FDOT
District Seven

US 301 (Gall Blvd.) Project Development & Environment Study

from S. of Proposed SR 56 to S. of SR 39 (Buchman Highway)

Pasco County, Florida

Work Program Item Segment Number: 416564-1

Final Preliminary Engineering Report




June 2017

Addendum to the Project File

US 301 (Gall Boulevard) from South of Proposed SR 56 to South of SR 39 (Buchman Highway)

The limits of the original Environmental Assessment with a Finding of No Significant Impact (EA/FONSI), approved 1/25/1993, included SR 54 (currently SR 56) from Cypress Creek Road to US 301 and extended northward along US 301 (Gall Boulevard) to Zephyrhills East By-pass/Chancey Road. During the Re-evaluation of this segment of the EA/FONSI (from SR 56 to Chancey Road), including the Chancey Road/US 301 (Gall Boulevard) intersection, the limit was extended to the north from Chancey Road to SR 39 (Buchman Highway), a total distance of 0.4 mile. Project documents refer to this 0.4 mile extension as the second segment associated with a new Type 2 Categorical Exclusion (CE).

During a meeting held on September 26, 2017, District 7 in coordination with the Office of Environmental Management, agreed to include the evaluation of the 0.4 mile extension with the Re-evaluation of the EA/FONSI. This reduces confusion to the public and sets logical project termini. All supporting environmental and engineering documents have evaluated the limits of the segment being advanced as part of the EA/FONSI Re-evaluation, as well as the 0.4 mile extension. It should be noted that the inclusion of the 0.4 mile extension does not change the outcome of the analysis conducted.

FINAL

PRELIMINARY ENGINEERING REPORT (PER)
PROJECT DEVELOPMENT AND ENVIRONMENT (PD&E) STUDY
US 301 (GALL BOULEVARD) FROM S. OF PROPOSED SR 56 TO S. OF SR 39 (PAUL BUCHMAN HIGHWAY)
PASCO COUNTY, FLORIDA

Work Program Item Segment Number: 416564-1

Prepared for:

Florida Department of Transportation
District Seven
11201 North McKinley Drive
Tampa, Florida 33612-6456

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated December 14, 2016 and executed by the Federal Highway Administration and FDOT.

June 2017

PROFESSIONAL ENGINEER CERTIFICATE

I hereby certify that I am a registered professional engineer in the State of Florida practicing with **AECOM,** 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:	US 301 (Gall Boulevard) Project Development and Environment Study From S. of Proposed SR 56 to South of SR 39 (Buchman Hwy.)
LOCATION:	Pasco County, Florida
WPI SEGMENT NO.:	416564-1
CLIENT:	Florida Department of Transportation - District Seven District Environmental Management Office

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

AECOM Technical Services, Inc.
7650 W Courtney Campbell Causeway
Tampa, FL 33607
Telephone: (813) 286-1711
Florida Certificate of Authorization: 8115

This report includes a summary of data collection efforts, corridor analysis and conceptual design analysis for the proposed roadway widening of US 301 from S. of Proposed SR 56 to the proposed realigned SR 39.

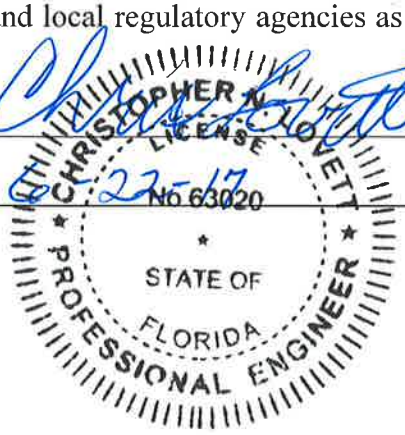
I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through design standards and criteria set forth by the federal, state, and local regulatory agencies as well as professional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

Name: Christopher Lovett

Signature: _____

P.E. Number: 63020

Date: 6-27-17



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LIST OF FIGURES

ACRONYM LIST

AADT	Annual Average Daily Traffic
ADT	Average Daily Traffic
CCC	Chairs Coordinating Committee
CDMS	Crash Data Management System
CE	Categorical Exclusion
CFR	Code of Federal Regulation
CO	Carbon Monoxide
CSER	Contamination Screening Evaluation Report
dB(A)	A-weighted Decibels
DDHV	Directional Design Hourly Volume
DOE	Degree of Effect
EA/FONSI	Environmental Assessment/Finding of No Significant Impact
EPA	United States Environmental Protection Agency
ETAT	Environmental Technical Advisory Team
ETDM	Efficient Transportation Decision Making
F.S.	Florida Statutes
FSC	Florida State Clearinghouse
FDACS	Florida Department of Agriculture & Consumer Services
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FSC	Florida State Clearinghouse
FNAI	Florida Natural Areas Inventory
FPC	Floodplain Compensation
FWC	Florida Fish and Wildlife Conservation Commission
FWS	U.S. Fish and Wildlife Service
FY	Fiscal Year
HCM	Highway Capacity Manual
LHR	Location Hydraulic Report
LOS	Level of Service
LRE	Long Range Estimates
MEV	Million Entering Vehicles
MOCF	Model Output Conversion Factor
MOT	Maintenance of Traffic
MP	Mile Post
mph	Miles Per Hour
MPO	Metropolitan Planning Organization
MVMT	Million Vehicle Miles Traveled

NRCS	Natural Resources Conservation Service
NRE	Natural Resources Evaluation
NRHP	National Register of Historic Places
OFW	Outstanding Florida Waters
PCPT	Pasco County Public Transportation
PD&E	Project Development and Environment
PER	Preliminary Engineering Report
PPM	Plans Preparation Manual
PPSR	Preliminary Pond Siting Report
PSWADT	Peak Season Weekday Average Daily Traffic
ROW	Right-of-Way
SCS/NRCS	Soil Conservation Service/ National Resource Conservation Service
SE	Socioeconomic
SF	Seasonal Factor
SHGWT	Seasonal High Ground Water Table
SR	State Road
TAZ	Traffic Analysis Zone
TBRPM-ML	Tampa Bay Regional Planning Model for Managed Lanes
TNM	Traffic Noise Model
TSM&O	Transportation System Management & Operations
TSP	Transit Signal Priority
UAR	Utility Assessment Report
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USGS	US Geological Survey
vpd	Vehicles Per Day
WBID	Watershed Basin I.D.

Section 1.0
SUMMARY OF PROJECT

1.1 COMMITMENTS AND RECOMMENDATIONS

Commitments

The FDOT will adhere to the following commitments with regard to the proposed improvements to US 301:

1. Mitigation for impacts to 1.6 acres of wetlands and other surface waters will be conducted pursuant to United States Code (U.S.C.) 1344 and Part IV, Chapter 373 Florida Statutes (F.S.) as necessary to meet the permitting agencies' requirements. The exact type of mitigation used to offset wetland impacts from the proposed US 301 (Gall Boulevard) improvements will be coordinated with USACE and SWFWMD during the state and federal permitting phase of this project.

2. To minimize the potential for adverse impacts to the eastern indigo snake, the FDOT will incorporate the "Construction Precautions for the Eastern Indigo Snake" guidelines into the final project design plans and is committed to implementing the FWS standard protection measures for the eastern indigo snake (updated August 2013), during construction of the project.

3. During the design phase, the FDOT will conduct comprehensive surveys of the project within construction limits for gopher tortoise burrows prior to construction. If gopher tortoises or potentially occupied burrows are observed, the FDOT will coordinate with the FWC to secure all permits needed and perform relocation activities.

4. Because suitable habitat exists for the wood stork in the Preferred Build Alternative, the FDOT is committed to reinitiating Section 7 consultation in conjunction with undertaking the permitting process for the proposed project. At that time, the FDOT will evaluate the current information and provide suitable foraging habitat compensation within the service area of an FWS-approved wetland mitigation bank or wood stork conservation bank (preferably located within the CFA of wood stork foraging habitat lost).

5. During the design phase, the FDOT is committed to survey areas of suitable habitat and coordinate with the FWC and FWS (as required) to secure all necessary approvals regarding the Florida Burrowing Owl.

6. The FDOT will conduct surveys of the project area for Florida sandhill crane nests during the design phase and prior to construction. If Florida sandhill crane nests are found within the proposed project area, the FDOT will coordinate with the FWC to ensure construction will not adversely impact this species.

7. During the design phase, the FDOT will conduct a survey of the project area for bald eagle nests. If a bald eagle nest is found within 660 feet of the project area during the design and permitting phases, the FDOT will coordinate with FWC and FWS to secure any and all approvals regarding this species.

8. The FDOT is committed to further consideration of noise barriers during the final design process at Palm View Gardens RV Park and Shady Oaks Mobile Home Park. The traffic noise barrier evaluation for these locations will be refined using specific horizontal and vertical alignment data for US 301 along with other factors developed during final design. During final design, a commitment to construct feasible and reasonable noise abatement will be 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 effective limit;
   - The residents/property owners benefitted by the noise barrier desire that a noise barrier be constructed; and
   - All safety and engineering conflicts or issues related to construction of a noise barrier are resolved.

Recommendations

It is recommended that the proposed improvements as described below under Proposed Improvements in Section 1.2 (Description of Proposed Action) be approved for advancement to future phases of project development (i.e., right-of-way acquisition and construction) as funding becomes available. Also, further coordination will be required during the design phase to address provisions with Pasco County, the City of Zephyrhills, and the Pasco County MPO. In addition, the following items are recommended for implementation in the future design phase:

- A 10-foot shared use trail from Chancey Rd. to the realigned SR 39/US 301 intersection is planned to be included during the design phase based on coordination with City of Zephyrhills and Pasco County. This trail will connect with the proposed shared use trail from south of SR 56 to Chancey Rd.

- Additional coordination will be undertaken during the design phase to determine how best to transition from a high speed rural facility with a design speed of 60 mph to high speed suburban facility with a design speed of 55 mph.

- Lighting will be added throughout the project corridor to improve safety for pedestrians and motorists.

1.2 DESCRIPTION OF PROPOSED ACTION

The Florida Department of Transportation (FDOT) has proposed improvements to approximately 2 miles of US 301 (Gall Boulevard) in Pasco County to accommodate present and future traffic demands. These improvements include widening the existing two-lane road to four lanes with a median. The overall project limits begin south of the proposed connection of State Road (SR) 56 on the south (approximately mile post 1.395) to south of the proposed future realigned SR 39 (Buchman Highway) on the north (mile post 3.505).

The project consists of two segments. The first segment begins south of the planned US 301/SR 56 intersection and ends at Chancey Road; an approximate length of this segment is 1.7 miles. This segment is part of a PD&E Design Change Reevaluation of the original SR 54 Environmental Assessment/Finding of No Significant Impact (EA/FONSI). The second segment begins at Chancey Road and ends south of SR 39 (Buchman Highway) and includes the US 301/Chancey Road intersection; an approximate length of this segment is 0.4 miles. It terminates south of where the proposed SR 39 realignment will tie into existing US 301 (Gall Boulevard), south of the existing SR 39/US 301 (Gall Boulevard intersection. The second segment of the project is associated with a new Type 2 Categorical Exclusion (CE).

The PD&E Study's public hearing was held at the New Hope Baptist Church, 3514 Allen Road, Zephyrhills, FL. The Open House began at 5:00 p.m. on Tuesday, September 22, 2015, and the formal hearing presentation began at 6:00 p.m. Following the formal presentation, the Open House continued until 7:00 p.m. The public was given the opportunity to provide their comments in writing during the open house or by mail to be postmarked by October 2, 2015; verbally at the microphone following the formal presentation, or verbally to the court reporter during the open house portions of the hearing. FDOT representatives were available during the open house to speak one-on-one with attendees, take comments, and answer questions.

Thirty (30) members of the public signed in at the public hearing. Kirk Bogen, Environmental Management Engineer, and Stephanie Pierce, FDOT Project Manager, made the presentation during the formal session. The FDOT and consultant staff were available to answer questions and take comments following the presentation.

Attendees were provided with a project newsletter and a comment form (see attached). The hearing provided interested persons an opportunity to express their views concerning the location, conceptual design, and social, economic, and environmental effects of the proposed improvements to US 301.

One comment form was collected at the meeting, three additional comments were received by mail following the hearing, and one person spoke during the formal session. The comments received included:

- One request to be placed on the mailing list.
- A request for information about another project.

- One property owner requested information as to how her property would be affected by the proposed build alternative.
- The Pasco MPO submitted a letter requesting that the FDOT provide a 10-foot-wide multiuse path along the western side of US 301 for the entire project length.
- Mr. Vande Berg from the City of Zephyrhills spoke during the formal session to request that a 10-foot trail on the west side of US 301 be included in the final plans for the project.

All of the comments received from this hearing and the hearing sign-in sheets are included in the Comments and Coordination Report, available under separate cover.

Section 2.0
INTRODUCTION

2.1 PROJECT DESCRIPTION

The Florida Department of Transportation (FDOT) has proposed improvements to approximately 2 miles of US 301 (Gall Boulevard) in Pasco County to accommodate present and future traffic demands. These improvements include widening the existing two-lane road to four lanes with a median. The overall project limits begin south of the proposed connection of State Road (SR) 56 on the south (approximately mile post 1.395) to south of the proposed future realigned SR 39 (Buchman Highway) on the north (mile post 3.505).

The project consists of two segments. The first segment begins south of the planned US 301/SR 56 intersection and ends at Chancey Road; an approximate length of this segment is 1.7 miles. This segment is part of a PD&E Design Change Reevaluation of the original SR 54 Environmental Assessment/Finding of No Significant Impact (EA/FONSI). The second segment begins at Chancey Road and ends south of SR 39 (Buchman Highway) and includes the US 301/Chancey Road intersection; an approximate length of this segment is 0.4 miles. It terminates south of where the proposed SR 39 realignment will tie into existing US 301 (Gall Boulevard), south of the existing SR 39/US 301 (Gall Boulevard intersection. The second segment of the project is associated with a new Type 2 Categorical Exclusion (CE).

The project location map is included as **Figure 2-1.** Within the project limits, the existing roadway is a principal arterial, and the improvements would expand the current two-lane facility to four lanes. US 301 (Gall Boulevard) is a major north-south arterial roadway and is located in Sections 22, 23, and 27 of Township 26 South, Range 21 East (U.S. Geological Survey [USGS] Zephyrhills, Fla. 1975, PR 1987).

This project was evaluated through the FDOT's Efficient Transportation Decision Making (ETDM) process, designated as ETDM project #3107. An ETDM Final Programming Screen Summary Report was published on March 7, 2014, containing comments from the Environmental Technical Advisory Team (ETAT) on the project's effects on various natural, physical and social resources. Based on the ETAT comments included in the Summary Report and undertaking the public involvement process to date, it has been determined that the recommended improvements to US 301 (Gall Boulevard) would not create any significant impacts to the environment. Also, when the project went through the ETDM Programming Screen process, the FDOT planned to seek approval of the PD&E study's environmental document by the FHWA. Since this time, the FDOT has received NEPA Assignment from FHWA and the FDOT Office of Environmental Management (OEM) will be reviewing the Type 2 Categorical Exclusion and Design Change Reevaluation. The project is currently fully funded for design in the FDOT Five-year Work Program for Fiscal Year (FY) 2018, and right-of-way (ROW) is funded for Fiscal Years 2021 and 2022. Construction may be added in future updates of the FDOT Five Year Work Program.

FIGURE 2-1
PROJECT LOCATION MAP

Source: URS, 2015.

2.2 PURPOSE OF REPORT

The purpose of this report is to document the engineering and environmental analysis performed to support decisions related to evaluation of the project alternatives. In addition, it summarizes existing conditions, documents the purpose of and need for the project, and documents other data related to preliminary design concepts. These preliminary design concepts establish the functional or conceptual requirements that will be the starting point for the final design phase. The concept plans for this project are included as **Appendix A**.

Section 3.0
PROJECT PURPOSE AND NEED

3.1 REGIONAL CONNECTIVITY

US 301 (Gall Boulevard) is a major north-south arterial located in East Pasco County. It is a regional truck route and provides north-south access to distribution centers. US 301 (Gall Boulevard) is an important connection to the regional and statewide transportation network that links the Tampa Bay region to the remainder of the state and the nation. US 301 (Gall Boulevard) was identified as a regional roadway by the West Central Florida Metropolitan Planning Organization (MPO) Chairs Coordinating Committee (CCC) and is included in the Regional Roadway Network. As shown in Section 2.5, the Design Year (2040) expected Annual Average Daily Traffic (AADT) is 39,500 vehicles per day (vpd). The measured percentage of daily truck traffic is 15.10 percent. Therefore, the projected truck traffic on US 301 (Gall Boulevard) is approximately 6,000 trucks per day in the Design Year (2040).

3.2 PLAN CONSISTENCY

The widening of US 301 (Gall Boulevard) from proposed SR 56 to the proposed realignment of SR 39 (Buchman Highway) is identified as a 'Cost-Affordable Capital Improvement' (construction 2031 – 2040) in the *Pasco County MPO Mobility 2040*. The project has also been identified on the latest *Pasco County Transportation Capital Improvement Projects (2014-2028)* map. It should additionally be noted that $2.5 million is programmed for the design phase in FY 2018 within the FDOT Five Year Work Program. Further, the project is reflected on *Map 7-22: Future Number of Lanes (2035)* in the Transportation Element of the adopted *Pasco County Comprehensive Plan*.

3.3 EMERGENCY EVACUATION

US 301 (Gall Boulevard) is designated as a parallel evacuation route to I-75 for the length of Pasco County.

3.4 FUTURE POPULATION AND EMPLOYMENT GROWTH

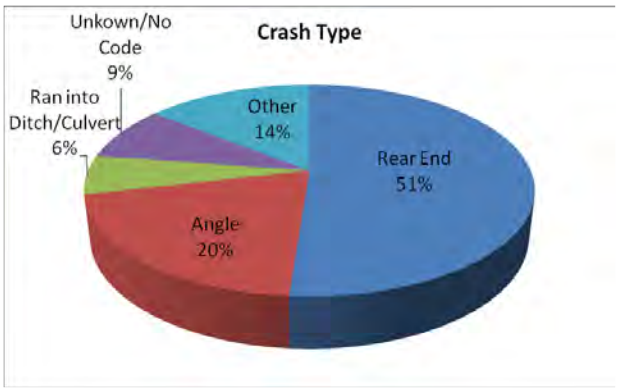
Socioeconomic (SE) data from the Tampa Bay Regional Planning Model for Managed Lanes (TBRPM-ML) "Starter Projects" Traffic Analysis Zones (TAZs) located within one quarter-mile of the US 301 (Gall Boulevard) project corridor indicates that the study area's population is projected to grow from 4,973 in year 2006 to 13,638 in year 2035 (an increase of 8,665). Employment is also expected to increase during the same period from 1,337 to 5,392 (an increase of 4,055).

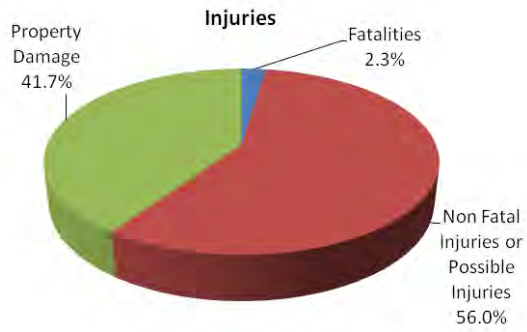
3.5 FUTURE TRAFFIC

In 2013, US 301 (Gall Boulevard) from Chancey Road to SR 39 (Buchman Highway) carried 12,500 vpd. By the Design Year (2040), segments within this section of US 301 (Gall Boulevard) are expected to reach a volume of 39,500 vpd. The roadway segment was analyzed using the FDOT's HIGHPLAN software which incorporates methodologies contained within the 2010 Highway Capacity Manual (HCM) 2010. Based on this analysis, the existing level of service (LOS) is C. Without the recommended improvement, the operating conditions will continue to deteriorate to a failing LOS of F. With the recommended improvement to widen this roadway to four lanes and other recommended improvements, the LOS for the Design Year (2040) is projected to be C, with one exception in the northbound PM peak hour where the LOS will be D.

3.6 SAFETY

For the five-year period (2009-2013), there were 84 crashes reported along the corridor with an average of 16.8 crashes per year. Rear-end collisions were the most common crash type recorded for the corridor with 43 or 51.2 percent of total crashes, followed by 17 angle collisions (including two left-turn collisions) or 20.2 percent of the total crashes. Out of the 84 total crashes, 47 or 56.0 percent were crashes with injuries and 35 or 41.7 percent were crashes with property damage only.





Source: FDOT Unified Base Map Repository, 2014.

There were two fatal crashes recorded along the US 301 (Gall Boulevard) corridor (2.3 percent). Further, four out of 84 total crashes (4.8 percent) were related to medium or heavy trucks. Among the truck-related incidents, three crashes involved injuries.

Safety within the US 301 (Gall Boulevard) corridor will be enhanced due to the additional capacity that will be provided. Roadway congestion will be reduced, thereby decreasing potential conflicts with other vehicles.

3.7 TRANSIT

The existing Pasco County Public Transportation (PCPT) bus Route 30 terminates at Tucker Road just north of the study area, and serves activity centers to the north including downtown Zephyrhills and Dade City from 4:45 am to 7:45 pm. In addition, this segment of US 301 (Gall Boulevard) to downtown Zephyrhills is part of the proposed SR 54 Cross County Express Route that is included in the *Pasco County MPO Mobility 2040 Cost Affordable Transit Plan* for implementation in 2031. Also planned is a Major Transit Station/Stop and Transit Signal Priority (TSP) along the corridor.

3.8 ACCESS TO INTERMODAL FACILITIES AND FREIGHT ACTIVITY CENTERS

Access to intermodal facilities and movement of goods and freight are important considerations in the development of the Pasco County transportation system. US 301 (Gall Boulevard) is a regional truck route. The Zephyrhills Airport Industrial Area, a designated freight activity center, is located just northeast of the northern terminus of the study area. This industrial area has five major manufacturing facilities with approximately 700,000 square feet of industrial space. These companies generate approximately 200 trucks per day. Improvements to US 301 (Gall Boulevard) will enhance access to activity centers in the area and the movement of goods and freight in eastern Pasco County.

3.9 RELIEF TO PARALLEL FACILITIES

The planned widening of US 301 (Gall Boulevard) between Chancey Road and the proposed realigned SR 39 (Buchman Highway) intersection is part of an overall plan to improve access and relieve traffic congestion on such parallel facilities as I-75, the Suncoast Parkway, and US 41. Safety, emergency access, and truck access will all be enhanced by this improvement.

3.10 BIKEWAYS AND SIDEWALKS

Integration of bicycle facilities and sidewalks are considered on all Pasco County and State road projects including new roads, widening of existing roads, and the resurfacing of State roads. The project segment from south of proposed SR 56 to Chancey Road includes 7-foot-wide paved shoulders/bike lanes to allow for bicycle safety, a 10-foot shared use path on the west side of US 301 (Gall Boulevard), and a 5-foot sidewalk on the east side of US 301 (Gall Boulevard). The project segment north of Chancey Road includes 7-foot-wide paved shoulders/bike lanes; 5-foot sidewalks are proposed on both sides of the project segment in lieu of the shared use path.

Section 4.0
EXISTING CONDITIONS

4.1 EXISTING ROADWAY CONDITIONS

4.1.1 Roadway Classification

US 301 (Gall Boulevard) is functionally classified as a *Rural Principal Arterial - Other* from MP 1.395 (project southern termini) to MP 2.452 (just north of Shamrock Place), for a distance of 1.057 mile. From MP 2.452 (just north of Shamrock Place) to MP 3.505 (project northern termini), the corridor is functionally classified as an *Urban Principal Arterial – Other*, for a distance of 1.053 mile. US 301 (Gall Boulevard) is designated as Access Class 3 within the study limits.

4.1.2 Access Management

The FDOT has developed minimum driveway and connector spacing, median opening spacing, and signalized intersection spacing standards for limited access and controlled access facilities on the State Highway System. Currently, US 301 (Gall Boulevard) within the study area is classified as a controlled access facility, Access Class 3. The minimum spacing standards for the applicable Access Management Classification are summarized in **Table 4-1**.

TABLE 4-1
ACCESS MANAGEMENT CLASSIFICATION

Roadway	Access Class	Facility Design Features (Median Treatment and Access Roads)	Minimum Connection Spacing (feet)		Minimum Median Opening Spacing (feet)		Minimum Signal Spacing (feet)
			>45 mph	≤45 mph	Directional	Full	
US 301	3	Restrictive	660	440	1,320	2,640	2,640

Source: FDOT District Seven Access Management Classification System

Median Openings

US 301 (Gall Boulevard) within the study area is a two-lane undivided roadway. Although there are striped median treatments located at Palmview Drive, Blue Lagoon Drive and the southern entrances of the Zephyrhills Correctional Institution and Zephyrhills Festival Park, these treatments exist as safety measures for the exclusive turn-lanes at these locations. As such, there are no major or closed median openings located along the corridor.

Driveway Connections

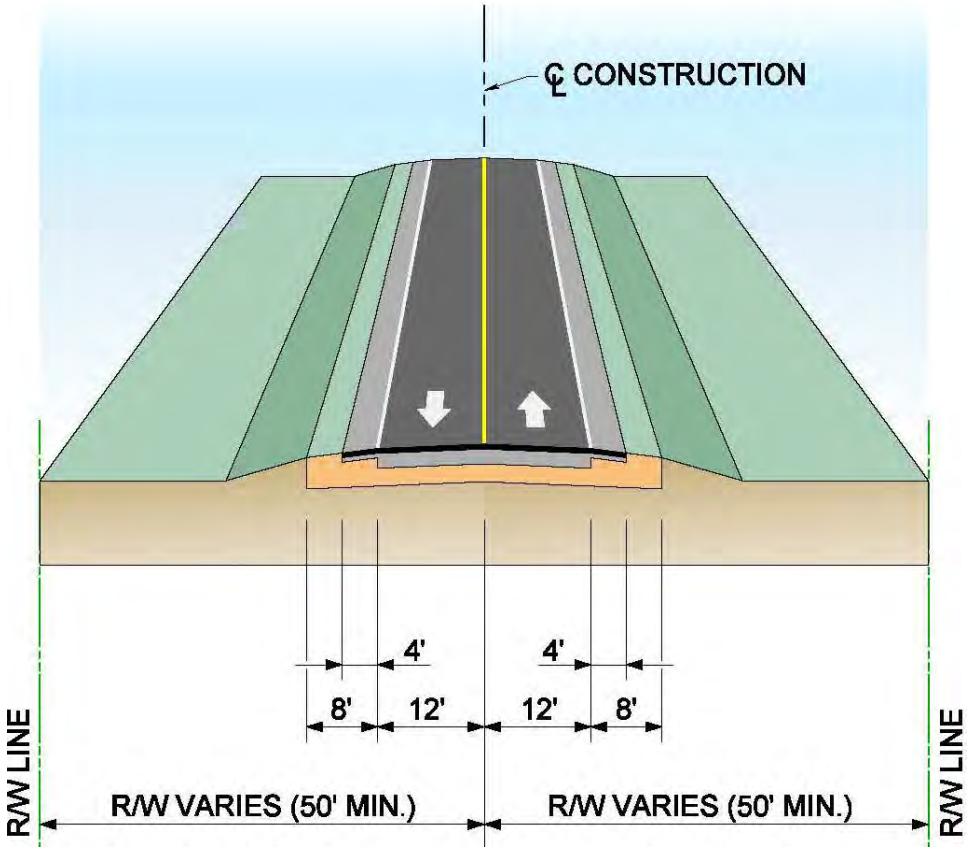
Numerous driveway connections, which do not comply with the current standards for a facility designated as Access Class 3 are present along the US 301 (Gall Boulevard) corridor. Several driveways serving independent businesses/parcels are located along the corridor, including the

Zephyrhills Correctional Institution, Zephyrhills Festival Park (a privately owned property), and the Moose Lodge #2276. In addition, access abutting residential developments is provided via stop-controlled access to local streets including Palmview Drive (Palm View Gardens RV Travel Resort), Blue Lagoon Drive (Tropical Acre Estates), Old Crystal Springs Road (The Ramblewoods Active 55+ Community) and Shamrock Place (private residences).

4.1.3 Existing Roadway Facility

The existing US 301 (Gall Boulevard) corridor within the study area is currently a two-lane undivided facility with 12-foot travel lanes and 8-foot outside shoulders (four feet paved). From the south, the existing posted speed limit is 60 miles per hour (mph) up to MP 2.240, 55 mph from MP 2.240 to MP 3.067 (Chancey Road), and 45 mph north of MP 3.067 (Chancey Road). The existing right-of-way (ROW) width is approximately 100 feet. **Figure 4-1** depicts the existing roadway typical section.

FIGURE 4-1
EXISTING TYPICAL SECTION



Source: URS, 2015.

4.1.4 Existing Structures

There are no existing structures within the study area.

4.1.5 Existing Cross Drains

There are seven cross drains within the study limits as summarized in **Table 4-2**.

TABLE 4-2
SUMMARY OF CROSS DRAINS

Name	Sub-Basin	Approx. Station	Material	Approx. Size	Approx. Length (feet)	U.S. Invert (feet-NAVD)	D.S. Invert (feet-NAVD)
CD-1	SB-1	260+76	CBC	4' X 3'	119.23	63.00	62.90
CD-2	SB-2	288+95	CBC	4' X 2'	84.02	65.25	64.88
CD-3	SB-3	301+80	RCP	(2) 30" dia.	84.94	61.57	61.51
CD-4	SB-3	314+64	RCP	30" dia.	74.13	64.04	63.87
CD-5 *	SB-4	353+95	RCP	30" dia.	78.02	70.78	70.59
CD-6 *	SB-4	353+95	RCP	24" dia.	74.81	70.78	70.59
CD-7#%	SB-5	368+56	CBC	(2) 4' x 2'	122.46	N – 68.85 C – 68.85 S - blocked	N – 67.67 C – 67.73 S – 67.58

Source: Pasco County, 2014; URS, 2014.
NOTES:
* Denotes existing cross drains that share an existing headwall
\# CD-7 comprises three CBCs, but only two are operational per SWFWMD requirements
% Survey data for CD-7 obtained from URS study "Zephyr Creek Unit 1, Design & Permitting", dated April 2011.
CBC = Concrete Box Culvert
RCP = Reinforced Concrete Pipe

4.1.6 Pedestrian and Bicycle Facilities

There are no dedicated bicycle lanes currently provided along the corridor or within the study area; however, shoulders are available to accommodate bicycles. While there are pedestrian cross-walks provided on all legs of the intersection of US 301 (Gall Boulevard) and Chancey Road, there are no pedestrian facilities provided along these roadways or within the study area.

4.1.7 Horizontal and Vertical Alignments

It has been determined that the project construction area would need to be higher than existing elevation to provide the necessary hydraulic grade from the existing US 301 roadway corridor; therefore, all viable alternatives reflect a total reconstruction of US 301.

4.1.8 Crash Data and Safety Analysis

Crash data for the US 301 (Gall Boulevard) corridor from south of the proposed future connection of SR 56 to south of SR 39 (Buchman Highway) was obtained from the Pasco County Crash Data Management System (CDMS) for the five-year period from 2009 to 2013. Crash data is provided in Appendix E of the *Final Design Traffic Technical Memorandum* (DTTM), available under separate cover. Analysis of the available crash data within the study area is described in this section.

4.1.8.1 US 301 (Gall Boulevard) Corridor Crash Analysis

The study corridor includes US 301 (Gall Boulevard) segments from south of the proposed future connection of SR 56 to south of SR 39 (Buchman Highway) for a total length of approximately 2.11 miles. For the five-year period (2009-2013), there were 84 crashes reported with approximately towage of 16.8 crashes per year. Rear-end collisions were the most common crash type recorded for the corridor with 51.2 percent of total crashes followed by angle collisions (including left- and right-turn collisions) with 20.2 percent of the total crashes. Out of 84 total crashes, 47 (or 56.0 percent) were crashes with injuries and 35 (or 41.7 percent) were crashes with property damage only. There were two (or 2.3 percent) fatal crashes recorded along the corridor. Further, four out of 84 total crashes (4.8 percent) were related to medium or heavy trucks. Among the truck-related incidents, three crashes involved injuries. The corridor crash summary in terms of crash frequency by year and severity is shown in **Table 4-3**.

TABLE 4-3
US 301 (GALL BOULEVARD) CORRIDOR CRASH SUMMARY

Year	Crashes	Crash Severity		
		Fatality	Injury	Property Damage
2013	13	0	2	11
2012	10	0	5	5
2011	24	1	16	7
2010	19	1	16	2
2009	18	0	8	10
Total	**84**	**2**	**47**	**35**

Source: Pasco County Crash Data Management System (2009 - 2013)

In order to assess the corridor at a more detailed level, US 301 (Gall Boulevard) has been divided into three segments for the crash analysis. The highest number of crashes occurred for the segment from Shamrock Place (MP 2.367) to Chancey Road (MP 3.067), with 38 crashes reported. The calculated crash rate for the segment classified as rural principal arterial from south of the future SR 56 (MP 1.395) to Shamrock Place is 0.992 crashes per million vehicle miles traveled (MVMT). The crash rates for the two segments designated as urban-other principal arterial from Shamrock Place to Chancey Road (MP 2.367 to 3.067) and from Chancey Road to south of SR 39 (Buchman Highway) (MP 3.067 to MP 3.764) are 2.479 MVMT and 1.747 MVMT, respectively. The average crash rate for the corridor is 1.7391 MVMT. The FDOT statewide average crash rates for similar facilities are 0.588 (rural principal arterial-other) and 2.116 (urban-other principal arterial) crashes per MVMT. **Table 4-4** presents the crash rate for each segment in comparison to the statewide averages for similar facilities.

TABLE 4-4
US 301 (GALL BOULEVARD) SEGMENT CRASH SUMMARY

Corridor Segment	Length	AADT	Number of Crashes	Segment Crash Rates	
				Segment Crash Rate	Statewide Crash Rate
S. of future SR 56 to Shamrock Place	1.061	12,500	24	0.992	0.588
Shamrock Place to Chancey Road	0.700	12,000	38	2.479	2.116
Chancey Road to south of SR 39 (Buchman Highway)	0.697	9,900	22	1.747	2.116

Source: Pasco County Crash Data Management System (2009 - 2013).

As shown in Table 4-4, the highest crash rate occurred along the segment from Shamrock Place (MP 2.367) to Chancey Road (3.067) with a rate of 2.479 crashes per MVMT, which is higher than the FDOT statewide average crash rate of 2.116 for similar facilities. Within the corridor, the rural arterial segment between the south of future SR 56 intersection and Shamrock Place has also experienced a crash rate higher than the FDOT statewide average crash rate of 0.588 for similar facilities.

Based on the five-year crash history for the corridor, two fatal crashes were reported. Details regarding these incidents are summarized in **Table 4-5**.

TABLE 4-5
US 301 (GALL BOULEVARD) CORRIDOR FATAL CRASH SUMMARY

Date	Crash Location	Description/Contributing Cause
5/7/2011	US 301 (Gall Boulevard) @ Shamrock Place	Ran into a ditch/culvert and hitting a fence under dark conditions
2/18/2010	US 301 (Gall Boulevard) @ Old Crystal Springs	Bicyclist making a right turning under dark conditions (other details not coded)

Source: Pasco County Crash Data Management System (2009 - 2013).

4.1.8.2 Intersection Crash Analysis

A review of the crashes occurring within 250 feet of the US 301 (Gall Boulevard) intersection at Chancey Road was conducted; a summary of the intersection crash analysis results is presented in **Table 4-6**. The intersection crash rate was calculated as crashes per million entering vehicles (MEV) and was compared with the statewide average for similar roadways. The formula used to calculate the intersection crash rate is as follows:

$$R = \frac{C \times 1{,}000{,}000}{V \times 365 \times N}$$

Where: R = Crash rate for intersection expressed as crashes per MEV
C = Total number of intersection-related crashes. N = Number of years of data
V = Traffic volumes entering the intersection

TABLE 4-6
US 301 (GALL BOULEVARD) INTERSECTION CRASH SUMMARY

Mile Post	Location	Crashes Per Year						Intersection Crash Rates	
		2009	2010	2011	2012	2013	Total	Intersection Crash Rate (MEV)	Statewide Crash Rate (Crashes/MEV)
3.067	US 301 (Gall Boulevard) @ Chancey Road	8	5	13	6	8	40	0.545	0.369

Source: Pasco County Crash Data Management System (2009 - 2013).

The US 301 (Gall Boulevard) intersection at Chancey Road had 40 crashes occurring between 2009 and 2013. The crash rate for this location exceeds the FDOT average crash rates for similar facilities. Of the 40 crashes, 18 crashes resulted in an injury and 22 resulted in property damage. There were no fatalities recorded for the five-year period within the 250-foot intersection buffer area.

For crashes identified as occurring at or influenced by the intersections along the US 301 (Gall Boulevard) corridor, 28.6 percent were attributed to careless driving. The primary contributing causes for incidents in the study area include careless driving, failure to yield, and disregard for traffic signal/stop sign.

Detailed crash data and reports are included in Appendix E of the DTTM.

4.1.9 Intersections and Signalization

The project study area currently includes one signalized intersection at US 301 (Gall Boulevard) and Chancey Road.

4.1.10 Lighting

Currently, there is no lighting along US 301 (Gall Boulevard) within the project limits.

4.1.11 Utilities and Railroads

The existing and proposed utilities located within the project limits were identified as part of this PD&E Study. A list of existing utility companies within the project limits was obtained from the Sunshine 811 system. The list of existing utilities is summarized in **Table 4-7**.

There are no at-grade railroad crossings within the project limits.

TABLE 4-7
EXISTING UTILITIES

Utility	Contact	Address	Phone Number	Facility within Study Area
Bright House Networks	Ms. Helen Fife	30432 State Road 54 Wesley Chapel, FL 33543	(813) 862-0522 x: 84266	Fiber Optic Cables
CenturyLink	Mr. Mike Fitzgerald	5908-A Hampton Oaks Pkwy. Tampa, FL 33610	(941) 661-7557	Fiber Optic Cables
City of Zephyrhills	Mr. C.J. Funnell	39421 South Ave. Zephyrhills, FL 33542	(813) 780-0000 x: 3582	None
Duke Energy Distribution	Ms. Sharon Dear	452 E. Crown Point Rd. Winter Garden, FL 34787	(407) 905-3321	Electric
Duke Energy Transmission	Ms. Jennifer Williams	20525 Amberfield Dr. Suite 201 Land O' Lakes, FL 34638	(813) 909-1210	None
Pasco County Utilities	Mr. Martin Ramirez	7536 State St., Suite 205 New Port Richey, FL 34654	(727) 847-8145 x: 7391	Water & Sanitary Sewer (Force Main)
TECO Peoples Gas	Mr. Chris Uria	1400 Channelside Dr. Tampa, FL 33605	(813) 275-3731	Gas
Verizon Florida, LLC.	Mr. Mike Little	7701 E. Telecom Pkwy. Temple Terrace, FL 33637	(813) 978-2161	Copper & Fiber Optic Cables
Withlacoochee River Electric Cooperative	Mr. Corey Littlefield	30461 Commerce Dr. San Antonio, FL 33526	(813) 588-5115 x: 1131	Electric
Zephyrhills Spring Water	Mr. Robert Sarmiento	6403 Harney Rd. Tampa, FL 33610	(813) 778-0594	Water

Source: OMNI, 2015.

4.1.12 Weigh Station

There are no weigh stations within the study area.

4.1.13 Pavement Conditions

Based on a review of the Department's Pavement Condition Forecast Report, currently US 301 has a Cracking Rating of 7.0 and a Ride Rating of 6.7. US 301 from the Pasco County Line to SR 39 (Buchman Highway) was resurfaced in 2006, and is in generally good condition. Additionally, there is a resurfacing project scheduled for this segment (FPID 44063-1, US 301/ SR 41/ Gall Boulevard from Hillsborough County Line to S. of SR 39).

4.1.14 Soils and Geotechnical

The USDA Soil Survey provides indications of what a soil may be useful for and can provide clues as to possible uses and potential environmental issues. Additionally, maps of the soil units provided in the surveys often show historical land features such as mines, borrow pits, railroads, etc. These can also be indications of areas of concern.

The USDA's Soil Conservation Service/ Natural Resources Conservation Service (SCS/NRCS) "Soil Survey of Pasco County, Florida" issued in May 1982 and the Web Soil Survey were reviewed for general climate and near surface soil information. According to the Soil Survey, the mean annual rainfall for the county is approximately 55 inches with 60 percent falling in the summer months, June through September. The climate of the area is generally subtropical with maximum daily temperature of about 90 degrees Fahrenheit in the summer months and frost/freezing temperatures expected two to three days in winter months.

The Soil Survey's *General Soil Map* indicates two soil groups are located within the study area:

1. Soils of the Upland Ridges include the Tavares-Sparr-Adamsville series, which are nearly level to sloping, moderately well drained and somewhat poorly drained soils; some are sandy throughout and others are sandy to a depth of 40 to 80 inches and loamy below.

2. Soils of the Flatwoods and Depressions include the Pomona-EauGallie-Sellers series, which are nearly level, poorly drained and very poorly drained soils, some have subsoil that is dark colored and sandy within a depth of 30 inches and loamy below; some are sandy throughout and have a thick dark colored surface layer.

The Soil Survey indicates that there are eleven (11) detailed soil-mapping units located along the project corridor. The general engineering properties of the soil-mapping units as indicated in the Soil Survey is summarized in **Table 4-8**. A reproduction of the Pasco County Soil Survey published by the USDA for the project vicinity is illustrated on the NRCS Soils Map in **Figure 4-2.**

TABLE 4-8
SUMMARY OF COUNTY SOIL SURVEY

SUMMARY OF USDA SOIL SURVEY PASCO COUNTY, FLORIDA									
USDA MAP SYMBOL AND SOIL NAME	**SOIL CLASSIFICATION**				**PH**	**SEASONAL HIGH WATER TABLE**		**RISK OF CORROSION**	
	DEPTH (INCHES)	**USCS**	**AASHTO**	**PERMEABILITY (INCHES/HOUR)**		**DEPTH (FEET)**	**MONTHS**	**UNCOATED STEEL**	**CONCRETE**
(1) Wauchula, non-hydric - Wauchula, hydric	0-8	SP-SM	A-2-4, A-3	6.0 - 20.0	4.5-5.5	0.5-1.5	May-Oct	High	High
	8-19	SP-SM	A-2-4, A-3	6.0 - 20.0	4.5-5.5				
	19-26	SM, SP-SM	A-2-4, A-3	0.6 - 6.0	4.5-5.5				
	26-34	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	4.5-5.5				
	34-80	SC, SC-SM, SM	A-2-4, A-2-6, A-4, A-6	0.6 - 6.0	4.5-5.5				
	0-8	SP-SM	A-2-4, A-3	6.0 - 20.0	4.5-5.5	0.0-0.5	May-Oct	High	High
	8-19	SP-SM	A-2-4, A-3	6.0 - 20.0	4.5-5.5				
	19-26	SM, SP-SM	A-2-4, A-3	0.6 - 6.0	4.5-5.5				
	26-34	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	4.5-5.5				
	34-80	SC, SC-SM, SM	A-2-4, A-2-6, A-4, A-6	0.6 - 6.0	4.5-5.5				
(2) Pomona, non-hydric - Pomona, hydric	0-6	SP, SP-SM	A-2-4, A-3	6.0 - 20.0	3.5-5.5	1.0-3.5; 0.5-1.5; 1.0-3.5	Feb-June; July-Sept; Oct	High	High
	6-22	SP, SP-SM	A-2-4, A-3	6.0 - 20.0	3.5-5.5				
	22-36	SM, SP-SM	A-2-4, A-3	0.6 - 2.0	3.5-5.5				
	36-52	SP, SP-SM	A-2-4, A-3	6.0 - 20.0	3.5-5.5				
	52-60	SC, SC-SM, SM	A-2-4, A-4, A-6	0.2 - 0.6	3.5-5.5				
	60-80	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	3.5-5.5				
	0-6	SP, SP-SM	A-2-4, A-3	6.0 - 20.0	3.5-5.5	0.0-0.5	Feb-Oct	High	High
	6-22	SP, SP-SM	A-2-4, A-3	6.0 - 20.0	3.5-5.5				
	22-36	SM, SP-SM	A-2-4, A-3	0.6 - 2.0	3.5-5.5				
	36-52	SP, SP-SM	A-2-4, A-3	6.0 - 20.0	3.5-5.5				
	52-60	SC, SC-SM, SM	A-2-4, A-4, A-6	0.2 - 0.6	3.5-5.5				
	60-80	SM, SP-SM	A-2-4, A-3	6.0 - 20.0	3.5-5.5				
(6) Tavares	0-3	SP, SP-SM	A-3	20.0 - 50.0	5.1-6.0	3.5->6.0	June-Dec	Low	High
	3-80	SP, SP-SM	A-3	20.0 - 50.0	5.1-6.0				

TABLE 4-8
SUMMARY OF COUNTY SOIL SURVEY (CONTINUED)

SUMMARY OF USDA SOIL SURVEY PASCO COUNTY, FLORIDA										
USDA MAP SYMBOL AND SOIL NAME	**SOIL CLASSIFICATION**					**PH**	**SEASONAL HIGH WATER TABLE**		**RISK OF CORROSION**	
	DEPTH (INCHES)	**USCS**	**AASHTO**	**PERMEABILITY (INCHES/HOUR)**			**DEPTH (FEET)**	**MONTHS**	**UNCOATED STEEL**	**CONCRETE**
(10) Wabasso, non-hydric - Wabasso, hydric	0-6	SM, SP-SM	A-2-4, A-3	6.0	20.0	3.5-5.5	1.0-3.5; 0.5-1.5; 1.0-3.5	Feb-May; June-Sept; Oct-Nov	Moderate	High
	6-23	SM, SP-SM	A-2-4, A-3	6.0	20.0	3.5-5.5				
	23-30	SM	A-2-4	0.0	0.2	4.5-7.3				
	30-80	SC, SC-SM, SM	A-2-4, A-2-6, A-4, A-6	0.0	0.2	6.6-8.4				
	0-6	SM, SP-SM	A-2-4, A-3	6.0	20.0	3.5-5.5	0.0-0.5	June-Sept	Moderate	High
	6-23	SM, SP-SM	A-2-4, A-3	6.0	20.0	3.5-5.5				
	23-30	SM	A-2-4	0.0	0.2	4.5-7.3				
	30-80	SC, SC-SM, SM	A-2-4, A-2-6, A-4, A-6	0.0	0.2	6.6-8.4				
(16) Zephyr	0-13	PT	A-8	6.0	20.0	3.5-5.5	0	June-Nov	High	High
	13-31	SM, SP-SM	A-2-4, A-3	6.0	20.0	3.5-5.5				
	31-61	SC-SM, SM	A-2-4, A-2-6	0.1	0.2	3.5-5.5				
	61-80	SC-SM, SM	A-2-4	0.6	6.0	3.5-5.5				
(17) Immokalee, non-hydric - Immokalee, hydric	0-4	SP, SP-SM	A-3	6.0	20.0	4.5-6.0	1.0-3.5; 0.5-1.5; 1.0-3.5	Jan-March, June; July-Aug; Sept-Dec	High	High
	4-33	SP, SP-SM	A-3	6.0	20.0	4.5-6.0				
	33-45	SM, SP-SM	A-2-4, A-3	0.6	2.0	4.5-6.0				
	45-80	SP, SP-SM	A-3	6.0	20.0	4.5-6.0				
	0-4	SP, SP-SM	A-3	6.0	20.0	4.5-6.0	0.0-0.5	Aug-Sept	High	High
	4-33	SP, SP-SM	A-3	6.0	20.0	4.5-6.0				
	33-45	SM, SP-SM	A-2-4, A-3	0.6	2.0	4.5-6.0				
	45-80	SP, SP-SM	A-3	6.0	20.0	4.5-6.0				
(18) Electra variant	0-5	SP, SP-SM	A-3	6.0	20.0	4.5-5.5	2.0-3.5	July-Oct	Low	High
	5-39	SP, SP-SM	A-3	6.0	20.0	4.5-5.5				
	39-51	SM, SP-SM	A-2-4, A-3	2.0	6.0	4.5-5.5				
	51-70	SP, SP-SM	A-3	6.0	20.0	4.5-5.5				
	70-78	SC, SC-SM, SM	A-2-4, A-2-6	0.1	0.2	5.6-7.3				
	78-82	---	---	2.0	20.0	---				

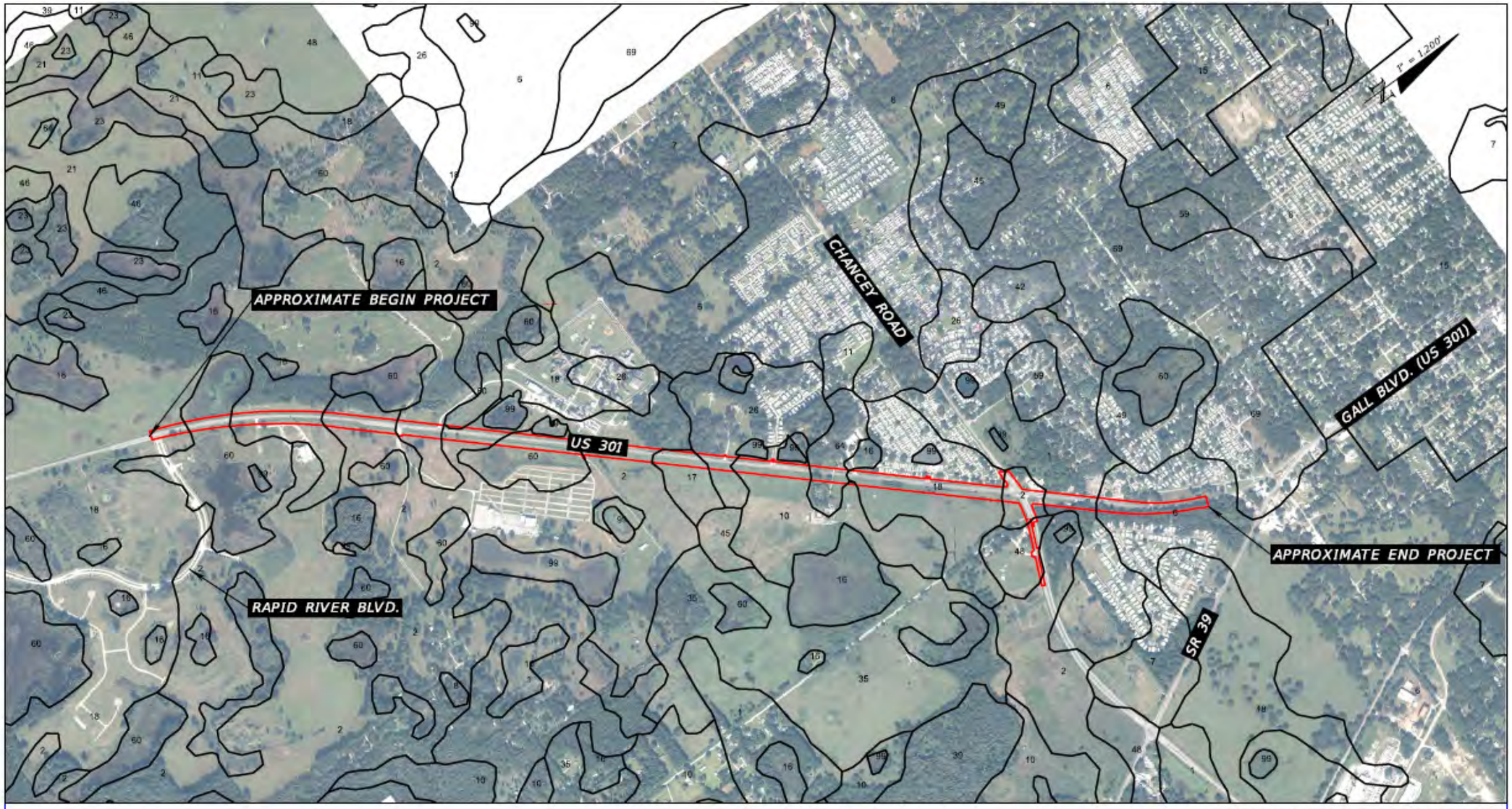
TABLE 4-8
SUMMARY OF COUNTY SOIL SURVEY (CONTINUED)

SUMMARY OF USDA SOIL SURVEY PASCO COUNTY, FLORIDA										
USDA MAP SYMBOL AND SOIL NAME	**SOIL CLASSIFICATION**					**PH**	**SEASONAL HIGH WATER TABLE**		**RISK OF CORROSION**	
	DEPTH (INCHES)	**USCS**	**AASHTO**	**PERMEABILITY (INCHES/HOUR)**			**DEPTH (FEET)**	**MONTHS**	**UNCOATED STEEL**	**CONCRETE**
(26) Narcoosse	0-3	SP-SM	A-3	6.0	- 20.0	3.5-6.0	2.0-3.5	June-Nov	Moderate	High
	3-9	SP, SP-SM	A-3	6.0	- 20.0	3.5-6.0				
	9-12	SM, SP-SM	A-2-4, A-3	2.0	- 6.0	3.5-6.0				
	12-75	SP, SP-SM	A-3	6.0	- 20.0	3.5-6.0				
(60) Palmetto-Sellers-Zephyr	0-4	SP, SP-SM	A-2-4, A-3	6.0	- 20.0	3.5-5.5	0.5-2.5	June-Nov	High	High
	4-10	SP, SP-SM	A-2-4, A-3	6.0	- 20.0	3.5-5.5				
	10-28	SP-SM	A-2-4, A-3	6.0	- 20.0	3.5-5.5				
	28-46	SP, SP-SM	A-2-4, A-3	6.0	- 20.0	3.5-5.5				
	46-80	SC, SC-SM, SM	A-2-4, A-2-6	0.2	- 0.6	4.5-5.5				
	0-5	SM, SP-SM	A-2-4, A-3	6.0	- 20.0	3.5-5.5	0.0	May-Oct	High	High
	5-28	SM, SP-SM	A-2-4, A-3	6.0	- 20.0	3.5-5.5				
	28-80	SM, SP-SM	A-2-4, A-3	6.0	- 20.0	3.5-5.5				
	0-5	PT	A-8	6.0	- 20.0	3.5-5.5	0.0	May-Oct	High	High
	5-22	SP-SM	A-2-4, A-3	6.0	- 20.0	3.5-5.5				
	22-59	SC, SC-SM, SM	A-2-4, A-2-6	0.1	- 0.2	3.5-5.5				
	59-80	SC-SM, SM	A-2-4	0.6	- 6.0	3.5-5.5				
(64) Nobleton	0-5	SM, SP-SM	A-2-4, A-3	6.0	- 20.0	4.5-6.0	1.5-3.5	June-Sept	High	High
	5-29	SM, SP-SM	A-2-4, A-3	6.0	- 20.0	4.5-6.0				
	29-36	SC	A-2-6, A-6	0.2	- 2.0	3.5-5.5				
	36-47	CH, CL, SC	A-6, A-7	0.2	- 0.6	3.5-5.5				
	47-80	SC	A-2-6, A-6	0.2	- 2.0	3.5-5.5				
(69) Millhopper	0-7	SM, SP-SM	A-2-4, A-3	6.0	- 20.0	4.5-6.5	3.5-5.0; 5.0->6.0	June-Sept; Oct-Dec	Low	Moderate
	7-59	SM, SP-SM	A-2-4, A-3	6.0	- 20.0	4.5-6.5				
	59-64	SM	A-2-4	2.0	- 6.0	4.5-6.0				
	64-80	SC, SC-SM, SM	A-2-4, A-4	0.6	- 2.0	4.5-6.0				

(1) AASHTO and USCS do not provide classification for weathered/unweathered bedrock.

Source: USDAA.SCC/NRCS, 1982

FIGURE 4-2
NRCS SOIL MAP



NRCS SOIL MAP

SOURCE: FDOT SURVEY AND MAPPING DATED 2014

4.2 NATURAL AND PHYSICAL ENVIRONMENT

4.2.1 Air Quality

The project is located in Pasco County, Florida, an area currently designated by the United States Environmental Protection Agency (USEPA) as being in attainment for all of the criteria air pollutants. Because the project is in an attainment area and the project would reduce congestion, it is not likely that the recommended improvements would have an impact on local or regional air pollutant/pollutant precursor emissions or concentrations.

The project was subjected to a localized carbon monoxide (CO) screening analysis and "passed" the screening test.

4.2.2 Contamination and Hazardous Materials Sites

Thirteen (13) mainline locations were investigated as sites that may present the potential for finding petroleum contamination or hazardous materials, and therefore may impact the construction of the proposed improvements for this project. Specific details for each site can be found in the *Final Contamination Screening Evaluation Report (CSER)*, available under separate cover.

Of the thirteen (13) mainline sites investigated, the following risk rankings have been applied: three (3) "High" rated sites, two (2) "Medium" rated sites, five (5) "Low" rated sites, and three (3) sites rated "No" for potential contamination concerns.

For the sites ranked "No" for potential contamination, no further action is planned. These sites have been evaluated and determined not to have any potential environmental risk to the study area at this time.

For sites rated "Low" for potential contamination, no further action is required at this time. These sites/facilities have the potential to impact the project's construction activities in the future, but based on select variables have been determined to have low risk, at this time. Variables that may change the risk ranking include a facility's non-compliance to environmental regulations, new discharges to the soil or groundwater, and modifications to current permits. Should any of these variables change, additional assessment of the facilities will be conducted to determine if the low risk rating is still appropriate.

For those locations with a risk rating of "Medium" or "High", Level II field screening will be conducted if it is determined during the project's design that its construction activities could be within their vicinity. These sites have been determined to have potential contaminants, which may impact the proposed roadway improvement project. A soil and groundwater sampling plan could be developed for each site, if applicable. The sampling plan would provide sufficient detail as to the number of soil and groundwater samples to be obtained and the specific analytical test to be performed. A site location sketch for each facility showing all proposed boring locations and groundwater monitoring wells could also be prepared.

4.2.3 Drainage and Floodplains

As indicated in the *Final Location Hydraulics Report* (LHR) available under separate cover, the following Federal Emergency Management Agency (FEMA) FIRM panels were reviewed for the study area: 1201C0458F, 12101C0454F and 12101C0462F for Pasco County, Florida, all dated September 26, 2014. The majority of the project area is located within Flood Zone X (areas that have a 0.2% probability of flooding every year (500-year floodplain)). The proposed roadway expansion would result in a total of 0.64 acres of impacts to Flood Zone A, (areas with a 1% probability of flooding every year (100-year floodplain) and predicted flood water elevations have not been established). The proposed roadway expansion would also result in a total of 0.76 acres of impact, all located north of Chancey Road, to Flood Zone AE (areas which are 100-year floodplains with established base flood elevations).

The impacted Flood Zone AE floodplain is located in an area of high-density residential use located adjacent to Zephyr Creek, and the encroachment areas are 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. In the case of this project, floodplain compensation (FPC) areas would be created applying the FDOT drainage design standards and following the SWFWMD procedures to achieve results that would not increase or significantly change the flood elevations and/or limits.

A total of seven existing cross drains have been identified for the length of the project, see Table 4-2.

4.2.4 Special Designations

No features with a Special Designation such as Outstanding Florida Waters (OFW), Aquatic Preserves, Scenic Highways, or Wild and Scenic Rivers exist within the study area.

4.2.5 Water Quality

According to the *Final Preliminary Pond Siting Report* (PPSR) available under separate cover, the land use across the southern one-half of the study area (south of Chancey Road) is dominated by agricultural use (improved pastures), open land, commercial use (Festival Park) and a correctional facility (Zephyrhills Correctional Institution) with high-density residential areas located in the vicinity of the intersection of US 301 (Gall Boulevard) and Chancey Road. The northern one-half of the study area is dominated by high-density residential areas and mixed wetlands and freshwater marshes. There are no State listed or impaired water bodies within the project limits. The additional impervious surface within the project corridor would increase stormwater runoff.

Portions of the US 301 (Gall Boulevard) project corridor, from the southern end of the project to the north side of the intersection of US 301 (Gall Boulevard) and Chancey Road, are located within an area of impaired water quality. This portion of the project lies within Watershed Basin I.D. (WBID) No. 1443A (Tampa Bay Tributaries), and comprises a portion of the watershed for

the Hillsborough River. This reach of the river is a Class 3F water body, and the river is classified as impaired with respect to nutrients and dissolved oxygen. The FDEP has not adopted any TMDLs for this portion of the river.

4.2.6 Wetlands

The proposed project has been evaluated for potential effects to wetlands and a *Final Natural Resources Evaluation (NRE)* was prepared. Wetland locations and boundaries were identified and approximated using aerial interpretation and field reconnaissance on June 26, 2013 and January 7, 2015. Wetland boundaries were visually approximated using the U.S. Army Corps of Engineers' (USACE) "Regional Supplement to the Corps of Engineers Wetlands Delineation Manual: Atlantic and Gulf Coastal Plain Region" (2010) and the Florida Department of Environmental Protection's (FDEP) "Delineation of the Landward Extent of Wetlands and Surface Waters" (1995) (Chapter 62-340, F.A.C).

Based on collected field data and in-house reviews, ten wetlands, six reservoir ponds, and four ditches occur within the project study area. Appendix C of the Final NRE provides descriptions of the 20 individual wetland and other surface water habitats, as well as aerial maps depicting the location of each wetland and surface water within the project study area. As shown in **Table 4-9** below, several of the individual wetlands contain multiple Florida Land Use, Cover and Forms Classification System (FLUCFCS) and U.S. Fish and Wildlife Service (FWS) classifications, as they are comprised of various habitat types.

TABLE 4-9
INDIVIDUAL WETLANDS AND OTHER SURFACE WATERS WITHIN THE PROJECT STUDY AREA

WETLAND/ SW ID	FLUCFCS DESCRIPTION	FLUCFCS CODE	FWS WETLAND CLASSIFICATION	ACRES WITHIN PSA
Wetlands				
WL 1	Freshwater Marsh	641	PEM1C	0.7
WL 2	Freshwater Marsh	641	PEM1C	2.4
WL 3	Wet Prairie	643	PEM1J	0.2
WL 4	Wet Prairie	643	PEM1J	0.5
WL 5	Streams and Waterways	510	R2UB3J	1.9
WL 6	Mixed Wetland Hardwoods	617	PFO1C	0.1
WL 7	Freshwater Marsh	641	PEM1C	0.7
WL 8	Emergent Aquatic	644	PAB4H	1.8
WL 9	Freshwater Marsh	641	PEM1C	0.3
WL 10	Freshwater Marsh	641	PEM1C	<0.1
			Subtotal for Wetlands	8.6
Other Surface Waters				
Ditch 1	Streams and Waterways	510	PEM1Jx	0.2
Ditch 2	Streams and Waterways	510	PEM1Jx	0.2
Ditch 3	Streams and Waterways	510	PEM1Jx	0.2
Ditch 4	Streams and Waterways	510	PEM1Jx	0.1
SW 1	Reservoirs less than 10 ac	534	POWHx	1.0
SW 2	Reservoirs less than 10 ac	534	POWHx	1.2
SW 3	Reservoirs less than 10 ac	534	POWHx	1.2
SW 4	Reservoirs less than 10 ac	534	POWHx	1.2
SW 5	Reservoirs less than 10 ac	534	POWHx	0.2
SW 6	Reservoirs less than 10 ac	534	POWHx	0.1
			Subtotal for Other Surface Waters	**5.6**
			Total	**14.2**

Source: Cowardin et al., 1979

Notes: FWS Wetland Classifications:

PFO1C Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded
PEM1C Palustrine, Emergent, Persistent, Seasonally Flooded
PEM1J Palustrine, Emergent, Persistent, Intermittently Flooded
PAB4H Palustrine, Aquatic Bed, Floating Vascular, Permanently Flooded
PEM1Jx Palustrine, Emergent, Persistent, Intermittently Flooded, Excavated
POWHx Palustrine, Open Water, Permanently Flooded, Excavated
R2UB3J Riverine, Lower Perennial, Unconsolidated Bottom, Mud, Intermittently Flooded

4.2.7 Wildlife and Habitat

The project corridor was assessed and a *Final NRE* was prepared that documented the presence of suitable habitat for federal- and/or state-listed protected species in accordance with 50 Code of Federal Regulation (CFR) Part 402 of the ESA of 1973, as amended, Chapters 5B-40 and 68A-27 F.A.C., and *Part 2, Chapter 27 - Wildlife and Habitat Impacts* of the FDOT *PD&E Manual*.

Prior to performing field reviews, a letter was sent to the Florida Natural Areas Inventory (FNAI) and Florida Fish and Wildlife Conservation Commission (FWC) requesting information on documented occurrences of listed species within one mile of the US 301 (Gall Boulevard) project

study area and wood stork rookeries located within 15 miles of the project study area. A list of threatened and endangered species with the potential for occurrence within the project study area was then compiled based on information received from the responding agencies and in-house and field research.

In addition to the literature and databases listed in **Section 4.2**, the following data sources were reviewed to assess the potential occurrence of federally- and state-listed plant and animal species within the project study area:

- FWC, Eagle Nest Locator website: (http://myfwc.com/eagle/eaglenests/nestlocator.aspx)
- FWC, *Florida's Endangered Species, Threatened Species, and Species of Special Concern* (January 2013)
- FWC, Florida Black Bear Management Plan, Florida Fish and Wildlife Conservation Commission, Tallahassee, 215 p. (June 27, 2012)
- FWS, Endangered and Threatened Wildlife and Plants, 50 CFR 17.11 and 17.12
- FWS, 2012 GIS wood stork data for active colonies
- FWS, online endangered ESA library PDF species information sheets; Website (http://www.fws.gov/endangered/esa-library/pdf/)
- FNAI maps and database, (updated June 2014), Website: (http://www.fnai.org/bioticssearch.cfm)
- FNAI Element Occurrence Data Report (January 8, 2015)
- Florida Department of Agriculture & Consumer Services, Division of Plant Industry (FDACS), Notes on Florida's Endangered and Threatened Plants: Botany Contribution No. 38, 5th edition, (2010), Website: http://freshfromflorida.s3.amazonaws.com/fl-endangered-plants.pdf)
- Atlas of Florida Vascular Plants, Institute for Systemic Botany, Website: http://www.florida.plantatlas.usf.edu/)

Environmental scientists familiar with Florida natural communities conducted a field review of the project study area in June 2013 and January 2015. The field review consisted of pedestrian transects throughout all habitat types found within the project study area. The purpose of this review was to verify and/or refine preliminary habitat boundaries and classification codes established through in-office literature reviews and photo interpretation. During the field review, each upland and surface water community within the project study area was visually inspected and plant species composition, exotic plant infestations, shifts in historical plant communities, and any other disturbances such as soil subsidence, clearing, canals, power lines, etc. were noted.

Wildlife and signs of wildlife usage in each upland and surface water community were also noted.

4.2.8 Noise

A traffic noise analysis for the project was prepared in accordance with all applicable guidelines as stated within both 23 CFR 772 and Part 2, Chapter 17 of the FDOT PD&E Manual. As such, the analysis was performed using the FHWA's Traffic Noise Model (TNM, Version 2.5). Use of the TNM is required when evaluating the potential for traffic noise impacts during the design year of roadway improvement projects for which the regulations, policies and guidelines with 23 CFR 772 and Part 2, Chapter 17 of the PD&E Manual are applicable.

For properties with uses other than residential, the methodologies described in the FDOT's *A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations* was also used. Special land uses include community pools and recreational areas.

One-hundred twenty one noise sensitive receptors (i.e., discrete representative locations on a property that has noise sensitive land uses) were evaluated within eight noise sensitive areas. One-hundred eighteen receptors were evaluated on residential property, two were evaluated at community pools located at the Palm View Gardens RV Resort and Bramblewood Mobile Home Park and one receptor was evaluated at the shuffleboard court at the Palm View Gardens RV Resort.

Of the 121 evaluated receptors, 41 are predicted to be impacted by traffic noise with existing conditions and in the future without the proposed improvements. With the proposed improvements, 70 of the 121 receptors are predicted to be impacted by traffic noise. Of the 70 receptors predicted to be impacted with the proposed improvements, 69 were evaluated on residential properties and one was evaluated at a shuffleboard court.

Future traffic noise levels with the proposed improvements are predicted to approach, meet, or exceed the NAC at 70 noise sensitive sites. These sites are predicted to experience future traffic noise levels with the proposed improvements to US 301 that would range from 66.0 to 74.4 dB(A).

4.3 CULTURAL ENVIRONMENT

4.3.1 Historical/Archaeological

Historical background research indicated that nine previously recorded historic resources were located in the US 301 (Gall Boulevard) project APE: (8PA00674, 8PA00675, 8PA01164, 8PA02675, and 8PA02720 through 8PA02724). They include one resource group (8PA01164), one road segment (8PA02675), and seven buildings (8PA00674, 8PA00675, and 8PA02720 through 8PA02724). Clyde's Cottages (8PA01164), was determined eligible for the National Register of Historic Places (NRHP) listing in 2010, and a Section 106 Case Study Report was prepared in 2012 as part of the previously completed PD&E Study Update (256422-2). The evaluation of effects to Clyde's Cottages (8PA01164) resulted in a finding of No Adverse Effect.

The segment of US 301 (8PA02675) within the project APE was not evaluated by the SHPO, and the seven other previously recorded historic resources were determined ineligible.

In addition to the previously recorded historic resources, five historic resources were newly recorded within the US 301 (Gall Boulevard) project APE (8PA02838 through 8PA02842). They include one resource group (8PA02838) comprised of two buildings (8PA02839 and 8PA02840) and two other buildings (8PA02841 and 8PA02842). None is considered potentially eligible for listing in the NRHP.

Archaeological background research indicated that 19 previously recorded archaeological sites are located within one mile of the US 301 (Gall Boulevard) project corridor. Of these, three sites, 8PA00382, 8PA01140, and 8PA02053 are located proximate to, but outside, the US 301 (Gall Boulevard) ROW. Given the known patterns of aboriginal settlement in the vicinity, combined with the results of previous surveys, five areas along the US 301 (Gall Boulevard) PD&E Study corridor are considered to have a moderate potential for prehistoric period archaeological site occurrence.

4.3.2 Recreation Areas

No recreation areas are located within the study area.

4.4 SOCIAL ENVIRONMENT

4.4.1 Socioeconomic

The TBRPM-ML "Starter Projects" network with the Pasco County ULI SE Data was reviewed to ensure that it accurately reflects the timing of improvements to the surrounding roadway network, including the proposed future extension of SR 56 to US 301 (Gall Boulevard). In addition, note that numerous developments approved within eastern Pasco County are in various stages of planning and construction. For example, the County approved a Comprehensive Plan Amendment in 2008 for Pasadena Hills (Pasadena Hills Area Plan) consisting of 20,000 acres located adjacent to US 301 (Gall Boulevard), north of the project study area. In addition, several developments have been approved along the existing and future proposed sections of SR 56. As such, the SE data was reviewed to ensure that the latest approved development totals, including those specifically located along the US 301 (Gall Boulevard), SR 39, Chancey Road and future SR 56 corridors, are represented.

The impact of these developments is reflected in the projected increases in population, employment, and the number of dwelling units in the general area. A comparison of socioeconomic data within the study area between the 2006 base year and 2035 Pasco County ULI datasets indicates that the population in the TAZs surrounding the US 301 (Gall Boulevard) corridor is projected to grow from 4,973 in the year 2006 to 13,638 in the year 2035, with an estimated growth of 175 percent. Similarly, employment is projected to grow from 1,337 in the year 2006 to 5,392 in the year 2035, with an estimated growth of 300 percent.

4.4.2 Mobility

US 301 (Gall Boulevard) is a major north-south arterial located in East Pasco County. It is a regional truck route and provides excellent north-south access to distribution centers. US 301 (Gall Boulevard) is an important connection to the regional and statewide transportation network that links the Tampa Bay region to the remainder of the state and the nation. US 301 (Gall Boulevard) was identified as a regional roadway by the West Central Florida MPOs, CCC and included in the Regional Roadway Network. In addition, this segment of US 301 to downtown Zephyrhills is part of the proposed SR 54 Cross County Express Route that is included in the *Pasco County MPO Mobility 2040 Cost Affordable Transit Plan* for implementation in 2031.

4.4.3 Aesthetics

US 301 (Gall Boulevard) within the study limits is a 2-lane rural undivided facility that includes a grassed median and border areas, which would allow for future aesthetic and landscaping features. Currently there are no landscaping or aesthetic features within the project corridor.

Section 5.0
DESIGN CRITERIA

The design criteria used to develop the Preferred Build Alternative is based on the FDOT's Plans Preparation Manual (PPM), Volume 1, January 2017. The criteria are presented in **Table 5-1.**

TABLE 5-1
URBAN AND SUBURBAN DESIGN CRITERIA

Design Criteria	Design Standard	Source
DESIGN SPEED (V)	55/45 mph (Urban)	PPM, Table 1.9.1 & Section 2.16.1
ACCESS CLASS	Class 3	PPM, Table 1.8.2
	Median Openings: Full/Signal: 2640 ft. Directional: 1320 ft.	
	Connection Spacing: >45 MPH: 660 ft. <45MPH: 440 ft.	
Horizontal Alignment		
Max. Curvature	2° 5' 00" 3° 10' 00" (Urban)	PPM, Figure 2.16.3
Clear Zone	24 ft. - Travel Lane 20 ft. – Travel Lane (Urban)	PPM, Table 2.11.11
	14 ft. - Auxiliary Lane	PPM, Table 2.11.11
Border Width	35 ft. 14 ft. (Urban)	PPM, Section 2.16.7 & PPM, Table 2.5.2
	Traffic Control Signs - See Design Standards	PPM, Section 2.16.11 & Table 2.11.1
	Light Poles - 20 ft. - Travel Lane / 14 ft. - Auxiliary Lane 4 ft. – Face of Curb (Urban)	PPM, Section 2.16.11 & Table 2.11.2
	AFUs - Clear Zone 4 ft. – Face of Curb (Urban)	PPM, Section 2.16.11 & Table 2.11.3
Horizontal Clearance	Signal Poles and Controller Cabinet - Clear Zone 4 ft. – Face of Curb (Urban)	PPM, Section 2.16.11 & Table 2.11.4

TABLE 5-1
URBAN AND SUBURBAN DESIGN CRITERIA (CONTINUED)

Design Criteria	Design Standard	Source
Horizontal Clearance	Trees - Clear Zone 4 ft. – Face of Curb (Urban)	PPM, Section 2.16.11 & Table 2.11.5
Horizontal Clearance	Other Roadside Obstacles - Clear Zone	PPM, Section 2.16.11 & Table 2.11.9
Max. Superelevation	0.05	PPM, Section 2.16.10
Superelevation Transition Slope Rate	1:225 & 1:200 (Urban) - 100 ft. minimum length of transition	PPM, Table 2.9.3
Max. Deflection w/o Curve	0° 45' 00" 1° 00' 00" (Urban)	PPM, Table 2.8.1a
Max. Deflection Through Intersection	3° 00' 00" Urban	PPM, Table 2.8.1b
Min. Horizontal Curve Length	15V = 825 ft. (400 ft. minimum) 15V = 675 ft. (Urban) (400 ft. minimum)	PPM, Table 2.8.2a
Max. Curvature Using Normal Cross Slopes	0° 30' 00"	PPM, Table 2.8.4
VERTICAL ALIGNMENT		
K Value for Vertical Curve (Crest)	185 98 (Urban)	PPM, Table 2.8.5
Minimum Length (Crest)	350 ft. 250 ft. (Urban)	PPM, Table 2.8.5
K Value for Vertical Curve (Sag)	115 79 (Urban)	PPM, Table 2.8.6
Minimum Length (Sag)	250 ft. 150 ft. (Urban)	PPM, Table 2.8.6
Grades	5% Maximum 6% Maximum (Urban)	PPM, Section 2.16.8 & PPM, Table 2.6.1
	0.3% Minimum	PPM, Table 2.6.4
Min. Distance Between VPI's	250 ft.	PPM, Table 2.6.4
Max. Change in Grade w/o Vertical Curve	0.50% 0.70% (Urban)	PPM, Table 2.6.2

TABLE 5-1
URBAN AND SUBURBAN DESIGN CRITERIA (CONTINUED)

Design Criteria	Design Standard	Source
Roadway Base Clearance	3 ft. 1 ft. (Urban)	PPM, Table 2.6.3
SIGHT DISTANCE		
Minimum Stopping Sight Distance for Grades ≤ 2%	495 ft. 360 ft. (Urban)	PPM, Table 2.7.1
ROADWAY ELEMENTS		
Number of Through Lanes	4 (2 in each direction)	
Through Lane Width	12 ft. 11 ft. (Urban)	PPM, Table 2.1.1
Turn Lane Width	12 ft. 11 ft. (Urban)	PPM, Table 2.1.1
Bicycle Lane Width	6.5 ft. 7 ft. (Urban)	PPM, Section 2.16.5 & PPM, Section 8.4.1
Shoulder Width	6.5 ft. 7 ft. (Urban)	PPM, Section 2.16.5 & PPM, Section 8.4.1
Sidewalk Width	5 ft. (6 ft. adjacent to curb)	PPM, Section 8.3.1
Median Width	30 ft.	PPM, Section 2.16.4
Side Slopes	Front Slope: Varies 1:6 to 1:2	PPM, Table 2.4.1
	Back Slope: Varies 1:6 to 1:2	PPM, Table 2.4.1
Transverse Slopes	1:4	PPM, Table 2.4.1
Travel Lane Cross Slope (ft/ft)	0.02 (0.03 Outside Lane)	PPM, Figure 2.1.1

Section 6.0
TRAFFIC

A Final DTTM has been prepared for the proposed project and is available under separate cover. An analysis was performed as a part of this study for the existing year (2013) and the future years – Opening Year (2020), Interim Year (2030) and Design Year (2040) with the existing and projected future traffic volumes.

6.1 EXISTING TRAFFIC VOLUMES AND TRAFFIC CHARACTERISTICS

The AADT volumes for the Existing Year (2013) were developed from the 72-hour traffic counts using the Average Daily Traffic (ADT) volumes over a three-day period. The ADT volumes were adjusted using the applicable weekly Seasonal Factor (SF) and Axle Correction Factor (applied only to the volume counts), as documented in the FDOT's *Florida Traffic Information & Highway Data* (2012) and provided in Appendix D of the DTTM. All of the AADT volumes were rounded to the nearest hundredth digit. The Existing Year (2013) AADT volumes are shown on **Figure 6-1**.

The peak-hour existing traffic was derived by applying the K- and D-factors described in Section 2.3 of the DTTM to the AADT volumes. The peak direction of travel was assumed to be consistent with the existing counts. At the intersections, the existing turning movement volumes were obtained by applying the existing turning movement percentages to the approach volumes. Detailed calculations are provided in Appendix D of the DTTM. For the a.m. peak hour, existing traffic volumes were obtained by reversing the reciprocal movements from the p.m. peak hour. Note that per the traffic methodology, no adjustments were required for the existing Directional Design Hourly Volume (DDHVs). The Existing Year (2013) a.m. and p.m. peak hour traffic is shown on **Figure 6-2.**

6.2 FUTURE TRAFFIC PROJECTIONS

The Peak Season Weekday Average Daily Traffic (PSWADT) volumes obtained from the 2006 base year and 2035 design year models were converted to the respective AADT volumes through multiplication by a factor of 0.95, which is the Model Output Conversion Factor (MOCF) for Pasco County. A linear interpolation of the AADT volumes from 2006 to 2035 was used to forecast the Opening Year (2020) and Interim Year (2030) AADT volumes. Traffic projections for the Design Year (2040) were developed by applying a growth factor determined from historic traffic count data to the 2035 model volumes. Historic traffic counts for several FDOT traffic count stations within the US 301 (Gall Boulevard) study corridor were reviewed and the historic growth rates were calculated. A summary of historic growth in the study area is provided in **Table 6-1.** For locations where the historic growth rate was negative or less than one percent, a minimum growth rate of one percent was used. All of the future year AADT volumes were checked for reasonableness and verified to be greater than the Existing Year (2013) AADT volumes. **Figure 6-3** provides the future year AADT volumes for the study area; detailed calculations are included in Appendix F of the DTTM.

FIGURE 6-1
EXISTING YEAR (2013) ANNUAL AVERAGE DAILY TRAFFIC (AADT)

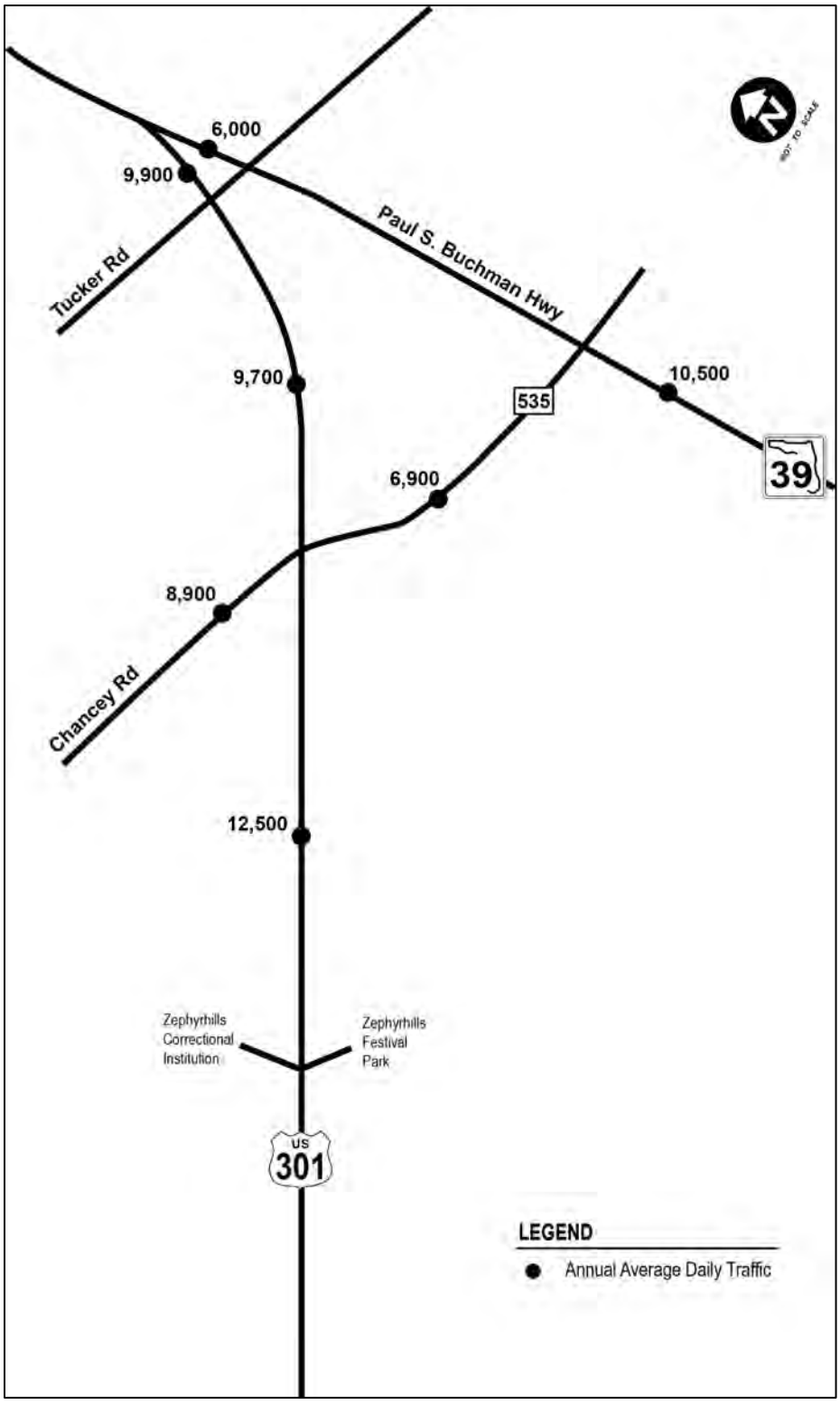


FIGURE 6-2
EXISTING YEAR (2013) AM/PM PEAK HOUR TURNING MOVEMENT VOLUMES

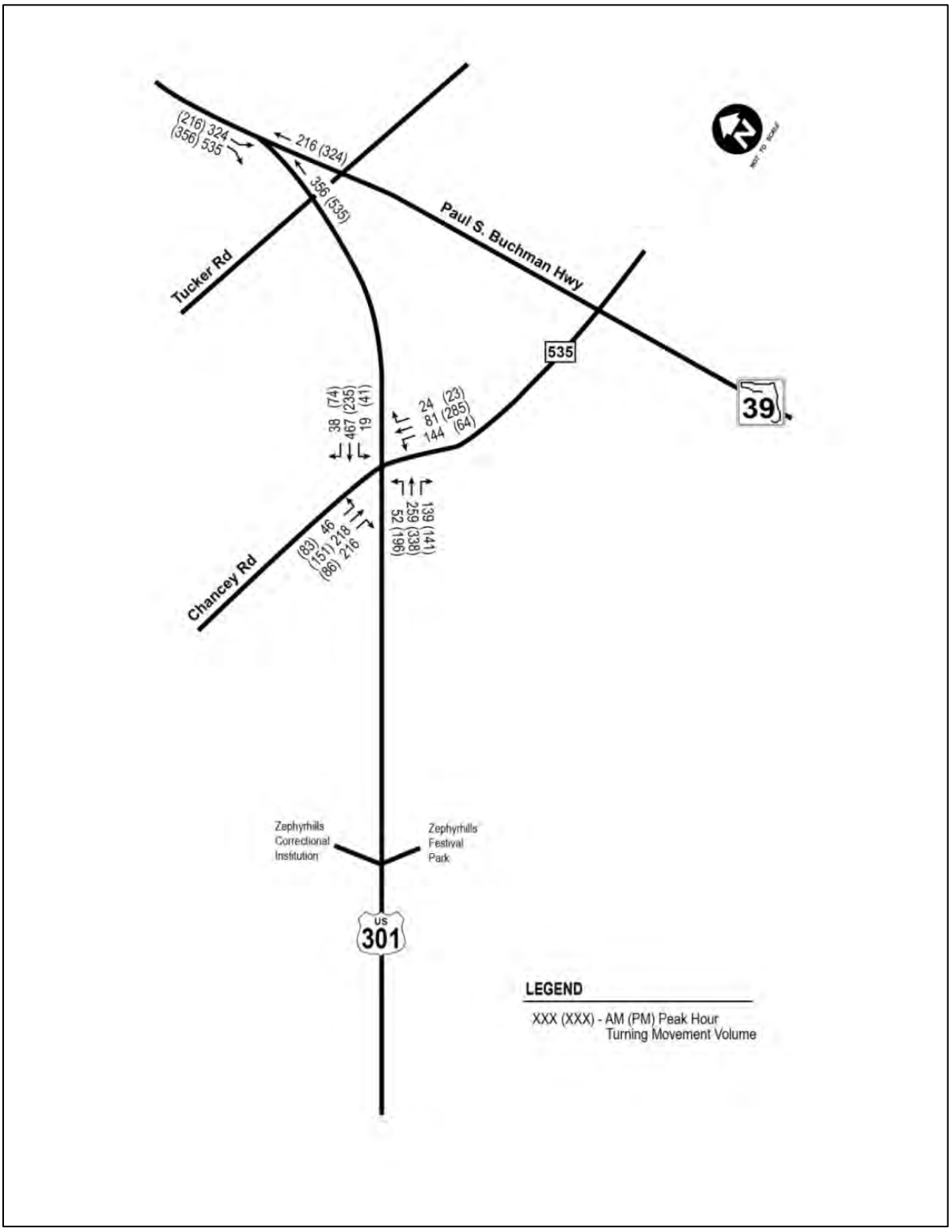


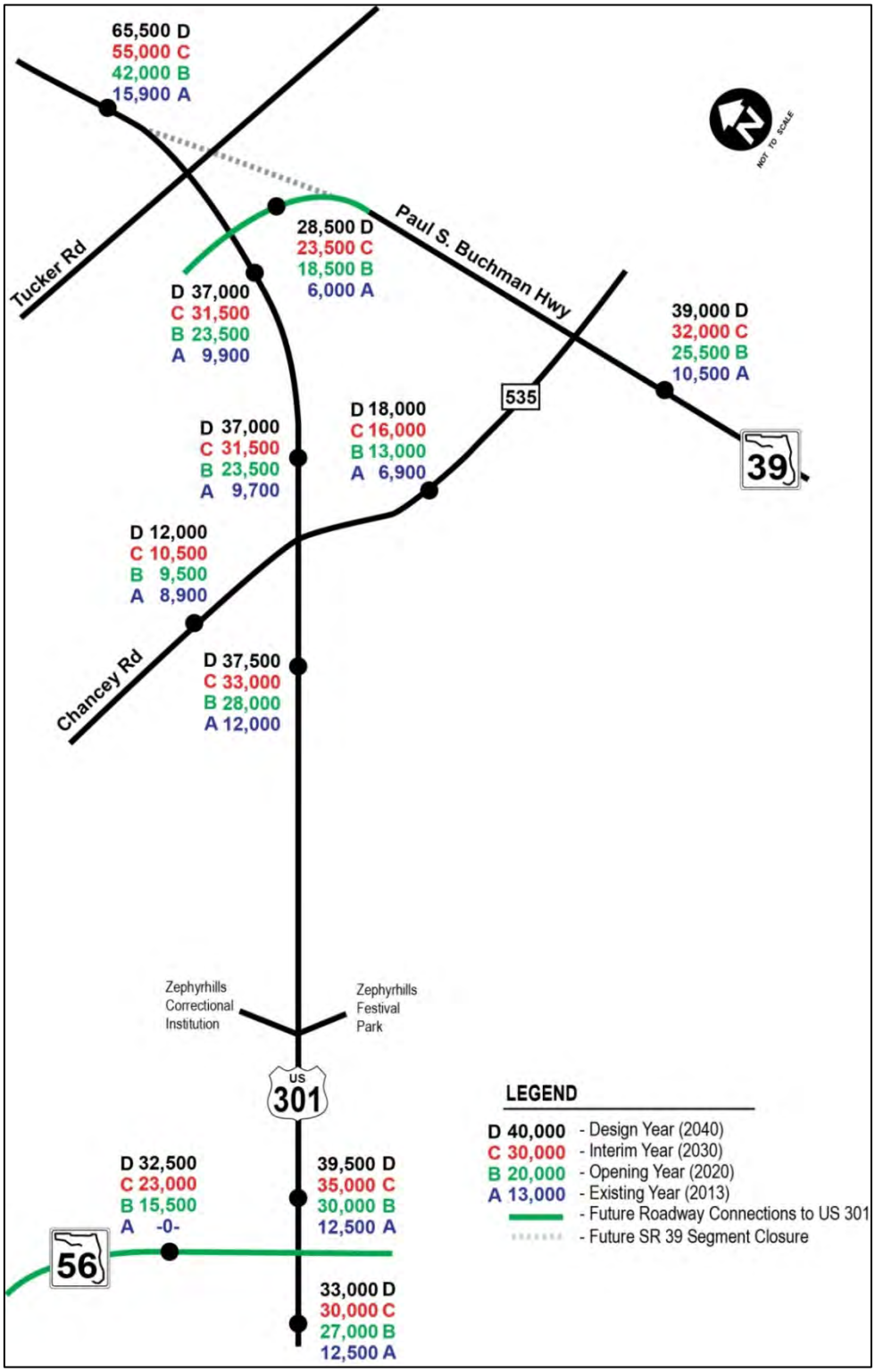
TABLE 6-1
HISTORIC GROWTH RATES

Count Site	Location	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Growth/ Year
5501	US 301 South of Chancey Road	N/A	N/A	N/A	N/A	N/A	N/A	18200	9200	11100	14300	16500	13900	15000	12700	14400	13300	-2.99%
0016	US 301 South of SR 39	8800	9100	9800	9600	10800	11200	11200	2800	18000	15800	15700	13900	14500	13400	14200	13800	3.79%
0022	US 301 North of SR 39	17300	17800	16500	17200	17900	18100	18700	19000	36500	25500	22000	26500	22500	22500	20300	21500	1.62%
																	US 301 Historic Average	***0.80%***
5308	SR 39 South of Chancey Road	8000	7700	7700	8300	8100	7900	8300	9300	11300	13800	12700	11600	11700	11700	10900	11600	3.00%
0023	SR 39 South of US 301	N/A	N/A	N/A	N/A	N/A	N/A	6100	6200	6200	7800	6900	6400	6700	6700	6900	6700	1.09%
																	SR 39 Historic Average	***2.05%***
9025	Chancey Road West of US 301	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8600	8900	3.49%
6019	Chancey Road East of SR 39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	7100	6500	6600	6600	6800	-1.06%
																	Chancey Road Historic Average	***1.22%***

Source: *Florida Transportation Information 2012*

N/A = Not Available

FIGURE 6-3
FUTURE YEAR AADT VOLUMES



6.3 FUTURE NO-BUILD ALTERNATIVE LEVEL OF SERVICE ANALYSIS

For the No-Build Alternative, all of the study area intersections were analyzed to evaluate operational conditions for the Opening Year (2020) and Design Year (2040). The No-Build Alternative geometry described in Section 4.1 of the DTTM and the DDHVs for the a.m. and p.m. peak period were input into SYNCHRO to obtain the LOS. The LOS for signalized intersections was considered acceptable if the overall intersection operates at or above the LOS D standard and all approaches operate at LOS E or better. **Table 6-2** provides the results of the No-Build Alternative intersection analysis for the Opening Year (2020) and Design Year (2040). The SYNCHRO output sheets are provided in Appendix G of the DTTM. As shown in **Table 6-2**, most of the intersections in the study area operate below the acceptable LOS standard under the No-Build Alternative which demonstrates the need for additional improvements by the Opening Year (2020) in order to accommodate projected growth.

TABLE 6-2
NO-BUILD ALTERNATIVE INTERSECTION LOS

Intersection	Control Type	Lane Group/ Approach	Opening Year (2020) (AM/PM)		Design Year (2040) (AM/PM)	
			Average Delay	LOS	Average Delay	LOS
US 301 (Gall Boulevard) at SR 39	Signal	Eastbound	44.6/59.7	D/E	163.8/189.1	F/F
		Westbound	19.3/30.8	B /C	37.5/119.0	D/F
		Northbound	29.2 /28.3	C/C	79.2/130.8	E/F
		Southbound	20.8/26.9	C/C	50.4/94.4	D/F
		Overall	***22.9/29.7***	***C /C***	***56.6/115.8***	***E/F***
US 301 (Gall Boulevard) at Chancey Road	Signal	Eastbound	173.9 /114.3	F /F	288.0/171.1	F/F
		Westbound	127.5/119.9	F /F	213.1/151.6	F/F
		Northbound	37.6/84.0	D/F	142.6/274.5	F /F
		Southbound	214.3 /49.0	F/D	399.4 /228.9	F /F
		Overall	***142.2 /87.0***	***F/F***	***279.8/225.0***	***F/F***
US 301 (Gall Boulevard) at SR 56 (Proposed)	Signal	Eastbound	106.3/180.4	F/F	284.5/287.3	F /F
		Westbound	127.4/61.7	F /E	169.0/97.9	F /F
		Northbound	66.7/68.1	E/E	99.5 /323.2	F /F
		Southbound	114.3/40.1	F/D	232.9/224.5	F /F
		Overall	***99.2/80.3***	***F /F***	***215.5 /281.4***	***F /F***

Notes: Existing plus LRTP Cost Affordable geometry was assumed for the No-Build Alternative intersection analysis US 301 (Gall Boulevard) was assumed to remain two lanes.

Arterial analysis was conducted along the US 301 (Gall Boulevard) corridor for the No-Build Alternative with the existing two lanes using SYNCHRO software. The No-Build Alternative arterial analysis results for the Opening Year (2020) and Design Year (2040) are presented in **Table 6-3**. The SYNCHRO output sheets are provided in Appendix G of the DTTM.

TABLE 6-3
NO-BUILD ALTERNATIVE ARTERIAL ANALYSIS RESULTS

US 301 (Gall Boulevard) Segment	Opening Year (2020)				Design Year (2040)			
	Northbound (AM/PM)		Southbound (AM/PM)		Northbound (AM/PM)		Southbound (AM/PM)	
	Average Speed (mph)	LOS	Average Speed (mph)	LOS	Average Speed (mph)	LOS	Average Speed (mph)	LOS
S. of Proposed SR 56 to Chancey Road	35.3/25.7	B/D	22.3/37.3	D/B	18.2/11.6	E/F	12.3/12.6	F/F
Chancey Road to SR 39 (Buchman Highway)	26.8/27.5	D/C	7.3/21.4	F/D	15.5/11.0	F/F	4.6/7.0	F/F
Overall	***30.4/22.4***	***C/D***	***15.0/30.2***	***F/C***	***16.7/9.1***	***E/F***	***9.0/10.9***	***F/F***

Under the No-Build Alternative, the results indicate that US 301 (Gall Boulevard) is generally anticipated to operate at or better than the LOS D standard for the Opening Year (2020), with exception being the segment between Chancey Road and SR 39 (Buchman Highway) in the southbound direction during the a.m. peak hour. For the Design Year (2040), all segments of US 301 (Gall Boulevard) are projected to operate below the LOS D standard. These results indicate the need for capacity improvements along the corridor prior to the Design Year (2040) in order to accommodate the projected growth.

The No-Build Alternative geometry and LOS results for the Opening Year (2020) and Design Year (2040) are graphically shown on **Figure 6-4**.

6.4 FUTURE BUILD ALTERNATIVE LEVEL OF SERVICE ANALYSIS

For the Build Alternative, all of the study area intersections were analyzed to evaluate operational conditions for the Opening Year (2020), Interim Year (2030) and Design Year (2040). The Build Alternative geometry described in Section 4.1 of the DTTM and the DDHVs for the a.m. and p.m. peak period were input into SYNCHRO to obtain the LOS. The analysis was initially conducted using the existing network plus the LRTP Cost Affordable improvements, which includes US 301 (Gall Boulevard) as a four-lane facility. Any additional improvements needed at the intersections were determined in order to achieve an acceptable LOS. An iterative approach was conducted assuming the improvements required to achieve acceptable LOSs in the prior analysis year(s) plus those improvements needed in the analysis year under consideration. In general terms, a "step-by-step approach" was employed by adding improvements to the intersection for each of the analysis years (2020, 2030 and 2040) until acceptable LOS were achieved. **Tables 6-4 through 6-6** provide the results of the Build Alternative intersection analysis for the Opening Year (2020), Interim Year (2030) and Design Year (2040). The SYNCHRO output sheets are provided in Appendix G of the DTTM.

FIGURE 6-4
OPENING YEAR (2020) NO-BUILD ALTERNATIVE GEOMETRY AND LOS

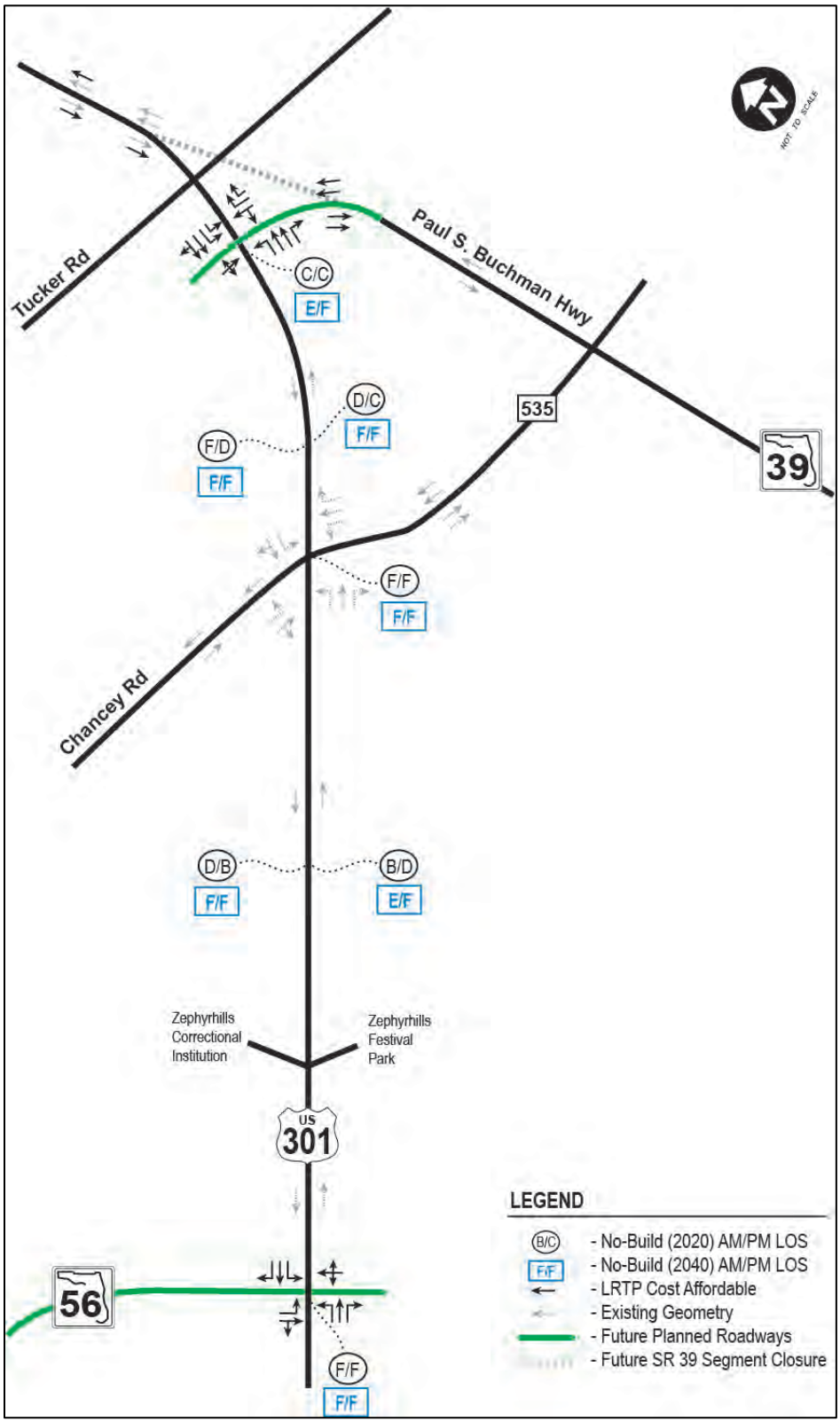


TABLE 6-4
OPENING YEAR (2020) BUILD ALTERNATIVE INTERSECTION LOS

Intersection	Control Type	Lane Group/ Approach	2020 AM/PM Existing Plus LRTP Cost Affordable Improvements[1]		2020 AM/PM With Additional Improvements		
			Average Delay	LOS	Proposed Improvement	Average Delay	LOS
US 301 (Gall Boulevard) and SR 39 (Buchman Highway)	Signal	Eastbound	44.6/59.7	D/E	-	-	-
		Westbound	19.3/30.8	B/C	-	-	-
		Northbound	29.2/28.3	C/C	-	-	-
		Southbound	20.8/26.9	C/C	-	-	-
		Overall	***22.9/29.7***	***C/C***	-	-	-
US 301 (Gall Boulevard) and Chancey Road	Signal	Eastbound	71.7/55.6	E/E	• Exclusive Eastbound Right-Turn Lane	40.2/33.9	D/C
		Westbound	70.3/41.7	E/D		75.1/39.4	E/D
		Northbound	37.8/32.3	D/C		26.8/28.8	C/C
		Southbound	66.6/35.0	E/C		34.8/31.9	C/C
		Overall	***60.0/37.5***	***E/D***		***40.0/32.5***	***D/C***
US 301 (Gall Boulevard) and SR 56	Signal	Eastbound	48.3/63.2	C/E	-	-	-
		Westbound	33.7/28.4	C/C	-	-	-
		Northbound	24.8/23.0	C/C	-	-	-
		Southbound	25.1/23.4	C/C	-	-	-
		Overall	***30.7/30.7***	***C/C***	**-**	**-**	**-**

Note: [1] Includes the four-lane widening of US 301 (Gall Boulevard).

TABLE 6-5
INTERIM YEAR (2030) BUILD ALTERNATIVE INTERSECTION LOS

Intersection	Control Type	Lane Group/ Approach	2030 AM/PM Existing Plus LRTP Cost Affordable Improvements[1] Average Delay	LOS	2030 AM/PM With Additional Improvements[2] Proposed Improvement	Average Delay	LOS
US 301 (Gall Boulevard) and SR 39 (Buchman Highway)	Signal	Eastbound	61.2/79.0	E/E	• Exclusive Eastbound Left-Turn Lane • Exclusive Westbound Left-Turn Lane • Exclusive Southbound Right-Turn Lane	45.0/63.3	D/E
		Westbound	23.6/72.4	C/E		27.7/79.1	C/E
		Northbound	49.9/66.6	D/E		30.1/43.5	C/D
		Southbound	38.2/55.3	D/E		26.9/43.3	C/D
		Overall	***38.5/64.3***	***D/E***		***28.2/53.5***	***C/D***
US 301 (Gall Boulevard) and Chancey Road	Signal	Eastbound	85.7/70.8	F/E	• Exclusive Eastbound Right-Turn Lane • Exclusive Southbound Right-Turn Lane	52.3/40.5	D/D
		Westbound	96.4/47.1	F/D		72.1/52.1	E/D
		Northbound	47.5/51.2	D/D		39.2/31.2	D/C
		Southbound	195.0/48.1	F/D		51.7/25.0	D/C
		Overall	***119.2/51.3***	***F/D***		***51.6/35.6***	***D/D***
US 301 (Gall Boulevard) and SR 56	Signal	Eastbound	65.1/134.0	E/F	• Eastbound Left-Turn Lane (Dual) • Exclusive Eastbound Right-Turn Lane • Northbound Left-Turn Lane (Dual)	60.8/75.1	E/E
		Westbound	60.5/79.1	E/E		28.2/39.3	C/D
		Northbound	42.9/85.6	D/F		34.6/51.0	C/D
		Southbound	47.2/71.9	D/E		37.6/26.9	D/C
		Overall	***51.1/91.7***	***D/F***		***43.0/48.7***	***D/D***

Notes: [1] Includes the four-lane widening of US 301 (Gall Boulevard).
[2] Cumulative improvements analysis [includes additional improvements cited for the Opening Year (2020)].

TABLE 6-6
DESIGN YEAR (2040) BUILD ALTERNATIVE INTERSECTION LOS

Intersection	Control Type	Lane Group/ Approach	2040 AM/PM Existing plus LRTP Cost Affordable Improvements[1] Average Delay	LOS	2040 AM/PM With Additional Improvements[2] Proposed Improvement	Average Delay	LOS
US 301 (Gall Boulevard) and SR 39 (Buchman Highway)	Signal	Eastbound	152.9/179.3	F/F	• Exclusive Eastbound Left-Turn Lane • Exclusive Westbound Left-Turn Lane • Exclusive Southbound Right-Turn Lane • *Operational Improvement*: Additional Northbound and Southbound Through Lane	43.1/58.4	D/E
		Westbound	38.6/117.7	D/F		25.8/61.7	C/E
		Northbound	47.8/116.0	D/F		40.0/47.5	D/D
		Southbound	53.7/96.2	D/F		26.5/54.9	C/D
		Overall	***51.6/111.0***	***D/F***		***29.7/54.4***	***C/D***
US 301 (Gall Boulevard) and Chancey Road	Signal	Eastbound	158.1/113.7	F/F	• Exclusive Eastbound Right-Turn Lane • Exclusive Southbound Right-Turn Lane • Additional Southbound Left-Turn Lane (Dual) • Additional Westbound Left (Dual) and Right-Turn Lane (Dual - operated under signal control)	61.3/61.8	E/E
		Westbound	122.6/85.6	F/F		79.4/65.2	E/E
		Northbound	86.4/69.9	F/E		40.6/50.5	D/D
		Southbound	173.3/51.3	F/D		51.6/34.1	D/C
		Overall	***138.7/72.7***	***F/E***		***54.5/50.6***	***D/D***
US 301 (Gall Boulevard) and SR 56	Signal	Eastbound	138.1/206.9	F/F	• Additional Eastbound Left-Turn Lane (Dual) • Additional Eastbound Right-Turn Lane (Dual - operated under signal control) • Additional Northbound Left-Turn Lane (Dual) • Exclusive Westbound Left and Right-Turn Lanes	51.9/63.2	D/E
		Westbound	157.7/97.9	F/F		35.9/45.3	D/D
		Northbound	70.9/144.6	E/F		40.3/50.5	D/D
		Southbound	80.0/120.1	F/F		33.5/48.0	C/D
		Overall	***96.9/149.9***	***F/F***		***40.8/52.4***	***D/D***

Notes: [1] Includes the four-lane widening of US 301 (Gall Boulevard).
[2] Cumulative improvements analysis [includes additional improvements cited for the Opening Year (2020) and Interim Year (2030)].

As shown in Table 6-6, the analysis shows that an additional lane in both the northbound and southbound direction may be needed on US 301 (Gall Boulevard) through the SR 39 (Buchman Highway) intersection in order to meet the LOS D standard in the Design Year (2040). Note that the need for this improvement is not due to capacity constraints on the US 301 (Gall Boulevard) corridor within the study area (south of SR 39); rather, it is needed due to the heavy localized traffic demand projected to enter/exit the intersection from north of SR 39.

The arterial analysis for US 301 (Gall Boulevard) was initially conducted using the existing network plus the LRTP Cost Affordable improvements, which includes US 301 (Gall Boulevard) as a four-lane facility. Any additional improvements required in order to achieve an acceptable LOS were determined in an iterative manner for the analysis years. The Build Alternative arterial analysis results for the Opening Year (2020), Interim Year (2030), and Design Year (2040) are presented in **Tables 6-7 through 6-9**. The SYNCHRO output sheets are provided in Appendix G of the DTTM.

TABLE 6-7
OPENING YEAR (2020) BUILD ALTERNATIVE ARTERIAL ANALYSIS RESULTS

US 301 (Gall Boulevard) Segment	Opening Year (2020) with Existing plus LRTP Cost Affordable Improvements[1]				Opening Year (2020) with Additional Improvements[2]			
	Northbound (AM/PM)		Southbound (AM/PM)		Northbound (AM/PM)		Southbound (AM/PM)	
	Average Speed (mph)	LOS	Average Speed (mph)	LOS	Average Speed (mph)	LOS	Average Speed (mph)	LOS
S. of Proposed SR 56 to Chancey Road	35.8/38.0	B/B	43.1/43.0	A/A	38.8/39.0	B/B	43.1/43.0	A/A
Chancey Road to SR 39 (Buchman Highway)	27.4/28.0	C/C	18.1/25.5	E/D	27.4/28.0	C/C	25.5/26.6	D/D
Overall	***31.5/32.4***	***C/C***	***30.4/34.5***	***C/B***	***32.9/32.9***	***C/C***	***34.6/35.0***	***B/B***

Notes: [1] Includes the four-lane widening of US 301 (Gall Boulevard).
[2] Refer to Table 6-4 for additional improvements at the study area intersections in the Opening Year (2020).

TABLE 6-8
INTERIM YEAR (2030) BUILD ALTERNATIVE ARTERIAL ANALYSIS RESULTS

US 301 (Gall Boulevard) Segment	Interim Year (2030) with Existing plus LRTP Cost Affordable Improvements[1]				Interim Year (2030) with Additional Improvements[2]			
	Northbound (AM/PM)		Southbound (AM/PM)		Northbound (AM/PM)		Southbound (AM/PM)	
	Average Speed (mph)	LOS	Average Speed (mph)	LOS	Average Speed (mph)	LOS	Average Speed (mph)	LOS
S. of SR 56 (Proposed) to Chancey Road	33.2/33.4	C/C	33.4/27.5	C/C	33.7/37.1	C/B	36.8/41.4	B/B
Chancey Road to SR 39 (Buchman Highway)	21.1/17.9	D/E	11.6/21.9	F/D	27.2/22.8	C/D	23.6/27.6	D/C
Overall	***27.2/25.0***	***C/D***	***22.0/25.5***	***D/D***	***29.4/29.2***	***C/C***	***31.0/34.6***	***C/B***

Notes: [1] Includes the four-lane widening of US 301 (Gall Boulevard).
[2] Refer to Table 4-4 for additional improvements at the study area intersections in the Interim Year (2030)

TABLE 6-9
DESIGN YEAR (2040) BUILD ALTERNATIVE ARTERIAL ANALYSIS RESULTS

US 301 (Gall Boulevard) Segment	Design Year (2040) with Existing plus LRTP Cost Affordable Improvements[1]				Design Year (2040) with Additional Improvements[2,3]			
	Northbound (AM/PM)		Southbound (AM/PM)		Northbound (AM/PM)		Southbound (AM/PM)	
	Average Speed (mph)	LOS	Average Speed (mph)	LOS	Average Speed (mph)	LOS	Average Speed (mph)	LOS
S. of Proposed SR 56 to Chancey Road	25.2/29.4	D/C	26.1/19.3	D/E	35.4/33.3	B/C	39.0/33.3	B/C
Chancey Road to SR 39 (Buchman Highway)	21.5/12.1	D/F	10.2/21.5	F/D	23.7/21.8	D/D	21.8/24.8	D/D
Overall	***22.8/20.0***	***D/E***	***18.4/20.0***	***E/E***	***29.0/26.8***	***C/D***	***31.1/29.3***	***C/C***

Notes: [1] Includes the four-lane widening of US 301 (Gall Boulevard).
[2] Refer to Table 4-5 for additional improvements at the study area intersections in the Design Year (2040).
[3] Includes the through-lane operational improvement provided on Table 4-5 at US 301 (Gall Boulevard) and SR 39.

The results indicate that the US 301 (Gall Boulevard) corridor is projected to operate at or above an acceptable LOS through the Interim Year (2030). However, the segment between Chancey Road and SR 39 (Buchman Highway) may deteriorate to an unacceptable LOS by the Design Year (2040) if additional improvements are not made. Note that the deficient LOS results on this segment are due to the operational issues previously described at the US 301 (Gall Boulevard) and SR 39 (Buchman Highway) intersection.

The Build Alternative geometry and LOS results for the Opening Year (2020), Interim Year (2030) and Design Year (2040) are graphically shown on **Figures 6-5 through 6-7**.

FIGURE 6-5
OPENING YEAR (2020) BUILD ALTERNATIVE GEOMETRY AND LOS

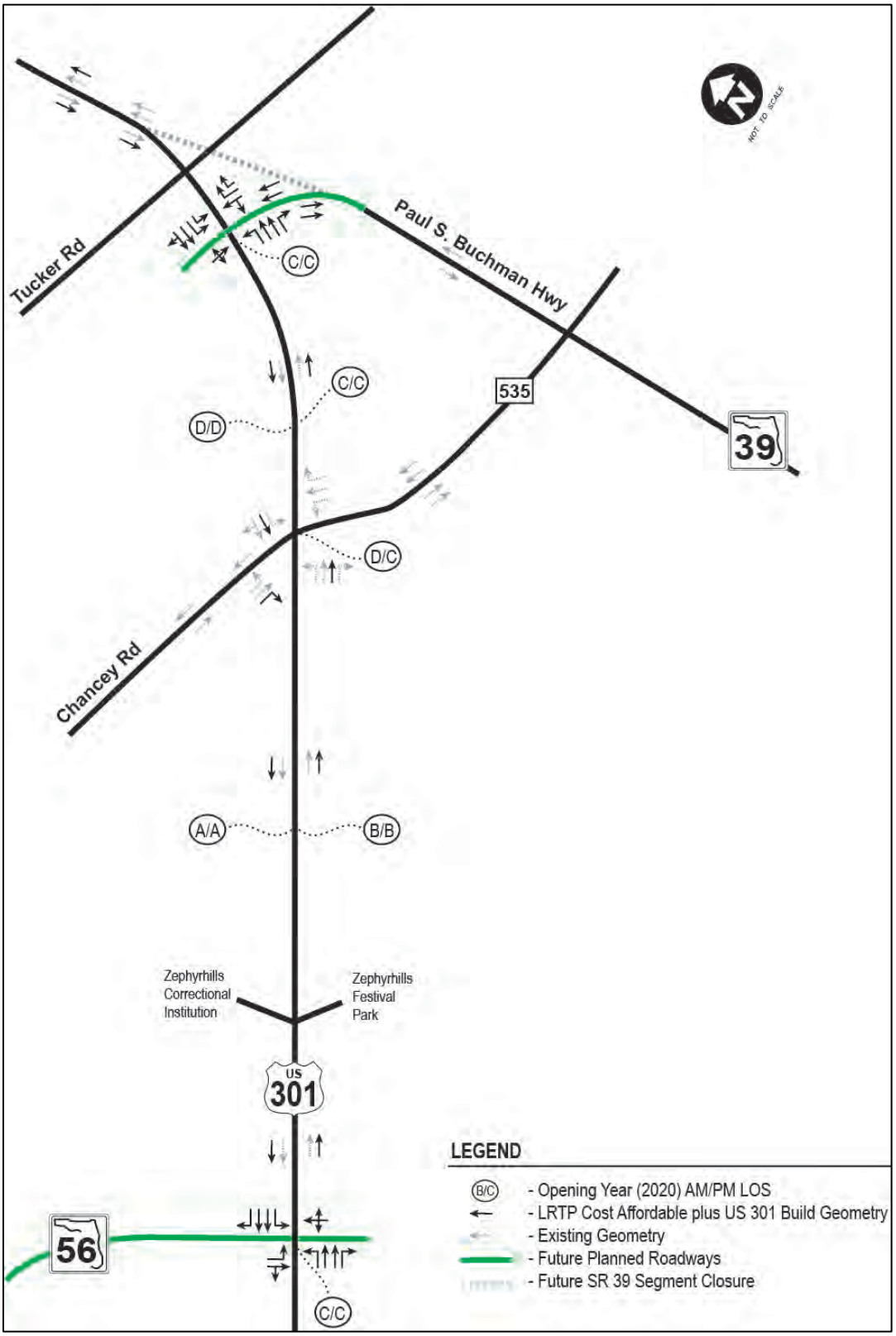


FIGURE 6-6
INTERIM YEAR (2030) BUILD ALTERNATIVE GEOMETRY AND LOS

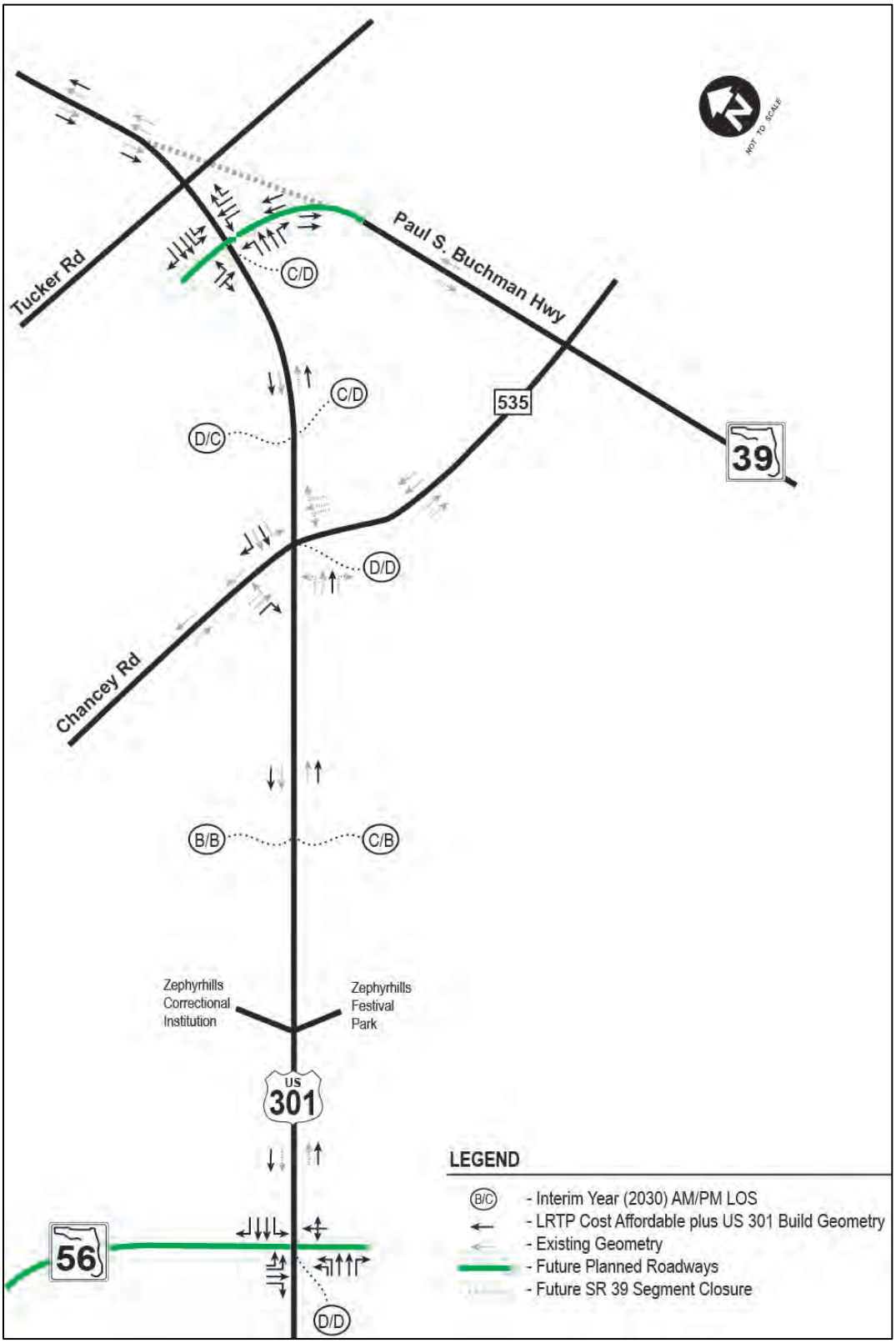
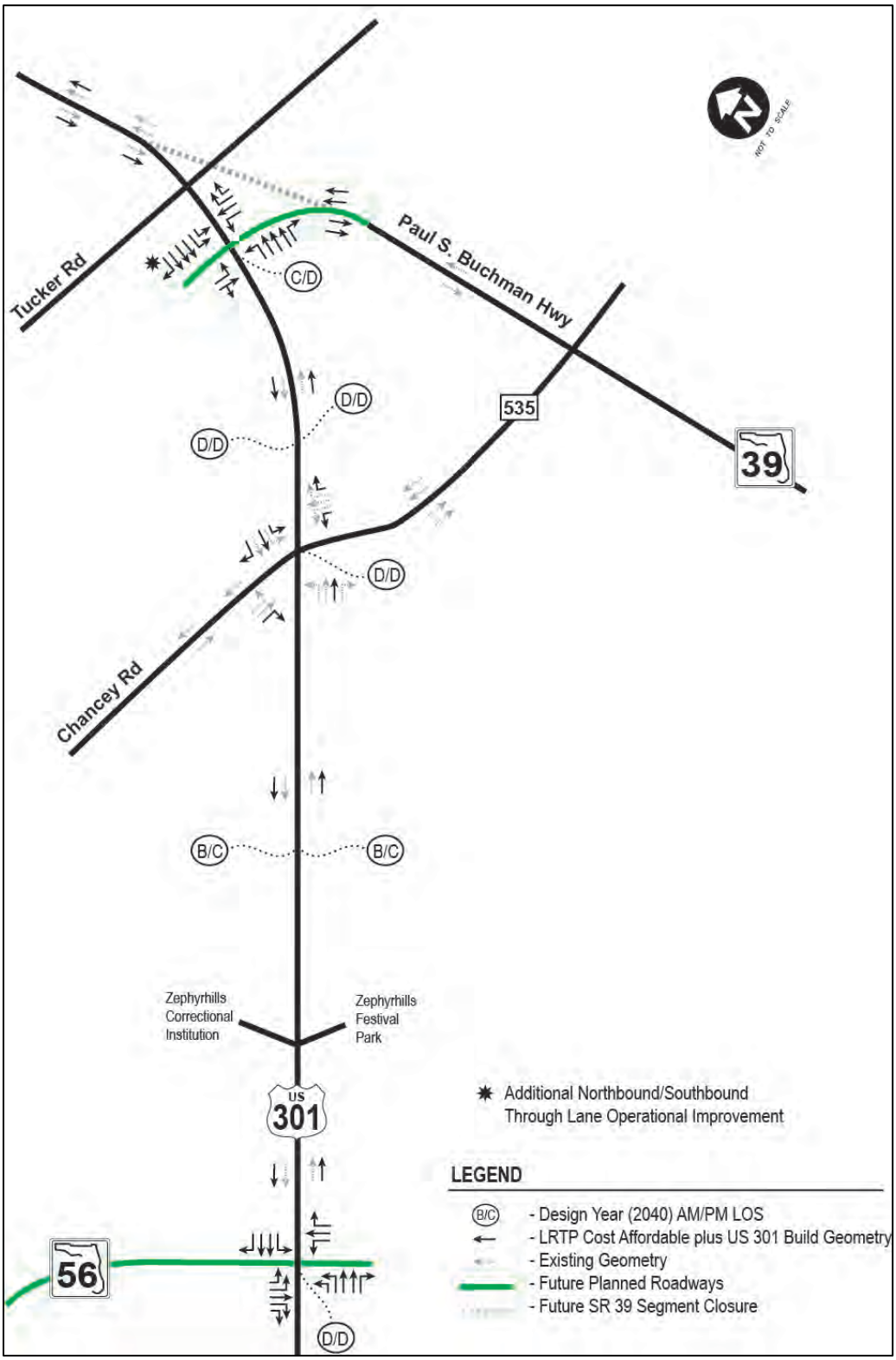


FIGURE 6-7
DESIGN YEAR (2040) BUILD ALTERNATIVE GEOMETRY AND LOS



Section 7.0
ALTERNATIVES ANALYSIS

7.1 NO-BUILD ALTERNATIVE

The No-Build Alternative assumes that traffic volumes will continue to increase with no changes to US 301 within the study area. The No-Build Alternative requires no additional expenditure of funds and has no environmental impacts. Although the No-Build Alternative does not meet the purpose and need and offers no future operational improvements, it remained a viable alternative throughout the study process and it served as the basis of comparison for the build alternatives.

7.2 TRANSPORTATION SYSTEM MANAGEMENT & OPERATIONS (TSM&O)

The objective of Transportation System Management & Operations (TSM&O) is to identify strategies that reduce existing traffic congestion and prevent its occurrence in areas that are currently congested. These strategies are designed to modify travel behavior and increase system efficiency without costly infrastructure improvements. TSM&O strategies are implemented when one or more of the following occurs:

- Insufficient funds available to meet system improvement needs,
- Increased construction costs for new roadways and transit facilities,
- Increased need to improve operational efficiency, and/or
- Changes in travel patterns.

TSM&O options generally include traffic signal and intersection improvements, access management, and transit improvements. Upon analysis it was determined, the additional capacity required to meet the projected traffic volumes along US 301 (Gall Boulevard) in the Design Year 2040 cannot be provided solely through the implementation of TSM&O improvements.

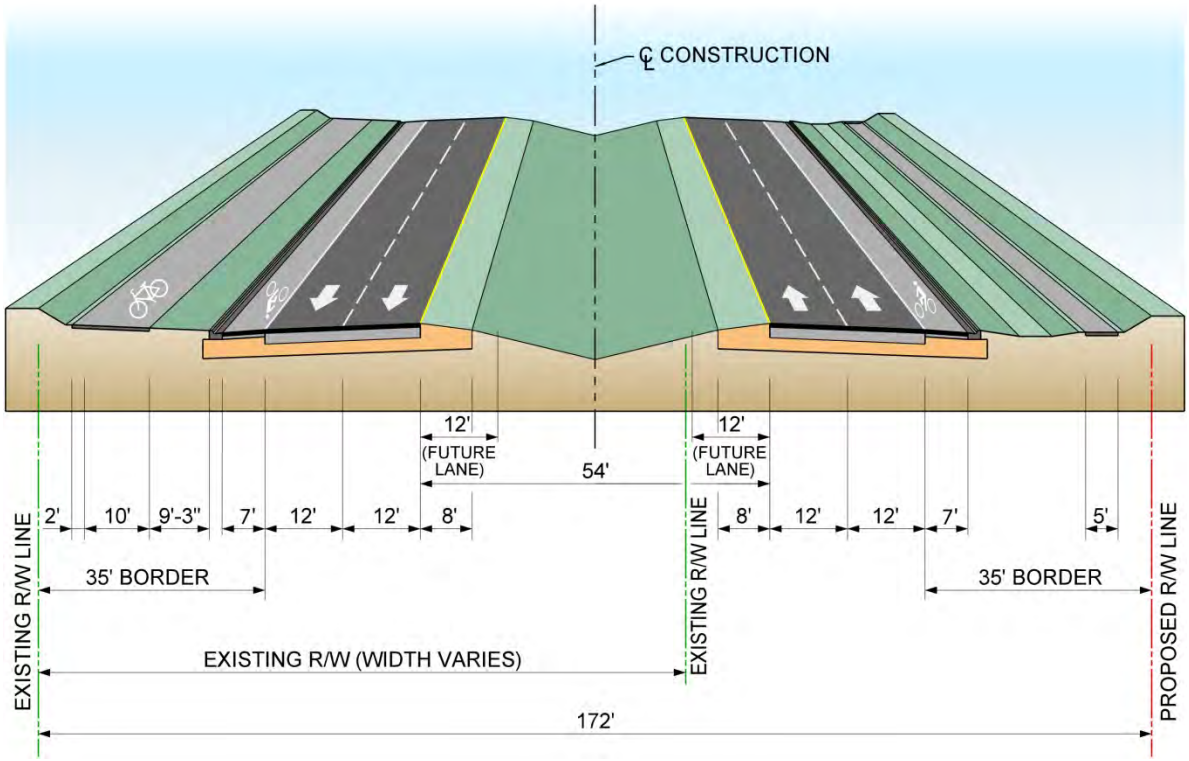
7.3 BUILD ALTERNATIVE

During the US 301 (Gall Boulevard) PD&E study, two Build Alternatives were considered. Both Build Alternatives consisted of holding the existing centerline of US 301 (Gall Boulevard), and simply widening the US 301 (Gall Boulevard) corridor either to the east or the west. Additionally, only new construction was considered due to the inability to achieve the necessary hydraulic grade needed to convey stormwater from the project corridor to future pond sites based on a preliminary review of existing ground elevations using LIDAR, and geotechnical data.

The Build Alternative consists of two proposed typical sections. The first typical section, a suburban section, begins south of the future SR 56 intersection and ends at Chancey Road. The second typical section, an urban section, begins at Chancey Road and ends just south of the proposed realigned SR 39 (Buchman Highway) and US 301 (Gall Boulevard) intersection.

The suburban typical section, beginning south of the future SR 56 intersection and ending at Chancey Road will have four 12-foot lanes, a 54-foot median, two 7-foot bike lanes/paved shoulders, and Type E curb and gutter; as well as a 5-foot sidewalk along the eastern ROW line and a 10-foot shared use path along the western ROW line, as shown in **Figure 7-1**. This typical section is expandable to six lanes by adding two lanes to the inside reducing the overall median width to 30 feet. The design speed is 50 mph.

FIGURE 7-1
PROPOSED BUILD ALTERNATIVE SUBURBAN TYPICAL SECTION
S. OF PROPOSED SR 56 TO CHANCEY ROAD

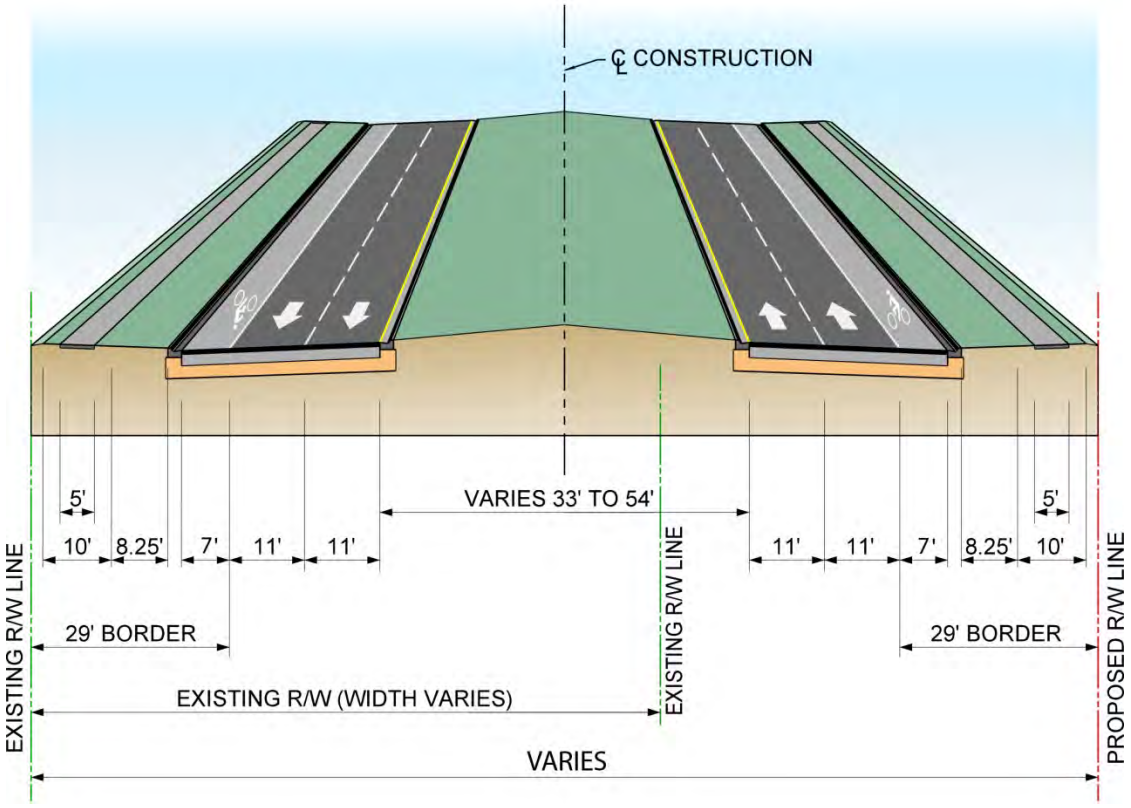


The urban typical section, beginning at Chancey Road and ending just south of the proposed realigned SR 39 (Buchman Highway) and US 301 (Gall Boulevard) intersection, is shown in **Figure 7-2**. The typical section consists of four 11-foot lanes, a variable width median, 7-foot bike lanes/paved shoulders, and Type E curb and gutter; as well as 5-foot sidewalks. The design speed is 45 mph.

This typical section would serve as a transition between the ultimate six-lane section of US 301 (Gall Boulevard) and the ultimate four-lane section of US 301 (Gall Boulevard). Both typical sections hold the existing west ROW line and expand the project corridor to the east. During the design phase, the 10-foot shared use path shall be extended north of Chancey Road to south of the SR 39 intersection.

Widening to the east would impact seven (7) property owners (land acquisition only, no residential impacts) and impact 1.6 acres of wetlands.

FIGURE 7-2
PROPOSED BUILD ALTERNATIVE URBAN TYPICAL SECTION
CHANCEY ROAD TO S. OF SR 39 (BUCHMAN HIGHWAY)



7.4 EVALUATION MATRIX

TABLE 7-1
US 301 (GALL BOULEVARD) PD&E STUDY EVALUATION MATRIX

Evaluation Criteria	No-Build Alternative	Build Alternative
Potential Business Impacts		
Number of business relocations (includes outdoor signs)	0	1+
Potential Residential Impacts		
Number of residential relocations	0	0
Potential Right-of-Way (ROW) Impacts		
Roadway: Area of ROW anticipated to be acquired (acres)	0	19.1
Drainage: Off-site ponds necessary (Yes/No)	No	Yes
Potential Environmental Effects		
Archaeological/historical sites potentially affected *	0	0
Noise-sensitive sites	0	70
Wetlands (acres)	0	0.9
Surface waters (acres)	0	0.7
Floodplains (acres)	0	0.76
Threatened and endangered species potentially affected **	0	0
Petroleum contamination or hazardous material sites (H/M/L)	0/0/0	3/2/5
Estimated Costs (in millions)		
ROW acquisition	$0.0	$14.8
Wetlands mitigation***	$0.0	$0.2
Roadway construction	$0.0	$9.8
Engineering design (15% of construction)	$0.0	$1.5
Construction engineering & inspection (15% of construction)	$0.0	$1.5
Preliminary Estimate of Total Costs	**$0.0**	**$27.9**

* NRHP eligible or potentially eligible

** FWC/USFWS listed or protected

*** Based on 2015-2016 Senate Bill Rate of $133,000/ac.

\+ Impact to Business Sign only

7.5 PREFERRED ALTERNATIVE

Based on feedback to date from the local government, the public, and other agencies, and the results of the Public Hearing, the Build Alternative has been chosen as the Preferred Build Alternative.

Section 8.0
DESIGN DETAILS OF PREFERRED ALTERNATIVE

8.1 DESIGN TRAFFIC VOLUMES

The Design Year (2040) traffic volumes are presented in Figure 6-3. Details on the future traffic projections are included in Section 6.0.

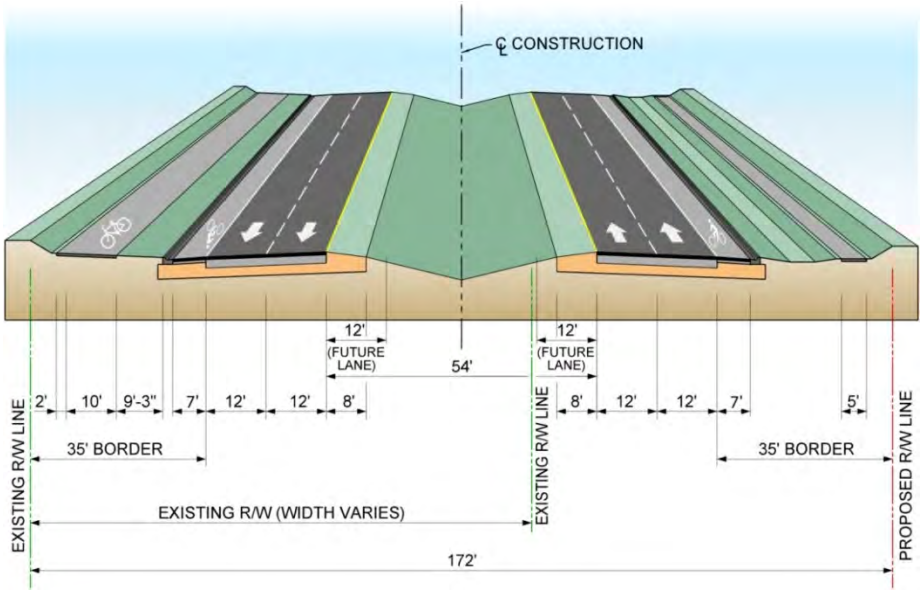
8.2 TYPICAL SECTIONS AND DESIGN SPEED

The Preferred Build Alternative is comprised of two typical sections. The first typical section, a suburban section, begins south of the future SR 56 intersection and ends at Chancey Road. The second typical section, an urban section, begins at Chancey Road and ends just south of the proposed realigned SR 39 (Buchman Highway) and US 301 (Gall Boulevard) intersection.

8.2.1 Suburban Typical Section

The suburban typical section, beginning south of the future SR 56 intersection and ending at Chancey Road will have four 12-foot lanes, a 54-foot median, two 7-foot bike lanes/paved shoulders, and Type E curb and gutter; as well as a 5-foot sidewalk along the eastern ROW line and a 10-foot shared use path along the western ROW line, as shown in **Figure 8-1**. This typical section is expandable to six lanes by adding two lanes to the inside reducing the overall median width to 30 feet. The design speed is 50 mph.

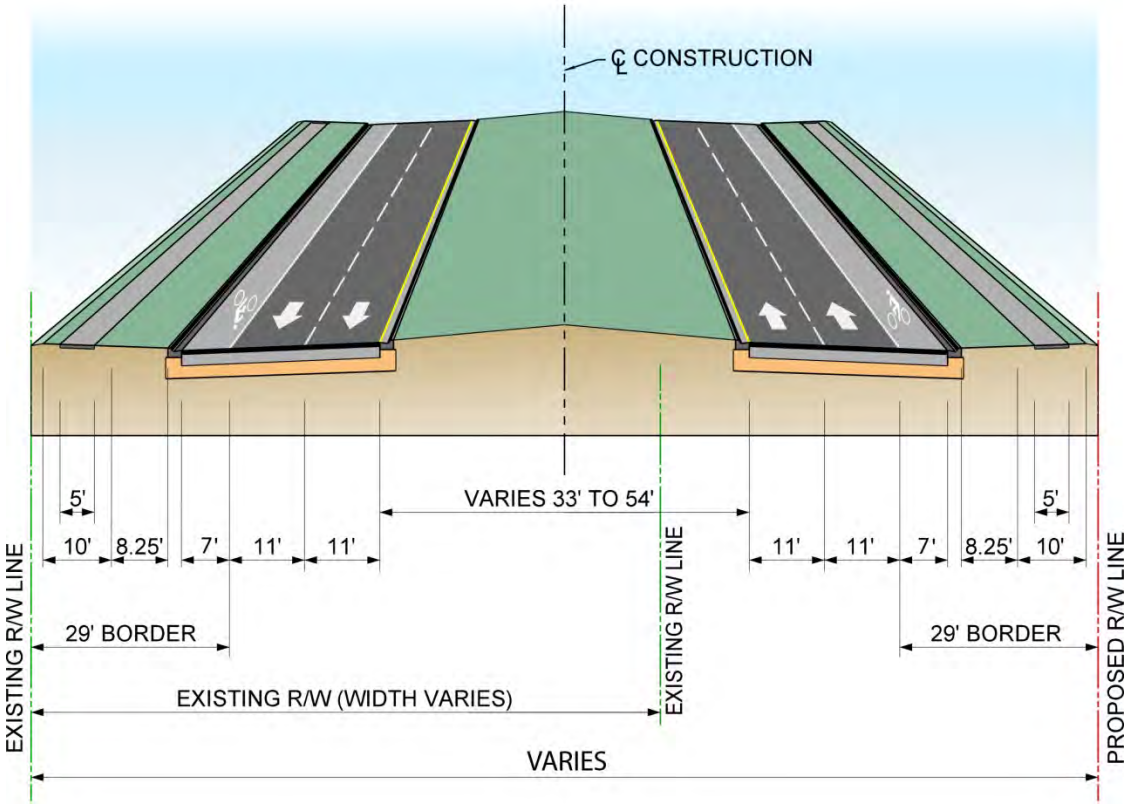
FIGURE 8-1
PREFERRED BUILD ALTERNATIVE SUBURBAN TYPICAL SECTION
S. OF PROPOSED SR 56 TO CHANCEY ROAD



8.2.2 Urban Typical Section

The urban typical section, beginning at Chancey Road and ending just south of the proposed realigned SR 39 (Buchman Highway) and US 301 (Gall Boulevard) intersection, is shown in **Figure 8-2**. The typical section consists of four 11-foot lanes, a variable width median, 7-foot bike lanes/paved shoulders, and Type E curb and gutter; as well as 5-foot sidewalks. The design speed is 45 mph.

FIGURE 8-2
PREFERRED BUILD ALTERNATIVE URBAN TYPICAL SECTION
CHANCEY ROAD TO S. OF SR 39 (BUCHMAN HIGHWAY)



8.3 INTERSECTION CONCEPTS AND SIGNAL ANALYSIS

There is one existing signalized intersection in the study corridor located at US 301 and Chancey Road. The Preferred Build Alternative also includes intersection improvements at the following intersections:

- US 301 (Gall Boulevard) at proposed SR 56
- US 301(Gall Boulevard) at Chancey Road
- US 301 at the proposed realigned SR 39 (Buchman Highway) (to be designed by others)

Lane geometries and turn lanes needed to accommodate the Design Year (2040) traffic volumes have been identified for the intersections. Signal timing optimization and coordination may be implemented as part of routine maintenance operations in the area. During the design phase, a through-lane queue analysis will be conducted to ensure that all intersections are operating at an optimal performance level.

8.4 ALIGNMENT AND RIGHT-OF-WAY NEEDS

The Preferred Build Alternative is centered on the existing roadway centerline and would require additional ROW, but would not result in any business or residential relocations.

The total amount of required ROW for the Preferred Build Alternative is approximately 19.1 acres. In addition, approximately 10.0 acres are required for stormwater and floodplain facilities. Further details are provided in the Final PPSR, available under separate cover.

8.5 RELOCATIONS

The proposed project, as presently conceived, would not displace any residences or businesses within the community. Should this change over the course of the project, the FDOT would carry out a ROW and Relocation Program in accordance with Florida Statute 339.09 and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646 as amended by Public Law 100-17). The brochures that describe, in detail, the FDOT's Relocation Assistance Program and ROW acquisition program are "Residential Relocation Under the Florida Relocation Assistance Program," "Relocation Assistance Business, Farms and Non-profit Organizations," "Sign Relocation Under the Florida Relocation Assistance Program," "Mobile Home Relocation Assistance," and "Relocation Assistance Program Personal Property Moves." All of these brochures are distributed at all public hearings and made available upon request to any interested persons.

8.6 COST ESTIMATES

A roadway construction cost estimate for the Preferred Build Alternative was developed using the FDOT's Long Range Estimates (LRE) system. The estimate includes major items such as mobilization, maintenance of traffic (MOT), pavement, earthwork, signalization, and project unknowns. The costs included in **Table 8-1** are per the LRE prepared for the Preferred Build Alternative on April 7, 2017.

In addition to the roadway construction cost estimate, costs were calculated for wetland mitigation, stormwater and floodplain compensation facility construction, and ROW acquisition. Final design costs were estimated at 15% of the total construction cost and construction engineering and inspection costs were estimated at 15% of the total construction cost. The preliminary estimate of project costs for the No-Build Alternative and the Preferred Build Alternative are provided in **Table 8-3**.

TABLE 8-1
PRELIMINARY ESTIMATE OF PROJECT COSTS

Estimated Project Costs (in Millions)	No-Build Alternative	Preferred Build Alternative
ROW acquisition	0	$0.9
Wetlands mitigation*	0	$0.2
Roadway construction	0	$11.5
Engineering design (15% of construction)	**$0**	$1.7
Construction engineering & inspection (15% of construction)	0	$1.7
Preliminary Estimate of Total Costs	0	**$16.0**

* Based on 2015-2016 Senate Bill Rate of $133,000/ac.

8.7 NOISE BARRIERS

The TNM was used to evaluate the ability of noise barriers to reduce traffic noise levels for the impacted noise sensitive receptors adjacent to US 301. The barriers were evaluated 5 feet within the FDOT's ROW at heights from 8 to 22 feet (in 2-foot increments). The length of each barrier was optimized to determine if at least the minimum noise reduction requirements (i.e., a minimum reduction of 5 dB(A) for two (2) impacted receptors and a minimum reduction of 7 dB(A) for one benefitted receptor) could be achieved.

The following provides the results of the noise barrier evaluation and discusses the potential amount of noise reduction and the cost effectiveness of providing barriers as an abatement measure for the areas in which traffic noise has been predicted to impact noise sensitive properties.

Barrier 1 - Palm View Gardens RV Resort

A noise barrier was evaluated for the sixty-one (61) impacted residences in the Palm View Gardens RV Resort (Receptors 4-60, 64, 66, and 72). The barrier was evaluated in two segments to accommodate access to/from the properties.

The results of the barrier analysis are provided in **Table 8-2**. As shown, at barrier heights between 8 and 22 feet, at least forty-one (41) of the impacted residences would benefit from a reduction in traffic noise of 5 dB(A) or more, the noise reduction design goal of 7 dB(A) would be achieved, and the cost of the barrier would be below the FDOT's cost reasonable limit. Because Barrier 1 is predicted to provide the minimum noise reduction requirements at a cost below the cost effective limit, the barrier was evaluated further. The results of the evaluation are provided in **Table 8-3**.

Barrier 2 - Palm View Gardens RV Resort Shuffleboard Court

Barrier 2 was considered for the shuffleboard court located in Palm View Gardens RV Resort. The area of the shuffleboard closest to US 301 (Gall Boulevard) is predicted to be impacted by traffic noise. The highest predicted traffic noise level in this area is 66.9 dB(A). The FDOT's "special land use" procedures were used to determine if a noise barrier could be considered a

potential abatement measure for the impacted area. The cost of a barrier at a special land use should not exceed $995,935 per person-hour per square foot (dollars/person-hr/ft^2).

A barrier was evaluated 5 feet inside the FDOT ROW in two (2) segments to accommodate access to/from the properties. Due to limitations on the length of the barrier segments, the noise reduction design goal of 7 dB(A) could not be achieved at any of the evaluated barrier heights. Therefore, a barrier is not considered a reasonable noise abatement measure for the impacted area of the shuffleboard court.

Barrier 3 - Shady Oaks Mobile Home Park

A noise barrier was evaluated for the eight (8) impacted residences in the Shady Oaks Mobile Home Park (Receptors 86-93). The barrier was evaluated 5 feet inside the proposed FDOT ROW.

The results of the barrier analysis are provided in **Table 8-4**. As shown, at barrier heights between 10 and 22 feet, at least three (3) of the impacted residences would benefit from a reduction in traffic noise of 5 dB(A) or more, the noise reduction design goal of 7 dB(A) would be achieved, and the cost of the barrier would be below the FDOT's cost reasonable limit. Because Barrier 3 is predicted to provide the minimum noise reduction requirements at a cost below the cost effective limit, the barrier was evaluated further. The results of the evaluation are provided in **Table 8-5**.

TABLE 8-2
BARRIER 1: RESULTS FOR IMPACTED RESIDENCES IN THE PALM VIEW GARDENS RV RESORT

BARRIER HEIGHT (FEET)	BARRIER LENGTH (FEET)	NOISE REDUCTION AT IMPACTED RECEPTORS (dB(A))[1]			NUMBER OF BENEFITED RECEPTORS[2]			TOTAL ESTIMATED COST[3]	COST PER BENEFITED RECEPTOR[4]	COST REASON-ABLE YES/NO
		5-5.9	6–6.9	≥7	IMPACTED	NOT IMPACTED	TOTAL			
NUMBER OF IMPACTED RECEPTORS = 61										
8	1,480	3	1	37	41	0	41	$355,200	$8,663	Yes
10	1,440	11	7	38	56	0	56	$432,000	$7,714	Yes
12	1,410	7	9	44	60	10	70	$507,600	$7,251	Yes
14	1,410	7	9	44	60	10	70	$592,200	$8,460	Yes
16	1,400	4	8	48	60	12	72	$672,000	$9,333	Yes
18	1,390	4	6	50	60	13	73	$750,600	$10,282	Yes
20	1,390	5	5	51	61	14	75	$834,000	$11,120	Yes
22	1,390	5	5	51	61	14	75	$917,400	$12,232	Yes

Source: KBE, 2015.

[1] Receptors with a predicted noise level of 66 dB(A) or greater.

[2] Receptors with a predicted reduction of 5 dB(A) or more are considered benefited.

[3] Based on a unit cost of $30 per square foot.

[4] FDOT cost reasonable criterion is $42,000 per benefited receptor.

TABLE 8-3
BARRIER 1: ADDITIONAL BARRIER CONSIDERATIONS

TYPE OF FACTOR	EVALUATION CRITERIA	COMMENT
Feasibility	Design and Construction	A determination of whether a noise barrier can be constructed using standard construction methods and techniques will be made during the project's design phase. Notably, any additional costs to solely construct a noise barrier will be included in the final cost reasonableness evaluation of a noise barrier at this location.
	Safety	It does not appear that there would be any safety concerns (e.g., loss of sight distance).
	Accessibility	The barrier would be located within the FDOT's ROW for US 301 (Gall Boulevard) and would not block ingress or egress to any property.
	ROW	No acquisition of ROW or easements for construction/ maintenance appear to be necessary to construct a barrier within the FDOT's ROW.
	Maintenance	The FDOT should be able to maintain a barrier at this location using standard practices.
	Drainage	A determination as to whether the barrier can be designed so that water would be directed along, under, or away from the barrier will be made during the project's design phase.
	Utilities	A determination of utility conflicts will be made during the project's design phase. Notably, there are existing poles within the FDOT ROW that may cause a conflict with a noise barrier.
Reasonableness	Community desires	The desires of the property owners and renters (if applicable) will be solicited during the design phase of the project.

Source: KBE, 2015.

TABLE 8-4
BARRIER 3: ADDITIONAL BARRIER CONSIDERATIONS

Type of Factor	Evaluation Criteria	Comment
Feasibility	Design and Construction	A determination of whether a noise barrier can be constructed using standard construction methods and techniques will be made during the project's design phase. Notably, additional costs to solely construct a noise barrier will be included in the final cost reasonableness evaluation of a noise barrier at this location.
	Safety	It does not appear that there would be any safety concerns (e.g., loss of sight distance).
	Accessibility	The barrier would be located within the proposed FDOT's ROW for US 301 (Gall Boulevard) and would not block ingress or egress to any property.
	ROW	No acquisition of additional ROW or easements for construction/ maintenance appear to be necessary to construct a barrier within the FDOT's ROW.
	Maintenance	The FDOT should be able to maintain a barrier at this location using standard practices.
	Drainage	A determination as to whether the barrier can be designed so that water would be directed along, under, or away from the barrier will be made during the project's design phase.
	Utilities	A determination of utility conflicts will be made during the project's design phase. Notably, there are existing poles within the FDOT ROW that may cause a conflict with a noise barrier.
Reasonableness	Community desires	The desires of the property owners and renters (if applicable) will be solicited during the design phase of the project.

Source: KBE, 2015.

TABLE 8-5
BARRIER 3: RESULTS FOR IMPACTED RESIDENCES IN THE SHADY OAKS MOBILE HOME PARK

BARRIER HEIGHT (FEET)	BARRIER LENGTH (FEET)	NOISE REDUCTION AT IMPACTED RECEPTORS (dB(A))[1]			NUMBER OF BENEFITED RECEPTORS[2]			TOTAL ESTIMATED COST[3]	COST PER BENEFITED RECEPTOR[4]	COST REASONABLE YES/NO
		5 -5.9	6 – 6.9	≥7	IMPACTED	NOT IMPACTED	TOTAL			
NUMBER OF IMPACTED RECEPTORS = 8										
8	NA[5]	NA[5]	NA[5]	NA[5]	NA[5]	NA[5]	NA[5]	NA[5]	NA[5]	NA[5]
10	707	3	4	1	8	0	8	$212,100	$26,513	Yes
12	577	2	4	2	8	0	8	$207,720	$25,965	Yes
14	557	2	2	4	8	0	8	$233,940	$29,243	Yes
16	547	2	1	5	8	0	8	$262,560	$32,820	Yes
18	547	2	1	5	8	0	8	$295,380	$36,923	Yes
20	537	2	1	5	8	0	8	$322,200	$40,275	Yes
22	537	2	1	5	8	0	8	$354,420	$44,303	No

Source: KBE, 2015.

[1] Receptors with a predicted noise level of 66 dB(A) or greater.

[2] Receptors with a predicted reduction of 5 dB(A) or more are considered benefited.

[3] Based on a unit cost of $30 per square foot.

[4] FDOT cost reasonable criterion is $42,000 per benefited receptor.

[5] 7 dB(A) reduction not achieved at any receptor.

As previously stated, future traffic noise levels with the proposed improvements are predicted to approach, meet, or exceed the NAC at 70 noise sensitive sites. These sites are predicted to experience future traffic noise levels with the proposed improvements to US 301 (Gall Boulevard) that would range from 66.0 to 74.4 dB(A).

The results of the evaluation indicate that construction of noise barriers is a potentially reasonable and feasible noise abatement method to reduce the predicted traffic noise levels for up to 69 of the 70 impacted sites at the following locations:

- **Barrier 1:** Residences at the Palm View Gardens RV Park (Receptors 4-59, 64, 66, 72, 73, and 77).
- **Barrier 3:** Residences at the Shady Oaks Mobile Home Park (Receptors 86-93).

The estimated cost to construct the noise barriers ranges from $207,720 to $917,400 depending on barrier length and height.

Statement of Likelihood

The FDOT is committed to the construction of noise barriers at the locations above, 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 barrier would not exceed the cost effective limit.
- The residents/property owners benefitted by the noise barrier desire that a noise barrier be constructed.
- All safety and engineering conflicts or issues related to construction of the noise barriers are resolved.

8.8 RECYCLING OF SALVAGEABLE MATERIALS

The Preferred Build Alternative allows for the majority of the existing roadway base and pavement to be reused as material for the new southbound lanes. The existing lanes will be excavated and used as base material for the Preferred Build Alternative.

8.9 MULTIMODAL CONSIDERATIONS

The existing PCPT bus Route 30 terminates at Tucker Road, just north of the study area, and serves activity centers to the north including downtown Zephyrhills and Dade City from 4:45 am to 7:45 pm. In addition, this segment of US 301 to downtown Zephyrhills is part of the proposed SR 54 Cross County Express Route that is included in the *Pasco County MPO Mobility 2040 Cost Affordable Transit Plan* for implementation in 2031. Also planned are a Major

Transit Station/Stop and TSP along the corridor. The location of the bus stops/stations will be determined through the separate SR 54 Cross County Express planning and have not been included in this study. Further coordination is required during the design phase to address transit with Pasco County, the City of Zephyrhills, and the Pasco County MPO.

8.10 TEMPORARY TRAFFIC CONTROL PLAN

The temporary traffic control plans for this project will consist of two phases. During the first phase, the northbound lanes and ponds will be constructed. The second phase will consist of shifting traffic to the newly constructed pavement, and construct the southbound lanes.

The temporary traffic control plan will be developed during the final design phase to safely and efficiently move vehicles, bicycles, and pedestrians through and around the work zones. Advance notice will be given if street closures and detours are necessary and construction will take place during off-peak hours, whenever feasible, to minimize disruptions to the traveling public and adjacent residences and businesses.

8.11 PEDESTRIAN AND BICYCLE FACILITIES

The Preferred Build Alternative includes a 5-foot sidewalk along the eastern ROW line and a 10-foot shared use path along the western ROW line, as shown in Figure 8-1. Buffered bicycle lanes are also included throughout the project limits, as well as 5-foot sidewalks.

8.12 UTILITIES AND RAILROAD IMPACTS

Utility identification was conducted with the use of Sunshine 811. Table 4-7 in Section 4.1.11 summarizes the facilities of the ten identified utility owners. Coordination has begun with these utility providers and is included as an appendix to the *Final Utility Assessment Report (UAR)*, available under separate cover.

The exact locations of existing utilities and the extent of impacts will be determined during the final design phase through coordination with the utility owners; however, some impacts are expected as a result of widening the roadway to the outside. Disruptions to service and utility relocations will be minimized to the greatest extent feasible. Utility Coordination and anticipated costs are included in the Final UAR as an Appendix.

There are no at-grade railroad crossings that would be impacted.

8.13 RESULTS OF PUBLIC INVOLVEMENT PROGRAM

A comprehensive Public Involvement Program was completed for this project. This program is in compliance with the FDOT Project Development and Environment Manual, Section 339.155, Florida Statutes (F.S.); Executive Orders 11990 and 11988; Council on Environmental Quality Regulations for implementing the procedural provisions of the NEPA; and 23 CFR 771.

At the start of the PD&E study, a kickoff newsletter was mailed to adjacent property owners and interested parties to notify the public that the study had commenced. Agency coordination commenced with the ETDM Programming Screen and distribution of an Advanced Notification.

The AN Package on the section of US 301 from Chancey Road to SR 39 (Buchman Highway) was transmitted to the Florida State Clearinghouse (FSC), Department of Environmental Protection/Office of Intergovernmental Programs, on September 19, 2013. During the 45 day review, the ETAT provided their comments on the project's purpose and need, and issued their Degree of Effect (DOE) findings by resource area for each of the proposed corridors. Upon completion of the ETDM Programming Screen review, a Final Programming Screen Summary Report was developed and entered into the EST which provided the FDOT's response to each DOE finding as well as discussion about the overall project. As a result of the AN and EST screening, there were no substantial comments received and no further coordination was necessary in the EST. The section of US 301 from south of the future SR 56 to Chancey Road was included in the SR 54 EA/FONSI, from Cypress Creek to Zephyrhills East Bypass/Chancey Road, approved on January 25, 1993 so it was not included in the ETDM process.

In lieu of an alternatives public workshop, a series of small group meetings were held in the communities adjacent to the project. It was determined that, due to the demographics in the project area, residents were more likely to participate if the meetings were more convenient for them. Each of the communities adjacent to the project as well as civic organizations in the area were contacted and provided an opportunity to request a presentation. As a result, meetings were scheduled at the following locations:

- Tropical Acres Estates on February 23, 2015 at 8:30 a.m.,131 attendees, 23 written comments received;
- Ramblewoods Manufactured Home Community on March 11, 2015 at 9:30 a.m., 43 attendees, 2 written comments received;
- Moose Lodge on March 10, 2015 at 1:30 p.m., 24 attendees, 3 written comments received; and
- The FDOT district headquarters on March 25, 2015 at 2:00 p.m. with the owners of Festival Park, a large outdoor event venue adjacent to the project.
- Shady Oaks Mobile Modular Estates scheduled a meeting for May 21, 2015 at 9:00 a.m., however, it was cancelled by Shady Oaks prior to the meeting date; one comment was received from a resident by email and one request for project information was received from Shady Oaks' legal representative.

The purpose of the small group meetings was to provide project information and an opportunity for the public to provide comments regarding the location and conceptual design of the proposed improvements to US 301 within the project limits.

There were no comments regarding opposition to the project and none regarding the selection of the No-Build Alternative. The majority of the comments were regarding access management

needs along the project corridor. Based on the findings of the earlier EA/FONSI, ETAT comments included in the Summary Report and undertaking the public involvement process, it has been determined that the proposed improvements to US 301 would not create any significant impacts to the environment. Also, when the project went through the ETDM Programming Screen process, the FDOT planned to seek approval of the PD&E study's environmental document by the FHWA. In the meantime, the FDOT has received NEPA Assignment from FHWA and the FDOT Office of Environmental Management (OEM) will be reviewing the Type 2 Categorical Exclusion and Design Reevaluation. The project is currently fully funded for design in the FDOT's District 7 2016-2020 Five-Year Work Program. ROW and construction, are not yet included in the Five-Year Work Plan.

See Section 1.2, *Description of Proposed Action*, for a summary of the Public Hearing.

8.14 VALUE ENGINEERING RESULTS

A Value Engineering Study was not required as part of the PD&E study.

8.15 DRAINAGE AND STORMWATER MANAGEMENT

The stormwater runoff from the project limits would be collected and conveyed in roadside ditches or closed drainage systems to offsite wet detention and dry retention ponds. The ponds would discharge at or near the same cross drains that carry the roadway runoff in the existing condition. The water quality treatment and water quantity attenuation would be achieved through the construction of offsite wet detention and dry retention ponds, which would require the acquisition of additional ROW.

Required pond ROW acreages have been calculated. Approximately 10.0 acres are required for stormwater and floodplain compensation. Refer to the Final PPSR, available under separate cover, for further information. The analysis estimates ROW needs using a volumetric analysis, which accounts for water quality treatment and water quantity for runoff attenuation. The recommendations were based on pond sizes determined from preliminary data calculations, reasonable engineering judgment, and assumptions. Pond sizes and configurations may change during final design as more detailed information becomes available.

8.16 STRUCTURES

There are no structures within the study area.

8.17 SPECIAL FEATURES

Context sensitive solutions such as aesthetic features and landscaping will be undertaken during the Design Phase so that the project is in harmony with the community and preserves and/or enhances the natural, environmental, scenic, and aesthetic values of the area. The placement and maintenance of any landscaping shall comply with the required clear zone and sight distance

criteria at intersections. Lighting will be added throughout the project corridor.

8.18 DESIGN EXCEPTIONS AND VARIATIONS

There are no design exceptions or variations anticipated for this project.

8.19 ACCESS MANAGEMENT

US 301 (Gall Boulevard), in Pasco County, is designated as Access Class 3 from Hillsborough County Line to SR 39 (Buchman Highway). The proposed median openings have been designed to provide a balance between access to adjacent properties and safety based on the Access Class 3 standards. Existing driveway connections will be maintained. Refer to Section 5.0 for more information on the median and connection spacing requirements and Appendix A for locations of the proposed median openings and connections as summarized in **Table 8-6** below.

TABLE 8-6
RECOMMENDED ACCESS MANAGEMENT PLAN

LOC. NO.	CROSS STREET	MILE POST	EXIST. ACCESS	PROP. ACCESS	PROPOSED SPACING (FT)			PERCENT COMPLIANCE		
					SIGNAL	FULL	DIR	SIGNAL	FULL	DIR
1	SR 56 (Future)	1.597	N/A	Signal	>2640	>2640	-	100%	100%	-
2	Driveway (Dept. of Corrections/Festival Park)	2.020	N/A	Full	-	2233	-	-	85%	-
3	Blue Lagoon Dr.	2.487	N/A	Full	-	2466	-	-	93%	-
4	Palmview Dr.	2.854	N/A	Directional	-	-	1938	-	-	100%
5	Chancey Rd.	3.067	N/A	Signal	>2640	>2640	1125	100%	100%	85%

8.20 POTENTIAL CONSTRUCTION SEGMENTS AND PHASING

Due to the small size and scale of this project, there are not any practical segments that would provide an opportunity for phased construction.

8.21 WORK PROGRAM SCHEDULE

US 301 (Gall Boulevard) from south of proposed SR 56 to south of SR 39 (Buchman Highway), FPID 416564-1, is included in the FDOT's currently adopted 2016-2020 Five Year Work Program. There is $2,309,943 programmed for final design in fiscal year 2018, and another $13,642,100 for ROW acquisition is funded for fiscal years 2020 and 2021. Currently, there is no funding for construction in the Work Program.

Section 9.0
LIST OF TECHNICAL REPORTS

The following is a list of technical reports that have been prepared for the project:

- Final Contamination Screening Evaluation Report
- Final Location Hydraulic Report
- Type 2 CE
- Final Natural Resources Evaluation
- Cultural Resource Assessment Survey
- Final Noise Study Report
- Final Design Traffic Technical Memorandum
- Final Preliminary Pond Siting Report
- Final Utility Assessment Report

APPENDIX A

Concept Plan Sheets

FISCAL YEAR	SHEET NO.
	I

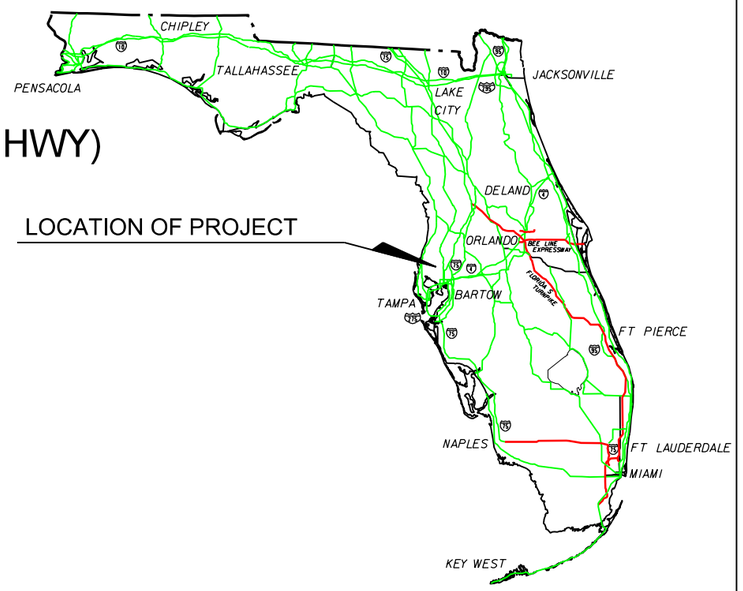
PASCO COUNTY

US 301 (GALL BLVD.) PD&E STUDY

FROM S. OF PROPOSED SR 56 TO S. OF SR 39 (BUCHMAN HWY)

WPI Segment No: 416564-1

PREFERRED ALTERNATIVE



INDEX OF PLANS

Aerial Photography Date: 2011

PROJECT LOCATION MAP

FINAL - FOR PLANNING PURPOSES ONLY

FDOT

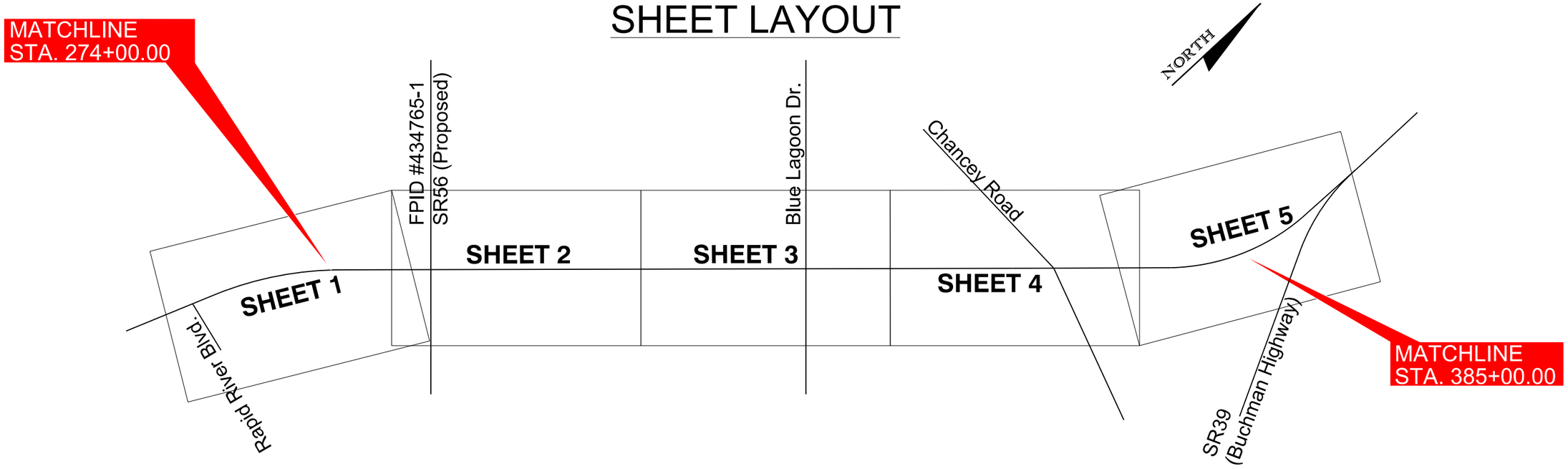
CONCEPT PLANS
ENGINEER OF RECORD: Christopher N. Lovett, P.E.

P.E. NO.: 63020

LEGEND

- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- PROPERTY LINES
- EXISTING CROSS DRAIN
- NOISE WALL
- WORK UNDER FPID 434765-1
- WORK UNDER FPID 255796-1
- ROADWAY
- MEDIAN
- SIDEWALK OR SHARED USE PATH
- WETLAND
- FLOODPLAIN
- EXISTING SIGNAL
- PROPOSED SIGNAL
- CONTAMINATION/HAZARDOUS MATERIALS SITE (1)

SHEET LAYOUT



REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

AECOM Technical Services, Inc.
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 8115
Christopher N. Lovett, P.E. No. 63020

US 301 (GALL BOULEVARD)
PD&E STUDY
FROM S. OF PROPOSED SR 56 TO
S. OF SR 39 (BUCHMAN HWY)
PASCO COUNTY, FLORIDA

PREFERRED ALTERNATIVE
LEGEND / SHEET LAYOUT

SHEET NO.
II

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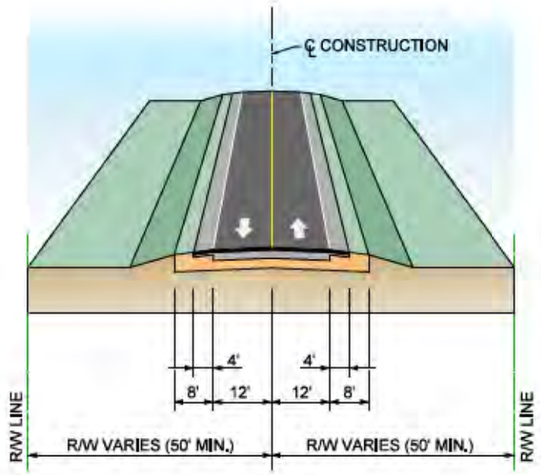
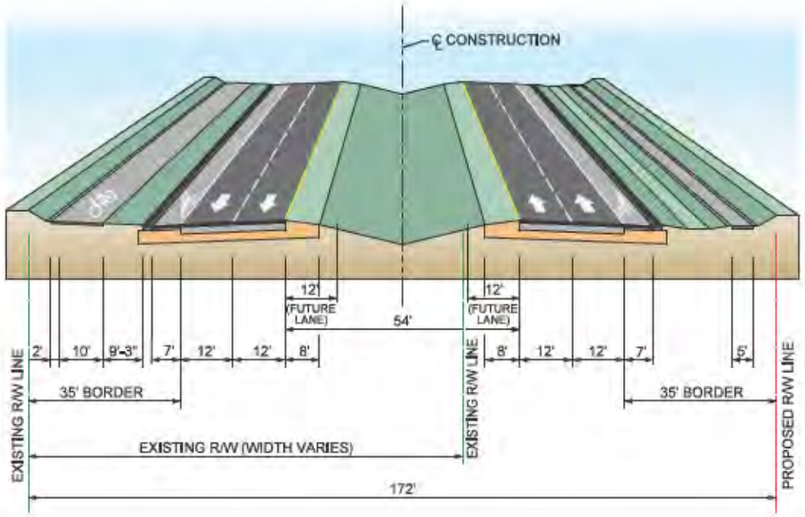


EXISTING
TYPICAL SECTION



PROPOSED SUBURBAN TYPICAL SECTION
SOUTH OF PROPOSED SR 56 TO CHANCEY ROAD
50 MPH DESIGN SPEED

PROPOSED URBAN TYPICAL SECTION
CHANCEY ROAD TO SOUTH OF SR 39 (BUCHMAN HIGHWAY)
45 MPH DESIGN SPEED

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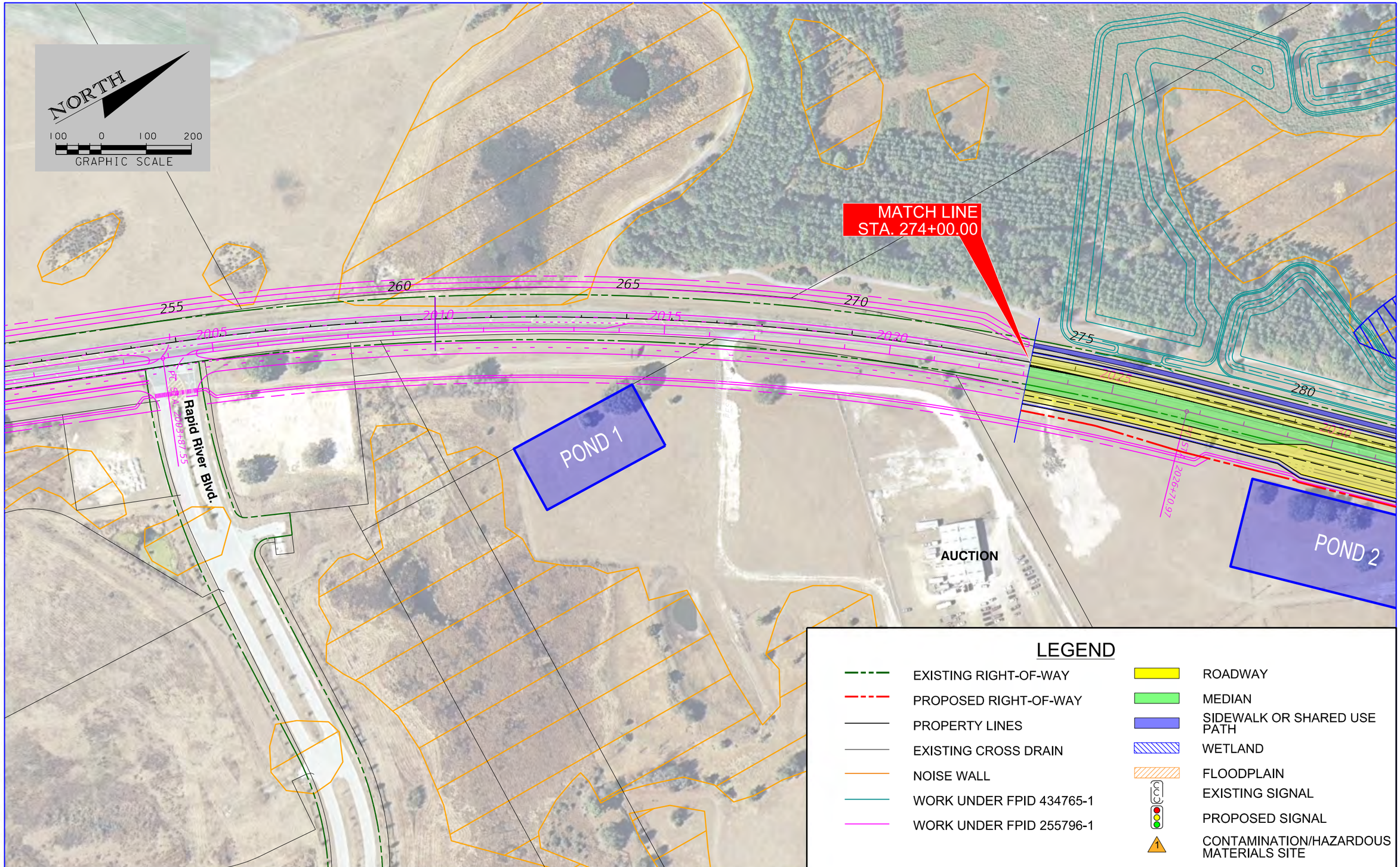
PD&E STUDY
FROM S. OF PROPOSED SR 56 TO
S. OF SR 39 (BUCHMAN HWY)
PASCO COUNTY, FLORIDA

PREFERRED ALTERNATIVE
TYPICAL SECTION

SHEET NO.
III



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PD&E STUDY
FROM S. OF PROPOSED SR 56 TO
S. OF SR 39 (BUCHMAN HWY)
PASCO COUNTY, FLORIDA

PREFERRED ALTERNATIVE PLAN SHEET (1)

SHEET NO. 1

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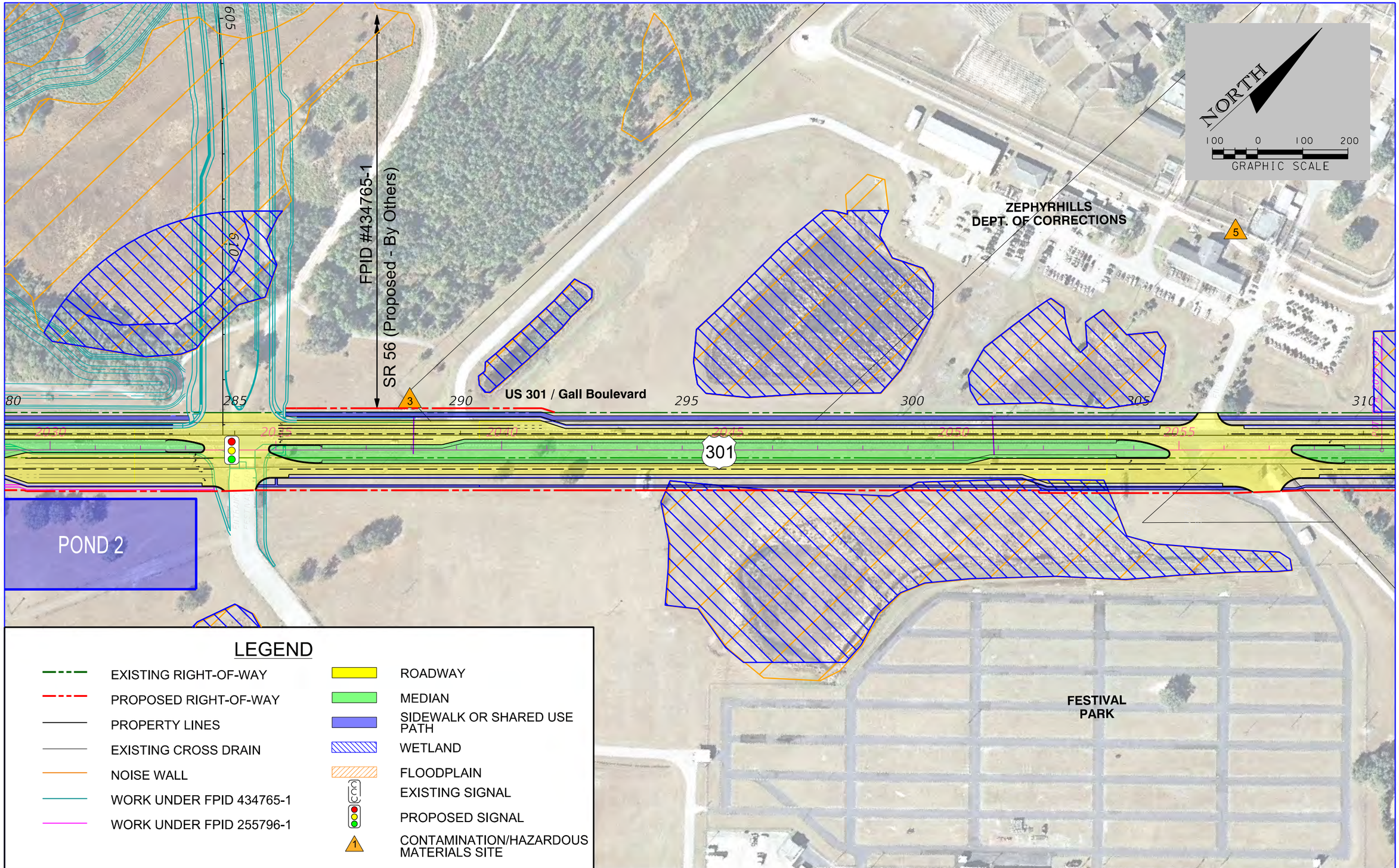

LEGEND

- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- PROPERTY LINES
- EXISTING CROSS DRAIN
- NOISE WALL
- WORK UNDER FPID 434765-1
- WORK UNDER FPID 255796-1
- ROADWAY
- MEDIAN
- SIDEWALK OR SHARED USE PATH
- WETLAND
- FLOODPLAIN
- EXISTING SIGNAL
- PROPOSED SIGNAL
- CONTAMINATION/HAZARDOUS MATERIALS SITE

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FROM S. OF PROPOSED SR 56 TO
S. OF SR 39 (BUCHMAN HWY)
PASCO COUNTY, FLORIDA

PREFERRED ALTERNATIVE PLAN SHEET (2)

SHEET NO. 2

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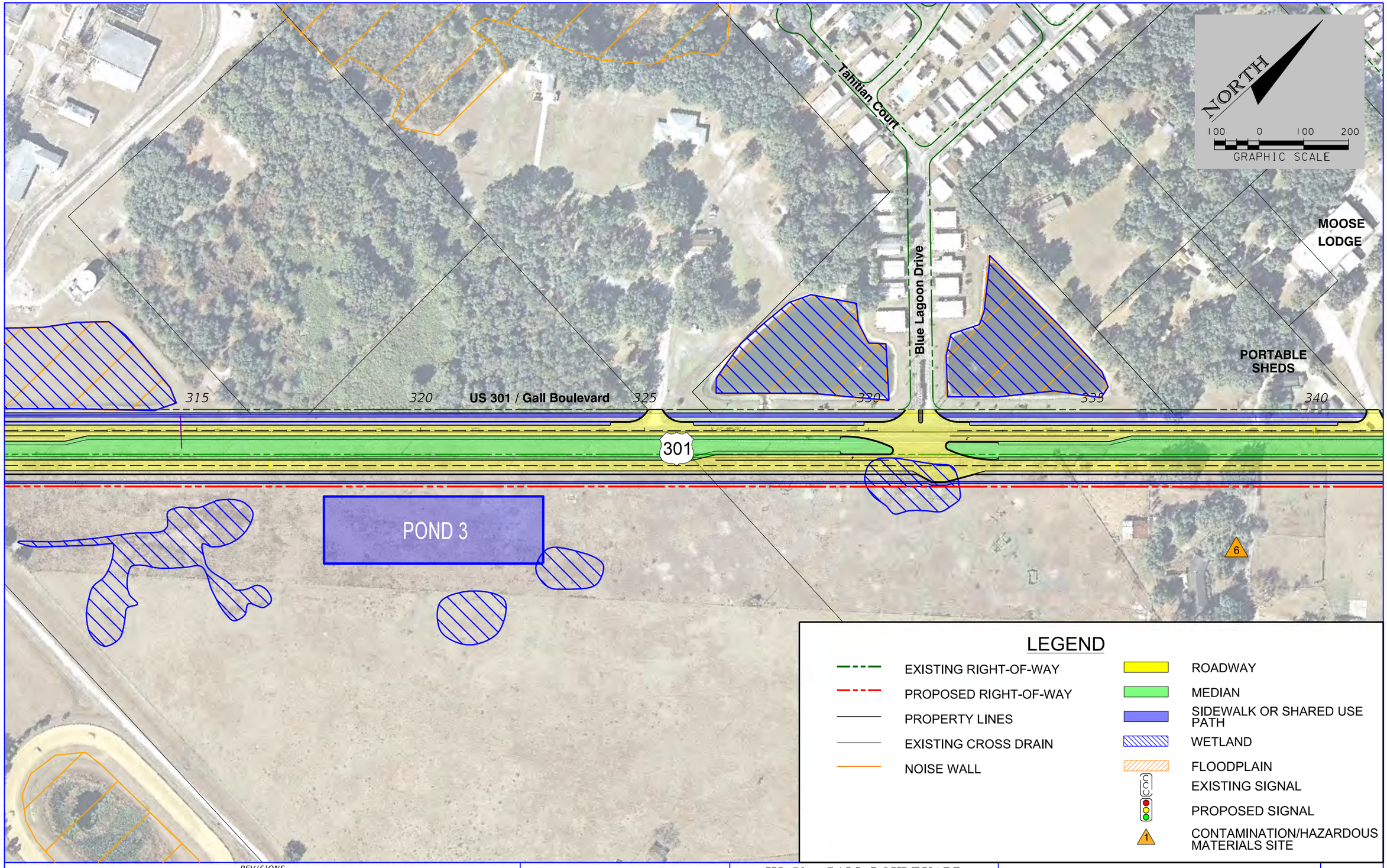

LEGEND

- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- PROPERTY LINES
- EXISTING CROSS DRAIN
- NOISE WALL
- ROADWAY
- MEDIAN
- SIDEWALK OR SHARED USE PATH
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- PROPOSED SIGNAL
- CONTAMINATION/HAZARDOUS MATERIALS SITE

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US 301 (GALL BOULEVARD)
PD&E STUDY
FROM S. OF PROPOSED SR 56 TO
S. OF SR 39 (BUCHMAN HWY)
PASCO COUNTY, FLORIDA

PREFERRED ALTERNATIVE PLAN SHEET (3)

SHEET NO. 3

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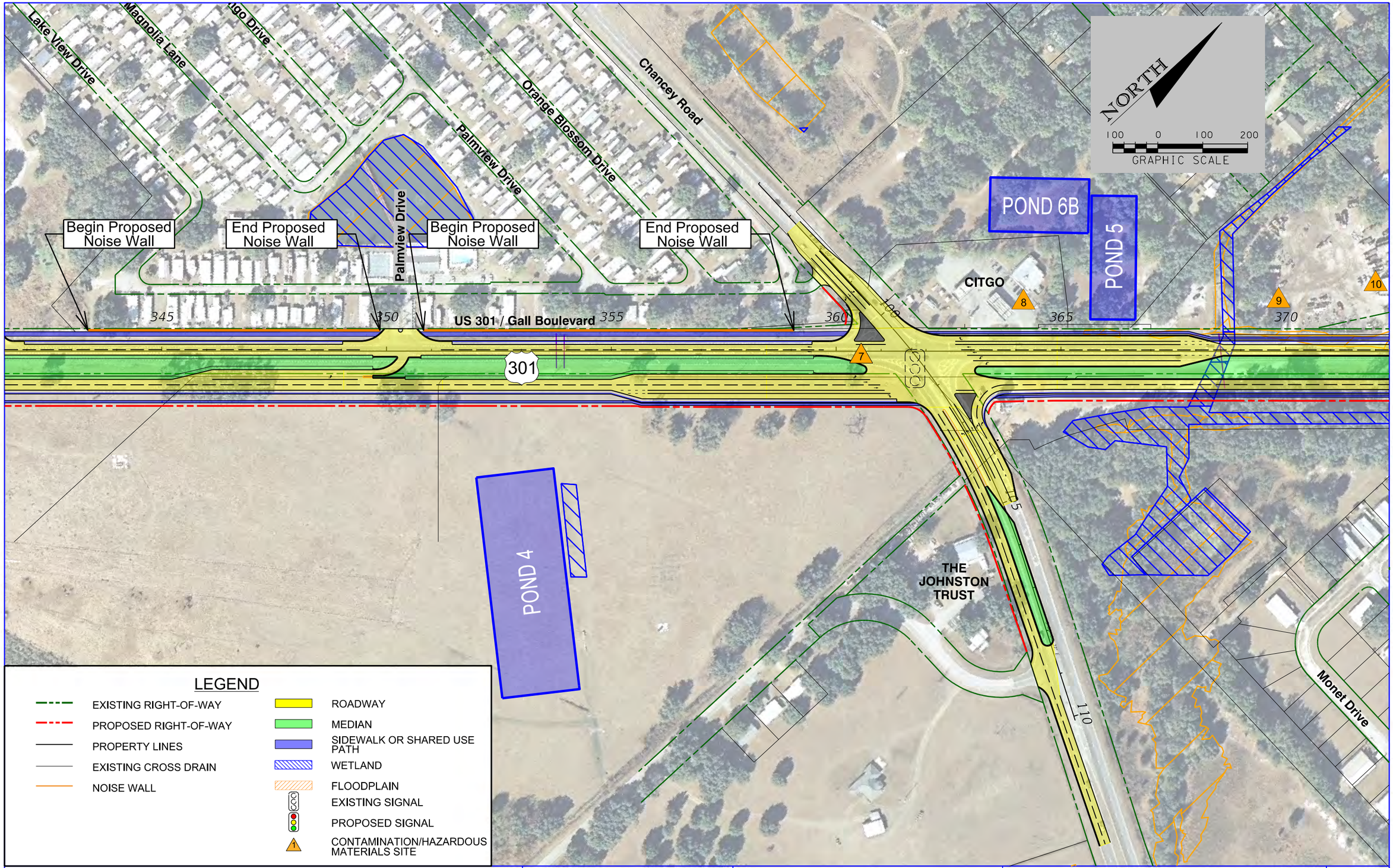

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PD&E STUDY
FROM S. OF PROPOSED SR 56 TO
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PASCO COUNTY, FLORIDA

PREFERRED ALTERNATIVE
PLAN SHEET (4)

SHEET NO. 4

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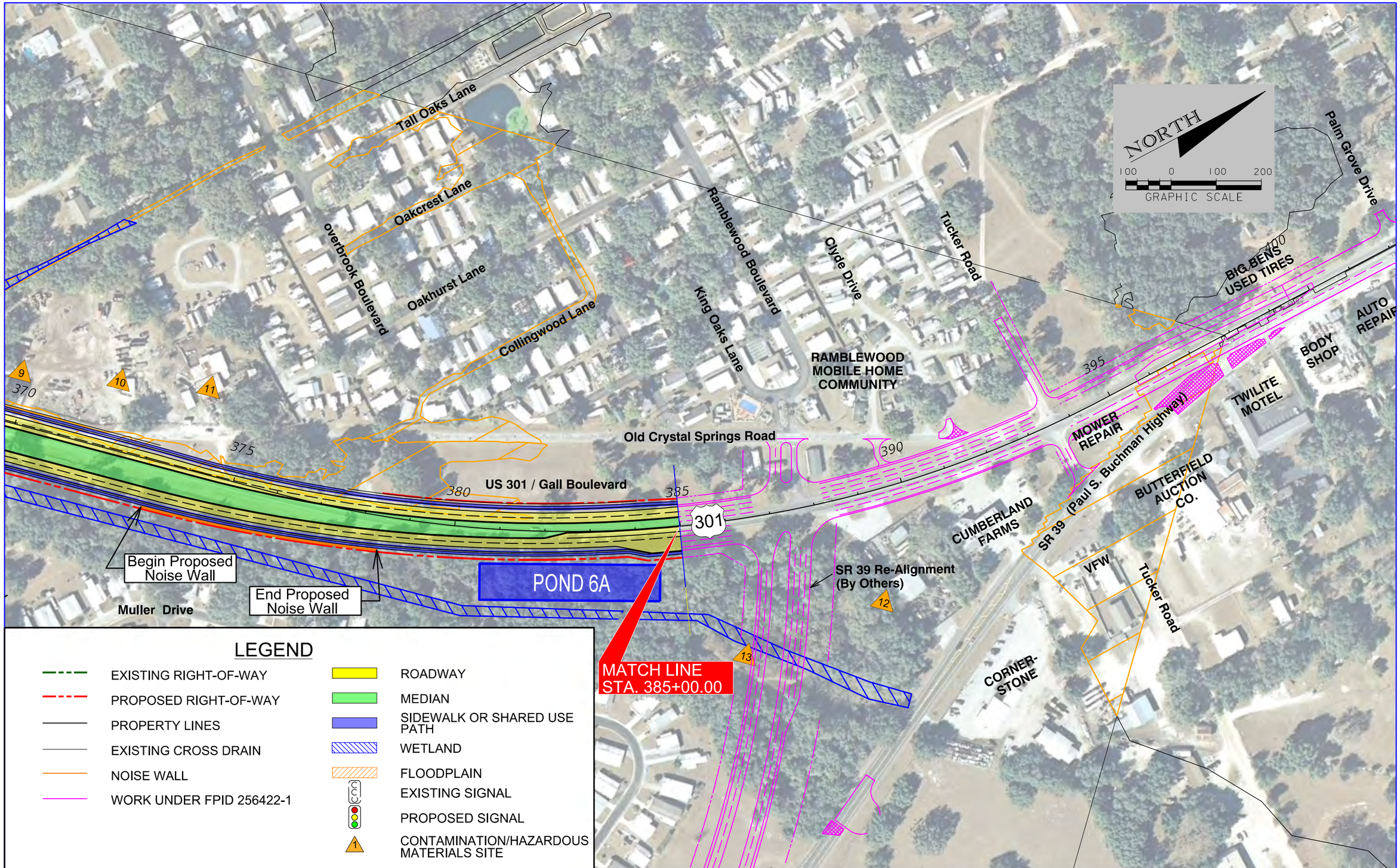

LEGEND

- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- PROPERTY LINES
- EXISTING CROSS DRAIN
- NOISE WALL
- WORK UNDER FPID 256422-1
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C.A. No. 8115
Christopher N. Lovett, P.E. No. 63020

US 301 (GALL BOULEVARD)
PD&E STUDY
FROM S. OF PROPOSED SR 56 TO S. OF SR 39 (BUCHMAN HWY)
PASCO COUNTY, FLORIDA

PREFERRED ALTERNATIVE PLAN SHEET (5)

SHEET NO. 5

paul.floyd 6/22/2017 10:42:02 AM S:\Projects_RDWY\ProjFdot\ProjFDOT\V8\41656412201\roadway\Sheets\Alternative 1Pr

APPENDIX B

Final Roundabout Study for US 301 (Gall Boulevard) at Chancey Road

FINAL
ROUNDABOUT STUDY FOR
US 301 (GALL BOULEVARD) AT CHANCEY ROAD
PASCO COUNTY, FLORIDA

Work Program Item Segment N0.: 416564-1

FLORIDA DEPARTMENT OF TRANSPORTATION
DISTRICT SEVEN
11201 N. MCKINLEY DRIVE
TAMPA, FLORIDA 33612

MAY 2017

EXECUTIVE SUMMARY

The purpose of this study is to evaluate whether an improved signalized intersection or a roundabout is appropriate for the intersection of US 301 (Gall Boulevard) and Chancey Road in Pasco County, Florida. The method of analysis used to evaluate the intersection and roundabout concepts starts with the Step 1 Roundabout Screening. If the screening results are positive, the analysis proceeds with the Step 2 Roundabout Benefit/Cost Evaluation spreadsheet. If those results are positive, the project proceeds with the development of concept plans for the roundabout. This Technical memorandum supports and summarizes the Step 1 and Step 2 analyses completed to date.

The Step 1 Screening was positive, and Step 2 was completed.

The Step 2 evaluation indicated the construction cost of a two-lane roundabout is less than that of the signalized intersection. This is unexpected, but may be explained by the multiple turn lanes provided by each approach to the signalized intersection, that increase its cost.

The roundabout benefit/cost analysis spreadsheet is incapable of indicating a positive or negative benefit cost ratio for a roundabout if the roundabout cost is less than the signalized intersection alternative. However, the delay analysis indicated a failing level of performance during the design year for the roundabout alternative. While the spreadsheet indicates the roundabout is less costly than the signalized intersection, the inability of the roundabout to provide sufficient capacity in the design year results in a recommendation that the roundabout alternative not be further evaluated.

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1.0 INTRODUCTION

1.1 Purpose

The purpose of this study is to evaluate whether an improved signalized intersection or a roundabout is appropriate for the intersection of US 301 (Gall Boulevard) and Chancey Road in Pasco County, Florida. The method of analysis used to evaluate the intersection and roundabout concepts starts with the Step 1 Roundabout Screening. If the screening results are positive, the analysis proceeds with the Step 2 Roundabout Benefit/Cost Evaluation spreadsheet. If those results are positive, the project proceeds with the development of concept plans for the roundabout. This Technical Memorandum supports and summarizes the Step 1 and Step 2 analyses completed to date.

The Step 1 Roundabout Screening involves 6 criteria, including:

1. Geometric constraints that would limit visibility or complicate construction,
2. Roadway traffic volumes on the major roadway exceeding 90 percent of the total intersection volume,
3. Considerations that would complicate pedestrians with special needs crossing the road,
4. Whether the intersection is located within a coordinated signal network,
5. Downstream traffic control that might cause queues to back up into the intersection, and
6. Would the installation of a roundabout create impacts to historical, Section 4(f), or environmentally sensitive lands.

   If the answers are all 'no', then the Step 2 Benefit/Cost Evaluation is required.

The Step 2 is a more in-depth analysis considering delay costs, construction and other capital costs, cost of crashes. The result of Step 2 is a benefit/cost ratio that indicates if the roundabout alternative is preferred or not from a financial standpoint.

1.2 Project Description

This study focuses on the intersection of US 301 (Gall Boulevard) and Chancey Road, located in the City of Zephyrhills in Pasco County, Florida. **Figure 1-1** shows the location of the PD&E study as well as the location of the potential roundabout project. In order to identify the best solution for this intersection, the following tasks were conducted.

- Review of March 2017 Final Preliminary Engineering Report for US 301 (Gall Boulevard) PD&E Study from SR 56 (proposed) to SR 39 (Buchman Highway) and associated Recommended Alternative concept
- Review August 2015 Design traffic Technical Memorandum
- Review updated Crash Reporting System (CARS) crash data from years 2011 through 2015
- Review existing land uses adjacent to the intersection
- Preparation of the Step 1 Roundabout Screening
- Based on the results of the Step 1 Roundabout Screening, preparation of the Step 2 Roundabout Benefit / Cost Evaluation

Figure 1-1: Project Location Map

Source: URS, 2015.

2.0 EXISTING CONDITIONS

2.1 Roadway Characteristics

US 301 (Gall Boulevard) is a two-lane rural principal arterial (other) roadway. The existing typical section is shown in **Figure 2-1**. The existing posted speed limit is 45 mph north of Chancey Road, and 55 mph south of Chancey Road. The Straight Line Diagram is included in **Appendix A** for reference.

The existing intersection of US 301 (Gall Boulevard) is a four legged intersection with a single left turn lane and a through lane on each approach. Right turning traffic shares the use of the existing through lanes on the eastbound and southbound approaches. The northbound and westbound approaches include an exclusive right turn lane. All approaches include right–turn channelization, but the northbound right turn is a free flow movement since it has its own receiving lane. The southbound right turn lanes could be considered free flow because it has an acceleration lane. The eastbound and westbound right turn movements must yield to conflicting traffic at the ends of the channelized lanes as shown in **Figure 2-2**. Crosswalks and ADA sidewalk ramps exist across all approaches; however, the ADA ramps do not connect to sidewalks. There are no bicycle accommodations through the intersection, however, the approaches include paved shoulders. There are no adjacent intersections that would influence the operation of the proposed intersection or roundabout.

Figure 2-1: Existing Typical Section

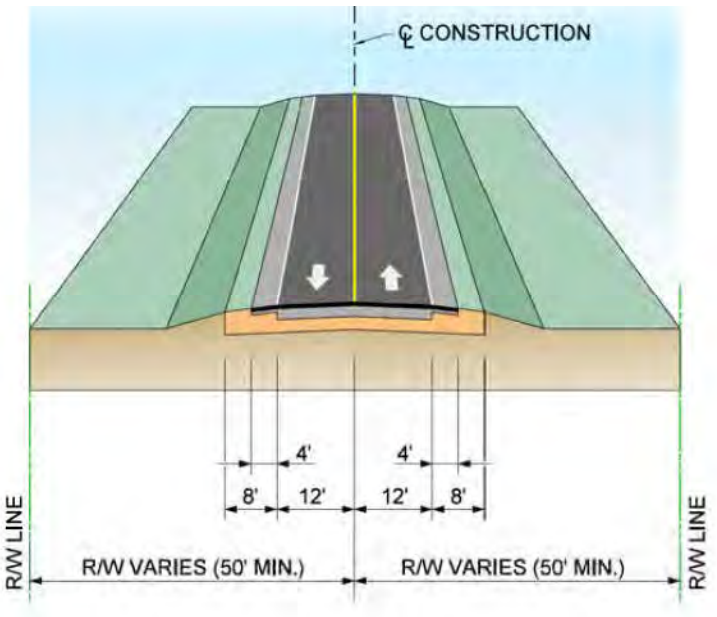
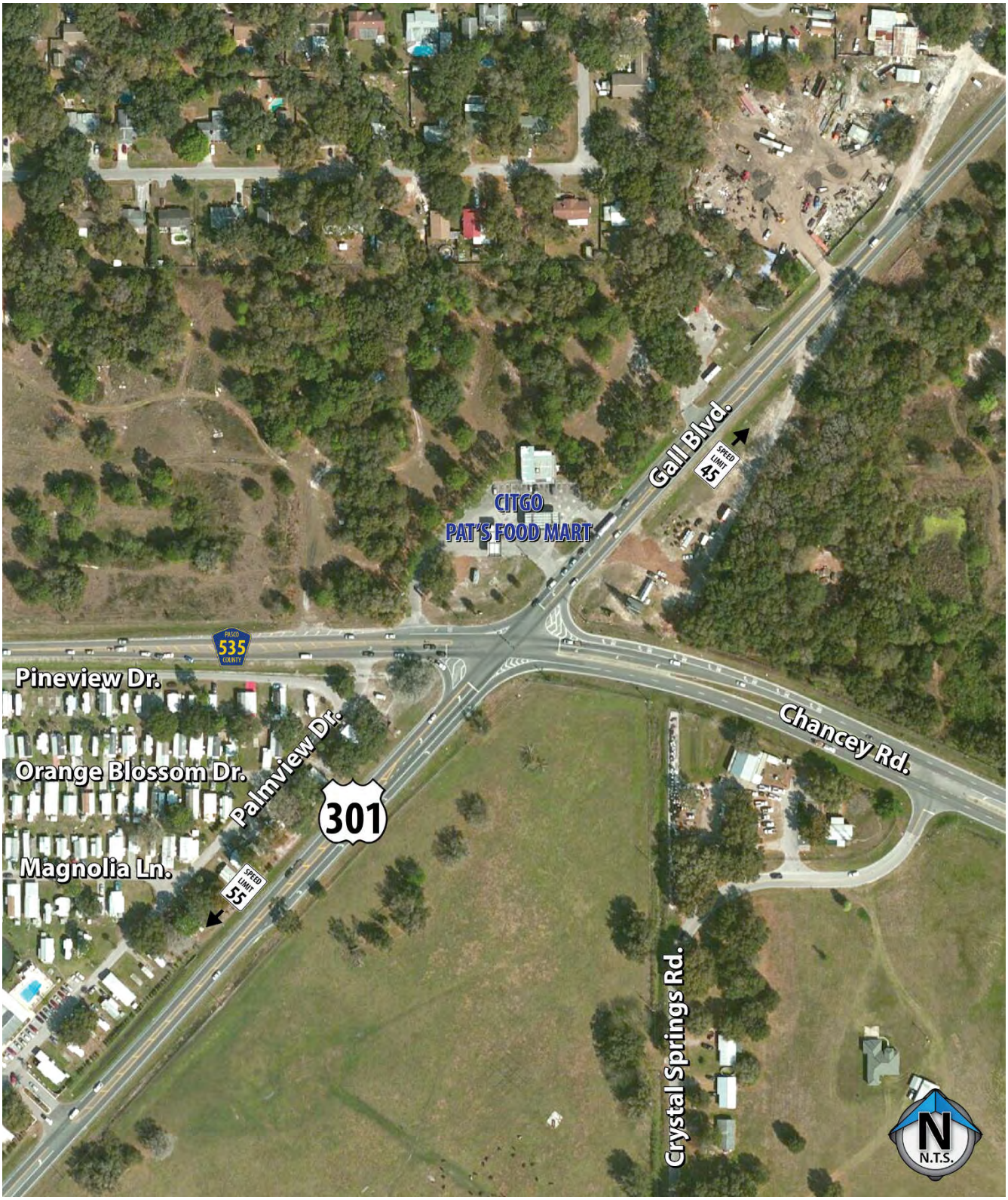


Figure 2-2: Existing Intersection Configuration



2.2 Existing Traffic Volumes and Future Traffic Projections

Future Annual Average Daily Traffic (AADT) volume projections were reported in the August 2015 Design Traffic Technical Memorandum (DTTM). These future year projections are shown in **Figure 2-3** and are used as inputs to the Step 2 Benefit/Cost Evaluation.

2.3 Crash Data

Since the crash data in the DTTM is a few years old (2009-2012) and more recent data is available in the Crash Reporting System (CARS), new data was reviewed for the years 2011-2015. The updated crash data is included in **Appendix B**. The result is the following for the US 301/Chancey Road intersection:

- 30 total crashes from 2011 through 2015
  - No fatalities
  - 21 injuries
  - 9 property damage only
  - All 30 crashes involved multiple vehicles
  - No crashes involved pedestrians or bicyclists

2.4 Environmental and Cultural Considerations

The Step 1 Screening analysis requires the consideration of environmental and social factors such as historical and cultural sites, Section 4(f) sites, environmentally sensitive sites, and potential relocations. **Figures 2-4 through Figure 2-6** address these considerations.

A Cultural Resource Assessment Survey (CRAS) was prepared for US 301 (Gall Blvd) from SR 56 (Proposed) to SR 39 (Paul Buchman Highway) (Work Program Item Segment No: 416564-1). It was sent to the State Historic Preservation Officer (SHPO) in September 2015. There were no historic resources or archaeological sites that were eligible for listing in the National Register of Historic Places (NRHP) except for Clydes Cottages that is a property located north of SR 39 (not near Chancey Road). SHPO concurred on October 13, 2015.

Figure 2-4 from the Efficient Transportation Decision Making Environmental Screening Tool shows historic resource surveys and sites. There are no historic structures or archaeological sites at this intersection. Only US 301 is recorded as a linear resource along here but it is not NRHP eligible. This map also shows that there has been a CRAS prepared for the parcel at the SW corner. “CULTURAL RESOURCE ASSESSMENT SURVEY, RUCKS PARCELS, PASCO COUNTY, FLORIDA” prepared by Archaeological Consultants, Inc. in 2003.

There are no historical or cultural sites, Section 4(f) sites, or environmentally sensitive sites which would be impacted by either the at-grade intersection or a roundabout. There appears to be ample vacant land available adjacent to the intersection to accommodate a two-lane roundabout while avoiding relocations. The 10-ft multi use trail included in the PD&E study as well as the adjacent project to the north can be incorporated into either the signalized intersection alternative or the roundabout alternative.

Figure 2-3: AADT Volumes

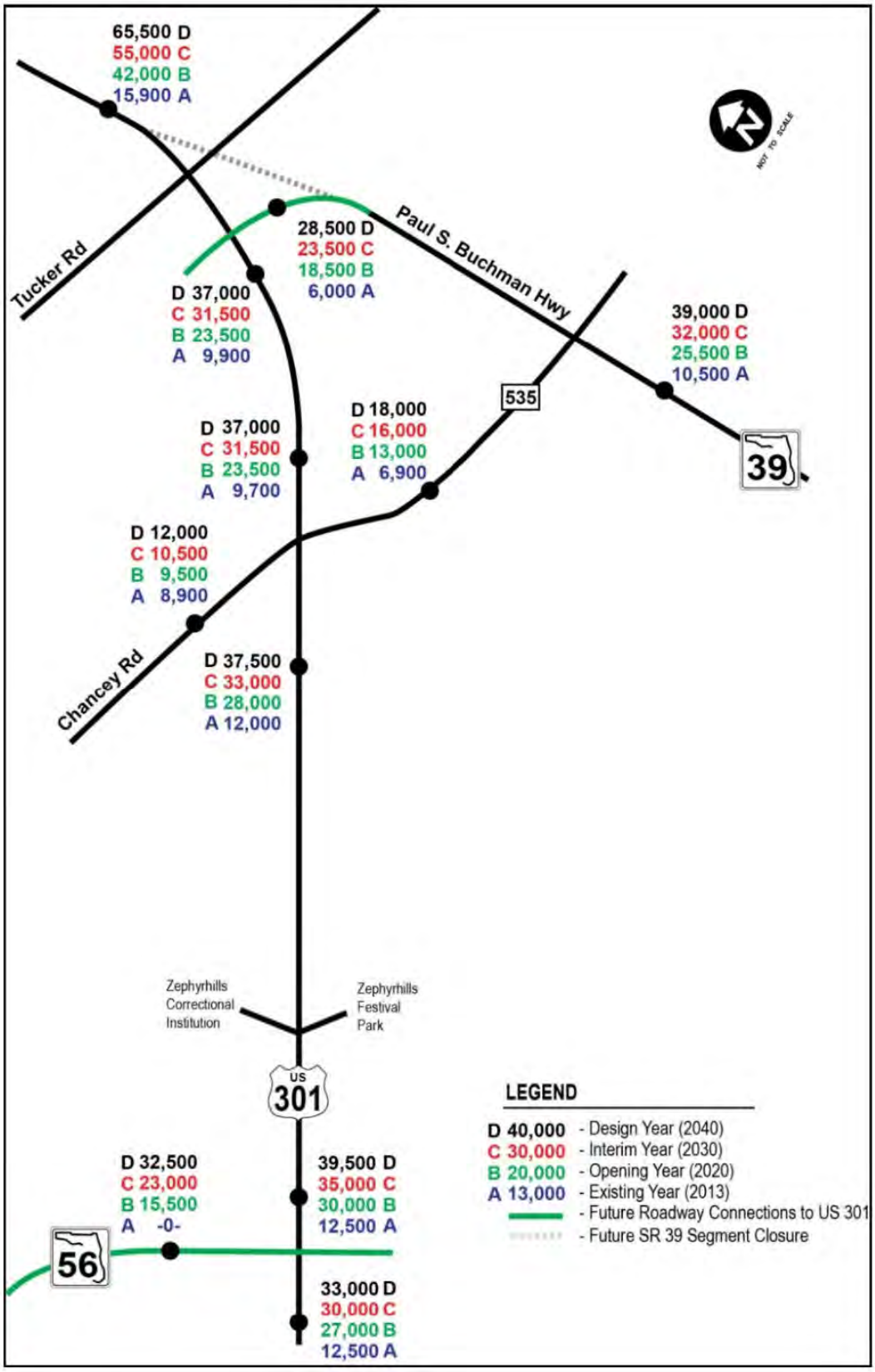
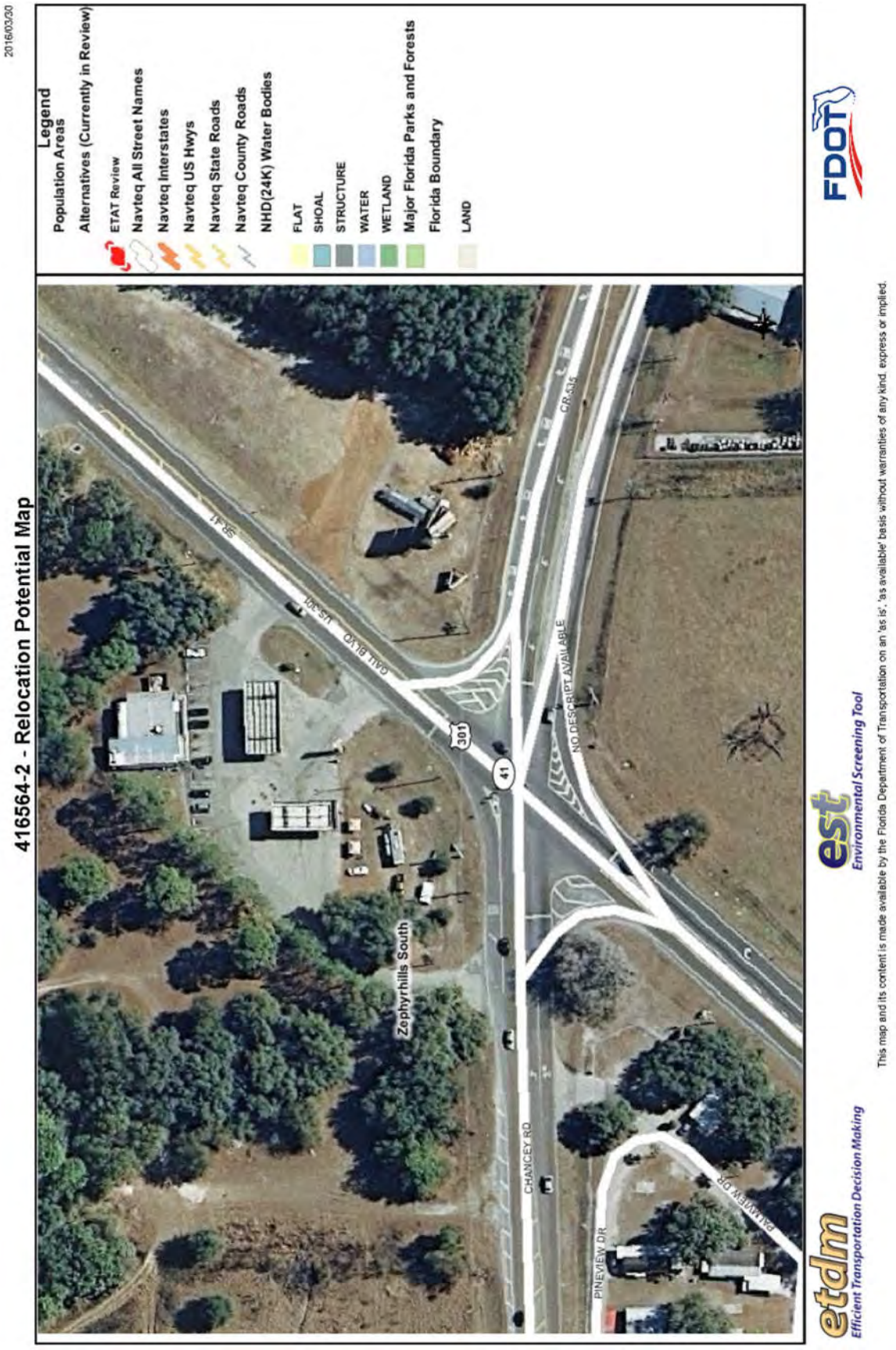


Figure 2-4: Environmentally Sensitive Lands and Cultural Resources

Figure 2-5: Section 4(f) and Recreational Resource Map

Figure 2-6: Relocation Potential



3.0 FUTURE ALTERNATIVES

The purpose of this study is to determine if a roundabout or a traditional signalized intersection should be selected for final design and future construction. The PD&E Study Final Preliminary Engineering Report (March 2017) is incorporated by reference.

3.1 PD&E Recommended Alternative

The 2016 PD&E study and concept plans relevant to the Chancey Road intersection were reviewed and to ensure that the Recommended Alternative is represented in the Step 1 and Step 2 Benefit/Cost Evaluation for the traditional at-grade intersection alternative to compare to the roundabout alternative. The Recommended Alternative includes widening US 301 (Gall Boulevard) from a two-lane undivided rural roadway to a four-lane suburban and urban roadway. The proposed typical sections are shown in **Figure 3-1** for both north and south of Chancey Road. South of Chancey Road, US 301 (Gall Boulevard) is planned to be a four-lane suburban roadway with 12-ft travel lanes, 7-ft bike lanes, 8-ft inside paved shoulders within a 54-ft median, a 5-ft sidewalk along the eastern ROW line and a 10-foot shared use path along the western ROW line. This typical section is expandable to six lanes by adding two lanes to the inside reducing the overall median width to 30 feet. The design speed is 50 mph.

North of Chancey Road, US 301 (Gall Boulevard) is planned to be a four-lane urban roadway with 11-ft travel lanes, 7-ft bike lanes, Type E curb and gutter, a raised median that varies from 33-ft to 54-ft, and 5-ft sidewalks on both sides. The design speed is 45 mph. The concept includes a signalized intersection at Chancey Road. There are no relocations within the intersection area. The PD&E study concept plan sheet is included in **Appendix C**.

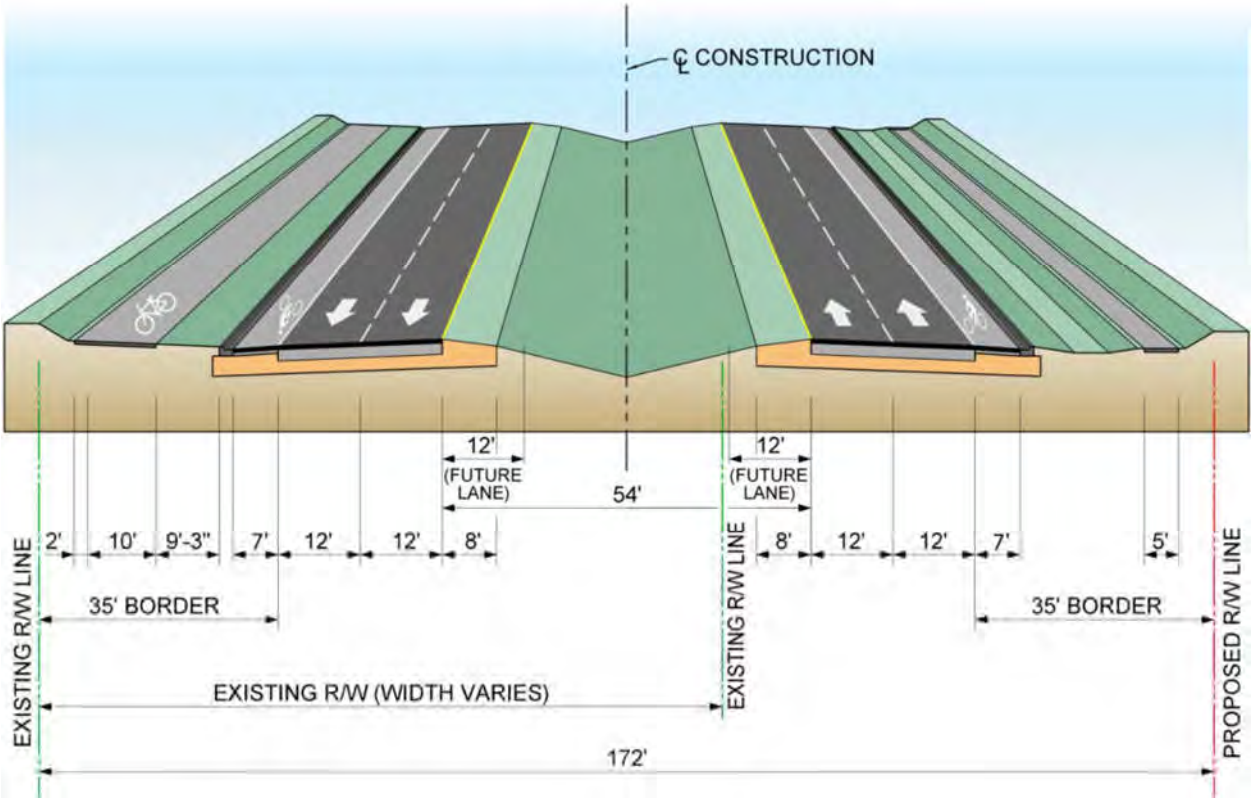
Costs for the proposed signalized intersection were developed using the FDOT Long Range Estimates (LRE) computer program. Limits of construction extended 600 feet along each approach. The LRE is included in **Appendix D** and summarized in **Table 3-1**. Estimated known costs are summarized in **Table 3-1**. Utility relocation costs are unknown at this time, but are expected to be similar for both alternatives. However, ROW costs are assumed to be zero for the intersection alternative, since all the ROW required for the signalized intersection is also needed for the roundabout. Therefore, only the *additional* ROW cost for the roundabout was considered (see Table 3-2, below). Other costs such as Construction Engineering Inspection (CEI), landscaping, etc., are also be assumed to be similar and therefore are not included in the analysis.

Table 3-1: Summary of Signalized Intersection Costs

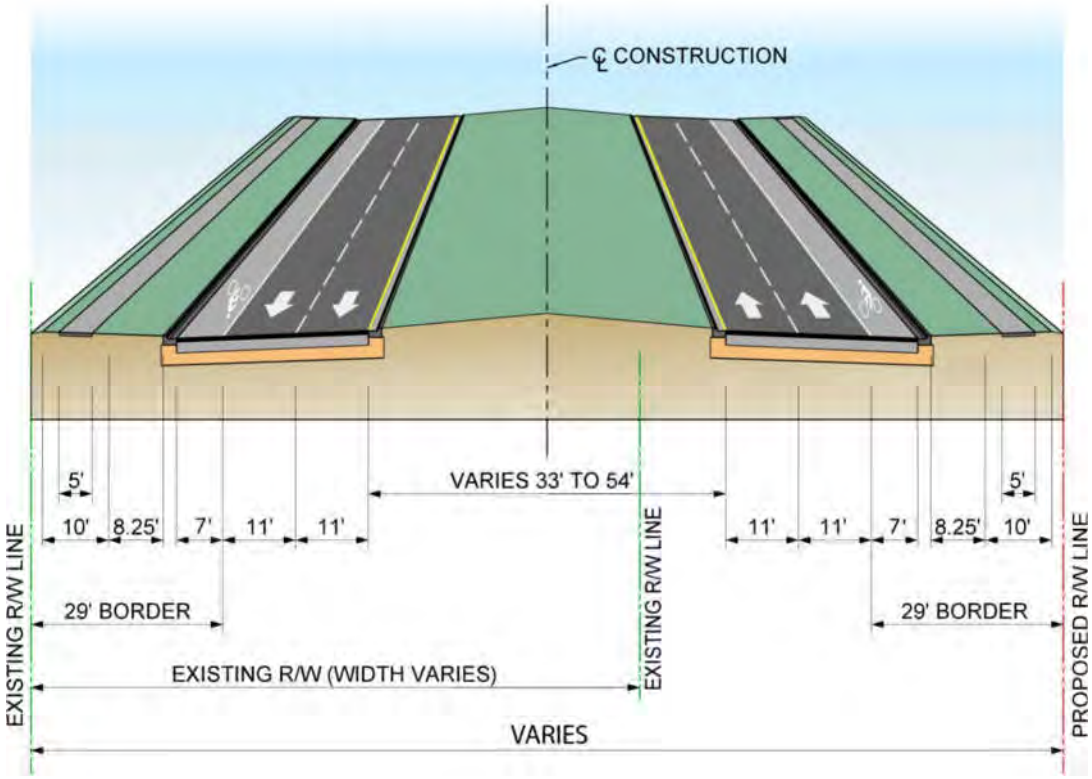
Right-of-Way	$ 0
Construction	$4,788,093
Preliminary Engineering 12%	$ 574,571
Total	$5,362,664

Figure 3-1: Proposed Typical Sections

South of Proposed SR 56 to Chancey Road



Chancey Road to South of SR 39



3.2 Roundabout Alternative

It is assumed that a two-lane roundabout will be needed to handle the traffic volumes at an acceptable level of service. After Step 1 was completed, a sketch-level concept was developed for the purposes of estimating right-of-way costs and specific quantities and construction costs for the Step 2 spreadsheet. The sketch-level two-lane roundabout uses a 200-ft inscribed circle, as shown below in **Figure 3-2**. A detailed LRE was completed including unknowns, maintenance of traffic, mobilization, initial contingency, and to account for the four roadway approaches to compare equivalently with the 600-ft approach lengths of the signalized intersection. A ROW cost estimate was prepared only for the additional ROW, over and above that of the signalized intersection alternative. ROW and construction costs are shown below in **Table 3-2**. The LRE is in **Appendix D**.

Figure 3-2: Two-Lane Roundabout Sketch-Level Concept

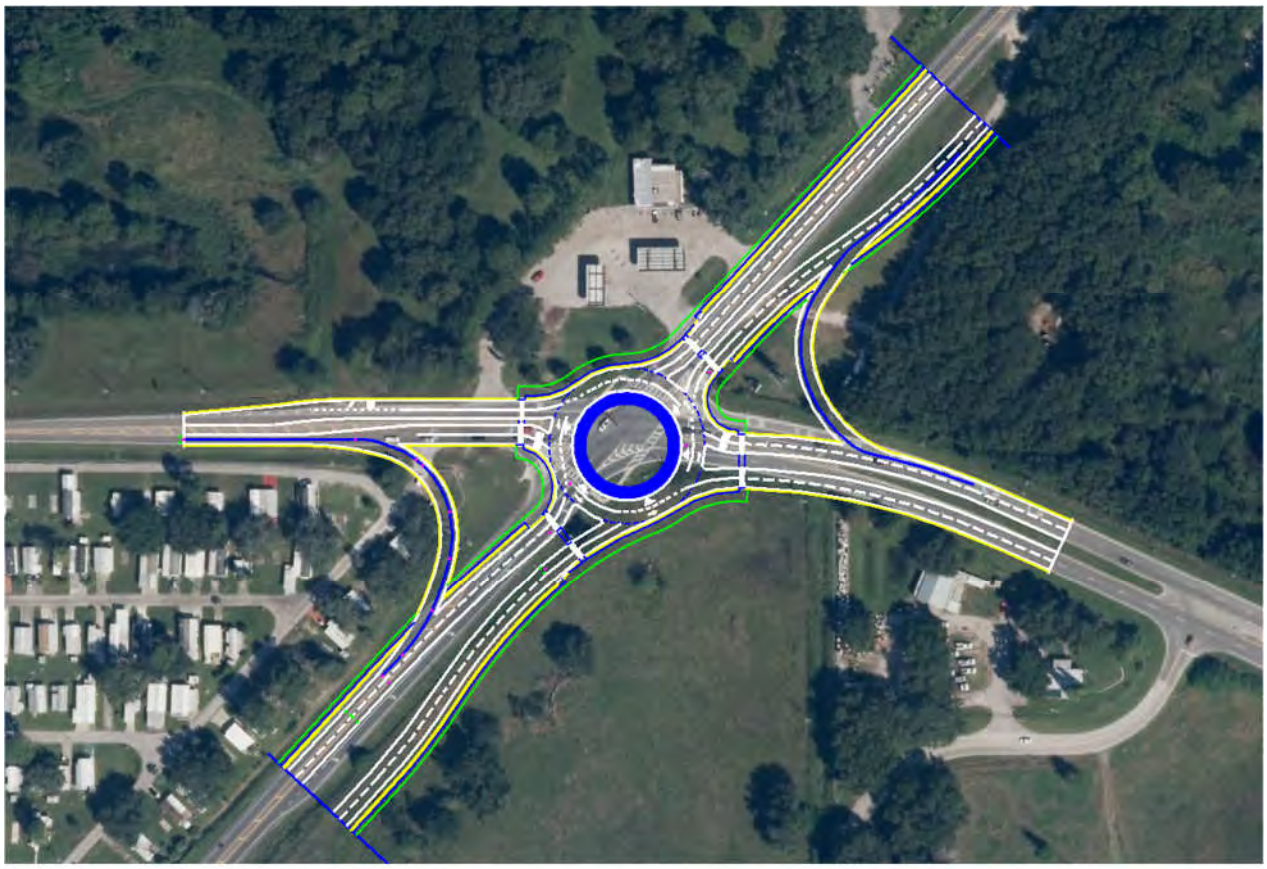


Table 3-2: Summary of Roundabout Costs

Right-of-way	$ 868,000
Construction	$3,992,657
Preliminary Engineering 12%	$ 479,119
Total	**$5,339,776**

4.0 STEP 1 ROUNDABOUT SCREENING

With data collection complete, the Step 1 Screening was prepared. The Step 1 Screening is a short and basic screening tool used to determine if a more detailed roundabout evaluation is appropriate. It includes basic project information such as project name, Financial Project ID, county, and names of the intersection roads. The form identifies the existing type of intersection controls (signal, stop, yield, none), and the where in the project delivery process the project is (design, traffic operations, other).

The screening consists of six questions with yes or no answers.

1. Does the intersection have physical or geometric constraints that would limit visibility or complicate construction?
2. Does the major roadway AADT exceed 90% of the total intersection AADT?
3. Does the intersection have pedestrians with special needs that would have difficulty crossing the road?
4. Is the intersection located within a coordinated signal network?
5. Is there downstream traffic control or conditions that could cause queues to back up into the intersection?
6. Would the installation of a roundabout create impacts to historical, 4(f), or environmentally sensitive sites? Would the relocation of residences or businesses be required?

If the answer to any of the questions is ‘yes’, a comment is required to explain. The Step 2 Evaluation is required if ‘no’ is checked for all criteria. Level 2 is optional if ‘yes’ is checked for one or more of the criteria. Once approved and signed by the District Design Engineer or District Traffic Operations Engineer, the process can proceed to the Step 2 Evaluation.

All questions are checked ‘no’, and a Step 2 Evaluation is required for the US 301 (Gall Boulevard) / Chancey Road roundabout. The signed Step 1 form is included in **Appendix E**.

5.0 STEP 2 ROUNDABOUT BENEFIT/COST EVALUATION

The Step 2 Roundabout Evaluation is an Excel spreadsheet that compares the life cycle cost of a roundabout to that of a traditional signalized or stop-controlled intersection. The spreadsheet considers roundabouts during the intersection planning and design analysis, multiple including factors such as safety, operations, maintenance and construction data that will be used in the benefit-to-cost comparison. The end result will be the selection of the most appropriate intersection control alternate.

The spreadsheet analyzes costs associated with the following metrics:

- Safety improvements
- Vehicular delay (when information is available)
- Operations improvements
- Maintenance costs
- Design costs
- Construction costs
- Utility relocation costs
- Right-of-way costs

Some costs, such as construction and preliminary engineering costs, are directly entered by the user. Other costs, such as costs of fatal or property damage only crashes, are computed by the spreadsheet based on typical costs used in Florida. The spreadsheet is one of the many tools that planners and designers have at their disposal during the intersection selection process. Other variables must be considered as well to account for public and stakeholder input, availability of capital funds, right-of-way impacts, multi-modal accommodation, utility relocation and future development planned along the corridor.

The Step 2 Benefit Cost Evaluation Spreadsheets for the US 301 (Gall Boulevard at Chancey Road are included in **Appendix F**. Crash modification factors (CMF) and delay data are included in the evaluation and in **Appendix G, and H**, respectively. In addition, right-of-way costs were determined for the roundabout alternative to include the ROW acquisition required over and above that needed for the intersection alternative. Therefore, the ROW cost for the signalized intersection alternative was assumed to be zero, since it will be needed for either alternative.

The evaluation indicates that a roundabout has a lower life cycle cost that the traditional intersection alternative. The life cycle costs of the roundabout were calculated to be $24,538,712 (Net Present Value [NPV]), while the NPV of the traditional signalized intersection is $25,663,260. The roundabout benefit/cost analysis spreadsheet is incapable of calculating a benefit cost ratio for a roundabout if the roundabout cost is less than the signalized intersection alternative. However, the delay analysis indicated a failing level of performance during the design year for the roundabout alternative. So while the spreadsheet indicates the cost of the roundabout is lower, the inability of the roundabout to provide sufficient capacity in the design year results in a recommendation that the roundabout alternative not be further evaluated.

6.0 RECOMMENDATION

The result of the Step 2 Benefit Cost Evaluation (pending District approval) is not to proceed with development of a roundabout for the US 301 (Gall Boulevard) and Chancey Road intersection.

APPENDICES

Appendix A: STRAIGHT LINE DIAGRAM

Appendix B: CRASH DATA

Appendix C: PD&E STUDY CONCEPT PLAN SHEET

Appendix D: LONG RANGE ESTIMATE – INTERSECTION AND ROUNDABOUT ALTERNATIVES

Appendix E: STEP 1 ROUNDABOUT SCREENING

Appendix F: STEP 2 BENEFIT COST EVALUATION SPREADSHEETS

Appendix G: CRASH MODIFICATION FACTOR EMAIL

Appendix H: INTERSECTION AND ROUNDABOUT DELAY DATA

Appendix A

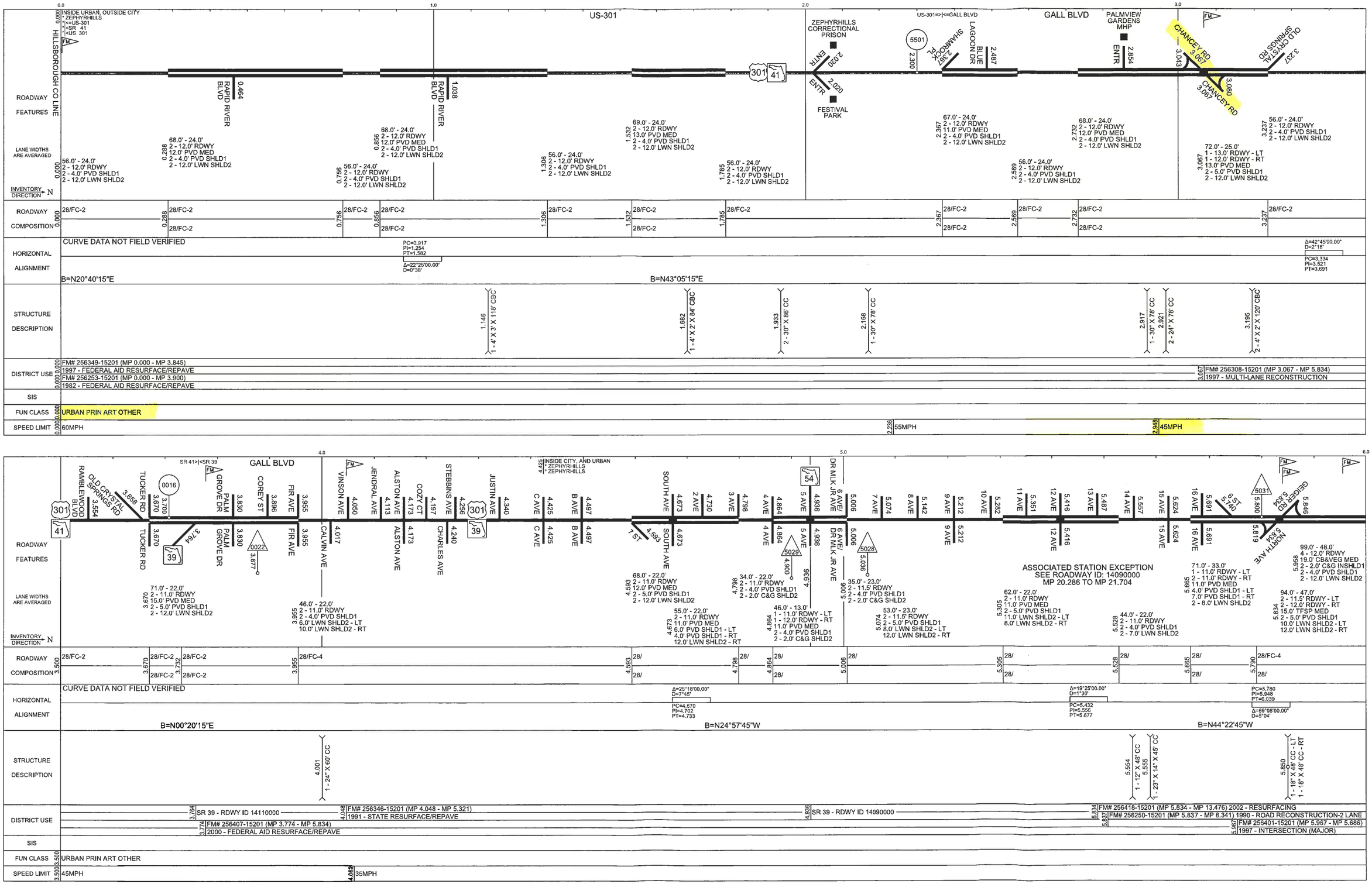
STRAIGHT LINE DIAGRAM

	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	05/09/2016	06/28/2016				
BY	FTE / JR-IM	FTE / KA				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
12	US 301/US 98	SR 41/SR 39/SR 35/SR 700	PASCO	07	14 050 000	1 OF 7



Version: 1.4.2.24 06/24/2016

Appendix B

CRASH DATA

Crash Number	Location Mile Post	Roadway Id	Crash Date	On Road	Intersecting Road	First Harmful Event	Manner Of Collision	Light Condition	Weather Condition	Surface Condition	Junction	Site Location	Alcohol Drugs Involvement	Number of Fatalities	Number of Injured	Total Crash Damage Amount	Crash Status
819653910	3.067	14050000	2/10/2011	US 301	CHANCEY RD	Motor Vehicle In Transport	Front To Front	Daylight	Rain	Wet	Intersection	At Intersection	No		2		Q/C Completed - Loc Verified
820730420	3.067	14050000	2/27/2011	CHANCEY RD	US 301	Motor Vehicle In Transport	Front To Rear	Daylight	Clear	Dry	Non-Junction	Influenced By Intersection	No		6		Q/C Completed - Loc Verified
822458570	3.067	14050000	6/2/2011	CHANCEY RD	US 301	Motor Vehicle In Transport	Front To Rear	Dark-Not Lighted	Clear	Wet	Non-Junction	At Intersection	No		1	5	Q/C Completed - Loc Verified
822568870	3.071	14050000	8/4/2011	US 301	CHANCEY RD	Motor Vehicle In Transport	Front To Rear	Dark-Not Lighted	Cloudy	Dry	Intersection-Related	At Intersection	No		2		Q/C Completed - Loc Verified
828211880	3.034	14050000	9/24/2011	US 301	CHANCEY RD	Motor Vehicle In Transport	Front To Rear	Daylight	Clear	Dry	Intersection-Related	Influenced By Intersection	Alc				Q/C Completed - Loc Verified
828170960	3.067	14050000	11/3/2011	US 301	CHANCEY RD	Motor Vehicle In Transport	Angle	Dark-Not Lighted	Clear	Dry	Non-Junction	At Intersection	No				Q/C Completed - Loc Verified
828479240	3.076	14050000	11/5/2011	US 301	CHANCEY RD	Motor Vehicle In Transport	Front To Rear	Daylight	Clear	Dry	Non-Junction	At Intersection	No			500	Q/C Completed - Loc Verified
820160140	3.067	14050000	11/14/2011	CHANCEY RD	US 301	Motor Vehicle In Transport	Front To Rear	Dark-Not Lighted	Clear	Dry	Non-Junction	At Intersection	No		1		Q/C Completed - Loc Verified
828550600	3.075	14050000	11/25/2011	US 301	CHANCEY RD	Motor Vehicle In Transport	Angle	Dark-Not Lighted	Clear	Dry	Intersection-Related	Influenced By Intersection	No		5		Q/C Completed - Loc Verified
831775140	3.067	14050000	7/26/2012	US 301	CHANCEY RD	Motor Vehicle In Transport	Front To Rear	Daylight	Clear	Dry	Intersection	At Intersection	No				Q/C Completed - Loc Verified
831967510	3.067	14050000	9/10/2012	CHANCEY RD	US 301	Motor Vehicle In Transport	Angle	Daylight	Clear	Dry	Non-Junction	At Intersection	No		2		Q/C Completed - Loc Verified
832578530	3.061	14050000	12/21/2012	US 301	CHANCEY RD	Motor Vehicle In Transport	Front To Rear	Dawn	Clear	Dry	Non-Junction	At Intersection	No		1		Q/C Completed - Loc Verified
832578590	3.07	14050000	12/28/2012	US 301	CHANCEY RD	Motor Vehicle In Transport	Front To Rear	Daylight	Clear	Dry	Non-Junction	At Intersection	No		8		Q/C Completed - Loc Verified
832796670	3.048	14050000	1/25/2013	US 301	CHANCEY RD	Motor Vehicle In Transport	Front To Rear	Daylight	Clear	Dry	Non-Junction	Influenced By Intersection	No		2		Q/C Completed - Loc Verified
832894400	3.067	14050000	3/7/2013	US 301	CHANCEY RD	Motor Vehicle In Transport	Angle	Dusk	Clear	Dry	Intersection	At Intersection	No		2		Q/C Completed - Loc Verified
836762250	3.065	14050000	9/2/2013	US 301	CHANCEY RD	Motor Vehicle In Transport	Front To Rear	Daylight	Clear	Dry	Non-Junction	At Intersection	A/D			700	Q/C Completed - Loc Verified
836897630	3.067	14050000	11/2/2013	CHANCEY RD	US 301	Motor Vehicle In Transport	Front To Rear	Dark-Not Lighted	Rain	Wet	Intersection-Related	Influenced By Intersection	No		1	500	Q/C Completed - Loc Verified
837196970	3.067	14050000	11/28/2013	CHANCEY RD	US 301	Motor Vehicle In Transport	Front To Rear	Daylight	Clear	Dry	Non-Junction	At Intersection	No		1		Q/C Completed - Loc Verified
837179520	3.063	14050000	1/17/2014	US 301	CHANCEY RD	Motor Vehicle In Transport	Angle	Dark-Not Lighted	Clear	Dry	Non-Junction	At Intersection	No		1		Q/C Completed - Loc Verified
837224020	3.059	14050000	2/26/2014	US 301	CHANCEY RD	Motor Vehicle In Transport	Sideswipe, Opposite Direction	Dawn	Fog, Smog, Smoke	Dry	Non-Junction	At Intersection	No			820	Q/C Completed - Loc Verified
837483680	3.048	14050000	3/26/2014	US 301	CHANCEY RD	Motor Vehicle In Transport	Front To Rear	Dark-Not Lighted	Clear	Dry	Intersection-Related	Influenced By Intersection	No				Q/C Completed - Loc Verified
837845110	2.697	14050000	4/5/2014	US 301	CHANCEY RD	Motor Vehicle In Transport	Angle	Dark-Not Lighted	Fog, Smog, Smoke	Dry	Intersection	Driveway Access	No		1		Q/C Completed - Loc Verified
838324230	3.065	14050000	6/14/2014	US 301	CHANCEY RD	Motor Vehicle In Transport	Front To Rear	Daylight	Cloudy	Wet	Intersection-Related	At Intersection	No		2		Q/C Completed - Loc Verified
838296880	3.067	14050000	7/7/2014	CHANCEY RD	US 301	Motor Vehicle In Transport	Angle	Daylight	Clear	Dry	Intersection	At Intersection	No		2		Q/C Completed - Loc Verified
844840400	3.067	14050000	7/21/2014	CHANCEY RD	US 301	Motor Vehicle In Transport	Front To Rear	Dark-Not Lighted	Clear	Dry	Intersection-Related	At Intersection	No		1	500	Q/C Completed - Loc Verified
845127890	3.075	14050000	10/31/2014	US 301	CHANCEY RD	Motor Vehicle In Transport	Front To Rear	Daylight	Clear	Dry	Intersection-Related	At Intersection	No		3	700	Q/C Completed - Loc Verified
845290140	3.067	14050000	12/30/2014	CHANCEY RD	US 301	Motor Vehicle In Transport	Angle	Dark-Lighted	Rain	Wet	Intersection	At Intersection	No		2		Q/C Completed - Loc Verified
845475310	3.067	14050000	1/23/2015	US 301	CHANCEY RD	Motor Vehicle In Transport	Front To Front	Dark-Lighted	Cloudy	Dry	Intersection	At Intersection	No		2		Q/C Completed - Loc Verified
851336380	3.067	14050000	7/24/2015	CHANCEY RD	US 301	Motor Vehicle In Transport	Front To Rear	Daylight	Cloudy	Wet	Non-Junction	Influenced By Intersection	No			900	Q/C Completed - Loc Verified
852026550	3.067	14050000	10/2/2015	US 301	CHANCEY RD	Motor Vehicle In Transport	Angle	Dark-Not Lighted	Cloudy	Dry	Intersection	At Intersection	No			800	Q/C Completed - Loc Verified

Appendix C

PD&E STUDY CONCEPT PLAN SHEET

LEGEND

- EXISTING RIGHT-OF-WAY
- EXISTING L/A RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- PROPOSED L/A RIGHT-OF-WAY
- PROPERTY LINES
- EXISTING CROSS DRAIN
- ROADWAY
- MEDIAN
- SIDEWALK
- WETLAND
- FLOODPLAIN
- EXISTING SIGNAL
- PROPOSED SIGNAL

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

URS Corporation Southern
7650 West Courtney
Campbell Causeway
Tampa, FL 33607-1462
C.A. No. 00000002
Christopher N. Lovett, P.E. No. 63020

US 301 (GALL BOULEVARD)
PD&E STUDY

FROM SR 56 (PROPOSED) TO SR 39 (BUCHMAN HIGHWAY)
PASCO COUNTY, FLORIDA

RECOMMENDED ALTERNATIVE PLAN SHEET (4)

SHEET NO. 4

Appendix D

LONG RANGE ESTIMATE – INTERSECTION AND ROUNDABOUT ALTERNATIVES

INTERSECTION ALTERNATIVE

Date: 8/16/2016 8:47:38 AM

FDOT Long Range Estimating System - Production

R3: Project Details by Sequence Report

Project: GALLBD-P-DE-01 **Letting Date:** 01/2099

Description: Construct new intersection at US 301/Gall Blvd and Chancey Rd.

District: 07 **County:** 14 PASCO **Market Area:** 07 **Units:** English
Contract Class: 9 **Lump Sum Project:** N **Design/Build:** N **Project Length:** 0.360 MI

Project Manager:

Version 1-P Project Grand Total **$4,788,092.62**
Description: Construct new intersection at US 301/Gall Blvd and Chancey Rd.

Sequence: 1 NDU - New Construction, Divided, Urban **Net Length:** 0.114 MI
600 LF

Description: Construct SW Leg at the intersection of US 301/Gall Blvd and Chancey Rd.

EARTHWORK COMPONENT

User Input Data

Description	Value
Standard Clearing and Grubbing Limits L/R	86.00 / 86.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.246
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 Shoulder Cross Slope L/R	4.00 % / 4.00 %
Outside Shoulder Cross Slope L/R	2.00 % / 2.00 %
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	2.38 AC	$9,583.08	$22,807.73
120-6	EMBANKMENT	39,480.66 CY	$13.45	$531,014.88
	Earthwork Component Total			$553,822.61

ROADWAY COMPONENT

User Input Data

Description	Value
Number of Lanes	4
Roadway Pavement Width L/R	31.00 / 31.00
Structural Spread Rate	330
Friction Course Spread Rate	165

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	4,819.79	SY	$5.09	$24,532.73
285-709	OPTIONAL BASE,BASE GROUP 09	4,132.01	SY	$43.52	$179,825.08
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	681.78	TN	$100.72	$68,668.88
337-7-43	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	340.89	TN	$97.63	$33,281.09

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
710-11-123	PAINTED PAVT MARK,STD,WHITE,SOLID, 12"	238.00	LF	$0.65	$154.70
710-11-125	PAINTED PAVT MARK,STD,WHITE,SOLID,24"	196.00	LF	$1.18	$231.28
710-11-170	PAINTED PAVT MARK,STD,WHITE, ARROWS	10.00	EA	$23.44	$234.40
711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	238.00	LF	$1.64	$390.32
711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	196.00	LF	$3.76	$736.96
711-11-170	THERMOPLASTIC, STD, WHITE, ARROW	10.00	EA	$51.28	$512.80

Turnouts/Crossovers Subcomponent

Description	Value
Asphalt Adjustment	50.00
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	2,409.90	SY	$5.09	$12,266.39
285-709	OPTIONAL BASE,BASE GROUP 09	2,066.00	SY	$43.52	$89,912.32
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	340.89	TN	$100.72	$34,334.44
337-7-43	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	170.44	TN	$97.63	$16,640.06

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	7
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		46.00	EA	$3.28	$150.88

	RETRO-REFLECTIVE PAVEMENT MARKERS			
710-11-101	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.80 GM	$889.61	$711.69
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.23 GM	$364.50	$83.84
711-15-101	THERMOPLASTIC, STD-OP, WHITE, SOLID, 6"	0.80 GM	$4,105.82	$3,284.66
711-15-131	THERMOPLASTIC, STD-OP, WHITE, SKIP, 6"	0.23 GM	$1,061.12	$244.06
	Roadway Component Total			$466,196.57

SHOULDER COMPONENT

User Input Data

Description	Value
Total Outside Shoulder Width L/R	15.25 / 28.25
Total Outside Shoulder Perf. Turf Width L/R	8.00 / 21.00
Sidewalk Width L/R	5.00 / 5.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-10	CONCRETE CURB & GUTTER, TYPE F	599.81	LF	$19.56	$11,732.28
520-1-10	CONCRETE CURB & GUTTER, TYPE F	599.81	LF	$19.56	$11,732.28
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	666.45	SY	$30.41	$20,266.74
570-1-2	PERFORMANCE TURF, SOD	1,932.71	SY	$2.66	$5,141.01

Erosion Control

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	27.22	LF	$3.50	$95.27
107-1	LITTER REMOVAL	2.77	AC	$38.87	$107.67
107-2	MOWING	2.77	AC	$56.16	$155.56
	Shoulder Component Total				$49,230.82

MEDIAN COMPONENT

User Input Data

Description	Value
Total Median Width	38.00
Performance Turf Width	38.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
570-1-2	PERFORMANCE TURF, SOD	2,532.52	SY	$2.66	$6,736.50

	Median Component Total	$6,736.50

DRAINAGE COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	1.96	CY	$1,516.04	$2,971.44
425-1-351	INLETS, CURB, TYPE P-5, <10'	4.00	EA	$4,036.30	$16,145.20
425-1-451	INLETS, CURB, TYPE J-5, <10'	2.00	EA	$6,472.61	$12,945.22
425-1-521	INLETS, DT BOT, TYPE C, <10'	1.00	EA	$2,850.24	$2,850.24
425-2-41	MANHOLES, P-7, <10'	1.00	EA	$3,963.70	$3,963.70
430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	296.00	LF	$96.77	$28,643.92
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	32.00	LF	$125.14	$4,004.48
430-175-148	PIPE CULV, OPT MATL, ROUND, 48"S/CD	552.00	LF	$208.80	$115,257.60
570-1-1	PERFORMANCE TURF	33.11	SY	$1.98	$65.56
	Drainage Component Total				$186,847.36

SIGNING COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	3.00	AS	$244.01	$732.03
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	1.00	AS	$782.33	$782.33
700-2-15	MULTI- POST SIGN, F&I GM, 51-100 SF	1.00	AS	$4,707.55	$4,707.55
700-2-16	MULTI- POST SIGN, F&I GM, 101-200 SF	1.00	AS	$9,382.01	$9,382.01
	Signing Component Total				$15,603.92

LIGHTING COMPONENT

Conventional Lighting Subcomponent

Description	Value
Spacing	MIN

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	574.99	LF	$8.58	$4,933.41
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	114.13	LF	$22.65	$2,585.04
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	4.00	EA	$606.82	$2,427.28
715-1-13	LIGHTING CONDUCTORS, F&I, INSUL, NO.4-2	2,100.03	LF	$2.15	$4,515.06
715-4-111	LIGHT POLE COMP, F&I, WS150, 40'	4.00	EA	$4,862.45	$19,449.80
715-500-1	POLE CABLE DIST SYS, CONVENTIONAL	4.00	EA	$567.45	$2,269.80

Subcomponent Total	$36,180.40
Lighting Component Total	$36,180.39
Sequence 1 Total	$1,314,618.17

Sequence: 2 NDU - New Construction, Divided, Urban **Net Length:** 0.114 MI
600 LF

Description: Construct NE Leg at the intersection of US 301/Gall Blvd and Chancey Rd.

EARTHWORK COMPONENT

User Input Data

Description	Value
Standard Clearing and Grubbing Limits L/R	73.00 / 73.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.246
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 Shoulder Cross Slope L/R	4.00 % / 4.00 %
Outside Shoulder Cross Slope L/R	2.00 % / 2.00 %
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	2.02	AC	$9,583.08	$19,357.82
120-6	EMBANKMENT	36,760.23	CY	$13.45	$494,425.09
	Earthwork Component Total				$513,782.92

ROADWAY COMPONENT

User Input Data

Description	Value
Number of Lanes	4
Roadway Pavement Width L/R	29.00 / 29.00
Structural Spread Rate	330
Friction Course Spread Rate	165

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	4,553.21	SY	$5.09	$23,175.84
285-709	OPTIONAL BASE,BASE GROUP 09	3,865.43	SY	$43.52	$168,223.51
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	637.80	TN	$100.72	$64,239.22
337-7-43	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	318.90	TN	$97.63	$31,134.21

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
710-11-123	PAINTED PAVT MARK,STD,WHITE,SOLID, 12"	228.00	LF	$0.65	$148.20
710-11-125	PAINTED PAVT MARK,STD,WHITE,SOLID,24"	197.00	LF	$1.18	$232.46
710-11-170		15.00	EA	$23.44	$351.60

	PAINTED PAVT MARK,STD,WHITE, ARROWS			
711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	228.00 LF	$1.64	$373.92
711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	197.00 LF	$3.76	$740.72
711-11-170	THERMOPLASTIC, STD, WHITE, ARROW	15.00 EA	$51.28	$769.20

Turnouts/Crossovers Subcomponent

Description	Value
Asphalt Adjustment	75.00
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	3,414.91	SY	$5.09	$17,381.89
285-709	OPTIONAL BASE,BASE GROUP 09	2,899.07	SY	$43.52	$126,167.53
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	478.35	TN	$100.72	$48,179.41
337-7-43	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	239.18	TN	$97.63	$23,351.14

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	8
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	46.00	EA	$3.28	$150.88
710-11-101	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.91	GM	$889.61	$809.55
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.23	GM	$364.50	$83.84
711-15-101	THERMOPLASTIC, STD-OP, WHITE, SOLID, 6"	0.91	GM	$4,105.82	$3,736.30
711-15-131	THERMOPLASTIC, STD-OP, WHITE, SKIP, 6"	0.23	GM	$1,061.12	$244.06
	Roadway Component Total				$509,493.47

SHOULDER COMPONENT

User Input Data

Description	Value
Total Outside Shoulder Width L/R	7.25 / 22.25

Total Outside Shoulder Perf. Turf Width L/R	0.00 / 15.00
Sidewalk Width L/R	5.00 / 5.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-10	CONCRETE CURB & GUTTER, TYPE F	599.81	LF	$19.56	$11,732.28
520-1-10	CONCRETE CURB & GUTTER, TYPE F	599.81	LF	$19.56	$11,732.28
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	666.45	SY	$30.41	$20,266.74
570-1-2	PERFORMANCE TURF, SOD	999.68	SY	$2.66	$2,659.15

Erosion Control

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	27.22	LF	$3.50	$95.27
107-1	LITTER REMOVAL	2.77	AC	$38.87	$107.67
107-2	MOWING	2.77	AC	$56.16	$155.56
	Shoulder Component Total				$46,748.96

MEDIAN COMPONENT

User Input Data

Description	Value
Total Median Width	43.50
Performance Turf Width	43.50

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-10	CONCRETE CURB & GUTTER, TYPE F	1,199.62	LF	$19.56	$23,464.57
570-1-2	PERFORMANCE TURF, SOD	2,899.07	SY	$2.66	$7,711.53
	Median Component Total				$31,176.10

DRAINAGE COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	1.96	CY	$1,516.04	$2,971.44
425-1-351	INLETS, CURB, TYPE P-5, <10'	4.00	EA	$4,036.30	$16,145.20
425-1-451	INLETS, CURB, TYPE J-5, <10'	2.00	EA	$6,472.61	$12,945.22
425-1-521	INLETS, DT BOT, TYPE C, <10'	1.00	EA	$2,850.24	$2,850.24
425-2-41	MANHOLES, P-7, <10'	1.00	EA	$3,963.70	$3,963.70
430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	296.00	LF	$96.77	$28,643.92
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	32.00	LF	$125.14	$4,004.48

430-175-148	PIPE CULV, OPT MATL, ROUND, 48"S/CD	552.00 LF	$208.80	$115,257.60
570-1-1	PERFORMANCE TURF	33.11 SY	$1.98	$65.56
	Drainage Component Total			$186,847.36

SIGNING COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	3.00	AS	$244.01	$732.03
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	1.00	AS	$782.33	$782.33
700-2-15	MULTI- POST SIGN, F&I GM, 51-100 SF	1.00	AS	$4,707.55	$4,707.55
700-2-16	MULTI- POST SIGN, F&I GM, 101-200 SF	1.00	AS	$9,382.01	$9,382.01
	Signing Component Total				$15,603.92

LIGHTING COMPONENT

Conventional Lighting Subcomponent

Description	Value
Spacing	MIN

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	574.99	LF	$8.58	$4,933.41
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	114.13	LF	$22.65	$2,585.04
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	4.00	EA	$606.82	$2,427.28
715-1-13	LIGHTING CONDUCTORS, F&I, INSUL, NO.4-2	2,100.03	LF	$2.15	$4,515.06
715-4-111	LIGHT POLE COMP, F&I, WS150, 40'	4.00	EA	$4,862.45	$19,449.80
715-500-1	POLE CABLE DIST SYS, CONVENTIONAL	4.00	EA	$567.45	$2,269.80
	Subcomponent Total				$36,180.40
	Lighting Component Total				$36,180.39

Sequence 2 Total $1,339,833.12

Sequence: 3 NDU - New Construction, Divided, Urban **Net Length:** 0.057 MI
300 LF

Description: Construct W Leg at the intersection of US 301/Gall Blvd and Chancey Rd.

EARTHWORK COMPONENT

User Input Data

Description	Value
Standard Clearing and Grubbing Limits L/R	38.00 / 38.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.246
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 Shoulder Cross Slope L/R	4.00 % / 4.00 %
Outside Shoulder Cross Slope L/R	2.00 % / 2.00 %
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	0.53	AC	$9,583.08	$5,079.03
120-6	EMBANKMENT	17,387.67	CY	$13.45	$233,864.16
	Earthwork Component Total				$238,943.19

ROADWAY COMPONENT

User Input Data

Description	Value
Number of Lanes	2
Roadway Pavement Width L/R	12.00 / 20.00
Structural Spread Rate	330
Friction Course Spread Rate	165

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	1,410.22	SY	$5.09	$7,178.02
285-709	OPTIONAL BASE,BASE GROUP 09	1,066.33	SY	$43.52	$46,406.68
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	175.94	TN	$100.72	$17,720.68
337-7-43	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	87.97	TN	$97.63	$8,588.51

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
710-11-123	PAINTED PAVT MARK,STD,WHITE,SOLID, 12"	136.00	LF	$0.65	$88.40
710-11-125	PAINTED PAVT MARK,STD,WHITE,SOLID,24"	150.00	LF	$1.18	$177.00
710-11-170		4.00	EA	$23.44	$93.76

	PAINTED PAVT MARK,STD,WHITE, ARROWS				
711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	136.00	LF	$1.64	$223.04
711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	150.00	LF	$3.76	$564.00
711-11-170	THERMOPLASTIC, STD, WHITE, ARROW	4.00	EA	$51.28	$205.12

Turnouts/Crossovers Subcomponent

Description	Value
Asphalt Adjustment	100.00
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	1,410.22	SY	$5.09	$7,178.02
285-709	OPTIONAL BASE,BASE GROUP 09	1,066.33	SY	$43.52	$46,406.68
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	175.94	TN	$100.72	$17,720.68
337-7-43	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	87.97	TN	$97.63	$8,588.51

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	7
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	0

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
706-3	RETRO-REFLECTIVE PAVEMENT MARKERS	8.00	EA	$3.28	$26.24
710-11-101	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.40	GM	$889.61	$355.84
711-15-101	THERMOPLASTIC, STD-OP, WHITE, SOLID, 6"	0.40	GM	$4,105.82	$1,642.33
	Roadway Component Total				$163,163.51

SHOULDER COMPONENT

User Input Data

Description	Value
Total Outside Shoulder Width L/R	4.25 / 4.25
Total Outside Shoulder Perf. Turf Width L/R	2.00 / 2.00
Sidewalk Width L/R	0.00 / 0.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-10	CONCRETE CURB & GUTTER, TYPE F	299.90	LF	$19.56	$5,866.04
520-1-10	CONCRETE CURB & GUTTER, TYPE F	299.90	LF	$19.56	$5,866.04
570-1-2	PERFORMANCE TURF, SOD	133.29	SY	$2.66	$354.55

Erosion Control

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	14.20	LF	$3.50	$49.70
107-1	LITTER REMOVAL	1.45	AC	$38.87	$56.36
107-2	MOWING	1.45	AC	$56.16	$81.43
	Shoulder Component Total				$12,274.12

DRAINAGE COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	1.02	CY	$1,516.04	$1,546.36
425-1-351	INLETS, CURB, TYPE P-5, <10'	3.00	EA	$4,036.30	$12,108.90
425-1-451	INLETS, CURB, TYPE J-5, <10'	1.00	EA	$6,472.61	$6,472.61
425-1-521	INLETS, DT BOT, TYPE C, <10'	1.00	EA	$2,850.24	$2,850.24
425-2-41	MANHOLES, P-7, <10'	1.00	EA	$3,963.70	$3,963.70
430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	152.00	LF	$96.77	$14,709.04
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	16.00	LF	$125.14	$2,002.24
430-175-148	PIPE CULV, OPT MATL, ROUND, 48"S/CD	288.00	LF	$208.80	$60,134.40
570-1-1	PERFORMANCE TURF	17.27	SY	$1.98	$34.19
	Drainage Component Total				$103,821.68

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	$244.01	$488.02
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	1.00	AS	$782.33	$782.33
700-2-15	MULTI- POST SIGN, F&I GM, 51-100 SF	1.00	AS	$4,707.55	$4,707.55
700-2-16	MULTI- POST SIGN, F&I GM, 101-200 SF	1.00	AS	$9,382.01	$9,382.01
	Signing Component Total				$15,359.91

LIGHTING COMPONENT

Conventional Lighting Subcomponent

Description	**Value**
Spacing	MIN

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	299.90	LF	$8.58	$2,573.14
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	59.53	LF	$22.65	$1,348.35
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	2.00	EA	$606.82	$1,213.64
715-1-13	LIGHTING CONDUCTORS, F&I, INSUL, NO.4-2	1,095.33	LF	$2.15	$2,354.96
715-4-111	LIGHT POLE COMP, F&I, WS150, 40'	2.00	EA	$4,862.45	$9,724.90
715-500-1	POLE CABLE DIST SYS, CONVENTIONAL	2.00	EA	$567.45	$1,134.90
	Subcomponent Total				$18,349.90
	Lighting Component Total				$18,349.89

Sequence 3 Total $551,912.30

Sequence: 4 NDU - New Construction, Divided, Urban **Net Length:** 0.057 MI
300 LF

Description: Construct E Leg at the intersection of US 301/Gall Blvd and Chancey Rd.

EARTHWORK COMPONENT

User Input Data

Description	Value
Standard Clearing and Grubbing Limits L/R	42.00 / 42.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.246
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 Shoulder Cross Slope L/R	4.00 % / 4.00 %
Outside Shoulder Cross Slope L/R	2.00 % / 2.00 %
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	0.58	AC	$9,583.08	$5,558.19
120-6	EMBANKMENT	17,919.73	CY	$13.45	$241,020.37
	Earthwork Component Total				$246,578.55

ROADWAY COMPONENT

User Input Data

Description	Value
Number of Lanes	3
Roadway Pavement Width L/R	24.00 / 12.00
Structural Spread Rate	330
Friction Course Spread Rate	165

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	1,543.51	SY	$5.09	$7,856.47
285-709	OPTIONAL BASE,BASE GROUP 09	1,199.62	SY	$43.52	$52,207.46
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	197.94	TN	$100.72	$19,936.52
337-7-43	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	98.97	TN	$97.63	$9,662.44

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
570-1-2	PERFORMANCE TURF, SOD	100.00	SY	$2.66	$266.00
710-11-123	PAINTED PAVT MARK,STD,WHITE,SOLID, 12"	156.00	LF	$0.65	$101.40
710-11-125	PAINTED PAVT MARK,STD,WHITE,SOLID,24"	172.00	LF	$1.18	$202.96

710-11-170	PAINTED PAVT MARK,STD,WHITE, ARROWS	7.00	EA	$23.44	$164.08
711-11-123	THERMOPLASTIC, STD, WHITE, SOLID, 12"	156.00	LF	$1.64	$255.84
711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	172.00	LF	$3.76	$646.72
711-11-170	THERMOPLASTIC, STD, WHITE, ARROW	7.00	EA	$51.28	$358.96

Turnouts/Crossovers Subcomponent

Description	Value
Asphalt Adjustment	100.00
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	1,543.51	SY	$5.09	$7,856.47
285-709	OPTIONAL BASE,BASE GROUP 09	1,199.62	SY	$43.52	$52,207.46
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	197.94	TN	$100.72	$19,936.52
337-7-43	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	98.97	TN	$97.63	$9,662.44

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	5
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	15.00	EA	$3.28	$49.20
710-11-101	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.28	GM	$889.61	$249.09
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.06	GM	$364.50	$21.87
711-15-101	THERMOPLASTIC, STD-OP, WHITE, SOLID, 6"	0.28	GM	$4,105.82	$1,149.63
711-15-131	THERMOPLASTIC, STD-OP, WHITE, SKIP, 6"	0.06	GM	$1,061.12	$63.67
	Roadway Component Total				$182,855.20

SHOULDER COMPONENT

User Input Data

Description	Value

Total Outside Shoulder Width L/R	4.25 / 4.25
Total Outside Shoulder Perf. Turf Width L/R	2.00 / 2.00
Sidewalk Width L/R	0.00 / 0.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-10	CONCRETE CURB & GUTTER, TYPE F	299.90	LF	$19.56	$5,866.04
520-1-10	CONCRETE CURB & GUTTER, TYPE F	299.90	LF	$19.56	$5,866.04
570-1-2	PERFORMANCE TURF, SOD	133.29	SY	$2.66	$354.55

Erosion Control

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	14.20	LF	$3.50	$49.70
107-1	LITTER REMOVAL	1.45	AC	$38.87	$56.36
107-2	MOWING	1.45	AC	$56.16	$81.43
	Shoulder Component Total				$12,274.12

MEDIAN COMPONENT

User Input Data

Description	Value
Total Median Width	8.00
Performance Turf Width	0.00

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-5-12	TRAF SEP CONC-TYPE I, 6' WIDE	300.00	LF	$47.67	$14,301.00

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-10	CONCRETE CURB & GUTTER, TYPE F	180.00	LF	$19.56	$3,520.80
570-1-2	PERFORMANCE TURF, SOD	100.00	SY	$2.66	$266.00
	Median Component Total				$18,087.80

DRAINAGE COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	1.02	CY	$1,516.04	$1,546.36
425-1-351	INLETS, CURB, TYPE P-5, <10'	3.00	EA	$4,036.30	$12,108.90
425-1-451	INLETS, CURB, TYPE J-5, <10'	1.00	EA	$6,472.61	$6,472.61
425-1-521	INLETS, DT BOT, TYPE C, <10'	1.00	EA	$2,850.24	$2,850.24
425-2-41	MANHOLES, P-7, <10'	1.00	EA	$3,963.70	$3,963.70

430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	152.00 LF	$96.77	$14,709.04
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	16.00 LF	$125.14	$2,002.24
430-175-148	PIPE CULV, OPT MATL, ROUND, 48"S/CD	288.00 LF	$208.80	$60,134.40
570-1-1	PERFORMANCE TURF	17.27 SY	$1.98	$34.19
	Drainage Component Total			$103,821.68

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	$244.01	$488.02
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	1.00	AS	$782.33	$782.33
700-2-15	MULTI- POST SIGN, F&I GM, 51-100 SF	1.00	AS	$4,707.55	$4,707.55
700-2-16	MULTI- POST SIGN, F&I GM, 101-200 SF	1.00	AS	$9,382.01	$9,382.01
	Signing Component Total				$15,359.91

LIGHTING COMPONENT

Conventional Lighting Subcomponent

Description	Value
Spacing	MIN

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	299.90	LF	$8.58	$2,573.14
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	59.53	LF	$22.65	$1,348.35
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	2.00	EA	$606.82	$1,213.64
715-1-13	LIGHTING CONDUCTORS, F&I, INSUL, NO.4-2	1,095.33	LF	$2.15	$2,354.96
715-4-111	LIGHT POLE COMP, F&I, WS150, 40'	2.00	EA	$4,862.45	$9,724.90
715-500-1	POLE CABLE DIST SYS, CONVENTIONAL	2.00	EA	$567.45	$1,134.90
	Subcomponent Total				$18,349.90
	Lighting Component Total				$18,349.89

Sequence 4 Total $597,327.15

Sequence: 5 MIS - Miscellaneous Construction **Net Length:** 0.028 MI 150 LF

Description: Rebuild the existing traffic signal to a mast arm signal at the intersection of US 301/Gall Blvd and Chancey Rd. Construct traffic separator at the east and west corners of intersections for pedestrian crossing.

Special Conditions:

MEDIAN COMPONENT

User Input Data

Description	Value

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-70	CONCRETE TRAFFIC SEPARATOR, SP- VAR WIDT	188.89	SY	$49.94	$9,433.17
	Median Component Total				$9,433.17

SIGNALIZATIONS COMPONENT

Signalization 1

Description	Value
Type	4 Lane Mast Arm
Multiplier	1
Description	US 301/Gall Blvd and Chancey Rd

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	750.00	LF	$8.58	$6,435.00
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	250.00	LF	$22.65	$5,662.50
632-7-1	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL	1.00	PI	$6,595.68	$6,595.68
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	16.00	EA	$606.82	$9,709.12
639-1-112	ELECTRICAL POWER SRV,F&I,OH,M,PUR BY CON	1.00	AS	$2,244.50	$2,244.50
639-2-1	ELECTRICAL SERVICE WIRE, F&I	60.00	LF	$4.08	$244.80
649-31-103	M/ARM,F&I, WS-150,SING ARM,W/0 LUM-60	4.00	EA	$35,104.89	$140,419.56
650-1-14	TRAFFIC SIGNAL,F&I ALUMINUM, 3 S 1 W	12.00	AS	$2,018.20	$24,218.40
653-1-11	PEDESTRIAN SIGNAL, F&I LED COUNT, 1 WAY	8.00	AS	$623.43	$4,987.44
660-1-102	LOOP DETECTOR INDUCTIVE, F&I, TYPE 2	12.00	EA	$171.39	$2,056.68
660-2-106	LOOP ASSEMBLY, F&I, TYPE F	12.00	AS	$887.87	$10,654.44
665-1-11	PEDESTRIAN DETECTOR, F&I, STANDARD	8.00	EA	$202.41	$1,619.28
670-5-111	TRAF CNTL ASSEM, F&I, NEMA, 1 PREEMPT	1.00	AS	$26,189.25	$26,189.25
700-3-101	SIGN PANEL, F&I GM, UP TO 12 SF	4.00	EA	$176.24	$704.96

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
660-4-12	VEHICLE DETECTION SYSTEM-VIDEO, ABOVE G	2.00	EA	$3,642.61	$7,285.22
	Signalizations Component Total				$249,026.83
Sequence 5 Total					$258,460.00

Date: 8/16/2016 8:47:40 AM

FDOT Long Range Estimating System - Production

R3: Project Details by Sequence Report

Project: GALLBD-P-DE-01 **Letting Date:** 01/2099

Description: Construct new intersection at US 301/Gall Blvd and Chancey Rd.

District: 07 **County:** 14 PASCO **Market Area:** 07 **Units:** English
Contract Class: 9 **Lump Sum Project:** N **Design/Build:** N **Project Length:** 0.360 MI

Project Manager:

Version 1-P Project Grand Total **$4,788,092.62**
Description: Construct new intersection at US 301/Gall Blvd and Chancey Rd.

Project Sequences Subtotal			**$4,062,150.74**
102-1	Maintenance of Traffic	8.00 %	$324,972.06
101-1	Mobilization	8.00 %	$350,969.82
Project Sequences Total			**$4,738,092.62**
Project Unknowns		0.00 %	$0.00
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	$50,000.00	$50,000.00
Project Non-Bid Subtotal					**$50,000.00**
Version 1-P Project Grand Total					**$4,788,092.62**

Roundabout Alternative

Date: 3/28/2017 11:49:02 AM

FDOT Long Range Estimating System - Production

R3: Project Details by Sequence Report

Project: GALLBD-P-DE-02 **Letting Date:** 01/2099

Description: Construct new roundabout at US301/Gall Blvd and Chancey Rd.

District: 07 **County:** 14 PASCO **Market Area:** 07 **Units:** English
Contract Class: **Lump Sum Project:** N **Design/Build:** N **Project Length:** 0.200 MI

Project Manager:

Version 1-P Project Grand Total **$3,992,656.78**
Description: Construct new roundabout at US301/Gall Blvd and Chancey Rd.

Sequence: 1 MIS - Miscellaneous Construction **Net Length:** 0.200 MI
1,056 LF

Description: Construct new roundabout at US301/Gall Blvd and Chancey Rd.

ROADWAY COMPONENT

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	6.14	AC	$10,247.87	$62,921.92
120-6	EMBANKMENT	90,000.00	CY	$12.96	$1,166,400.00
160-4	TYPE B STABILIZATION	17,614.00	SY	$5.57	$98,109.98
285-710	OPTIONAL BASE,BASE GROUP 10	15,404.00	SY	$43.52	$670,382.08
334-1-13	SUPERPAVE ASPHALTIC CONC, TRAFFIC C	2,419.00	TN	$100.72	$243,641.68
337-7-43	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	1,209.00	TN	$98.97	$119,654.73
350-3-5	PLAIN CEMENT CONC PAVT, 8"	720.11	SY	$67.99	$48,960.28
710-11-101	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	0.97	GM	$890.08	$863.38
710-11-125	PAINTED PAVT MARK,STD,WHITE,SOLID,24"	294.00	LF	$1.27	$373.38
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.50	GM	$371.62	$185.81
710-11-141	PAINTED PAVT MARK,STD,WH,DOT GUIDE, 6"	0.10	GM	$452.53	$45.25
710-11-160	PAINTED PAVT MARK,STD,WHITE, MESSAGE	9.00	EA	$32.46	$292.14
710-11-170	PAINTED PAVT MARK,STD,WHITE, ARROWS	10.00	EA	$23.97	$239.70
710-11-201	PAINTED PAVT MARK,STD,YELLOW,SOLID,6"	0.21	GM	$892.42	$187.41
710-11-224	PAINTED PAVT MARK,STD,YELLOW,SOLID,18"	41.00	LF	$0.99	$40.59
711-11-125	THERMOPLASTIC, STD, WHITE, SOLID, 24"	294.00	LF	$3.84	$1,128.96
711-11-141	THERMOPLASTIC, STD, WHITE, DOT GUIDE, 6"	0.10	GM	$1,494.23	$149.42
711-11-160	THERMOPLASTIC, STD, WHITE, MESSAGE	9.00	EA	$122.43	$1,101.87
711-11-170	THERMOPLASTIC, STD, WHITE,	10.00	EA	$52.97	$529.70

	ARROW			
711-11-224	THERMOPLASTIC, STD, YELLOW, SOLID, 18"	41.00 LF	$2.99	$122.59
711-15-101	THERMOPLASTIC, STD-OP, WHITE, SOLID, 6"	0.97 GM	$4,105.82	$3,982.65
711-15-131	THERMOPLASTIC, STD-OP, WHITE, SKIP, 6"	0.50 GM	$1,065.24	$532.62
711-15-201	THERMOPLASTIC, STD-OP,YELLOW, SOLID, 6"	0.21 GM	$4,120.50	$865.30
	Roadway Component Total			$2,420,711.45

SHOULDER COMPONENT

User Input Data

Description	Value

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-10	CONCRETE CURB & GUTTER, TYPE F	4,880.00	LF	$18.72	$91,353.60
520-2-1	CONCRETE CURB, TYPE A	4,058.00	LF	$14.38	$58,354.04
520-2-4	CONCRETE CURB, TYPE D	335.00	LF	$24.19	$8,103.65
520-2-8	CONCRETE CURB, TYPE RA	440.00	LF	$47.72	$20,996.80
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	1,997.00	SY	$30.62	$61,148.14
527-2	DETECTABLE WARNINGS	192.00	SF	$25.61	$4,917.12
570-1-2	PERFORMANCE TURF, SOD	9,809.00	SY	$2.99	$29,328.91
	Shoulder Component Total				$274,202.26

DRAINAGE COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
400-2-2	CONC CLASS II, ENDWALLS	5.96	CY	$1,516.04	$9,035.60
425-1-351	INLETS, CURB, TYPE P-5, <10'	14.00	EA	$4,092.49	$57,294.86
425-1-451	INLETS, CURB, TYPE J-5, <10'	6.00	EA	$6,472.61	$38,835.66
425-1-521	INLETS, DT BOT, TYPE C, <10'	4.00	EA	$2,850.24	$11,400.96
425-2-41	MANHOLES, P-7, <10'	4.00	EA	$3,963.70	$15,854.80
430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	896.00	LF	$82.00	$73,472.00
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	96.00	LF	$125.14	$12,013.44
570-1-1	PERFORMANCE TURF	100.76	SY	$2.80	$282.13

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
430-175-148	PIPE CULV, OPT MATL, ROUND, 48"S/CD	1,680.00	LF	$208.80	$350,784.00
	Drainage Component Total				$568,973.45

SIGNING COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	28.00	AS	$262.24	$7,342.72
	Signing Component Total				$7,342.72

LIGHTING COMPONENT

Conventional Lighting Subcomponent

Description	Value
Spacing	MAX

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	1,749.78	LF	$8.74	$15,293.08
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	347.32	LF	$22.45	$7,797.33
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	12.00	EA	$598.82	$7,185.84
715-1-13	LIGHTING CONDUCTORS, F&I, INSUL, NO.4-2	6,390.00	LF	$2.15	$13,738.50
715-4-111	LIGHT POLE COMP, F&I, WS150, 40'	12.00	EA	$4,851.28	$58,215.36
715-500-1	POLE CABLE DIST SYS, CONVENTIONAL	12.00	EA	$561.06	$6,732.72
	Subcomponent Total				$108,962.83
	Lighting Component Total				$108,962.83

Sequence 1 Total $3,380,192.71

Date: 3/28/2017 11:49:03 AM

FDOT Long Range Estimating System - Production

R3: Project Details by Sequence Report

Project: GALLBD-P-DE-02 **Letting Date:** 01/2099

Description: Construct new roundabout at US301/Gall Blvd and Chancey Rd.

District: 07 **County:** 14 PASCO **Market Area:** 07 **Units:** English
Contract Class: **Lump Sum Project:** N **Design/Build:** N **Project Length:** 0.200 MI

Project Manager:

Version 1-P Project Grand Total **$3,992,656.78**
Description: Construct new roundabout at US301/Gall Blvd and Chancey Rd.

Project Sequences Subtotal			**$3,380,192.71**
102-1	Maintenance of Traffic	8.00 %	$270,415.42
101-1	Mobilization	8.00 %	$292,048.65
Project Sequences Total			**$3,942,656.78**
Project Unknowns		0.00 %	$0.00
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	$50,000.00	$50,000.00
Project Non-Bid Subtotal					**$50,000.00**
Version 1-P Project Grand Total					**$3,992,656.78**

Appendix E

STEP 1 ROUNDABOUT SCREENING

FLORIDA DEPARTMENT OF TRANSPORTATION
STEP 1 - ROUNDABOUT SCREENING

Prepared by:	*Douglas Reed, PE; Atkins*	**Date Prepared:**	*3-31-16*
Financial Project ID:	*416564-2*	**Project Name:**	*US 301 FROM SR 56 TO SR 39*
FAP No.:		**State Road:**	*US 301*
County:	*Hillsborough*	**Intersecting Road:**	*Chancey Road*

EXISTING CONTROL/PROJECT CLASSIFICATION

Control: ■ Signal ☐ All Way Stop ☐ 2 Way Stop ☐ Yield ☐ None

Classification: ■ Design. ☐ Traffic Operations ☐ Other

SCREENING CRITERIA

1.	Does the intersection have physical or geometric constraints that would limit visibility or complicate construction? *(comment below if "yes")*	☐ yes ■ no
2.	Does the major roadway AADT exceed 90% of the total intersection AADT? *(comment below if "yes")*	☐ yes ■ no
3.	Does the intersection have pedestrians with special needs that would have difficulty crossing the road? *(comment below if "yes")*	☐ yes ■ no
	None evident	
4.	Is the intersection located within a coordinated signal network? *(comment below if "yes")*	☐ yes ■ no
5.	Is there downstream traffic control or conditions that could cause queues to back up into the intersection? *(comment below if "yes")*	☐ yes ■ no
6.	Would the installation of a roundabout create impacts to historical, 4(f), or environmentally sensitive sites? Would the relocation of residences or businesses be required? *(comment below if "yes")*	☐ yes ■ no

Step 2 evaluation is required if no is checked for all criteria. Level 2 is optional if yes is checked for one or more of the criteria.

Advance Roundabout Alternative to step 2 Roundabout b/c Evaluation ☐ yes ☐ no

Approved by: ☑ DDE or ☐ DTOE

Signature: [signature] Date: 4/20/16

Appendix F

STEP 2 BENEFIT COST EVALUATION SPREADSHEETS

FDOT Level 2 Roundabout b/c Evaluation

1 - MAIN ENTRY

Enter project-specific data into orange cells on this sheet.

Scenario

Type of Comparison	Case 2: Traditional Intersection Option vs. Roundabout Option at site of existing traditional intersection	Choose from list
Existing Control	Traffic Signal	Choose from list
Traditional Intersection Option	Traffic Signal	Choose from list

Timeframe

Opening Year	2020	Enter year
Life Span	20	Enter life space in years. Maximum life span is 50 years

Safety Inputs

Consider safety costs?	Yes	Choose from list
Number of Legs	4	Choose from list

	Major Road	Minor Road	
Opening Year AADT	28,000	13,000	Enter volumes
Design Year AADT	37,500	18,000	Enter volumes

Facility Type (for SPFs)	Urban and Suburban Arterials	Choose from list
Area Type (for roundabout CMFs)	Urban	Choose from list
Number of Lanes in Roundabout	2	Choose from list

For "Urban and Suburban Arterial" facility type:		
Max. number of lanes crossed by pedestrian	4	For any crossing at intersection. If raised island/median, count stages seperately.
Daily Pedestrian Volume		Sum of all legs crossed

Existing Crash Data Available?	Yes	Choose from list
Time Span of Record (years):	5	Enter a minimum of 2 years
Total Number of Crashes:	**30**	
- with Fatalities:	0	Enter total number for given time span.
- with Injuries:	21	Enter total number for given time span.
- with PDO:	9	Enter total number for given time span.

For "Urban and Suburban Arterial" facility type:		
Number of Single-Vehicle Crashes	0	Enter total number for given time span. Do not include pedestrian or bicycle crashes.
Number of Multi-Vehicle Crashes	30	Enter total number for given time span. Do not include pedestrian or bicycle crashes.
Number of Vehicle-Pedestrian Crashes	0	Enter total number for given time span.
Number of Vehicle-Bicycle Crashes	0	Enter total number for given time span.

The existing traditional intersection and the traditional intersection option have the same control device, but some geometric differences:

0.81 Optional: Enter a CMF for the change associated with the traditional intersection option

Example: Add a left-turn lane to a rural, 3-leg, signalized intersection
-> Enter 0.85 per Table 14-10 of the HSM
If multiple CMFs are applicable, multiply them together before entering into spreadsheet
Use CMFs from HSM Chapter 14 c FHWA's CMF Clearinghouse

Additional safety inputs are located on the "2 - Adjust SPF" tab.

Vehicle Delay
Enter this information on the "3 - DelayENTRY" tab.

Operations and Maintenance	Roundabout	Traffic Signal
Lighting?	Yes	Yes

Capital Costs

Cells in tables below should be left blank if consideration of capital costs is not desired.

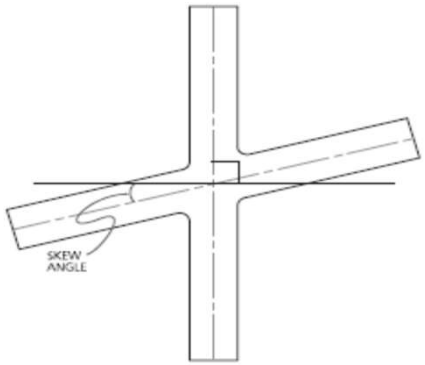
	Roundabout	Traffic Signal
Preliminary Engineering	$ 479,119	$ 574,571
Right-of-Way and Utilities	$ 868,000	$ -
Construction	$ 3,992,657	$ 4,788,093
Total	**$ 5,339,776**	**$ 5,362,664**

Unit Costs are listed below. In general, there is no need to change these and default values should be used.
Changes, if made, should be made in blue cells.

Item	Cost		Typ. Cost	Typ. Cost Source
Cost/Fatal-Injury Crash	$ 363,470	$	363,470	Weighted average of fatal-injury crash costs based on all recorded fatal and injury crashes on the SHS from 2009 to 2013
Cost/PDO Crash	$ 7,600	$	7,600	FDOT
Cost/Vehicle-Hour Delay	$ 16.79	$	16.79	2012 Urban Mobility Report by Texas Transportation Institute
Retiming Cost Every 3 Years	$ 5,000	$	5,000	FDOT. Equals $5000 for signal and $0 for stop-control
Annual Lighting Cost	$ 750	$	750	*FDOT. Equals $750 if illumination present*
Annual Signal Maintenance Cost	$ 3,100	$	3,100	FDOT. Equals $2000 for signal and $0 for stop control
Annual Roundabout Landscaping Cost	$ 2,000	$	2,000	Typical cost
Discount Rate	3.0%		3.0%	Typical for Infrastructure Projects. Opportunity cost of investing in intersection. *Discount rate cannot be zero.*

FDOT Level 2 Roundabout b/c Evaluation

2 - ADJUST SPF



Enter intersection geometric conditions into orange cells on this sheet.

Selected Facility Type from MainEntry tab: Urban and Suburban Arterials

Rural Two-lane, Two-Way Roads - Two-Way Stop-Control Intersection (3 or 4 legs)

Intersection Skew Angle	0	Enter Angle (positive number between 0 and 90). See figure.
Major Street Approaches With Left-Turn Lanes	0	Choose from list
Major Street Approaches With Right-Turn Lanes	0	Choose from list
Lighting	No	Choose from list

Rural Two-lane, Two-Way Roads - Signalized Intersection (4 legs)

Approaches With Left-Turn Lanes	0	Choose from list
Approaches With Right-Turn Lanes	0	Choose from list
Lighting	No	Choose from list

Rural Multilane Highways - Two-Way Stop-Control Intersection (3 or 4 legs)

Intersection Skew Angle		Enter Angle (positive number). See figure.
Major Street Approaches With Left-Turn Lanes	0	Choose from list. Do not choose "2" for a 3-leg intersection
Major Street Approaches With Right-Turn Lanes	0	Choose from list. Do not choose "2" for a 3-leg intersection
Lighting	No	Choose from list

Rural Multilane Highways - Signalized Intersection (4 legs)

No crash modification factors for this safety performance function

Urban and Suburban Arterials - Two-Way Stop-Control Intersection (3 or 4 legs)

Major Street Left-Turn Lanes	2	Choose from list
Major Street Right-Turn Lanes	2	Choose from list
Lighting	Yes	Choose from list

Urban and Suburban Arterials - Signalized Intersection (3 or 4 legs)

Approaches with Left-Turn Lanes	4	Choose from list
Approaches with Protected/Permissive or Permissive/Protected left-turn phasing	2	Choose from list
Approaches with protected phasing	2	Choose from list
Approaches with Right-Turn Lanes	4	Choose from list
Approaches with RTOR Prohibited	0	Choose from list. RTOR is Right-Turn-on-Red
Lighting	Yes	Choose from list
Red-Light Cameras	No	Choose from list
Bus Stops within 1000 feet of Intersection	0	Choose from list. This CMF only affects the number of vehicle-pedestrian crashes
Presence of Schools within 1000 feet of Intersection	No school present	Choose from list. This CMF only affects the number of vehicle-pedestrian crashes
Number of Alcohol Sales Establishments within 1000 feet of Intersection	1 to 8	Choose from list. This CMF only affects the number of vehicle-pedestrian crashes

FDOT Level 2 Roundabout b/c Evaluation

3 - DELAY ENTRY

Enter delay data into orange cells on this sheet.

Consider delay costs? Yes Choose from list

Enter average vehicle occupancy. This is used to convert vehicle delay to person delay.
Vehicle Occupancy 1.59 Average car rate is 1.59 per US Dept. of Energy http://www1.eere.energy.gov/vehiclesandfuels/facts/2010_fotw613.html

Enter the duration in hours of each time period of the day. If delay data is not available for a time period, enter a duration of 0 hours and analyze less than all 24 hours of the day.

	Weekday		Weekend	
AM	1	AM		
PM	1	PM		
Midday		Midday		
Off-Peak1		Off-Peak1		This could be used for hours before the AM Peak or in the evening after the PM Peak
Off-Peak2		Off-Peak2		This could be used for overnight hours
Total	2	Total	0	

Total for weekday and weekend should equal 24 for analysis of all hours of the week, or should equal less than 24 for analysis of certain time periods only. Full day analysis for weekdays and weekends is recommended if sufficient data is available.

Enter the hourly volume (total entering vehicles) for each time period of the day. This is used to convert average delay per vehicle to total delay.
If analysis of certain time periods is not desired, leave cells for that time period blank

	Weekday		Weekend		
	Opening Year	Design Year	Opening Year	Design Year	
AM	3210	4659			
PM	3878	5541			
Midday					
Off-Peak1					
Off-Peak2					
ADT	**Requires 24**	**hour data**	**Requires 24**	**hour data**	ADT calculated from the hourly volumes above time period durations below. Provided for informational purposes and not used in subsequent calculations.

Orange cells in tables below can be left blank if consideration of time period is not desired.
For example, if it is desired to only analyze peak hours, delay entries for midday and off-peak may be left blank.

Weekday

Roundabout

	AM Delay	PM Delay	Midday Delay	Off-Peak1 Delay	Off-Peak2 Delay
	sec/veh	sec/veh	sec/veh	sec/veh	sec/veh
2020	13.3	15.5			
2040	88.1	106.6			

Traffic Signal

	AM Delay	PM Delay	Midday Delay	Off-Peak1 Delay	Off-Peak2 Delay
	sec/veh	sec/veh	sec/veh	sec/veh	sec/veh
2020	40	32.5			
2040	54.5	50.6			

Orange cells in tables below can be left blank if consideration of time period is not desired.
Leave all cells in weekend tables below blank if consideration of weekend delay is not desired.

Weekend

Roundabout

	AM Delay	PM Delay	Midday Delay	Off-Peak1 Delay	Off-Peak2 Delay
	sec/veh	sec/veh	sec/veh	sec/veh	sec/veh
2020					
2040					

Traffic Signal

	AM Delay	PM Delay	Midday Delay	Off-Peak1 Delay	Off-Peak2 Delay
	sec/veh	sec/veh	sec/veh	sec/veh	sec/veh
2020					
2040					

These cells calculate daily totals. No data entry here.

Roundabout

Weekday Total - Entire Day OR Sum of Hours Entered	Weekday Total
Vehicle Delay	Person Delay
(in sec)	(in sec)
102,802	163,455
1,001,129	1,591,794

Traffic Signal

Weekday Total - Entire Day OR Sum of Hours Entered	Weekday Total
Vehicle Delay	Person Delay
(in sec)	(in sec)
254,435	404,552
534,290	849,521

These cells calculate daily totals. No data entry here.

Roundabout

Weekend Total - Entire Day OR Sum of Hours Entered	Weekend Total
Vehicle Delay	Person Delay
(in sec)	(in sec)
0	0
0	0

Traffic Signal

Weekend Total - Entire Day OR Sum of Hours Entered	Weekend Total
Vehicle Delay	Person Delay
(in sec)	(in sec)
0	0
0	0

FDOT Level 2 Roundabout b/c Evaluation

Annual Costs	Roundabout		Traffic Signal	
Safety	**Predicted Annual Crashes**	**Safety Cost**	**Predicted Annual Crashes**	**Safety Cost**
Predicted Fatal/Injury Crashes	0.60	$ 219,370	1.53	$ 556,786
Predicted PDO Crashes	4.23	$ 32,131	2.86	$ 21,764
	Annual Costs of Predicted Crashes	**$ 251,501**	***Annual Costs of Predicted Crashes***	**$ 578,550**
Delay	**Annual Intersection Delay (person-hrs)**	**Delay Cost**	**Annual Intersection Delay (person-hrs)**	**Delay Cost**
Average Annual Person (in Vehicle) Delay	63384	**$ 734,111**	45286	**$ 552,912**
Operation and Maintenance	**Operation and Maintenance**	**O&M Cost**	**Operation and Maintenance**	**O&M Cost**
Annualized Cost of Signal Retiming		$ -	Signal Retiming Every 3 Years	$ 1,667
Annual Cost of Illumination	Intersection Illumination	$ 750	Intersection Illumination	$ 750
Annual Cost of Maintenance	Landscaping Costs	$ 2,000	Signal Maintenance Costs (power outage, detection, etc.)	$ 3,100
	Total Annual Operation and Maintenance Costs	**$ 2,750**	***Total Annual Operation and Maintenance Costs***	**$ 5,517**
Initial Capital Costs	**Total Capital Costs**	**Cost**	**Total Capital Costs**	**Cost**
Preliminary Engineering		$ 479,119		$ 574,571
Right-of-way and Utilities		$ 868,000		$ -
Construction		$ 3,992,657		$ 4,788,093

*Delay cost is based upon a 2 hour analysis period.

Total Discounted Life Cycle Costs (2020 - 2040)	Roundabout		Traffic Signal	
Safety	**Total Predicted Crashes**	**Safety Cost**	**Total Predicted Crashes**	**Safety Cost**
Predicted Fatal/Injury Crashes	12.07	$ 3,263,670	30.64	$ 8,283,573
Predicted PDO Crashes	84.55	$ 478,023	57.27	$ 323,789
	Total Costs of Predicted Crashes	**$ 3,741,693**	***Total Costs of Predicted Crashes***	**$ 8,607,362**
Delay	**Total Intersection Delay (person-hrs)**	**Delay Cost**	**Total Intersection Delay (person-hrs)**	**Delay Cost**
Total Person (in Vehicle) Delay	1331064	**$ 15,416,330**	951005	**$ 11,611,160**
Operation and Maintenance	**Operation and Maintenance**	**O&M Cost**	**Operation and Maintenance**	**O&M Cost**
Annualized Cost of Signal Retiming		$ -	Signal Retiming Every 3 Years	$ 24,796
Annual Cost of Illumination	Intersection Illumination	$ 11,158	Intersection Illumination	$ 11,158
Annual Cost of Maintenance	Landscaping Costs	$ 29,755	Signal Maintenance Costs (power outage, detection, etc.)	$ 46,120
	Total Annual Operation and Maintenance Costs	**$ 40,913**	***Total Annual Operation and Maintenance Costs***	**$ 82,074**
Initial Capital Costs	**Total Capital Costs**	**Cost**	**Total Capital Costs**	**Cost**
Preliminary Engineering		$ 479,119		$ 574,571
Right-of-way and Utilities		$ 868,000		$ -
Construction		$ 3,992,657		$ 4,788,093
	Total Initial Capital Costs	**$ 5,339,776**	***Total Initial Capital Costs***	**$ 5,362,664**
Total Life Cycle Costs (Opening Year $)	**Net Present Value**	**$ 24,538,712**	**Net Present Value**	**$ 25,663,260**

*Delay cost is based upon a 2 hour analysis period.

Roundabout

Traffic Signal

Life Cycle Benefit/Cost Ratio	
Safety Benefit of a Roundabout	$ 4,865,669
Delay Reduction Benefit of a Roundabout	$ (3,805,169)
Total Benefits	**$ 1,060,499**
Added Operations&Maintenance Costs of a Roundabout	$ (41,161)
Added Capital Costs of a Roundabout	$ (22,888)
Total Costs	**$ (64,049)**
Life Cycle Benefit/Cost Ratio	**N/A**

Roundabout Compared to Traffic Signal

Roundabout Preferred

Cost of Roundabout is less than cost of Traffic Signal, and bout is less than cost of Traffic Signal, and Roundabout offers benefits compared to Traffic Signal.

FLORIDA DEPARTMENT OF TRANSPORTATION

STEP 2 - b/c EVALUATION

Prepared by:	*Douglas Reed, PE; Atkins*	**Date Prepared:**	***3/28/2017***
Financial Project ID:	*416564-23-52-01*	**Project Name:**	***US 301 PD&E***
FAP No.:		**State Road:**	***US 301***
County:	*Pasco*	**Intersecting Rd:**	***Chancey Road***

ANNUAL COSTS		
	Roundabout	Traffic Signal
Safety Cost (Crashes)	$ 251,501	$ 578,550
Delay Cost	$ 734,111	$ 552,912
O & M Cost	$ 2,750	$ 5,517

Initial Capital Cost		
Preliminary Engineering	$ 479,119	$ 574,571
Right-of-way and Utilities	$ 868,000	$ -
Construction	$ 3,992,657	$ 4,788,093

TOTAL DISCOUNTED LIFE CYCLE COSTS (OPENING YEAR)		
	Roundabout	Traffic Signal
Safety Cost (Crashes)	$ 3,741,693	$ 8,607,362
Delay Cost	$ 15,416,330	$ 11,611,160
O & M Cost	$ 40,913	$ 82,074
Initial Capital Cost	$ 5,339,776	$ 5,362,664
Total Life Cycle Costs	$ 24,538,712	$ 25,663,260

LIFECYCLE BENEFIT/COST RATIO	
Safety Benefit of a Roundabout	$ 4,865,669
Delay Reduction Benefit of a Roundabout	$ (3,805,169)
Total Benefit	$ 1,060,499
Added O & M Costs of a Rondabout	$ (41,161)
Added Capital Costs of a Roundabout	$ (22,888)
Total Cost	$ (64,049)
Life Cycle Benefit/Cost Ratio	**N/A**

Advance to Level 3 Geometric and Operational Analysis: ☐ YES ☐ NO

Approved by: ☐ DDE or ☐ DTOE

Signature:_____ Date:_____

Appendix G: CRASH MODIFICATION FACTOR EMAIL

Reed, Doug J

From: Ratnayake, Liyanage <Liyanage.Ratnayake@dot.state.fl.us>
Sent: Thursday, November 10, 2016 3:56 PM
To: Reed, Doug J
Subject: FW: FPID# 416564-2: US 301 FROM SR 56 (PROPOSED) TO SR 39/PAUL BUCHMAN HWY - Step 2 Roundabout b/c evaluation (CMF)

Doug,
Please see below information. Also, please give me an update of the status of the study.
Thanks,
Indike

Liyanage "Indike" Ratnayake, PE
FDOT Dist. 7 Project Management (GEC)
Florida Department of Transportation
11201 N. McKinley Drive
☎: (813) 975-6057 | ✉: Liyanage.Ratnayake@dot.state.fl.us
www.dot.state.fl.us | Facebook | Twitter | YouTube

Schedule: Mon., Wed., Fri. 8:45 to 5:15 (Lunch 12:00 to 12:30)

From: Escalera, Lilliam
Sent: Wednesday, November 09, 2016 7:33 AM
To: Ratnayake, Liyanage
Subject: FW: FPID# 416564-2: US 301 FROM SR 56 (PROPOSED) TO SR 39/PAUL BUCHMAN HWY - Step 2 Roundabout b/c evaluation (CMF)

Indike,

Please see below for Matt Nance (Traffic Ops) response about the Crash Modification Factor(CMF= 0.81) to use for the Step 2 Roundabout b/c evaluation.

Your consultant needs to include this number in the CO Roundabout spreadsheet. This CMF will determine the benefit/cost (b/c) of adding a roundabout vs a signal traffic.

We still need to get from Elizabeth Wehle's consultant (HDR- Heather) the roundabout delay vs signal delay using SIDRA software so we can complete the STEP 2 analysis and present to DDE.

Please let me know if you have any questions.

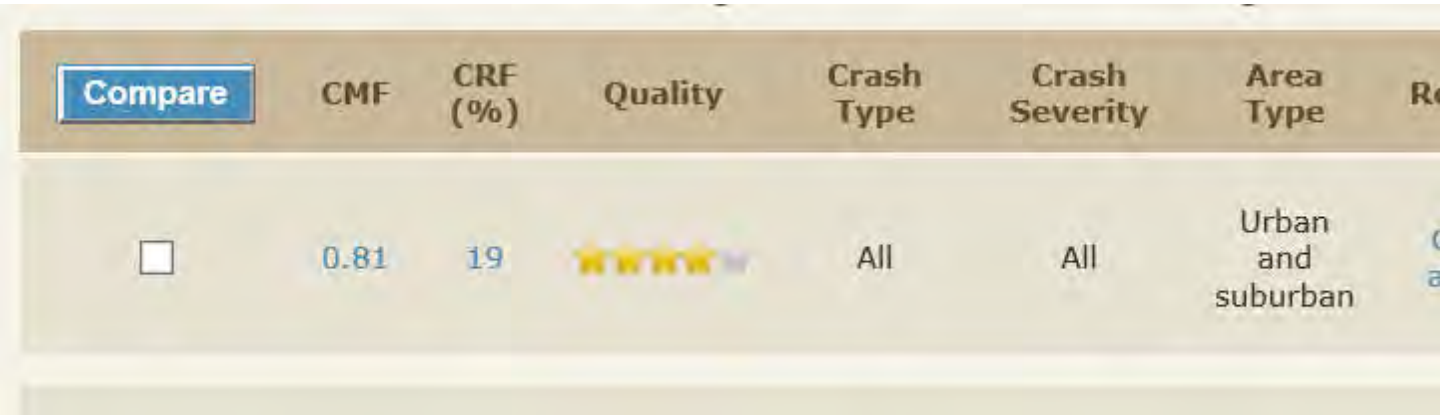
I:\PRODUCTION\416564-1 US 301

Thanks,

Lilliam E. Escalera
EMO Project Manager
FDOT District VII
Planning & Environmental Management Office (PLEMO)
11201 N. McKinley Dr., 7-800

Tampa, FL 33612
P: (813)975-6445
F: (813) 975-6451

From: Nance, Matthew
Sent: Tuesday, November 08, 2016 3:07 PM
To: Escalera, Lilliam
Subject: RE: FPID# 416564-2: US 301 FROM SR 56 (PROPOSED) TO SR 39/PAUL BUCHMAN HWY - Step 2 Roundabout b/c evaluation



Compare	CMF	CRF (%)	Quality	Crash Type	Crash Severity	Area Type	Re
☐	0.81	19	★★★★☆	All	All	Urban and suburban	

Matthew Nance
Traffic Safety Specialist/
Senior Engineer Trainee
District 7 Traffic Safety Office
Florida Department of Transportation
☎ (813) 975-6747
Matthew.Nance@dot.state.fl.us

From: Escalera, Lilliam
Sent: Tuesday, November 8, 2016 2:44 PM
To: Nance, Matthew
Subject: FW: FPID# 416564-2: US 301 FROM SR 56 (PROPOSED) TO SR 39/PAUL BUCHMAN HWY - Step 2 Roundabout b/c evaluation

Lilliam E. Escalera
EMO Project Manager
FDOT District VII
Planning & Environmental Management Office (PLEMO)
11201 N. McKinley Dr., 7-800
Tampa, FL 33612
P: (813)975-6445
F: (813) 975-6451

From: Escalera, Lilliam
Sent: Friday, October 28, 2016 3:38 PM
To: Nance, Matthew
Cc: Riha, William S; Ratnayake, Liyanage
Subject: FPID# 416564-2: US 301 FROM SR 56 (PROPOSED) TO SR 39/PAUL BUCHMAN HWY - Step 2 Roundabout b/c evaluation

Matt,

We are working with a STEP 2 Roundabout analysis (passed STEP 1) for an intersection along the above mentioned project so we need to obtain a Crash Modification Factor (CMF) to include in the b/c benefit cost analysis for this intersection. Can you please help us determine the most appropriate CMF and Crash reduction factor (CRF %) at this intersection?

Liyanage Ratnayake (Indike) is the PM for the Design project and I am the PM for the PD&E (almost completed) so please feel free to email any of us if you have any question or need anything else.

I:\PRODUCTION\416564-1 US 301

http://www.cmfclearinghouse.org/

Thank you so much for all your help!

Lilliam E. Escalera
EMO Project Manager
FDOT District VII
Planning & Environmental Management Office (PLEMO)
11201 N. McKinley Dr., 7-800
Tampa, FL 33612
P: (813)975-6445
F: (813) 975-6451

Appendix H: INTERSECTION AND ROUNDABOUT DELAY DATA

STEP 2
Revised
Jan 2017

Delay + DHV Entries
CMF

FIGURE 3-2
OPENING YEAR (2020) DDHVs

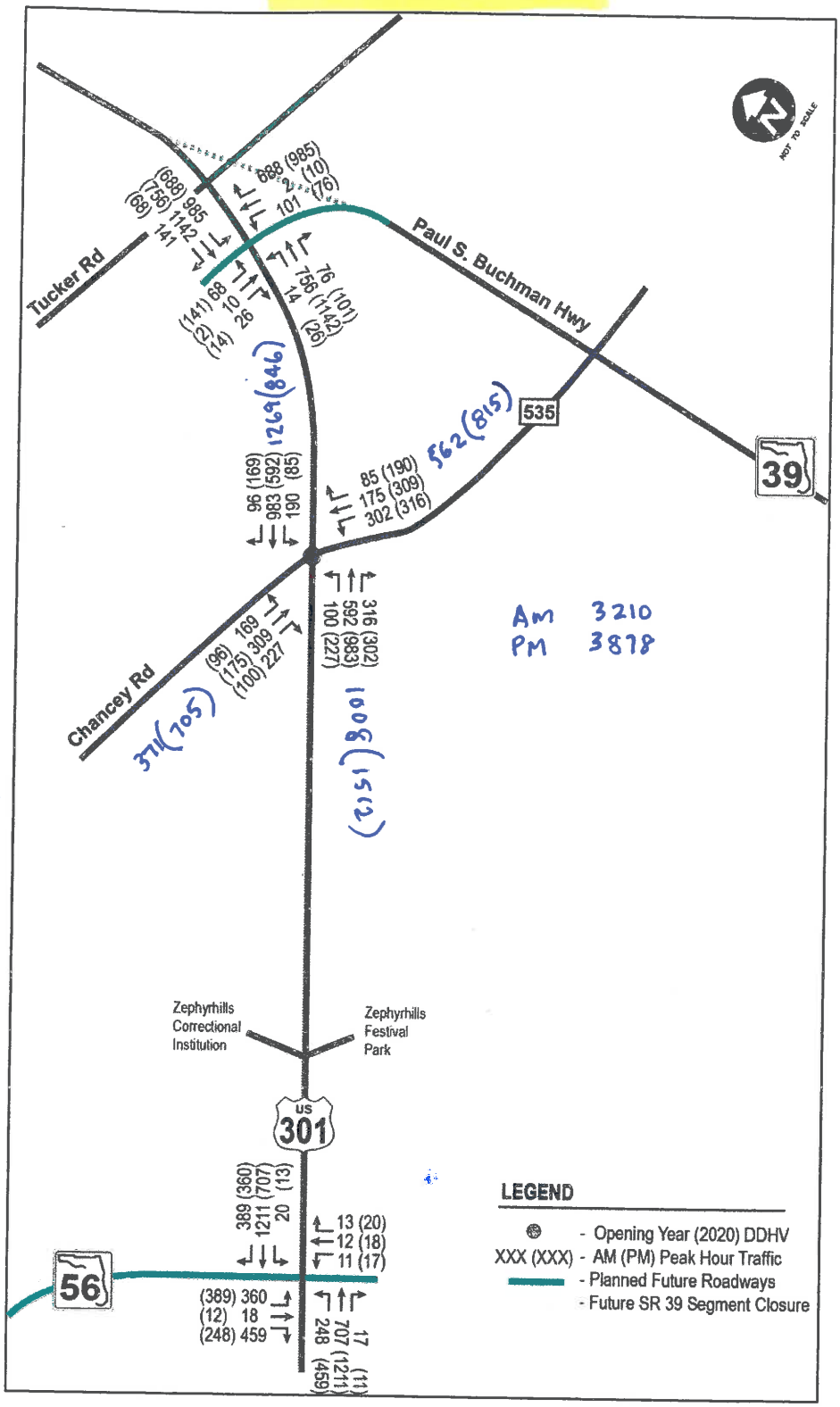
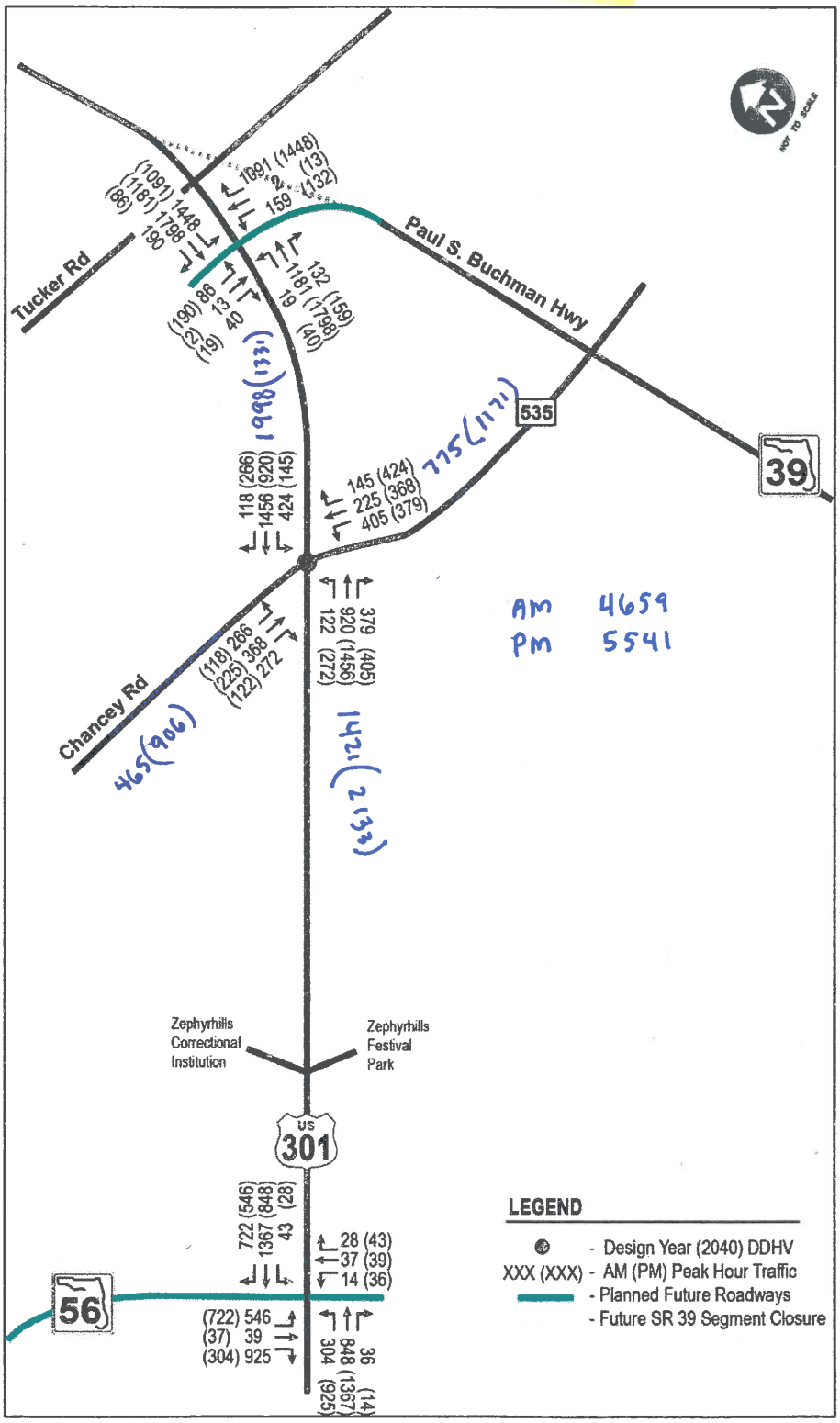


FIGURE 3-4
DESIGN YEAR (2040) DDHVs



Memo

Date: December 20, 2016

Project: FPID: 436382-1-32-01; District-Wide Traffic Operational Studies for Innovative Intersection and Interchange Treatments

To: Lilliam Escalera, FDOT D7 EMO Project Manager
Indike Ratnayake, FDOT D7 HDR GEC Project Manager

Cc: Jill Wehle, FDOT D7 Arterial Systems Manager

From: Bryan St. George, EI, HDR Transportation and Traffic Engineer
Heather Hubbard, PE, HDR Transportation and Traffic Engineer

Subject: FDOT Roundabout SIDRA Analysis for the US 301/Chancey Road Intersection

1.0 Introduction/Purpose of Memorandum

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study along US 301 (Gall Road) from SR 56 (Proposed) to SR 39 (Buchman Highway) under Work Program Item (WPI) Segment Number 416564-1. The Florida Intersection Design Guide (FIDG), 2015 and FDOT Plans Preparation Manual (PPM), Volume 1, Section 2.13.1 requires a three-step roundabout screening process, including a pre-screening evaluation, on new construction, reconstruction, PD&E Studies, and safety improvement projects, as well as any time there are proposed changes in intersection control that will require new signalization or replacement of existing signals. In accordance with these requirements, FDOT is screening the US 301/Chancey Road intersection for roundabout feasibility. Step 1 of the roundabout screening process was conducted by others. This memo documents the SIDRA roundabout analyses of the US 301/Chancey Road intersection to be used in the Step 2 roundabout screening spreadsheet.

2.0 Twenty-Year Design Traffic Criteria

The FIDG 2015 states that if the twenty-year design Annual Average Daily Traffic (AADT) total entering volume is less than 25,000 for a one-lane roundabout or less than 45,000 for a two-lane roundabout, then the location of interest should be advanced to the roundabout pre-screening evaluation. Otherwise, a roundabout is not to be considered at the location of interest.

The existing year (2013) and design year (2040) AADT volumes from the US 301 PD&E Study (WPI 416564-1) Design Traffic Technical Memorandum (DDTM), revised in July 2015 were used to verify the twenty-year design traffic criteria. **Table 2.1** shows the total entering AADT volumes for the existing year (2013) and design year (2040). According to the total entering 2040 AADT volumes, a two-lane roundabout is expected to be over capacity and this location should not be further considered for a roundabout. However, SIDRA analyses were conducted to verify the AM and PM peak-hour operations and confirm that the roundabout operates over capacity for a variety of layout scenarios.

Table 2.1 – US 301/Chancey Road AADT Volumes

Year/Source	West Leg	East Leg	South Leg	North Leg	Total Entering AADT Volume[1]
2013 AADT from DTTM Revised 07-2015	8900	6900	12500	9700	19000
2040 AADT from DTTM Revised 07-2015	12000	18000	37500	37000	52300

[1]Calculated as the sum of half of each leg's AADT volume.

3.0 SIDRA Analysis Results

SIDRA 6.1 was used to analyze various roundabout layouts including two lanes on all approaches with no right-turn bypass lanes and two-lanes on all approaches with single right-turn bypass lanes on all approaches, which is the maximum realistic number of lanes for a fully expanded roundabout. Washington State Department of Transportation (WSDOT) SIDRA guidelines and parameters were used in the analyses along with volumes and truck percentages from the US 301 PD&E Study (WPI 416564-1) DDTM.

Table 3.1 shows the SIDRA overall intersection delay results for the scenario with two lanes on all approaches with no right-turn bypass lanes because it shows the best operations in the design year (2040). This may be attributed to the yield condition for the right-turn bypass lanes "locking up" and spilling back onto the approaches. The delay results in **Table 3.1** can be used in the Step 2 roundabout screening spreadsheet and the layout can be used for an estimate on construction and R/W and best case operations for the Benefit-to-Cost (BC) analysis compared to a signal at this location. SIDRA was also used for a signal analysis at the US 301/Chancey Road intersection. However, it is recommended that the Synchro results from the DTTM be used for consistency with the results of the DTTM and because Synchro is a more credible and widely accepted method of conducting signal analysis and allows more user control over phasing, signal timing optimization, and signal settings.

Table 3.1 – US 301/Chancey Road SIDRA Overall Intersection Delay Results (s/veh) for Two-Lanes on All Approaches with No Right-Turn Bypass Lanes

Year	AM	PM
2020	13.3	15.5
2040	88.1	106.6

4.0 Summary and Conclusions

The SIDRA analysis shows that a roundabout layout at the US 301/Chancey Road intersection does not operate at acceptable levels. Several approaches have a v/c ratio much greater than 1.00 in either the AM or PM peak periods, indicating that it is expected to be over capacity with excessive queuing and delay. Therefore, a roundabout is not recommended at this location.

FIGURE 4-3
OPENING YEAR (2020) BUILD ALTERNATIVE GEOMETRY AND LOS

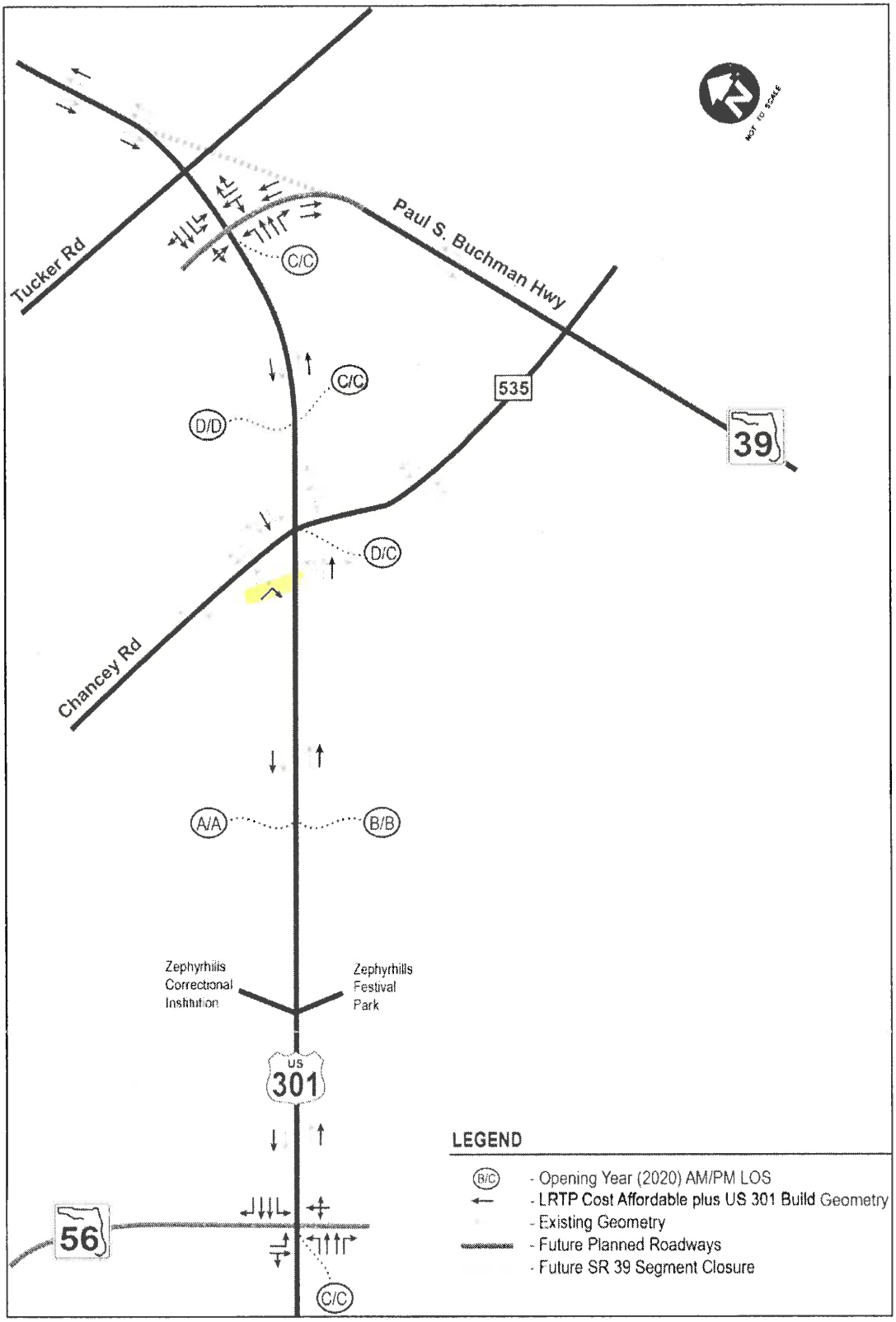


TABLE 4-3
OPENING YEAR (2020) BUILD ALTERNATIVE INTERSECTION LOS

Intersection	Control Type	Lane Group/ Approach	2020 AM/PM Existing Plus LRTP Cost Affordable Improvements[1]		2020 AM/PM With Additional Improvements		
			Average Delay	LOS	Proposed Improvement	Average Delay	LOS
US 301 (Gall Boulevard) and SR 39	Signal	Eastbound	44.6/59.7	D/E	-	-	-
		Westbound	19.3/30.8	B/C	-	-	-
		Northbound	29.2/28.3	C/C	-	-	-
		Southbound	20.8/26.9	C/C	-	-	-
		Overall	***22.9/29.7***	***C/C***	-	-	-
US 301 (Gall Boulevard) and Chancey Road	Signal	Eastbound	71.7/55.6	E/E	• Exclusive Eastbound Right-Turn Lane	40.2/33.9	D/C
		Westbound	70.3/41.7	E/D		75.1/39.4	E/D
		Northbound	37.8/32.3	D/C		26.8/28.8	C/C
		Southbound	66.6/35.0	E/C		34.8/31.9	C/C
		Overall	***60.0/37.5***	***E/D***		***40.0/32.5***	***D/C***
US 301 (Gall Boulevard) and SR 56	Signal	Eastbound	48.3/63.2	C/E	-	-	-
		Westbound	33.7/28.4	C/C	-	-	-
		Northbound	24.8/23.0	C/C	-	-	-
		Southbound	25.1/23.4	C/C	-	-	-
		Overall	***30.7/30.7***	***C/C***	-	-	-

Notes: [1] Includes the four-lane widening of US 301 (Gall Boulevard).

FIGURE 4-5
DESIGN YEAR (2040) BUILD ALTERNATIVE GEOMETRY AND LOS

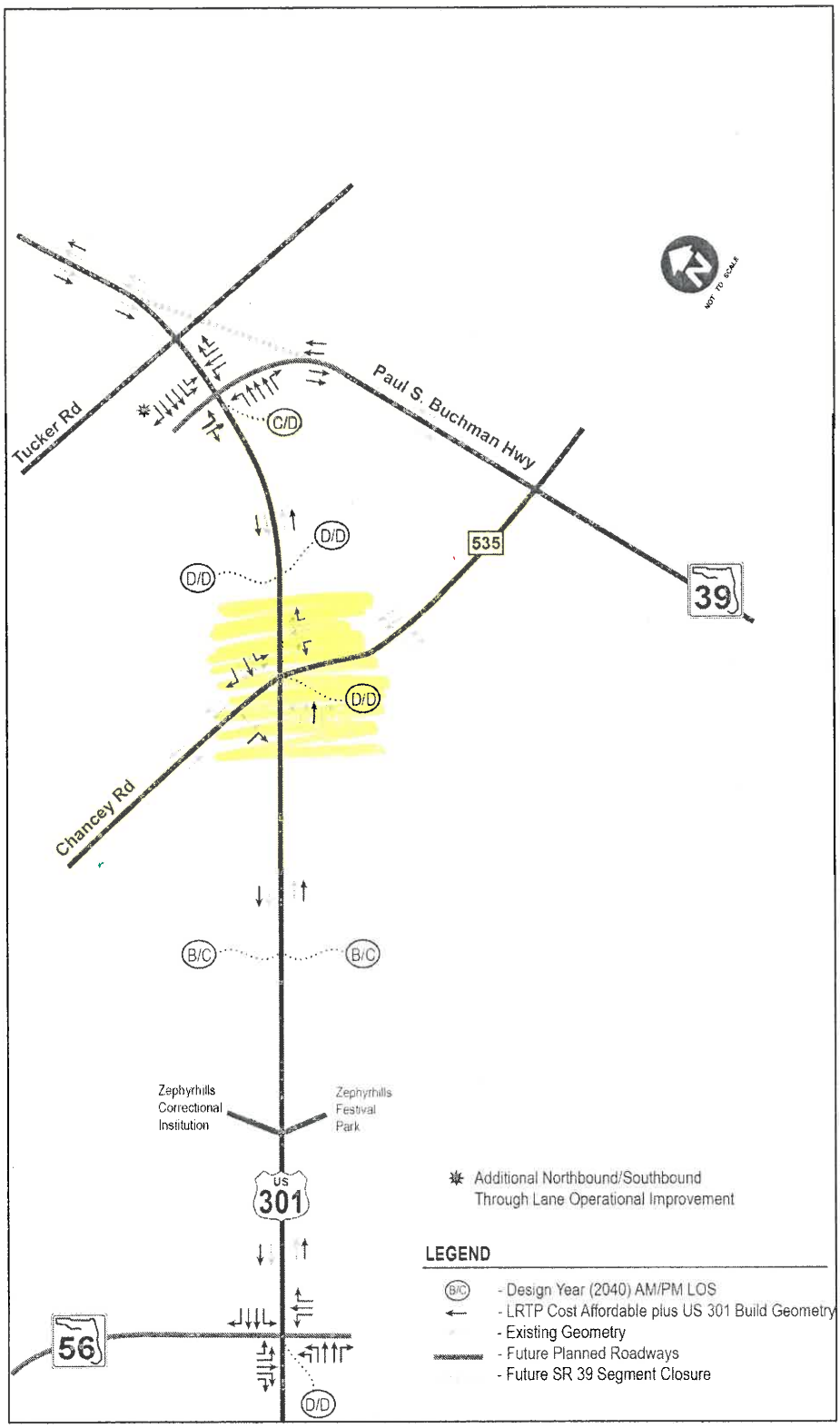


TABLE 4-5
DESIGN YEAR (2040) BUILD ALTERNATIVE INTERSECTION LOS

Intersection	Control Type	Lane Group/Approach	2040 AM/PM Existing plus LRTP Cost Affordable Improvements[1] Average Delay	LOS	2040 AM/PM With Additional Improvements[2] Proposed Improvement	Average Delay	LOS
US 301 (Gall Boulevard) and SR 39	Signal	EB Approach	152.9/179.3	F/F	• Exclusive Eastbound Left-Turn Lane • Exclusive Westbound Left-Turn Lane • Exclusive Southbound Right-Turn Lane • *Operational Improvement*: Additional Northbound and Southbound Through Lane	43.1/58.4	D/E
		WB Approach	38.6/117.7	D/F		25.8/61.7	C/E
		NB Approach	47.8/116.0	D/F		40.0/47.5	D/D
		SB Approach	53.7/96.2	D/F		26.5/54.9	C/D
		Overall	***51.6/111.0***	***D/F***		***29.7/54.4***	***C/D***
US 301 (Gall Boulevard) and Chancey Road	Signal	EB Approach	158.1/113.7	F/F	• Exclusive Eastbound Right-Turn Lane • Exclusive Southbound Right-Turn Lane • Additional Southbound Left-Turn Lane (Dual) • Additional Westbound Left (Dual) and Right-Turn Lane (Dual)	61.3/61.8	E/E
		WB Approach	122.6/85.6	F/F		79.4/65.2	E/E
		NB Approach	86.4/69.9	F/E		40.6/50.5	D/D
		SB Approach	173.3/51.3	F/D		51.6/34.1	D/C
		Overall	***138.7/72.7***	***F/E***		***54.5/50.6***	***D/D***
US 301 (Gall Boulevard) and SR 56	Signal	EB Approach	138.1/206.9	F/F	• Additional Eastbound Left-Turn Lane (Dual) • Additional Eastbound Right-Turn Lane (Dual) • Additional Northbound Left-Turn Lane (Dual) • Exclusive Westbound Left and Right-Turn Lanes	51.9/63.2	D/E
		WB Approach	157.7/97.9	F/F		35.9/45.3	D/D
		NB Approach	70.9/144.6	E/F		40.3/50.5	D/D
		SB Approach	80.0/120.1	F/F		33.5/48.0	C/D
		Overall	***96.9/149.9***	***F/F***		***40.8/52.4***	***D/D***

Note: [1] Includes the four-lane widening of US 301 (Gall Boulevard).
[2] Cumulative improvements analysis [includes additional improvements cited for the Opening Year (2020) and Interim Year (2030)].