\$2,849.26	\$22,794.08
425-1-361	INLETS, CURB, TYPE P-6, <10'	2.00	EA	\$3,225.65	\$6,451.30
430-175-130	PIPE CULV, OPT MATL, ROUND, 30"S/CD	344.00	LF	\$66.29	\$22,803.76
430-175-148	PIPE CULV, OPT MATL, ROUND, 48"S/CD	472.00	LF	\$138.28	\$65,268.16
430-982-133	MITERED END SECT, OPTIONAL RD, 30" CD	2.00	EA	\$1,787.92	\$3,575.84

Retention Basin 1

Description	Value
Size	10 AC
Multiplier	2
Depth	3.00
Description	

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	20.00	AC	\$10,000.00	\$200,000.00
120-1	REGULAR EXCAVATION	96,800.00	CY	\$5.22	\$505,296.00
400-2-2	CONC CLASS II, ENDWALLS	72.00	CY	\$1,322.03	\$95,186.16
425-1-541	INLETS, DT BOT, TYPE D, <10'	4.00	EA	\$2,486.11	\$9,944.44
425-2-71	MANHOLES, J-7, <10'	4.00	EA	\$4,474.17	\$17,896.68
430-175-142	PIPE CULV, OPT MATL, ROUND, 42"S/CD	208.00	LF	\$121.13	\$25,195.04
430-175-160	PIPE CULV, OPT MATL, ROUND, 60"S/CD	800.00	LF	\$218.70	\$174,960.00
550-10-220	FENCING, TYPE B, 5.1-6.0', STANDARD	5,560.00	LF	\$13.00	\$72,280.00

550-60-234	FENCE GATE, TYP B, SLIDE/CANT, 18.1-20' OPEN	6.00 EA	\$2,671.64	\$16,029.84
570-1-1	PERFORMANCE TURF	96,800.00 SY	\$1.13	\$109,384.00
Drainage Component Total				\$2,125,756.89

SIGNING COMPONENT**Pay Items**

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	2.00 AS	\$305.32	\$610.64
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	17.00 AS	\$1,012.87	\$17,218.79
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	2.00 AS	\$4,276.20	\$8,552.40
700-2-15	MULTI- POST SIGN, F&I GM, 51-100 SF	5.00 AS	\$4,884.17	\$24,420.85
Signing Component Total				\$50,802.68

SIGNALIZATIONS COMPONENT**Signalization 1**

Description	Value
Type	4 Lane Mast Arm
Multiplier	2
Description	I-4 Ramps

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	1,500.00 LF	\$4.74	\$7,110.00
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	500.00 LF	\$15.49	\$7,745.00
632-7-1	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL	2.00 PI	\$3,568.53	\$7,137.06
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	32.00 EA	\$512.53	\$16,400.96
639-1-112	ELECTRICAL POWER SRV, F&I, OH, M, PUR BY CON	2.00 AS	\$1,604.87	\$3,209.74
639-2-1	ELECTRICAL SERVICE WIRE	120.00 LF	\$7.56	\$907.20
649-31-103	M/ARM, F&I, WS-150, SINGLE ARM, W/O LUM-60	8.00 EA	\$31,147.81	\$249,182.48
650-1-311	TRAFFIC SIGNAL, F&I, 3 SECT, 1 WAY, ALUMINUM	24.00 AS	\$897.40	\$21,537.60
653-191	PEDESTRIAN SIGNAL, F&I, LED-COUNT DWN, 1	16.00 AS	\$492.50	\$7,880.00
660-1-102	LOOP DETECTOR INDUCTIVE, F&I, TYPE 2	24.00 EA	\$164.17	\$3,940.08
660-2-106	LOOP ASSEMBLY, F&I, TYPE F	24.00 AS	\$829.39	\$19,905.36
665-1-11	PEDESTRIAN DETECTOR, F&I, STANDARD	16.00 EA	\$214.30	\$3,428.80
670-5-111	TRAF CNTL ASSEM, F&I, NEMA, 1 PREEMPT	2.00 AS	\$23,209.81	\$46,419.62
700-3-101	SIGN PANEL, F&I GM, UP TO 12 SF	8.00 EA	\$238.70	\$1,909.60
Signalizations Component Total				\$396,713.50

LANDSCAPING COMPONENT**User Input Data**

Description	Value
Cost %	2.50
Component Detail	N

Landscaping Component Total	\$93,787.56
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Sequence 2 Total	\$5,081,695.11
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Sequence: 3WDR - Widen/Resurface, Divided, Rural**Net Length:** 0.161 MI
850 LF**Description:** 850 LF of taper from 4 to 2 Lanes on SR 33**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	100.00 / 100.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.161
Top of Structural Course For Begin Section	103.00
Top of Structural Course For End Section	103.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Existing Front Slope L/R	6 to 1 / 6 to 1
Existing Median Slope L/R	6 to 1 / 6 to 1
Existing Median Shoulder Cross Slope L/R	5.00 % / 5.00 %
Existing Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Front Slope L/R	6 to 1 / 6 to 1
Median Slope L/R	6 to 1 / 6 to 1
Median Shoulder Cross Slope L/R	5.00 % / 5.00 %
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	3.90	AC	\$10,000.00	\$39,000.00
120-2-2	BORROW EXCAVATION, TRUCK MEASURE	1,382.48	CY	\$11.20	\$15,483.78
Earthwork Component Total					\$54,483.78

ROADWAY COMPONENT**User Input Data**

Description	Value
Number of Lanes	3
Existing Roadway Pavement Width L/R	24.00 / 0.00
Structural Spread Rate	275
Friction Course Spread Rate	80
Widened Outside Pavement Width L/R	0.00 / 18.00
Widened Inside Pavement Width L/R	0.00 / 0.00
Widened Structural Spread Rate	495
Widened Friction Course Spread Rate	80

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	3,589.23	SY	\$3.65	\$13,100.69
285-711	OPTIONAL BASE,BASE GROUP 11	1,731.33	SY	\$16.06	\$27,805.16
327-70-8	MILLING EXIST ASPH PAVT,2 1/2" AVG DEPTH	2,266.88	SY	\$1.66	\$3,763.02
334-1-13		311.70	TN	\$84.42	\$26,313.71

	SUPERPAVE ASPHALTIC CONC, TRAFFIC C			
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	420.79 TN	\$84.42	\$35,523.09
337-7-5	ASPH CONC FC, INC BIT/RUBBER, FC-5	90.68 TN	\$130.37	\$11,821.95
337-7-5	ASPH CONC FC, INC BIT/RUBBER, FC-5	68.01 TN	\$130.37	\$8,866.46

X-Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C Comment: Overbuild	14.90 TN	\$84.42	\$1,257.86

Turnouts/Crossovers Subcomponent

Description	Value
Asphalt Adjustment	10.00
Milling Code	Y
Stabilization Code	Y
Base Code	Y
Friction Course Code	Y

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	358.92 SY	\$3.65	\$1,310.06
285-711	OPTIONAL BASE,BASE GROUP 11	173.13 SY	\$16.06	\$2,780.47
327-70-8	MILLING EXIST ASPH PAVT,2 1/2" AVG DEPTH	226.69 SY	\$1.66	\$376.31
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	31.17 TN	\$84.42	\$2,631.37
337-7-5	ASPH CONC FC, INC BIT/RUBBER, FC-5	9.07 TN	\$130.37	\$1,182.46

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	Y
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	4
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	1

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	43.00 EA	\$3.56	\$153.08
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.64 NM	\$913.97	\$584.94
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.16 GM	\$345.33	\$55.25
711-11-111		0.64 NM	\$3,957.74	\$2,532.95

	THERMOPLASTIC, STD, WHITE, SOLID, 6"			
711-11-131	THERMOPLASTIC, STD, WHITE, SKIP, 6"	0.16 GM	\$1,171.15	\$187.38

Roadway Component Total

\$140,246.21

SHOULDER COMPONENT**User Input Data**

Description	Value
Existing Total Outside Shoulder Width L/R	0.00 / 0.00
New Total Outside Shoulder Width L/R	8.00 / 8.00
Total Outside Shoulder Perf. Turf Width L/R	1.33 / 1.33
Existing Paved Outside Shoulder Width L/R	0.00 / 0.00
New Paved Outside Shoulder Width L/R	5.00 / 5.00
Structural Spread Rate	110
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	T
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	1,006.87	SY	\$8.76	\$8,820.18
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	51.95	TN	\$84.42	\$4,385.62
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	37.78	TN	\$127.19	\$4,805.24
570-1-1	PERFORMANCE TURF	251.25	SY	\$1.13	\$283.91

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
522-1	CONC SIDEWALK AND DRIVEWAYS, 4" THICK	944.00	SY	\$25.58	\$24,147.52
570-1-1	PERFORMANCE TURF Comment: 79 LF within border area	7,461.00	SY	\$1.13	\$8,430.93
570-1-2	PERFORMANCE TURF, SOD Comment: 24 LF for Sidewalk tiedown	2,267.00	SY	\$2.22	\$5,032.74

Erosion Control**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	1,955.18	LF	\$1.01	\$1,974.73
104-11	FLOATING TURBIDITY BARRIER	16.10	LF	\$8.53	\$137.33
104-12	STAKED TURBIDITY BARRIER- NYL REINF PVC	16.10	LF	\$4.50	\$72.45
104-15	SOIL TRACKING PREVENTION DEVICE	1.00	EA	\$1,932.61	\$1,932.61
107-1	LITTER REMOVAL	1.17	AC	\$35.65	\$41.71
107-2	MOWING	1.17	AC	\$45.79	\$53.57

Shoulder Component Total

\$60,118.54

MEDIAN COMPONENT**User Input Data**

Description	Value
Total Median Width	15.00
Performance Turf Width	6.50
New Total Median Shoulder Width L/R	2.00 / 2.00
New Paved Median Shoulder Width L/R	0.00 / 0.00
Existing Total Median Shoulder Width L/R	2.00 / 2.00
Existing Paved Median Shoulder Width L/R	0.00 / 0.00
Structural Spread Rate	495
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	T
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
570-1-1	PERFORMANCE TURF	613.95	SY	\$1.13	\$693.76

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-7	CONCRETE CURB & GUTTER, TYPE E	700.00	LF	\$13.40	\$9,380.00

Median Component Total

\$10,073.76

DRAINAGE COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	2.90	CY	\$1,322.03	\$3,833.89
430-174-124	PIPE CULV, OPT MATL, ROUND,24"SD	128.00	LF	\$66.57	\$8,520.96
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	16.00	LF	\$104.92	\$1,678.72
430-984-129	MITERED END SECT, OPTIONAL RD, 24" SD	7.00	EA	\$1,138.80	\$7,971.60
570-1-1	PERFORMANCE TURF	113.34	SY	\$1.13	\$128.07

Drainage Component Total

\$22,133.24

SIGNING COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	1.00	AS	\$305.32	\$305.32
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	4.00	AS	\$1,012.87	\$4,051.48
700-1-50	SINGLE POST SIGN, RELOCATE	1.00	AS	\$136.53	\$136.53
700-1-60	SINGLE POST SIGN, REMOVE	4.00	AS	\$25.34	\$101.36

700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	1.00 AS	\$4,276.20	\$4,276.20
700-2-60	MULTI- POST SIGN, REMOVE	1.00 AS	\$303.31	\$303.31
Signing Component Total				\$9,174.20

LANDSCAPING COMPONENT

User Input Data

Description	Value
Cost %	2.50
Component Detail	N

Landscaping Component Total	\$5,814.29
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Sequence 3 Total	\$302,044.02
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Sequence: 4 NDR - New Construction, Divided, Rural**Net Length:** 1.617 MI
8,539 LF**Description:** Mainline I-4 - Six lane divided Interstate/Turnpike with 164' median**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	400.00 / 400.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	1.617
Top of Structural Course For Begin Section	110.00
Top of Structural Course For End Section	110.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	6 to 1 / 6 to 1
Median Slope L/R	6 to 1 / 6 to 1
Median Shoulder Cross Slope L/R	5.00 % / 5.00 %
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	156.80	AC	\$10,000.00	\$1,568,000.00
120-6	EMBANKMENT	838,553.49	CY	\$7.89	\$6,616,187.04
Earthwork Component Total					\$8,184,187.04

ROADWAY COMPONENT**User Input Data**

Description	Value
Number of Lanes	6
Roadway Pavement Width L/R	36.00 / 36.00
Structural Spread Rate	440
Friction Course Spread Rate	80

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	113,850.88	SY	\$3.65	\$415,555.71
285-710	OPTIONAL BASE,BASE GROUP 10	69,562.89	SY	\$12.07	\$839,624.08
334-1-25	SUPERPAVE ASPH CONC, TRAF E, PG76-22,PMA	15,028.32	TN	\$87.78	\$1,319,185.93
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	2,732.42	TN	\$127.19	\$347,536.50

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
521-8-1	CONC TRAF RAIL BAR, JCT SLAB,32"F SHAPE	5,753.00	LF	\$191.35	\$1,100,836.55
544-75-140	CRASH CUSHION - OPTIONAL, CAPACITY PR<50	2.00	EA	\$16,937.18	\$33,874.36

Turnouts/Crossovers Subcomponent

Description	Value
Asphalt Adjustment	0.00
Stabilization Code	Y
Base Code	Y
Friction Course Code	Y

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	Y
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	4
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	4

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	1,092.00	EA	\$3.56	\$3,887.52
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	6.47	NM	\$913.97	\$5,913.39
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	6.47	GM	\$345.33	\$2,234.29
711-11-111	THERMOPLASTIC, STD, WHITE, SOLID, 6"	6.47	NM	\$3,957.74	\$25,606.58
711-11-131	THERMOPLASTIC, STD, WHITE, SKIP, 6"	6.47	GM	\$1,171.15	\$7,577.34

Peripherals Subcomponent

Description	Value
Off Road Bike Path(s)	0
Off Road Bike Path Width L/R	0.00 / 0.00
Bike Path Structural Spread Rate	0
Noise Barrier Wall Length	0.00
Noise Barrier Wall Begin Height	0.00
Noise Barrier Wall End Height	0.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
550-10-220	FENCING, TYPE B, 5.1-6.0', STANDARD	7,656.00	LF	\$13.00	\$99,528.00

Roadway Component Total

\$4,201,360.25

SHOULDER COMPONENT**User Input Data**

Description	Value
Total Outside Shoulder Width L/R	12.00 / 12.00
Total Outside Shoulder Perf. Turf Width L/R	0.00 / 0.00
Paved Outside Shoulder Width L/R	12.00 / 12.00
Structural Spread Rate	220
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	0
Rumble Strips No. of Sides	2

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	23,396.36 SY	\$8.76	\$204,952.11
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	2,504.72 TN	\$108.28	\$271,211.08
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	50.09 TN	\$127.19	\$6,370.95
546-72-51	RUMBLE STRIPS, GROUND-IN, 16" MIN. WIDTH	3.23 PM	\$1,576.19	\$5,091.09

Erosion Control**Pay Items**

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	22,200.92 LF	\$1.01	\$22,422.93
104-11	FLOATING TURBIDITY BARRIER	404.30 LF	\$8.53	\$3,448.68
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	404.30 LF	\$4.50	\$1,819.35
104-15	SOIL TRACKING PREVENTION DEVICE	2.00 EA	\$1,932.61	\$3,865.22
104-18	INLET PROTECTION SYSTEM	10.00 EA	\$72.84	\$728.40
107-1	LITTER REMOVAL	39.20 AC	\$35.65	\$1,397.48
107-2	MOWING	39.20 AC	\$45.79	\$1,794.97
Shoulder Component Total				\$523,102.26

MEDIAN COMPONENT**User Input Data**

Description	Value
Total Median Width	164.00
Performance Turf Width	4.00
Total Median Shoulder Width L/R	12.00 / 12.00
Paved Median Shoulder Width L/R	10.00 / 10.00
Structural Spread Rate	220
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	O
Rumble Strips No. of Sides	2

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	19,601.33 SY	\$8.76	\$171,707.65
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	2,087.27 TN	\$108.28	\$226,009.60
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	50.09 TN	\$127.19	\$6,370.95
546-72-51	RUMBLE STRIPS, GROUND-IN, 16" MIN. WIDTH	3.00 PM	\$1,576.19	\$4,728.57
570-1-1	PERFORMANCE TURF	3,795.03 SY	\$1.13	\$4,288.38
Median Component Total				\$413,105.15

DRAINAGE COMPONENT**Pay Items**

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	29.11 CY	\$1,322.03	\$38,484.29
425-1-551	INLETS, DT BOT, TYPE E, <10'	10.00 EA	\$2,972.83	\$29,728.30
430-174-124	PIPE CULV, OPT MATL, ROUND,24"SD	1,296.00 LF	\$66.57	\$86,274.72
430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	560.00 LF	\$47.23	\$26,448.80
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	480.00 LF	\$104.92	\$50,361.60
430-984-129	MITERED END SECT, OPTIONAL RD, 24" SD	65.00 EA	\$1,138.80	\$74,022.00
524-1-1	CONCRETE DITCH PAVT, NR, 3"	3,234.40 SY	\$37.24	\$120,449.06
570-1-1	PERFORMANCE TURF	1,138.51 SY	\$1.13	\$1,286.52

X-Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
400-4-1	CONC CLASS IV, CULVERTS	150.00 CY	\$1,069.05	\$160,357.50
415-1-6	REINF STEEL- MISCELLANEOUS	7,831.00 LB	\$0.77	\$6,029.87

Drainage Component Total

\$593,442.66

SIGNING COMPONENT**Pay Items**

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	4.00 AS	\$305.32	\$1,221.28
700-1-12	SINGLE POST SIGN, F&I GM, 12- 20 SF	39.00 AS	\$1,012.87	\$39,501.93
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	4.00 AS	\$4,276.20	\$17,104.80
700-2-15	MULTI- POST SIGN, F&I GM, 51- 100 SF	10.00 AS	\$4,884.17	\$48,841.70

X-Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
700-3-205	SIGN PANEL, F&I OM, 51-100 SF	3.00 EA	\$3,394.62	\$10,183.86
700-3-210	SIGN PANEL, F&I OM, 501-600 SF	3.00 EA	\$8,500.00	\$25,500.00
700-3-303	SIGN PANEL, F&I BM, 21-30 SF	3.00 EA	\$2,500.00	\$7,500.00
700-4-113	OH STATIC SIGN STR, F&I, C 31- 40 FT	3.00 EA	\$55,000.00	\$165,000.00
700-4-125	OH STATIC SIGN STR, F&I, S 51- 100 FT	3.00 EA	\$100,000.00	\$300,000.00
700-4-140	OH STATIC SIGN STR, F&I, O BR MOUNT	3.00 EA	\$7,512.50	\$22,537.50

Signing Component Total

\$637,391.07

LIGHTING COMPONENT**High Mast Lighting Subcomponent**

Description	Value
Multiplier (Number of Poles)	14

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
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715-1-12	LIGHTING CONDUCTORS, F&I, INSUL,NO.8-6	7,000.00 LF	\$1.23	\$8,610.00
715-1-13	LIGHTING CONDUCTORS, F&I, INSUL, NO.4-2	21,000.00 LF	\$1.87	\$39,270.00
715-2-11	LIGHTING-CONDUIT, F&I, UNDERGROUND	7,000.00 LF	\$3.97	\$27,790.00
715-7-11	LOAD CENTER, F&I, SECONDARY VOLTAGE	1.00 EA	\$11,703.33	\$11,703.33
715-11-112	LUMINAIRE, F&I, ROADWAY, HIGH MAST	14.00 EA	\$1,100.00	\$15,400.00
715-14-11	LIGHTING - PULL BOX,F&I,ROADSIDE-MOULDED	28.00 EA	\$492.88	\$13,800.64
715-19-113	HIGH MAST LIGHT POLE,F&I,WS-150,120'	14.00 EA	\$47,977.46	\$671,684.44
715-500-2	POLE CABLE DISTRIBUTION SYS, HIGH MAST	14.00 EA	\$292.36	\$4,093.04
	Subcomponent Total			\$792,351.45
	Lighting Component Total			\$792,351.45

BRIDGES COMPONENT

Bridge CROVER

Description	Value
Estimate Type	SF Estimate
Primary Estimate	YES
Length (LF)	223.00
Width (LF)	61.00
Type	Overpass Bridge
Cost Factor	1.00
Structure No.	160181
Removal of Existing Structures area	10,166.00
Default Cost per SF	\$122.00
Factored Cost per SF	\$122.00
Final Cost per SF	\$126.65
Basic Bridge Cost	\$1,659,566.00
Description	

Bridge Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-3	REMOVAL OF EXISTING STRUCTURE	10,166.00	SF	\$24.54	\$249,473.64
400-2-10	CONC CLASS II, APPROACH SLABS	135.56	CY	\$331.64	\$44,957.12
415-1-9	REINF STEEL- APPROACH SLABS	23,723.00	LB	\$0.77	\$18,266.71
	Bridge CROVER Total				\$1,972,263.47

Bridge CROVER

Description	Value
Estimate Type	SF Estimate
Primary Estimate	YES
Length (LF)	237.00
Width (LF)	61.00
Type	Overpass Bridge
Cost Factor	1.00
Structure No.	160182

Removal of Existing Structures area	10,166.00
Default Cost per SF	\$122.00
Factored Cost per SF	\$122.00
Final Cost per SF	\$126.37
Basic Bridge Cost	\$1,763,754.00
Description	

Bridge Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
110-3	REMOVAL OF EXISTING STRUCTURE	10,166.00 SF	\$24.54	\$249,473.64
400-2-10	CONC CLASS II, APPROACH SLABS	135.56 CY	\$331.64	\$44,957.12
415-1-9	REINF STEEL- APPROACH SLABS	23,723.00 LB	\$0.77	\$18,266.71
Bridge CROVER Total				\$2,076,451.47
Bridges Component Total				\$4,048,714.94

RETAINING WALLS COMPONENT**X-Items**

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
548-12	RET WALL SYSTEM, PERM, EX BARRIER	57,530.00 SF	\$21.89	\$1,259,331.70
Retaining Walls Component Total				\$1,259,331.70

Sequence 4 Total **\$20,652,986.52**

Sequence: 5NUR - New Construction, Undivided, Rural**Net Length:** 0.166 MI
875 LF**Description:** Ramp A - One lane off-ramp**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	50.00 / 50.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.166
Top of Structural Course For Begin Section	108.00
Top of Structural Course For End Section	107.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	4 to 1 / 4 to 1
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	2.01	AC	\$10,000.00	\$20,100.00
120-6	EMBANKMENT	13,007.29	CY	\$7.89	\$102,627.52
Earthwork Component Total					\$122,727.52

ROADWAY COMPONENT**User Input Data**

Description	Value
Number of Lanes	1
Roadway Pavement Width L/R	7.50 / 7.50
Structural Spread Rate	275
Friction Course Spread Rate	80

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	3,207.95	SY	\$3.65	\$11,709.02
285-709	OPTIONAL BASE,BASE GROUP 09	1,522.32	SY	\$13.01	\$19,805.38
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	200.50	TN	\$108.28	\$21,710.14
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	58.33	TN	\$127.19	\$7,418.99

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	Y
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	2
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.33	NM	\$913.97	\$301.61
711-11-111	THERMOPLASTIC, STD, WHITE, SOLID, 6"	0.33	NM	\$3,957.74	\$1,306.05

Peripherals Subcomponent

Description	Value
Off Road Bike Path(s)	0
Off Road Bike Path Width L/R	0.00 / 0.00
Bike Path Structural Spread Rate	0
Noise Barrier Wall Length	0.00
Noise Barrier Wall Begin Height	0.00
Noise Barrier Wall End Height	0.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
339-1	MISCELLANEOUS ASPHALT PAVEMENT	44.00	TN	\$227.00	\$9,988.00
536-1-1	GUARDRAIL- ROADWAY	1,300.00	LF	\$15.42	\$20,046.00
536-85-22	GUARDRAIL END ANCHORAGE ASSEMBLY- FLARED	2.00	EA	\$1,649.83	\$3,299.66

Roadway Component Total

\$95,584.85

SHOULDER COMPONENT**User Input Data**

Description	Value
Total Outside Shoulder Width L/R	12.00 / 6.00
Total Outside Shoulder Perf. Turf Width L/R	0.00 / 2.00
Paved Outside Shoulder Width L/R	12.00 / 4.00
Structural Spread Rate	165
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	0
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	1,619.53	SY	\$8.76	\$14,187.08
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	128.32	TN	\$108.28	\$13,894.49
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	5.13	TN	\$127.19	\$652.48
570-1-1	PERFORMANCE TURF	194.42	SY	\$1.13	\$219.69

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-6	SHOULDER GUTTER- CONCRETE	1,300.00	LF	\$16.99	\$22,087.00

Erosion Control**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	2,274.73	LF	\$1.01	\$2,297.48
104-11	FLOATING TURBIDITY BARRIER	41.42	LF	\$8.53	\$353.31
104-12	STAKED TURBIDITY BARRIER- NYL REINF PVC	41.42	LF	\$4.50	\$186.39
104-15	SOIL TRACKING PREVENTION DEVICE	1.00	EA	\$1,932.61	\$1,932.61
107-1	LITTER REMOVAL	2.01	AC	\$35.65	\$71.66
107-2	MOWING	2.01	AC	\$45.79	\$92.04
Shoulder Component Total					\$55,974.23

DRAINAGE COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	2.98	CY	\$1,322.03	\$3,939.65
430-174-124	PIPE CULV, OPT MATL, ROUND,24"SD	136.00	LF	\$66.57	\$9,053.52
430-984-129	MITERED END SECT, OPTIONAL RD, 24" SD	7.00	EA	\$1,138.80	\$7,971.60
570-1-1	PERFORMANCE TURF	116.65	SY	\$1.13	\$131.81

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
425-1-711	INLETS, GUTTER, TYPE V, <10'	10.00	EA	\$2,830.83	\$28,308.30
430-175-118	PIPE CULV, OPT MATL, ROUND, 18"S/CD	632.00	LF	\$39.78	\$25,140.96
430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	704.00	LF	\$47.23	\$33,249.92
430-175-130	PIPE CULV, OPT MATL, ROUND, 30"S/CD	240.00	LF	\$66.29	\$15,909.60
Drainage Component Total					\$123,705.36

SIGNING COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	1.00	AS	\$305.32	\$305.32
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	4.00	AS	\$1,012.87	\$4,051.48
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	1.00	AS	\$4,276.20	\$4,276.20
Signing Component Total					\$8,633.00

Sequence 5 Total

\$406,624.96

Sequence: 6NUR - New Construction, Undivided, Rural**Net Length:** 0.081 MI
428 LF**Description:** TWO LANE PORTION OF RAMP "A"**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	50.00 / 50.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.081
Top of Structural Course For Begin Section	107.00
Top of Structural Course For End Section	105.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	6 to 1 / 6 to 1
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	0.98	AC	\$10,000.00	\$9,800.00
120-6	EMBANKMENT	5,956.95	CY	\$7.89	\$47,000.34
Earthwork Component Total					\$56,800.34

ROADWAY COMPONENT**User Input Data**

Description	Value
Number of Lanes	2
Roadway Pavement Width L/R	12.00 / 12.00
Structural Spread Rate	275
Friction Course Spread Rate	165

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	1,998.30	SY	\$3.65	\$7,293.80
285-709	OPTIONAL BASE,BASE GROUP 09	1,173.29	SY	\$13.01	\$15,264.50
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	157.01	TN	\$84.42	\$13,254.78
337-7-33	ASPH CONC FC,TRAFFIC C,FC- 12.5,RUBBER	94.21	TN	\$105.83	\$9,970.24

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	N
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	2
Solid Stripe No. of Stripes	2
Skip Stripe No. of Paint Applications	2
Skip Stripe No. of Stripes	1

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	11.00	EA	\$3.56	\$39.16
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.32	NM	\$913.97	\$292.47
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.16	GM	\$345.33	\$55.25
Roadway Component Total					\$46,170.20

SHOULDER COMPONENT**User Input Data**

Description	Value
Total Outside Shoulder Width L/R	12.00 / 6.00
Total Outside Shoulder Perf. Turf Width L/R	0.00 / 2.00
Paved Outside Shoulder Width L/R	12.00 / 4.00
Structural Spread Rate	110
Friction Course Spread Rate	165
Total Width (T) / 8" Overlap (O)	O
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	792.66	SY	\$8.76	\$6,943.70
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	41.87	TN	\$84.42	\$3,534.67
337-7-33	ASPH CONC FC,TRAFFIC C,FC-12.5,RUBBER	5.18	TN	\$105.83	\$548.20
570-1-1	PERFORMANCE TURF	95.16	SY	\$1.13	\$107.53

Erosion Control**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	1,113.34	LF	\$1.01	\$1,124.47
104-11	FLOATING TURBIDITY BARRIER	20.28	LF	\$8.53	\$172.99
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	20.28	LF	\$4.50	\$91.26
104-15	SOIL TRACKING PREVENTION DEVICE	1.00	EA	\$1,932.61	\$1,932.61
107-1	LITTER REMOVAL	0.98	AC	\$35.65	\$34.94
107-2	MOWING	0.98	AC	\$45.79	\$44.87
Shoulder Component Total					\$14,535.24

SIGNING COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
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700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	1.00 AS	\$305.32	\$305.32
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	2.00 AS	\$1,012.87	\$2,025.74
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	1.00 AS	\$4,276.20	\$4,276.20
Signing Component Total				\$6,607.26
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Sequence 6 Total				\$124,113.04
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Sequence: 7NUR - New Construction, Undivided, Rural**Net Length:** 0.145 MI
765 LF**Description:** Ramp A - Four lane portion of ramp at intersection of crossroad**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	50.00 / 50.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.145
Top of Structural Course For Begin Section	107.00
Top of Structural Course For End Section	103.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	4 to 1 / 4 to 1
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	1.76	AC	\$10,000.00	\$17,600.00
120-6	EMBANKMENT	9,201.66	CY	\$7.89	\$72,601.10
Earthwork Component Total					\$90,201.10

ROADWAY COMPONENT**User Input Data**

Description	Value
Number of Lanes	4
Roadway Pavement Width L/R	24.00 / 24.00
Structural Spread Rate	275
Friction Course Spread Rate	80

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	5,610.53	SY	\$3.65	\$20,478.43
285-709	OPTIONAL BASE,BASE GROUP 09	4,136.49	SY	\$13.01	\$53,815.73
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	561.05	TN	\$108.28	\$60,750.49
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	163.22	TN	\$127.19	\$20,759.95

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	Y
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	2
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	3

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	98.00	EA	\$3.56	\$348.88
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.29	NM	\$913.97	\$265.05
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.43	GM	\$345.33	\$148.49
711-11-111	THERMOPLASTIC, STD, WHITE, SOLID, 6"	0.29	NM	\$3,957.74	\$1,147.74
711-11-131	THERMOPLASTIC, STD, WHITE, SKIP, 6"	0.43	GM	\$1,171.15	\$503.59
Roadway Component Total					\$158,218.35

SHOULDER COMPONENT**User Input Data**

Description	Value
Total Outside Shoulder Width L/R	12.00 / 6.00
Total Outside Shoulder Perf. Turf Width L/R	0.00 / 2.00
Paved Outside Shoulder Width L/R	12.00 / 4.00
Structural Spread Rate	165
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	O
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	1,416.23	SY	\$8.76	\$12,406.17
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	112.21	TN	\$108.28	\$12,150.10
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	4.49	TN	\$127.19	\$571.08
570-1-1	PERFORMANCE TURF	170.02	SY	\$1.13	\$192.12

Erosion Control**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	1,989.19	LF	\$1.01	\$2,009.08
104-11	FLOATING TURBIDITY BARRIER	36.22	LF	\$8.53	\$308.96
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	36.22	LF	\$4.50	\$162.99
104-15	SOIL TRACKING PREVENTION DEVICE	1.00	EA	\$1,932.61	\$1,932.61
107-1	LITTER REMOVAL	1.76	AC	\$35.65	\$62.74
107-2	MOWING	1.76	AC	\$45.79	\$80.59
Shoulder Component Total					\$29,876.44

SIGNING COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	1.00	AS	\$305.32	\$305.32
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	3.00	AS	\$1,012.87	\$3,038.61
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	1.00	AS	\$4,276.20	\$4,276.20
Signing Component Total					\$7,620.13
<hr/>					
Sequence 7 Total					\$285,916.02
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Sequence: 8NUR - New Construction, Undivided, Rural**Net Length:** 0.236 MI
1,245 LF**Description:** Ramp B - One lane off-ramp**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	50.00 / 50.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.236
Top of Structural Course For Begin Section	108.00
Top of Structural Course For End Section	105.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	4 to 1 / 4 to 1
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	2.86	AC	\$10,000.00	\$28,600.00
120-6	EMBANKMENT	15,008.80	CY	\$7.89	\$118,419.43
Earthwork Component Total					\$147,019.43

ROADWAY COMPONENT**User Input Data**

Description	Value
Number of Lanes	1
Roadway Pavement Width L/R	7.50 / 7.50
Structural Spread Rate	275
Friction Course Spread Rate	80

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	4,565.09	SY	\$3.65	\$16,662.58
285-709	OPTIONAL BASE,BASE GROUP 09	2,166.34	SY	\$13.01	\$28,184.08
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	285.32	TN	\$108.28	\$30,894.45
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	83.00	TN	\$127.19	\$10,556.77

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	Y
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	2
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.47	NM	\$913.97	\$429.57
711-11-111	THERMOPLASTIC, STD, WHITE, SOLID, 6"	0.47	NM	\$3,957.74	\$1,860.14
Roadway Component Total					\$88,587.59

SHOULDER COMPONENT**User Input Data**

Description	Value
Total Outside Shoulder Width L/R	12.00 / 6.00
Total Outside Shoulder Perf. Turf Width L/R	0.00 / 2.00
Paved Outside Shoulder Width L/R	12.00 / 4.00
Structural Spread Rate	165
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	O
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	2,304.68	SY	\$8.76	\$20,189.00
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	182.60	TN	\$108.28	\$19,771.93
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	7.30	TN	\$127.19	\$928.49
570-1-1	PERFORMANCE TURF	276.67	SY	\$1.13	\$312.64

Erosion Control**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	3,237.06	LF	\$1.01	\$3,269.43
104-11	FLOATING TURBIDITY BARRIER	58.95	LF	\$8.53	\$502.84
104-12	STAKED TURBIDITY BARRIER- NYL REINF PVC	58.95	LF	\$4.50	\$265.28
104-15	SOIL TRACKING PREVENTION DEVICE	1.00	EA	\$1,932.61	\$1,932.61
107-1	LITTER REMOVAL	2.86	AC	\$35.65	\$101.96
107-2	MOWING	2.86	AC	\$45.79	\$130.96
Shoulder Component Total					\$47,405.14

DRAINAGE COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	4.24	CY	\$1,322.03	\$5,605.41
430-174-124		192.00	LF	\$66.57	\$12,781.44

	PIPE CULV, OPT MATL, ROUND,24"SD			
430-984-129	MITERED END SECT, OPTIONAL RD, 24" SD	10.00 EA	\$1,138.80	\$11,388.00
570-1-1	PERFORMANCE TURF	166.00 SY	\$1.13	\$187.58
Drainage Component Total				\$29,962.43

SIGNING COMPONENT**Pay Items**

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	1.00 AS	\$305.32	\$305.32
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	5.00 AS	\$1,012.87	\$5,064.35
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	1.00 AS	\$4,276.20	\$4,276.20
Signing Component Total				\$9,645.87
Sequence 8 Total				\$322,620.46

Sequence: 9NUR - New Construction, Undivided, Rural**Net Length:** 0.153 MI
808 LF**Description:** Ramp B - Three lane portion of ramp at intersection of crossroad**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	50.00 / 50.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.153
Top of Structural Course For Begin Section	105.00
Top of Structural Course For End Section	103.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	4 to 1 / 4 to 1
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	1.85	AC	\$10,000.00	\$18,500.00
120-6	EMBANKMENT	5,929.55	CY	\$7.89	\$46,784.15
Earthwork Component Total					\$65,284.15

ROADWAY COMPONENT**User Input Data**

Description	Value
Number of Lanes	4
Roadway Pavement Width L/R	24.00 / 12.00
Structural Spread Rate	275
Friction Course Spread Rate	80

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	5,026.56	SY	\$3.65	\$18,346.94
285-709	OPTIONAL BASE,BASE GROUP 09	3,290.60	SY	\$13.01	\$42,810.71
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	444.31	TN	\$108.28	\$48,109.89
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	129.25	TN	\$127.19	\$16,439.31

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	Y
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	2
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	3

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	103.00	EA	\$3.56	\$366.68
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.31	NM	\$913.97	\$283.33
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.46	GM	\$345.33	\$158.85
711-11-111	THERMOPLASTIC, STD, WHITE, SOLID, 6"	0.31	NM	\$3,957.74	\$1,226.90
711-11-131	THERMOPLASTIC, STD, WHITE, SKIP, 6"	0.46	GM	\$1,171.15	\$538.73
Roadway Component Total					\$128,281.34

SHOULDER COMPONENT**User Input Data**

Description	Value
Total Outside Shoulder Width L/R	8.00 / 12.00
Total Outside Shoulder Perf. Turf Width L/R	4.00 / 0.00
Paved Outside Shoulder Width L/R	4.00 / 12.00
Structural Spread Rate	165
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	O
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	1,495.40	SY	\$8.76	\$13,099.70
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	118.48	TN	\$108.28	\$12,829.01
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	4.74	TN	\$127.19	\$602.88
570-1-1	PERFORMANCE TURF	359.04	SY	\$1.13	\$405.72

Erosion Control**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	2,100.38	LF	\$1.01	\$2,121.38
104-11	FLOATING TURBIDITY BARRIER	38.25	LF	\$8.53	\$326.27
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	38.25	LF	\$4.50	\$172.12
104-15	SOIL TRACKING PREVENTION DEVICE	1.00	EA	\$1,932.61	\$1,932.61
107-1	LITTER REMOVAL	1.85	AC	\$35.65	\$65.95
107-2	MOWING	1.85	AC	\$45.79	\$84.71
Shoulder Component Total					\$31,640.36

SIGNING COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	1.00	AS	\$305.32	\$305.32
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	4.00	AS	\$1,012.87	\$4,051.48
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	1.00	AS	\$4,276.20	\$4,276.20
Signing Component Total					\$8,633.00
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Sequence 9 Total					\$233,838.85
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Sequence: 10 NUR - New Construction, Undivided, Rural**Net Length:** 0.672 MI
3,546 LF**Description:** Ramp C - One lane on-ramp**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	50.00 / 50.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.672
Top of Structural Course For Begin Section	103.00
Top of Structural Course For End Section	108.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	4 to 1 / 4 to 1
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	8.15	AC	\$10,000.00	\$81,500.00
120-6	EMBANKMENT	34,920.47	CY	\$7.89	\$275,522.51
Earthwork Component Total					\$357,022.51

ROADWAY COMPONENT**User Input Data**

Description	Value
Number of Lanes	1
Roadway Pavement Width L/R	7.50 / 7.50
Structural Spread Rate	275
Friction Course Spread Rate	80

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	13,002.18	SY	\$3.65	\$47,457.96
285-709	OPTIONAL BASE,BASE GROUP 09	6,170.12	SY	\$13.01	\$80,273.26
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	812.64	TN	\$108.28	\$87,992.66
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	236.40	TN	\$127.19	\$30,067.72

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	N
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	2
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	1.34	NM	\$913.97	\$1,224.72
Roadway Component Total					\$247,016.32

SHOULDER COMPONENT**User Input Data**

Description	Value
Total Outside Shoulder Width L/R	12.00 / 6.00
Total Outside Shoulder Perf. Turf Width L/R	0.00 / 2.00
Paved Outside Shoulder Width L/R	12.00 / 4.00
Structural Spread Rate	165
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	O
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	6,564.13	SY	\$8.76	\$57,501.78
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	520.09	TN	\$108.28	\$56,315.35
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	20.80	TN	\$127.19	\$2,645.55
570-1-1	PERFORMANCE TURF	788.01	SY	\$1.13	\$890.45

Erosion Control**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	9,219.72	LF	\$1.01	\$9,311.92
104-11	FLOATING TURBIDITY BARRIER	167.90	LF	\$8.53	\$1,432.19
104-12	STAKED TURBIDITY BARRIER- NYL REINF PVC	167.90	LF	\$4.50	\$755.55
104-15	SOIL TRACKING PREVENTION DEVICE	1.00	EA	\$1,932.61	\$1,932.61
107-1	LITTER REMOVAL	8.14	AC	\$35.65	\$290.19
107-2	MOWING	8.14	AC	\$45.79	\$372.73
Shoulder Component Total					\$131,448.32

DRAINAGE COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	12.09	CY	\$1,322.03	\$15,983.34
430-174-124	PIPE CULV, OPT MATL, ROUND,24"SD	544.00	LF	\$66.57	\$36,214.08
430-984-129		27.00	EA	\$1,138.80	\$30,747.60

	MITERED END SECT, OPTIONAL RD, 24" SD			
570-1-1	PERFORMANCE TURF	472.81 SY	\$1.13	\$534.28
Drainage Component Total				\$83,479.30

SIGNING COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	2.00	AS	\$305.32	\$610.64
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	14.00	AS	\$1,012.87	\$14,180.18
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	2.00	AS	\$4,276.20	\$8,552.40
Signing Component Total					\$23,343.22

Sequence 10 Total **\$842,309.67**

Sequence: 11 NUR - New Construction, Undivided, Rural**Net Length:** 0.253 MI
1,336 LF**Description:** TWO LANE PORTION OF RAMP "C"**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	50.00 / 50.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.253
Top of Structural Course For Begin Section	108.00
Top of Structural Course For End Section	105.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	6 to 1 / 6 to 1
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	3.07	AC	\$10,000.00	\$30,700.00
120-6	EMBANKMENT	21,640.11	CY	\$7.89	\$170,740.47
Earthwork Component Total					\$201,440.47

ROADWAY COMPONENT**User Input Data**

Description	Value
Number of Lanes	2
Roadway Pavement Width L/R	12.00 / 12.00
Structural Spread Rate	275
Friction Course Spread Rate	165

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	6,233.92	SY	\$3.65	\$22,753.81
285-709	OPTIONAL BASE,BASE GROUP 09	3,660.20	SY	\$13.01	\$47,619.20
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	489.81	TN	\$84.42	\$41,349.76
337-7-33	ASPH CONC FC,TRAFFIC C,FC- 12.5,RUBBER	293.88	TN	\$105.83	\$31,101.32

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	N
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	2
Solid Stripe No. of Stripes	2
Skip Stripe No. of Paint Applications	2
Skip Stripe No. of Stripes	1

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	34.00	EA	\$3.56	\$121.04
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	1.01	NM	\$913.97	\$923.11
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.51	GM	\$345.33	\$176.12
Roadway Component Total					\$144,044.36

SHOULDER COMPONENT**User Input Data**

Description	Value
Total Outside Shoulder Width L/R	12.00 / 6.00
Total Outside Shoulder Perf. Turf Width L/R	0.00 / 2.00
Paved Outside Shoulder Width L/R	12.00 / 4.00
Structural Spread Rate	110
Friction Course Spread Rate	165
Total Width (T) / 8" Overlap (O)	O
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	2,472.79	SY	\$8.76	\$21,661.64
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	130.62	TN	\$84.42	\$11,026.94
337-7-33	ASPH CONC FC,TRAFFIC C,FC-12.5,RUBBER	16.16	TN	\$105.83	\$1,710.21
570-1-1	PERFORMANCE TURF	296.85	SY	\$1.13	\$335.44

Erosion Control**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	3,473.18	LF	\$1.01	\$3,507.91
104-11	FLOATING TURBIDITY BARRIER	63.25	LF	\$8.53	\$539.52
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	63.25	LF	\$4.50	\$284.62
104-15	SOIL TRACKING PREVENTION DEVICE	1.00	EA	\$1,932.61	\$1,932.61
107-1	LITTER REMOVAL	3.07	AC	\$35.65	\$109.45
107-2	MOWING	3.07	AC	\$45.79	\$140.58
Shoulder Component Total					\$41,248.93

SIGNING COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
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700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	1.00 AS	\$305.32	\$305.32
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	6.00 AS	\$1,012.87	\$6,077.22
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	1.00 AS	\$4,276.20	\$4,276.20
Signing Component Total				\$10,658.74
Sequence 11 Total				\$397,392.50

Sequence: 12 NUR - New Construction, Undivided, Rural**Net Length:** 0.687 MI
3,629 LF**Description:** Ramp D - One lane on-ramp**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	50.00 / 50.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.687
Top of Structural Course For Begin Section	108.00
Top of Structural Course For End Section	103.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	4 to 1 / 4 to 1
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	8.33	AC	\$10,000.00	\$83,300.00
120-6	EMBANKMENT	35,699.94	CY	\$7.89	\$281,672.53
Earthwork Component Total					\$364,972.53

ROADWAY COMPONENT**User Input Data**

Description	Value
Number of Lanes	1
Roadway Pavement Width L/R	7.50 / 7.50
Structural Spread Rate	275
Friction Course Spread Rate	80

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	13,306.13	SY	\$3.65	\$48,567.37
285-709	OPTIONAL BASE,BASE GROUP 09	6,314.36	SY	\$13.01	\$82,149.82
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	831.63	TN	\$108.28	\$90,048.90
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	241.93	TN	\$127.19	\$30,771.08

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	N
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	2
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	1.37	NM	\$913.97	\$1,252.14
Roadway Component Total					\$252,789.31

SHOULDER COMPONENT**User Input Data**

Description	Value
Total Outside Shoulder Width L/R	12.00 / 6.00
Total Outside Shoulder Perf. Turf Width L/R	0.00 / 2.00
Paved Outside Shoulder Width L/R	12.00 / 4.00
Structural Spread Rate	165
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	O
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	6,717.58	SY	\$8.76	\$58,846.00
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	532.25	TN	\$108.28	\$57,632.03
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	21.29	TN	\$127.19	\$2,707.88
570-1-1	PERFORMANCE TURF	806.43	SY	\$1.13	\$911.27

Erosion Control**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	9,435.25	LF	\$1.01	\$9,529.60
104-11	FLOATING TURBIDITY BARRIER	171.82	LF	\$8.53	\$1,465.62
104-12	STAKED TURBIDITY BARRIER- NYL REINF PVC	171.82	LF	\$4.50	\$773.19
104-15	SOIL TRACKING PREVENTION DEVICE	1.00	EA	\$1,932.61	\$1,932.61
107-1	LITTER REMOVAL	8.33	AC	\$35.65	\$296.96
107-2	MOWING	8.33	AC	\$45.79	\$381.43
Shoulder Component Total					\$134,476.59

DRAINAGE COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	12.37	CY	\$1,322.03	\$16,353.51
430-174-124	PIPE CULV, OPT MATL, ROUND,24"SD	552.00	LF	\$66.57	\$36,746.64
430-175-136		80.00	LF	\$104.92	\$8,393.60

	PIPE CULV, OPT MATL, ROUND, 36"S/CD			
430-984-129	MITERED END SECT, OPTIONAL RD, 24" SD	28.00 EA	\$1,138.80	\$31,886.40
570-1-1	PERFORMANCE TURF	483.86 SY	\$1.13	\$546.76
Drainage Component Total				\$93,926.91

SIGNING COMPONENT

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	2.00 AS	\$305.32	\$610.64
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	14.00 AS	\$1,012.87	\$14,180.18
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	2.00 AS	\$4,276.20	\$8,552.40
Signing Component Total				\$23,343.22

Sequence 12 Total **\$869,508.56**

Sequence: 13 NUR - New Construction, Undivided, Rural**Net Length:** 0.274 MI
1,445 LF**Description:** Ramp D - Two lane portion of ramp at intersection of crossroad**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	50.00 / 50.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.274
Top of Structural Course For Begin Section	108.00
Top of Structural Course For End Section	103.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	4 to 1 / 4 to 1
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	3.32	AC	\$10,000.00	\$33,200.00
120-6	EMBANKMENT	16,405.80	CY	\$7.89	\$129,441.76
Earthwork Component Total					\$162,641.76

ROADWAY COMPONENT**User Input Data**

Description	Value
Number of Lanes	2
Roadway Pavement Width L/R	12.00 / 12.00
Structural Spread Rate	275
Friction Course Spread Rate	80

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	7,065.11	SY	\$3.65	\$25,787.65
285-709	OPTIONAL BASE,BASE GROUP 09	3,959.67	SY	\$13.01	\$51,515.31
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	529.88	TN	\$108.28	\$57,375.41
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	154.15	TN	\$127.19	\$19,606.34

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	N
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	2
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	1

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	37.00	EA	\$3.56	\$131.72
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.55	NM	\$913.97	\$502.68
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.27	GM	\$345.33	\$93.24
Roadway Component Total					\$155,012.35

SHOULDER COMPONENT**User Input Data**

Description	Value
Total Outside Shoulder Width L/R	8.00 / 12.00
Total Outside Shoulder Perf. Turf Width L/R	4.00 / 0.00
Paved Outside Shoulder Width L/R	4.00 / 12.00
Structural Spread Rate	165
Friction Course Spread Rate	80
Total Width (T) / 8" Overlap (O)	O
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
285-704	OPTIONAL BASE,BASE GROUP 04	2,675.11	SY	\$8.76	\$23,433.96
334-1-23	SUPERPAVE ASPH CONC, TRAF C, PG76-22,PMA	211.95	TN	\$108.28	\$22,949.95
337-7-22	ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA	8.48	TN	\$127.19	\$1,078.57
570-1-1	PERFORMANCE TURF	642.28	SY	\$1.13	\$725.78

Erosion Control**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	3,757.35	LF	\$1.01	\$3,794.92
104-11	FLOATING TURBIDITY BARRIER	68.42	LF	\$8.53	\$583.62
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	68.42	LF	\$4.50	\$307.89
104-15	SOIL TRACKING PREVENTION DEVICE	1.00	EA	\$1,932.61	\$1,932.61
107-1	LITTER REMOVAL	3.32	AC	\$35.65	\$118.36
107-2	MOWING	3.32	AC	\$45.79	\$152.02
Shoulder Component Total					\$55,077.68

SIGNING COMPONENT**Pay Items**

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
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700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	1.00 AS	\$305.32	\$305.32
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	6.00 AS	\$1,012.87	\$6,077.22
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	1.00 AS	\$4,276.20	\$4,276.20
Signing Component Total				\$10,658.74
Sequence 13 Total				\$383,390.53

Sequence: 14 NUR - New Construction, Undivided, Rural**Net Length:** 0.306 MI
1,615 LF**Description:** 2 LANE UNDIVIDED TOMKOW ROAD**EARTHWORK COMPONENT****User Input Data**

Description	Value
Standard Clearing and Grubbing Limits L/R	50.00 / 50.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.306
Top of Structural Course For Begin Section	105.00
Top of Structural Course For End Section	105.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Front Slope L/R	6 to 1 / 6 to 1
Outside Shoulder Cross Slope L/R	6.00 % / 6.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	3.71	AC	\$10,000.00	\$37,100.00
120-6	EMBANKMENT	16,339.91	CY	\$7.89	\$128,921.89
Earthwork Component Total					\$166,021.89

ROADWAY COMPONENT**User Input Data**

Description	Value
Number of Lanes	2
Roadway Pavement Width L/R	12.00 / 12.00
Structural Spread Rate	275
Friction Course Spread Rate	165

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	7,178.45	SY	\$3.65	\$26,201.34
285-709	OPTIONAL BASE,BASE GROUP 09	4,425.52	SY	\$13.01	\$57,576.02
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	592.22	TN	\$84.42	\$49,995.21
337-7-33	ASPH CONC FC,TRAFFIC C,FC- 12.5,RUBBER	355.33	TN	\$105.83	\$37,604.57

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	N
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	2
Solid Stripe No. of Stripes	2
Skip Stripe No. of Paint Applications	2
Skip Stripe No. of Stripes	1

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	41.00 EA	\$3.56	\$145.96
710-11-111	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	1.22 NM	\$913.97	\$1,115.04
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.61 GM	\$345.33	\$210.65
Roadway Component Total				\$172,848.79

SHOULDER COMPONENT**User Input Data**

Description	Value
Total Outside Shoulder Width L/R	8.00 / 8.00
Total Outside Shoulder Perf. Turf Width L/R	2.67 / 2.67
Paved Outside Shoulder Width L/R	0.00 / 0.00
Structural Spread Rate	110
Friction Course Spread Rate	165
Total Width (T) / 8" Overlap (O)	T
Rumble Strips No. of Sides	0

Pay Items

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
570-1-1	PERFORMANCE TURF	958.32 SY	\$1.13	\$1,082.90

Erosion Control**Pay Items**

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	4,199.40 LF	\$1.01	\$4,241.39
104-11	FLOATING TURBIDITY BARRIER	76.47 LF	\$8.53	\$652.29
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	76.47 LF	\$4.50	\$344.12
104-15	SOIL TRACKING PREVENTION DEVICE	1.00 EA	\$1,932.61	\$1,932.61
107-1	LITTER REMOVAL	3.71 AC	\$35.65	\$132.26
107-2	MOWING	3.71 AC	\$45.79	\$169.88
Shoulder Component Total				\$8,555.45

DRAINAGE COMPONENT**Pay Items**

Pay item	Description	Quantity Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	5.51 CY	\$1,322.03	\$7,284.39
430-174-124	PIPE CULV, OPT MATL, ROUND,24"SD	248.00 LF	\$66.57	\$16,509.36
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	56.00 LF	\$104.92	\$5,875.52

430-984-129	MITERED END SECT, OPTIONAL RD, 24" SD	13.00 EA	\$1,138.80	\$14,804.40
570-1-1	PERFORMANCE TURF	215.35 SY	\$1.13	\$243.35
Drainage Component Total				\$44,717.02

SIGNING COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	1.00	AS	\$305.32	\$305.32
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	7.00	AS	\$1,012.87	\$7,090.09
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	1.00	AS	\$4,276.20	\$4,276.20
Signing Component Total					\$11,671.61

Sequence 14 Total **\$403,814.76**

Date: 6/3/2014 8:41:53 AM

FDOT Long Range Estimating System - Production

R3: Project Details by Sequence Report

Project: 430185-1-22-01

Letting Date: 11/2020

Description: SR 33 FROM OLD COMBEE RD TO N OF TOMKOW RD

District: 01 County: 16 POLK Market Area: 08 Units: English

Contract Class: 1 Lump Sum Project: N Design/Build: N Project Length: 3.720 MI

Project Manager: CES-MJB-ANS

Version 21 Project Grand Total **\$43,904,501.53**

Description: June 2014 Unit Cost Update from Version 19 - 6/3/14

Project Sequences Subtotal **\$32,873,404.60**

102-1 Maintenance of Traffic 10.00 % \$3,287,340.46

101-1 Mobilization 10.00 % \$3,616,074.51

Project Sequences Total **\$39,776,819.57**

Project Unknowns 10.00 % \$3,977,681.96

Design/Build 0.00 % \$0.00

Non-Bid Components:

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
999-25	INITIAL CONTINGENCY AMOUNT (DO NOT BID)		LS	\$150,000.00	\$150,000.00

Project Non-Bid Subtotal **\$150,000.00****Version 21 Project Grand Total** **\$43,904,501.53**