PRELIMINARY ENGINEERING REPORT
Florida Department of Transportation

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This preliminary engineering report contains detailed engineering information that fulfills the purpose and need for State Road 400 (SR 400)/Interstate 4 (I-4), from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road), PD&E study.
Notes to Reviewer:

The typical section package for the entire SR 400 (I-4) Beyond the Ultimate corridor has been submitted under separate cover.
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1.0 Summary of Project

The Florida Department of Transportation (FDOT) is conducting an update/reevaluation of the Project Development and Environment (PD&E) studies for the extension of proposed express lanes for State Road 400 (SR 400)/Interstate 4 (I-4). The project limits in the original PD&E studies were:

- West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line, (29.5 miles)
- CR 532 (Polk/Osceola County Line) to West of SR 528 Beachline Expressway (13.7 miles), and
- West of SR 528 Beachline Expressway to SR 472 (43 miles).

The corresponding environmental documents associated with these PD&E studies include: Environmental Assessment/Finding of No Significant Impact (EA/FONSI) for SR 400 (I-4) from West of Memorial Boulevard (SR 546) to the Polk/Osceola County Line [Financial Project Number (FPN) 201210 (December 1998)] and from CR 532 (Polk/Osceola County Line) to West of SR 528 (Beachline Expressway) [FPN 242526 and 242483 (December 1999)] and Final Environmental Impact Statement (FEIS) for I-4 from SR 528 (Beachline Expressway) to SR 472 [FPN 242486, 242592 and 242703 (August 2002, Record of Decision Pending)].

The project limits of the current SR 400 (I-4) PD&E reevaluation, herein referred to as I-4 Beyond the Ultimate (BtU) PD&E Reevaluation Study, include a total of approximately 43 miles of roadway sections east and west of the 21-mile, I-4 Ultimate project. The I-4 Ultimate project, which began construction in early 2015, is reconstruction to include new express lanes, of the section of I-4 that extends from west of SR 435 (Kirkman Road) to east of SR 434. For analysis purposes, the current I-4 BtU PD&E study has been divided into the following five segments:

- Segment 1: SR 400 (I-4) from West of CR 532 (Polk/Osceola County Line) to West of SR 528 (Beachline Expressway) - Osceola County (92130) and Orange County (75280)
- Segment 2: SR 400 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) - Orange County (75280)
- Segment 3: SR 400 (I-4) from 1 Mile East of SR 434 to East of SR 15-600/US 17-92 (Seminole/Volusia County Line) - Seminole County (77160)
- Segment 4: SR 400 (I-4) from East of SR 15-600/US 17-92 (Seminole/Volusia County Line) to 1/2 Mile East of SR 472 - Volusia County (79110)
- Segment 5: SR 400 (I-4) from West of SR 25/US 27 to West of CR 532 (Polk/Osceola County Line) Polk County (16320)

Since no Record of Decision has been issued by the Federal Highway Administration (FHWA) for Segments 2, 3 and 4, the current PD&E BtU study for these three segments will update the original PD&E study. This preliminary engineering report was prepared for Segment 2 of the SR 400 (I-4) BtU PD&E Reevaluation Study and contains detailed engineering information that fulfills the
The purpose of this preliminary engineering report is to document design changes in support of the PD&E update for the I-4 BuU Segment 2 portion of the FEIS for I-4 from SR 528 (Beachline Expressway) to SR 472 (FPN 242486-1, 242592-1 and 242703-1, August 2002, Record of Decision pending). This update includes environmental and engineering analysis of the original design concept, which showed six general use lanes (GULs) and two high occupancy vehicles (HOV) lanes (6+2), to the current proposed design, which includes six GULs and four express lanes (EL) operating under a variable price toll plan (6+4). Other changes being reanalyzed include stormwater management, access plan and interchange configurations.

1.1 Commitments

To minimize impacts of this project on the environment, FDOT is committed to the following mitigation measures for impacts resulting from the Recommended Alternative:


2. **Cultural Resources** - FDOT commits to documenting any structures that reach historic age prior to project completion as part of a supplemental CRAS.

3. **Wildlife and Habitat** - The utilization of the following specific wildlife and habitat commitments and mitigation measures for unavoidable impacts are recommended to minimize the overall impacts to wildlife from this project:
   a. As required by FDOT Standard Specifications, the construction equipment staging areas for storage of oils, greases, fuel, road bed material and equipment maintenance will be sited in previously disturbed areas not adjacent to any streams, wetlands, or surface water bodies. The staging areas will be surveyed for listed species prior to their use. Also as required by FDOT Standard Specifications, if protected species are identified unexpectedly within the construction area during construction, coordination will be initiated with the appropriate resource agencies to avoid or mitigate impacts.

c. During permitting, all potential gopher tortoise habitat that could be impacted by the project will be systematically surveyed according to the current guidelines published by the Florida Fish and Wildlife Conservation Commission (FFWCC). If gopher tortoise burrows are found, all practicable design measures will be employed to avoid impacts to the burrows. For burrows which cannot be avoided, a permit will be obtained from FFWCC for relocation of gopher tortoises and commensals, and relocation will be performed at a time as close as practicable to the start of construction activities at the site of the burrows.

d. During permitting, FDOT will coordinate with the permitting agencies to quantify and provide compensation for any unavoidable impacts to wood stork suitable foraging habitat (SFH). Mitigation for these impacts will be provided within the service area of a USFWS-approved wetland mitigation bank that provides an amount of habitat and foraging function equivalent to that of the impacted SFH in accordance with the Corps of Engineers and U.S. Fish and Wildlife Service Effect Determination Key for the Wood Stork in Central and North Peninsular Florida.

e. During permitting, FDOT will re-survey for listed species to ensure no changes have occurred since the completion of the PD&E Study.

4. **Wetlands** – The following commitments are proposed to ensure that the project does not result in adverse impacts to wetland communities and the functions they provide:

a. During the permitting process, FDOT will coordinate with federal and state agency personnel to ensure minimization and reduction of adverse wetland impacts have been explored to the fullest extent of the project while meeting engineering standards and practice.

b. Wetland impacts (direct and secondary) that will result from the construction of this project will be mitigated pursuant to requirements of Part IV. Chapter 373, F.S. and 33 U.S.C.s.1344, as appropriate. Where feasible, the FDOT is committed to minimize direct, secondary, and temporary impacts.

c. During the development of the final design, a Quality Enhancement Strategies (QES) plan addressing the avoidance and minimization for losses of waters of the United States and alternative design changes to minimize wetland impacts (without jeopardizing safety) will be committed by others.
5. **Contamination** - Project commitments to address potential contamination sites include:
   a. FDOT commits to conducting Level II Contamination Screenings on all Medium and High Risk Rated sites before establishing a final determination. This will include investigating previous PD&E Studies and Design Projects covering the project area and its surroundings.
   b. All bridges and other structures which will require possible demolition or retrofit should be tested for asbestos containing materials, lead-based paint or any other hazardous materials prior to construction.
   c. Should any parcels containing medical facilities, doctor offices, hospitals, or drug stores be acquired, they should be tested for asbestos, lead-based paint, x-ray equipment, lead-lined walls, chemicals and pharmaceuticals prior to demolition.

6. **Noise** - FDOT is committed to the construction of feasible and reasonable noise abatement measures at Sea Isle and McKinley at Monterey Lakes, as shown on the Noise Maps contingent upon the following conditions:
   - Cost analysis indicates that the cost of the noise barriers will not exceed the cost-reasonable criterion.
   - Community input supporting types, heights and locations of noise barriers is provided to the District Office.
   - Safety and engineering aspects as related to the roadway user and the adjacent property owner have been reviewed and any conflicts or issues resolved.

7. **Section 4(f)** - FDOT commits to avoidance of any Section 4(f) resources along the I-4 BtU corridor. The staging of construction equipment, materials, or vehicles will be prohibited within these areas during the project.

8. **Trails, Sidewalks, and Bicycle Lanes** – FDOT commits that during the construction of the project, connectivity to trails, sidewalks, and bicycle lanes will be maintained.

1.2 **Recommendations**

The FDOT recommends improvements to widen the 3.9-mile segment of I-4 from west of SR 528 (Beachline Expressway) to west of SR 435 (Kirkman Road) in Orange County. This recommendation was developed based on engineering and environmental analysis conducted as part of the PD&E Update/Re-evaluation studies, community input and coordination with local governments and other agencies.

The recommended improvements, as shown in the Concept Plans in Appendix A and described in detail in Chapter 6 of this report, provide for six general purpose lanes and four express lanes...
throughout the project limits, interchange modifications, grade-separated ramps, ramp-to-ramp auxiliary lanes, intersection modifications and/or other improvements. As a result of the Public Hearing, environmental and engineering analyses and interagency coordination, the Recommended Alternative is recommended for Location Design Concept Acceptance by the FHWA.

**Typical Section**
The recommended mainline typical section for I-4 Segment 2 will have a total of ten dedicated lanes (6 general use lanes + 4 express lanes) and a design speed of 70 miles per hour (mph) within a minimum 300-foot right-of-way. A future rail corridor has been preserved in the median of I-4 from the begin project limits north to SR 528, where the rail corridor alignment turns east to continue along the north side of SR 528. Auxiliary lanes or slip ramp connections will be provided to enter or exit the express lanes along both the I-4 and SR 528 corridors.

**Interchanges**
The recommended alternative for I-4 Segment 2 provides grade separations and/or interchanges at two locations:
- SR 528 (Systems Interchange),
- SR 482 (Diverging Diamond Interchange)

**Bridges**
A total of thirteen bridge structures are required for the I-4 Segment 2 recommended alternative. Eleven new bridges are proposed to be constructed along the corridor and two existing bridges will remain. The majority are multiple span structures while three bridges are single span structures. Four existing bridges will be demolished and replaced to support the proposed improvements.

**Drainage**
Stormwater management the recommended alternative for I-4 Segment 2 will involve collection of runoff by storm sewer systems or roadside ditches and routing to existing or proposed stormwater ponds. There is a total of ten basins within the project limits which will require 21 existing or proposed ponds to achieve water quality treatment and attenuation of project runoff.

### 1.3 Description of Proposed Action

FDOT is proposing to reconstruct and widen I-4 as part of the I-4 BtU concept. This involves the build-out of I-4 to its ultimate condition through Central Florida, including segments in Polk, Osceola, Orange, Seminole and Volusia Counties. The concept design proposes the addition of two new express lanes in each direction, resulting in a total of ten dedicated lanes. The project limits for the segment analyzed in this report are within a 3.9-mile segment of I-4 which extends from west of SR 528 (MP 5.650) to west of SR 435 (Kirkman Road) [MP 9.528] in Orange County (herein referred to as I-4 Segment 2), as shown in **Figure 1.1**. Although, the interstate is a designated east-west corridor, the alignment follows a north-south orientation through the majority of Segment 2.
Figure 1.1 - Project Location Map
The study area in this section from west of SR 528 to west of SR 435 (Kirkman Road) includes the interchanges at SR 528, Sand Lake Road and Universal Boulevard.

Two mainline typical sections are proposed for I-4 Segment 2. The typical section from the begin project limits east of Central Florida Parkway to SR 528 includes a 44-foot rail envelope in the median within a minimum 300-foot right-of-way (6+4 with rail envelope). The typical section from SR 528 to west of SR 435 does not include the rail corridor and also has a proposed minimum 300-foot right-of-way (6+4 without rail envelope). Both typical sections have a design speed of 70 miles per hour (mph) and will include three 12-foot general use lanes with a 10-foot inside shoulder and a 12-foot outside shoulder (10-foot paved) and two 12-foot express lanes with a 4-foot inside shoulder and a 10-foot outside shoulder, in each direction. A barrier wall between adjacent shoulders will separate the express lanes from the general use lanes. Additionally, up to three auxiliary lanes in either direction of travel will be provided in some areas. Figure 1.2 and Figure 1.3 illustrate the proposed mainline typical sections for I-4 Segment 2.

While the overall typical section remains consistent throughout Segment 2, there are some areas along the I-4 BtU corridor that will have special sections. Special cross sections were developed to meet the needs of the project due to right-of-way constraints, existing utility easements or other design considerations along the corridor. These special sections may include C-D roads, braided ramp systems, elevated express lanes or elevated general use lanes. Additionally, the median width may vary in certain locations to accommodate changes in the horizontal alignment due to crossroad support structures or other design features. The special sections within the Segment 2 corridor include a C-D system between Central Florida Parkway and SR 528; the eastbound C-D Road is at grade and the westbound C-D Road is elevated. The eastbound C-D Road extends approximately 1.9 miles between SR 528 in Segment 2 and the Daryl Carter Parkway interchange located within Segment 1 of the I-4 BtU corridor. The westbound C-D Road extends approximately 5.9 miles between SR 528 in Segment 2 and the Osceola Parkway interchange located within Segment 1 of the I-4 BtU corridor.

1.4 Purpose and Need

The proposed improvements to I-4 include widening the existing six-lane divided urban interstate to a ten-lane divided highway in order to improve traffic operations, enhance connectivity and improve mobility by providing travel choices to the motoring public. I-4 is an east-west limited access freeway which links the west and east coasts of Florida, from I-275 in Tampa to I-95 in Daytona Beach. I-4 spans across six counties in Central Florida, traversing many cities including Lakeland, Orlando, Altamonte Springs, Sanford and DeLand. I-4 is a critical component of Florida’s Strategic Intermodal System (SIS) which links seaports, rail, airports and other intermodal facilities. This aspect of I-4’s significance is evidenced through connectivity provided by major junctions with
Figure 1.2 - Proposed Typical Section (6 GUL + 4 EL with rail envelope) – E. of Central Florida Pkwy. to SR 528

Figure 1.3 - Proposed Typical Section (6 GUL + 4 EL without rail envelope) – SR 528 to W. of SR 435
I-275 and I-75 in the Tampa Bay area, SR 429 (Daniel Webster Western Beltway), SR 417 (Southern Connector/Central Florida Greeneway/Seminole Expressway), SR 528 (Martin Andersen Beachline Expressway), SR 91 (Florida’s Turnpike), SR 408 (Spessard Lindsay Holland East-West Expressway) in Central Florida and I-95 on the east coast.

I-4 serves as the primary corridor in the movement of people and freight between major population, employment and activity centers in the Central Florida region. When the entire Interstate was fully opened in the early 1960’s, it was designed to serve intrastate and interstate travel by providing a critical link between the east and west coasts of Central Florida. Although this role continues to be a crucial transportation function of I-4, the highway also serves large volumes of local and commuter traffic with shorter trip distances. Today, the highway serves as the primary link between hotel/resort complexes and tourist attractions such as Walt Disney World, Universal Studios, Sea World, the International Drive Resort Area and downtown Orlando. Since I-4 is the only north-south limited access facility that is centrally located between the predominant employment centers and the major suburbs to the north, it has become the primary commuting corridor in the Central Florida metropolitan area.

Growth in Central Florida over the past decades has made it difficult for the transportation system to accommodate travel demand. Additionally, traffic congestion and crash incidents have resulted in major delays on the Interstate as well as other arterials surrounding the corridor. Increased congestion levels are experienced outside of the typical morning and afternoon rush-hour periods, affecting mobility levels for more hours of the day and impacting other non-commuter/nonweekday travel. The congestion on I-4 is further evidenced by the less than desirable levels of service on the Interstate as well as the crossroads.

Projections of future population and employment in the region indicate that travel demand will continue to increase well into the future. Table 1.1 and Table 1.2, respectively, provide a summary of the population and employment growth projections for counties surrounding the I-4 corridor. The ability to accommodate the new travel patterns resulting from growth must be provided to sustain the region's economy. Without the improvements, extremely congested conditions are expected to occur for extended periods of time in both the morning and evening peak periods. Due to these congested conditions, user travel times will continue to increase, the movement of goods through the urban area will be slower, and the deliveries of goods within the urban area will be forced to other times throughout the day.

The need for improvements to I-4 is illustrated by the important transportation roles I-4 serves to the Central Florida region and the State of Florida. If no improvements are made to the Interstate, a loss in mobility for the area's residents, visitors, and commuters can be expected, resulting in a severe threat to the continued viability of the economy and the quality of life.
This PD&E update involves revising the original design concept showing 6 GULs + 2 HOV lanes, as recommended in the FEIS for I-4 from SR 528 to SR 472 (FPN No. 242486, 242592 & 242703, August 2002, Record of Decision Pending), to the current proposed design of 6 GUL + 4 EL. The express lanes are tolled lanes and will extend the full length of the project. The access to/from the tolled lanes will be evaluated as part of this effort to determine if changes are needed from the previously approved concept for access to/from the HOV Lanes.

Table 1.1 – Population Projections for Counties in the I-4 Corridor

<table>
<thead>
<tr>
<th></th>
<th>April 1, 2013</th>
<th>2020</th>
<th>2030</th>
<th>2040</th>
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<tbody>
<tr>
<td>Flagler</td>
<td>97,843</td>
<td>124,863</td>
<td>160,705</td>
<td>191,861</td>
</tr>
<tr>
<td>Hillsborough</td>
<td>1,276,410</td>
<td>1,445,344</td>
<td>1,666,187</td>
<td>1,845,013</td>
</tr>
<tr>
<td>Lake</td>
<td>303,317</td>
<td>355,935</td>
<td>425,221</td>
<td>479,928</td>
</tr>
<tr>
<td>Orange</td>
<td>1,202,978</td>
<td>1,394,814</td>
<td>1,641,173</td>
<td>1,840,695</td>
</tr>
<tr>
<td>Osceola</td>
<td>288,361</td>
<td>360,478</td>
<td>452,651</td>
<td>532,472</td>
</tr>
<tr>
<td>Polk</td>
<td>613,950</td>
<td>691,355</td>
<td>794,061</td>
<td>883,393</td>
</tr>
<tr>
<td>Seminole</td>
<td>431,074</td>
<td>465,128</td>
<td>508,329</td>
<td>541,133</td>
</tr>
<tr>
<td>Sumter</td>
<td>105,104</td>
<td>138,220</td>
<td>181,846</td>
<td>219,396</td>
</tr>
<tr>
<td>Volusia</td>
<td>498,978</td>
<td>529,447</td>
<td>566,999</td>
<td>595,077</td>
</tr>
<tr>
<td>Total</td>
<td>4,818,015</td>
<td>5,505,584</td>
<td>6,397,172</td>
<td>7,128,968</td>
</tr>
</tbody>
</table>


Table 1.2 - Employment Projections for Workforce Regions in the I-4 Corridor

<table>
<thead>
<tr>
<th>Workforce Region</th>
<th>2014</th>
<th>2022</th>
<th>% Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flagler &amp; Volusia Counties</td>
<td>200,541</td>
<td>224,127</td>
<td>11.8</td>
</tr>
<tr>
<td>Hillsborough County</td>
<td>699,877</td>
<td>789,163</td>
<td>12.8</td>
</tr>
<tr>
<td>Polk County</td>
<td>228,559</td>
<td>252,300</td>
<td>10.4</td>
</tr>
<tr>
<td>Lake, Orange, Osceola, Seminole and Sumter Counties</td>
<td>1,224,998</td>
<td>1,404,357</td>
<td>14.6</td>
</tr>
</tbody>
</table>

Source: Florida Department of Economic Opportunity

The original I-4 PD&E Studies involved physical separation between the general use lanes and the HOV lanes on I-4, with demand management in the HOV lanes. The original demand management strategy was to control the use of the lanes by requiring a minimum number of occupants per vehicle to maintain an acceptable level of service (Level of Service D). This update also addresses revising the demand management tool to convert the HOV lanes to tolled express lanes. The express lanes will be separated from the general use travel lanes by two shoulders with a barrier wall between the shoulders. A variable pricing tolling plan is proposed for the express lanes. The tolls will vary by time of day and day of week to maintain acceptable levels of service in the express lanes. The tolls will be collected electronically through existing E-Pass, SunPass and other systems.
currently in place in the Central Florida area. The conversion to express lanes will maintain the same right-of-way limits as documented previously and will not change the impacts to the social, natural or physical environment. An update to the Systems Access Modification Report (SAMR) prepared in January 2013 is being completed in conjunction with this effort.
2.0 Existing Conditions

The existing conditions within the I-4 study corridor were evaluated by reviewing existing plans and documents, coordination with regulatory agencies and performing field investigations. The following sections provide detailed descriptions of existing roadway characteristics, traffic and bridge features, drainage, soils and other physical features and traffic and crash data within the project study area.

2.1 Roadway Classification

I-4 is classified by FDOT as an Urban Interstate and Strategic Intermodal System (SIS) corridor throughout the limits of Segment 2. I-4 is a designated evacuation route by the Florida Division of Emergency Management.

2.2 Typical Section

The existing typical section for the I-4 mainline consists of three 12-foot travel lanes in each direction. The outside and inside shoulders are 12 feet wide with 10 feet paved. From SR 528 to Sand Lake Road, both the eastbound and westbound directions have a 12-foot auxiliary lane. From Sand Lake Road to Kirkman Road, only the eastbound direction has a 12-foot auxiliary lane. The roadways are separated by a 64-foot median from SR 528 to Sand Lake Road and a varying width median (64- to 180-feet) from Sand Lake Road to Universal Boulevard. The existing right-of-way varies from 300-feet to 330-feet. Figure 2.1 illustrates the existing I-4 typical section.

2.3 Right-of-way

The existing right-of-way varies from 300-feet to 330-feet. The Concept Plans for this project, included in Appendix A, show the existing right-of-way along the corridor.

2.4 Existing Property Lines and Land Use

The existing property lines were obtained from the Orange County GIS database and are shown on the Concept Plans in Appendix A. Parcels affected by the proposed improvements are identified on the Concept Plans. The proposed improvements to the 3.9 mile I-4 corridor Segment 2, primarily lie within unincorporated Orange County, with a small portion of the segment in the City of Orlando as shown in Figure 2.2.

Existing Land Use

The existing land use map, shown in Figure 2.3, was created using information from FDOT 2014 parcel tax data records compiled by the Florida Geographic Data Library (FGDL). The existing land use along the I-4 Segment 2 corridor and within the City limits consists of retail/office, vacant nonresidential, vacant residential and acreage not zoned for agriculture uses. Land uses along the remainder of the corridor and within unincorporated Orange County consist largely of retail/office
Figure 2.1 - Existing I-4 Typical Section
Figure 2.2 - Existing City Limits
Figure 2.3 - Existing Land Use
Future Land Use
The future land use map, shown in Figure 2.4, was created using FGDL future land use data from the adopted comprehensive plan amendments for each municipality within the project’s limits. Future land use along the I-4 corridor primarily consists of parcels designated for mixed-use on both sides of I-4, between Kirkman Road and Sand Lake Road. South of Sand Lake Road to SR 528, the mixed-use designation continues for parcels east of I-4. Along the west side of I-4, future land use includes commercial, high density residential and institutional.

2.5 Horizontal Alignment
The alignment on I-4 is typical of most interstate highways with long tangent sections connecting long, gradual curves and/or deflection angles, not requiring horizontal curves. There is one horizontal curve located east of Sand Lake Road at Station 1509+61.04 (PI Station from current Concept Plans, Appendix A). The degree of curvature is 02°00’00” to the right and the existing superelevation is 0.05 ft/ft. Based on current design criteria per Table 2.9.1 of the FDOT Plans Preparation Manual, Revised January 2015 (PPM), this curve has a corresponding design speed of 55 mph. The existing pavement cross slope within the project limits has a downward slope of 0.02 ft/ft towards the outside (except in the superelevated sections of roadway). The superelevation rate, e, and radius for this curve are equivalent to a 55-mph design speed. The posted speed at this curve is 55 mph. The curve does not meet current design criteria for a 70-mph design speed, including stopping sight distance criteria. This is both a horizontal and vertical curvature problem. A superelevation of 0.07 is required by today’s standards to meet a 70-mph design speed for this curve on this type of facility.

2.6 Vertical Alignment
Table 2.1 summarizes the vertical alignment of I-4 within the corridor study limits and the design speed associated with each curve based on current design criteria. There are 13 vertical curves along Segment 2. Based on the PPM standard for minimum lengths of vertical curves based on stopping sight distance, five crest curves and three sag curves were identified as not meeting today’s standard for curve length and/or K-value. The vertical curves at PVI stationing 1405+00, 1434+00, 1451+00, 1480+25, 1505+00, 1513+00, 1537+00, and 1562+00 do not meet the current PPM standards. Reference location stationing is included on the Concept Plans included in Appendix A.

---

Figure 2.4 - Future Land Use
2.7 Pedestrian and Bicycle Facilities

I-4 is a limited access interstate facility that accordingly prohibits bicycle and pedestrian traffic. Sidewalks and crosswalks are not provided at the SR 528 interchange. Sand Lake Road provides sidewalks on either side of the road and pedestrians have the ability to use crosswalks located at the I-4 eastbound and westbound ramp terminals. There are no bicycle facilities along Sand Lake Road. At the north end of the Adventure Way interchange, towards Universal Studios, there are crosswalks and sidewalks along the north side of Hollywood Way. At the Universal Boulevard interchange, there are sidewalks and crosswalks along the east side of the road that lead from International Drive to Universal Studios.

2.8 Design and Posted Speed

The design speed for I-4 is 60 miles per hour (MPH) and the posted speed limit along Segment 2 is 55 MPH.
2.9 **Lighting**

There is continuous lighting in both directions along the I-4 Segment 2 mainline from MP 5.650 to 9.562 except at the following locations:

- Both directions - MP 6.830 to MP 7.485 (0.655 Miles) [Station 1407+78.88 to Station 1442+37.28 on the Concept Plans]
- Eastbound - MP 7.485 to MP 7.885 (0.400 Miles) [ Station 1442+37.28 to Station 1463+49.28 on the Concept Plans]

The existing lighting consists of conventional lighting along the mainline, except at the systems interchange at I-4 and SR 528, which has high mast lighting.

2.10 **Railroad**

There are no railroads located within the project area. A 44’ rail corridor has been preserved in the median of I-4 between Tampa and the SR 528 Interchange, west of Orlando.

2.11 **Existing Traffic**

Existing (2011) traffic information including volume counts, geometry, signal timing plans and other pertinent data for the I-4 Segment 2 study corridor was provided in the *I-4 Beyond the Ultimate Systems Access Modification Report (SAMR) Re-Evaluation: I-4 Beyond the Ultimate Project South Section – from West of US 27 to West of SR 435 (Kirkman Road) [March 2017]*. This data was used to perform operational analyses of existing conditions using the latest VISSIM (Version 7.0) microsimulation software.

2.11.1 **Traffic Volumes**

Existing traffic volume data consists of year 2011 AM and PM peak hour counts compiled from FDOT’s Florida Traffic Information (FTI) database, Florida’s Turnpike Enterprise, Orange County count program, other agencies and field data collection. The existing (year 2011) traffic counts for the I-4 Segment 2 study corridor were obtained from the *I-4 Beyond the Ultimate Systems Access Modification Report (SAMR) Re-Evaluation: I-4 Beyond the Ultimate Project South Section – from West of US 27 to West of SR 435 (Kirkman Road) [March 2017]* and are depicted in Figure 2.5 through Figure 2.7.

2.11.2 **Intersection Geometry and Signalization**

There are three existing interchanges within the limits of I-4 Segment 2. The interchange configurations are depicted in Figure 2.5 through Figure 2.7 and are described in detail in the following sections.
Figure 2.5 - Existing (Year 2011) Peak Hour Traffic Volumes (Sheet 1 of 3)
Figure 2.6 - Existing (Year 2011) Peak Hour Traffic Volumes (Sheet 2 of 3)
Figure 2.7 - Existing (Year 2011) Peak Hour Traffic Volumes (Sheet 3 of 3)
I-4 and SR 528 Interchange
SR 528 has its westerly terminus at the interchange with I-4, creating a three-leg, directional T-type interchange. The SR 528 west-to-south off ramp (I-4 westbound on-ramp) is a two-lane flyover ramp which passes over mainline I-4 and the I-4 westbound off-ramp. The outside lane ends on the flyover ramp prior to the merge with on-ramp for the I-4 westbound mainline. The I-4 south-to-east off ramp (SR 528 eastbound on-ramp) is a single lane ramp which crosses under the SR 528 westbound off-ramp and over the I-4 mainline.

I-4 and Sand Lake Road Interchange
The I-4 and Sand Lake Road Interchange is a partial cloverleaf interchange with a single loop ramp in the northwest quadrant which provides access from westbound Sand Lake Road onto I-4 westbound. The I-4 westbound off-ramp forms a T-intersection at the signalized ramp terminus. The I-4 eastbound on/off-ramps at Sand Lake Road are controlled by a single traffic signal; a raised median island restricts through movements between the off and on ramps.

I-4 and Universal Boulevard Interchange
Universal Boulevard crosses over the I-4 eastbound and westbound lanes. At this location, access to and from I-4 is provided only in the eastbound direction by way of a signalized intersection at the eastbound ramp terminal on Universal Boulevard. Access to and from Universal Boulevard for I-4 westbound traffic is provided at two locations: via the I-4 the entry/exit ramps at Adventure Way and via the Kirkman Road interchange, approximately 0.4 miles west and 0.5 miles east of the Universal Boulevard overpass, respectively. The Kirkman Road south to I-4 west ramp is a two-lane connector road which runs parallel to the I-4 westbound lanes and is joined by the southbound/westbound Adventure Way ramp before merging with I-4 westbound.

2.11.3 Traffic Operational Analyses
Existing conditions operational analyses were performed for the I-4 mainline and individual intersections using the calibrated VISSIM model (VISSIM, Version 7.0). The results of the operational analyses for I-4 Segment 2 are summarized in Table 2.2 and Table 2.3. The VISSIM intersection node evaluation indicates that the SR 482 (Sand Lake Road) and Turkey Lake Road intersection operates at LOS F during the AM peak hour and the Kirkman Road and International Drive intersection operates at LOS E during the PM peak hour. The link evaluation of freeway segments indicates that average speeds are in the 35-55 mph range near the SR 482 (Sand Lake Road) interchange area during the AM and PM peak hours. Detailed analyses and outputs from the software programs are provided in the supplemental report, I-4 Beyond the Ultimate Systems Access Modification Report (SAMR) Re-Evaluation: I-4 Beyond the Ultimate Project South Section – from West of US 27 to West of SR 435 (Kirkman Road) [March 2017].
Table 2.2 - Intersection Operational Analysis

<table>
<thead>
<tr>
<th>Primary Road</th>
<th>Secondary Road</th>
<th>Existing AM</th>
<th>Existing PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sand Lake Rd</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dr. Phillips Blvd</td>
<td>19.2</td>
<td>33.1</td>
</tr>
<tr>
<td></td>
<td>Turkey Lake Rd</td>
<td>81.7</td>
<td>43.2</td>
</tr>
<tr>
<td></td>
<td>WB off-ramp</td>
<td>11.4</td>
<td>18.3</td>
</tr>
<tr>
<td></td>
<td>WB on-ramp</td>
<td>0.5</td>
<td>6.1</td>
</tr>
<tr>
<td></td>
<td>EB Ramps</td>
<td>35.9</td>
<td>36.7</td>
</tr>
<tr>
<td></td>
<td>International Dr</td>
<td>25.7</td>
<td>37.0</td>
</tr>
<tr>
<td></td>
<td>Universal Blvd</td>
<td>27.8</td>
<td>40.3</td>
</tr>
<tr>
<td>Universal Blv</td>
<td>Hollywood Way</td>
<td>12.0</td>
<td>21.3</td>
</tr>
<tr>
<td></td>
<td>EB Ramps</td>
<td>13.4</td>
<td>18.7</td>
</tr>
<tr>
<td>Kirkman Rd</td>
<td>International Dr</td>
<td>14.9</td>
<td>31.9</td>
</tr>
<tr>
<td></td>
<td>Major Blvd</td>
<td>9.3</td>
<td>16.1</td>
</tr>
<tr>
<td></td>
<td>International Dr</td>
<td>22.5</td>
<td>59.3</td>
</tr>
</tbody>
</table>

Intersections operating at or below LOS E.

Table 2.3 - I-4 Mainline Freeway Link Analysis

<table>
<thead>
<tr>
<th>I-4 Segment 2</th>
<th>Average Speed (mph)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>AM</td>
</tr>
<tr>
<td>I-4 EB at Sand Lake Rd</td>
<td>55.5</td>
</tr>
<tr>
<td>I-4 WB at Sand Lake Rd</td>
<td>56.3</td>
</tr>
</tbody>
</table>

2.12 Pavement Conditions

Pavement condition surveys for the I-4 PD&E study area are conducted by FDOT and are rated on a scale of zero to 10, with a rating of six or less considered critical. The pavement surface and base conditions on I-4 throughout the study area were rated as “good” to “very good” based on high pavement survey ratings between 6.9 and 8.4. Table 2.4 provides the existing pavement condition ratings for 2013 and forecasted 2018 ratings.

Table 2.4 - Pavement Conditions I-4 - Segment 2

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>4.414</td>
<td>5.971</td>
<td>L</td>
<td>9.0</td>
<td>7.9</td>
<td>9.0</td>
<td>7.5</td>
<td>7.6</td>
<td>8</td>
</tr>
<tr>
<td>4.585</td>
<td>6.018</td>
<td>R</td>
<td>6.5</td>
<td>7.2</td>
<td>9.0</td>
<td>5</td>
<td>6.9</td>
<td>8</td>
</tr>
<tr>
<td>5.971</td>
<td>6.482</td>
<td>L</td>
<td>9.5</td>
<td>8.1</td>
<td>9.0</td>
<td>8</td>
<td>7.8</td>
<td>8</td>
</tr>
<tr>
<td>6.018</td>
<td>6.482</td>
<td>R</td>
<td>9.0</td>
<td>7.5</td>
<td>9.0</td>
<td>7.5</td>
<td>7.2</td>
<td>8</td>
</tr>
<tr>
<td>6.482</td>
<td>8.264</td>
<td>R</td>
<td>7.5</td>
<td>6.9</td>
<td>9.0</td>
<td>6</td>
<td>6.6</td>
<td>8</td>
</tr>
</tbody>
</table>
2.13 **Drainage and Hydrology**

Existing drainage characteristics in the study area were determined by reviewing FDOT construction plans, the Straight Line Diagrams of Road Inventory, South Florida Water Management District (SFWMD) drainage and permitting files, United States Geological Survey (USGS) Quadrangle Maps, Geographic Information System (GIS) maps, and Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM). Field reviews were also conducted along the corridor. The study area lies within the jurisdiction of SFWMD.

2.13.1 **Existing Drainage Patterns**

The project is separated into ten drainage basins; all of the basins are open. The basins consist of the pond site and the full right-of-way. The stormwater runoff from the roadway is collected by roadside ditches and cross drains that either discharge to an existing pond or treatment swale for treatment, or discharge directly to the outfall, untreated. Most of the basins discharge to either Big Sand Lake or Little Sand Lake, which both outfall to Shingle Creek. Shingle Creek is not an Outstanding Florida Water (OFW). None of the basins discharge to a nutrient impaired water.

There are three basins (Basins 200, 201 and 202) within the project that discharge to the Central Florida Parkway Canal, which flows to Shingle Creek. In Basin 200, the treatment for the two lanes that were added during the I-4 Auxiliary project was compensated for in dry treatment swales in another area of the original project. In Basin 201, the stormwater runoff from the westbound roadway and ramps discharges untreated and the stormwater runoff from the eastbound lanes flows to the existing pond. In Basin 202, the stormwater runoff from the westbound roadway and ramps discharges untreated and the stormwater runoff from the eastbound lanes flows to an existing pond.

There are two basins (Basins 203 and 204) that serve SR 528 and the corresponding ramps and do not include any runoff from I-4. In Basin 203, the stormwater runoff from the roadway is collected by roadside ditches and flows east, where it discharges untreated to Newover Canal. Basin 204 includes runoff from a portion of International Drive and Back of House Road. Back of House Road...
was intended as a temporary road that was built by Orange County to provide an entrance and exit for delivery trucks and shuttle buses. In Basin 204, the stormwater runoff from the roadway is collected by a series of ditches and storm sewer systems that flow to an existing pond, which discharges to Newover Canal.

There is one basin (Basin 205) that discharges to smaller lakes that discharge to Big Sand Lake and ultimately, to Shingle Creek. The stormwater runoff from the roadway on I-4 and the ramps to Sand Lake Road is collected by roadside ditches and cross drains that discharge untreated to two cross drains.

There are two basins (Basins 206 and 207) that discharge to Little Sand Lake and ultimately to Shingle Creek. Two existing ponds were constructed for treatment and attenuation. The stormwater runoff from the roadway is collected by roadside ditches and cross drains that flow to the existing ponds. In Basin 207, the existing pond was constructed over a sinkhole.

In Basin 208, the stormwater runoff from the roadway is collected by roadside ditches and cross drains that flow to an existing pond. Only ramps, not the I-4 mainline, are treated in the existing pond. The pond discharges east to the I-4 median swale, which ultimately drains to Shingle Creek.

In the final basin (Basin 209), the stormwater runoff from the roadway is collected by roadside ditches and cross drains that flow to the future ponds in the I-4 Ultimate project. The ponds are located at the Kirkman Road Interchange, east/north of the project terminus. The ponds were designed as interconnected wet detention ponds and discharge to Shingle Creek. Additional information on existing drainage patterns is presented in the Pond Siting Report (August 2016).

2.13.2 Cross Drains

There are three cross drains within the study area. Table 2.5 depicts the existing cross drain data pertinent to the project study area and obtained from the Straight Line Diagram of Road Inventory, as well as, original construction plans. In the case where original construction plans were not found, cross drain invert elevations were obtained from the original PD&E study (Preliminary Engineering Report for the Interstate 4 (SR 400) Project Development and Environmental Study, Section 2, Orange, Seminole and Volusia County; Project Nos. 242486-1, 242592-1, 242703-1). Therefore, field verification is needed to determine the upstream and downstream flow elevations for the cross drain located at Milepost 7.409. During the design phase, field verification will be necessary to determine the actual pipe lengths as well. Additional information on drainage conveyance is provided in the supplemental report, Location Hydraulic Report (August 2016) prepared for this project.
Table 2.5 - Existing Cross Drains

<table>
<thead>
<tr>
<th>Milepost</th>
<th>Station</th>
<th>Count</th>
<th>Span (in)</th>
<th>Rise (in)</th>
<th>Type</th>
<th>Length (ft)</th>
<th>Elevation[^1] (ft NAVD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Left</td>
</tr>
<tr>
<td>7.409</td>
<td>1434+46</td>
<td>1</td>
<td>42</td>
<td>42</td>
<td>RCP</td>
<td>230</td>
<td>110.49</td>
</tr>
<tr>
<td>8.028</td>
<td>1467+13</td>
<td>1</td>
<td>36</td>
<td>36</td>
<td>RCP</td>
<td>245</td>
<td>116.61</td>
</tr>
<tr>
<td>8.545</td>
<td>1494+90</td>
<td>1</td>
<td>30</td>
<td>30</td>
<td>RCP</td>
<td>228</td>
<td>130.81</td>
</tr>
</tbody>
</table>

[^1]: Upstream and downstream cross drain invert elevation
Abbreviations: RCP – Reinforced Concrete Pipe

2.14 Existing Bridges

Within Segment 2 of the I-4 study corridor, there are three existing bridge structures which cross I-4 and two existing mainline bridge structures which carry I-4 over local roads. There is an additional steel box girder bridge carrying a local road over SR 528 which may be impacted by changes to the I-4 and SR 528 interchange. The existing bridges are listed in Table 2.6 and depicted graphically in Figure 2.8.

2.14.1 Type of Structure

Mainline Bridges - The superstructures of the existing mainline I-4 bridges consist of a cast-in-place concrete deck carried by steel plate girders. The existing bridge features such as, span lengths, deck widths, shoulder/lane widths and superstructure types were summarized in Table 2.6.

Overpass Bridges - The superstructures for the bridges over I-4 consist of steel plate girders or American Association of State Highway and Transportation Officials (AASHTO) prestressed concrete beams.

2.14.2 Current Conditions and Year of Construction

Table 2.7 provides a description of the existing bridges within the I-4 study corridor. This information was obtained from existing plans and the most recent bridge inspection reports. The sufficiency rating is derived from a formula that evaluates factors that are indicative of the structure’s ability to remain in service. A rating of 100 percent represents an entirely sufficient bridge and a rating of zero percent represents an entirely deficient bridge. Table 2.7 also provides data on the year of original construction and when the bridges were widened or replaced. This data was obtained from the most recent bridge inspection reports or approximated from the dates of the existing plans. The Sand Lake Road bridges were originally constructed in 1991. Neither of the Sand Lake Road bridges is classified as “functionally obsolete” or “structurally deficient.” Both of the mainline bridges have a structural sufficiency rating above 90. Likewise, both bridges...
carrying SR 528 as well as the bridge carrying Universal Boulevard over the mainline have a structural sufficiency rating above 90.

Table 2.6 - Existing Bridge Structures

<table>
<thead>
<tr>
<th>Facility</th>
<th>Bridge No.</th>
<th>No. Of Spans</th>
<th>Bridge Length (Ft)[1]</th>
<th>Max Span Length (Ft)[1]</th>
<th>Deck Width (Ft)</th>
<th>Lane/Shoulder Widths (Ft)</th>
<th>Super-Structure Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 528 EB Over I-4</td>
<td>750180</td>
<td>4</td>
<td>307.1</td>
<td>107.0</td>
<td>30.2[3]</td>
<td>6’ inside shldr. 1 lane @ 12’ 6’ outside shldr.</td>
<td>AASHTO Concrete Beam</td>
</tr>
<tr>
<td>SR 528 WB Over I-4</td>
<td>750087</td>
<td>8</td>
<td>621.1</td>
<td>101.4</td>
<td>43.08[3]</td>
<td>6’ inside shldr. 2 lanes @ 12’ 10’ outside shldr.</td>
<td>AASHTO Concrete Beam</td>
</tr>
<tr>
<td>I-4 EB Over SR 482 (Sand Lake Road)</td>
<td>750336</td>
<td>1</td>
<td>164.7</td>
<td>164.7</td>
<td>58.7[3]</td>
<td>10’ inside shldr. 3 lanes @ 12’ 10’ outside shldr.</td>
<td>Steel Plate Girder</td>
</tr>
<tr>
<td>I-4 WB Over SR 482 (Sand Lake Road)</td>
<td>750335</td>
<td>1</td>
<td>164.7</td>
<td>164.7</td>
<td>84.6[3]</td>
<td>10’ inside shldr. 5 lanes @ 12’ 10’ outside shldr.</td>
<td>Steel Plate Girder</td>
</tr>
<tr>
<td>Universal Boulevard Over I-4[2]</td>
<td>750485</td>
<td>3</td>
<td>655.2</td>
<td>229.0</td>
<td>130.1</td>
<td>8’ shldr. 7 lanes @ 12’ 8’ shldr. 8’ sidewalk</td>
<td>Steel Plate Girder</td>
</tr>
<tr>
<td>West Entrance Drive Over SR 528</td>
<td>754128</td>
<td>5</td>
<td>944.8</td>
<td>205</td>
<td>42.0</td>
<td>7.5’ sidewalk, 6’ shldr., 2 lanes @ 11’, 2.5’ shldr.</td>
<td>Steel Box Girder</td>
</tr>
</tbody>
</table>

[1] Plans for bridge are not available. Data taken from Bridge Inspection Reports.
[2] Originally Republic Drive per existing bridge plans.
Figure 2.8 - Existing Bridge Locations
Table 2.7 - Current Structure Condition and Year of Construction

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 528 EB Over I-4</td>
<td>750180</td>
<td>93.0</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>SR 528 WB Over I-4</td>
<td>750087</td>
<td>96.5</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>I-4 EB Over SR 482 (Sand Lake Road)</td>
<td>750336</td>
<td>98.0</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>I-4 WB Over SR 482 (Sand Lake Road)</td>
<td>750335</td>
<td>98.0</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Universal Boulevard Over I-4 [3]</td>
<td>750485</td>
<td>99.1</td>
<td>7</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>West Entrance Drive Over SR 528</td>
<td>754128</td>
<td>96.3</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
</tr>
</tbody>
</table>

[1] National Bridge Inventory (NBI) Rating: 9- Excellent; 8- Very Good; 7- Good; 6- Satisfactory; 5 – Fair
[2] Construction and widening years obtained from Bridge Inspection Reports.
[3] Originally Republic Drive per existing bridge plans.

2.14.3 Horizontal and Vertical Alignments of Structures

Existing clearances less than 16.5 feet are undesirable over the Interstate. The facilities carrying SR 528 over the mainline do not meet the minimum vertical clearance threshold while the facility carrying Universal Boulevard over the mainline provides adequate vertical clearance. Table 2.8 presents the pier locations and horizontal clearances for each of the bridges. Table 2.9 summarizes the vertical curve data at each location. Table 2.10 provides the vertical clearance information at each structure.

2.14.4 Span Arrangement

The existing span arrangement (number and length of spans) of the bridges within the project limits were previously listed in Table 2.6.

Table 2.8 - Horizontal Clearances at Bridges

<table>
<thead>
<tr>
<th>Facility</th>
<th>Bridge No.</th>
<th>Horizontal Clearance to Substructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 528 EB Over I-4</td>
<td>750180</td>
<td>30’ clear to Pier 2</td>
</tr>
<tr>
<td>SR 528 WB Over I-4</td>
<td>750087</td>
<td>29.8’ clear to Pier 6</td>
</tr>
<tr>
<td>I-4 EB Over SR 482 (Sand Lake Road)</td>
<td>750336</td>
<td>13.0’ and 5.5’ clear to wall at End Bents 1 and 2</td>
</tr>
<tr>
<td>I-4 WB Over SR 482 (Sand Lake Road)</td>
<td>750335</td>
<td>13.0’ and 5.5’ clear to wall at End Bents 1 and 2</td>
</tr>
<tr>
<td>Universal Boulevard Over I-4 [1]</td>
<td>750485</td>
<td>8’ clear to Pier 3 and wall at End Bent 4</td>
</tr>
<tr>
<td>West Entrance Drive Over SR 528</td>
<td>754128</td>
<td>16’ to EB 6, 17.6’ to Pier 3</td>
</tr>
</tbody>
</table>

[1] Originally Republic Drive per existing bridge plans.
Table 2.9 - Vertical Curve Data at Bridges

<table>
<thead>
<tr>
<th>Facility</th>
<th>Bridge No.</th>
<th>Vertical Curve Length</th>
<th>Vertical Curve Grade In/Grade Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 528 EB Over I-4</td>
<td>750180</td>
<td>600’</td>
<td>+3.00%/-2.520%</td>
</tr>
<tr>
<td>SR 528 WB Over I-4</td>
<td>750087</td>
<td>700’ (crest)</td>
<td>+3.50%/-3.50%</td>
</tr>
<tr>
<td>I-4 EB Over SR 482 (Sand Lake Road)</td>
<td>750336</td>
<td>500’ (sag)</td>
<td>-3.50%/-2.32%</td>
</tr>
<tr>
<td>I-4 WB Over SR 482 (Sand Lake Road)</td>
<td>750335</td>
<td>1800’</td>
<td>+3.00%/-2.333%</td>
</tr>
<tr>
<td>Universal Boulevard Over I-4[1]</td>
<td>750485</td>
<td>900’</td>
<td>+2.750%/-5.000%</td>
</tr>
<tr>
<td>West Entrance Drive Over SR 528</td>
<td>754128</td>
<td>500</td>
<td>+4.800%/-3.162%</td>
</tr>
</tbody>
</table>

[1]Originally Republic Drive per existing bridge plans.

Table 2.10 - Vertical Clearances at Bridges

<table>
<thead>
<tr>
<th>Location</th>
<th>Bridge No.</th>
<th>Vertical Clearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 528 EB Over I-4</td>
<td>750180</td>
<td>16.4</td>
</tr>
<tr>
<td>SR 528 WB Over I-4</td>
<td>750087</td>
<td>16.4</td>
</tr>
<tr>
<td>I-4 EB Over SR 482 (Sand Lake Road)</td>
<td>750336</td>
<td>17.1</td>
</tr>
<tr>
<td>I-4 WB Over SR 482 (Sand Lake Road)</td>
<td>750335</td>
<td>16.7</td>
</tr>
<tr>
<td>West Entrance Drive Over SR 528</td>
<td>754128</td>
<td>17.1</td>
</tr>
</tbody>
</table>

[1]Originally Republic Drive per existing bridge plans.

2.14.5 Historical Significance
Existing bridges in Segment 2 of the I-4 study corridor carry no historical significance. Thus, this section is not applicable to this project.

2.14.6 Channel Dimensions
No water crossings exist in Segment 2 of the I-4 study corridor. Thus, this section is not applicable to this project.

2.14.7 Bridge Openings
Since the I-4 widening project does not involve any moveable bridges that fall within the study limits, this section is not applicable to this project.

2.14.8 Ship Impact Data
No water crossings exist in Segment 2 of the I-4 study corridor. Thus, this section is not applicable to this project.
2.15 Crash Data

The five-year crash data, between 2008 and 2012, was analyzed for the I-4 segment between west of SR 528 and west of Kirkman Road. The crash data was downloaded from the FDOT Crash Analysis Reporting System (CARS) system. The crash data includes data for the I-4 mainline as well as the ramps. The five-year crash data analysis showed that there were 575 crashes in the last five years within the I-4 Segment 2 study area. Out of those 575 crashes, there were four fatal crashes, 292 injury crashes and 279 property damage only crashes. Table 2.11 shows the summary of crashes by severity within the study area. Figure 2.9 shows the crash distribution by severity along the I-4 Segment 2 mainline within Orange County.

During the five-year study period, the highest numbers of crash events were rear end crashes (221 crashes) followed by angle collisions (63 crashes) and hitting guard rail (46 crashes). The highest numbers of contributing causes were careless driving (308 crashes) followed by improper lane change (70 crashes). Table 2.12 provides a summary of the types of crashes within the study area and Table 2.13 provides a summary of contributing causes.

Rear end collisions represent approximately 38% (221 crashes) of the total crashes occurring along the I-4 Segment 2 study corridor for the five-year period analyzed. Nearly half (106 crashes) of the rear end collisions occurred during “clear” weather conditions, approximately 62% (137 crashes) occurred on dry roadway surface conditions and approximately 61% (134 crashes) occurred during daylight lighting conditions. This data indicates that the high occurrence of rear end collisions may be due to peak periods of heavy congestion along the corridor.

As part of the crash data analysis, the FDOT District 5 High Crash Roadway Segments list was reviewed. Within I-4 Segment 2, the sections identified as high crash segments are summarized in Table 2.14. The actual crash rates on these segments were greater than the average statewide crash rate for urban interstate facility type for each of the five years of data analyzed.

<table>
<thead>
<tr>
<th>Crash Severity</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatal</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Injury</td>
<td>46</td>
<td>53</td>
<td>63</td>
<td>51</td>
<td>79</td>
<td>292</td>
</tr>
<tr>
<td>Property Damage Only</td>
<td>48</td>
<td>50</td>
<td>65</td>
<td>45</td>
<td>71</td>
<td>279</td>
</tr>
<tr>
<td>Total</td>
<td>94</td>
<td>105</td>
<td>129</td>
<td>96</td>
<td>151</td>
<td>575</td>
</tr>
</tbody>
</table>
Figure 2.9 - Crash Distribution Along I-4 Segment 2 Corridor
Table 2.12 - Crash Event Summary

<table>
<thead>
<tr>
<th>Harmful Event</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Other</td>
<td>10</td>
<td>7</td>
<td>7</td>
<td>6</td>
<td>11</td>
<td>41</td>
</tr>
<tr>
<td>Angle</td>
<td>15</td>
<td>13</td>
<td>15</td>
<td>8</td>
<td>12</td>
<td>63</td>
</tr>
<tr>
<td>Cargo Loss or Shift</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Collision with Motor Vehicle on Road</td>
<td>2</td>
<td>1</td>
<td>12</td>
<td>8</td>
<td>14</td>
<td>37</td>
</tr>
<tr>
<td>Head-On</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Hit Br/Pier/Abutment</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Hit Concrete Barrier Wall</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>5</td>
</tr>
<tr>
<td>Hit Fence</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Hit Guardrail</td>
<td>9</td>
<td>7</td>
<td>15</td>
<td>5</td>
<td>10</td>
<td>46</td>
</tr>
<tr>
<td>Hit Sign/Sign Post</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>Hit Tree/Shrub</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
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<td>Hit Utility Pole</td>
<td>-</td>
<td>1</td>
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<td>1</td>
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<td>Moveable Object</td>
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<td>-</td>
<td>1</td>
<td>1</td>
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<td>Occupant Fell from Vehicle</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
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<tr>
<td>Overturned</td>
<td>9</td>
<td>1</td>
<td>7</td>
<td>5</td>
<td>6</td>
<td>28</td>
</tr>
<tr>
<td>Parked Car</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Ran into Ditch/Culvert</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>-</td>
<td>7</td>
</tr>
<tr>
<td>Rear End</td>
<td>30</td>
<td>41</td>
<td>44</td>
<td>36</td>
<td>70</td>
<td>221</td>
</tr>
<tr>
<td>Sideswipe</td>
<td>11</td>
<td>19</td>
<td>14</td>
<td>-</td>
<td>-</td>
<td>44</td>
</tr>
<tr>
<td>Unknown/Not Coded</td>
<td>3</td>
<td>6</td>
<td>5</td>
<td>22</td>
<td>22</td>
<td>58</td>
</tr>
<tr>
<td>Total</td>
<td>94</td>
<td>105</td>
<td>129</td>
<td>96</td>
<td>151</td>
<td>575</td>
</tr>
</tbody>
</table>

Table 2.13 - Contributing Cause Summary

<table>
<thead>
<tr>
<th>Contributing Cause</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol/Drugs-Under Influence</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Alcohol-Under Influence</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>All Other</td>
<td>9</td>
<td>3</td>
<td>7</td>
<td>10</td>
<td>28</td>
<td>57</td>
</tr>
<tr>
<td>Careless Driving</td>
<td>48</td>
<td>61</td>
<td>71</td>
<td>48</td>
<td>80</td>
<td>308</td>
</tr>
<tr>
<td>Disregarded Traffic Signal</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Exceeded Safe Speed Limit</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Failed to Maintain Equipment</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Followed Too Closely</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Failed to Yield Right-of-way</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Improper Backing</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Improper Lane Change</td>
<td>18</td>
<td>25</td>
<td>27</td>
<td>-</td>
<td>-</td>
<td>70</td>
</tr>
<tr>
<td>Improper Load</td>
<td>1</td>
<td>-</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Improper Passing</td>
<td>2</td>
<td>-</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>No Improper Driving</td>
<td>6</td>
<td>7</td>
<td>8</td>
<td>10</td>
<td>14</td>
<td>45</td>
</tr>
<tr>
<td>Obstructing Traffic</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Unknown/Not Coded</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>23</td>
<td>22</td>
<td>51</td>
</tr>
<tr>
<td>Total</td>
<td>94</td>
<td>105</td>
<td>129</td>
<td>96</td>
<td>151</td>
<td>575</td>
</tr>
</tbody>
</table>
Table 2.14 - High Crash Segment Summary

<table>
<thead>
<tr>
<th>Year</th>
<th>Begin MP</th>
<th>End MP</th>
<th>Total # Crashes</th>
<th>ADT</th>
<th>Crash Rate</th>
<th>Average Statewide Crash Rate (Urban Interstate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>7.200</td>
<td>7.300</td>
<td>13</td>
<td>166,481</td>
<td>2.139</td>
<td>0.417</td>
</tr>
<tr>
<td></td>
<td>8.200</td>
<td>8.400</td>
<td>12</td>
<td>166,481</td>
<td>0.987</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>7.200</td>
<td>7.300</td>
<td>12</td>
<td>157,791</td>
<td>2.083</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.200</td>
<td>8.400</td>
<td>14</td>
<td>157,791</td>
<td>1.215</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>6.400</td>
<td>6.600</td>
<td>14</td>
<td>163,974</td>
<td>1.169</td>
<td></td>
</tr>
<tr>
<td></td>
<td>7.200</td>
<td>7.300</td>
<td>11</td>
<td>163,974</td>
<td>1.837</td>
<td>0.519</td>
</tr>
<tr>
<td></td>
<td>8.000</td>
<td>8.100</td>
<td>11</td>
<td>163,974</td>
<td>1.837</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>6.000</td>
<td>6.200</td>
<td>12</td>
<td>135,500</td>
<td>1.213</td>
<td>0.458</td>
</tr>
<tr>
<td></td>
<td>6.500</td>
<td>6.700</td>
<td>16</td>
<td>164,143</td>
<td>1.335</td>
<td></td>
</tr>
<tr>
<td></td>
<td>8.000</td>
<td>8.400</td>
<td>31</td>
<td>139,500</td>
<td>1.522</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9.300</td>
<td>9.400</td>
<td>8</td>
<td>132,045</td>
<td>1.659</td>
<td></td>
</tr>
</tbody>
</table>

Milepost locations within I-4 Segment 2 do not appear on the “High Crash Roadway Segments for 2011” list.

The following milepost locations within I-4 Segment 2 occur on the High Crash Roadway Segment list for three or more years of the five-year period from 2008 to 2012:

- MP 7.200 – MP 7.300
- MP 8.200 – MP 8.400

2.16 Utilities

The utilities located within the right-of-way were identified through the use of existing plans and by sending plans to all of the utility companies identified via the Sunshine State One call system. Table 2.15 provides a list of the utility companies and contact information. Table 2.16 provides approximate locations of the major utilities that are within the project corridor. The easements by utility type and owner are shown in the Concept Plans (Appendix A).
Table 2.15 - Utility Contact Information

<table>
<thead>
<tr>
<th>Utility</th>
<th>Contact Name</th>
<th>Address</th>
<th>Phone</th>
<th>E-Mail</th>
</tr>
</thead>
<tbody>
<tr>
<td>American Traffic Solutions</td>
<td>Alfredo Arroyo</td>
<td>2719 Causeway Center Dr.</td>
<td>(813) 380-8565</td>
<td><a href="mailto:alfredo.arroyo@atsol.com">alfredo.arroyo@atsol.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Tampa, FL 33619</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AT&amp;T Florida</td>
<td>Alan Reynolds</td>
<td>5100 Steyr Street Orlando, FL 32819</td>
<td>(407) 351-8180</td>
<td><a href="mailto:AR2916@att.com">AR2916@att.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BrightHouse Networks</td>
<td>Marvin Usry</td>
<td>3767All American Blvd.</td>
<td>(407) 532-8509</td>
<td><a href="mailto:Marvin.usry@mybrighthouse.com">Marvin.usry@mybrighthouse.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Orlando, FL 32810</td>
<td></td>
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</tr>
<tr>
<td>City of Orlando</td>
<td>Jim Hunt</td>
<td>400 South Orange Ave.</td>
<td>(407) 246-3623</td>
<td><a href="mailto:Jim.hunt@cityoforlando.net">Jim.hunt@cityoforlando.net</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Orlando, FL 32810</td>
<td></td>
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<tr>
<td>CenturyLink</td>
<td>Jeff Griffin</td>
<td>33 N. Main St. Winter Garden,</td>
<td>(407) 814-5344</td>
<td><a href="mailto:Jeff.w.griffin@centurylink.com">Jeff.w.griffin@centurylink.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>FL 34787</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comcast Communications</td>
<td>Cesar Rivera</td>
<td>4305 Vineland Rd. Suite G-2</td>
<td>(407) 849-3611</td>
<td><a href="mailto:cesar_rivera@cable.comcast.com">cesar_rivera@cable.comcast.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Orlando, FL 32811</td>
<td></td>
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<tr>
<td>Duke Energy-Distribution</td>
<td>Sharon Dear</td>
<td>3300 Exchange Place NP4A</td>
<td>(407) 942-9421</td>
<td><a href="mailto:sharon.dear@duke-energy.com">sharon.dear@duke-energy.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lake Mary, FL 32746</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Duke Energy-Transmission</td>
<td>Jennifer Williams</td>
<td>20525 Amberfield Drive Suite 201</td>
<td>(813) 909-1210</td>
<td><a href="mailto:jewilliams@ucseng.com">jewilliams@ucseng.com</a></td>
</tr>
<tr>
<td></td>
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<td>Land O` Lakes, FL 34638</td>
<td></td>
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<tr>
<td>Enterprise Community Development District</td>
<td>Brian Smith</td>
<td>610 Sycamore St. Suite 140</td>
<td>(407) 566-1935</td>
<td><a href="mailto:brsmith@severtrentms.com">brsmith@severtrentms.com</a></td>
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<tr>
<td></td>
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<td>Celebration, FL 34747</td>
<td></td>
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<tr>
<td>Florida Power and Light</td>
<td>Pete Washio</td>
<td>700 Universe Blvd. Department TS4/JW Juno Beach, FL 33408</td>
<td>(561) 904-3693</td>
<td><a href="mailto:peter.h.washio@fpl.com">peter.h.washio@fpl.com</a></td>
</tr>
<tr>
<td></td>
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</tr>
<tr>
<td>The Golf Channel</td>
<td>Bob Van Deering</td>
<td>7580 Golf Channel Dr. Office,</td>
<td>(407) 355-4434</td>
<td><a href="mailto:bvandeering@golfchannel.com">bvandeering@golfchannel.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Orlando, FL 32819</td>
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</table>
## Table 2.15 - Utility Contact Information

<table>
<thead>
<tr>
<th>Utility</th>
<th>Contact Name</th>
<th>Address</th>
<th>Phone</th>
<th>E-Mail</th>
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</thead>
<tbody>
<tr>
<td>Hotwire Communications</td>
<td>Marty Mohr</td>
<td>10360 USA Today Way Miramar, FL 33205</td>
<td>(954) 628-7021</td>
<td></td>
</tr>
<tr>
<td>Level 3 Communications</td>
<td>Richard Simonton</td>
<td>380 S. Lake Destiny Dr. Orlando, FL 32810</td>
<td>(407) 254-9720</td>
<td><a href="mailto:richard.simonton@level3.com">richard.simonton@level3.com</a></td>
</tr>
<tr>
<td>Orange County Utilities</td>
<td>Randy Brown</td>
<td>9150 Curry Ford Rd. Orlando, FL 32825</td>
<td>(407) 254-9720</td>
<td><a href="mailto:edwin.brown@ocfl.net">edwin.brown@ocfl.net</a></td>
</tr>
<tr>
<td>Orlando Utilities Commission</td>
<td>Ric Dy-Liacco</td>
<td>100 W. Anderson St. Orlando, FL 32801</td>
<td>(407) 236-9651</td>
<td><a href="mailto:rydyliacco@ouc.com">rydyliacco@ouc.com</a></td>
</tr>
<tr>
<td>Smart City Solutions</td>
<td>David Cawley</td>
<td>3100 Bonnet Creek Rd. Lake Buena Vista, FL 32830</td>
<td>(407) 828-6648</td>
<td><a href="mailto:dcawley@smartcity.com">dcawley@smartcity.com</a></td>
</tr>
<tr>
<td>TECO Peoples Gas</td>
<td>Bruce Stout</td>
<td>600 W. Robinson St. Orlando, FL 32801</td>
<td>(407) 420-2678</td>
<td><a href="mailto:bstout@tecoenergy.com">bstout@tecoenergy.com</a></td>
</tr>
<tr>
<td>Transcore</td>
<td>Eric Gordin</td>
<td>Milepost 263 Ocoee, FL 34761</td>
<td>(407) 264-3316</td>
<td><a href="mailto:Eric.gordin@dot.state.fl.us">Eric.gordin@dot.state.fl.us</a></td>
</tr>
<tr>
<td>TW Telecom</td>
<td>Sean Moss</td>
<td>485 N. Keller Rd. Suite 551 Maitland, FL 32751</td>
<td>(407) 215-6895</td>
<td><a href="mailto:sean.moss@twtelecom.com">sean.moss@twtelecom.com</a></td>
</tr>
<tr>
<td>Verizon</td>
<td>John McNeil</td>
<td>210 Recker Highway Auburndale, FL 33823</td>
<td>(863) 965-6438</td>
<td><a href="mailto:John.mcneil@verizon.com">John.mcneil@verizon.com</a></td>
</tr>
<tr>
<td>Water Conserv II</td>
<td>Phil Cross</td>
<td>17498 McKinney Rd. Winter Garden, FL 34787</td>
<td>(407) 656-2332</td>
<td><a href="mailto:phil.cross@waterconservii.com">phil.cross@waterconservii.com</a></td>
</tr>
</tbody>
</table>
Table 2.16 - Major Utilities

<table>
<thead>
<tr>
<th>Type of Utility</th>
<th>Utility Owner</th>
<th>Type of Facility</th>
<th>Limits</th>
<th>Offset / Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>American Traffic Solutions</td>
<td>2” Conduit</td>
<td>Crossing at intersection of International Dr. &amp; Kirkman Rd.</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>American Traffic Solutions</td>
<td>2” Conduit</td>
<td>Crossing at intersection of International Dr. &amp; Kirkman Rd.</td>
<td>East side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>American Traffic Solutions</td>
<td>Underground Telephone</td>
<td>Crossing at intersection of International Dr. &amp; Kirkman Rd.</td>
<td>East side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>American Traffic Solutions</td>
<td>Underground Telephone</td>
<td>From 240-ft north to 240-ft south of intersection of International Dr. &amp; Kirkman Rd.</td>
<td>East side of road</td>
</tr>
<tr>
<td>Communication</td>
<td>ATT</td>
<td>Underground Fiber Optic</td>
<td>Crossing at intersection of Sand Lake Rd &amp; International Dr.</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>ATT</td>
<td>Underground Fiber Optic</td>
<td>From intersection of Sand Lake Rd &amp; I-4 eastbound ramp to Sand Lake Rd east to intersection of International Dr. &amp; Sand Lake Rd</td>
<td>South side of road</td>
</tr>
<tr>
<td>Communication</td>
<td>ATT</td>
<td>Underground Fiber Optic</td>
<td>From I-4 westbound ramp to Kirkman Rd northbound to 730-ft south of intersection of Major Blvd &amp; Kirkman Rd</td>
<td>East side of road</td>
</tr>
<tr>
<td>Communication</td>
<td>ATT</td>
<td>Underground Fiber Optic</td>
<td>Two crossings of Kirkman Rd 730-ft south of intersection of Major Blvd &amp; Kirkman Rd</td>
<td>N/A</td>
</tr>
<tr>
<td>Communication</td>
<td>ATT</td>
<td>Underground Fiber Optic</td>
<td>From 490-ft north to 1360-ft north of intersection of International Dr. &amp; Kirkman Rd</td>
<td>East side of intersection</td>
</tr>
</tbody>
</table>
Table 2.16 - Major Utilities

<table>
<thead>
<tr>
<th>Type of Utility</th>
<th>Utility Owner</th>
<th>Type of Facility</th>
<th>Limits</th>
<th>Offset / Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Aerial Fiber Optic</td>
<td>From 230-ft east of intersection of Della Dr. &amp; Sand Lake Rd east on Sand Lake Rd to 470-ft east of intersection of Dr. Phillips Blvd &amp; Sand Lake Rd</td>
<td>South side of road</td>
</tr>
<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Aerial Fiber Optic</td>
<td>From 350-ft west of to intersection of Turkey Lake Rd &amp; Sand Lake Rd</td>
<td>North side of road</td>
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<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Aerial Fiber Optic</td>
<td>Crossing at intersection of Turkey Lake Rd. &amp; Sand Lake Rd.</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Aerial Fiber Optic</td>
<td>From 750-ft west of intersection of International Dr. &amp; Sand Lake Rd to intersection of Universal Blvd &amp; Sand Lake Rd</td>
<td>North side of road</td>
</tr>
<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Aerial Fiber Optic</td>
<td>Crossing at intersection of Universal Blvd &amp; Sand Lake Rd</td>
<td>East side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Aerial Fiber Optic</td>
<td>From intersection of Universal Blvd &amp; Sand Lake Rd east on Sand Lake Rd to 250-ft west to station 135+00 on Sand Lake Road</td>
<td>Center of road</td>
</tr>
<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Underground Fiber Optic</td>
<td>Crossing of I-4 Corridor at Sand Lake Rd, I-4 Corridor underpass</td>
<td>West side of underpass</td>
</tr>
<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Underground Fiber Optic</td>
<td>From 890-ft west to 230-ft east of intersection of Della Dr. &amp; Sand Lake Rd.</td>
<td>South side of road</td>
</tr>
<tr>
<td>Type of Utility</td>
<td>Utility Owner</td>
<td>Type of Facility</td>
<td>Limits</td>
<td>Offset / Side</td>
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<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Underground Fiber Optic</td>
<td>Crossing 470-ft east of intersection of Dr. Phillips Blvd &amp; Sand Lake Rd</td>
<td>N/A</td>
</tr>
<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Underground Fiber Optic</td>
<td>From 470-ft east of intersection of Dr. Phillips Blvd &amp; Sand Lake Rd on Sand Lake Rd to 290-ft west of intersection of Turkey Lake Rd &amp; Sand Lake Rd</td>
<td>North side of road</td>
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<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Underground Fiber Optic</td>
<td>Crossing of Sand Lake Rd 750-ft west of intersection of International Dr. &amp; Sand Lake Rd</td>
<td>N/A</td>
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<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>Aerial Fiber Optic</td>
<td>Crossing of Sand Lake Rd. 670-ft west of intersection of International Dr. &amp; Sand Lake Rd.</td>
<td>N/A</td>
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<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>Aerial Fiber Optic</td>
<td>Crossing at intersection of International Dr. &amp; Sand Lake Rd.</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>Aerial Fiber Optic</td>
<td>Crossing at intersection of Canada Ave. &amp; Sand Lake Rd.</td>
<td>North side of intersection</td>
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<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>Aerial Fiber Optic</td>
<td>From intersection of Canada Ave. &amp; Sand Lake Rd. to station 135+00 on Sand Lake Road</td>
<td>Varies from north to center to south side of road</td>
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<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>Aerial Fiber Optic</td>
<td>From 370-ft east of intersection of Universal Blvd. &amp; Sand Lake Rd. to station 132+50 on Sand Lake Road</td>
<td>Center of road</td>
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<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>Aerial Fiber Optic</td>
<td>Crossing on Sand Lake Rd. at station 132+50</td>
<td>N/A</td>
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<td>Type of Facility</td>
<td>Limits</td>
<td>Offset / Side</td>
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<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>3-1.25&quot; Underground Fiber Optic</td>
<td>Crossing at intersection of Turkey Lake Rd. &amp; Sand Lake Rd.</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>3-1.25&quot; Underground Fiber Optic</td>
<td>Crossing at SR 528, International Dr. Underpass</td>
<td>West side of underpass</td>
</tr>
<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>3-1.25&quot; Underground Fiber Optic</td>
<td>From intersection of Turkey Lake Rd. &amp; Sand Lake Rd. to 500-ft west of intersection of International Dr. &amp; Sand Lake Rd. on Sand Lake Rd.</td>
<td>North side of road</td>
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<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>3-1.25&quot; Underground Fiber Optic</td>
<td>Crossing 500-ft west of intersection of International Dr. &amp; Sand Lake Rd.</td>
<td>West of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>3-1.25&quot; Underground Fiber Optic</td>
<td>From 500-ft west of intersection of International Dr. &amp; Sand Lake Rd. to intersection of Universal Blvd &amp; Sand Lake Rd. on Sand Lake Rd.</td>
<td>South side of road</td>
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<td>Communication</td>
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<td>3-1.25&quot; Underground Fiber Optic</td>
<td>Crossing at intersection of Universal Blvd. &amp; Sand Lake Rd.</td>
<td>West side of intersection</td>
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<td>Communication</td>
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<td>3-1.25&quot; Underground Fiber Optic</td>
<td>Crossing at intersection of Universal Blvd. &amp; Sand Lake Rd.</td>
<td>West side of intersection</td>
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<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>3-1.25&quot; Underground Fiber Optic</td>
<td>Crossing at intersection of Carrier Dr. &amp; Universal Blvd</td>
<td>South side of intersection</td>
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<td>Communication</td>
<td>Level 3 Communication</td>
<td>3-1.25&quot; Underground Fiber Optic</td>
<td>From 600-ft south of intersection of International Dr. &amp; Kirkman Rd. to Intersection of Carrier Dr. &amp; Kirkman Rd.</td>
<td>East side of road</td>
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</table>
Table 2.16 - Major Utilities

<table>
<thead>
<tr>
<th>Type of Utility</th>
<th>Utility Owner</th>
<th>Type of Facility</th>
<th>Limits</th>
<th>Offset / Side</th>
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<tr>
<td>Communication</td>
<td>Level 3</td>
<td>3-1.25&quot; Underground Fiber Optic</td>
<td>Crossing at intersection of Vineland Rd. &amp; Kirkman Rd</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>Level 3</td>
<td>1.25&quot; Underground Fiber Optic</td>
<td>Crossing 1850-ft east of SR 528, I-4 Underpass</td>
<td>N/A</td>
</tr>
<tr>
<td>Communication</td>
<td>Level 3</td>
<td>1.25&quot; Underground Fiber Optic</td>
<td>Crossing 1900-ft east of SR 528, I-4 Underpass</td>
<td>N/A</td>
</tr>
<tr>
<td>Communication</td>
<td>Level 3</td>
<td>2-1.25&quot; Underground Fiber Optic</td>
<td>Crossing at intersection of International Dr. &amp; Universal Blvd.</td>
<td>South side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>SmartCity</td>
<td>Unknown Size Underground Fiber Optic</td>
<td>Crossing at SR 528, International Dr. Underpass</td>
<td>East side of underpass</td>
</tr>
<tr>
<td>Communication</td>
<td>TW Telecom</td>
<td>2.25&quot; Underground Fiber Optic</td>
<td>Two Crossings at intersection of International Dr. &amp; Universal Blvd</td>
<td>South side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>Verizon (MCI)</td>
<td>Unknown Size Underground Fiber Optic</td>
<td>Crossing at intersection of Universal Blvd &amp; Sand Lake Rd</td>
<td>East side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>Verizon (MCI)</td>
<td>Unknown Size Underground Fiber Optic</td>
<td>Crossing at intersection of Carrier Dr. &amp; Universal Blvd</td>
<td>East side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>Verizon (MCI)</td>
<td>Unknown Size Aerial Fiber Optic</td>
<td>From end of project limit on Universal Blvd north to intersection of Carrier Dr. &amp; Universal Blvd</td>
<td>East side of road</td>
</tr>
<tr>
<td>Communication</td>
<td>Verizon (MCI)</td>
<td>Unknown Size Aerial Fiber Optic</td>
<td>From 1120-ft north of intersection of International Dr. &amp; Kirkman Rd north to I-4 Corridor</td>
<td>East side of road</td>
</tr>
<tr>
<td>Communication</td>
<td>Verizon (MCI)</td>
<td>Unknown Size Aerial Fiber Optic</td>
<td>From 730-ft north of Kirkman Rd, I-4 Corridor north to intersection of Major Blvd &amp; Kirkman Rd</td>
<td>East side of road</td>
</tr>
<tr>
<td>Type of Utility</td>
<td>Utility Owner</td>
<td>Type of Facility</td>
<td>Limits</td>
<td>Offset / Side</td>
</tr>
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<tr>
<td>Communication</td>
<td>Verizon (MCI)</td>
<td>Unknown Size Aerial Fiber Optic</td>
<td>Crossing at intersection of Vineland Rd. &amp; Kirkman Rd</td>
<td>South side of intersection</td>
</tr>
<tr>
<td>Communication</td>
<td>Verizon (MCI)</td>
<td>Unknown Size Aerial Fiber Optic</td>
<td>Crossing at intersection of Vineland Rd. &amp; Kirkman Rd</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Underground Electric</td>
<td>From 1090-ft west of to 730-ft west of International Dr., SR 528 underpass</td>
<td>North side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Underground Electric</td>
<td>Two crossings of SR 528 Corridor at International Dr., SR 528 underpass</td>
<td>West side of underpass</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Underground Electric</td>
<td>From 1000-ft east of to 1750-ft east of International Dr., SR 528 underpass</td>
<td>South side of road, following ramp</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Underground Electric</td>
<td>Three crossings of SR 528 Corridor 2070-ft east of International Dr., SR 528 underpass</td>
<td>N/A</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Underground Electric</td>
<td>From 880-ft west of intersection to intersection of Della Dr. &amp; Sand Lake Rd on Sand Lake Rd</td>
<td>South side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Underground Electric</td>
<td>From intersection of Della Dr. &amp; Sand Lake Rd east to intersection of Dr. Phillips Blvd &amp; Sand Lake Rd on Sand Lake Rd</td>
<td>North side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Underground Electric</td>
<td>Two lines from 900-ft west of to intersection of Dr. Phillips Blvd &amp; Sand Lake Rd on Sand Lake Rd</td>
<td>North side of road</td>
</tr>
</tbody>
</table>
### Table 2.16 - Major Utilities

<table>
<thead>
<tr>
<th>Type of Utility</th>
<th>Utility Owner</th>
<th>Type of Facility</th>
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<th>Offset / Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV</td>
<td>From station 1339+00 on I-4 Corridor east to 1970-ft feet west of Sand Lake Rd, I-4 Corridor underpass</td>
<td>West side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV</td>
<td>From 2120-ft west of to Sand Lake Rd &amp; I-4 Corridor underpass on I-4 Corridor</td>
<td>East side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV</td>
<td>From Sand Lake Rd, I-4 Corridor underpass east on I-4 for 3290-ft</td>
<td>East side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV</td>
<td>From 120-ft east of SR 528 westbound ramp to I-4 westbound east on I-4 Corridor for 1540-ft</td>
<td>East side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV</td>
<td>Crossing at intersection of Sand Lake Rd &amp; I-4 westbound to Sand Lake Rd</td>
<td>Diagonally across intersection</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>7.2 KV</td>
<td>Two lines from 730-ft west of to 250-ft west of International Dr., SR 528 underpass</td>
<td>North side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>7.2 KV</td>
<td>Crossing of Sand Lake Rd, 300-ft west of intersection of Della Dr. &amp; Sand Lake Rd</td>
<td>N/A</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>7.2 KV</td>
<td>From 300-ft west of to intersection of Della Dr. &amp; Sand Lake Rd</td>
<td>North side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>7.2 KV</td>
<td>Crossing at intersection of Della Dr. &amp; Sand Lake Rd</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>120 V</td>
<td>Crossing of Sand Lake Rd, 300-ft west of intersection of Della Dr. &amp; Sand Lake Rd</td>
<td>N/A</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>120 V</td>
<td>From 300-ft west of to intersection of Della Dr. &amp; Sand Lake Rd</td>
<td>North side of road</td>
</tr>
</tbody>
</table>
### Table 2.16 - Major Utilities

<table>
<thead>
<tr>
<th>Type of Utility</th>
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<th>Type of Facility</th>
<th>Limits</th>
<th>Offset / Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>Duke Energy</td>
<td>120 V Underground</td>
<td>From 880-ft west of to intersection of Della Dr. &amp; Sand Lake Rd</td>
<td>South side of road</td>
</tr>
<tr>
<td></td>
<td>Distribution</td>
<td>Electric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy</td>
<td>120 V Underground</td>
<td>Crossing of Sand Lake Rd, 500-ft east of intersection of Dr. Phillips Blvd &amp; Sand Lake Rd</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Distribution</td>
<td>Electric</td>
<td></td>
<td></td>
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<tr>
<td>Electricity</td>
<td>Duke Energy</td>
<td>120 V Underground</td>
<td>From intersection of Dr. Phillips Blvd &amp; Sand Lake Rd east on Sand Lake Rd for 1370-ft</td>
<td>North side of road</td>
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<td></td>
<td>Distribution</td>
<td>Electric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy</td>
<td>120 V Underground</td>
<td>Crossing of Sand Lake Rd 1600-ft east of intersection of Turkey Lake Rd &amp; Sand Lake Rd</td>
<td>N/A</td>
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<td></td>
<td>Distribution</td>
<td>Electric</td>
<td></td>
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</tr>
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<td>Electricity</td>
<td>Duke Energy</td>
<td>120 V Underground</td>
<td>From 260-ft west of to intersection of International Dr. &amp; Sand Lake Rd</td>
<td>North side of road</td>
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<tr>
<td></td>
<td>Distribution</td>
<td>Electric</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy</td>
<td>120 V Underground</td>
<td>From 350-ft west of intersection to intersection of International Dr. &amp; Sand Lake Rd</td>
<td>North side of road</td>
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<tr>
<td></td>
<td>Distribution</td>
<td>Electric</td>
<td></td>
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</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy</td>
<td>120 V Underground</td>
<td>From 140-ft west of intersection to intersection of International Dr. &amp; Sand Lake Rd</td>
<td>South side of road</td>
</tr>
<tr>
<td></td>
<td>Distribution</td>
<td>Electric</td>
<td></td>
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</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy</td>
<td>120 V Underground</td>
<td>Crossing at intersection of Universal Blvd &amp; Sand Lake Rd</td>
<td>East side of intersection</td>
</tr>
<tr>
<td></td>
<td>Distribution</td>
<td>Electric</td>
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<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>120 V Underground Electric</td>
<td>From intersection of Universal Blvd east on Sand Lake Rd for 350-ft</td>
<td>South side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>Crossing of Sand Lake Rd 1500-ft west of intersection of Turkey Lake Rd &amp; Sand Lake Rd</td>
<td>N/A</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>Crossing of Sand Lake Rd. 1400-ft west of intersection of Turkey Lake Rd &amp; Sand Lake Rd</td>
<td>N/A</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>Crossing of Sand Lake Rd, 400-ft west of intersection of Turkey Lake Rd &amp; Sand Lake Rd</td>
<td>N/A</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>From 1140-ft west of to 380-ft west of intersection of Turkey Lake Blvd &amp; Sand Lake Rd on Sand Lake Rd</td>
<td>South side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>From 400-ft west of to intersection of Turkey Lake Rd &amp; Sand Lake Rd on Sand Lake Rd</td>
<td>North side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>Crossing at intersection of Turkey Lake Rd &amp; Sand Lake Rd</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>Crossing of Sand Lake Rd 650-ft west of intersection of International Dr. &amp; Sand Lake Rd</td>
<td>N/A</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>From 680-ft west of intersection of International Dr. &amp; Sand Lake Rd. to 630-ft east of intersection of Canada Ave &amp; Sand Lake Rd</td>
<td>North side of road</td>
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</tbody>
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<tr>
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<tbody>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>Crossing at intersection of International Dr. &amp; Sand Lake Rd</td>
<td>West side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>Crossing at intersection of Canada Ave &amp; Sand Lake Rd</td>
<td>North side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>Crossing at intersection of Universal &amp; Sand Lake Rd</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>Crossing at intersection of Universal Blvd &amp; Sand Lake Rd</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>Crossing at intersection of Vineland Rd &amp; Kirkman Rd</td>
<td>South side of intersection</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Aerial Electric</td>
<td>Two crossings at intersection of Vineland Rd &amp; Kirkman Rd</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>7.2 KV Aerial Electric</td>
<td>Crossing of SR 528, 2200-ft east of International Dr., SR 528 underpass</td>
<td>N/A</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>120 V Aerial Electric</td>
<td>From 880-ft west of to 540-ft west of intersection of Della Dr. &amp; Sand Lake Rd. on Sand Lake Road</td>
<td>North side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Transmission</td>
<td>69 KV Underground Electric</td>
<td>Two crossings of Sand Lake Rd 370-ft east of intersection of Universal Blvd &amp; Sand Lake Rd</td>
<td>N/A</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Transmission</td>
<td>230 KV Aerial Electric</td>
<td>Crossing of Kirkman Rd 130-ft north of intersection of Windhover Dr. &amp; Kirkman Rd</td>
<td>Diagonally across road</td>
</tr>
</tbody>
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<tr>
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<tbody>
<tr>
<td>Electricity</td>
<td>Duke Energy Transmission</td>
<td>69 KV Aerial Electric</td>
<td>Two crossings of SR 528 Corridor 1900-ft east of International Dr., SR 528 underpass</td>
<td>N/A</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Transmission</td>
<td>69 KV Aerial Electric</td>
<td>Two crossings of SR 528 Corridor 1960-ft east of International Dr., SR 528 underpass</td>
<td>N/A</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Transmission</td>
<td>69 KV Aerial Electric</td>
<td>From 370-ft east of intersection east to 720-ft east of Kirkman northbound, Sand Lake Rd underpass</td>
<td>Center of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Transmission</td>
<td>69 KV Aerial Electric</td>
<td>From intersection of Universal Blvd &amp; Sand Lake Rd east 1600-ft on Sand Lake Rd.</td>
<td>North side of road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Transmission</td>
<td>69 KV Aerial Electric</td>
<td>Two crossings of Kirkman Rd 140-ft north of intersection of Windhover Dr. &amp; Kirkman Rd</td>
<td>Diagonally across road</td>
</tr>
<tr>
<td>Intelligent</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>From east side of Central Florida Pkwy, I-4 Underpass east to Kirkman Rd, I-4 Overpass</td>
<td>North side of road</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>From east side of Central Florida Pkwy, I-4 Underpass east to Kirkman Rd, I-4 Overpass</td>
<td>South side of road</td>
</tr>
<tr>
<td>Intelligent</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Two crossings of I-4, 800-ft west of I-4 westbound ramp to SR 528 eastbound</td>
<td>N/A</td>
</tr>
<tr>
<td>Intelligent</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>From 800-ft west of I-4 westbound ramp, following I-4 eastbound ramp to SR 528 eastbound</td>
<td>South side of ramp</td>
</tr>
</tbody>
</table>
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<th>Type of Facility</th>
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</thead>
<tbody>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>From 800-ft west of I-4 westbound ramp, following I-4 eastbound ramp to SR 528 eastbound</td>
<td>North side of ramp</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of I-4 westbound ramp to SR 528 eastbound, 380-ft west of end of ramp.</td>
<td>Diagonally across road</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>From end of I-4 ramps to SR 528 eastbound east to International Dr., SR 528 underpass</td>
<td>South side of road</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing at SR 528, International Dr. Underpass</td>
<td>West side of underpass</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of International Dr. at intersection of International Dr. &amp; International Dr. ramp to SR 528 eastbound</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of International Dr. at intersection of International Dr. &amp; International Dr. ramp to SR 528 eastbound</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Three crossings of International Dr. at intersection of International Dr. &amp; International Dr. ramp to SR 528 eastbound</td>
<td>East side of intersection</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>From 870-ft west of to 60-ft west of West Entrance Dr. &amp; SR 528 overpass along SR 528</td>
<td>Center of road</td>
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</tbody>
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<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of SR 528 westbound ramp to I-4 eastbound, 670-ft west of West Entrance Dr. &amp; SR 528 overpass along SR 528</td>
<td>N/A</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Four Crossings at intersection of Destination Pkwy &amp; International Dr.</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing at intersection of Destination Pkwy &amp; International Dr.</td>
<td>South side of intersection</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Two crossings at intersection of Destination Pkwy &amp; International Dr.</td>
<td>East side of intersection</td>
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<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>From 220-ft south of to intersection of Destination Pkwy &amp; International Dr. on International Dr.</td>
<td>East side of road</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>From intersection of International Dr. &amp; International Drive ramp to SR 528 eastbound east to end of project limits on SR 528</td>
<td>South side of road</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of I-4, 5750-ft west of Sand Lake Rd, I-4 Underpass</td>
<td>N/A</td>
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<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of I-4 at Sand Lake Rd, I-4 Underpass</td>
<td>East side of underpass</td>
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<tbody>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>From 300-ft east of intersection of Turkey Lake Rd &amp; Sand Lake Rd east to intersection of Universal Blvd &amp; Sand Lake Rd.</td>
<td>North side of road</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing at intersection of Universal Blvd &amp; Sand Lake Rd.</td>
<td>Diagonal across intersection</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing at intersection of Universal Blvd &amp; Sand Lake Rd.</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing at intersection of International Dr. &amp; Sand Lake Rd.</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of Sand Lake Rd 190-ft west of intersection of Sand Lake Rd &amp; International Dr.</td>
<td>Diagonally across road</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of Sand Lake Rd 200-ft west of intersection of Sand Lake Rd &amp; International Dr.</td>
<td>Diagonally across road</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of I-4 eastbound lanes, 3000-ft east of Sand Lake Rd, I-4 underpass</td>
<td>N/A</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>From 2750-ft east of to 3000-ft east of Sand Lake Rd, I-4 underpass along I-4</td>
<td>Center of road</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of I-4 eastbound lanes at Adventure Way exit</td>
<td>N/A</td>
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<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of I-4 eastbound lanes 1350-ft west of Universal Blvd, I-4 overpass</td>
<td>N/A</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>From 1350-ft west of to 1390-ft east of intersection of Universal Blvd, I-4 overpass, along I-4</td>
<td>Center of road</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of Universal Blvd at intersection of I-4 eastbound ramp to Universal Blvd</td>
<td>Diagonally across road</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing at intersection of Universal Blvd &amp; International Dr.</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Three Crossings at intersection of Universal Blvd &amp; International Dr.</td>
<td>East side of intersection</td>
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<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of I-4, 1090-ft west of Kirkman Rd, I-4 Overpass</td>
<td>N/A</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>From 1210-ft west of to intersection of Kirkman Rd, I-4 Overpass on I-4</td>
<td>South side of Westbound lanes</td>
</tr>
<tr>
<td>Intelligent Transportation Systems</td>
<td>Florida Department of Transportation</td>
<td>Intelligent Transportation Systems Cable</td>
<td>Crossing of Universal Blvd, 1610-ft south of intersection of Universal Blvd &amp; Hollywood Way</td>
<td>N/A</td>
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<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4” Natural Gas Main</td>
<td>Crossing at SR 528, International Dr. Underpass</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4” Natural Gas Main</td>
<td>Crossing at intersection of International Dr. &amp; Sand Lake Rd.</td>
<td>West side of intersection</td>
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</tbody>
</table>
Table 2.16 - Major Utilities

<table>
<thead>
<tr>
<th>Type of Utility</th>
<th>Utility Owner</th>
<th>Type of Facility</th>
<th>Limits</th>
<th>Offset / Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4” Natural Gas</td>
<td>From station 2+00 on Sand Lake Rd. to intersection of International Dr. &amp; Sand Lake Rd.</td>
<td>South side of road</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4” Natural Gas</td>
<td>From intersection of International Dr. &amp; Sand Lake Rd. to intersection of Canada Ave. &amp; Sand Lake Rd., on Sand Lake Rd.</td>
<td>Center of road</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4” Natural Gas</td>
<td>Crossing at intersection of International Dr. &amp; Universal Blvd.</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4” Natural Gas</td>
<td>From intersection of International Dr. &amp; Universal Blvd. south on Universal Blvd. for 425-ft</td>
<td>West side of road</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4” Natural Gas</td>
<td>Crossing at intersection of Vineland Rd. &amp; Kirkman Rd</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4” Natural Gas</td>
<td>From intersection of Vineland Rd. &amp; Kirkman Rd. to intersection of Major Blvd. &amp; Kirkman Rd.</td>
<td>East side of road</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4” Natural Gas</td>
<td>Crossing at intersection of Major Blvd. &amp; Kirkman Rd.</td>
<td>East side of intersection</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4” Natural Gas</td>
<td>Crossing at intersection of International Dr. &amp; Kirkman Rd.</td>
<td>North side of intersection</td>
</tr>
</tbody>
</table>
## Table 2.16 - Major Utilities

<table>
<thead>
<tr>
<th>Type of Utility</th>
<th>Utility Owner</th>
<th>Type of Facility</th>
<th>Limits</th>
<th>Offset / Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4&quot; Natural Gas</td>
<td>Main From 400-ft north of intersection of International Dr. &amp; Kirkman Rd. to 1025-ft south of intersection of International Dr. &amp; Kirkman Rd. on Kirkman Rd.</td>
<td>West side of road</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4&quot; Natural Gas</td>
<td>Main Crossing 560-ft south of intersection of International Dr. &amp; Kirkman Rd.</td>
<td>South of intersection</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4&quot; Natural Gas</td>
<td>Main From 560-ft south to 1050-ft south of intersection of International Dr. &amp; Kirkman Rd.</td>
<td>East side of road</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>4&quot; Natural Gas</td>
<td>Main From 340-ft west of intersection to intersection of International Dr. &amp; Sand Lake Rd.</td>
<td>North side of road</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>2&quot; Natural Gas</td>
<td>Main Crossing 1120-ft west of intersection of Della Dr. &amp; Sand Lake Rd.</td>
<td>West of intersection</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>2&quot; Natural Gas</td>
<td>Main Crossing at intersection of Della Dr. &amp; Sand Lake Rd.</td>
<td>East side of intersection</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>2&quot; Natural Gas</td>
<td>Main Crossing 270-ft west of Little Sand Lake on Sand Lake Rd.</td>
<td>N/A</td>
</tr>
<tr>
<td>Natural Gas</td>
<td>Teco Peoples Gas</td>
<td>2&quot; Natural Gas</td>
<td>Main Crossing 440-ft west of intersection of Turkey Lake Rd. &amp; Sand Lake Rd.</td>
<td>N/A</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>Crossing at SR 528, International Dr. Underpass</td>
<td>West side of underpass</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>From station 2+00 on Sand Lake Rd east to intersection of Della Dr. &amp; Sand Lake Rd</td>
<td>South side of road</td>
</tr>
<tr>
<td>Type of Utility</td>
<td>Utility Owner</td>
<td>Type of Facility</td>
<td>Limits</td>
<td>Offset / Side</td>
</tr>
<tr>
<td>----------------</td>
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</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>Crossing at intersection of Della Dr. &amp; Sand Lake Rd</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>Crossing at intersection of Della Dr. &amp; Sand Lake Rd</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>From intersection of Della Dr. &amp; Sand Lake Rd east to 1800-ft west of intersection of Turkey Lake Rd &amp; Sand Lake Rd</td>
<td>North side of road</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>From 1260-ft west of to 400-ft west of intersection of Turkey Lake Rd &amp; Sand Lake Rd</td>
<td>North side of road</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>From 400-ft west of to intersection of Turkey Lake Rd &amp; Sand Lake Rd on Sand Lake Rd</td>
<td>South side of intersection</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>Crossing at intersection of Turkey Lake Rd &amp; Sand Lake Rd</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>Crossing of I-4 Corridor at Sand Lake Rd underpass</td>
<td>South side of underpass</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>Crossing at intersection of Frontage Rd &amp; Sand Lake Rd</td>
<td>South side of intersection</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>From 580-ft west of to intersection of Universal Blvd &amp; Sand Lake Rd</td>
<td>South side of road</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>From station 2+00 to Station 4+90 on Sand Lake Road</td>
<td>North side of road</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>From intersection of Hollywood Way &amp; Universal Blvd north 1600-ft on Hollywood Way</td>
<td>West side of road</td>
</tr>
</tbody>
</table>
### Table 2.16 - Major Utilities

<table>
<thead>
<tr>
<th>Type of Utility</th>
<th>Utility Owner</th>
<th>Type of Facility</th>
<th>Limits</th>
<th>Offset / Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Television</td>
<td>BrightHouse</td>
<td>Underground CATV</td>
<td>Crossing of Universal Blvd 710-ft south of intersection of Major Blvd &amp; Universal Blvd</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>Networks</td>
<td></td>
<td>Crossing at intersection of International Dr. &amp; Universal Blvd</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>East side of intersection</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>From 1370-ft south of to intersection of International Dr. &amp; Universal Blvd</td>
<td>East side of road</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>From 990-ft south of to intersection of International Dr. &amp; Kirkman Rd</td>
<td>West side of road</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Crossing of Kirkman Rd 480-ft south of intersection of International Dr. &amp; Kirkman Rd</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Crossing at intersection of International Dr. &amp; Kirkman Rd</td>
<td>West side of intersection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>From intersection of International Dr. &amp; Kirkman Rd north for 680-ft on Kirkman Rd</td>
<td>West side of road</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>From 500-ft south of to intersection of International Dr. &amp; Kirkman Rd</td>
<td>East side of intersection</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>From intersection of International Dr. &amp; Kirkman Rd north for 550-ft on Kirkman Rd</td>
<td>East side of road</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>From 940-ft south to intersection of Major Blvd &amp; Kirkman Rd</td>
<td>East side of road</td>
</tr>
<tr>
<td>Type of Utility</td>
<td>Utility Owner</td>
<td>Type of Facility</td>
<td>Limits</td>
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</tr>
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<td>----------------</td>
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<td>------------------------------------------------------------------------</td>
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</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>Crossing at intersection of Major Blvd &amp; Kirkman Rd</td>
<td>East side of intersection</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>Crossing at Sand Lake Rd, I-4 Corridor underpass</td>
<td>South side of underpass</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>From station 1353+00 on the I-4 Corridor to station 1387+50 on the I-4 Corridor.</td>
<td>West side of road</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From intersection of Della Dr. &amp; Sand Lake Rd east to 1500-ft west of intersection of Turkey Lake Rd &amp; Sand Lake Rd</td>
<td>South side of road</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From 400-ft west of to intersection of Turkey Lake Rd &amp; Sand Lake Rd on Sand Lake Rd</td>
<td>North side of road</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From 1770-ft west to 1260-ft west of intersection of Turkey Lake Rd &amp; Sand Lake Rd</td>
<td>North side of road</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>Crossing of Sand Lake Rd, 400-ft west of intersection of Turkey Lake Blvd &amp; Sand Lake Rd</td>
<td>N/A</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>Crossing of Sand Lake Rd 650-ft west of intersection of International Dr. &amp; Sand Lake Rd</td>
<td>N/A</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From 650-ft west of intersection of International Dr. &amp; Sand Lake Rd east to 1560-ft east of intersection of Universal Blvd &amp; Sand Lake Rd</td>
<td>North side of road</td>
</tr>
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Table 2.16 - Major Utilities

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<tbody>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From 420-ft west of intersection of International Dr. &amp; Sand Lake Rd east to 560-ft west of intersection of Universal Blvd &amp; Sand Lake Rd</td>
<td>South side of road</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>Crossing at intersection of Universal Blvd &amp; Sand Lake Rd</td>
<td>East side to center of intersection</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From intersection of Universal Blvd &amp; Sand Lake Rd east 900-ft on Sand Lake Rd</td>
<td>Center of road</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>Crossing of Sand Lake Rd west bound 900-ft east of intersection of Universal Blvd &amp; Sand Lake Rd</td>
<td>N/A</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From intersection of Carrier Dr. &amp; Universal Blvd north 850-ft on Universal Blvd</td>
<td>East side of road</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>Crossing at intersection of Carrier Dr. &amp; Universal Blvd</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>Crossing at intersection of Carrier Dr. &amp; Universal Blvd</td>
<td>Diagonally across intersection</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From 180-ft south of to intersection of Carrier Dr. &amp; Universal Blvd</td>
<td>West side of road</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From 1040-ft south of to intersection of Carrier Dr. &amp; Kirkman Rd</td>
<td>West side of road</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>Crossing at intersection of Carrier Dr. &amp; Kirkman Rd</td>
<td>South side of road</td>
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<tbody>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From intersection of Carrier Dr. &amp; Kirkman Rd north 870-ft north on Kirkman Rd</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From intersection of International Dr. &amp; Kirkman Rd north 2870-ft north on Kirkman Rd</td>
<td>East side of road following ramp</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From 1680-ft south to 940-ft south of intersection of Major Blvd &amp; Kirkman Rd</td>
<td>East side of road following ramp</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>Crossing at intersection of Vineland Rd &amp; Kirkman Rd</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From 1260-ft east of SR 528 ramp to I-4 westbound to 1470-ft west of Sand Lake Rd, I-4 Corridor underpass</td>
<td>West side of road</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>16&quot; Force Main</td>
<td>From station 9+00 on Universal Blvd to intersection of International Dr. &amp; Universal Blvd</td>
<td>West side of road</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>16&quot; Force Main</td>
<td>Crossing at intersection of International Dr. &amp; Universal Blvd.</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>14&quot; Force Main</td>
<td>Crossing of I-4 at Adventure Way Exit</td>
<td>East side of exit</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>24&quot; Sanitary Main</td>
<td>From 1830-ft east of to station 1579+00 on Segment 2, toward Kirkman Rd</td>
<td>West side of road</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>24&quot; Sanitary Main</td>
<td>From 1800-ft south to intersection of Universal Blvd &amp; International Dr.</td>
<td>Center of road</td>
</tr>
</tbody>
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</thead>
<tbody>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>24” Sanitary Main</td>
<td>Crossing at intersection of Universal Blvd &amp; International Dr.</td>
<td>South side of intersection</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>24” Sanitary Main</td>
<td>Crossing at intersection of Universal Blvd &amp; International Dr.</td>
<td>East side of intersection</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>20” Sanitary Main</td>
<td>Crossing at intersection of Major Blvd &amp; Universal Blvd</td>
<td>South side of intersection</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>18” Sanitary Main</td>
<td>Crossing at intersection of Hollywood Way &amp; Universal Blvd</td>
<td>Center of intersection</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>18” Sanitary Main</td>
<td>From intersection of Hollywood Way &amp; Universal Blvd north to intersection of Major Blvd &amp; Universal Blvd</td>
<td>Center of road</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>15” Sanitary Main</td>
<td>From station 9+00 to station 14+00 on Universal Blvd</td>
<td>Center of road</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>10” Sanitary Main</td>
<td>Crossing of Universal Blvd 920-ft north of intersection of Carrier Dr. &amp; Universal Blvd</td>
<td>From center of road to west side of road</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>10” Sanitary Main</td>
<td>Crossing at intersection of Major Blvd &amp; Universal Blvd</td>
<td>South side of road</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>8” Sanitary Main</td>
<td>Crossing at intersection of Carrier Dr. &amp; Universal Blvd</td>
<td>Center of intersection</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>8” Sanitary Main</td>
<td>Crossing of Universal Blvd 300-ft north of intersection of Carrier Dr. &amp; Universal Blvd</td>
<td>From center of road to east side of road</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>8” Sanitary Main</td>
<td>Crossing of Universal Blvd 170-ft north of intersection of Carrier Dr. &amp; Universal Blvd</td>
<td>From center of road to west side</td>
</tr>
</tbody>
</table>
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<tbody>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>8&quot; Sanitary Main</td>
<td>Crossing of Universal Blvd 500-ft north of intersection of Hollywood Way &amp; Universal Blvd</td>
<td>From center of road to west side of road</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>City of Orlando</td>
<td>8&quot; Sanitary Main</td>
<td>Crossing of Universal Blvd 250-ft north of intersection of Hollywood Way &amp; Universal Blvd</td>
<td>From center of road to west side of road</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>4&quot; Abandoned Force Main</td>
<td>Crossing 350-ft east of intersection of International Dr. &amp; Sand Lake Rd.</td>
<td>East of intersection</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>48&quot; Force Main</td>
<td>Crossing 2050-ft east of SR 528, International Dr. Underpass on SR 528</td>
<td>N/A</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>42&quot; Force Main</td>
<td>Crossing 3000-ft north of SR 528, I-4 Overpass on I-4 Corridor</td>
<td>N/A</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>24&quot; Force Main</td>
<td>Crossing 175-ft east of intersection of I-4 west bound ramp to Sand Lake Rd.</td>
<td>East of intersection</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>24&quot; Force Main</td>
<td>From intersection of Canada Ave. &amp; Sand Lake Rd. to station 136+00 on Sand Lake Road</td>
<td>Varies from north to center of road</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>24&quot; Sanitary Main</td>
<td>From station 2+00 Sand Land Rd. to 400-ft east of intersection of International Dr. &amp; Sand Lake Rd. on Sand Lake Rd.</td>
<td>Varies from north to center of road</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>14&quot; Force Main</td>
<td>Crossing at intersection of International Dr. &amp; Sand Lake Rd.</td>
<td>West side of intersection</td>
</tr>
</tbody>
</table>
### Table 2.16 - Major Utilities

<table>
<thead>
<tr>
<th>Type of Utility</th>
<th>Utility Owner</th>
<th>Type of Facility</th>
<th>Limits</th>
<th>Offset / Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>8&quot; Force Main</td>
<td>Crossing at intersection of Canada Ave. &amp; Sand Lake Rd.</td>
<td>East side of intersection</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>6&quot; Force Main</td>
<td>Crossing at intersection of Della Dr. &amp; Sand Lake Rd.</td>
<td>West side of road</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>4&quot; Force Main</td>
<td>Crossing on Sand Lake Rd. at Little Sand Lake</td>
<td>N/A</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>4&quot; Force Main</td>
<td>Crossing at intersection of International Dr. &amp; Sand Lake Rd.</td>
<td>West side of intersection</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>20&quot; Sanitary Main</td>
<td>Crossing 290-ft east of intersection of Dr. Phillips Blvd. &amp; Sand Lake Rd.</td>
<td>East of intersection</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>20&quot; Sanitary Main</td>
<td>Crossing on Sand Lake Rd. at Little Sand Lake</td>
<td>N/A</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>20&quot; Sanitary Main</td>
<td>Crossing 310-ft east of intersection of Turkey Lake Rd. &amp; Sand Lake Rd.</td>
<td>East of intersection</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>Varying Size Force Main</td>
<td>From 330-ft west of intersection of Dr. Phillips Blvd &amp; Sand Lake Rd to 380-ft west of intersection of Turkey Lake Rd. &amp; Sand Lake Rd.</td>
<td>North side of road</td>
</tr>
<tr>
<td>Water</td>
<td>American Traffic Solutions</td>
<td>Unknown Size Water Main</td>
<td>Crossing at intersection of International Dr. &amp; Kirkman Rd.</td>
<td>South side of intersection</td>
</tr>
<tr>
<td>Water</td>
<td>City of Orlando</td>
<td>24&quot; Reclain Main</td>
<td>Crossing at intersection of Major Blvd &amp; Universal Blvd</td>
<td>South side of intersection</td>
</tr>
<tr>
<td>Type of Utility</td>
<td>Utility Owner</td>
<td>Type of Facility</td>
<td>Limits</td>
<td>Offset / Side</td>
</tr>
<tr>
<td>----------------</td>
<td>--------------</td>
<td>-----------------</td>
<td>--------</td>
<td>--------------</td>
</tr>
<tr>
<td>Water</td>
<td>City of Orlando</td>
<td>20” Reclaim Main</td>
<td>Crossing at intersection of Hollywood Way &amp; Universal Blvd</td>
<td>Center to south side of intersection</td>
</tr>
<tr>
<td>Water</td>
<td>City of Orlando</td>
<td>20” Reclaim Main</td>
<td>From intersection of Hollywood Way &amp; Universal Blvd north to intersection of Major Blvd &amp; Universal Blvd</td>
<td>Center of road</td>
</tr>
<tr>
<td>Water</td>
<td>City of Orlando</td>
<td>4” Reclaim Main</td>
<td>Crossing of Universal Blvd 600-ft north of intersection of Hollywood Way &amp; Universal Blvd</td>
<td>N/A</td>
</tr>
<tr>
<td>Water</td>
<td>City of Orlando</td>
<td>4” Reclaim Main</td>
<td>Crossing of Universal Blvd 470-ft north of intersection of Hollywood Way &amp; Universal Blvd</td>
<td>N/A</td>
</tr>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>20” Water Main</td>
<td>Crossing at intersection of Major Blvd &amp; Universal Blvd on Universal Blvd</td>
<td>South side of intersection</td>
</tr>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>20” Water Main</td>
<td>Crossing at Universal Blvd. Bridge, 350-ft north of intersection of Major Blvd. &amp; Universal Blvd</td>
<td>West side of road</td>
</tr>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>16” Water Main</td>
<td>Crossing at SR 528, International Dr. Underpass</td>
<td>Center of underpass</td>
</tr>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>16” Water Main</td>
<td>From 340-ft north to 550-ft south of intersection of International Dr. &amp; Kirkman Rd.</td>
<td>Center of road</td>
</tr>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>16” Water Main</td>
<td>Crossing 450-ft south of intersection of International Dr. &amp; Kirkman Rd.</td>
<td>From center to east side of road</td>
</tr>
</tbody>
</table>
## Table 2.16 - Major Utilities

<table>
<thead>
<tr>
<th>Type of Utility</th>
<th>Utility Owner</th>
<th>Type of Facility</th>
<th>Limits</th>
<th>Offset / Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>16&quot; Water Main</td>
<td>Crossing 340-ft north of intersection of International Dr. &amp; Kirkman Rd.</td>
<td>From center to east side of road</td>
</tr>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>16&quot; Water Main</td>
<td>Crossing 820-ft south of intersection of Major Blvd &amp; Kirkman Rd. on Kirkman Rd.</td>
<td>N/A</td>
</tr>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>12&quot; Water Main</td>
<td>Crossing 2100-ft north of Sand Lake Rd., I-4 Overpass on I-4 Corridor</td>
<td>N/A</td>
</tr>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>12&quot; Water Main</td>
<td>Crossing 160-ft south of intersection of Vineland Rd. &amp; Universal Blvd. on Universal Blvd.</td>
<td>South of intersection</td>
</tr>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>12&quot; Water Main</td>
<td>From intersection of international Dr. &amp; Universal Blvd to 580-ft south on Universal Blvd.</td>
<td>East side of road</td>
</tr>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>12&quot; Water Main</td>
<td>Crossing at intersection of Major Blvd. &amp; Kirkman Rd.</td>
<td>North side of intersection</td>
</tr>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>8&quot; Water Main</td>
<td>From intersection of Hollywood Way &amp; Adventure Way to end of I-4 west bound to Adventure Way ramp</td>
<td>South side of road</td>
</tr>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>8&quot; Water Main</td>
<td>Crossing 270-ft west of end of I-4 westbound ramp to Adventure Way on Adventure Way</td>
<td>N/A</td>
</tr>
<tr>
<td>Water</td>
<td>Orlando Utilities Commission</td>
<td>8&quot; Water Main</td>
<td>Crossing at intersection of International Dr. &amp; Universal Blvd.</td>
<td>South side of intersection</td>
</tr>
</tbody>
</table>
### Table 2.16 - Major Utilities

<table>
<thead>
<tr>
<th>Type of Utility</th>
<th>Utility Owner</th>
<th>Type of Facility</th>
<th>Limits</th>
<th>Offset / Side</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water</td>
<td>Orange County Utilities</td>
<td>Abandoned</td>
<td>From station 2+00 on Sand Land Rd. to 550-ft west of intersection of</td>
<td>Center of road</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Water Main, Unknown Size</td>
<td>Turkey Lake Rd. &amp; Sand Lake Rd.</td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>Orange County Utilities</td>
<td>36&quot; Reclaim Main</td>
<td>Crossing 5300-ft north of SR 528, I-4 Overpass on I-4 Corridor</td>
<td>N/A</td>
</tr>
<tr>
<td>Water</td>
<td>Orange County Utilities</td>
<td>16&quot; Reclaim Main</td>
<td>From station 2+00 on Sand Land Rd. to intersection of Turkey Lake Rd. &amp; Sand Lake Rd.</td>
<td>North side of road</td>
</tr>
<tr>
<td>Water</td>
<td>Orange County Utilities</td>
<td>12&quot; Reclaim Main</td>
<td>Crossing at SR 528, International Dr. Underpass</td>
<td>East side of underpass</td>
</tr>
<tr>
<td>Water</td>
<td>Orange County Utilities</td>
<td>12&quot; Reclaim Main</td>
<td>Crossing 2000-ft east of SR 528, International Dr. Underpass on SR 528</td>
<td>N/A</td>
</tr>
<tr>
<td>Water</td>
<td>Orange County Utilities</td>
<td>12&quot; Reclaim Main</td>
<td>Crossing 2000-ft east of SR 528, International Dr. Underpass on SR 528</td>
<td>N/A</td>
</tr>
<tr>
<td>Water</td>
<td>Orange County Utilities</td>
<td>12&quot; Reclaim Main</td>
<td>Crossing at intersection of Della Dr. &amp; Sand Lake Rd.</td>
<td>East side of intersection</td>
</tr>
<tr>
<td>Water</td>
<td>Orange County Utilities</td>
<td>12&quot; Water Main</td>
<td>From 2700-ft south to 2100-ft south of SR 528, I-4 Overpass on I-4 Corridor</td>
<td>West side of road</td>
</tr>
</tbody>
</table>
2.17 Soils

A preliminary geotechnical review was conducted to evaluate stormwater management in the project corridor study area. Soils data from the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) and the United States Geological Society (USGS) Quadrangle Map was reviewed within the limits of the proposed improvements in Orange County to determine soil and groundwater conditions along the I-4 Segment 2 corridor. A large portion of the corridor segment is classified as Urban Land, which includes areas of developed land with buildings, streets and other types of impervious ground cover. Based on the NRCS survey, the soils within the project area are characterized as sands with variable silt content. The seasonal high water table levels for the majority of soils, in locations investigated along the project corridor, range from 0.5 to 3.5 feet below the existing ground surface. The predominant types of soils found in the study area and their corresponding properties are summarized in Table 2.17. The corresponding soils map is illustrated in Figure 2.10. Soil boring information, permeability test results and detailed soil survey information can be found in the Report of Preliminary Geotechnical Engineering Investigation for Ponds, Segment 2: State road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) (December 2015), completed for this project.

Table 2.17 - Soil Types

<table>
<thead>
<tr>
<th>Soil Name</th>
<th>Depth (in)</th>
<th>Soil Description</th>
<th>Soil Classification (AASHTO)</th>
<th>Seasonal High Groundwater Depth (ft)</th>
<th>Hydrologic Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Archbold Fine Sand, 0 to 5 percent slopes</td>
<td>0 - 80</td>
<td>Fine sand, sand</td>
<td>A-3</td>
<td>3.5 – 5.0</td>
<td>A</td>
</tr>
<tr>
<td>Basinger Fine Sand, depressional</td>
<td>0 – 7</td>
<td>Fine sand</td>
<td>A-3</td>
<td>+2.0 - 0.0</td>
<td>A/D</td>
</tr>
<tr>
<td>Candler Fine Sand, 5 to 12 percent slopes</td>
<td>0 – 69</td>
<td>Fine sand</td>
<td>A-3</td>
<td>&gt;6</td>
<td>A</td>
</tr>
<tr>
<td>Apopka fine sand, 5 to 12 percent slopes</td>
<td>0 – 69</td>
<td>Fine sand</td>
<td>A-3</td>
<td></td>
<td>A</td>
</tr>
<tr>
<td>Immokalee Fine Sand</td>
<td>0 – 5</td>
<td>Fine sand</td>
<td>A-3</td>
<td>0.5 - 1.0</td>
<td>B/D</td>
</tr>
<tr>
<td>Pomello Fine Sand, 0 to 5 percent slopes</td>
<td>0 - 3</td>
<td>Fine sand</td>
<td>A-3</td>
<td>2.0 -3.5</td>
<td>A</td>
</tr>
</tbody>
</table>

Soil boring information, permeability test results and detailed soil survey information can be found in the Report of Preliminary Geotechnical Engineering Investigation for Ponds, Segment 2: State road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) (December 2015), completed for this project.
Table 2.17 - Soil Types

<table>
<thead>
<tr>
<th>Soil Name</th>
<th>Depth (in)</th>
<th>Soil Description</th>
<th>Soil Classification (AASHTO)</th>
<th>Seasonal High Groundwater Depth (ft)</th>
<th>Hydrologic Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Johns Fine Sand</td>
<td>0 – 12</td>
<td>Fine sand</td>
<td>A-3</td>
<td>0.5 - 1.0</td>
<td>B/D</td>
</tr>
<tr>
<td></td>
<td>12 – 24</td>
<td>Fine sand, sand</td>
<td>A-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>44 – 80</td>
<td>Fine sand, sand</td>
<td>A-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>St. Lucie Fine Sand (0 to 5 percent slopes)</td>
<td>0 – 2</td>
<td>Fine sand</td>
<td>A-3</td>
<td>&gt;6</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>2 - 80</td>
<td>Fine sand, sand</td>
<td>A-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Smyrna fine sand</td>
<td>0 – 27</td>
<td>Fine sand, sand</td>
<td>A-2-4, A-3</td>
<td>0.5 – 1.5</td>
<td>A/D</td>
</tr>
<tr>
<td></td>
<td>27 – 80</td>
<td>Fine sand, sand</td>
<td>A-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tavares Fine Sand (0 to 5 percent slopes)</td>
<td>0 – 6</td>
<td>Fine sand, sand</td>
<td>A-3</td>
<td>3.5 – 6.0</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>6 – 80</td>
<td>Fine sand, sand</td>
<td>A-3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tavares Fine Sand (0 to 5 percent slopes)</td>
<td>0 – 80</td>
<td>Fine sand, sand</td>
<td>A-3</td>
<td>3.5 – 6.0</td>
<td>A</td>
</tr>
<tr>
<td>Millhopper fine sand, 0 to 5 percent slopes</td>
<td>0 – 64</td>
<td>Fine sand</td>
<td>A-3, A-2-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>64 – 76</td>
<td>Sandy loam, loamy sand, loamy fine sand</td>
<td>A-2-4</td>
<td>5.0 – 5.5</td>
<td>A</td>
</tr>
<tr>
<td></td>
<td>76 – 80</td>
<td>Sandy clay loam, sandy loam, fine sandy loam</td>
<td>A-4, A-2-4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urban Land</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td>A</td>
</tr>
</tbody>
</table>
Figure 2.10 – Soils Map

Prepared from:
Harris Soil Survey of Orange County, FL
Orange County 1:24,000 Scale Soil Map

Legend:
2 - Archbold fine sand, 0 to 5 percent slopes
3 - Basinger fine sand
6 - Candler-Appopka fine sands, 5 to 20 percent slopes
20 - Immokalee fine sand
34 - Pomelio fine sand, 0 to 5 percent slopes
37 - St. Johns fine sand
38 - St. Lucie fine sand, 0 to 5 percent slopes
44 - Smyrna fine sand
46 - Tavares fine sand, 0 to 20 percent slopes
47 - Tavares-Mehlhoppe fine sands, 0 to 20 percent slopes
50 - Urban land

1,000 2,000
Feet

North

SR 400 (I-4) Project Development and Environment (PD&E) Study | FM No.: 432100-1-22-01
2.18 **Sociocultural Conditions**

Sociocultural Effects (SCE) Evaluation is the process of determining and evaluating the effects a transportation action may have on a community and the quality of life of the citizenry. A community is defined as a geographic, manmade or natural boundary comprised of people and places which may share similar social, cultural, economic, political or other characteristics. This section of the report identifies community features and characteristics surrounding the project corridor, including a data inventory of existing community facilities.

2.18.1 **Study Area**

The SCE study area was determined by evaluating project plans, land use maps, local government comprehensive plans and other relevant resources. Segment 2 is located within the U.S. Census designated Orlando-Kissimmee Metropolitan Statistical Area. In this metro area, the corridor lies almost entirely within the U.S. Postal Service (USPS) zip code boundary of 32819 in unincorporated Orange County, with an approximate ¾ mile portion of the segment in the north end of the corridor in the City of Orlando. Nearby communities adjacent to the corridor include Tangelo Park to the east and Doctor Phillips to the west, both of which are outside of ½ mile of the project corridor.

2.18.2 **Social Demographics**

Orange County is the fifth most populous County in the State of Florida; with a 2014 population estimate of 1.2 million, the County represents approximately six percent of the total State population. According to the U.S. Census Bureau, Orange County experienced a growth rate of 6.9% during the three-year period between 2010 and 2013, with a population increase of approximately 79,000. Over the ten-year period between the 2000 Census and the 2010 Census, the County population increased at a rate of approximately 2.8% per year from approximately 900,000 to 1.15 million. The population projection for Orange County for the year 2040 is approximately 1.84 million, a projected increase of approximately 50% over a 27-year period.

With a 2014 estimated population of 255,636, the City of Orlando is ranked as the fourth largest city in Florida, and represents approximately 21% of the total population of Orange County. Based on data compiled by the University of Florida Bureau of Economic and Business Research (BEBR), the City of Orlando ranks fourth in growth amongst all Florida cities with population greater

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2 Orange County Profile, Florida Legislature Office of Economic and Demographic Research, January 2015.
or equal to 50,000, between 2010 and 2014. The growth projections for the City indicate an estimated population of 345,000 by 2040.  

Demographic statistics specific to the area surrounding the I-4 Segment 2 corridor were obtained from the U.S. Census Bureau’s American Community Survey (ACS). The U.S. Census Bureau has developed Zip Code Tabulation Areas (ZCTAs) to represent USPS zip code service areas. Since USPS zip codes can cross state, county, census tract and census block boundaries, the Bureau has developed the ZCTAs to provide a correlation between postal zip codes and census bureau geographic boundaries. The demographic data for Orange County and U.S. Census ZCTA 32819 is summarized in Table 2.18.

<table>
<thead>
<tr>
<th>Community Characteristic</th>
<th>Orange County</th>
<th>ZCTA 32819</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Population</td>
<td>1,145,956</td>
<td>24,976</td>
</tr>
<tr>
<td>% White</td>
<td>63.6</td>
<td>72.2</td>
</tr>
<tr>
<td>% Black or African American</td>
<td>20.8</td>
<td>12.8</td>
</tr>
<tr>
<td>% Other</td>
<td>15.6</td>
<td>15.0</td>
</tr>
<tr>
<td>% Hispanic or Latino (of Any Race)</td>
<td>26.9</td>
<td>14.6</td>
</tr>
<tr>
<td>% 65 Years and Over</td>
<td>9.7</td>
<td>12.1</td>
</tr>
<tr>
<td>% High School Graduate or Higher</td>
<td>86.9</td>
<td>92.4</td>
</tr>
<tr>
<td>% Bachelor’s Degree or Higher</td>
<td>30.0</td>
<td>43.9</td>
</tr>
<tr>
<td>% Speak English Less Than &quot;Very Well&quot;</td>
<td>12.7</td>
<td>8.6</td>
</tr>
<tr>
<td>% Employed (Age 16 And Over)</td>
<td>62.8</td>
<td>60.6</td>
</tr>
<tr>
<td>% Unemployed</td>
<td>7.2</td>
<td>4.2</td>
</tr>
<tr>
<td>Commuting to Work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% Car, Truck, Or Van -- Drove Alone</td>
<td>80.2</td>
<td>79.8</td>
</tr>
<tr>
<td>% Car, Truck, Or Van – Carpooleed</td>
<td>9.8</td>
<td>9.1</td>
</tr>
<tr>
<td>% Public Transportation (Excluding Taxicab)</td>
<td>2.7</td>
<td>1.6</td>
</tr>
<tr>
<td>Mean Travel Time to Work (Minutes)</td>
<td>26.3</td>
<td>22.7</td>
</tr>
<tr>
<td>Average Household Size</td>
<td>2.72</td>
<td>2.75</td>
</tr>
<tr>
<td>Average Family Size</td>
<td>3.31</td>
<td>3.20</td>
</tr>
<tr>
<td>Median Household Income (Dollars)</td>
<td>49,731</td>
<td>65,526</td>
</tr>
<tr>
<td>Mean Household Income (Dollars)</td>
<td>68,054</td>
<td>97,743</td>
</tr>
<tr>
<td>Per Capita Income (Dollars)</td>
<td>25,494</td>
<td>35,997</td>
</tr>
<tr>
<td>Income Below the Poverty Level</td>
<td></td>
<td></td>
</tr>
<tr>
<td>% All People</td>
<td>14.9</td>
<td>11.2</td>
</tr>
<tr>
<td>% 65 Years and Over</td>
<td>10.0</td>
<td>5.9</td>
</tr>
<tr>
<td>% Under 18 Years</td>
<td>19.8</td>
<td>12.7</td>
</tr>
</tbody>
</table>

---

2.18.3 Economics

According to the City of Orlando Economic Development Department’s *Growth Management Plan 2013-2040 Growth Projections Report (June 30, 2014)*, the total employment in Orange County for 2010 was approximately 820,000. Total employment in the County is projected to increase by 67% over 30 years, with an estimated employment of 1,370,000 in 2040. The 2010 employment in Orlando was approximately 240,000 and the 2040 employment projection is approximately 340,000.

2.18.4 Existing Developments

The proposed I-4 Segment 2 improvements are within a segment of the Interstate that is characterized heavily by tourist/visitor activity and related hospitality-driven businesses and facilities. Attractions include Universal Studios Theme Park and Sea World Entertainment Park in the I-4/Republic Drive Community Redevelopment Area (CRA) and Wet n Wild water park near the northern end of the corridor. The east side of the corridor is adjacent to the International Drive CRA which includes the Orange County Convention Center, the Pointe Orlando Shopping and Entertainment complex and numerous lodging facilities, ranging from small hotels to large-scale resorts.

A review of aerial photographs and land use/zoning maps indicates that the primary uses along the corridor are commercial (retail and general) with some PD (Planned Development). There are few existing parcels with residential uses within 500 feet of the centerline of the proposed corridor. These properties, which are located on the west side of I-4 approximately ¾ mile south of Sand Lake Road, are currently zoned R-CE (Rural Country Estate) are lakefront lots developed with single family residential use. Within one-half mile of the proposed corridor’s centerline, a few residential developments exist along the west side of the corridor as follows:

- Toscana Units 1 & 2 (Townhomes and Condos)
- Spring Lake Villas (Single Family Residences)
- Sand Lake Private Residences Condos (Multi-Family)
- Westgate Resort (Condominium Time Share)

2.18.5 Community Facilities and Services

Existing community resources within the I-4 Segment 2 project study area were identified as part of the sociocultural analysis. The existing patterns of social activity revolve heavily around tourist and visitor activity in this corridor. The International Drive corridor, parallel to I-4 in the project’s vicinity, is a large focal point of this community. Numerous community resources exist to serve the visiting population as well as the surrounding residential communities and neighborhoods. Table 2.19 provides a list of the locations of existing community facilities and services in the I-4 study area. Figure 2.11 illustrates the locations of community facilities and services.
<table>
<thead>
<tr>
<th>Community Facility/Service</th>
<th>Address</th>
<th>Location</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School/College/Daycare Facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CCLC at Orlando</td>
<td>7113 Wallace Rd, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Student Leadership University</td>
<td>7380 W Sand Lake Rd, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Westgate Children’s Learning &amp; Development Center</td>
<td>7450 Sandlake Commons Blvd, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Webster University</td>
<td>6750 Forum Dr, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Health/Safety Facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dr. P. Phillips Hospital</td>
<td>9400 Turkey Lake Rd, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Central Florida Behavioral Hospital</td>
<td>6601 Central Florida Pkwy, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Orlando Police Department (International Dr. Team Office)</td>
<td>6731 S Kirkman Rd, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Orange County Sheriff’s Office Sector V</td>
<td>6825 Westwood Blvd, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Religious Facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ebon Temple Inc</td>
<td>7001 Wallace Rd, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>The Church of Life</td>
<td>7468 Universal Blvd, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Parks/Recreation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Orange Tree Golf Club</td>
<td>7450 Woodgreen Dr, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Marriott’s Grande Pines Golf Club</td>
<td>6351 International Dr, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Other Community Facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>YMCA Aquatic and Family Center</td>
<td>8422 International Dr, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>United States Post Office</td>
<td>10450 Turkey Lake Rd, Orlando</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Pointe Orlando</td>
<td>9101 International Dr, Orlando</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
Figure 2.11 – Community Facilities and Services
3.0 Planning Phase/Corridor Analysis

The current PD&E study is an update of the previously approved PD&E study for I-4 from SR 528 (Beachline Expressway) to SR 472 (FM Nos.: 242486-1, 242592-1 and 242703-1 (FEIS – August 2002, Record of Decision Pending)). The original project followed a multi-level screening process which involved preliminary evaluations of the I-4 corridor with respect to constructability, design speeds and type of physical separation between the special use (HOV in the original design concept and express lanes in the current design concept) and general use lanes. The preliminary evaluations were reviewed with FDOT, and the corridor was analyzed with the following project goals:

- Use the existing infrastructure to the maximum extent possible
- Evaluate a barrier-separated facility
- Refine concept plans to minimize traffic disruptions during construction
- Minimize construction costs and right-of-way requirements
- Avoid and/or minimize impacts especially for wetlands, floodplains, Section 4(f) properties and Section 106 properties

Since the proposed project is a widening project, no alternative alignments were evaluated.
4.0 **Design Criteria and Standards**

The I-4 Btu PD&E Reevaluation Study incorporates project elements with various design requirements. Table 4.1 presents the roadway design criteria established for each design element. The design criteria and standards are based on design parameters in accordance with *A Policy on Geometric Design of Highway and Streets* (AASHTO 2011), *Roadway Plans Preparation Manual (PPM), Volumes I and II* (FDOT, January 2015), and *Roadway and Traffic Design Standards* (FDOT, 2015).

<table>
<thead>
<tr>
<th>Design Element</th>
<th>Design Standard</th>
<th>Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design Vehicle</td>
<td>WB-62FL</td>
<td>PPM, Pg. 1-19</td>
</tr>
<tr>
<td>Design Year</td>
<td>2040</td>
<td>FDOT Scope of Services</td>
</tr>
<tr>
<td>Design Speed</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4 / Express Lanes</td>
<td>70 mph</td>
<td>FDOT PPM, Table 1.9.1 and 2011 AASHTO, Page 10-89</td>
</tr>
<tr>
<td>Diamond Ramps</td>
<td>50 mph</td>
<td></td>
</tr>
<tr>
<td>Loop Ramp</td>
<td>30 mph (25 mph min as per AASHTO)</td>
<td></td>
</tr>
<tr>
<td>Median Width I-4</td>
<td>64 ft. without barrier</td>
<td>FDOT PPM, Table 2.2.1</td>
</tr>
<tr>
<td></td>
<td>26 ft. minimum with barrier</td>
<td></td>
</tr>
<tr>
<td>Maximum Degree of Curve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4 / Express Lanes</td>
<td>3°00'</td>
<td>FDOT PPM, Table 2.8.3 (e MAX – 0.10)</td>
</tr>
<tr>
<td>Direct Connection Ramp</td>
<td>8°15'</td>
<td></td>
</tr>
<tr>
<td>Loop Ramp</td>
<td>24°45'</td>
<td></td>
</tr>
<tr>
<td>Length of Horizontal Curves</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4 / Express Lanes</td>
<td>Desirable: 30(V)</td>
<td>FDOT PPM, Table 2.8.2a</td>
</tr>
<tr>
<td>Ramps</td>
<td>Minimum: 15(V)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Desirable: 15(V)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Minimum: 400 ft.</td>
<td></td>
</tr>
<tr>
<td>Minimum Stopping Sight Distance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4 / Express Lanes</td>
<td>820 ft.</td>
<td>FDOT PPM, Table 2.7.1</td>
</tr>
<tr>
<td>Diamond Ramps</td>
<td>425 ft.</td>
<td></td>
</tr>
<tr>
<td>Loop Ramp</td>
<td>200 ft.</td>
<td></td>
</tr>
<tr>
<td>Decision Sight Distance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4 / Express Lanes</td>
<td>1,445 ft.</td>
<td>2011 AASHTO, Exhibit 3-3, Page 3-7</td>
</tr>
<tr>
<td>Diamond Ramps</td>
<td>910 ft.</td>
<td></td>
</tr>
<tr>
<td>Loop Ramp</td>
<td>490 ft.</td>
<td></td>
</tr>
<tr>
<td>Maximum Shoulder &quot;Roll-Over&quot;</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Lane “Roll-Over”</td>
<td>7%</td>
<td>FDOT Roadway &amp; Traffic Design Standard Index No. 510, 2011 AASHTO pg. 4-5</td>
</tr>
<tr>
<td></td>
<td>4%</td>
<td></td>
</tr>
</tbody>
</table>
### Table 4.1 - Roadway Design Criteria

<table>
<thead>
<tr>
<th>Design Element</th>
<th>Design Standard</th>
<th>Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Superelevation Transition</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tangent Curve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Superelevation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4 / Express Lanes Ramps</td>
<td>80% desirable, 50% minimum</td>
<td>FDOT PPM, Page 2-53</td>
</tr>
<tr>
<td></td>
<td>20% desirable, 50% maximum</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td></td>
<td>10%</td>
<td></td>
</tr>
<tr>
<td>On- and Off-Ramp Design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diamond On-Ramps</td>
<td></td>
<td>FDOT Roadway &amp; Traffic Design Standard Index No 525</td>
</tr>
<tr>
<td>Diamond Off-Ramps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Loop Ramp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum Profile Grade</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4 Express Lanes</td>
<td>3%</td>
<td>FDOT PPM, Table 2.6.1</td>
</tr>
<tr>
<td>Diamond Ramp</td>
<td>5%</td>
<td></td>
</tr>
<tr>
<td>Loop Ramp</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Maximum Change in Grade without Vertical Curve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4 / Express Lanes</td>
<td>0.20%</td>
<td>FDOT PPM, Table 2.6.2</td>
</tr>
<tr>
<td>Diamond Ramp</td>
<td>0.60%</td>
<td></td>
</tr>
<tr>
<td>Loop Ramp</td>
<td>1.00%</td>
<td></td>
</tr>
<tr>
<td>Crest Vertical Curve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4 / Express Lanes (Open Highway)</td>
<td>K=506, min. length 1,000 ft.</td>
<td>FDOT PPM, Table 2.8.5</td>
</tr>
<tr>
<td>Mainline I-4 / Express Lanes (w/interchange)</td>
<td>K=506, min. length 1,800 ft.</td>
<td></td>
</tr>
<tr>
<td>Diamond Ramp</td>
<td>K=136, min. length 300 ft.</td>
<td></td>
</tr>
<tr>
<td>Loop Ramp</td>
<td>K=31, min. length 3V</td>
<td></td>
</tr>
<tr>
<td>Sag Vertical Curve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4 / Express Lanes</td>
<td>K=206, min. length 800 ft.</td>
<td>FDOT PPM, Table 2.8.6</td>
</tr>
<tr>
<td>Diamond Ramp</td>
<td>K=96, min. length 200 ft.</td>
<td></td>
</tr>
<tr>
<td>Loop Ramp</td>
<td>K=37, min. length 3V</td>
<td></td>
</tr>
<tr>
<td>Minimum Vertical Clearance</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bridges over I-4</td>
<td>16'-6&quot;²</td>
<td>FDOT PPM, Tables 2.10.1 and 2.10.2</td>
</tr>
<tr>
<td>I-4 Bridges over Cross Roads</td>
<td>16'-6&quot;²</td>
<td></td>
</tr>
<tr>
<td>Pedestrian Facilities over Rdwy</td>
<td>17'-6&quot;²</td>
<td></td>
</tr>
<tr>
<td>Overhead Signs</td>
<td>17'-6&quot;²</td>
<td></td>
</tr>
<tr>
<td>Roadway over Railroad</td>
<td>23'-6&quot;³</td>
<td></td>
</tr>
<tr>
<td>Design Element</td>
<td>Design Standard</td>
<td>Source(s)</td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>--------------------------</td>
<td>------------------------------------------------</td>
</tr>
<tr>
<td>Lane Widths</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4</td>
<td>12 ft. – Tangent</td>
<td>FDOT PPM, Tables 2.1.1, 2.1.2 and 2.1.3</td>
</tr>
<tr>
<td>One-Lane Ramp</td>
<td>15 ft. – Tangent</td>
<td></td>
</tr>
<tr>
<td>Two-Lane Ramp</td>
<td>24 ft. – Tangent</td>
<td></td>
</tr>
<tr>
<td>Lane Drop Taper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4 / Express Lanes</td>
<td>70:1 Desirable</td>
<td>2011 AASHTO, Page 3-143</td>
</tr>
<tr>
<td>Shoulder Width – Roadway – Inside (or Left)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4</td>
<td>12 ft. 10 ft.</td>
<td>FDOT PPM, Table 2.3.1</td>
</tr>
<tr>
<td>One-Lane Ramp</td>
<td>6 ft. 2 ft.</td>
<td></td>
</tr>
<tr>
<td>Two-Lane Ramp</td>
<td>8 ft. 4 ft.</td>
<td></td>
</tr>
<tr>
<td>Two-Lane Express Lane</td>
<td>6 ft. 6 ft.</td>
<td></td>
</tr>
<tr>
<td>Shoulder Width – Roadway – Outside (or Right)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4</td>
<td>12 ft. 10 ft.</td>
<td>FDOT PPM, Table 2.3.1</td>
</tr>
<tr>
<td>Mainline with Auxiliary Lane</td>
<td>12 ft. 10 ft.</td>
<td></td>
</tr>
<tr>
<td>One-Lane Ramp</td>
<td>6 ft. 4 ft.</td>
<td></td>
</tr>
<tr>
<td>Two-Lane Ramp</td>
<td>12 ft. 10 ft.</td>
<td></td>
</tr>
<tr>
<td>Two-Lane Express Lane</td>
<td>10 ft. 10 ft.</td>
<td></td>
</tr>
<tr>
<td>Typical Roadway Cross Section</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slopes Roadways:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 Lanes in Same Direction</td>
<td>0.02</td>
<td>FDOT PPM, Figure 2.1.1 and Table 2.3.1</td>
</tr>
<tr>
<td>Addition Lane in Same Direction</td>
<td>0.03</td>
<td></td>
</tr>
<tr>
<td>Shoulders:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Inside Shoulder</td>
<td>0.05 (0.06 for 4 or more lanes)</td>
<td>FDOT PPM, Figure 2.1.1 and Table 2.3.1</td>
</tr>
<tr>
<td>Outside Shoulder</td>
<td>0.06</td>
<td></td>
</tr>
<tr>
<td>Recoverable Terrain (min. from edge of travel way)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4 / Express Lanes (&gt; 55mph)</td>
<td>36 ft.</td>
<td>FDOT PPM Table 2.11.11</td>
</tr>
<tr>
<td>Auxiliary Lane (&gt; 55mph)</td>
<td>24 ft.</td>
<td></td>
</tr>
<tr>
<td>One-Lane Ramp (50 mph)</td>
<td>14 ft.</td>
<td></td>
</tr>
<tr>
<td>Two-Lane Ramp (50 mph)</td>
<td>24 ft.</td>
<td></td>
</tr>
<tr>
<td>Loop Ramp (30 mph)</td>
<td>18 ft.</td>
<td></td>
</tr>
<tr>
<td>Shoulder Width – Bridge Structures – Inside</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4</td>
<td>10 ft.</td>
<td>FDOT PPM, Figure 2.0.1</td>
</tr>
<tr>
<td>One-Lane Ramp</td>
<td>6 ft.</td>
<td></td>
</tr>
<tr>
<td>Two-Lane Ramp</td>
<td>6 ft.</td>
<td></td>
</tr>
</tbody>
</table>
Table 4.1 - Roadway Design Criteria

<table>
<thead>
<tr>
<th>Design Element</th>
<th>Design Standard</th>
<th>Source(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shoulder Width – Bridge Structures –</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outside</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mainline I-4</td>
<td>10 ft.</td>
<td>FDOT PPM, Figure 2.0.1</td>
</tr>
<tr>
<td>Auxiliary Lanes</td>
<td>10 ft.</td>
<td></td>
</tr>
<tr>
<td>One-Lane Ramp</td>
<td>6 ft.</td>
<td></td>
</tr>
<tr>
<td>Two-Lane Ramp</td>
<td>10 ft.</td>
<td></td>
</tr>
<tr>
<td>Border Width</td>
<td>94 ft.</td>
<td>FDOT PPM, Table 2.5.3</td>
</tr>
</tbody>
</table>

Notes:
1. Where V = design speed of the roadway.
2. Includes 6” allowance for resurfacing.
3. Includes Rail Resurfacing (Track Raised): 12’ for conventional railroads.
4. Measured from outside edge of travel way to right-of-way.
5.0 Alternatives Analysis

The original I-4 PD&E study (Interstate 4 (SR 400) Project Development and Environmental Study, Section 2, Project Nos.: 242486-4, 242592-1, 242703-1; FEIS – August 2002, Record of Decision Pending) was performed to address access, safety and capacity improvements. The update described herein adheres to the project development process by examining the various concepts considered for this project. The alternatives analysis will focus primarily on the interchanges and pond sites. The mainline typical section will be consistent with the approved typical section that is being implemented for the I-4 Ultimate from SR 435 (Kirkman Road) to SR 434, the section of I-4 that began construction in early 2015. The alternatives for the interchanges include no modifications to the existing interchange geometry (No Build), Transportation System Management and Operations (TSMO), Multimodal and Study (Build) Alternatives. The following sections describe in greater detail each of the alternatives proposed and the advantages and disadvantages of each.

5.1 No Project (No-Build) Alternative

The No-Build Alternative assumes no changes to the transportation facilities within the project corridor beyond currently planned and programmed projects already committed within Metro Plan Orlando’s 2030 Long Range Transportation Plan and the Fiscal Year 2013/14 to 2017/18 Transportation Improvement Program. The No-Build Alternative forms the basis of the comparative analysis for each of the viable Study Alternatives.

The benefits of the No-Build Alternative are the absence of construction-related and short-term operational impacts associated with the Build Alternatives. However, long-term benefits accrued from serving future traffic demands will not be realized with this alternative. Operating conditions are anticipated to worsen with time, while further increasing delays and congestion. Specifically, the No-Build Alternative will offer no benefits to address existing or future traffic congestion anticipated on I-4. Distinct advantages and disadvantages associated with the No-Build Alternative are as follows.

Advantages:

- No impedance to traffic flow during construction,
- No expenditure of funds for design, right-of-way acquisition, or construction,
- No impact to the adjacent natural, social, physical and cultural environments and
- No disruption to existing/future land uses due to construction-related activities.
Disadvantages:

- Increase in traffic congestion and road user costs, unacceptable level of service and an increase in accidents associated with an increase in travel times and traffic volumes due to excessive delays,
- Increase in carbon monoxide levels and other air pollutants caused by an increase in traffic congestion,
- Increase in maintenance costs due to roadway and structure deterioration,
- Increase in emergency service response time in addition to an increase in evacuation time during weather emergencies as a result of heavy congestion,
- Increase in delays to evacuation procedures throughout the state,
- Increase in safety-related accidents due to heavy congestion

The No-Build Alternative shall remain a viable alternative through the study. The final selection of an alternative will not be made until all impacts are considered and responses to the public hearing comments have been evaluated.

5.2 Transportation System Management and Operations

Transportation System Management and Operations (TSMO) Alternatives are defined as low capital cost transportation improvements designed to maximize the utilization and efficiency of the existing transportation system through improved system management. The various forms of TSMO activities include:

- Traffic signal improvements,
- Intersection/interchange improvements,
- Widening of parallel arterials,
- Ridesharing programs,
- Reversible flow roadway systems,
- Transit,
- ITS and
- Ramp-to-ramp auxiliary lanes.

Although the implementation of TSMO strategies would aid in localized operation of the existing roadway, the projected traffic volumes for the design year 2040 require I-4 to be widened to provide the additional capacity necessary to maintain or improve the existing and future levels of service. Therefore, the TSMO Alternative is not considered a viable alternative and no further evaluation of the TSMO Alternative will be conducted during this study.
5.3 Multi-Modal Alternatives

The project study area including arterial streets crossing I-4 is served by different modes of travel, both motorized and non-motorized. Increased connectivity for bicycle, pedestrian and transit users is an objective of the project.

5.3.1 Transit

A corridor for the future Florida High Speed Rail (FHSR) has been set aside in the median of I-4 within a portion of Segment 2. The rail corridor is located within the median of I-4 from Tampa to SR 528 (Beachline Expressway), where it would then turn east and be located within the SR 528 right-of-way. Design plans (60% Submittal) for the FHSR project were completed in 2011 and the project was discontinued.

Public transit is provided by LYNX bus service which operates several routes within the I-4 corridor, including along the Beachline Expressway, Central Florida Parkway, Universal Boulevard, Turkey Lake Road, Sand Lake Road and Kirkman Road. Service is provided via the following fixed routes:

- Link 21 - Universal Studios
- Link 37 - Pine Hills/Florida Mall
- Link 38 - Downtown Orlando/SeaWorld
- Link 50 - Downtown Orlando/Magic Kingdom

Non-stop express service along I-4 includes the following Link routes:

- Link 300 - Downtown Orlando/Hotel Plaza
- Link 301 - Pine Hills/Animal Kingdom
- Link 302 - Rosemont/Magic Kingdom
- Link 303 - Wash. Shores/Disney Hollywood Studios
- Link 304 - Rio Grande/Vistana Resort
- Link 305 - Metrowest/All Star Resorts

Other services provided by LYNX and pertinent to the I-4 Segment 2 corridor include: ACCESS LYNX and SunRail connections. The ACCESS LYNX program provides complementary service for eligible individuals who are not able to use the regular fixed route bus service because of a disability or other limitations. Connectivity to SunRail is provided through numerous Link routes that travel along Sand Lake Road, between I-4 and the SunRail station located to the east on Sand Lake Road at SR 527 (S. Orange Avenue). Commuter assistance is also provided through vanpool program which includes cost sharing, enabling participants to save money as well as time. The LYNX pre-tax savings program offers transit users tax incentives for participation in its Vanpool or Bus Pass programs.
The *LYNX Vision 2030 (Final Report, October 2011)* study identifies the SR 528 corridor from Walt Disney World (WDW) to Orlando International Airport (OIA) as a potential future Bus Rapid Transit (BRT) corridor. This 16.3-mile corridor extends from OIA to WDW along Sand Lake Road, SR 528 and I-4. Any improvements proposed as part of the Build Alternatives for I-4 Segment 2, will not preclude future LYNX transit plans.

### 5.3.2 Bicycles and Pedestrians

Bicycle lanes currently do not exist along Sand Lake Road, Turkey Lake Road, Adventure Way or Universal Boulevard. However, 7-foot bicycle lanes are being proposed with the planned improvements to Sand Lake Road on both the north and south sides of the roadway between Turkey Lake Road and International Drive. The Turkey Lake Road realignment areas, south of Sand Lake Road and north of Central Florida Parkway, will not include bicycle lanes due to constricted right-of-way and the inability to provide connectivity due to the absence of existing bicycle lanes along the facility, in the project study corridor. However, a 10-foot sidewalk in lieu of a bike lane will be provided along the west side of Turkey Lake Road, as requested by Orange County. Pedestrian accommodations do exist along Sand Lake Road, Turkey Lake Road and Universal Boulevard. The proposed build alternatives include further bicycle and pedestrian accommodations. Additionally, grade separated pedestrian crossings are being proposed by private landowners at the intersection of Sand Lake Road and International Drive. At the time of this study, the pedestrian bridges are only conceptual in nature.

### 5.4 Build Alternatives

The build alternative for the I-4 mainline involves widening from the existing 6-lane to the proposed 10-lane section with four, tolled express lanes. Accommodation for a future rail corridor is provided within the median south of SR 528. Access to and from the express lanes will be provided through direct access ramps at major interchanges or slip ramp connections between interchanges. Slip ramps provide access between the general use lanes and the express lanes, direct access ramps will provide access between the crossroads at the major interchanges and the express lanes and dual access ramps provide both access between GULs and ELs and major crossroads and ELs. The build alternative will provide one direct access ramp and one slip ramp along I-4 Segment 2, as shown in Figure 5.1. Detailed analysis on the development of express lanes access points and tolling concepts, is provided in the supplemental report, *Concept of Operations SR 400 (I-4) from West of SR 25/US 27 to East of SR 472 (April 2016)*, prepared for this project.
As outlined previously, the project objective is to develop and evaluate viable interchange alternatives to enhance the ability of the roadways to meet anticipated traffic demands, improve safety, and serve existing and future land uses along the I-4 corridor. The alternatives analysis will focus primarily on the interchanges and pond sites, since the mainline typical section (three general use lanes and two express lanes in each direction) will be consistent with the approved typical section that is being implemented from SR 435 (Kirkman Road) to SR 434.

The I-4 Beyond the Ultimate typical section which includes a 44-foot rail envelope was previously shown in Figure 1.2. A high-speed rail corridor was preserved in the median of I-4, west of the Beachline Expressway. At the Beachline, the rail corridor turns towards the east and follows the Beachline Expressway. The I-4 ultimate typical section which does not include a rail envelope was previously shown in Figure 1.3. The complete typical section package for the entire I-4 BtU corridor has been submitted under separate cover. Build alternatives were evaluated for the SR 528 interchange and Sand Lake Road interchange. No alternatives are proposed for the Adventure Way or the Universal Boulevard interchanges.

TSMO strategies which will be implemented into the Build alternatives include: a demand management tool which utilizes a variable price tolling plan to maintain LOS D in the express lanes, an electronic toll collection system, ramp to ramp auxiliary lanes to facilitate merge/diverge maneuvers from the freeway, preservation of a rail corridor within the median of the interstate, dedicated turn lanes at intersections within the corridor study area and enhanced pedestrian and bicycle facilities along arterial crossroads.

5.4.1 Design Speed

The design speed of I-4 (general use lanes and express lanes) and SR 528 is 70 mph. The existing and proposed design speed of Sand Lake Road is 40 mph. The design speed of Adventure Way and
Universal Boulevard were not evaluated since the concepts shown in this study tie in to the ramps at the gore locations.

5.4.2 Interchange Alternatives

The Build Alternatives for I-4 Segment 2 include new interchanges at SR 528 and Sand Lake Road, as well as widening Turkey Lake Road south of Sand Lake Road. The Concept Plans provided in Appendix A include detail sheets of the interchange alternatives described in the following sections.

SR 528 (Beachline Expressway) Interchange Alternatives

Seven interchange concepts were evaluated for the SR 528 interchange. All of the I-4 BtU interchange alternative concepts evaluated for SR 528 will tie in to the planned improvements for the Beachline Expressway (SR 528 Widening from I-4 to Florida’s Turnpike, FPN 406090-5-52-01). The proposed project will widen the existing four-lane expressway to an eight-lane facility by adding four express toll lanes within the median of SR 528.

Alternative 1, shown in Sheets 18-23 of the Concept Plans in Appendix A, maintains the freeway terminal junction design. This four-level interchange concept includes direct connect express lane ramps to/from the east and west on I-4, in addition to the direct general use lane ramps. A 44-foot rail corridor is maintained into the interchange from the west and turns east along SR 528. A two-lane entrance ramp from Central Florida Parkway onto I-4 eastbound will connect within the interchange. Also, a two-lane off ramp from I-4 westbound onto Central Florida Parkway will be provided. Due to the increased number of lanes and ramps on I-4, Turkey Lake Road will have to be realigned and right-of-way must be acquired along the west side of Turkey Lake Road.

Alternative 2, shown in Sheets 24-29 of the Concept Plans in Appendix A, maintains the same geometry as Alternative 1, but combines the general use and express lane ramps together. This design eliminates the need for a four-level flyover and decreases the number of bridges from seven to six. Alternative 2 is designed for drivers to determine direction of travel first and then choose between general use and express lanes. The same 44-foot rail corridor and ramps to/from Central Florida Parkway are maintained. Turkey Lake Road will have to be realigned and right-of-way must be acquired along the west side of Turkey Lake Road.

Alternative 3, shown in Sheets 30-35 of the Concept Plans in Appendix A, is a multi-level free flow Diverging Diamond Interchange (DDI). The westbound general use and express lanes bridge over the eastbound general use and express lanes, south and north of the interchange. Eastbound lanes will be on the west side of the interchange and westbound lanes will be on the east side of the interchange. This is a three-level interchange with a 44-foot rail corridor and ramps to/from...
Central Florida Parkway. This design has less of an impact on Turkey Lake Road, but it still requires realignment and right-of-way acquisition along the west side of Turkey Lake Road.

Alternative 4, shown in Sheets 36-41 of the Concept Plans in Appendix A, is the same geometric design as Alternative 1. The I-4 mainline and SR 528 ramps shift west approximately 48 feet, such that there would be no right-of-way impacts along the east side of I-4. This shift will cause greater right-of-way impacts along the west side of I-4 and will require Turkey Lake Road to be realigned.

Alternative 5, shown in Sheets 42-47 of the Concept Plans in Appendix A, is the same geometry as Alternative 2, but the I-4 mainline is shifted westward so that no right-of-way will be needed along the eastbound side. The westbound general use and express lane exit ramps are combined and fly over I-4 as a third-level bridge. Westbound SR 528 will split into an eastbound I-4 on ramp and westbound I-4 on ramp. The eastbound ramp will further split into separate general purpose and express lane on ramps. The westbound ramp will be a second-level flyover and will split into a general use on ramp and an express lane on ramp. The eastbound I-4 to eastbound SR 528 will have separate ramps for general use and express lanes. The express ramp will elevate over the eastbound general purpose lanes and the ramp from Central Florida Pkwy to I-4 eastbound. The general use exit ramp will elevate and cross over the Central Florida Pkwy to I-4 eastbound on ramp. Right-of-way will have to be acquired along the southwest quadrant of the interchange. Turkey Lake Road will have to be realigned due to the widening of I-4.

Alternative 6, shown in Sheets 48-53 of the Concept Plans in Appendix A, maintains the freeway terminal junction design while providing direct connection to the SR 528 express lanes. I-4 exit ramps for westbound general use and express lanes will remain separate, and fly over I-4 and the ramps from SR 528 westbound to I-4 westbound. The I-4 westbound general use ramp will merge with the I-4 eastbound to SR 528 eastbound general use ramp. The I-4 westbound express lane ramp will merge with the I-4 eastbound to SR 528 eastbound express lane ramp. The SR 528 westbound general use lanes will split to eastbound and westbound ramps to I-4. The SR 528 westbound express lanes will also split to eastbound and westbound ramps to I-4. Right-of-way will have to be acquired along the southwest quadrant of the interchange. Turkey Lake Road will have to be realigned due to the widening of I-4.

Alternative 7, shown in Sheets 54-59 of the Concept Plans in Appendix A, combines the express lane ramps for I-4 westbound (to SR 528 eastbound express lanes) and I-4 eastbound (from SR 528 westbound express lanes) with the westbound exit ramp for the general use lanes (to SR 528 eastbound general use). This creates one flyover bridge instead of three separate bridges. The SR 528 westbound general use lanes will split, allowing for two lanes to go to I-4 eastbound and two lanes to fly over I-4 and merge with the I-4 westbound general use lanes. SR 528 westbound express to I-4 westbound express will contra flow between the I-4 eastbound general use lanes and
the combined express and general use ramp from I-4 eastbound to SR 528 eastbound. The I-4 eastbound express off ramp to SR 528 eastbound and the I-4 westbound express on ramp from SR 528 westbound combine together and bridge over the I-4 eastbound general use and express lanes. This alternative also provides a direct connect ramp from International Drive to the SR 528 westbound express lanes. Right-of-way will have to be acquired along the southwest quadrant of the interchange to accommodate the proposed improvements and Turkey Lake Road will have to be realigned due to the widening of I-4.

The build alternative identified in the original PD&E study/FEIS (I-4 PD&E Study – Section 2, Final Environmental Impact Statement FEIS, August 2002) for the SR 528 (Beachline Expressway, formerly known as the Bee Line Expressway) interchange proposed replacing the existing interchange with three-leg fully directional, three-level interchange with direct HOV access flyover ramps. Two-lane ramps were proposed to serve the I-4 eastbound to SR 528 eastbound, I-4 westbound to SR 528 eastbound and SR 528 westbound to I-4 westbound movements. Single-lane ramps were proposed for the remaining movements. The proposed improvements would result in the realignment of Turkey Lake Road near Sand Lake Hospital.

Sand Lake Road Interchange Alternatives

Four interchange concepts were evaluated for the Sand Lake Road interchange. All of the I-4 BtU interchange alternative concepts evaluated for Sand Lake Road will tie in to the planned improvements for Sand Lake Road (SR 482 Widening from Turkey Lake Road to Universal Boulevard, FPN 407143-4-52-01). The proposed Sand Lake Road project will widen the existing four-lane roadway to a six-lane facility with exclusive turn lanes, drainage improvements, bike paths and sidewalks on both sides.

Alternative 1, shown in Sheets 60-63 of the Concept Plans in Appendix A, maintains the interchange geometry similar to today, which is a partial cloverleaf interchange with a two-lane loop ramp from Sand Lake Road westbound to I-4 westbound in the northwest quadrant. The design speed of the proposed Sand Lake Road improvements is 40 mph. As part of the proposed improvements, right-of-way will be required at the intersections of Sand Lake Road with Turkey Lake Road and International Drive. Additionally, the Sand Lake Road corridor east of International Drive will also require right-of-way. The right-of-way required for the Sand Lake Road project will be acquired as part of that project.

Alternative 2, shown in Sheets 64-67 of the Concept Plans in Appendix A, proposes a Diverging Diamond Interchange (DDI). The design speed of the DDI is 35 mph due to right-of-way constraints. Similar to Alternative 1, the DDI would connect to the proposed Sand Lake Road improvements. A design variation would be required for the Design Speed (Major Arterial should be designed for a design speed of 45 mph). A design variation will also be required for the roadway cross slope. The
cross slope proposed is +2% (Reverse Crown); however, per PPM, a cross slope of -2% (Normal Crown) is required.

Alternative 3, shown in Sheets 68-71 of the Concept Plans in Appendix A, proposes a Single Point Urban Interchange (SPUI). Both I-4 off ramps will have dual left turn lanes and dual right turn lanes onto Sand Lake Road. Each I-4 on ramp will have a single right turn lane and dual left turn lanes. The westbound on ramp will taper to one lane before merging with I-4 and the eastbound on ramp will taper to two lanes before merging with I-4.

Alternative 4, shown in Sheets 72-77 of the Concept Plans in Appendix A, proposes a DDI similar to Alternative 2, but adds a loop ramp in the northwest quadrant for westbound Sand Lake Road traffic to access Turkey Lake Road south of the interchange. Additionally, the I-4 westbound off ramp will split into two ramps north of Sand Lake Road. One ramp will continue to the Sand Lake Road DDI and the other will merge with the loop ramp from westbound Sand Lake Road. The two merged ramps will continue to the south until they intersect Turkey Lake Road. This additional ramp will eliminate the left turn movement from westbound Sand Lake Road onto southbound Turkey Lake Road. Additionally, a third northbound through lane will be added on Turkey Lake Road adjacent to the existing Phillips Crossing and Phillips Village shopping centers, south of Sand Lake Road.

The build alternative identified in the original PD&E study/FEIS (I-4 PD&E Study – Section 2, Final Environmental Impact Statement FEIS, August 2002) for the Sand Lake Road interchange proposed maintaining the existing partial cloverleaf interchange and modifying the westbound Sand Lake Road to westbound I-4 loop ramp to connect to eastbound Sand Lake Road to westbound I-4 ramp for a single access point on I-4 westbound.

**Adventure Way Interchange Alternatives**
No interchange alternatives were evaluated for Adventure Way. The existing one-lane west bound off ramp will continue to connect to the I-4 general use lanes. The westbound on ramp will continue to connect to the two-lane on ramp from Kirkman Road southbound to I-4 westbound.

**Universal Boulevard Interchange Alternatives**
No interchange alternatives were evaluated for Universal Boulevard. The existing two-lane eastbound off ramp will continue to connect to the I-4 general use lanes. The two-lane eastbound on ramp will continue to connect to the I-4 eastbound general use lanes.

### 5.5 Design Traffic
Development of project traffic for I-4 and surrounding arterials within the study limits of Segment 2 was based on the procedures outlined in the Methodology Letter of Understanding (MLOU) (October 2014 Update) and are provided in the *I-4 Beyond the Ultimate Systems Access*
5.5.1 Future Traffic Volumes
Travel demand modeling using the Central Florida Regional Planning Model (CFRPM version 5.01) was utilized to forecast Directional Design Hour Volumes (DDHV) for the I-4 Segment 2 project. The future traffic forecasts were determined for 2020 (opening year), 2030 (interim year) and 2040 (design years) for two build alternatives: Original Build and Modified Build. The Original Build alternative refers to the preferred interchange alternatives identified in the original I-4 SAMR dated April 2000 and approved by FHWA in June 2000 with subsequent update in 2003. The Modified Build alternative refers to the current I-4 SAMR Reevaluation and constitutes revised improvement concepts, which account for changing conditions over time. These changes include variation in traffic characteristics, modifications to express lane access points and other traffic and design considerations which led to the current proposed build alternatives.

5.5.2 Design Traffic Factors
The traffic volume outputs generated by the model represent Peak Season Weekday Average Daily Traffic (PSWADT). A Model Output Conversion Factor (MOCF) was used to convert the PSWADT to Average Annual Daily Traffic (AADT). A MOCF of 0.98 for I-4 and arterials in Orange County was used for this study. The K factor is used to convert the 24-hour AADT estimate to an hourly volume (DHV-Design Hour Volume). The Directional Distribution factor (D) is the percentage of total, two-way design traffic traveling in the peak direction.

K Factor
The K Factor is the ratio of the AADT that occurs during the design hour for the design year. Standard K factors have been adopted by FDOT based on area and facility type, with consideration to typical peak periods of the day. Due to the unique nature of the I-4 Segment 2 corridor and the corresponding multi-hour traffic peaking characteristics, a peak spreading methodology was developed to determine design traffic for this project. The use of peak spreading is needed in this section of the I-4 BtU corridor due to the high volume to capacity (v/c) ratios that result from using the FDOT standard “K.” The approved peak spreading methodology is detailed in the Methodology Letter of Understanding (MLOU) (October 2014 Update).

D Factor
The Directional Distribution (D) is the percentage of total, two-way design traffic traveling in the peak direction. The design traffic factors were derived from all the count stations in Orange County for I-4 and the arterial roadways. The D factor used in the analysis for I-4 Segment 2 traffic, by facility type, is summarized in Table 5.1.
Table 5.1 - D Factor

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>D-Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interstate 4</td>
<td>52.92</td>
</tr>
<tr>
<td>Arterials</td>
<td>53.66</td>
</tr>
</tbody>
</table>

T Factor
The percentage of trucks (T) using a roadway is the most critical factor in pavement design. The T factor used in traffic analysis for I-4 Segment 2 traffic was 5.4% for the AM peak hour and 3.0% for the PM peak hour.

5.5.3 Intersection/Interchange Traffic Volumes
Traffic volumes for intersections and interchanges within the I-4 Segment 2 corridor were developed for both Original Build and Modified Build conditions based on the procedures outlined in the MLOU (October 2014 Update). The CFRPM model was used to develop the existing, 2020 and 2030 forecasts. Year 2040 forecasts were developed by determining a growth rate from 2030 to 2035 (forecast year of the model) and using that growth rate to extrapolate volumes from 2030 to 2040. For the Original Build scenario, year 2040 peak hour volumes were adjusted based on reasonable growth rates for localized movements, current land-use patterns and future projected developments, population growth rate and, if needed, peak hour capacity of the proposed roadway configurations. Traffic volumes for the Modified Build scenario were developed based on the Original Build volumes. The redistribution of traffic between the Original Build and Modified Build was performed based on the current proposed interchange and freeway configurations. The resulting design year 2040 DDHVs for the Modified Build scenario, which is pertinent to the current reevaluation study, are shown in are shown in Figure 5.2 and Figure 5.3.
Figure 5.2 – 2040 Build Directional Peak Hour Traffic Volumes (Sheet 1 of 2)
Figure 5.3 – 2040 Build Directional Peak Hour Traffic Volumes (Sheet 2 of 2)
5.5.4 Intersection Operational Analysis

As part of the development of interchange alternatives for I-4 Segment 2, traffic operational analyses of the intersections within or near the proposed interchange improvements were completed for No Build and Build alternatives. Some alternatives were removed from further consideration due to roadway geometric design constraints, operational deficiencies, inter-agency coordination indicating other preferences and/or being cost-prohibitive and no further traffic analysis was completed. Peak hour operational analysis of intersections/interchanges was completed using Synchro or VISSIM-version 5.4 software.

Sand Lake Road Interchange

Four interchange alternatives were developed for the SR 482 interchange, as previously described in Section 5.4.2 of this report. Traffic operational analyses based on Directional Peak Period Traffic volumes developed for the I-4 Systems Access Modification Report (SAMR) update were completed for the four Build alternatives as well as the No-Build alternative:

1. No-Build (existing interchange configuration)
2. Alternative 1 - Base Partial cloverleaf with loop ramp in Northwest quadrant
3. Alternative 2 - Diverging Diamond Interchange (DDI)
4. Alternative 3 - Single Point Diamond Urban Interchange (SPUI)
5. Alternative 4 - DDI with loop ramp in Northwest quadrant

AM and PM peak hour intersection analyses were completed using VISSIM for the No-Build condition. The results of the No-Build operational analyses indicating that adjacent intersections beyond the ramp terminals at the interchange were failing. Alternatives 1-3 were dismissed from further evaluation since they do not include further improvements beyond the interchange and along the remainder of the SR 482 study area corridor. Results of the intersection analyses, as shown in Table 5.2 indicate that all intersections along the corridor improve in operations for Alternative 4 when compared to the No-Build Alternative.

<table>
<thead>
<tr>
<th>Intersection</th>
<th>2040 AM Peak</th>
<th></th>
<th>2040 PM Peak</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No-Build</td>
<td>Alternative 4</td>
<td>No-Build</td>
<td>Alternative 4</td>
</tr>
<tr>
<td></td>
<td>Delay</td>
<td>LOS</td>
<td>Delay</td>
<td>LOS</td>
</tr>
<tr>
<td>Sand Lake Road/Turkey Lake Road</td>
<td>289.0</td>
<td>F</td>
<td>155.9</td>
<td>F</td>
</tr>
<tr>
<td>Sand Lake Road/I-4 West Interchange</td>
<td>113.8</td>
<td>F</td>
<td>37.1</td>
<td>D</td>
</tr>
<tr>
<td>Sand Lake Road/I-4 East Interchange</td>
<td>107.1</td>
<td>F</td>
<td>36.2</td>
<td>D</td>
</tr>
<tr>
<td>Sand Lake Road/International Drive</td>
<td>237.9</td>
<td>F</td>
<td>51.5</td>
<td>D</td>
</tr>
<tr>
<td>Sand Lake Road/Universal Boulevard</td>
<td>121.7</td>
<td>F</td>
<td>128.7</td>
<td>F</td>
</tr>
</tbody>
</table>

Intersections operating at or below LOS E.
Operational analyses were further evaluated using network-wide performance measures to compare the No-Build and Alternative 4 Build conditions. Results of the network-wide performance measures, as shown in Table 5.3, indicate that the corridor improves in operations for Alternative 4 when compared to the No-Build Alternative.

<table>
<thead>
<tr>
<th>Table 5.3 – I-4 and SR 482 (Sand Lake Road) Network Evaluation Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Measure</td>
</tr>
<tr>
<td>Total Travel Time (hr)</td>
</tr>
<tr>
<td>Total Delay Time (hr)</td>
</tr>
<tr>
<td>Average Delay Time (sec/veh)</td>
</tr>
<tr>
<td>Latent Delay Time (hr)</td>
</tr>
<tr>
<td>Number of Arrived Vehicles</td>
</tr>
<tr>
<td>Latent Vehicles</td>
</tr>
<tr>
<td>Total Delay + Latent Delay (hr)</td>
</tr>
<tr>
<td>PM Peak</td>
</tr>
<tr>
<td>Total Travel Time (hr)</td>
</tr>
<tr>
<td>Total Delay Time (hr)</td>
</tr>
<tr>
<td>Average Delay Time (sec/veh)</td>
</tr>
<tr>
<td>Latent Delay Time (hr)</td>
</tr>
<tr>
<td>Number of Arrived Vehicles</td>
</tr>
<tr>
<td>Latent Vehicles</td>
</tr>
<tr>
<td>Total Delay + Latent Delay (hr)</td>
</tr>
</tbody>
</table>

**SR 528 Interchange**

Seven interchange alternatives were developed for the SR 528 interchange, as previously described in Section 5.4.2 of this report. During development of the SR 528 alternatives, the project team, consisting of the design consultant and FDOT staff, coordinated extensively with the Florida’s Turnpike Enterprise (FTE) to ensure continuity between the I-4 BtU project and the SR 528/Beachline Expressway Widening (FPID 406090-5) project that will add two express lanes in each direction between I-4 and Florida’s Turnpike Mainline. Alternatives 1-4 were eliminated due to cost and constructability issues. Alternative 5, which provides for direct connection between I-4 and SR 528 express lanes through an open access weave zone, was recommended for further evaluation and refinement. The FTE, in coordination with the project team, developed Alternatives 6 and 7 which built upon the concepts developed in Alternative 5. Alternative 6 provides direct connection between I-4 and SR 528 express lanes with continuous express lanes, and includes ingress/egress slip ramps between I-4 and International Drive interchanges along SR 528. Alternative 7 provides direct connection between I-4 and SR 528 express lanes with braided ramps.
to International Drive. Traffic operational analyses for Alternatives 5, 6 and 7 were completed by FTE utilizing 2040 project traffic and microsimulation analysis. Various Measures of Effectiveness (MOEs) including speed, density and percent demand served were evaluated for all three alternatives. The initial MOEs indicated low travel speeds and queues extending along the I-4 mainline from SR 528 upstream to the next interchange to the south (SR 535). Thus, the three alternatives were evaluated for mitigated measures including widening the ramps. In the mitigated scenarios, Alternative 5 reported the lowest speeds along SR 528 during the PM peak period along with unfavorable weave conditions between the I-4 and International Drive interchanges. Alternatives 6 and 7 provided acceptable operating conditions along the same corridor limits with Alternative 7 having slightly improved weaving conditions. However, Alternative 7 had other disadvantages including higher cost and accessibility issues from key interchanges to the SR 528 express lanes. Based on these considerations, Alternative 6 was selected for further evaluation. Alternative 6 was further refined to develop Alternative 6B, which would provide an improved weave zone in the eastbound direction. The peak period performance measures for all alternatives evaluated are summarized in Table 5.4; detailed analysis is provided in Technical Memorandum: Evaluation of the Proposed Ultimate S.R. 528 (Beachline Expressway) and I-4 Interchange Configurations – Alternatives 5, 6 and 7 (November 2014).

5.6 Intersection Improvements

Intersection improvements, such as exclusive turn lanes and additional through lanes, based on the traffic operations analyses are proposed at or adjacent to the interchange at Sand Lake Road, including the Sand Lake Road intersections with Turkey Lake Road to the west of I-4 and with International Drive to the east of I-4. The Concept Plans for the proposed intersection concepts can be found in Appendix A. The proposed intersection improvements associated with the Sand Lake Road Alternatives 1, 2, 3 and 4 are shown on pages 60, 64, 68 and 74, respectively, of Appendix A.
### Preliminary Engineering Report

Segment 2 - West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road)

#### Table 5.4 – I-4 and SR 528 (Beachline Expressway) 2040 Peak Period Network Performance (4 Hours)

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Base Configuration</th>
<th>Mitigated Configuration</th>
<th>Diff %</th>
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<tr>
<td></td>
<td>Alt. 5</td>
<td>Alt. 6</td>
<td>Alt. 7</td>
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<tr>
<td>Total Travel Time (hr)</td>
<td>20,729</td>
<td>20,658</td>
<td>24,515</td>
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<tr>
<td>Total Delay Time (hr)</td>
<td>2,029</td>
<td>1,999</td>
<td>6,389</td>
</tr>
<tr>
<td>Average Delay (secs/veh)</td>
<td>42</td>
<td>41</td>
<td>141</td>
</tr>
<tr>
<td>Average Speed (mph)</td>
<td>54</td>
<td>55</td>
<td>45</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance Measure</th>
<th>Base Configuration</th>
<th>Mitigated Configuration</th>
<th>Diff %</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alt. 5</td>
<td>Alt. 6</td>
<td>Alt. 7</td>
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<tr>
<td>Total Travel Time (hr)</td>
<td>21,813</td>
<td>21,678</td>
<td>24,571</td>
</tr>
<tr>
<td>Total Delay Time (hr)</td>
<td>3,216</td>
<td>3,127</td>
<td>5,817</td>
</tr>
<tr>
<td>Average Delay (secs/veh)</td>
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<td>65</td>
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</tr>
<tr>
<td>Average Speed (mph)</td>
<td>52</td>
<td>52</td>
<td>46</td>
</tr>
</tbody>
</table>
5.7 Environmental Impacts

5.7.1 Floodplains and Regulatory Floodways
FEMA has developed Flood Insurance Rate Maps (FIRM) for Orange County. According to FEMA Map Nos. 12095C0405F and 12095C0415F, none of the roadway or the existing ponds within this segment are located in the 100-year floodplain. The proposed ponds 200A, 200B, 205A, 205B, 205C and 205D are adjacent to the 100-year floodplain; however, there is no impact to the floodplain. There are no regulatory floodways within the project corridor.

The Geographical Information System (GIS) and FEMA FIRM data identified two floodplain zones present within the project study area. These zones are identified as follows:

- Zone A – Area of 1% annual chance of flood (100-year flood), no base flood elevation determined; and
- Zone AE – Area of 1% annual chance of flood (100-year flood), base elevation determined.

The FEMA Flood Insurance Rate Map for the project is shown in Figure 5.4. No floodplain impacts are associated with this project.

5.7.2 Wetlands
The jurisdictional wetland and surface waters limits and potential impacts were previously identified in the original PD&E Study (Interstate 4 Section 2 Wetland Evaluation Report for the Project Development & Environment Study from SR 528 (Bee Line Expressway) to SR 472 Interchange, May 2000). A Wetland Evaluation Report Segment 2: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) (July 2016) in accordance with the PD&E Manual, Part 2, Chapter 18 (FDOT, 4/24/2013) has been prepared to reevaluate the jurisdictional limits of wetlands and surface waters within the project, assesses the potential for wetland and surface water impacts and provide conceptual mitigation using the Uniform Mitigation Assessment Method (UMAM). The jurisdictional extent of onsite wetlands and other surface water systems, within the project corridor, were evaluated through the review of current and historic aerial photography of the study area and ground-truth activities. Current and historical information reviewed included infrared digitally orthorectified quadrangle maps (DOQs), USGS Topographic Maps, National Wetlands Inventory (NWI) Maps, and Soil Survey Maps. Jurisdictional limits were identified and limits established in general accordance with the 1987 Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1), the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (November 2010) and the State of Florida's Delineation of the Landward Extent of Wetlands and Surface Waters (Chapter 62-340, Florida Administrative Code). Wetlands
Figure 5.4 - FEMA Flood Insurance Map
and surface waters observed were classified using FDOT’s *Florida Land Use, Cover and Forms Classification System (FLUCFCS)* and the USFWS classification system as described in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin, et. al, 1979). In addition, field reviews of wetland and other surface waters were conducted along the project corridor using handheld Global Positioning Systems (GPS) devices to approximate each system’s limits. For this study, jurisdictional systems were identified from west to east and were classified as either Wetland (WL-#) or Other Surface Water (SW-#) and included the direction of corresponding I-4 travel lanes (i.e. East (E) or West (W)). The term other surface water generally identifies ditches, swales or wet stormwater ponds associated with the existing drainage conditions of Interstate 4. A description of wetlands and other surface waters within the study area is summarized in Table 5.5. Detailed analysis of existing wetlands and other surface waters are provided in the *Wetland Evaluation Report (July 2016)* prepared for this project.

Preliminary estimates suggest that 4.43 acres of wetlands communities and 9.32 acres of other surface waters will be directly impacted by the proposed improvements associated with I-4 Segment 2. Impact estimates are assumed to be equivalent for all alternatives evaluated. These estimates are based on field assessment of jurisdictional limits and preliminary plan preparation for design. Impacts to jurisdictional areas will be refined as design details are finalized. The impact areas, quality of each system and likelihood of requiring mitigation for adverse impacts are summarized in Table 5.6 and depicted in Figure 5.5 through Figure 5.10. Impacts to wetlands and surface waters during construction will also be classified as temporary or permanent, depending on the proposed level of disturbance. The type and level of mitigation for impacts will be based on the final impact acreages, the nature of disturbance (temporary or permanent) and the overall quality of the systems.

Mitigation requirements are based on a compilation of wetland parameters including quality, type, function and size. Impacts to wetlands and other surface waters will be avoided and minimized to the maximum extent possible while maintaining safe and sound engineering and construction practices. Primarily, avoidance and minimization efforts are related to the proposed stormwater management pond locations. A mitigation plan that adequately offsets adverse impacts will be developed and implemented. Adverse wetland impacts that may result from the construction of this project will be mitigated, satisfying the requirements of Part IV Chapter 373, F.S. and 33 U.S.C.s.1344. Compensatory mitigation for this project will be completed through the use of mitigation banks and/or any other mitigation options that satisfy state requirements.
Table 5.5 - Summary of Wetlands and Surface Waters

<table>
<thead>
<tr>
<th>ID</th>
<th>USFWS Classification*</th>
<th>FLUCFCS Code**</th>
<th>Description/ Vegetation Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>SW-1(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut ditch</td>
</tr>
<tr>
<td>SW-2(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut ditch</td>
</tr>
<tr>
<td>SW-3(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut ditch</td>
</tr>
<tr>
<td>SW-4(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut ditch</td>
</tr>
<tr>
<td>SW-5(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut ditch</td>
</tr>
<tr>
<td>SW-6(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut swale</td>
</tr>
<tr>
<td>SW-7(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut ditch</td>
</tr>
<tr>
<td>SW-8(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut ditch</td>
</tr>
<tr>
<td>SW-9(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut ditch</td>
</tr>
<tr>
<td>SW-10(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut swale</td>
</tr>
<tr>
<td>SW-11(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut swale</td>
</tr>
<tr>
<td>SW-12(E)</td>
<td>PEM2E</td>
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<td>Upland-cut swale</td>
</tr>
<tr>
<td>SW-13(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut swale</td>
</tr>
<tr>
<td>SW-14(E)</td>
<td>PEM2E</td>
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<td>Upland-cut swale</td>
</tr>
<tr>
<td>SW-15(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut swale</td>
</tr>
<tr>
<td>SW-16(E)</td>
<td>PEM2E</td>
<td>5130</td>
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</tr>
<tr>
<td>SW-18(E)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut swale</td>
</tr>
<tr>
<td>SW-1(W)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut swale</td>
</tr>
<tr>
<td>SW-2(W)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut swale</td>
</tr>
<tr>
<td>SW-3(W)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut swale</td>
</tr>
<tr>
<td>SW-4(W)</td>
<td>PEM2E</td>
<td>5130</td>
<td>Upland-cut swale</td>
</tr>
<tr>
<td>WL-1(W)</td>
<td>PFO4A</td>
<td>6170</td>
<td>Mixed Wetland Hardwoods</td>
</tr>
<tr>
<td>WL-2(W)</td>
<td>PFO4A</td>
<td>6170</td>
<td>Mixed Wetland Hardwood</td>
</tr>
<tr>
<td>WL-3(W)</td>
<td>L2EMH</td>
<td>5230</td>
<td>Lakes</td>
</tr>
<tr>
<td>WL-4(W)</td>
<td>L2EMH</td>
<td>5210</td>
<td>Lakes</td>
</tr>
</tbody>
</table>

*United States Fish and Wildlife Service (USFWS) Classifications:
L2EMH: Lacustrine/Littoral/Emergent/Permanently Flooded; PEM2E: Palustrine/Emergent/Nonpersistent/Seasonally Flooded/Saturated

**Florida Land Use Cover and Forms Classification System (FLUCFCS): 5130 (Streams and Waterways); 5210 (Lakes larger than 500 acres); 5230 (Lakes larger than 10 acres but less than 100 acres); and 6170 (Mixed Wetland Hardwoods).
Table 5.6: Summary of Proposed Impacts to Wetlands/Other Surface

<table>
<thead>
<tr>
<th>ID</th>
<th>FLUCFCS Code</th>
<th>Total Area within ROW (acres)</th>
<th>Proposed Impacts (acres)</th>
<th>Quality*</th>
<th>Mitigation Requirements (Y, N, N/A)**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wetlands</td>
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<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>WL-1(W)</td>
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<tr>
<td>WL-2(W)</td>
<td>6170</td>
<td>3.77</td>
<td>3.77</td>
<td>Low</td>
<td>Y</td>
</tr>
<tr>
<td>WL-3(W)</td>
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<td>0.00</td>
<td>0.00</td>
<td>Moderate</td>
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</tr>
<tr>
<td>WL-4(W)</td>
<td>5210</td>
<td>0.00</td>
<td>0.00</td>
<td>Moderate</td>
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<tr>
<td>Subtotal Acres</td>
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<td>4.43</td>
<td>4.43</td>
<td></td>
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<tr>
<td>Subtotal Impacts</td>
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<td></td>
<td></td>
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<tr>
<td>Other Surface Waters (Upland-Cut Ditches and Swales)</td>
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<tr>
<td>SW-1(E)</td>
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<tr>
<td>SW-2(E)</td>
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<td>0.28</td>
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<td>0.17</td>
<td>0.17</td>
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<tr>
<td>SW-5(E)</td>
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<td>0.06</td>
<td>0.06</td>
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<tr>
<td>SW-6(E)</td>
<td>5130</td>
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<tr>
<td>SW-7(E)</td>
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<td>SW-8(E)</td>
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<tr>
<td>SW-9(E)</td>
<td>5130</td>
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</tr>
<tr>
<td>SW-10(E)</td>
<td>5130</td>
<td>0.15</td>
<td>0.15</td>
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<tr>
<td>SW-11(E)</td>
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<td>0.26</td>
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<tr>
<td>SW-12(E)</td>
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<td>SW-13(E)</td>
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<td>SW-14(E)</td>
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<td>N</td>
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<td>SW-15(E)</td>
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<td>0.17</td>
<td>Low</td>
<td>N</td>
</tr>
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<td>SW-16(E)</td>
<td>5130</td>
<td>0.30</td>
<td>0.30</td>
<td>Low</td>
<td>N</td>
</tr>
<tr>
<td>SW-18(E)</td>
<td>5130</td>
<td>0.21</td>
<td>0.21</td>
<td>Low</td>
<td>N</td>
</tr>
<tr>
<td>SW-1(W)</td>
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<td>1.50</td>
<td>1.50</td>
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</tr>
<tr>
<td>SW-2(W)</td>
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<td>0.48</td>
<td>0.48</td>
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</tr>
<tr>
<td>SW-3(W)</td>
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<td>0.03</td>
<td>0.03</td>
<td>Low</td>
<td>N</td>
</tr>
<tr>
<td>SW-4(W)</td>
<td>5130</td>
<td>0.78</td>
<td>0.78</td>
<td>Low</td>
<td>N</td>
</tr>
<tr>
<td>Subtotal Acres</td>
<td></td>
<td>9.32</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Subtotal Impacts</td>
<td></td>
<td>9.32</td>
<td></td>
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</tr>
<tr>
<td>Project Total</td>
<td></td>
<td>13.75</td>
<td>13.75</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Low= UMAM Score between 0 and 0.49    Moderate= UMAM Score between 0.50 and 0.79    High= UMAM Score of 0.80 or better.
**Y= Jurisdictional/Mitigation Required    N = Jurisdictional/No Mitigation Required    N/A = No Mitigation Required
Figure 5.5 - Surface Water and Wetland Impacts (Map 1 of 6)
Figure 5.6 – Surface Water and Wetland Impacts (Map 2 of 6)
Figure 5.7 – Surface Water and Wetland Impacts (Map 3 of 6)
Figure 5.8 – Surface Water and Wetland Impacts (Map 4 of 6)
Figure 5.9 – Surface Water and Wetland Impacts (Map 5 of 6)
Figure 5.10 – Surface Water and Wetland Impacts (Map 6 of 6)
Preliminary estimates suggest that 4.43 acres of direct impacts to low-quality wetland systems will result from I-4 Segment 2 improvements; no secondary impacts are anticipated. Direct impacts will require approximately 3.1 mitigation credits (based on a 0.7 average UMAM score) to offset adverse wetland impacts. Mitigation banks with service areas within limits of the project and mitigation credit availability are listed in Table 5.7.

<table>
<thead>
<tr>
<th>Mitigation Bank (MB)</th>
<th>Mitigation Service Area</th>
<th>Credit Availability*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shingle Creek Mitigation Bank</td>
<td>Shingle Creek</td>
<td>15.76 UMAM Credits</td>
</tr>
<tr>
<td>Hatchineha Ranch Mitigation Bank</td>
<td>Shingle Creek</td>
<td>50 UMAM Credits</td>
</tr>
<tr>
<td>Southport Mitigation Bank</td>
<td>Shingle Creek</td>
<td>170 UMAM Credits</td>
</tr>
<tr>
<td>Reedy Creek Mitigation Bank</td>
<td>Shingle Creek</td>
<td>60 UMAM Credits</td>
</tr>
<tr>
<td>Collany Mitigation Bank</td>
<td>Shingle Creek</td>
<td>3.5 UMAM Credits</td>
</tr>
<tr>
<td>Bullfrog Bay Mitigation Bank</td>
<td>Shingle Creek</td>
<td>14 UMAM Credits</td>
</tr>
</tbody>
</table>

*Based on June 2014/September 2015 mitigation credit ledger review and coordination with Mitigation Marketing Resources, LLC and Florida Mitigation Technologies (2016).

5.7.3 Wildlife and Habitat

Potential environmental impacts include identifying impacts to wildlife and natural habitat within the proposed corridor. A supplemental report, *Endangered Species Biological Assessment, Segment 2: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) (July 2016)*, was prepared following guidelines presented in the PD&E Manual, Part 2, Chapter 27 (FDOT, 10/1/91) to identify wildlife species of known or potential occurrence and natural habitat types along the project corridor and to document potential project-related impacts. Particular attention was given to species that have been provided regulatory protection such as federal or state listed endangered, threatened or otherwise sensitive species, as well as suitable habitat for those species.

The study area for the project corridor included all potential pond sites, the existing right-of-way of I-4 and a buffer of 500 feet beyond the boundary of the current right-of-way. The methodology used to conduct the wildlife assessment included research of existing records and review of literature published by the Florida Natural Areas Inventory (FNAI), the Florida Committee on Rare and Endangered Plants and Animals (FCREPA), the Florida Fish and Wildlife Conservation Commission (FFWCC), the U.S. Fish and Wildlife Service (USFWS) and other relevant scientific publications. Based on these sources, 52 species of animals and 56 species of plants have been identified as potentially occurring in Orange County, though suitable habitat may not be available for all of them along the project corridor. Of these, 10 are federally listed animals, 12 are federally listed plants, 28 are state listed animals and 56 are state listed plants.
Field surveys were conducted within all suitable habitat in the proposed widening area and proposed stormwater pond sites to assess potential impacts to federal and state listed species. These surveys also included: gopher tortoise survey (April-June 2013, April 2014 and February 2015) and sand skink survey (April-May 2014). A formal scrub-jay survey was not conducted as the previously identified locations for scrub-jay habitat in the original PD&E study, FEIS for I-4 from SR 528 to SR 472 [FPN 242486, 242592 and 242703 (2002)], have since been developed and no potential habitat was currently identified within this segment of the project.

During the field investigation, individuals or evidence of at least 21 different mammal, bird and reptile species were identified along the project corridor; of these, six appear on protected species lists as shown in Table 5.8. Additional wildlife species observed during the field investigations included: Cuban brown anole, Cattle egret, Red tailed hawk, Red shouldered hawk, Killdeer, Black vulture, American crow, Blue jay, Mockingbird, Common grackle, Eastern gray squirrel and White Ibis. Numerous other wildlife and plant species, many of which are protected, have the potential to occur in Orange County. Although evidence of the occurrence of those species was not observed during field inspections of the existing right-of-way or proposed pond sites, suitable habitat might exist in those areas. Figure 5.11 shows the potential involvement with listed species and their habitat as a result of the project. Of the 21 observed species, only the gopher tortoise and wood stork would merit protective or other measures to address with the project. Other listed species with protective or other measures are the sand skink, bald eagle and Indigo snake (assessment directly related to gopher tortoise burrows). Details of the field surveys including species identification, soils and land use types, habitat locations and potential impacts to federal or state listed species and other sensitive species are included in the Endangered Species Biological Assessment (July 2016). The following sections describe those species with the potential to occur within the study limits and to be impacted by the project.

| Table 5.8 - Protected Wildlife Species Observed within I-4 Segment 2 Corridor |
|---------------------------------|-----------------|-----------------|-----------------|
| American alligator | FFWCC | USFWS | FNAI | FCREPA |
| Little blue heron | T(S/A) | T(S/A) | S4 | - |
| Gopher tortoise | T | - | S4 | SSC |
| Florida sandhill crane | T | - | S2S3 | T |
| Wood stork | T | T | S2 | T |
| Osprey* | - | - | - | - |

Notes:  
FFWCC: E= Endangered; T= Threatened; SSC= Species of Special Concern  
USFWS: E= Endangered; T= Threatened; (S/A)= Similarity of Appearance; (E/P)= Experimental Population; *CH = Critical Habitat; C= Candidate for Listing  
FNAI: S1= Critically Imperiled Due to Extreme Rarity; S2= Imperiled Due to Rarity; S3= Very Rare and Local; S4= Apparently Secure; SH= Historical Occurrence; ?= Tentative Ranking  
FCREPA: E= Endangered; T= Threatened; SSC= Species of Special Concern; R= Rare; SU= Status Undetermined  
*Protected federally under the Migratory Bird Treaty Act (MBTA) and is on the state list as SSC for only Monroe County.
Figure 5.11 – Listed Species Observations Map
Federally Listed Species
Informal Consultation for federally listed species was completed with USFWS and the USFWS concurred with the proposed effects determinations described in the following paragraphs. All federally listed species within I-4 Segment 2 were granted either “No Effect” or “May Affect, but not Likely to Adversely Affect” determinations.

Reptiles
Eastern Indigo Snake - The eastern indigo snake, listed by both the FFWCC and the USFWS as Threatened, is a habitat generalist, using a variety of habitats from mangrove swamps to xeric uplands. These snakes are cold-sensitive and require gopher tortoise burrows, other animal holes, or stumps for protection during winter months. These snakes require large tracts of natural, undisturbed habitat, and prefer to forage in and around wetlands for their preferred prey - other snakes. Several burrows were located within the project area but the potential for indigo snakes is low due to the limited amount of habitat available in this developed area. No indigo snakes were observed during field studies and the closest documented sighting is located approximately 36 miles northeast of the project area (2008 sighting near Blue Springs State Park). If an eastern indigo snake is observed during construction, the contractor will be required to cease any operation that might cause harm to the snake. If the eastern indigo snake does not move away from the construction area, both FFWCC and USFWS will be contacted for further guidance. According to the USFWS Programmatic Key for the Eastern Indigo Snake (January 2010, updated August 2013), as the project will implement the Standard Protection Measures for the Eastern Indigo Snake (USFWS, 2013) which specify education of the construction contractor concerning avoidance of indigo snakes and post-construction reporting, will impact less than 25 acres of xeric habitat (scrub, sandhill, or scrubby flatwoods) and there are less than 25 active and inactive gopher tortoise burrows and will have permits conditioned such that all active and inactive gopher tortoise burrows will be evacuated prior to site manipulation in the vicinity of the burrow; the project may affect but is not likely to adversely affect the eastern indigo snake.

Sand Skink – The sand skink is listed as Threatened by the USFWS and FFWCC. The three most important factors in determining the presence of skinks are location, elevation, and suitable soils. Sand skinks occur on sandy ridges of interior Central Florida, including Orange and Osceola County. They are found within these geographic areas typically at elevations of 82 feet above sea level and higher. They occur in excessively drained, well-drained, and moderately well-drained sandy soils, with suitable soil types including: Apopka, Arrendondo, Archbold, Astatula, Candler, Daytona, Duette, Florahome, Gainesville, Hague, Kendrick, Lake, Millhopper, Orsino, Paola, Pomello, Satellite, St. Lucie, Tavares, and Zuber. These soil types typically support scrub, sandhill, or xeric hammock natural communities, though these may be degraded by impacts to overgrown scrub, pine plantation, citrus grove, old field, or pasture. Skinks have been documented to occur in all
these degraded conditions where soil types are suitable regardless of vegetative cover. This makes habitat condition of secondary importance in determining if skinks are present. If a site has suitable soils at the appropriate elevation within the counties where skinks are known to occur, there is a likelihood of presence, and potential effects to skinks should be considered. As the project occurs within the USFWS consultation area for sand skinks, both a pedestrian survey and full coverboard survey were conducted. The survey occurred between April 10, 2014 and May 6, 2014. Results of the survey, which indicated that no skinks were observed within any of the survey areas, were sent to the USFWS to determine if impacts to the sand skink will occur as a result of the project. The USFWS has advised that the Service would agree that due to the fact that no direct or indirect observations of sand skinks were made during the survey, the project may affect but is not likely to adversely affect the sand skink. A subsequent meeting was held in December 2015 at the Jacksonville office of USFWS, where it was determined that no additional sand skink surveys would be required for this segment.

Avian
Florida Scrub-Jay – The Florida scrub-jay, listed as Threatened by both the FFWCC and USFWS, is an endemic species found in Florida scrub habitats. This gregarious jay is a habitat specialist and typically lives in scrub and scrubby flatwoods habitats. No suitable scrub habitat is located within the project corridor. The previous PD&E study (May 2000) conducted surveys for scrub-jays in two areas near Sand Lake Road and I-4. Both of these areas have been developed since that study, and no longer contain any scrub or scrub-like habitat. Regardless, cursory surveys for scrub-jays were conducted in April/May 2013 and April/May 2014, to evaluate the potential for the presence of this species. No scrub-jays were observed within any proposed right-of-way or pond site areas of Segment 2. The proposed widening and stormwater ponds are not expected to have any impact on scrub-jays or scrub-jay habitat. Therefore, this project will have no effect on this species.

Crested caracara – The crested caracara is listed by both the USFWS and the FFWCC as Threatened. This large raptor inhabits Florida’s prairies and rangelands. They forage on many kinds of insects, fish, reptiles, birds, and mammals. They will feed on live captured prey, but also on roadkill. Nests are usually constructed within cabbage palms. Sensitivity to human disturbance varies in this species with many tolerating human activities, especially when human influence is already present within their home range. If a caracara nest is found to be within the project area, management practices outlined in *Habitat Management Guidelines for Audubon’s Crested Caracara in Central and Southern Florida* should be employed. The project occurs at the northernmost edge of the consultation area for this bird in Central Florida. No birds, nests or suitable habitat have been observed or were documented within the project corridor either during the current study or the previous PD&E Study (May 2000), therefore, the project will have no effect on this species.
Snail kite – The snail kite is listed as Endangered by both the USFWS and the FFWCC. This non-migratory, medium-sized raptor utilizes large open freshwater marsh habitats and lakes with shallow water. Nests are usually located in a low tree or shrub at the water’s edge. The main staple of their diet is the apple snail, lending to their name. The project does occur within the USFWS consultation area for the snail kite though no observations have been documented within or near the project corridor. Nesting snail kites have been documented well to the east of the project in Kissimmee at both Lake Tohopekaliga and East Lake Toho. No adequate nesting or foraging habitat is located adjacent to the project area, within the proposed right-of-way or pond site areas. Therefore, this project will have no effect on this species.

Red-Cockaded Woodpecker - Thisspecies is listed as Endangered by the USFWS and Threatened by the FFWCC. The colonial red-cockaded woodpecker (RCW) is a habitat specialist, requiring stands of over-mature pine that have contracted the red-heart disease. RCW’s require diseased trees for cavity building, which they use for nest and roost cavities. Preferred pine stands need to have a fairly open canopy, with a sparse subcanopy to allow easy flight. RCWs must also have ample foraging habitat consisting of younger pines surrounding the cavity trees. No suitable nesting habitat was observed in the impact area within the project limits. The project occurs near (3.5 miles) to an area previously designated by USFWS as “Occurrence Area”; though the previous PD&E Study (May 2000) indicated no suitable habitat or any documented RCW sightings within the proposed right-of-way or pond sites. Additionally, no suitable habitat for nesting or foraging was identified within the vicinity of the project during field surveys. Therefore, this project will have no effect on the red-cockaded woodpecker.

Wood Stork – This species, now listed as Threatened by the USFWS, is the only true species of stork nesting in the United States. This reclassification does not change any conservation or protection measures for the wood stork under the Endangered Species Act (ESA), rather it recognizes the recovery and the positive impact that conservation efforts have had on breeding populations of storks. Feeding areas for wood storks include marshes, pools or ditches in which fish congregate. This species typically nests in mixed woodlands comprised of such overstory species as cypress, gum, and southern willow; pond apple and mangrove swamps may also be utilized for nesting. Based on the updated colony map prepared by the USFWS in June of 2014, the study area is located within the Core Foraging Areas (CFA - 15 miles from an active nesting colony in Central Florida) of two wood stork colonies, as previously shown in Figure 5.11. A wood stork was observed within the project area during field surveys, though foraging areas within the study area are limited to roadside swales and retention ponds. Utilizing the Corps of Engineers and U. S. Fish and Wildlife Service Effect Determination Key for the Wood Stork in Central and North Peninsular Florida (2008); the project is not within 2,500 feet of an active colony site, will likely impact Suitable Foraging Habitat (SFH) of greater than 0.5 acres, and is located within the CFA of two wood stork
colonies *(Lawne Lake and Gatorland)*. The estimated direct impacts to wetlands include approximately 4.43 acres of forested systems and 9.32 acres of other surface waters. Additionally, FDOT commits to provide SFH compensation within the Service Area of a Service-approved wetland mitigation bank(s) within the CFA, and the project is not contrary to the Service’s *Habitat Management Guidelines for the Wood Stork in the Southeast Region* and is in accordance with the Clean Water Act section 404(b)(1) guidelines. There are nine currently permitted mitigation banks that include the project corridor within the bank service area that have credits available to offset impacts to SFH. FDOT will coordinate with the permitting agencies during the permitting phase of the project on compensatory mitigation and minimization of impacts to suitable foraging habitat. These actions should result in no net loss of foraging habitat; therefore, the project may affect but is not likely to adversely affect the wood stork.

Southern Bald Eagle – The southern bald eagle was delisted from both the U.S. Endangered Species Act and FFWCC imperiled list, though it is still protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act (MBTA). The USFWS issued the National Bald Eagle Management Guidelines in May 2007 while Florida adopted a Bald Eagle Management Plan (BEMP) in April 2008, written closely to follow the federal guidelines. The BEMP provides guidelines and recommendations to help people avoid violating state and federal eagle laws. The BEMP also outlines strategies to maintain the Florida population of bald eagles at or above current levels. The BEMP goal is to, “maintain a stable or increasing population of eagles in Florida in perpetuity.” Bald eagles almost always nest in the tops of living or dead tall trees along or very near lakes and rivers; these water bodies provide fish, typically their preferred food. Bald eagles generally avoid areas with extensive human activity, so management guidelines must be considered before any construction can be initiated within 660 feet of an active southern bald eagle nest. Four bald eagle nests are recorded to be in the general vicinity (within one mile) of the project corridor (OR014, OR015, OR047 and OR077). However, none of these nests is located within 660 feet of the proposed right-of-way or any of the proposed pond sites. For that reason, the project will have no effect on the southern bald eagle.

**Federally Listed Plant Species**
A review of agency databases and a field review of the project corridor indicate that there have been few reported occurrences of federally listed plant species within the proposed project area. Twelve federally listed species have been demonstrated to have the potential to occur within Orange County, though not all habitat types are represented within the project area. Information from the previous PD&E Study (May 2000) indicated that one listed plant was observed, the scrub lupine. The observation was made west of Turkey Lake Road, to the west of the SR 528 Interchange at westbound I-4. A follow up protected plant field survey covering the area of proposed right-of-way widening and pond sites was conducted in (May 2013, April 2014 and
January 2015) by project botanists and other biologists. No federally listed plant species were identified within the proposed widening impact area or pond sites during the field investigations. Based on field work conducted, no direct or indirect impacts to federally listed plant species are likely to occur; the project may affect, but not likely to adversely affect any of the federally listed plant species.

**State Listed Species**

**Mammals**

**Sherman’s Fox Squirrel** - The Sherman’s fox squirrel, listed by the FFWCC as a Species of Special Concern, is the largest of the three fox squirrel subspecies that occur in Florida. They have large ranges that can span over 80 acres. Optimum habitat for this subspecies is predominantly longleaf pine-turkey oak sandhills, although they are also reported to occur in mesic forested areas, as well. Some potential habitat is present within the project area, although Sherman’s fox squirrels were not observed during the site investigations for this project. The amount of potential habitat for this species impacted by the project will be minimal. Therefore, the proposed project is not likely to adversely affect the Sherman’s fox squirrel.

**Florida Black Bear** - The Florida black bear is a very wide-ranging species formerly listed as Threatened by the FFWCC. Preferred habitat of the black bear includes dense forest, both upland and wetland, but the bear is often encountered in other areas during its seasonal movements. The bear was removed from the list in August 2012 after the approval of the Florida Black Bear Management Plan. The plan was implemented to set a strategy in place to address challenges in bear management, to manage for a sustainable bear population state-wide, and reduce human-bear conflicts. Going forward, FFWCC will continue to engage with landowners and regulating agencies to guide future land use to be compatible with the objectives of the Bear Management Plan. The plan divides the state into seven Bear Management Units (BMUs) which support the seven sub-populations of bear across the state. The unit closest to the project corridor is the Ocala/St. Johns Unit, though nearest Primary or Secondary Bear range within this unit is located in northwestern Orange County and not near the location of the project. As it is unlikely that a black bear will travel through the project corridor, and no further fragmentation of bear habitat is proposed, the project is not likely to adversely affect the Florida black bear.

**Reptiles**

**Gopher Tortoise** - The occurrence of this species, listed as Threatened by the FFWCC (and designated as a Candidate species for listing by the USFWS), is a key factor in the determination of habitat suitability for certain other listed species because of the large number of other animals that use tortoise burrows for one or more of their life requisites. While it is common to find gopher tortoise burrows in most types of upland communities, the preferred habitats include xeric uplands and disturbed, ruderal areas. Six gopher tortoise burrows were observed within pond site 200A,
and suitable habitat was identified at pond 200B. If impacts to these areas cannot be avoided, then relocation of the tortoises and their commensals will be necessary. During permitting, all potential gopher tortoise habitat that could be impacted by the project will be systematically surveyed according to the current guidelines published by the FFWCC. If gopher tortoise burrows are found, all practicable design measures will be employed to avoid impacts to the burrows. For burrows which cannot be avoided, a permit will be obtained from FFWCC for relocation of gopher tortoises and commensals, and relocation will be performed at a time as close as practicable to the start of construction activities at the site of the burrows (see Figure 5.11). Therefore, the project is not likely to adversely affect the gopher tortoise.

Florida Pine Snake – This snake, listed as Threatened by the FFWCC, is another tortoise burrow commensal organism, utilizing both tortoise burrows and also the tunnels of pocket gophers for feeding and shelter. Preferred habitat of the pine snake is xeric uplands, and to a lesser extent, flatwoods and other mesic uplands. Some habitat is available within the project, especially where gopher tortoise burrows were observed (see Figure 5.11). Both the pocket gophers and the pine snakes live nearly their whole lives underground and are very hard to observe directly. Earth work in suitable habitat may impact subterranean pine snakes. With the relocation of commensal organisms from gopher tortoise burrows if impacted, the project is not likely to adversely affect the Florida Pine Snake.

Short-tailed snake – The short-tailed snake, listed as Threatened by the FFWCC, belongs to a monotypic genus that is endemic to Florida. Rarely seen due to its earth-burrowing tendencies, it is restricted to xeric uplands, primarily longleaf pine-turkey oak sandhills and sand pine scrub, for its habitat requirements. Herpetologist Paul Moler (FFWCC - retired) reports short-tailed snakes occur in a wider range of ecosystems than indicated in the scant literature on the species, and may be found where prey (small snakes) and loose soils occur in North-Central Florida. Suitable habitat (sand pine scrub) is not present on this project, nor was any of these snakes observed during any field surveys. Due to the lack of xeric habitat, it is anticipated that this project is not likely to adversely affect the short-tailed snake.

Avian
Florida Burrowing Owl - The Florida burrowing owl is listed as Threatened by the FFWCC. The breeding range of the Florida burrowing owl includes Orange County. Preferred habitats are treeless areas on well-drained soil where herbaceous ground cover is fairly short, such as dry prairies and edges of depressional marshes during the dry season. Florida burrowing owls have also been observed along canal banks, pastures, golf courses, mowed residential lawns, and airports (Rodgers, 1996). No Florida burrowing owls or their burrows were observed during the field surveys and no direct or indirect impacts are anticipated for this species. Therefore, the project is not likely to adversely affect the Florida burrowing owl.
Florida Sandhill Crane – This non-migratory subspecies, listed as Threatened by the FFWCC, can often be seen foraging in improved pastures, open fields and along the roadside. During the winter months, it is distinguished from its migratory northern cousins by its smaller size and more delicate stature. Sandhill cranes nest in freshwater marshes and feed in adjacent fields and pastures. Some adequate nesting habitat is found within the freshwater marshes located adjacent to the project corridor, and foraging habitat was found within the project limits. Sandhill cranes were observed flying over the project area several times during multiple surveying events, however were not observed foraging or nesting within the project area. The proposed project is not likely to adversely affect the sandhill crane.

Southeastern American Kestrel – This resident subspecies of the kestrel, listed as Threatened by the FFWCC, can be distinguished from its cousin, *F. s. sparverius*, a winter migrant, by its smaller size. The Southeastern kestrel requires three components for optimal habitat: large, open fields for foraging, snags for nesting, and snags, fence lines or telephone poles as perching sites from which to hunt. No kestrels were observed along the project corridor, nor within any pond sites or along the portion of the project to be widened. Therefore, this project is not likely to adversely affect this species.

Least tern – Historically, least terns nested on sandy beaches and lakeshores, but presently, they nest almost exclusively on man-made substrates such as spoil islands and gravel rooftops. This small tern, listed as Threatened by the FFWCC, is still fairly common in localized areas. However, none have been reported in the project study area. Prime nesting areas are minimal, so this species has only a low possibility of occurring along the project corridor, therefore the proposed project will have no effect on the least tern.

Wading Birds – Wading bird rookeries were not observed and are not known to occur within or adjacent to the study area. Potential foraging habitat for the little blue heron, roseate spoonbill, reddish egret and tri-colored heron, all classified as Threatened by the FFWCC, occurs within the limits of the study area. Both little blue heron and white ibis were observed during field surveys. No wetlands providing critical foraging or nesting habitat for these avian species will be impacted by the proposed project and indirect impacts to wading birds are not anticipated. Therefore, the proposed project is not likely to adversely affect the wading bird population in the region.

**State Listed Plant Species**
A review of available information revealed that 57 state listed plant species have the potential to occur within the habitats located within the project area in Orange County. No state listed plant species were observed during the field assessment of project area, though during the previous PD&E Study (May 2000), nodding pinweed was observed along Turkey Lake Road. Improvements to Turkey Lake Road since this study have eliminated the habitat areas that this plant occurred in,
and no evidence of the plant was observed during the field surveys in May 2013. Therefore, the proposed project is not likely to adversely affect any state-listed plant species.

Other Sensitive Species

Migratory Birds

The Migratory Bird Conservation Commission was established on February 18, 1929 by the passage of the Migratory Bird Conservation Act. It was created and authorized to consider and approve any areas of land and/or water recommended by the Secretary of the Interior for purchase or rental by the USFWS under the Act. In 1989, the Commission acquired the additional responsibility to approve project funding under the North American Wetland Conservation Act. This Act provides for Federal funding to encourage partnerships to protect, enhance, restore and manage wetland and other habitats for migratory birds and other fish and wildlife to carry out the North American Waterfowl Management Plan. Waterfowl are the most prominent and economically important group of migratory birds of the North American Continent. National Migratory Bird Areas in Florida include Arthur R. Marshall, Caloosahatchee, Cedar Key, Chassahowitzka, Egmont Key, Great White Heron, Hobe Sound, J.N. Ding Darling, Lake Woodruff, Matlacha Pass, Merritt Island, Okefenokee, Pine Island, Pinellas, St. Marks and St. Vincent. None of these National Migratory Bird Areas are located within a one-mile radius of the project corridor. If the project results in direct impacts to wetland habitat or surface water features (i.e. roadside ditches) that could be utilized by migratory birds, there may be an impact on these species. Impacts to wetlands will be mitigated for at approved mitigation sites within the affected watershed and will offset any potential impacts to migratory birds from this project.

The proposed project will avoid and minimize impacts to wildlife and their habitat to the greatest practicable extent. Unavoidable impacts will be mitigated through a combination of actions designed to enhance local and regional ecological and hydrologic connectivity where possible. Those actions constitute the current recommendations developed and refined by staff and consulting environmental scientists representing various federal and state agencies and nongovernmental organizations, using the most current record and project specific scientific information available. The FDOT routinely reevaluates PD&E Study results and commitments prior to and during the project design phase, and again prior to right-of-way acquisition and construction. Therefore, the wildlife recommendations proposed herein will be subject to reevaluation in the future. Appropriate modifications to the recommended actions may be made in the event that the latest science, design constraints or other relevant changes in circumstance so dictate.

5.7.4 Archaeological and Historical Resources

Archaeological and historical resources within the project area were documented in the report, Technical Memorandum: Cultural Resource Assessment Survey of Proposed Improvements to
Segment 2: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) (CRAS, December 2015). The CRAS was conducted to comply with Section 106 of the National Historic Preservation Act (as amended) and its implementing regulation 36 CFR Part 800 (Protection of Historic Properties). All work was performed in accordance with Part 2, Chapter 12, of the FDOT PD&E Manual (revised January 1999) and the Cultural Resource Management Handbook (revised November 2004) and is consistent with the Florida Division of Historical Resources (FDHR) recommendations for such projects as stipulated in the FDHR’s Cultural Resource Management Standards & Operations Manual, Module Three: Guidelines for Use by Historic Preservation Professionals. The CRAS study also complies with Chapter 267 of the Florida Statutes and Rule Chapter 1A-46, Florida Administrative Code.

The CRAS serves as an addendum to two previous reports: I-4 (S.R. 400) Project Development and Environmental Study from C.R. 532 (Osceola-Polk Line Road) to S.R. 528 (Beeline Expressway) in Osceola and Orange Counties, Florida (Florida Master Site File [FMSF] Survey No. 5287) (ACI 1998a), and Cultural Resource Assessment Survey, Interstate 4 Section 2 Project Development and Environment Study from Bee Line Expressway (S.R. 528) to S.R. 472 Interchange, Orange, Seminole, and Volusia Counties, Florida (FMSF Survey No. 5707) (ACI and Janus Research 1999).

The regional prehistory and history of the current project area are consistent with those described in the previous reports and were not repeated in the current study. The purpose of this survey is to update the previous I-4 corridor studies, which involves locating, identifying, and bounding archaeological resources within proposed pond locations, and updating the inventory of historic structures and potential districts within the project Area of Potential Effect (APE). Previously undocumented resources identified in the APE were assessed for their potential for listing in the National Register of Historic Places (NRHP).

The APE is defined as the area within which the roadway improvements and subsequent maintenance may have physical, visual, audible, or atmospheric effects on historic properties. The APE as defined for this project includes the existing and proposed ROW along I-4 and was extended to the back or side property lines of parcels adjacent to the corridor, limited to a distance of no more than 100 meters (330 feet) from the proposed ROW. The APE also includes the proposed pond footprints plus a 100-foot buffer.

Archaeological survey was conducted within the proposed pond footprints, and the architectural study included the entire APE. Field investigations consisted of pedestrian surface inspection and the excavation of 178 shovel tests within the footprint of the proposed ponds. Two Archaeological Occurrences (AOs) were identified, one each in Ponds 205A and 205B. These AOs do not meet the criteria for significance required for inclusion in the NRHP. The results of the archaeological field survey are summarized in Table 5.9.
Table 5.9 - Results of Phase I Archaeological Survey of the Proposed Ponds for the I-4 Segment 2 APE

<table>
<thead>
<tr>
<th>Pond</th>
<th>Acreage</th>
<th>Number of Shovel Tests</th>
<th>Condition/ Location</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>200A</td>
<td>4.07</td>
<td>20</td>
<td>Interchange of I-4 and SR 528</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>200B</td>
<td>4.26</td>
<td>16</td>
<td>Interchange of I-4 and SR 528</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>201</td>
<td>5.08</td>
<td>20</td>
<td>Interchange of I-4 and SR 528</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>202A</td>
<td>2.89</td>
<td>3</td>
<td>Interchange of I-4 and SR 528</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>202B</td>
<td>0.84</td>
<td>1</td>
<td>Interchange of I-4 and SR 528</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>202C</td>
<td>6.10</td>
<td>6</td>
<td>Interchange of I-4 and SR 528</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>202D</td>
<td>1.71</td>
<td>2</td>
<td>Interchange of I-4 and SR 528</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>203A</td>
<td>6.39</td>
<td>4</td>
<td>Within the interchange of International Drive and SR 528</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>203B</td>
<td>1.98</td>
<td>3</td>
<td>Within the interchange of International Drive and SR 528</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>204A</td>
<td>6.19</td>
<td>6</td>
<td>Within the interchange of International Drive and SR 528</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>204B</td>
<td>2.41</td>
<td>3</td>
<td>Within the interchange of International Drive and SR 528</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>205A</td>
<td>6.27</td>
<td>38</td>
<td>Former orange grove, west of Turkey Lake Road</td>
<td>Archaeological Occurrence 1 (AO 1)</td>
</tr>
<tr>
<td>205B</td>
<td>5.48</td>
<td>22</td>
<td>Former orange grove, west of Turkey Lake Road</td>
<td>Archaeological Occurrence 2 (AO 2)</td>
</tr>
<tr>
<td>205C</td>
<td>3.68</td>
<td>10</td>
<td>Former orange grove, west of Turkey Lake Road</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>205D</td>
<td>3.02</td>
<td>10</td>
<td>West of Turkey Lake Road</td>
<td>Previously recorded 8OR08763; no evidence of site encountered</td>
</tr>
<tr>
<td>206</td>
<td>3.12</td>
<td>6</td>
<td>Within ramp at intersection of I-4 and SR 482</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>206A</td>
<td>0.66</td>
<td>2</td>
<td>Within ramp at intersection of I-4 and SR 482</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>206B</td>
<td>0.85</td>
<td>2</td>
<td>Within ramp at intersection of I-4 and SR 482</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>207</td>
<td>2.24</td>
<td>3</td>
<td>Existing pond</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>208</td>
<td>1.41</td>
<td>1</td>
<td>Existing pond</td>
<td>No archaeological sites or cultural material</td>
</tr>
</tbody>
</table>
Table 5.9 - Results of Phase I Archaeological Survey of the Proposed Ponds for the I-4 Segment 2 APE

<table>
<thead>
<tr>
<th>Pond</th>
<th>Acreage</th>
<th>Number of Shovel Tests</th>
<th>Condition/ Location</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>F32</td>
<td>5.14</td>
<td>0</td>
<td>Existing pond</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>F33</td>
<td>5.26</td>
<td>0</td>
<td>Existing pond</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>F34</td>
<td>7.60</td>
<td>0</td>
<td>Existing pond</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>F35</td>
<td>3.85</td>
<td>0</td>
<td>Existing pond</td>
<td>No archaeological sites or cultural material</td>
</tr>
<tr>
<td>Turkey Lake Rd.</td>
<td>2.36</td>
<td>0</td>
<td>Existing pond</td>
<td>Previously recorded 8OR01271; no evidence of site encountered</td>
</tr>
<tr>
<td>Total</td>
<td>92.82</td>
<td>178</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The architectural survey resulted in the identification of two historic structures (8OR10249, 9036 Turkey Lake Road and 8OR10250, 7400 International Drive) constructed before 1971 within the APE. Both resources lack the architectural distinction and significant historical associations necessary to be considered for listing in the NRHP and are recommended ineligible. No potential NRHP districts were identified due to the lack of concentration of historic structures.

In addition, examination of the Orange County Property Appraiser’s records indicated that nine structures are located within the APE that date from 1971 to 1974, as shown in Table 5.10. Depending on the progression of the project (i.e., how much time elapses between the current study and the eventual design/construction of the project), it may become necessary to inventory and assess these resources. Figure 5.12 and Figure 5.13 shows the historic resources constructed before 1971 within the APE.

Table 5.10 - Parcels along the APE that Contain Resources Constructed between 1971 and 1974.

<table>
<thead>
<tr>
<th>Parcel Number</th>
<th>Address</th>
<th>Date</th>
<th>Preliminary Evaluation*</th>
</tr>
</thead>
<tbody>
<tr>
<td>12-24-28-9249-00-010</td>
<td>Places of Learning – Sea World Marketing (6817 Westwood Boulevard)</td>
<td>ca. 1973</td>
<td>Not eligible</td>
</tr>
<tr>
<td>25-23-28-7135-00-011</td>
<td>Quality Inn Hotel International (7600 International Drive)</td>
<td>ca. 1972</td>
<td>Not eligible</td>
</tr>
<tr>
<td>25-23-28-0000-00-029</td>
<td>Edwin Watts Golf (7024 International Drive)</td>
<td>ca. 1973</td>
<td>Not eligible</td>
</tr>
<tr>
<td>25-23-28-5404-02-010</td>
<td>Howard Johnson Inn (6603 International Drive)</td>
<td>ca. 1972</td>
<td>Not eligible</td>
</tr>
</tbody>
</table>
Table 5.10 - Parcels along the APE that Contain Resources Constructed between 1971 and 1974.

<table>
<thead>
<tr>
<th>Parcel Number</th>
<th>Address</th>
<th>Date</th>
<th>Preliminary Evaluation*</th>
</tr>
</thead>
<tbody>
<tr>
<td>25-23-28-5404-02-020</td>
<td>International Palms Resort Building 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6515 International Drive)</td>
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</tr>
<tr>
<td>25-23-28-5404-02-020</td>
<td>International Palms Resort Building 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(6515 International Drive)</td>
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<tr>
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<tr>
<td>25-23-28-2001-01-010</td>
<td>The Metropolitan Express (6323</td>
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<tr>
<td></td>
<td>International Drive)</td>
<td>ca. 1973</td>
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<tr>
<td></td>
<td>Drive)</td>
<td>ca. 1974</td>
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</table>

*Based on desktop analysis
Figure 5.12 – Newly Recorded Historic Resources within Southern Portion of I-4 Segment 2 APE
Figure 5.13 – Newly Recorded Historic Resources within Northern Portion of I-4 Segment 2 APE
5.7.5 Contamination

A Contamination Screening Evaluation Report, Segment 2: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) (CSER, July 2016) was completed for the I-4 Segment 2 corridor and proposed pond sites. The purpose of the CSER is to identify and evaluate known or potential contamination problems, present recommendations concerning these problems, and discuss possible impacts to the proposed project. The CSER, completed in accordance with Chapter 22 (January 17, 2008 revision) of the FDOT PD&E Manual and Federal Highway Administration (FHWA) Technical Advisory T6640.8A (October 30, 1987) guidelines, contains results from a physical site investigation of the project corridor, a limited investigation of properties along the corridor adjacent to the ROW as viewed from areas of public access, a review of Florida Department of Environmental Protection (FDEP) files, Orange County records and available environmental databases.

As part of the CSER, a review of the FDEP Oculus Database was conducted to determine locations of contaminated sites followed by visual inspection of the corridor including pond sites and properties adjacent to and within ½ mile of the roadway. Known contamination sites and properties with potential contamination were identified and assigned a risk rating based on the degree of concern for potential contamination problems. A total of one hundred twenty-four (124) sites within the study area were identified as being potential handlers of hazardous materials or having some type of involvement with potential contamination. Of these sites, none had a high risk rating, nine had a medium risk rating and 115 sites received a no risk or low risk rating. It is recommended that any demolition or dewatering activities within or adjacent to any of the identified medium risk sites should require soil and groundwater testing before construction. The 124 identified sites/properties within 1/2 mile of the existing I-4 right-of-way and the proposed pond sites and their corresponding risk rating are shown on Figure 5.14 through Figure 5.16.

A groundwater contamination plume of ethylene dibromide (EDB) which encompasses sixteen (16) other listed sites, including pond sites 205A, 205B, 205C and 205D, was identified in the project corridor. These are the only four pond sites within the groundwater contamination plume and were the only pond sites identified as having a medium risk rating for contamination. In addition to the contamination plume, discarded debris such as building materials and shingles were discovered at pond sites 205A, 205B and 205C, which are combined with other adjacent vacant land. A structure, along with discarded or abandoned containers and other potential sources of contamination, was found at pond site 205D. These sites should be tested for asbestos containing materials and lead-based paint prior to construction.
Figure 5.14 – Potential Contamination Sites (Sheet 1 of 3)
Figure 5.15 – Potential Contamination Sites (Sheet 2 of 3)
Figure 5.16 – Potential Contamination Sites (Sheet 3 of 3)
A Level 2 assessment (*Level 2 Contamination Impact Assessment Report, March 2015*) was completed on all Medium and High Risk Rated sites identified in the CSER. The purpose of the Level 2 assessment was to verify the potential presence of chemical contaminants that could affect ROW acquisition, design and/or construction of the proposed roadway. If the presence of such contaminants is verified, further delineation of the horizontal and vertical extent of the soil and/or groundwater contaminant plumes may be needed to support ROW acquisition and associated liability protections. Such additional data may also be necessary to support stormwater management system design, foundation design and design of remedial strategies that may be necessary during construction to properly mitigate the impacted media without causing adverse impacts to workers and the environment.

The Level 2 assessment included investigation and analyses of the proposed locations for pond sites 205B, 205C and 205D, research of FDEP’s Oculus database for pond sites 206, 206A and 206B and asbestos sampling at pond sites 205B and 205C.

As part of the assessment activities, a total of 32 soil screening borings were conducted at the Basin 205 pond sites investigated (205B – 13 borings, 205C – 9 borings and 205D – 10 borings). Soil and groundwater samples collected were submitted for analyses for arsenic, pesticides and herbicides. The laboratory analytical results indicated detections in the samples at levels below commercial and residential cleanup target levels listed in Chapter 62-777, FAC and Maximum Contaminant Levels listed in Chapter 62-550, FAC. Based on the results of the Level 2 Assessment, it appears that the soils and groundwater at proposed pond locations 205B, 205C and 205D have not been impacted at this time and would not require special handling, characterization and disposal provisions and no further is recommended contamination assessment at these locations.

Asbestos sampling was performed on debris piles within the vacant property containing Ponds 205B and 205C. Samples were taken from several debris piles and vinyl sheet flooring on a concrete slab. Non-friable asbestos containing materials were found within chimney flashing (2 square feet), heating ventilation and air conditioning (HVAC) duct mastic (10 square feet) and vinyl sheet flooring (1,200 square feet) onsite. Based on the results of the asbestos assessment, it appears that the debris at this location will require special handling, characterization and disposal provisions. Detailed analyses are provided in the Asbestos-Containing Material Survey which is provided in the Appendix of the *Level 2 Contamination Impact Assessment Report (March 2015)* prepared for the I-4 Segment 2 project.

Proposed pond sites 206, 206A and 206B were evaluated by researching FDEP’s Oculus files. A 7-Eleven facility previously occupied the parcel located west of the proposed pond 206, and within the infield of the existing loop ramp in the northwest quadrant of the I-4 and Sand Lake Road interchange. The site previously contained three 10,000-gallon gasoline underground storage tanks.
(USTs) that were removed in 1989. Removal of the USTs included excavation and removal of 522 tons of contaminated soil to a depth of six feet. However, no post-excision groundwater documentation was available. Based on the potential for groundwater impacts at the historical 7-Eleven facility and the proposed wet detention design of Ponds 206, 206A, and 206B, the historical 7-Eleven facility and pond sites should be considered a High Risk.

All bridges and other structures which will require possible demolition or retrofit should be tested for asbestos containing materials, lead-based paint or any other hazardous materials prior to construction.

Should any parcels containing medical facilities, doctor offices, hospitals, or drug stores be acquired, they should be tested for asbestos, lead-based paint, x-ray equipment, lead-lined walls, chemicals, and pharmaceuticals prior to demolition.

5.7.6 Noise

A Noise Study Report (NSR, July 2016) based on procedures established in Part 2, Chapter 17 “Noise,” of the FDOT PD&E Manual was prepared to document predicted noise levels associated with the I-4 Segment 2 improvements. The NSR was completed to determine if noise levels will be likely to increase, if noise-sensitive receivers are (or will be) within the project area and if noise impacts will occur. If future design-year noise levels at noise sensitive receptors approach, meet or exceed the Noise Abatement Criteria established by FHWA in 23 CFR 772 or increase 15 dB(A) over existing noise levels as a direct result of the transportation improvement project, noise abatement must be considered. The FHWA’s Traffic Noise Modeling (TNM) Version 2.5 computer program was used to determine if noise abatement was warranted, and if so, considered reasonable and feasible for any noise-sensitive sites. The noise analysis was prepared using guidance based on regulatory material found in 23 Code of Federal Regulations (CFR), Part 772, and entitled “Procedures for Abatement of Highway Traffic Noise and Construction Noise” for FDOT noise assessments, regardless of funding. This regulation, pursuant to Rule Chapter 335.17, Florida Statutes (F.S.), is available from the FHWA and FDOT.

Eight noise sensitive areas (NSA) that have the potential to be impacted by the project were identified within the study corridor as shown in Figure 5.17. Seventy-seven potential noise-sensitive sites were identified for the study segment, and consist of: hotels, resorts, multi-family residences within the Sand Lake Private Residences, Sand Lake Village, McKinley at Monterey Lakes, Sea Isle and single-family residences at Toscana. One single family residence that appears abandoned is located directly on Turkey Lake Road, several hundred feet south of the Walmart. The TNM analysis of noise sensitive areas predicted no sites to be impacted within NSA C, NSA D or NSA H.
Figure 5.17 – Noise Sensitive Areas Map
The results of the noise barrier analysis indicate that two noise barriers within NSA A will provide the best noise abatement and meet the requirements as reasonable and feasible. The recommended barriers for these two sites include:

- a 22-foot tall, 440-foot long ground mounted barrier (estimated cost $290,000) for the McKinley at Monterey Lakes Apartments and
- a 14-foot tall, 931-foot long shoulder-mounted barrier (estimated cost $390,000) for the Sea Isle Luxury Apartments.

The barrier analysis also indicated that no reasonable or feasible measures are achievable for the remaining impacted sites within the impacted NSAs (NSA B, NSA E, NSA F and NSA G).

### 5.7.7 Air Quality

The proposed project was reviewed for air quality impacts consistent with the guidance provided by the FHWA in the supplemental report *Air Quality Analysis Technical Memorandum (July 2016)*. Orange County is an area currently designated as being attainment for the following air pollutants: ozone, nitrogen dioxide, particulate matter (2.5 microns in size and 10 microns in size), sulfur dioxide, carbon monoxide and lead.

The project was subjected to a carbon monoxide (CO) screening model that makes various conservative worst-case assumptions related to site conditions, meteorology and traffic. The FDOT’s screening model, CO Florida 2012 (released March 12, 2012) uses the latest United States Environmental Protection Agency (USEPA) – approved software (*MOVES 2010a and CAL3QHC2*) to produce estimates of one-hour and eight-hour CO at default air quality receptor locations. The one-hour and eight-hour estimates can be directly compared to the one-hour and eight-hour National Ambient Air Quality Standards (NAAQS) for CO that are 35 parts per million (ppm) and 9 parts per million (ppm), respectively.

The roadway intersection forecast to have the highest total approach traffic volume (for both the Build and No-Build scenarios) is the intersection of Sand Lake Road and Turkey Lake Road. The design hour volumes for Build and No-Build scenarios for the opening year (2020) and the design year (2040) were evaluated.

Estimates of CO were predicted for the default receptors which are located 10 feet to 150 feet from the edge of the roadway. Based on the results from the screening model, the highest project-related CO one-hour and eight-hour levels are not predicted to meet or exceed the one-hour or eight-hour National Ambient Air Quality Standards (NAAQS) for this pollutant with either the Build or No-Build alternatives. As such, the project “passes” the screening model. The project is located in an area which is designated attainment for all of the National Ambient Air Quality Standards.
under the criteria provided in the Clean Air Act. Therefore, the Clean Air Act conformity requirements do not apply to the project.

5.8  Section 4(f) Lands

In accordance with Section 4(f) of the Department of Transportation (DOT) Act of 1966 [Title 49, USC, Section 1653(f)] amended and codified in Title 49, USC, Section 303, the project was evaluated for potential Section 4(f) resources. Section 4(f) resources consist of publicly owned parks, recreation areas, wildlife refuges and public and private historic and archaeological sites. No Section 4(f) properties have been identified within the project corridor therefore, Section 4(f) does not apply.

5.9  Public Involvement Program

A comprehensive Public Involvement Program (PIP) was initiated as part of this PD&E Study. This program is in compliance with Part 1, Chapter 11 of the FDOT PD&E Manual which details various federal, state and local regulations including Section 339.155, Florida Statutes; Council of Environmental Quality (CEQ) Regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA) and 23 Code of Federal Regulations (CFR) 771.

The public involvement program for I-4, Segment 2 included the publication of newsletters, meetings with government agencies, community outreach meetings and an Alternatives Public Workshop. A project website, www.i4express.com, was also developed to disseminate updated information about the project and allow the public to communicate with the project team and/or provide comments.

Alternatives Public Workshop

The Alternatives Public Workshop was held on Thursday, January 30, 2014, from 5:30 p.m. to 7:30 p.m. at the DoubleTree Hotel, 10100 International Drive. An invitational letter was mailed to property owners located within at least 300-ft on either side of the current project corridor, public officials, organizations and individuals interested in the project. An advertisement was placed in the Orlando Sentinel (full circulation) and a press release was distributed by FDOT to local media outlets. The Alternatives Public Workshop was held in an open house format with project display boards and an automated presentation which gave an overview of the proposed project, including a summary of the engineering and environmental considerations in development of the proposed alternatives. Twenty citizens and 13 project team members signed in at the public meeting. Project team attendees included the FDOT Project Manager, staff from FDOT Right-of-way and Environmental Management Offices, Metropolitan Planning Organization liaison and the project consultants. Public comment forms were made available to attendees; however, no written comments were received during or after the meeting. Verbal comments/questions received during
the public meeting consisted of discussions of future visions/development plans near the Sand Lake Road and International Drive intersection, questions regarding animal crossing and keeping the high-speed rail envelope within the corridor. No opposition against the project was received during the meeting.

Several additional meetings were held to discuss the proposed project improvements and PD&E study, as follows.

Meetings with Orange County:

- Orange County Partnering Meeting (August 12, 2014) – Presented alternative concepts to Orange County staff for both Sand Lake Road and SR 528
- Orange County Management Presentation (February 9, 2015) – Presented recommended alternative to Orange County management for Segments 1 and 2

Meetings with Florida’s Turnpike Enterprise (FTE):

- Beachline and I-4 Coordination Meeting (February 7, 2014) – Discussed alternative concepts for the I-4/SR 528 interchange and collected information on the proposed widening for SR 528 by FTE
- I-4/Beachline Ramp Widening - Coordination (March 25, 2014) - Meeting to discuss the proposed interim ramp improvement for I-4 and SR 528/Beachline interchange concept
- FTE Coordination Meeting (May 2, 2014) – Discussion on proposed improvement concepts for SR 417 & SR 429 interchanges
- D-5/FTE Coordination Meeting, Beyond I-4 Ultimate PD&E (June 30, 2014)- Discussion on proposed improvement concepts for the SR 528/I-4 Interchange
- I-4/Beachline Interchange Future Traffic (July 17, 2014) – Discussion on traffic volumes to be used in the analysis for the SR 528 Interchange Operational Analysis Report (IOAR) being prepared by FTE
- I-4 and SR 528 Interchange Coordination (December 5, 2014) – FTE presented their recommended alternative for the SR 528 section of the I-4 improvements.

Public Hearing

A formal public hearing was conducted on October 10, 2016 to seek input on the Recommended Alternative. The hearing, provided an overview of the Recommended Alternative and impacts, the study schedule, and summary of the remaining steps in the study process. The hearing was held at the Wyndham Orlando Resort, 8001 International Drive, Orlando, FL 32819. The draft environmental and engineering reports were available for public review from September 19, 2016
through October 20, 2016 on the project website (www.i4express.com) and at the Orange County Public Library, Southwest Branch, located at 7255 Della Drive, Orlando, FL 32819.

A half-hour open house preceded the formal portion of the hearing. The public was given the opportunity to ask questions and provide comments to the FDOT representatives in a one-on-one setting. A court reporter was present to receive oral comments from the public, and written comments were also accepted. The Recommended Alternative for the overall I-4 corridor and each interchange was displayed on aerial photography of the study area. A matrix with potential environmental impacts and cost estimates was presented. An audiovisual presentation describing the engineering and environmental components of the Recommended Alternative was given. After the presentation, the public was given an opportunity to offer oral comments to the hearing moderator.

Per Chapter 11 of the PD&E Manual, all property owners within at least 300 feet of either side of the centerline of the Recommended Alternative were notified of the hearing by newsletter. Twenty-three (23) citizens and seventeen (17) project team members signed in at the public hearing. Project team attendees included the FDOT PD&E and Design Project Managers, staff from FDOT Public Information, Right-of-way and Environmental Management Offices and the project consultants. No public comment forms were received at the hearing or during the 10-day comment period following the hearing. Two public comments were provided during the oral comment period of the hearing. The public comments from the hearing are summarized as follows:

- A citizen expressed a need for clarification on the proposed improvements and identification of which property is needed for ponds from a specific parcel. Opposition to any land being used for FDOT ponds was also expressed.
- A citizen stated he was not opposed to progress; however, he also gave a lengthy comment suggesting to follow the “money trail” on the project. The citizen indicated he did not require a response.

**Post Public Hearing Coordination**

No written comments were received during the 10-day post-hearing comment period. The oral comments from the public hearing were either directly addressed by project team members during the public hearing or through follow-up letter/email responses provided by the FDOT Project Manager. The public involvement documentation for I-4 Segment 2, including official public hearing transcripts and public input comments with responses, are provided in Appendix B of this report.
5.10 **Value Engineering (VE)**

Value Engineering (VE) for the proposed improvements was conducted after the alternatives public workshop meeting in 2014. The VE study was held February 10-14, 2014; the VE team consisted of representatives from the FDOT D5 office in the Traffic Operations, Roadway Design, Right-of-way, Construction, Structures, Geotechnical, Maintenance, Project Management and Drainage departments. The VE team reviewed the preliminary concept plans and made recommendations based on overall value added to the project. The VE team made seven recommendations that would result in cost savings or added value to the project. The detailed recommendations are provided in the *Value Engineering for Transportation Improvements, Interstate 4 from West of State Road 528 (Beachline) to West of State Road 435 (Kirkman Road), Value Engineering Study Draft Report, February 2014* and are summarized as follows.

- Reduce the size of Pond 200B by a third and provide the remainder of the needed stormwater storage in Pond 200D that is located within FDOT right-of-way in the northeast quadrant of the intersection of I-4 and SR 528. The land is currently being leased to the Orange County Convention Center and is currently used for parking.
- Construct a new Pond 205C on the Yogi Bear Campground property in conjunction with Pond 205D on the residential lots south of Walmart. Combine Pond 205D with the existing Orange County pond. An FDOT easement for an outfall into Big Sand Lake already exists.
- Construct a new Pond 205C on the Yogi Bear Campground property in conjunction with Pond 205D on the residential lots south of Walmart. Construct stand-alone Pond 205D. An FDOT easement for an outfall into Big Sand Lake already exists.
- Realign the horizontal geometry of the SR 528 interchange pushing the overall footprint westward to eliminate all right-of-way takes on the east side of I-4 as shown in the SR 528 interchange Alternative 4 exhibit of the *Value Engineering Study Draft Report, February 2014*.
- The VE team recommends considering construction of a SPUI. This concept will reduce the number of signalized ramp intersections from two to one and will improve operations of the system and is more user friendly for pedestrians and bikes through the corridor.
- Eliminate the ramps to and from Central Florida Parkway.
- Construct combined ramps at the SR 528 interchange as follows:
  - I-4 eastbound (GUL & Express Lane) to SR 528 eastbound
  - I-4 westbound (GUL & Express Lane) to SR 528 eastbound
  - SR 528 westbound to I-4 westbound (GUL & Express Lane)
  - SR 528 westbound to I-4 eastbound (GUL & Express Lane)

The VE study recommendations and dispositions are an integral part of the engineering design process. As the project proceeds through various phases of preliminary design, the design
concepts are modified to reflect all aspects of engineering and environmental analyses. As such, some of the dispositions previously stated may have been modified during design and development of the concept plans.

5.11 **Comparative Evaluation**

The proposed improvements follow the existing alignment of I-4 and the typical section for the I-4 BtU corridor will be consistent with the I-4 Ultimate mainline typical section (three general use lanes and two express lanes in each direction). Thus, the alternatives analysis focused on the interchange design.

5.11.1 **Evaluation Criteria**

Each of the viable alternatives was evaluated based on several criteria, including: traffic operations, right-of-way impacts, natural and physical environment, social impacts, engineering design considerations and estimated project construction costs. The recommended alternative was based on the results of the engineering and environmental analysis and input from the public involvement program. The following provides a description of the evaluation criteria.

**Community Impacts/Relocations**

Community impacts anticipated from the proposed improvements may include adverse effects on neighborhoods and community cohesion. Potential relocations of residences and businesses that will be directly impacted are identified and quantified.

**Environmental Impacts**

Environmental impacts include identifying and quantifying, through literature research, field surveys and investigations, the archeological, historical and contamination sites impacted, as well as endangered species impacts. A cultural resources survey was conducted to identify historic sites in the study corridor and archaeological resources within proposed pond locations. The architectural study further assesses historic sites for their potential for listing in the NRHP. The contamination screening evaluation was completed to identify the number, location and risk potential of known or potential hazardous waste sites along the corridor. The endangered species biological assessment was completed to document the potential occurrence of natural habitats and wildlife within the proposed project corridor and recommend actions to avoid and/or minimize impacts to the greatest practicable extend.

Additional environmental impacts include identifying noise sensitive areas, air quality, wetlands and floodplain impacts along the project corridor. The noise study report evaluates future design traffic to determine if noise-sensitive receivers are within the project area, if noise levels are likely to increase and if noise impacts are anticipated to occur. Noise abatement measures are evaluated based on the analysis. Air pollutant quantities are estimated and compared to nationally-
established air quality standards to determine impacts from traffic for the project design year. Encroachment into existing wetlands or floodplains may result from the proposed improvements. The wetlands evaluation report identifies existing wetlands and surface water communities based on the USFWS Classification and functionality. Impacts due to the proposed construction and improvements are addressed by the use of mitigation banks and/or other mitigation options that satisfy state and federal requirements. Impacts to the 100-year floodplain from the proposed improvements will be mitigated by floodplain compensation ponds.

**Project Costs**
Project costs include construction and right-of-way costs. Construction cost estimates include roadway, structures, retaining walls, utility relocation, drainage improvements, maintenance of traffic and engineering design cost. Construction engineering and inspection is assumed to be 12% of total construction cost. Additionally, the project costs include right-of-way costs (to be provided by FDOT) for additional right-of-way necessary for each alternative to accommodate roadway and interchange improvements and stormwater management. Right-of-way costs also include residential and business relocations.

**Public Involvement**
A comprehensive public involvement program (PIP), as described in Section 5.9 of this report, including a series of meetings, workshops and other outreach activities was initiated as part of the I-4 BtU PD&E Reevaluation Study. As part of the PIP, an Alternatives Public Workshop was held on January 30, 2014 to present project information, to property owners, public officials, organizations and individuals interested in the project. The workshop was intended to provide details on the proposed design concepts and receive input from the public.

### 5.11.2 Evaluation Matrix
A summary of the estimated impacts resulting from the comparative evaluation of the alternatives considered is provided in Table 5.11. The table illustrates impacts from the proposed improvements to the I-4 mainline for the no-build, and build alternatives and comparatively shows any additional impacts from the various interchange alternative options.

### 5.11.3 Recommended Alternative
The FDOT District 5 has selected the recommended alternative based on analyses of potential environmental impacts, projected traffic operations, right-of-way acquisitions, estimated project costs, value engineering study and other engineering considerations. The following alternatives were selected as the recommended alternative to be presented at the Public Hearing:

- I-4 Mainline Build Alternative (Roadway reconstruction to include six general use lanes and four express lanes, with 44’ rail corridor from Begin Project limit to SR 528)
• I-4 Mainline Build Alternative with Elevated Westbound C-D Road between Begin Project limit and SR 528
• I-4 Mainline Build Alternative with at-grade Eastbound C-D Road between Begin Project limit and SR 528
• SR 528 Alternative 6 (Freeway Terminal Junction w/separate direct connect ramps between I4 ELs and SR 528 ELs and between I-4 GULs and SR 528 GULs)
• SR 482 (Sand Lake Road) Alternative 4 (DDI w/loop ramp in NW quadrant)
## Table 5.11 - Alternatives Evaluation Matrix

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<td>Base Parclo w/loop ramp in NW quadrant; some ramp modifications</td>
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</tr>
<tr>
<td>Bicycle Accommodations</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parcels Impacted</td>
<td>0</td>
<td>12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relocations</td>
<td>0</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constructability</td>
<td>N/A</td>
<td>High</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bridges (Area, SF)</td>
<td>0</td>
<td>123,083</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction Cost²</td>
<td>$0</td>
<td>$127.2M</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes:

¹This table illustrates impacts from the proposed improvements for the I-4 Mainline build alternative and comparatively shows any additional impacts from the various interchange alternative options.
²Alternative # - designates the recommended alternative.
³Abbreviations: Parclo-Partial Cloverleaf; DDI- Diverging Diamond Interchange, SPIU-Single Point Urban Interchange, ROW- Right-of-Way, ac-ft- acre-feet, SF- square feet.
⁴Based on preferred pond sites as determined in the Pond Siting Report (August 2016).
⁵Low Quality, UMAM score between 0 and 0.49.
⁶Historic sites constructed before 1971 within APE (Area of Potential Effect), which includes existing ROW along I-4 and within 330' from proposed ROW and proposed pond footprints plus 100' buffer.
⁷One of these sites is a Ground Water Contamination Plume which contains numerous other sites in addition to ponds 205A, 205B, 205C & 205D.
⁸All pond sites listed are recommended, except Ponds 200A, 205A & 205B which are pond alternatives.
⁹Based on Level 2 CIAR, asbestos debris will require special handling, characterization and disposal provisions at Pond sites 205B & 205C; Pond sites 206, 206A & 206B considered high risk based on potential groundwater impacts at the historical 7-Eleven facility located near pond site 206.
¹⁰Some alternatives were removed from further consideration due to roadway geometric design constraints, operational deficiencies, inter-agency coordination indicating other preferences and/or being cost prohibitive, and no further traffic analysis was completed.
¹¹Construction costs are preliminary as determined by the Engineer’s Estimate included in Appendix D; shown in millions of dollars.
6.0 **Design Details of Recommended Alternative**

Based on the preceding analysis, a recommended build alternative was identified and selected to meet the purpose and need for the I-4 BtU Segment 2 corridor. The Concept Plans for this project, included in Appendix A, are provided for all of the alternatives evaluated in this report. Design concept details and further analysis of the recommended build alternative are discussed in the following section of the report.

6.1 **Typical Sections**

A typical section package for the entire I-4 BtU corridor has been prepared and submitted under separate cover to FDOT. Two mainline typical sections have been identified for I-4 Segment 2, as previously shown in Figure 1.2 and Figure 1.3. Both typical sections provide for six general use lanes and four express lanes within a 300’ minimum right-of-way and a design speed of 70 mph. Other common features of both typical sections include: 10’ inside and 12’ outside shoulders for the general use lanes, 4’ inside and 10’ outside shoulders for the express lanes and a 2 ft wide barrier wall between the general use and express lanes. The typical section from east of Central Florida Parkway to SR 528 provides for a 44’ rail corridor within the median of I-4; the inside shoulder for the express lanes will be modified from 10’ to 4’ when rail is constructed and barrier wall is in place. The typical section from SR 528 to the end of the project limits, west of Kirkman Road will not contain a rail corridor.

While the overall typical section remains consistent throughout Segment 2, there are some areas along the Segment 2 corridor that will have special sections. Special cross sections were developed to meet the needs of the project due to right-of-way constraints, existing utility easements or other design considerations along the corridor. These special sections may include C-D roads, braided ramp systems, elevated express lanes or elevated general use lanes. Additionally, the median width may vary in certain locations to accommodate changes in the horizontal alignment due to crossroad support structures or other design features. The special sections along the Segment 2 corridor include a C-D system between Central Florida Parkway and SR 528; the eastbound C-D Road is at grade and the westbound C-D Road is elevated.

6.2 **Alignment**

**Horizontal Alignment:** In general, the proposed horizontal alignment of I-4 closely follows the existing I-4 alignment and meets the horizontal design criteria established in Section 4.0 of this report. There is one curve in Segment 2 with the proposed curve data shown in Table 6.1. The preliminary Concept Plans and baseline data submitted with this report illustrate in detail the proposed horizontal alignment for the I-4 mainline, ramps and interchange layouts.
Table 6.1 – Proposed Horizontal Curve Data

| PC Station | 1497+87.32 |
| PT Station | 1521+34.77 |
| Degree of Curvature | 2° 00' 37.36" |
| Radius | 2,850 |
| Curve Direction | Right |
| Curve Length (ft) | 2,347.45 |
| Design Speed (MPH) | 70 |
| Proposed Super-elevation (ft/ft) | 0.07 |

Vertical Alignment: The proposed improvements require significant vertical alignment modifications to meet established criteria for the vertical alignment as outlined in Section 4.0 of this report. The proposed profile for I-4 needs to be modified in order to meet established criteria for stopping sight distances. A vertical alignment for a design speed of 70 mph will be developed during the line and grade phase. A listing of the known vertical curves and their design speeds can be found in Section 2.6.

6.3 Design Exceptions and Variations

From time to time, it may be necessary to deviate from the standard criteria used in the design process. If deemed necessary, two specific deviations may occur: (1) Design Exception or (2) Design Variation. A Design Exception is required when the design criteria applied falls below the minimums established by AASHTO. A Design Variation is required when design criteria applied falls below FDOT established criteria and the deviation is not covered by the Design Exception. The Sand Lake Road DDI requires a design speed and cross slope variation. In addition, the I-4 mainline will require a shoulder width variation. Table 6.2 summarizes the 13 design elements and specifies whether AASHTO or FDOT design criteria are satisfied, or if a design exception/variation is required for the specific design element for the proposed improvements.

Table 6.2 - Design Exceptions and Variations

<table>
<thead>
<tr>
<th>Design Element</th>
<th>Design Exception &lt; AASHTO</th>
<th>Design Variation &lt; FDOT and &gt; AASHTO</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Design Speed</td>
<td>Satisfied</td>
<td>Required</td>
</tr>
<tr>
<td>2. Lane Width</td>
<td>Satisfied</td>
<td>Satisfied</td>
</tr>
<tr>
<td>3. Shoulder Width</td>
<td>Satisfied</td>
<td>Required</td>
</tr>
<tr>
<td>4. Bridge Width</td>
<td>Satisfied</td>
<td>Satisfied</td>
</tr>
<tr>
<td>5. Structural Capacity</td>
<td>Satisfied</td>
<td>Satisfied</td>
</tr>
<tr>
<td>6. Vertical Clearance</td>
<td>Satisfied</td>
<td>Satisfied</td>
</tr>
</tbody>
</table>
Table 6.2 - Design Exceptions and Variations

<table>
<thead>
<tr>
<th>Design Element</th>
<th>Design Exception &lt; AASHTO</th>
<th>Design Variation &lt; FDOT and &gt; AASHTO</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. Grade</td>
<td>Satisfied</td>
<td>Satisfied</td>
</tr>
<tr>
<td>8. Cross Slope</td>
<td>Satisfied</td>
<td>Required</td>
</tr>
<tr>
<td>9. Superelevation</td>
<td>Satisfied</td>
<td>Satisfied</td>
</tr>
<tr>
<td>10. Horizontal Alignment</td>
<td>Satisfied</td>
<td>Satisfied</td>
</tr>
<tr>
<td>11. Vertical Alignment</td>
<td>Satisfied</td>
<td>Satisfied</td>
</tr>
<tr>
<td>12. Stopping Sight Distance</td>
<td>Satisfied</td>
<td>Satisfied</td>
</tr>
<tr>
<td>13. Horizontal Clearance</td>
<td>Satisfied</td>
<td>Satisfied</td>
</tr>
</tbody>
</table>

Table 6.3 lists additional design elements that are not addressed by AASHTO but require a design variation by FDOT if the standards are not met.

Table 6.3 - Additional Design Elements

<table>
<thead>
<tr>
<th>Design Element</th>
<th>Design Variation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Border Width</td>
<td>Required</td>
</tr>
<tr>
<td>Median Width</td>
<td>Satisfied</td>
</tr>
<tr>
<td>Length of Horizontal Curve</td>
<td>Satisfied</td>
</tr>
<tr>
<td>Length of Vertical Curve</td>
<td>Satisfied</td>
</tr>
</tbody>
</table>

A border width of 94 feet for freeways and interchange ramps is required by FDOT. In order to minimize impacts to adjacent properties and reduce right-of-way acquisition costs, a 15-foot border width has been used throughout the project limits. When necessary, standard concrete barrier wall will be placed at the edges of the outside shoulders. This will provide protection for motorists from objects that do not meet clear zone requirements and maintain the appropriate border width. The barrier wall will also be placed on top of any necessary retaining walls to provide protection from any drop offs.

6.4 Drainage

This project will make many improvements to the water quality along the roadway corridor. The stormwater runoff from the new impervious areas will be treated in existing and proposed stormwater facilities. In the existing condition, numerous areas along Segment 2 receive no stormwater runoff treatment or attenuation and discharge directly to an outfall; therefore, any treatment to the new impervious areas is expected to improve water quality in this corridor. The stormwater runoff will be collected by storm sewer systems and roadside ditches. The water quality treatment and attenuation will be achieved through the expansion and construction of offsite ponds, some of which will require acquisition of additional right-of-way.
The stormwater will be routed to existing and proposed stormwater ponds. There is a total of ten basins within the project limits. In areas with poor soils and high water table, only wet detention ponds were considered. The ponds were sized based on the assumption that most of the offsite runoff would be drained through separate systems. For a majority of the ponds, the location of where the proposed basins begin and end is the same as the existing condition. The location of the outfall in the proposed condition is the same as in the existing. None of the basins discharge to an OFW or a nutrient impaired water.

The following is a summary of the findings documented in the Location Hydraulic Report (August 2016) and the Pond Siting Report (August 2016). These documents contain more detailed information regarding the drainage along the project corridor.

6.4.1 Proposed Drainage Patterns

There are three basins (Basins 200, 201 and 202) within the project that discharge to the Central Florida Parkway Canal, which flows to Shingle Creek. Basin 200 needs one pond for treatment and attenuation, but has two alternatives. The recommended alternative is Pond 200B, which will impact one parcel for a total of 6.06 acres. Basin 201 requires one pond (Pond 201) for treatment and attenuation. Basin 202 requires four ponds (Ponds 202A, 202B, 202C and 202D) for treatment and attenuation. Ponds 201, 202A, 202B, 202C and 202D are located within the FDOT’s existing right-of-way; therefore, no additional right-of-way is required for these ponds.

There are two basins (Basins 203 and 204) that serve SR 528 and the corresponding ramps and do not include any runoff from I-4. Both basins require two ponds each (Ponds 203A, 203B, 204A and 204B), for treatment and attenuation. All of the proposed ponds are already permitted, but they have not been constructed yet. The ponds will need to be reconfigured to accommodate the new ramp alignments and will discharge to the cross drain at the Newover Canal. All of the roadway east of this cross drain will continue to flow east to the future ponds. No additional right-of-way is required for any of the recommended ponds.

There is one basin (Basin 205) that discharges to smaller lakes that discharge to Big Sand Lake and ultimately to Shingle Creek. Basin 205 needs two ponds for treatment and attenuation, but has three alternatives. The recommended alternatives are Ponds 205C and 205D, which will impact 11 parcels for a total of 9.62 acres.

There are two basins (Basins 206 and 207) that discharge to Little Sand Lake and ultimately to Shingle Creek. Basin 206 needs three ponds for treatment and attenuation. Pond 206 is an existing pond that was reconfigured to accommodate the new ramp alignment. Ponds 206A and 206B are proposed ponds that are located within the FDOT’s existing right-of-way; therefore, no additional
right-of-way is required for these ponds. Pond 207 is an existing pond that does not need to be expanded or regraded. No additional right-of-way is required for any of the recommended ponds.

Basin 208 only encompasses the ramps, not the I-4 mainline. Pond 208 is an existing pond that does not need to be expanded or regraded. The pond will continue to discharge east to the I-4 median swale, which ultimately drains to Shingle Creek.

In the final basin (Basin 209), the stormwater runoff from the roadway is collected by roadside ditches and cross drains that flow to the future ponds in the I-4 Ultimate project. The ponds are located at the Kirkman Road Interchange, east/north of the project terminus. The ponds were designed as interconnected wet detention ponds and discharge to Shingle Creek. Additional information on proposed drainage patterns is presented in the Pond Siting Report (August 2016).

The Pond Siting Report, Segment 2 (August 2016) evaluated the alternatives and identified the recommended pond sites which are shown on the Concept Plans in Appendix A. Table 6.4 lists the recommended pond alternatives and pond construction costs for I-4 Segment 2. The overall drainage maps for the project are shown in Figure 6.1 and Figure 6.2.

<table>
<thead>
<tr>
<th>Recommended Pond Alternative</th>
<th>Total Pond Cost*</th>
</tr>
</thead>
<tbody>
<tr>
<td>200B</td>
<td>$9,438,867</td>
</tr>
<tr>
<td>201</td>
<td>$938,679</td>
</tr>
<tr>
<td>202A, B, C, D</td>
<td>$1,445,764</td>
</tr>
<tr>
<td>203A &amp; 203B</td>
<td>$22,860</td>
</tr>
<tr>
<td>204A &amp; 204B</td>
<td>$22,860</td>
</tr>
<tr>
<td>205C</td>
<td>$8,533,822</td>
</tr>
<tr>
<td>205D</td>
<td>$8,196,224</td>
</tr>
<tr>
<td>206 &amp; 206B</td>
<td>$653,352</td>
</tr>
<tr>
<td>207</td>
<td>$0</td>
</tr>
<tr>
<td>208</td>
<td>$0</td>
</tr>
<tr>
<td>F32-F35**</td>
<td>$0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$29,252,427</td>
</tr>
</tbody>
</table>

*Total pond cost, as determined in the Pond Siting Report Segment 2 (August 2016), includes stormwater management facility construction costs, costs associated with wetland impacts and parcel acquisition costs. When there are no proposed changes, the pond cost is $0.

**Future ponds by others, located at the Kirkman Road Interchange.
Figure 6.1 – Overall Drainage Map
Figure 6.2 – Overall Drainage Map
6.4.2 Cross Drains

Through hydraulic analysis, it was determined that all three cross drains, Milepost 7.409, Milepost 8.028 and Milepost 8.545 will require larger pipe sizes. Table 6.5 presents the proposed cross drain data. Additional information is presented in the *Location Hydraulic Report (August 2016)* prepared for this study.

Table 6.5 - Proposed Cross Drains

<table>
<thead>
<tr>
<th>Milepost</th>
<th>Station</th>
<th>Description from Original Construction Plans</th>
<th>Count</th>
<th>Span (in)</th>
<th>Rise (in)</th>
<th>Type</th>
<th>Length (ft)</th>
<th>Elevation[^1] (ft NAVD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7.409</td>
<td>1434+46</td>
<td></td>
<td>1</td>
<td>48</td>
<td>48</td>
<td>RCP</td>
<td>318</td>
<td>110.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.028</td>
<td>1467+13</td>
<td></td>
<td>1</td>
<td>42</td>
<td>42</td>
<td>RCP</td>
<td>290</td>
<td>116.20</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.545</td>
<td>1494+90</td>
<td></td>
<td>1</td>
<td>36</td>
<td>36</td>
<td>RCP</td>
<td>285</td>
<td>129.30</td>
</tr>
</tbody>
</table>
|[^1]Upstream and downstream cross drain invert elevation; Abbreviations: RCP – Reinforced Concrete Pipe

6.5 Right-of-Way Requirements

The proposed improvements to I-4 Segment 2 will follow the existing alignment and will require right-of-way for the roadway mainline, interchange improvements and stormwater management facilities. The anticipated right-of-way impacts involve full or partial acquisition of 30 parcels for a total of approximately 25 acres; some parcels may be impacted by both roadway and stormwater acquisitions. The right-of-way required for the roadway improvements for the recommended alternative, includes partial or full acquisition of 18 parcels totaling approximately 9.2 acres; the parcels impacted are listed in Table 6.6 and shown on the Concept Plans included in Appendix A.

Table 6.6 - Right-of-way Acquisition for Roadway

<table>
<thead>
<tr>
<th>Parcel ID</th>
<th>Alternative</th>
<th>Size (Acres)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>35-23-28-0000-00-061</td>
<td>Sand Lake Road Alternative 4</td>
<td>1.551</td>
</tr>
<tr>
<td>35-23-28-7113-01-000</td>
<td>Sand Lake Road Alternative 4</td>
<td>0.046</td>
</tr>
<tr>
<td>35-23-28-0000-00-010</td>
<td>Sand Lake Road Alternative 4</td>
<td>0.023</td>
</tr>
<tr>
<td>35-23-28-7117-01-000</td>
<td>Sand Lake Road Alternative 4</td>
<td>0.002</td>
</tr>
<tr>
<td>35-23-28-0000-00-042</td>
<td>Sand Lake Road Alternative 4</td>
<td>0.007</td>
</tr>
<tr>
<td>35-23-28-0000-00-053</td>
<td>Sand Lake Road Alternative 4</td>
<td>0.083</td>
</tr>
<tr>
<td>35-23-28-7825-00-010</td>
<td>Sand Lake Road Alternative 4</td>
<td>0.004</td>
</tr>
<tr>
<td>35-23-28-7825-00-011</td>
<td>Sand Lake Road Alternative 4</td>
<td>0.030</td>
</tr>
<tr>
<td>35-23-28-0000-00-009</td>
<td>Sand Lake Road Alternative 4</td>
<td>0.003</td>
</tr>
<tr>
<td>35-23-28-0000-00-016</td>
<td>Sand Lake Road Alternative 4</td>
<td>0.000</td>
</tr>
<tr>
<td>35-23-28-7825-00-012</td>
<td>Sand Lake Road Alternative 4</td>
<td>0.071</td>
</tr>
<tr>
<td>11-24-28-0000-00-022</td>
<td>SR 528 Alternative 6</td>
<td>0.005</td>
</tr>
</tbody>
</table>
Table 6.6 - Right-of-way Acquisition for Roadway

<table>
<thead>
<tr>
<th>Parcel ID</th>
<th>Alternative</th>
<th>Size (Acres)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-24-28-7878-01-000</td>
<td>SR 528 Alternative 6</td>
<td>0.247</td>
</tr>
<tr>
<td>11-24-28-0000-00-014</td>
<td>SR 528 Alternative 6</td>
<td>0.011</td>
</tr>
<tr>
<td>11-24-28-0000-00-013</td>
<td>SR 528 Alternative 6</td>
<td>0.873</td>
</tr>
<tr>
<td>11-24-28-0000-00-010</td>
<td>SR 528 Alternative 6</td>
<td>1.413</td>
</tr>
<tr>
<td>11-24-28-0000-00-004</td>
<td>SR 528 Alternative 6</td>
<td>0.612</td>
</tr>
<tr>
<td>-</td>
<td>SR 528 Alternative 6</td>
<td>4.184</td>
</tr>
<tr>
<td><strong>Total right-of-way required:</strong></td>
<td></td>
<td><strong>9.162</strong></td>
</tr>
</tbody>
</table>

*Area proposed for take; - County or other municipality-owned, no parcel ID available

The right-of-way required for stormwater facilities (full or partial acquisition), based on the recommended pond sites as determined in the Pond Siting Report (August 2016) is 16.02 acres. Table 6.7 shows the right-of-way required for recommended pond site alternatives 200B, 205C and 205D.

Table 6.7 - Right-of-way Acquisition for Stormwater Facilities

<table>
<thead>
<tr>
<th>Pond Number</th>
<th>Parcel ID</th>
<th>Size (Acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>200B</td>
<td>11-24-28-0000-00-004</td>
<td>6.40</td>
</tr>
<tr>
<td>205C</td>
<td>02-24-28-0000-00-005</td>
<td>4.91</td>
</tr>
<tr>
<td>205D</td>
<td>35-23-28-0000-00-029</td>
<td>0.47</td>
</tr>
<tr>
<td>205D</td>
<td>35-23-28-0000-00-028</td>
<td>0.32</td>
</tr>
<tr>
<td>205D</td>
<td>35-23-28-0000-00-031</td>
<td>0.30</td>
</tr>
<tr>
<td>205D</td>
<td>35-23-28-0000-00-027</td>
<td>0.31</td>
</tr>
<tr>
<td>205D</td>
<td>35-23-28-0000-00-033</td>
<td>0.41</td>
</tr>
<tr>
<td>205D</td>
<td>35-23-28-0000-00-039</td>
<td>0.43</td>
</tr>
<tr>
<td>205D</td>
<td>35-23-28-0000-00-038</td>
<td>0.71</td>
</tr>
<tr>
<td>205D</td>
<td>35-23-28-0000-00-037</td>
<td>0.79</td>
</tr>
<tr>
<td>205D</td>
<td>35-23-28-0000-00-041</td>
<td>0.58</td>
</tr>
<tr>
<td>205D</td>
<td>35-23-28-0000-00-025</td>
<td>0.39</td>
</tr>
<tr>
<td><strong>Total right-of-way required:</strong></td>
<td></td>
<td><strong>16.02</strong></td>
</tr>
</tbody>
</table>

6.6 Relocations

Right-of-way acquisition for the proposed improvements associated with I-4 Segment 2 involves partial or complete purchase of parcels within the project study area which may result in displacement of residential and non-residential land uses. In order to minimize the unavoidable effects of right-of-way acquisition and displacement of people, FDOT will carry out a Right-of-way and Relocation Program in accordance with state statutes and federal regulations. This includes advance notification to property owners of impending acquisitions, fair market value payment for property rights and financial assistance to relocated individuals or businesses. The recommended
alternative for I-4 Segment 2 is anticipated to impact two parcels which are developed/occupied and may require full or partial acquisitions, involving potential relocation of one existing residence (approximate 0.54-acre parcel) and one publicly-owned facility (approximate 6.8-acre parcel), as shown in Table 6.8. Additional information pertaining to the potentially displaced properties, including resources available to facilitate relocation and socio-economic impacts to the surrounding neighborhoods are identified in the Conceptual Stage Relocation Plan SR 400 (I-4) Segment 2: West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) (January 2016), prepared for this project.

Table 6.8: Potential Relocations

<table>
<thead>
<tr>
<th>Parcel ID</th>
<th>Location</th>
<th>Parcel Size (Acres)</th>
<th>Proposed ROW Acquisition (Acres)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11-24-28-0000-00-013</td>
<td>10450 Turkey Lake Road, Orlando, FL 32819</td>
<td>6.796</td>
<td>0.873</td>
</tr>
<tr>
<td>35-23-28-0000-00-027</td>
<td>9036 Turkey Lake Road, Orlando, FL 32819</td>
<td>0.539</td>
<td>0.309</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td></td>
<td><strong>7.335</strong></td>
<td><strong>1.182</strong></td>
</tr>
</tbody>
</table>

### 6.7 Traffic Operational Analysis

Traffic operational analyses of the RecommendedBuild Alternative (referred to as Modified Build in the current I-4 SAMR Reevaluation) were completed. The operational analyses included Highway Capacity Analysis using Highway Capacity Software (HCS) 2010 for freeway, weave and ramp merge and diverge operations along the Interstate and Synchro software for arterial intersection operations. Additionally, microsimulation analyses were performed using VISSIM software to analyze the I-4 general and special use lanes and the study area intersections. Detailed analyses, including model runs and computer outputs, are provided in the future conditions analysis section of the supplemental report, I-4 Beyond the Ultimate Systems Access Modification Report (SAMR) Re-Evaluation: I-4 Beyond the Ultimate Project South Section – from West of US 27 to West of SR 435 (Kirkman Road) [March 2017], prepared for this project. The following sections provide a summary of the traffic operations analyses for the recommended alternative.

**Basic Freeway Operations**

The results of the HCM operational analyses of the basic freeway segments, as shown in Table 6.9, indicated that the majority of segments (general purpose lanes) would operate at LOS D or better. Within I-4 Segment 2, two segments in the eastbound direction and one segment in the westbound direction are projected to operate at LOS E during either the AM or PM peak hour for the projected 2040 traffic volumes. Network-wide performance was evaluated using VISSIM microsimulation analysis for the 2040 Build conditions. The network performance results indicate a significant
### Table 6.9 – I-4 Segment 2 Basic Freeway Operational Analysis (HCS 2010)

<table>
<thead>
<tr>
<th>Roadway/Segment</th>
<th>2040 AM Peak Hour</th>
<th>2040 PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Avg Speed (mph)</td>
<td>Density (pc/mi/ln)</td>
</tr>
<tr>
<td><strong>I-4 Basic Freeway Eastbound</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On Ramp from Daryl Carter Pkwy</td>
<td>SR 528 Off Ramp</td>
<td>63.1</td>
</tr>
<tr>
<td>SR 528 Off Ramp</td>
<td>On Ramp from Central Florida Pkwy</td>
<td>66.6</td>
</tr>
<tr>
<td>On Ramp from Central Florida Pkwy</td>
<td>On Ramp from EL at SR 528</td>
<td>67.2</td>
</tr>
<tr>
<td>On Ramp from EL at SR 528</td>
<td>On Ramp from SR 528</td>
<td>66.5</td>
</tr>
<tr>
<td>On Ramp from SR 528</td>
<td>SR 482 Off Ramp</td>
<td>55.6</td>
</tr>
<tr>
<td>SR 482 Off Ramp</td>
<td>On Ramp from SR 482</td>
<td>54.0</td>
</tr>
<tr>
<td>On Ramp from SR 482</td>
<td>Universal Blvd Off Ramp</td>
<td>64.8</td>
</tr>
<tr>
<td><strong>I-4 Basic Freeway Westbound</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Universal-Adventure Way Off Ramp</td>
<td>SR 482 Off Ramp</td>
<td>66.2</td>
</tr>
<tr>
<td>SR 482 Off Ramp</td>
<td>On Ramp from Universal-Adventure Way</td>
<td>70.0</td>
</tr>
<tr>
<td>On Ramp from Universal-Adventure Way</td>
<td>On Ramp from SR 482</td>
<td>67.6</td>
</tr>
<tr>
<td>On Ramp from SR 482</td>
<td>Off Ramp to EL south of SR 482</td>
<td>69.3</td>
</tr>
<tr>
<td>Off Ramp to EL south of SR 482</td>
<td>SR 528 Off Ramp</td>
<td>67.2</td>
</tr>
<tr>
<td>SR 528 Off Ramp</td>
<td>Daryl Carter Pkwy - SR 535 Off Ramp</td>
<td>68.7</td>
</tr>
<tr>
<td>Daryl Carter Pkwy - SR 535 Off Ramp</td>
<td>Central Florida Pkwy Off Ramp</td>
<td>70.0</td>
</tr>
<tr>
<td>Central Florida Pkwy Off Ramp</td>
<td>On Ramp from SR 528</td>
<td>70.0</td>
</tr>
<tr>
<td>On Ramp from SR 528</td>
<td>On Ramp from Central Florida Pkwy</td>
<td>70.0</td>
</tr>
<tr>
<td><strong>I-4 EL Eastbound</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>On Ramp from CD south of SR 535</td>
<td>SR 528 Off Ramp</td>
<td>74.9</td>
</tr>
<tr>
<td>SR 528 Off Ramp</td>
<td>Off Ramp from I-4 at SR 528</td>
<td>75.0</td>
</tr>
<tr>
<td>Off Ramp from I-4 at SR 528</td>
<td>On Ramp from SR 528</td>
<td>75.0</td>
</tr>
<tr>
<td>On Ramp from SR 528</td>
<td>Grand National Dr Off Ramp</td>
<td>75.0</td>
</tr>
<tr>
<td>Grand National Dr Off Ramp</td>
<td>On Ramp from Grand National Dr</td>
<td>75.0</td>
</tr>
<tr>
<td>On Ramp from Grand National Dr</td>
<td>Study Terminus</td>
<td>75.0</td>
</tr>
<tr>
<td><strong>I-4 EL Westbound</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Study Terminus</td>
<td>Grand National Dr Off Ramp</td>
<td>75.0</td>
</tr>
<tr>
<td>Grand National Dr Off Ramp</td>
<td>On Ramp from Grand National Dr</td>
<td>75.0</td>
</tr>
<tr>
<td>On Ramp from Grand National Dr</td>
<td>On Ramp to I-4 south of SR 482</td>
<td>75.0</td>
</tr>
<tr>
<td>On Ramp to I-4 south of SR 482</td>
<td>SR 528 Off Ramp</td>
<td>75.0</td>
</tr>
<tr>
<td>SR 528 Off Ramp</td>
<td>On Ramp from SR 528</td>
<td>75.0</td>
</tr>
<tr>
<td>On Ramp from SR 528</td>
<td>SR 536 Off Ramp to CD</td>
<td>75.0</td>
</tr>
</tbody>
</table>

*Segments operating at LOS E or worse.*
improvement in latent delay and latent demand between the Original Build and Modified Build alternatives with a reduction in total travel time and total delay time during the peak hours.

**Intersection Operations**
The results of the operational analyses, as shown in Table 6.10, indicates that the majority of study intersections (5 out of 9) within the project area are projected to operate at LOS E or worse during the AM and PM peak hours for the projected 2040 traffic volumes when utilizing the Synchro deterministic traffic analysis tool. Further evaluation of intersections using the VISSIM microscopic analysis reveals that four of the ten study intersections are projected to operate at LOS E or worse during one or both peak hours.

**Table 6.10 – I-4 Segment 2 Intersection Operational Analysis**

<table>
<thead>
<tr>
<th>Primary Road</th>
<th>Secondary Road</th>
<th>2040 AM Peak Hour</th>
<th>2040 PM Peak Hour</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 482 (Sand Lake Road)</td>
<td>Dr. Phillips Blvd</td>
<td>45.8 D</td>
<td>66.8 E</td>
</tr>
<tr>
<td></td>
<td>Turkey Lake Rd</td>
<td>52.4 D</td>
<td>79.3 E</td>
</tr>
<tr>
<td></td>
<td>WB Ramps</td>
<td>21.3 C</td>
<td>19.2 B</td>
</tr>
<tr>
<td></td>
<td>EB Ramps</td>
<td>18.2 B</td>
<td>16.4 B</td>
</tr>
<tr>
<td></td>
<td>International Dr</td>
<td>71.4 E</td>
<td>70.7 E</td>
</tr>
<tr>
<td></td>
<td>Universal Blvd</td>
<td>166.1 F</td>
<td>68.3 E</td>
</tr>
<tr>
<td>Universal Boulevard</td>
<td>Hollywood Way</td>
<td>31.1 C</td>
<td>31.2 C</td>
</tr>
<tr>
<td></td>
<td>EB Ramps</td>
<td>38.5 D</td>
<td>41.1 D</td>
</tr>
<tr>
<td></td>
<td>International Dr</td>
<td>45.8 D</td>
<td>67.8 E</td>
</tr>
</tbody>
</table>

**Synchro Analysis**

<table>
<thead>
<tr>
<th>Primary Road</th>
<th>Secondary Road</th>
<th>Delay (sec)</th>
<th>LOS</th>
<th>Delay (sec)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal Boulevard</td>
<td>Hollywood Way</td>
<td>10.20 B</td>
<td></td>
<td>12.79 B</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turkey Lake Rd</td>
<td>36.79 D</td>
<td></td>
<td>125.76 F</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Dr. Phillips Blvd</td>
<td>39.52 D</td>
<td></td>
<td>64.21 E</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Turkey Lake Rd</td>
<td>23.21 C</td>
<td></td>
<td>21.38 C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>WB On Ramp</td>
<td>23.86 C</td>
<td></td>
<td>23.39 C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EB Ramps</td>
<td>36.59 D</td>
<td></td>
<td>49.76 D</td>
<td></td>
</tr>
<tr>
<td></td>
<td>International Dr</td>
<td>89.46 F</td>
<td></td>
<td>58.75 E</td>
<td></td>
</tr>
</tbody>
</table>

**VISSIM Analysis**

<table>
<thead>
<tr>
<th>Primary Road</th>
<th>Secondary Road</th>
<th>Delay (sec)</th>
<th>LOS</th>
<th>Delay (sec)</th>
<th>LOS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Universal Boulevard</td>
<td>Hollywood Way</td>
<td>19.91 B</td>
<td></td>
<td>24.84 C</td>
<td></td>
</tr>
<tr>
<td></td>
<td>EB Ramps</td>
<td>24.04 C</td>
<td></td>
<td>65.70 E</td>
<td></td>
</tr>
<tr>
<td></td>
<td>International Dr</td>
<td>34.31 C</td>
<td></td>
<td>130.74 F</td>
<td></td>
</tr>
</tbody>
</table>

Intersections operating at LOS E or worse.
6.8 Bridge Analysis
An analysis of the existing bridge conditions and proposed improvements for each bridge structure was conducted as part of this PD&E study. There are five existing bridge structures along the I-4 Segment 2 mainline and one existing bridge structure along SR 528. As part of this study, each bridge was evaluated to determine if widening or replacement of the bridges is required or if the bridge may remain in place. Where practical, widening or retrofitting the existing structure is recommended. However, due to the proposed roadway geometrics and alignment, there are several structures which will require replacement. Based on the bridge analysis, eleven new bridge structures are recommended; the proposed improvements are summarized in Table 6.11. Vertical clearance requirements are based on minimum vertical clearance to the rail of a future high speed rail corridor. Coordination should occur in the design phase to ensure adequate clearance between highway sign panels and bridge deck structures along portions of the corridor where special typical sections with multi-level structures are proposed.

6.9 Utilities
Numerous utility companies have utilities located within the project corridor, as previously identified in Section 2.16 of this report. Utility impacts were carefully evaluated when considering the proposed roadway improvements and stormwater pond locations. The location of overhead utilities, existing power poles and access issues were also evaluated to minimize impacts. However, smaller utility lines and other buried utilities may involve relocation.

A Utility Impact Report (April 2016) has been prepared and submitted under separate cover. Table 6.12 provides a summary of potential utility impacts associated with the proposed improvements in the I-4 Segment 2 corridor for the recommended alternative. Exact locations of existing utilities will be determined in the final design of the proposed improvements. Coordination with the known utility companies during the final design phase will assist in minimizing relocation adjustments and disruptions of service to the public.

6.10 Lighting
Based on the lighting warrant criteria specified in AASHTO’s Roadway Lighting Design Guide (October 2005) and as determined in the SR 400 (I-4) Lighting Justification – West Section (US 27 to Kirkman Road) Memorandum (December 12, 2013), continuous freeway lighting is recommended along all of Segment 2.
Table 6.11 - Proposed Bridge Improvements

<table>
<thead>
<tr>
<th>Facility</th>
<th>Bridge No.</th>
<th>Proposed Improvement</th>
<th>Proposed Bridge Length (ft.)</th>
<th>Proposed Bridge Width (ft.)</th>
<th>Proposed Minimum Vertical Clearance (ft.)</th>
<th>Depth of Structure (ft.)</th>
<th>Super-structure Type</th>
<th>No. Spans</th>
<th>Max Span Length (ft.)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>SR 528 EB Over I-4</td>
<td>750180</td>
<td>Demolish</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Bridge to be replaced to support proposed interchange system.</td>
</tr>
<tr>
<td>I-4 EB GUL Ramp to SR-528 EB</td>
<td>New Bridge</td>
<td>New Bridge</td>
<td>127.1</td>
<td>47</td>
<td>16.5</td>
<td>6</td>
<td>Prestressed Concrete Girder(s)</td>
<td>1</td>
<td>127.1</td>
<td></td>
</tr>
<tr>
<td>I-4 EB EL Ramp to SR-528 EB</td>
<td>New Bridge</td>
<td>New Bridge</td>
<td>1174.0</td>
<td>30</td>
<td>16.5</td>
<td>8</td>
<td>Steel Box Girder(s)</td>
<td>7</td>
<td>227.0</td>
<td></td>
</tr>
<tr>
<td>I-4 WB EL Ramp to SR-528 EB</td>
<td>New Bridge</td>
<td>New Bridge</td>
<td>1212.9</td>
<td>30</td>
<td>16.5</td>
<td>8</td>
<td>Steel Box Girder(s)</td>
<td>8</td>
<td>207.0</td>
<td></td>
</tr>
<tr>
<td>I-4 WB GUL Ramp to SR-528 EB</td>
<td>New Bridge</td>
<td>New Bridge</td>
<td>1309.1</td>
<td>43</td>
<td>16.5</td>
<td>7</td>
<td>Steel Box Girder(s)</td>
<td>8</td>
<td>165.0</td>
<td></td>
</tr>
<tr>
<td>West Entrance Drive Over SR 528</td>
<td>754128</td>
<td>Remain</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
</tr>
<tr>
<td>SR 528 WB Over I-4</td>
<td>750087</td>
<td>Demolish</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Bridge to be replaced to support proposed interchange system.</td>
</tr>
<tr>
<td>SR-528 WB Ramp to I-4 EB EL</td>
<td>New Bridge</td>
<td>New Bridge</td>
<td>474.8</td>
<td>30</td>
<td>16.5</td>
<td>8</td>
<td>Steel Box Girder(s)</td>
<td>3</td>
<td>180.0</td>
<td></td>
</tr>
<tr>
<td>SR-528 WB Ramp to I-4 WB EL</td>
<td>New Bridge</td>
<td>New Bridge</td>
<td>730.5</td>
<td>30</td>
<td>16.5</td>
<td>8</td>
<td>Steel Box Girder(s)</td>
<td>5</td>
<td>213.0</td>
<td></td>
</tr>
<tr>
<td>SR-528 WB Ramp to I-4 WB GUL</td>
<td>New Bridge</td>
<td>New Bridge</td>
<td>1874.0</td>
<td>51</td>
<td>16.5</td>
<td>8</td>
<td>Steel Box Girder(s)</td>
<td>9</td>
<td>208.0</td>
<td></td>
</tr>
<tr>
<td>I-4 WB CD Elevated</td>
<td>New Bridge</td>
<td>New Bridge</td>
<td>2192.0</td>
<td>58</td>
<td>16.5</td>
<td>6</td>
<td>Concrete Box Girder</td>
<td>15</td>
<td>150.0</td>
<td></td>
</tr>
<tr>
<td>I-4 WB Over SR 482 (Sand Lake Road)</td>
<td>750335</td>
<td>Demolish</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Bridge to be replaced to support proposed interchange system.</td>
</tr>
<tr>
<td>I-4 EB Over SR 482 (Sand Lake Road)</td>
<td>750336</td>
<td>Demolish</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>Bridge to be replaced to support proposed interchange system.</td>
</tr>
<tr>
<td>I-4 Over SR-482 (Sand Lake Road)</td>
<td>New Bridge</td>
<td>New Bridge</td>
<td>186.0</td>
<td>256</td>
<td>16.5</td>
<td>5</td>
<td>Prestressed Concrete Girder(s)</td>
<td>2</td>
<td>93.0</td>
<td></td>
</tr>
<tr>
<td>I-4 WB off ramp to Turkey Lake Road</td>
<td>New Bridge</td>
<td>New Bridge</td>
<td>198.0</td>
<td>48</td>
<td>16.5</td>
<td>7</td>
<td>Steel I-Girders</td>
<td>1</td>
<td>198.0</td>
<td></td>
</tr>
<tr>
<td>SR-482 (Sand Lake Road) WB Ramp to I-4 WB</td>
<td>New Bridge</td>
<td>New Bridge</td>
<td>98.0</td>
<td>31</td>
<td>16.5</td>
<td>5</td>
<td>Prestressed Concrete Girder(s)</td>
<td>1</td>
<td>98.0</td>
<td></td>
</tr>
<tr>
<td>Type of Utility</td>
<td>Utility Owner</td>
<td>Type of Facility</td>
<td>Limits</td>
<td>Offset / Side</td>
<td>Begin Station</td>
<td>End Station</td>
<td>Relocation Required</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>----------------</td>
<td>----------------------</td>
<td>------------------</td>
<td>------------------------------------------------------------------------</td>
<td>---------------</td>
<td>---------------</td>
<td>-------------</td>
<td>--------------------------------------------------</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>ATT</td>
<td>Underground Fiber Optic</td>
<td>From intersection of Sand Lake Rd &amp; I-4 eastbound ramp to Sand Lake Rd east to intersection of International Dr. &amp; Sand Lake Rd</td>
<td>South side of road</td>
<td>67+23</td>
<td>84+88</td>
<td>Yes, adjust to run parallel to road</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Aerial Fiber Optic</td>
<td>Crossing at intersection of Turkey Lake Rd. &amp; Sand Lake Rd.</td>
<td>West side of intersection</td>
<td>57+61</td>
<td>57+61</td>
<td>Yes, relocation of poles required</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Underground Fiber Optic</td>
<td>From Central Florida Parkway to Sand Lake Rd on Turkey Lake Rd</td>
<td>East side of Road</td>
<td>1345+48</td>
<td>1480+00</td>
<td>Yes, adjust to run parallel to proposed road</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Aerial Fiber Optic</td>
<td>Crossing of I-4 Corridor at Sand Lake Rd, I-4 Corridor underpass</td>
<td>West side of underpass</td>
<td>66+79</td>
<td>73+59</td>
<td>Yes, adjust for bridge improvements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Comcast</td>
<td>Underground Fiber Optic</td>
<td>Crossing of Sand Lake Rd 750-ft west of intersection of International Dr. &amp; Sand Lake Rd</td>
<td>N/A</td>
<td>73+59</td>
<td>73+61</td>
<td>Yes, extend across proposed Sand Lake Rd.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>Aerial Fiber Optic</td>
<td>Crossing of Sand Lake Rd. 670-ft west of intersection of International Dr. &amp; Sand Lake Rd</td>
<td>N/A</td>
<td>74+36</td>
<td>74+42</td>
<td>Yes, extend across proposed Sand Lake Rd.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>Underground Fiber Optic</td>
<td>From intersection of Turkey Lake Rd. &amp; Sand Lake Rd. to 500-ft west of intersection of International Dr. &amp; Sand Lake Rd. on Sand Lake Rd.</td>
<td>North side of road</td>
<td>59+27</td>
<td>75+98</td>
<td>Yes, adjust for bridge improvements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td>Level 3 Communication</td>
<td>3-1.25&quot; Underground Fiber Optic</td>
<td>From 500-ft west of intersection of International Dr. &amp; Sand Lake Rd. to intersection of Universal Blvd &amp; Sand Lake Rd. on Sand Lake Rd.</td>
<td>South side of road</td>
<td>81+45</td>
<td>96+82</td>
<td>Yes, adjust to run parallel to road</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>Crossing of I-4 Corridor at Sand Lake Rd underpass</td>
<td>South side of underpass</td>
<td>64+14</td>
<td>74+54</td>
<td>Yes, adjust to accommodate ramp and bridge improvements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>Crossing at Sand Lake Rd, I-4 Corridor underpass</td>
<td>South side of underpass</td>
<td>64+14</td>
<td>76+88</td>
<td>Yes, adjust for bridge improvements</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Underground CATV</td>
<td>From station 1353+00 on the I-4 Corridor to station 1387+50 on the I-4 Corridor</td>
<td>West side of road</td>
<td>1353+00</td>
<td>1387+50</td>
<td>Yes, adjust to run parallel to road</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>Crossing of Sand Lake Rd 650-ft west of intersection of International Dr. &amp; Sand Lake Rd</td>
<td>N/A</td>
<td>74+40</td>
<td>74+45</td>
<td>Yes, relocation of poles required</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Television</td>
<td>BrightHouse Networks</td>
<td>Aerial CATV</td>
<td>From 420-ft west of intersection of International Dr. &amp; Sand Lake Rd east to 560-ft west of intersection of Universal Blvd &amp; Sand Lake Rd</td>
<td>South side of road</td>
<td>76+99</td>
<td>97+98</td>
<td>Yes, adjust to run parallel to road</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6.12 - Proposed Utility Impacts

<table>
<thead>
<tr>
<th>Type of Utility</th>
<th>Utility Owner</th>
<th>Type of Facility</th>
<th>Limits</th>
<th>Offset / Side</th>
<th>Begin Station</th>
<th>End Station</th>
<th>Relocation Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Underground Electric</td>
<td>Two lines running from 1000-ft east of to 1750-ft east of International Dr., SR 528 underpass</td>
<td>South side of road, following ramp</td>
<td>244+21</td>
<td>254+96</td>
<td>Yes, adjust to run parallel to ramp</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Underground Electric</td>
<td>From station 1339+00 on I-4 Corridor east to 1970-ft feet west of Sand Lake Rd, I-4 Corridor underpass</td>
<td>West side of road</td>
<td>1339+00</td>
<td>1459+01</td>
<td>Yes, adjust to run parallel to road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Underground Electric</td>
<td>From 2120-ft west of to Sand Lake Rd &amp; I-4 Corridor underpass on I-4 Corridor</td>
<td>East side of road</td>
<td>1459+07</td>
<td>1478+63</td>
<td>Yes, adjust to run parallel to road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Underground Electric</td>
<td>From Sand Lake Rd, I-4 Corridor underpass east on I-4 for 3290-ft</td>
<td>East side of road</td>
<td>1482+84</td>
<td>1513+85</td>
<td>Yes, adjust to run parallel to road</td>
</tr>
<tr>
<td>Electricity</td>
<td>Duke Energy Distribution</td>
<td>13 KV Underground Electric</td>
<td>Crossing at intersection of Sand Lake Rd &amp; I-4 westbound to Sand Lake Rd</td>
<td>Diagonally across intersection</td>
<td>1481+17</td>
<td>1479+64</td>
<td>Yes, extend across proposed Sand Lake Rd.</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>42&quot; Force Main</td>
<td>Crossing 3000-ft north of SR 528, I-4 Overpass on I-4 Corridor</td>
<td>N/A</td>
<td>1403+45</td>
<td>1404+30</td>
<td>Yes, extend across proposed I-4 and provide steel casing</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>16&quot; Force Main</td>
<td>Crossing 175-ft east of intersection of I-4 west bound ramp to Sand Lake Rd.</td>
<td>East of intersection</td>
<td>64+67</td>
<td>64+78</td>
<td>Yes, extend across proposed Sand Lake Rd.</td>
</tr>
<tr>
<td>Wastewater/Storm water</td>
<td>Orange County Utilities</td>
<td>Varying Size Force Main</td>
<td>From 330-ft west of intersection of Dr. Phillips Blvd &amp; Sand Lake Rd to 380-ft west of intersection of Turkey Lake Rd. &amp; Sand Lake Rd.</td>
<td>North side of road</td>
<td>22+61</td>
<td>54+71</td>
<td>Yes, Relocation from center of road from Turkey Lake Road to International Drive</td>
</tr>
<tr>
<td>Water</td>
<td>Orange County Utilities</td>
<td>12&quot; Water Main</td>
<td>From 2700-ft south to 2100-ft south of SR 528, I-4 Overpass on I-4 Corridor</td>
<td>West side of road</td>
<td>1347+79</td>
<td>1353+15</td>
<td>Yes, adjust to run parallel to road</td>
</tr>
</tbody>
</table>
6.11 Access Management

Access management is the practice of controlling vehicular access to a roadway in order to increase roadway efficiency and improve travel safety by reducing the number of traffic conflicts encountered by roadway users. The State Highway System Access Management Act (F.S. 335.18) mandates the implementation of access management standards based on the Access Management Classification System developed in Administrative Rule 14-97. I-4 has been identified as Access Management Class 1 under this system.

Property access impacts were evaluated to determine whether access can be maintained in interchange areas via the local roadway network. Meetings were conducted with some property owners regarding property access.

Sand Lake Road is currently a Class 5 Access Management roadway between Turkey Lake Road (MP 0.000 and Universal Boulevard (MP 0.665). It is a major arterial that has many businesses and driveways along the study area between Turkey Lake Road and International Drive. The recommended alternative for Sand Lake Road maintains the existing driveways along Sand Lake Road within the right-of-way. The spacing between Turkey Lake Road and the I-4 Westbound off ramp has increased from 445 feet to 850 feet. This should provide more vehicle stacking where needed. The spacing of the signalized intersections for the I-4 ramps have decreased from 830 feet to 520 feet and the distance between the I-4 Eastbound ramps and International Drive have remained the same.

6.12 Conceptual Signing Plan

A conceptual signing plan for the recommended alternatives was developed for the I-4 BtU improvements. A critical aspect in development of the signing concepts is distinguishing between the general use and special use (express) lanes. This is achieved by employing the designated sign panel colors to distinguish between the two lane facility types. The conceptual signing plan includes static and dynamic message signs (DMS) which show entry/exit access points between the general use and express lanes, as well as vehicle eligibility restrictions and toll pricing amounts. The conceptual signing plan for I-4 Segment 2 is provided in Appendix C.

6.13 Production Schedule

The PD&E re-evaluation for Segment 2 is scheduled to be completed Summer of 2017. The preliminary design began in April 2015. The segment is projected to be procured as a Design-Bid-Build contract with right-of-way funded for 2022 and funded for construction in 2025.
6.14 Project Cost Estimates

The estimated cost of construction including Maintenance of Traffic (MOT) and contingency (5%) is $244.4 Million. Estimated Construction Engineering and Inspection (CEI) and Engineering Design costs are both expected to be an additional 8% each of the total construction cost. The complete Long Range Estimates (LRE) for Segment 2 are included in Appendix D. The total estimated cost for Segment 2 is $283.5 Million; Table 6.13 shows the breakdown of estimated project costs for I-4 Segment 2.

<table>
<thead>
<tr>
<th>Item</th>
<th>Cost</th>
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<tbody>
<tr>
<td>LRE</td>
<td>$192,271,567</td>
</tr>
<tr>
<td>MOT (10%)</td>
<td>$19,227,157</td>
</tr>
<tr>
<td>Mobilization (10%)</td>
<td>$21,149,872</td>
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<tr>
<td>Project Unknowns (5%)</td>
<td>$11,632,430</td>
</tr>
<tr>
<td>Project Non-Bid Subtotal</td>
<td>$150,000</td>
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<tr>
<td><strong>Construction Subtotal</strong></td>
<td><strong>$244,431,025</strong></td>
</tr>
<tr>
<td>Design (8%)</td>
<td>$19,554,482</td>
</tr>
<tr>
<td>CEI (8%)</td>
<td>$19,554,482</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$283,539,990</strong></td>
</tr>
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</table>
7.0 Supplemental Technical Reports

A series of supporting documents including Technical Reports and Memorandums were prepared as part of the PD&E study for this project. Information from these reports was used to evaluate and develop the alternatives and design recommendations in this PER. These documents are listed here for reference.

1. *Air Quality Analysis Technical Memorandum Segment 2: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road)* [July 2016]

2. *Concept of Operations - SR 400 (I-4) from West of SR 25/US 27 to East of SR 472* [June 2016]

3. *Conceptual Stage Relocation Plan - Segment 2: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road)* [January 2016]

4. *Contamination Screening Evaluation Report Segment 2: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road)* [July 2016]

5. *Endangered Species Biological Assessment Segment 2: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road)* [July 2016]


7. *I-4 Beyond the Ultimate Systems Access Modification Report (SAMR) Re-Evaluation: I-4 Beyond the Ultimate Project South Section – from West of US 27 to West of SR 435 (Kirkman Road)* [March 2017]

8. *Interstate 4 from West of State Road 528 (Beachline) to West of State Road 435 (Kirkman Road) Value Engineering Study Recommendation Dispositions* [May 2015]


10. *Location Hydraulic Report Segment 2: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road)* [August 2016]
11. **Noise Study Report Segment 2**: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) [July 2016]

12. **Orange County Sand Skink Memo** [September 2014]

13. **Pavement Type Selection Report - Segment 2**: SR 528 (Beachline Expressway) to SR 435 (Kirkman Road) [April 2014]

14. **Pond Siting Report Segment 2**: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) [August 2016]

15. **Report of Preliminary Geotechnical Engineering Investigation for Ponds Segment 2**: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) [December 2015]

16. **SR 400 (I-4) Lighting Justification Memorandum – West Section** (US 27 to Kirkman Road) [December 2013]

17. **Technical Memorandum: Cultural Resource Assessment Survey of Proposed Improvements to Segment 2**: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) [December 2015]

18. **Technical Memorandum: Evaluation of the Proposed Ultimate S.R. 528 (Beachline Expressway) and I-4 Interchange Configurations – Alternatives 5, 6 and 7** [November 2014]

19. **Utility Impact Report Segment 2**: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) [April 2016]

20. **Wetland Evaluation Report (WER) Segment 2**: State Road 400 (SR 400)/Interstate 4 (I-4) from West of SR 528 (Beachline Expressway) to West of SR 435 (Kirkman Road) [July 2016]
SLIP RAMP DETAIL INGRESS TO EXPRESS LANES

SLIP RAMP DETAIL INGRESS TO EXPRESS LANES
WESTBOUND INVESTIGATION/ ENFORCEMENT AREA DETAILS

EASTBOUND INVESTIGATION/ ENFORCEMENT AREA DETAILS

INVESTIGATION/ ENFORCEMENT AREA TYPICAL SECTION
GENERAL USE LANES

TYPICAL TOLL EQUIPMENT SITE BETWEEN ROADWAYS

LIMITS OF TOLLING PAVEMENT

50'

LIMITS OF TOLLING PAVEMENT

50'

EXPRESS LANES

10'-6"
TYPICAL EMERGENCY ACCESS GATE DETAILS

- EXPRESS LANES
- CONCRETE PAD 121'-0" X 4'-3" (THICKNESS VARIES)
- BARRIER WALL OPENING 120'-0"
- STEEL BULKHEAD ASSEMBLY
- 42"-0" GATE OPENING (WHEN OPEN)
- WALL ASSEMBLY
- GATE ASSEMBLY
- WALL ASSEMBLY
- BARRIER WALL OPENING 120'-0"
- STEEL BULKHEAD ASSEMBLY
- WALL ASSEMBLY
- GENERAL USE LANES
EXISTING R/W LINE

PROPOSED R/W

PARCEL LINES

EXISTING LA/RW

PROPOSED LA/RW

INTERIOR LINES

EXISTING FOOT R/W

PROPOSED FOOT R/W

BARRIER WALL

EXISTING L/R/W

PROPOSED L/R/W

GENERAL USE LANES

EXISTING EXPRESS LANES

PROPOSED EXPRESS LANES

RAIL CORRIDOR (AERIAL)

EXISTING BRIDGE

PROPOSED BRIDGE

R/W LIMITS

EXISTING R/W LINE

PROPOSED R/W LINE

EXISTING LA/RW LINE

PROPOSED LA/RW LINE

EXISTING EXPRESS LANES

PROPOSED EXPRESS LANES

EXISTING GENERAL USE LANES

PROPOSED GENERAL USE LANES

EXISTING FOOT R/W

PROPOSED FOOT R/W

EXISTING L/R/W

PROPOSED L/R/W

I-4 EB GUL TO UNIVERSAL BLVD

I-4 WB EXPRESS LANES

I-4 EB  EXPRESS LANES

EXISTING R/W LINE

PROPOSED R/W LINE

EXISTING L/R/W

PROPOSED L/R/W

EXISTING GENERAL USE LANES

PROPOSED GENERAL USE LANES

EXISTING FOOT R/W

PROPOSED FOOT R/W
AREAS TAKING: 278,582 SF

PARCEL ID: 11-24-28-0000-00-004
PARCEL ID: 11-24-28-0000-00-010

FDOT TEXT-GLOW.TBL

GENERAL USE LANES

AEON CORPORATION
60 Dr. Martin Luther King Jr. Ct
Largo, FL 33773

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO. 400
COUNTY ORANGE
FINANCIAL PROJECT NO. 43200-1-22-05
EXISTING LA/R/W LINE

EXISTING BRIDGE

PROPOSED BRIDGE

RAIL CORRIDOR (AERIAL)

PARCEL LINES

GENERAL USE LANNES

EXPRESS LANES

EXISTING FOOT/R/W

PROPOSED FOOT/R/W

EXISTING R/W

PROPOSED LA/R/W

BARRIER WALL

FUTURE EXISTING CONDITION

MATCHLINE STA. 192+50.00

MATCHLINE STA. 227+00.00

EXHIBIT DR.

EXIST SR 528

CLARION INN

RED ROOF & SUITES

EXISTING LA/R/W LINE

ROSEN CENTRE INN

SR 528 EB

SR 528 WB

WYNFIELD INN

HAWTHORN SUITES

EXTENDED STAY AMERICA

WEST ENTRANCE DR.

0 50 100

I-4 EXPRESS LANES TO SR 528 EB

SR 528 WB TO I-4 WB EXPRESS LANES

SR 528 WB TO I-4 WB GENERAL USE LANES

EXHIBIT DR.
EXISTING LA/R/W LINE
EXISTING BRIDGE
EXISTING LA/R/W
BARREN WALL
GENERAL USE LANES
PROPOSED LA/R/W
PROPOSED BRIDGE
PROPOSED LA/R/W
FUTURE EXISTING CONDITION
MATCH LINE STA. 1399 + 00.00
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
I-4 PD&E STUDY
SR 528 ALT 3 (5 OF 5)
SEGMENT 2
432100-1-22-03
ORANGE
COUNTY
FLORIDA FINANCIAL PROJECT ID
ENGINEER OF RECORD: ROBERT M. DENNEY, P.E.
HNTB CORPORATION
FL. REGISTRATION NO. 58593
CERT. OF AUTH. NO. 6500
LAKE MARY, FL 32746
SUITE 400
610 CRESCENT EXECUTIVE CT
(407) 805-0355
ENGINEER OF RECORD: ROBERT M. DENNEY, P.E.
HNTB CORPORATION
FL. REGISTRATION NO. 58593
CERT. OF AUTH. NO. 6500
LAKE MARY, FL 32746
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610 CRESCENT EXECUTIVE CT
(407) 805-0355
ENGINEER OF RECORD: ROBERT M. DENNEY, P.E.
EXISTING R/W
PROPOSED R/W
PARCEL LINES
BARRIER WALL
EXISTING BRIDGE
PROPOSED BRIDGE
RAIL CORRIDOR (AERIAL)
FUTURE EXISTING CONDITION

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

I-4 PD&E STUDY
SAND LAKE RD ALT 1 (4 OF 5)
(RECOMMENDED ALTERNATIVE)
SEGMENT 2

EXISTING LA R/W
PROPOSED LA R/W
EXISTING R/W
PROPOSED R/W
PARCEL LINES
AREA TAKING: 3,598 SF
PARCEL ID: 35-23-28-0000-00-053

AREA TAKING: 67,540 SF
PARCEL ID: 35-23-28-0000-00-061

AREA TAKING: 1,848 SF
PARCEL ID: 35-23-28-7113-01-000

AREA TAKING: 1,324 SF
PARCEL ID: 35-23-28-7825-00-011

AREA TAKING: 289 SF
PARCEL ID: 35-23-28-0000-00-042

AREA TAKING: 185 SF
PARCEL ID: 35-23-28-7825-00-010

11/1/2016
mbacal

CERT. OF AUTH. NO. 6500
(407) 805-0355
LAKE MARY, FL  32746
SUITE 400
610 CRESCENT EXECUTIVE CT
HNTB CORPORATION
FL. REGISTRATION NO. 58593
ENGINEER OF RECORD:  ROBERT M. DENNEY, P.E.
Appendix B - Public Involvement Documentation/Coordination
The Florida Department of Transportation (FDOT) is holding a public hearing for the “I-4 Beyond the Ultimate” PD&E Study. This study focuses on the concept of adding express lanes on Interstate 4 (I-4), from west of US 27 to west of Kirkman Road/State Road (SR) 435 to the west, and from east of SR 434 to east of SR 472 to the east, a distance of approximately 40 miles. At this meeting we will present the recommended design alternative for adding express lanes on the segment of I-4 from West of the Beachline Expressway/SR 528 to West of Kirkman Road/SR 435 in Orange County. This hearing is being conducted to give interested persons an opportunity to express their views concerning the location, conceptual design, and social, economic, and environmental effects of the proposed improvements.

The hearing will be Monday, October 10, 2016, from 5:30 p.m. to 7:30 p.m. at the Wyndham Orlando Resort International Drive, located at 8001 International Drive, Orlando, FL 32819. It will begin as an open house at 5:30 p.m. with a formal presentation at 6:00 p.m., followed by a public comment period. Persons wishing to submit written statements, in place of or in addition to oral statements, may do so at the hearing or by sending them to Beata Stys-Palasz, P.E. at 719 South Woodland Boulevard, DeLand, Florida 32720, by phone 386-943-5418, or by email to beata.stys-palasz@dot.state.fl.us. All statements postmarked no later than October 20, 2016 will become a part of the public hearing record.

The draft environmental and engineering reports developed by the Department will be available for public review from September 19, 2016 through October 20, 2016 at the Orange County Public Library, Southwest Branch, located at 7255 Della Drive, Orlando, FL 32819 or on the study website - www.i4express.com.

Public participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. Persons wishing to express their concerns relative to FDOT compliance with Title VI may do so by contacting Jennifer Smith, FDOT District Five Title VI Coordinator by phone at 386-943-5367, or via email at jennifer.smith2@dot.state.fl.us.

Persons with disabilities who require special accommodations under the Americans with Disabilities Act or persons who require translation services (free of charge) should contact Beata Stys-Palasz, P.E., FDOT Project Manager, by phone at 386-943-5418, or via email at beata.stys-palasz@dot.state.fl.us at least seven (7) days prior to the hearing. If you are hearing or speech impaired, please contact us by using the Florida Relay Service, 1-800-955-8771 (TDD) or 1-800-955-8770 (Voice).
September 16, 2016

Subject: “I-4 Beyond the Ultimate” Project Development and Environment (PD&E) Reevaluation Study

From the West of the Beachline Expressway/State Road (SR) 528 to West of Kirkman Road/SR 435

Orange County

Financial Project ID Number: 432100-1-22-01
Design Project ID Number: 242484-7-32-01
Federal Aid Project Number: 0041-227-1

Dear Stakeholder,

On behalf of the Florida Department of Transportation (FDOT), I invite you to attend a public hearing for the “I-4 Beyond the Ultimate” PD&E Study. This study focuses on the concept of adding express lanes on Interstate 4 (I-4), from west of US 27 to west of Kirkman Road/State Road (SR) 435 to the west, and from east of SR 434 to east of SR 472 to the east; a distance of approximately 40 miles. At this meeting we will present the recommended design alternative for adding express lanes on the segment of I-4 from west of the Beachline Expressway/SR 528 to west of Kirkman Road/SR 435 in Orange County. This hearing is being conducted to give interested persons an opportunity to express their views concerning the location, conceptual design, and social, economic, and environmental effects of the proposed improvements.

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For information pertaining to this project, please contact Beata Stys-Palasz, P.E., FDOT Project Manager, by phone at 386-943-5418, or via email at beata.stys-palasz@dot.state.fl.us.

Sincerely,

Beata Stys-Palasz, P.E.
FDOT Project Manager
<table>
<thead>
<tr>
<th>Name (PLEASE PRINT)</th>
<th>Mailing Address (PLEASE PRINT)</th>
<th>E-mail or Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mary Hamill</td>
<td>3180 W. 45th St., Suite 1150, Longwood, FL 32757</td>
<td><a href="mailto:mhamill@global-5.com">mhamill@global-5.com</a></td>
</tr>
<tr>
<td>Matt Hamill</td>
<td></td>
<td><a href="mailto:Matt@global-5.com">Matt@global-5.com</a></td>
</tr>
<tr>
<td>Steve Brown</td>
<td></td>
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<tr>
<td>Jennifer Vibbard</td>
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<tr>
<td>Hogen Ibbaurm</td>
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<td>Dr. Vieve Green</td>
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<td>Brian Spork</td>
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<td>Thomas Ring</td>
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<td>Michelle Kendall</td>
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<td>Brent A. Lacy</td>
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<tr>
<td>Xavier Accoto</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hari Salcapram</td>
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Public Hearing

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Joseph F. Liquori
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**Public Hearing**

Wyndham Orlando Resort, 8001 International Drive, Orlando, FL
SPEAKER REQUEST CARD
To be completed prior to making a recorded statement
PUBLIC HEARING – OCTOBER 10, 2016
I-4 BEYOND THE ULTIMATE PD&E STUDY
FROM WEST OF WEST OF SR 528 (BEACHLINE EXPRESSWAY)
TO WEST OF SR 435 (KIRKMAN ROAD)
FPID NO.: 432100-1-22-01
PLEASE PRINT

Name: Dan Langley

Address: 1947 Lee Road
Winter Park, FL 32789

City: Winter Park
State: FL
Zip: 32789

Affiliation: Attorney for Smith Dymner, LLC

Note: In order to allow all persons the opportunity to speak, please limit your comments to 3 minutes. Public Participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. All verbal or written comments provided become part of the study's project file. This information may be provided to other individuals who make a public records request.

SPEAKER REQUEST CARD
To be completed prior to making a recorded statement
PUBLIC HEARING – OCTOBER 10, 2016
I-4 BEYOND THE ULTIMATE PD&E STUDY
FROM WEST OF WEST OF SR 528 (BEACHLINE EXPRESSWAY)
TO WEST OF SR 435 (KIRKMAN ROAD)
FPID NO.: 432100-1-22-01
PLEASE PRINT

Name: Robert Nowell

Address: 115 Wilton Pl.

City: Winter Park
State: FL
Zip: 32807

Affiliation: 

Note: In order to allow all persons the opportunity to speak, please limit your comments to 3 minutes. Public Participation is solicited without regard to race, color, national origin, age, sex, religion, disability or family status. All verbal or written comments provided become part of the study's project file. This information may be provided to other individuals who make a public records request.
I-4 BEYOND THE ULTIMATE PD&E REEVALUATION STUDY
SEGMENT 2: FROM WEST OF STATE ROAD 528 TO WEST OF STATE ROAD 435
FDOT PROJECT NUMBER: 432100-1-22-01

PUBLIC HEARING
DATE: OCTOBER 10, 2016
REPORTER: KAYLYN REINHOLD
PLACE: WYNDHAM RESORT INTERNATIONAL DRIVE
8001 INTERNATIONAL DRIVE
ORLANDO, FLORIDA 32819
APPEARANCES

BEATA STYS-PALASZ, P.E.
FLORIDA DEPARTMENT OF TRANSPORTATION

DAN LANGLEY, ESQUIRE
ATTORNEY FOR SMITH DYMMEK, LLC

ROBERT NOWELL

COLLEEN JARRELL
HNTB CORPORATION
STIPULATION

THE PUBLIC HEARING HELD AT WYNDHAM RESORT
INTERNATIONAL DRIVE, 8001 INTERNATIONAL DRIVE, ORLANDO,
FLORIDA 32819 ON MONDAY, THE 10TH DAY OF OCTOBER, 2016
AT APPROXIMATELY 5:57 P.M., SAID PUBLIC HEARING WAS
TAKEN PURSUANT TO THE FLORIDA RULES OF CIVIL PROCEDURE.
MS. STYS-PALASZ: And good evening, everybody.

The Florida Department of Transportation would like to welcome you to a public hearing for the PD&E study for I-4 Beyond the Ultimate. My name is Beata Stys-Palasz and I am the design project manager for the PD&E section and also overlooking the design of I-4 BTU. This public hearing is relative to Financial Management Project Number 432100-1-22-01 and Federal Aid Project Number 0041-227-I. The proposed improvements involves widening Interstate 4 to ten lanes with three general-use lanes and two express lanes in each direction. This PD&E really extends from Polk County from west of US 27 all the way to Kirkman Road where we are meeting right now. I-4 Ultimate, this hearing is only for one section of this project, what is from west of State Road 528 to west of Kirkman. Here with me tonight is the design -- the PD&E consultant project manager, Luis Diaz, and all other representatives of the FDOT and consultant project design team. If you have any question about future purchases of right-of-way, our right-of-way staff is -- has its table at the back. I did not recognize any familiar faces, but I would like to recognize any federal, state, county, or
city official who may be present tonight. Anybody?
Okay. I was right. Now, we will start our
presentation. Thank you.

(WHEREUPON, A SLIDE SHOW WAS PLAYED)

NARRATOR: The State of Florida Department of
Transportation, also known as FDOT, would like to
welcome you to the public hearing for the Interstate
4 Beyond the Ultimate Project Development and
Environment Study. This public hearing is being
held relative to FDOT Financial Project ID Number
432100-1-22-01 and Federal Aid Project Number 0041-
227-I. This public hearing was advertised
consistent with federal and state requirements and
is being conducted consistent with the Americans
with Disabilities Act of 1990. Advertisements for
this public hearing included letters to elected and
agency officials, letters to the property owners,
newspaper ads, notifying local media, and
advertising in the Florida Administrative Register.
The Florida Department of Transportation is required
to comply with various nondiscrimination laws and
regulations, including Title VI of the Civil Rights
Act of 1964. This hearing is being held to give all
interested persons the right to understand the
project and comment on their concerns to the
department. Public participation at this hearing is solicited without regard to race, color, national origin, age, sex, religion, disability, or family status. Persons wishing to express their concerns about Title VI may do so by contacting the individuals listed on this slide, which is also provided in the project newsletter and on a board displayed at this hearing. The proposed improvement involves adding express lanes on I-4 from US 27 to Kirkman Road to the west and from State Road 434 to State Road 472 to the east. The purpose of this public hearing is to share information with the general public about the alternatives under consideration, the proposed improvements, and their potential environmental impacts. This public hearing also serves as an official forum providing an opportunity to the public to express their opinions and concerns regarding the location, conceptual design, and potential social, economic, and environmental effects of the proposed improvement on the community. There is a court reporter present at this hearing and tonight's proceedings are being recorded. An official transcript of the hearing will be produced. Following this presentation, the floor will be open
for public comments. All written material received
at this public hearing and at the Florida Department
of Transportation office postmarked no later than
October 15, 2016 or through the project website will
become a part of the public record for this hearing.
The Project Development and Environment Study, or
PD&E, is the second step of the project development
process that the Florida Department of
Transportation follows to evaluate social, cultural,
economic, and environmental impacts associated with
a planned transportation improvement project. The
PD&E process was established by the FDOT as the
state's procedure for complying with the National
Environmental Policy Act, or NEPA, of 1969 and
Florida statutes. NEPA is a United States
environmental law that requires federal agencies to
assess the environmental effects of their proposed
actions prior to making decisions. This phase
involves the preparation of all preliminary
engineering and environmental documentation required
for study approval and subsequent funding. During a
PD&E study, several alternatives are developed to
meet the purpose and need for the project. These
alternatives are developed with input from the
public, local government, and environmental agencies
throughout the study process. Keeping the public involved and informed throughout the study is paramount to the success of a PD&E study. This study is a reevaluation of PD&E studies that were previously done 14 to 17 years ago. The section from State Road 435, Kirkman Road, to State Road 434 in Orange and Seminole Counties received approval from the Federal Highway Administration and are currently under construction to include the addition of express lanes. The study limits are along Interstate 4, from west of State Road 528 to west of State Road 435. This study proposes to widen the interstate from four to ten lanes; this includes six general-use lanes and four express lanes. The study corridor is approximately four miles in length and is located in Orange County. The MetroPlan Orlando Metropolitan Planning Organization works with the Florida Department of Transportation and local governments to fund and implement projects identified through various plans developed by the MPO. It should be noted that the I-4 Beyond the Ultimate Segment 2 was ranked number one on the MetroPlan Orlando priority list adopted September 14, 2016. This project segment is identified in the MetroPlan Orlando 2040 Long-Range Transportation...
Plan. The project is consistent with the State Transportation Improvement Program and the transportation element of the Orange County and City of Orlando comprehensive plans. The purpose of this study is to accommodate future traffic needs based on anticipated population and employment growth, and enhance safety and mobility along the study corridor. The original PD&E study included high-occupancy vehicle, or HOV lanes, in the median. This re-evaluation includes six general-use lanes, three in each direction; and four express lanes, two in each direction. The widening of I-4 is proposed to meet the design year 2040 projected traffic volumes. The goal of the project is to maintain acceptable levels of service along the corridor for the design year 2040. Levels of service are measured on an A through F grading scale with A being the best and F failing. Drivers will experience levels of service E and F under the original build condition in the design year 2040 along some portions of the corridor. Levels of service can be improved to D or better with the express lanes' widening improvements of the recommended build alternative. Typical sections are detailed cross-section depictions of a roadway's
principal elements that are standard between certain
segment limits and show typical conditions only.
The existing typical section consists of three 12-
foot travel lanes in each direction with 12-foot
inside and outside shoulders. The existing right-
of-way varies from 300 to 330 feet. The following
is a summary of coordination, meetings, and
presentations held with local agencies and
stakeholders to discuss the study, which includes
Orange County, MetroPlan Orlando, Florida's Turnpike
Enterprise, utility companies, and South Florida
Water Management District. A project website,
www.i4express.com, was developed to allow the public
to communicate with the study team and provide
comments. An alternatives public meeting was held
on January 30, 2014. 33 members of the public
attended this meeting. No written comments were
received. Public input from these meetings has
factored into the study decision-making process.
Today's hearing will provide the public with another
opportunity to comment on the proposed improvements
under consideration. A no- build and build
alternative are being considered as part of this
PD&E study. The no-build alternative maintains the
existing facility as-is. No improvements are made
and there is no congestion relief along the corridor.

The no-build alternative is also evaluated as a baseline for comparison with the build alternative. We will now discuss the recommended build alternative, which proposes to widen Interstate 4 to ten lanes with five lanes in each direction: three general-use lanes and two express lanes. An evaluation matrix comparing the no-build alternative with the recommended roadway build alternative is on display here tonight. The proposed typical section consists of two 12-foot wide express lanes with 4-foot inside and 10-foot outside shoulders, and three 12-foot wide general-use lanes with 10-foot inside and 12-foot outside shoulders in each direction. A 2-foot wide barrier wall separates the general-use from the express lanes. The minimum right-of-way width required to accommodate this typical section is 300 feet. A 44-foot rail corridor is preserved within the median from east of Central Florida Parkway to State Road 528. The proposed horizontal alignment of I-4 Segment 2 closely follows the existing I-4 alignment. Right-of-way will be required for the roadway mainline improvements, stormwater management facilities, and floodplain compensation sites. The total anticipated right-of-way impacts involve full or
partial acquisition of 29 parcels for a total of approximately 25 acres. The recommended alternative for the State Road 528 interchange proposes a systems interchange, which maintains a freeway terminal junction design. The proposed design provides direct-connect access between the I-4 express lanes and general-use lanes and the State Road 528 express lanes and general-use lanes. Turkey Lake Road will be realigned with the recommended alternative. The recommended alternative for Sand Lake Road proposes modifying the existing partial cloverleaf interchange to a diverging diamond interchange, also known as a DDI. A DDI is designed so that each direction of traffic is split and crosses over itself. The traffic will temporarily drive on the opposite side of the roadway and cross back over on the other side of the interchange. In order to avoid wrong way movements through this type of interchange, the opposite directions of the roadway are intersected at an angle that is large enough to appear to the driver as if they are making a through movement and that the other side of the roadway is an intersecting street. A new ramp connection will be provided between I-4 westbound and Turkey Lake Road, eliminating the need for the westbound left turns at the Sand Lake Road and Turkey Lake Road intersection. The existing drainage systems
will be enhanced to accommodate stormwater runoff from the proposed roadway improvements. The stormwater management systems, proposed by this study, have been designed to meet the current requirements of the South Florida Water Management District and the Florida Department of Transportation. Stormwater treatment will be provided in wet detention ponds, located on- or off-site. The treatment facilities and locations are on exhibit here this evening, as well as in the documents on display. In accordance with current FDOT standards for road and bridge construction, all best management practices for erosion control and water quality considerations will be adhered to during the construction phase of the project. Pond siting evaluation criteria were developed to screen the various potential pond sites. Each of the criteria are evaluated for impacts, which are then used for comparison in order to identify overall suitability and select recommended ponds. Design criteria, as set forth by the South Florida Water Management District and FDOT, was used to determine pond sizing. The recommended pond sites for this study are labeled and illustrated on the design concept boards on display. To comply with various executive orders and other federal and state requirements, engineering and environmental information
was reviewed and evaluated to determine if there were any substantial impacts to social and economic, cultural, physical, and natural resources that may result from construction of the proposed improvements. The project improvements will have positive socioeconomic impacts on the study area as it improves mobility and relieves congestion. An archaeological survey was performed within the existing and proposed right-of-way. The results indicate that there are two archaeological occurrences within the study limits; neither are eligible for inclusion in the National Register of Historic Places. There are two historic resources constructed before 1971 within the study area; neither of these historic resources are recommended eligible for the National Register of Historic Places. No adverse effects to cultural resources are anticipated. The project was evaluated in accordance with Executive Order 11990 entitled "Protection of Wetlands." There are approximately 4.43 acres of direct wetland impacts and 9.32 acres of jurisdictional other surface water impacts associated with the recommended alternative. This project was evaluated for impacts to wildlife and habitat resources, including protected species, in accordance with Title 50, Code of Federal Regulations, Part 402 of the Endangered Species Act of
1973, as amended. It was determined that the project has either a "no effect" or "may affect," but is "not likely to adversely affect" any federal- or state-listed species. To avoid and/or minimize impacts to wildlife, FDOT will continue to coordinate with the US Fish and Wildlife Service and the Florida Fish and Wildlife Conservation Commission. FDOT will also conduct monitoring and assessment for specific species during the permitting phase. The proposed stormwater facilities will be designed to meet the current requirements of the South Florida Water Management District. Stormwater treatment will be provided by wet detention ponds, located on- or off-site. The pond locations are on exhibit here this evening, as well as in the documents on display. In accordance with Executive Order 11988 entitled "Floodplain Management," a floodplain analysis was performed. It was determined that no floodplain impacts are anticipated. Traffic noise impacts were evaluated in accordance with the Code of Federal Regulations, Part 772. Based on the results of a noise barrier evaluation, a noise barrier appears to be a reasonable and cost-feasible noise abatement method for the east side of I-4 adjacent to the McKinley at Monterey Lakes and the Sea Isle Luxury Apartments. Potentially contaminated sites in the vicinity of the
project corridor were identified and evaluated to determine if impacts would occur as a result of the proposed improvements. 124 potential contamination sites have been identified. None of the sites are rated as high risk, 19 are medium risk, and 115 are rated no risk or low risk of potential contamination. Additionally, of the 20 potential pond sites, none were rated as high risk, four were rated as medium risk, and 16 were rated as low risk. An air quality analysis was performed on the project. The analysis was conducted using the established FDOT air quality screening model. Air quality impacts are not expected to occur as a result of this project. Right-of-way acquisition is anticipated for the recommended alternative for roadway and drainage improvements. Approximately nine acres of additional right-of-way is anticipated for roadway improvements, and approximately 16 acres of additional right-of-way is anticipated for off-site ponds. In addition, there is a potential for two relocations. These anticipated relocations are displayed on the aerials available at tonight's hearing. All right-of-way acquisition will be conducted in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Act of 1970 and FDOT Real Estate Acquisition Process. Right-of-way requirements for the project are
on display here tonight. One of the unavoidable consequences on a project such as this is the necessary relocation of families or businesses. On this project, we anticipate the relocation of three families and one business. All right-of-way acquisition will be conducted in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, commonly known as the Uniform Act. If you are required to make any type of move as a result of a Department of Transportation project, you can expect to be treated in a fair and helpful manner and in compliance with the Uniform Relocation Assistance Act. If a move is required, you will be contacted by an appraiser who will inspect your property. We encourage you to be present during the inspection and provide information about the value of your property. You may also be eligible for relocation advisory services and payment benefits. If you are being moved and you are unsatisfied with the department's determination of your eligibility for payment or the amount of that payment, you may appeal that determination. You will be promptly furnished necessary forms and notified of the procedures to be followed in making that appeal. A special word of caution -- if you move before you receive notification of the relocation benefits that you might be entitled
to, your benefits may be jeopardized. The relocation specialists who are supervising this program are here tonight. They will be happy to answer your questions and will also furnish you with copies of relocation assistance brochures. The estimated total cost for the recommended alternative will be approximately $401.3 million. This includes $308.5 million for construction and utility relocations, $43.4 million for right-of-way acquisition for roadway and pond improvements, and $48.4 million for final design and construction engineering and inspection. Over the next several months, FDOT will continue to finalize the analysis and will seek to approve the documents and improvements presented here at tonight's public hearing. Following approval, FDOT will continue with the design, right-of-way acquisition, and construction phases. Currently, there is no funding available for the construction phases. The study is anticipated to be completed in October 2016. Design is fully funded for this segment of I-4. Draft documents for this public hearing were available for review starting September 19, 2016 and will remain on display until October 20, 2016 at the Seminole County Public Library, Northwest Branch, and also on the study website www.i4express.com. These documents are also on display here tonight. No final decisions will be made until
after we review your comments. You may provide your
comments in several ways. You may provide an oral
statement to the court reporter present here tonight.
Complete a speaker card and make an oral statement at
the microphone during the public comment period.
Complete a comment form and drop it in the comment box
provided here at the hearing or mail your comments to
the FDOT project manager at the address shown on the
comment form. You may e-mail your comments to the FDOT
at the address shown on the comment form or visit the
project website and submit comments electronically.
There is a dedicated page on the website for comments.
All written material received at this public hearing and
at the Florida Department of Transportation office,
postmarked no later than ten days following the date of
this public hearing, or through the project website,
will become a part of the public record for this
hearing. This concludes our presentation. Thank you.

(END OF SLIDE SHOW)

**MS. STYS-PALASZ:** I would like to add it that
we have a small discrepancy in our script. The
project is funded right now for construction in 2025
and also we are working to bring that -- maybe this
date closer, but right now it's funded for
construction in 2025.
MR. NOWELL: Can I ask you a question?

MS. STYS-PALASZ: That -- all that --

MR. NOWELL: Would you please repeat that? I --

MS. STYS-PALASZ: The --

MR. NOWELL: Your --

MS. STYS-PALASZ: -- construction fund --

MR. NOWELL: The relation --

MS. STYS-PALASZ: -- the project construction

is funded in 2025.

MR. NOWELL: Oh. That's -- I guess --

MS. STYS-PALASZ: And also, we are really

impacting only one house. We understand we do not

know how many people lives in the house. That was

all. Thank you.

MS. JARRELL: So I have one public speaker

card. If there's anybody else that wants to make a

public statement?

MR. NOWELL: You need this thing to get a

speaker card?

MS. JARRELL: No. Here, I'll give you a

speaker card right here, sir. This --

MR. NOWELL: You need to translate. I didn't

catch a lot of what she's said anyway. I don't know

that I could hear his question on that -- set that
MS. JARRELL: Is there anybody else that would like a speaker card?

MR. NOWELL: Yes.

MS. JARRELL: We can go ahead and start with Dan Langley.

MR. LANGLEY: Is there a mic I'm supposed to speak in?

MS. JARRELL: Yeah, there is.

MR. NOWELL: If anybody else wants to --

MR. LANGLEY: Yes, sir.

MS. JARRELL: Do you think you can speak loud?

MR. LANGLEY: Yeah, I can speak loud. My name is Dan Langley. I -- I'm with Fishback Dominick law firm. I represent Se'Belle Smith Dymmek and Smith Dymmek, LLC for a property owner. Her clients are property owners. They own property located on Palm Parkway near Big Sand Lake, adjacent to that lake. This property has been in my client's family for generations. One of the great citrus grower families in central Florida. And they're slated for a -- one or two ponds. It's unclear from the documentation that we've gotten from DOT -- some differing information throughout the years, either slated for two ponds or one pond, which they're calling a 199B
or a 200B. My clients are strongly opposed to do any taking of their property. This is their homestead generational property. They have no interest in DOT taking any portion of their property for a pond and they would request that DOT find another location for any pond associated with this project. The last information we have, I guess on those boards, shows that it's 200B. So we would like that removed and we would like you to consider another location that's not on my client's property. Again, we're also unclear with the information that we've received from DOT, what segment this pond is being proposed. We've gotten different information, one being in Segment 1, one being in Segment 2, two different parcel numbers, multiple financial project numbers, every -- just about every correspondence that has been received from DOT has had different information. So I'm not sure why the financial project numbers have changed. I'm not sure why the pond numbers have changed. I'm not sure if there's more than one pond proposed on my client's property, whether there's a pond proposed in one phase and then another pond proposed in another phase. There's been information about whether part of the property in the north segment would be taken versus
the south portion, so my client's very unclear what
you're proposing, but essentially what you're
proposing will completely destroy any use of their
property and they just don't want any part of it.
Thank you.

**MS. JARRELL:** Okay. Thank you. All right. Mr.
Nowell, do you have any?

**MR. NOWELL:** Yeah. Sure. I'm going -- I'm
going to be brief and short. I'm not against
progress, but I'll tell you this. I don't know how
many -- how old are you-all? 63 or older? Anybody
older than I am? 63 years? I was here when Disney
was a swamp. They built a little trench around it
to drain the water off of it. And then there was a
deal -- a sweetheart deal made for I-4. That's how
Disney came here. Disney said, "You give us tax-
free and I-4 from coast-to-coast, we'll come here."
Why aren't they paying the tax on this? Why are the
taxpayers responsible? This imminent domain that
you were just talking about, how many people did
they rape for their properties that came through I-4
and Disney? Come on now. Who really reaps the
benefit of this expansion project? Universal
Studios, Disney, and SeaWorld. Will we really
hardly see anything? Maybe to get home on time. We
don't make that money like they make. We need to rethink this and re-look at it. Who -- follow the dollar. You'll find out all these guys over here, big money. And then a nice video, nice video talking about numbers and this and that and another. Follow the money trail and you'll find out where the stink's at. I'm an old country boy and I don't shit in my back -- well, I didn't know somebody had a cow in their backyard and then I went back there and found out. But I'm going to tell you, you're going to find out there's a cow in the backyard because that's where the stink is. Follow the money trail and you will find out. I had a couple other questions, too. Where is everybody today? What, this didn't get on the news or something? I just happened to be walking by. And I just finished a divorce in Alabama and I'm back in Orlando where I was born 63 years ago. And I -- I was a -- you know, I'm a grassroots Navy kid. I don't know how many of you-all are implants, but I'm going to tell you what. I kind of like the hunting range that we used to have down here. Sand Lake used to be a dirt road. 192 was a clay road where they drove cattle up here. You-all just don't remember that, but I do. And then is see this and, all of a sudden, somebody
got to dig in their pocket to pay for this. Well, who's digging in their pocket to pay for this? The old taxpayer. I'm a Vietnam veteran and I -- I worked at NASA. And I worked construction all my life. I pay big taxes because I was single all my life until I was 58 and got married like a damn fool and was divorced at 61. But anyway, she had a better lawyer than I had. I should have gotten you. But anyway, I'm just telling you, follow the money trail, starting to make sense out of this thing. Because sometimes, some things that are proposals and slick presentations don't always mean it's right. I'm done.

MS. JARRELL: Thank you. Is there anyone else that wanted to make a public statement? No? Hearing none, then this closes the public hearing portion of the evening. If you have other questions -- I know you have other questions. There's a lot of team members around to answer them. If you want to talk drainage, we've got drainage staff here, too, to talk about that pond. Okay. Thank you.

(HEARING CONCLUDED AT 6:32 P.M.)
CERTIFICATE

STATE OF FLORIDA)
COUNTY OF ORANGE)

I, KAYLYN REINHOLD, Court Reporter and Notary Public for the State of Florida at Large, do hereby certify that I was authorized to and did report the foregoing proceeding, and that said transcript is a true record of the testimony given by the witness.

I FURTHER CERTIFY that I am not of counsel for, related to, or employed by any of the parties or attorneys involved herein, nor am I financially interested in said action.

Submitted on: October 19, 2016

KAYLYN REINHOLD
Court Reporter, Notary Public
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**Key Terms:**
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| standards 13:10  
| start 5:2 21:5  
| starting 18:21  
| 25:10  
| state 1:3,4  
| 4:17,25 5:5,13  
| 6:10,11  
| 8:6,11,12 9:1  
| 11:20 12:3,7  
| 13:24 26:3,7  
| state-listed 15:3  
| statement 19:3,4 20:18  
| 25:15  
| state's 7:13  
| States 7:15  
| status 6:4  
| statutes 7:15  
| step 7:7  
| stink 24:12  
| stink's 24:7  
| STIPULATION 3:1  
| stormwater  
| 11:23 13:1,2,6  
| 15:9,12  
| street 12:21  
| strongly 22:1  
| studies 8:4  
| Studios 23:24  
| Stys-Palasz 2:3  
| submit 19:11  
| Submitted 26:17  
| subsequent 7:21  
| substantial 14:2  
| success 8:3  
| sudden 24:25  
| suitability 13:18  
| summary 10:7  
| supervising 18:2  
| supposed 21:7  
| sure 22:18,19,20  
| 23:8  
| surface 14:21  
| survey 14:8  
| swamp 23:13  
| sweetheart 23:15  
| systems 12:3,25  
| 13:3  
| table 4:23  
| taking 22:2,4  
| talk 25:20,21  
| talking 23:20  
| 24:5  
| tax 23:16,18  
| taxes 25:5  |
written 7:1
   10:17 19:13
wrong 12:16
www.i4express.com 10:13 18:24
WYNDHAM 1:10
   3:2
__________
   Y
you-all 23:11
   24:20,24
you'll 24:3,6
January 30, 2017

Mr. Dan Langley
Smith Dymmek, LLC
1947 Lee Road
Winter Park, FL 32789

Subject: “I-4 Beyond the Ultimate” Project Development and Environment (PD&E) Reevaluation Study
From the West of the Beachline Expressway/State Road (SR) 528 to West of Kirkman Road/SR 435
Orange County
Financial Project ID Number: 432100-1-22-01
Design Project ID Number: 242484-7-32-01
Federal Aid Project Number: 0041-227-I

Dear Mr. Langley:

On behalf of the Florida Department of Transportation (FDOT), District Five, we would like to thank you for your involvement in the “I-4 Beyond the Ultimate” PD&E Study. The FDOT values your input and considers interaction with the public to be an essential component of transportation improvements.

We are writing you to thank you for the verbal comments you made during the public hearing. You were representing a property owner who has indicated they are not interested in FDOT taking any portion of their property for retention ponds and requested that alternative pond locations be considered.

A preliminary drainage analysis is performed during the PD&E study phase. Based on this analysis ponds (size and locations) are recommended in order to accommodate the widening of I-4. The project is moving into the design phase and a more detailed drainage analysis will be performed. Consideration will be given to the request of your client during the detailed design and FDOT will provide an update to the property owner on the progress.

Again, we sincerely appreciate your participation and input into this project. If you have additional questions or comments, please do not hesitate to contact me at 386-943-5418 or beata.stys-palasz@dot.state.fl.us.

Sincerely,

Beata Stys-Palasz, P.E.
FDOT Project Manager
Appendix C - Conceptual Signing Plan
0 100 200 Feet

EXISTING LA W
PROPOSED LA W
EXISTING FOT R/W
PROPOSED FOT R/W
PARCEL LINES
BARRIER WALL
FACE OF HIGHWAY R/W (FOT)
FUTURE EXISTING CONDITION

GENERAL USE LANES
EXPRESSION LANES
EXISTING BRIDGE
PROPOSED BRIDGE
RAIL CORRIDOR
FUTURE EXISTING CONDITION

MATCH LINE STATION 211+00.00
MATCH LINE SEGMENT 2
CONCEPTUAL SIGNING PLAN
I-4 PD&E STUDY
STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
SEGMENT 2
FINANCIAL PROJECT ID
COUNTY
ENGINEER OF RECORD: ROBERT M. DENNEY, P.E.
FL. REGISTRATION NO. 58593
LAKE MARY, FL  32746  SUITE 400
610 CRESCENT EXECUTIVE CT
HNTB CORPORATION
CERT. OF AUTH. NO. 6500
(407) 805-0355
Appendix D - Long Range Estimates (LRE)
Date: 8/12/2016 10:30:20 AM

FDOT Long Range Estimating System - Production
R3: Project Details by Sequence Report

Project: 242484-7-52-01 Letting Date: 07/2024
Description: SR 400 I-4 FROM W OF SR528 BEACHLINE MP 5.650 TO W OF SR 435 KIRKMAN RD MP 9.249.

Letting Date: 07/2024

Description: SR 400 I-4 FROM W OF SR528 BEACHLINE MP 5.650 TO W OF SR 435 KIRKMAN RD MP 9.249.

District: 05 County: 75 ORANGE Market Area: 08 Units: English
Contract Class: 1 Lump Sum Project: N Design/Build: N Project Length: 3.900 MI

Project Manager: BSP

Version 29 Project Grand Total $244,431,025.24

Description: I-4 (SR 400) FROM W OF SR 528 (BEELINE) (Sta. 714+97, MP 5.65) TO W OF SR 435 (KIRKMAN RD) (Sta. 905+00, MP 9.249), HNTB January 2016 Update (New CD System) - A-List. HNTB August 2016 Update: Express Lanes with Asphalt Pavement

Sequence: 1 NDR - New Construction, Divided, Rural Net Length: 3.600 MI
19,008 LF

Description: Construct 3 GUL in each direction from station 1345+48.48 to station 1523+00 for a total distance of 17751.52'. This sequence includes the New elevated CD system.

Special Conditions: Sequence includes ITS for entire project Lighting Assumption: 200 foot pole spacing

EARTHWORK COMPONENT

User Input Data
Description Value
Standard Clearing and Grubbing Limits L/R 150.00 / 150.00
Incidental Clearing and Grubbing Area 0.00

Alignment Number 1
Distance 3.600
Top of Structural Course For Begin Section 103.00
Top of Structural Course For End Section 103.00
Horizontal Elevation For Begin Section 100.00
Horizontal Elevation For End Section 100.00
Front Slope L/R 6 to 1 / 6 to 1
Median Slope L/R 6 to 1 / 6 to 1
Median Shoulder Cross Slope L/R 5.00 % / 5.00 %
Outside Shoulder Cross Slope L/R 6.00 % / 6.00 %
Roadway Cross Slope L/R 2.00 % / 2.00 %

Pay Items
Pay item Description Quantity Unit Unit Price Extended Amount
110-1-1 CLEARING & GRUBBING 130.91 AC $10,000.00 $1,309,100.00
120-6 EMBANKMENT 124,509.44 CY $7.00 $871,566.08

Earthwork Component Total $2,180,666.08

ROADWAY COMPONENT

User Input Data
Description Value
Number of Lanes 6
Roadway Pavement Width L/R 36.00 / 36.00
Structural Spread Rate 660
## Pay Items

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<th>Description</th>
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<th>Extended Amount</th>
</tr>
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<tr>
<td>160-4</td>
<td>TYPE B STABILIZATION</td>
<td>244,992.00</td>
<td>SY</td>
<td>$3.25</td>
<td>$796,224.00</td>
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<tr>
<td>285-712</td>
<td>OPTIONAL BASE,BASE GROUP 12</td>
<td>154,851.84</td>
<td>SY</td>
<td>$20.00</td>
<td>$3,097,036.80</td>
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<tr>
<td>334-1-25</td>
<td>SUPERPAVE ASPH CONC, TRAF E, PG76-22,PMA</td>
<td>50,181.12</td>
<td>TN</td>
<td>$92.00</td>
<td>$4,616,663.04</td>
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<tr>
<td>337-7-22</td>
<td>ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA</td>
<td>6,082.56</td>
<td>TN</td>
<td>$125.00</td>
<td>$760,320.00</td>
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## X-Items

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<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>521-8-1</td>
<td>CONC TRAF RAIL BAR, JCT SLAB,32&quot; SHAPE</td>
<td>38,016.00</td>
<td>LF</td>
<td>$225.00</td>
<td>$8,553,600.00</td>
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**Comment:** On MSE wall

### Pavement Marking Subcomponent

<table>
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<tbody>
<tr>
<td>Include Thermo/Tape/Other</td>
<td>Y</td>
</tr>
<tr>
<td>Pavement Type</td>
<td>Asphalt</td>
</tr>
<tr>
<td>Solid Stripe No. of Paint Applications</td>
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<tr>
<td>Solid Stripe No. of Stripes</td>
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<tr>
<td>Skip Stripe No. of Paint Applications</td>
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<tr>
<td>Skip Stripe No. of Stripes</td>
<td>4</td>
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### Pay Items

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<th>Extended Amount</th>
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<tbody>
<tr>
<td>706-3</td>
<td>RETRO-REFLECTIVE PAVEMENT MARKERS</td>
<td>2,430.00</td>
<td>EA</td>
<td>$3.57</td>
<td>$8,675.10</td>
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<tr>
<td>710-11-111</td>
<td>PAINTED PAVT MARK,STD,WHITE,SOLID,6&quot;</td>
<td>28.80</td>
<td>NM</td>
<td>$939.29</td>
<td>$27,051.55</td>
</tr>
<tr>
<td>710-11-131</td>
<td>PAINTED PAVT MARK,STD,WHITE,SKIP,6&quot;</td>
<td>14.40</td>
<td>GM</td>
<td>$449.54</td>
<td>$6,473.38</td>
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<tr>
<td>711-11-111</td>
<td>THERMOPLASTIC, STD, WHITE, SOLID, 6&quot;</td>
<td>28.80</td>
<td>NM</td>
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<td>THERMOPLASTIC, STD, WHITE, SKIP, 6&quot;</td>
<td>14.40</td>
<td>GM</td>
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### Peripherals Subcomponent

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<tr>
<td>Off Road Bike Path(s)</td>
<td>0</td>
</tr>
<tr>
<td>Off Road Bike Path Width L/R</td>
<td>0.00 / 0.00</td>
</tr>
<tr>
<td>Bike Path Structural Spread Rate</td>
<td>0</td>
</tr>
<tr>
<td>Noise Barrier Wall Length</td>
<td>440.00</td>
</tr>
<tr>
<td>Noise Barrier Wall Begin Height</td>
<td>22.00</td>
</tr>
<tr>
<td>Noise Barrier Wall End Height</td>
<td>22.00</td>
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</tbody>
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### Pay Items

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<tr>
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<th>Description</th>
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<th>Unit Price</th>
<th>Extended Amount</th>
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</thead>
<tbody>
<tr>
<td>339-1</td>
<td>MISCELLANEOUS ASPHALT PAVEMENT</td>
<td>34.00</td>
<td>TN</td>
<td>$235.00</td>
<td>$7,990.00</td>
</tr>
<tr>
<td>521-1</td>
<td>MEDIAN CONC BARRIER WALL</td>
<td>69,469.00</td>
<td>LF</td>
<td>$135.00</td>
<td>$9,378,315.00</td>
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<tr>
<td>534-72-101</td>
<td>SOUND/NOISE BARRIER-INC FOUNDATION, PERM</td>
<td>9,680.00</td>
<td>SF</td>
<td>$25.00</td>
<td>$242,000.00</td>
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<tr>
<td>536-1-1</td>
<td>GUARDRAIL- ROADWAY, GEN TL-3</td>
<td>1,000.00</td>
<td>LF</td>
<td>$15.50</td>
<td>$15,500.00</td>
</tr>
<tr>
<td>536-85-22</td>
<td>GUARDRAIL END ANCHORAGE</td>
<td>2.00</td>
<td>EA</td>
<td>$2,257.65</td>
<td>$4,515.30</td>
</tr>
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</table>
ASSEMBLY- FLARED
544-75-1 CRASH CUSHION 6.00 EA $23,502.08 $141,012.48
550-10-220 FENCING, TYPE B, 5.1-6.0', STANDARD 38,016.00 LF $9.90 $376,358.40

Roadway Component Total $28,136,910.49

SHOULDER COMPONENT

User Input Data

<table>
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<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>Total Outside Shoulder Width L/R</td>
<td>12.00 / 12.00</td>
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<tr>
<td>Total Outside Shoulder Perf. Turf Width L/R</td>
<td>0.00 / 0.00</td>
</tr>
<tr>
<td>Paved Outside Shoulder Width L/R</td>
<td>12.00 / 12.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>330</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
<td>O</td>
</tr>
<tr>
<td>Rumble Strips No. of Sides</td>
<td>2</td>
</tr>
</tbody>
</table>

Pay Items

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>285-708</td>
<td>OPTIONAL BASE, BASE GROUP 08</td>
<td>52,081.92</td>
<td>SY</td>
<td>$14.00</td>
<td>$729,146.88</td>
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<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>8,363.52</td>
<td>TN</td>
<td>$97.61</td>
<td>$816,363.19</td>
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<tr>
<td>546-72-51</td>
<td>RUMBLE STRIPS, GROUND-IN, 16&quot; MIN. WIDTH</td>
<td>7.20</td>
<td>PM</td>
<td>$1,625.39</td>
<td>$11,702.81</td>
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Erosion Control

Pay Items

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<tbody>
<tr>
<td>104-10-3</td>
<td>SEDIMENT BARRIER</td>
<td>36,018.00</td>
<td>LF</td>
<td>$1.15</td>
<td>$41,420.70</td>
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<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>900.00</td>
<td>LF</td>
<td>$9.87</td>
<td>$8,883.00</td>
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<tr>
<td>104-12</td>
<td>STAKED TURBIDITY BARRIER- NYL REINF PVC</td>
<td>900.00</td>
<td>LF</td>
<td>$5.02</td>
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<tr>
<td>104-15</td>
<td>SOIL TRACKING PREVENTION DEVICE</td>
<td>4.00</td>
<td>EA</td>
<td>$1,940.20</td>
<td>$7,760.80</td>
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<tr>
<td>104-18</td>
<td>INLET PROTECTION SYSTEM</td>
<td>22.00</td>
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<td>$85.00</td>
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<tr>
<td>107-1</td>
<td>LITTER REMOVAL</td>
<td>87.26</td>
<td>AC</td>
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<tr>
<td>107-2</td>
<td>MOWING</td>
<td>87.26</td>
<td>AC</td>
<td>$54.17</td>
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Shoulder Component Total $1,628,513.54

MEDIAN COMPONENT

User Input Data

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<th>Value</th>
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<td>Total Median Width</td>
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<tr>
<td>Performance Turf Width</td>
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<tr>
<td>Total Median Shoulder Width L/R</td>
<td>10.00 / 10.00</td>
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<tr>
<td>Paved Median Shoulder Width L/R</td>
<td>10.00 / 10.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>330</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
<td>O</td>
</tr>
<tr>
<td>Rumble Strips No. of Sides</td>
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Pay Items

<table>
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<tr>
<th>Pay Item</th>
<th>Description</th>
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<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>D-3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pay Items</td>
<td>Description</td>
<td>Pay item</td>
<td>Quantity</td>
<td>Unit</td>
<td>Unit Price</td>
</tr>
<tr>
<td>-----------</td>
<td>-------------</td>
<td>----------</td>
<td>----------</td>
<td>------</td>
<td>------------</td>
</tr>
<tr>
<td>285-708</td>
<td>OPTIONAL BASE,BASE GROUP 08</td>
<td>43,633.92 SY</td>
<td>$14.00</td>
<td>$610,874.88</td>
<td></td>
</tr>
<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>6,969.60 TN</td>
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<tr>
<td>521-1</td>
<td>MEDIAN CONC BARRIER WALL</td>
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**Median Component Total**

$6,423,337.54

### DRAINAGE COMPONENT

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<td>400-2-2</td>
<td>CONC CLASS II, ENDWALLS</td>
<td>64.80 CY</td>
<td>$750.00</td>
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<tr>
<td>425-1-361</td>
<td>INLETS, DT BOT, TYPE P-6, &lt;10'</td>
<td>22.00 EA</td>
<td>$3,578.49</td>
<td>$78,726.78</td>
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<tr>
<td>430-175-124</td>
<td>PIPE CULV, OPT MATL, ROUND, 24&quot; SD</td>
<td>2,880.00 LF</td>
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<td>$201,600.00</td>
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<tr>
<td>430-175-124</td>
<td>PIPE CULV, OPT MATL, ROUND, 24&quot; S/CD</td>
<td>1,240.00 LF</td>
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<td>PIPE CULV, OPT MATL, ROUND, 36&quot; S/CD</td>
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<td>$110,898.40</td>
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<td>430-984-129</td>
<td>MITERED END SECT, OPTIONAL RD, 24&quot; SD</td>
<td>144.00 EA</td>
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<td>521-1</td>
<td>CONCRETE DITCH PAVT, NR, 3&quot;</td>
<td>7,200.00 SY</td>
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<td>$408,240.00</td>
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<tr>
<td>570-1-1</td>
<td>PERFORMANCE TURF</td>
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### Retention Basin 1

<table>
<thead>
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<td>Depth</td>
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<tr>
<td>Description</td>
<td>Turkey Lake Rd Pond</td>
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<table>
<thead>
<tr>
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<th>Description</th>
<th>Pay item</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
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<tr>
<td>120-1</td>
<td>REGULAR EXCAVATION</td>
<td>24,200.00 CY</td>
<td>$4.50</td>
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<tr>
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<td>56.00 LF</td>
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### Retention Basin 200

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<td>Depth</td>
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### Pay Items

file://C:/Users/amourad/AppData/Local/Microsoft/Windows/Temporary%20Internet%20Files/Content.IE5/LJXFSUU/R3%20(1).htm
### Retention Basin 201

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**Description:** Pond 201

### Retention Basin 202

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**Description:** Pond 202A

### Pay Items

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<td>CY</td>
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<td>2.00</td>
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<td>$13,165.02</td>
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<tr>
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<td>LF</td>
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<td>$13,234.00</td>
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<tr>
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<td>PIPE CULV, OPT MATL, ROUND, 60&quot;S/CD</td>
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<td>LF</td>
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### Retention Basin 202

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**Description:** Pond 202A

### Pay Items

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<th>Extended Amount</th>
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<td>$13,500.00</td>
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<tr>
<td>425-1-541</td>
<td>INLETS, DT BOT, TYPE D, &lt;10'</td>
<td>1.00</td>
<td>EA</td>
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<tr>
<td>425-2-71</td>
<td>MANHOLES, J-7, &lt;10'</td>
<td>1.00</td>
<td>EA</td>
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<td>$6,582.51</td>
</tr>
<tr>
<td>430-175-142</td>
<td>PIPE CULV, OPT MATL, ROUND, 42&quot;S/CD</td>
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<td>LF</td>
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<td>$7,126.00</td>
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<tr>
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file:///C:/Users/amourad/AppData/Local/Microsoft/Windows/Temporary%20Internet%20Files/Content.IE5/LJXF5XUU/R3%20(1).htm
### Retention Basin 203

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<tr>
<td>425-1-361</td>
<td>INLETS, CURB, TYPE P-6, &lt;10'</td>
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<td>$3,450.72</td>
<td>$3,450.72</td>
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<tr>
<td>425-2-71</td>
<td>MANHOLES, J-7, &lt;10'</td>
<td>1.00 EA</td>
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<td>$6,582.51</td>
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<tr>
<td>430-175-142</td>
<td>PIPE CULV, OPT MATL, ROUND, 42&quot;/CD</td>
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<td>$7,126.00</td>
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</tr>
<tr>
<td>430-175-160</td>
<td>PIPE CULV, OPT MATL, ROUND, 60&quot;/CD</td>
<td>200.00 LF</td>
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<td>$46,016.00</td>
<td></td>
</tr>
<tr>
<td>550-10-220</td>
<td>FENCING, TYPE B, 5.1-6.0', STANDARD</td>
<td>1,335.00 LF</td>
<td>$9.90</td>
<td>$13,216.50</td>
<td></td>
</tr>
<tr>
<td>550-60-234</td>
<td>FENCE GATE, TYPE B, SLIDE/CANT, 18.1-20' OPEN</td>
<td>1.00 EA</td>
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<td>$2,671.64</td>
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<tr>
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### Retention Basin 204

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<th>Unit Price</th>
<th>Extended Amount</th>
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<td>96,800.00 CY</td>
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<tr>
<td>425-1-541</td>
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<tr>
<td>425-2-71</td>
<td>MANHOLES, J-7, &lt;10'</td>
<td>2.00 EA</td>
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<td>430-175-142</td>
<td>PIPE CULV, OPT MATL, ROUND, 42&quot;/CD</td>
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<td>$127.25</td>
<td>$7,126.00</td>
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<td>430-175-160</td>
<td>PIPE CULV, OPT MATL, ROUND, 60&quot;/CD</td>
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<td>$92,032.00</td>
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<tr>
<td>550-10-220</td>
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<td>1,860.00 LF</td>
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### Retention Basin 205

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file:///C:/Users/amourad/AppData/Local/Microsoft/Windows/Temporary%20Internet%20Files/Content.IE5/LJXF5XUU/R3%20(1).htm
### Drainage Component Total

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<th>Unit</th>
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<th>Extended Amount</th>
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<td>AC</td>
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<td>REGULAR EXCAVATION</td>
<td>96,800</td>
<td>CY</td>
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<tr>
<td>400-2-2</td>
<td>CONC CLASS II, ENDWALLS</td>
<td>30.00</td>
<td>CY</td>
<td>$750.00</td>
<td>$22,500.00</td>
</tr>
<tr>
<td>425-1-541</td>
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<td>1.00</td>
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<td>MANHOLES, J-7, &lt;10'</td>
<td>2.00</td>
<td>EA</td>
<td>$6,582.51</td>
<td>$13,165.02</td>
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<tr>
<td>430-175-142</td>
<td>PIPE CULV, OPT MATL, ROUND,</td>
<td>56.00</td>
<td>LF</td>
<td>$127.25</td>
<td>$7,126.00</td>
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<td>400.00</td>
<td>LF</td>
<td>$230.08</td>
<td>$92,032.00</td>
</tr>
<tr>
<td>550-10-220</td>
<td>FENCING, TYPE B, 5.1-6.0',</td>
<td>1,860.00</td>
<td>LF</td>
<td>$9.90</td>
<td>$18,414.00</td>
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<tr>
<td>550-60-234</td>
<td>FENCE GATE, TYP</td>
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Drainage Component Total: $5,646,967.65

### SIGNING COMPONENT

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Signing Component Total: $241,714.87

### INTELLIGENT TRAFFIC SYSTEM (ITS) COMPONENT

Description of Work
Added at $750,000 per mile. Cost from FDOT D-5

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Intelligent Traffic System (ITS) Component Total: $423,540.00

### LIGHTING COMPONENT

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<td>LIGHT POLE COMP, F&amp;I, WS130, 45'</td>
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<td>715-4-122</td>
<td>POLE CABLE DIST SYS, CONVENTIONAL</td>
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<td></td>
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<td>$1,722,594.30</td>
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High Mast Lighting Subcomponent

Pay Items

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<tr>
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<th>Description</th>
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<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
<td>630-2-11</td>
<td>CONDUIT, F &amp; I, OPEN TRENCH PULL &amp; SPLICE BOX, F&amp;I, 13&quot; x 24&quot;</td>
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<td>LF</td>
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<td>LIGHTING CONDUCTORS, F&amp;I, INSUL, NO.8-6</td>
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<td>$1.40</td>
<td>$5,600.00</td>
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<td>715-1-13</td>
<td>LIGHTING CONDUCTORS, F&amp;I, INSUL, NO.4-2</td>
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<td>$10,862.88</td>
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<td>HIGH MAST LIGHT POLE, F&amp;I, WS-150, 120'</td>
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<td>POLE CABLE DISTRIBUTION SYS, HIGH MAST</td>
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Lighting Component Total

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LANDSCAPING COMPONENT

User Input Data

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Landscaping Component Total

$2,347,457.18

BRIDGES COMPONENT

Bridge SR482

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<th>Description</th>
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<td>SF Estimate</td>
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<tr>
<td>Primary Estimate</td>
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<tr>
<td>Length (LF)</td>
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<td>Width (LF)</td>
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<tr>
<td>Type</td>
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<tr>
<td>Removal of Existing Structures area</td>
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<tr>
<td>Default Cost per SF</td>
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<tr>
<td>Factored Cost per SF</td>
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<tr>
<td>Final Cost per SF</td>
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<td>Basic Bridge Cost</td>
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**Bridge Pay Items**

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<th>Unit Price</th>
<th>Extended Amount</th>
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<tr>
<td>110-3</td>
<td>REMOVAL OF EXISTING STRUCTURES/BRIDGES</td>
<td>24,643</td>
<td>SF</td>
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<td>$616,075.00</td>
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<td>400-2-10</td>
<td>CONC CLASS II, APPROACH SLABS</td>
<td>564.44</td>
<td>CY</td>
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<td>$197,554.00</td>
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<tr>
<td>415-1-9</td>
<td>REINF STEEL- APPROACH SLABS</td>
<td>98,777.00</td>
<td>LB</td>
<td>$1.05</td>
<td>$103,715.85</td>
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Bridge SR482 Total

$8,889,769.85

**Bridge CD**

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<td>SF Estimate</td>
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<td>Width (LF)</td>
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<td>Cost Factor</td>
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<td>Structure No.</td>
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<tr>
<td>Removal of Existing Structures area</td>
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<tr>
<td>Default Cost per SF</td>
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<td>Basic Bridge Cost</td>
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Description | NEW ELEVATED CD SYSTEM

**Bridge Pay Items**

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<td>400-2-10</td>
<td>CONC CLASS II, APPROACH SLABS</td>
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<td>CY</td>
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<td>415-1-9</td>
<td>REINF STEEL- APPROACH SLABS</td>
<td>23,332.75</td>
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Bridge CD Total

$19,571,914.89

Bridges Component Total

$28,461,684.74

**RETAINING WALLS COMPONENT**

**Retaining Wall 1**

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<td>Begin height</td>
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<td>End Height</td>
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**Pay Items**

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</tr>
</thead>
<tbody>
<tr>
<td>548-12</td>
<td>RET WALL SYSTEM, PERM, EX BARRIER</td>
<td>69,085.50</td>
<td>SF</td>
<td>$27.00</td>
<td>$1,865,308.50</td>
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Retaining Walls Component Total

$1,865,308.50
### ARCHITECTURAL COMPONENT

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<th>Extended Amount</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>TOLL GANTRY, 80'</td>
<td>2.00</td>
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<td>$500,000.00</td>
<td>$1,000,000.00</td>
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Comment: TWO 40' SPAN TOLL GANTRY

**Architectural Component Total**

$1,000,000.00

**Sequence 1 Total**

$80,596,029.93

---

**Sequence:** 2 NDR - New Construction, Divided, Rural  
**Net Length:** 10.064 MI  
**53,139 LF**

**Description:** Construct GUL Aux lanes in both directions for a length of 53139'.

### EARTHWORK COMPONENT

**User Input Data**

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<th>Description</th>
<th>Value</th>
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<tr>
<td>Incidental Clearing and Grubbing Area</td>
<td>0.00</td>
</tr>
<tr>
<td>Alignment Number</td>
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<tr>
<td>Distance</td>
<td>10.060</td>
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<tr>
<td>Top of Structural Course For Begin Section</td>
<td>103.00</td>
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<tr>
<td>Top of Structural Course For End Section</td>
<td>103.00</td>
</tr>
<tr>
<td>Horizontal Elevation For Begin Section</td>
<td>100.00</td>
</tr>
<tr>
<td>Horizontal Elevation For End Section</td>
<td>100.00</td>
</tr>
<tr>
<td>Front Slope L/R</td>
<td>0 to 1 / 0 to 1</td>
</tr>
<tr>
<td>Median Slope L/R</td>
<td>0 to 1 / 0 to 1</td>
</tr>
<tr>
<td>Median Shoulder Cross Slope L/R</td>
<td>5.00 % / 5.00 %</td>
</tr>
<tr>
<td>Outside Shoulder Cross Slope L/R</td>
<td>6.00 % / 6.00 %</td>
</tr>
<tr>
<td>Roadway Cross Slope L/R</td>
<td>2.00 % / 2.00 %</td>
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**Pay Items**

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
<td>120-6</td>
<td>EMBANKMENT</td>
<td>75,484.87 CY</td>
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**Earthwork Component Total**

$528,394.09

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### ROADWAY COMPONENT

**User Input Data**

<table>
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<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>Number of Lanes</td>
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</tr>
<tr>
<td>Roadway Pavement Width L/R</td>
<td>0.00 / 12.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>660</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
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**Pay Items**

<table>
<thead>
<tr>
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<th>Description</th>
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<th>Extended Amount</th>
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<tbody>
<tr>
<td>160-4</td>
<td>TYPE B STABILIZATION</td>
<td>188,938.58 SY</td>
<td>$3.25</td>
<td>$614,050.38</td>
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<tr>
<td>285-712</td>
<td>OPTIONAL BASE,BASE GROUP 12</td>
<td>74,748.83 SY</td>
<td>$20.00</td>
<td>$1,494,976.60</td>
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<tr>
<td>334-1-25</td>
<td>SUPERPAVE ASPH CONC, TRAF E, PG76-22,PMA</td>
<td>23,381.15 TN</td>
<td>$92.00</td>
<td>$2,151,065.80</td>
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### Pavement Marking Subcomponent

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<tbody>
<tr>
<td>Include Thermo/Tape/Other</td>
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<tr>
<td>Pavement Type</td>
<td>Asphalt</td>
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<tr>
<td>Solid Stripe No. of Paint Applications</td>
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<tr>
<td>Solid Stripe No. of Stripes</td>
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<tr>
<td>Skip Stripe No. of Paint Applications</td>
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<tr>
<td>Skip Stripe No. of Stripes</td>
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#### Pay Items

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<th>Extended Amount</th>
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<tbody>
<tr>
<td>710-11-111</td>
<td>PAINTED PAVT MARK, STD, WHITE, SOLID, 6&quot;</td>
<td>80.51</td>
<td>NM</td>
<td>$939.29</td>
<td>$75,622.24</td>
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<td>711-11-111</td>
<td>THERMOPLASTIC, STD, WHITE, SOLID, 6&quot;</td>
<td>80.51</td>
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<td>$3,138.35</td>
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### Peripherals Subcomponent

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<td>Off Road Bike Path Width L/R</td>
<td>0.00 / 0.00</td>
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<tr>
<td>Bike Path Structural Spread Rate</td>
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</tr>
<tr>
<td>Noise Barrier Wall Length</td>
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</tr>
<tr>
<td>Noise Barrier Wall Begin Height</td>
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<tr>
<td>Noise Barrier Wall End Height</td>
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#### Pay Items

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<th>Extended Amount</th>
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<tbody>
<tr>
<td>534-72-101</td>
<td>SOUND/NOISE BARRIER-INC FOUNDATION, PERM</td>
<td>13,034.00</td>
<td>SF</td>
<td>$25.00</td>
<td>$325,850.00</td>
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#### Roadway Component Total

Roadway Component Total: $5,268,493.59

### MEDIAN COMPONENT

#### User Input Data

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<td>Performance Turf Width</td>
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<tr>
<td>Total Median Shoulder Width L/R</td>
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<tr>
<td>Paved Median Shoulder Width L/R</td>
<td>10.00 / 10.00</td>
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<tr>
<td>Structural Spread Rate</td>
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<tr>
<td>Friction Course Spread Rate</td>
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<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
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<td>Rumble Strips No. of Sides</td>
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#### Pay Items

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<th>Extended Amount</th>
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<td>OPTIONAL BASE, BASE GROUP 08</td>
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<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>19,484.29</td>
<td>TN</td>
<td>$97.61</td>
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<td>521-1</td>
<td>MEDIAN CONC BARRIER WALL</td>
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<td>LF</td>
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<td>$658,800.00</td>
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Median Component Total $4,268,430.13

LANDSCAPING COMPONENT

User Input Data

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Landscaping Component Total $301,959.53

Sequence 2 Total $10,367,277.34

Sequence: 3 NDR - New Construction, Divided, Rural
Net Length: 0.695 MI
Description: SR 528 Beachline - Construct 4 travel lanes in each direction for a total of 3670' from Station 196+72.00 to 233+42.00.

EARTHWORK COMPONENT

User Input Data

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<th>Value</th>
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</tr>
<tr>
<td>Incidental Clearing and Grubbing Area</td>
<td>0.00</td>
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<td>Alignment Number</td>
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<tr>
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<td>Top of Structural Course For Begin Section</td>
<td>103.00</td>
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<tr>
<td>Top of Structural Course For End Section</td>
<td>103.00</td>
</tr>
<tr>
<td>Horizontal Elevation For Begin Section</td>
<td>100.00</td>
</tr>
<tr>
<td>Horizontal Elevation For End Section</td>
<td>100.00</td>
</tr>
<tr>
<td>Front Slope L/R</td>
<td>6 to 1 / 6 to 1</td>
</tr>
<tr>
<td>Median Slope L/R</td>
<td>0 to 1 / 0 to 1</td>
</tr>
<tr>
<td>Median Shoulder Cross Slope L/R</td>
<td>5.00 % / 5.00 %</td>
</tr>
<tr>
<td>Outside Shoulder Cross Slope L/R</td>
<td>6.00 % / 6.00 %</td>
</tr>
<tr>
<td>Roadway Cross Slope L/R</td>
<td>2.00 % / 2.00 %</td>
</tr>
</tbody>
</table>

Pay Items

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
<td>110-1-1</td>
<td>CLEARING &amp; GRUBBING</td>
<td>25.27</td>
<td>AC</td>
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<td>$252,700.00</td>
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<td>120-6</td>
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<td>CY</td>
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<td>$184,591.96</td>
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Earthwork Component Total $437,291.96

ROADWAY COMPONENT

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<tr>
<td>Roadway Pavement Width L/R</td>
<td>48.00 / 48.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>660</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
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Pay Items

<table>
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<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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**X-Items**

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<th>Extended Amount</th>
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**Pavement Marking Subcomponent**

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<td>Pavement Type</td>
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**Pay Items**

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<tr>
<td>Off Road Bike Path Width L/R</td>
<td>0.00 / 0.00</td>
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<tr>
<td>Bike Path Structural Spread Rate</td>
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<td>Noise Barrier Wall Length</td>
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<tr>
<td>Noise Barrier Wall Begin Height</td>
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<tr>
<td>Noise Barrier Wall End Height</td>
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**Pay Items**

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<td>MISCELLANEOUS ASPHALT PAVEMENT</td>
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<tr>
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<td>GUARDRAIL- ROADWAY, GEN TL-3</td>
<td>7,340.00</td>
<td>LF</td>
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<td>536-8</td>
<td>GUARDRAIL- BRIDGE ANCHORAGE ASSEM, F&amp;I</td>
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<td>EA</td>
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<td>LF</td>
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**Roadway Component Total**

$7,711,477.46
# SHOULDER COMPONENT

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<td>Total Outside Shoulder Perf. Turf Width L/R</td>
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<tr>
<td>Paved Outside Shoulder Width L/R</td>
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<tr>
<td>Structural Spread Rate</td>
<td>330</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
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<tr>
<td>Rumble Strips No. of Sides</td>
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## Pay Items

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<thead>
<tr>
<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
<td>285-708</td>
<td>OPTIONAL BASE,BASE GROUP 08</td>
<td>10,056.15</td>
<td>SY</td>
<td>$14.00</td>
<td>$140,786.10</td>
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<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>1,614.86</td>
<td>TN</td>
<td>$97.61</td>
<td>$157,626.48</td>
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<tr>
<td>337-7-22</td>
<td>ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA</td>
<td>21.53</td>
<td>TN</td>
<td>$125.00</td>
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<td>546-72-51</td>
<td>RUMBLE STRIPS, GROUND-IN, 16&quot; MIN. WIDTH</td>
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<td>STAKED TURBIDITY BARRIER-NYL REINF PVC</td>
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**Shoulder Component Total**: $320,611.97

# MEDIAN COMPONENT

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<tr>
<td>Paved Median Shoulder Width L/R</td>
<td>12.00 / 12.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>330</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
<td>O</td>
</tr>
<tr>
<td>Rumble Strips No. of Sides</td>
<td>2</td>
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## Pay Items

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<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
<td>285-708</td>
<td>OPTIONAL BASE,BASE GROUP 08</td>
<td>10,056.15</td>
<td>SY</td>
<td>$14.00</td>
<td>$140,786.10</td>
</tr>
<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>1,614.86</td>
<td>TN</td>
<td>$97.61</td>
<td>$157,626.48</td>
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<tr>
<td>337-7-22</td>
<td>ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA</td>
<td>21.53</td>
<td>TN</td>
<td>$125.00</td>
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**Median Component Total**: $2,691.25
### Median Component Total

$301,103.83

### DRAINAGE COMPONENT

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<tbody>
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#### Retention Basin 1

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<th>Extended Amount</th>
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<td>CY</td>
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<tr>
<td>110-1-1</td>
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<td>400-2-2</td>
<td>CONC CLASS II, ENDWALLS</td>
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<td>CY</td>
<td>$750.00</td>
<td>$13,500.00</td>
</tr>
<tr>
<td>425-1-541</td>
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<td>425-2-71</td>
<td>MANHOLES, J-7, &lt;10'</td>
<td>1.00</td>
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<td>LF</td>
<td>$9.90</td>
<td>$11,682.00</td>
</tr>
<tr>
<td>550-60-234</td>
<td>FENCE GATE, Typ B, SLIDE/CANT, 18.1-20' OPEN</td>
<td>1.00</td>
<td>EA</td>
<td>$2,671.64</td>
<td>$2,671.64</td>
</tr>
<tr>
<td>570-1-1</td>
<td>PERFORMANCE TURF</td>
<td>24,200.00</td>
<td>SY</td>
<td>$0.75</td>
<td>$18,150.00</td>
</tr>
</tbody>
</table>

Retention Basin 3

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>5 AC</td>
</tr>
<tr>
<td>Multiplier</td>
<td>1</td>
</tr>
<tr>
<td>Depth</td>
<td>12.00</td>
</tr>
</tbody>
</table>

Retention Basin 4

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
<td>2 AC</td>
</tr>
<tr>
<td>Multiplier</td>
<td>1</td>
</tr>
<tr>
<td>Depth</td>
<td>12.00</td>
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</table>

Pay Items
### Drainage Component Total

- B, SLIDE/CANT, 18.1-20’ OPEN: 1.00 EA $2,671.64 $2,671.64
- PERFORMANCE TURF: 9,680.00 SY $0.75 $7,260.00

#### SIGNING COMPONENT

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>700-1-11</td>
<td>SINGLE POST SIGN, F&amp;I GM, &lt;12 SF</td>
<td>2.00</td>
<td>AS</td>
<td>$324.12</td>
<td>$648.24</td>
</tr>
<tr>
<td>700-1-12</td>
<td>SINGLE POST SIGN, F&amp;I GM, 12-20 SF</td>
<td>17.00</td>
<td>AS</td>
<td>$1,117.07</td>
<td>$18,990.19</td>
</tr>
<tr>
<td>700-2-14</td>
<td>MULTI-POST SIGN, F&amp;I GM, 31-50 SF</td>
<td>2.00</td>
<td>AS</td>
<td>$4,361.29</td>
<td>$8,722.58</td>
</tr>
<tr>
<td>700-2-15</td>
<td>MULTI-POST SIGN, F&amp;I GM, 51-100 SF</td>
<td>5.00</td>
<td>AS</td>
<td>$4,865.75</td>
<td>$24,328.75</td>
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#### LIGHTING COMPONENT

**High Mast Lighting Subcomponent**

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Description</th>
<th>Value</th>
<th>Multiplier (Number of Poles)</th>
</tr>
</thead>
<tbody>
<tr>
<td>630-2-11</td>
<td>CONDUIT, F&amp;I, OPEN TRENCH PULL &amp; SPLICE BOX, F&amp;I, 13” x 24”</td>
<td>3,000.00 LF</td>
<td>$6.35</td>
</tr>
<tr>
<td>635-2-11</td>
<td>LIGHTING CONDUCTORS, F&amp;I, INSUL, NO.8-6</td>
<td>3,000.00 LF</td>
<td>$1.40</td>
</tr>
<tr>
<td>715-1-12</td>
<td>LIGHTING CONDUCTORS, F&amp;I, INSUL, NO.4-2</td>
<td>9,000.00 LF</td>
<td>$1.94</td>
</tr>
<tr>
<td>715-7-11</td>
<td>LOAD CENTER, F&amp;I, SECONDARY VOLTAGE</td>
<td>1.00 EA</td>
<td>$10,862.88</td>
</tr>
<tr>
<td>715-19-113</td>
<td>HIGH MAST LIGHT POLE, F&amp;I, WS-150, 120’</td>
<td>6.00 EA</td>
<td>$55,000.00</td>
</tr>
<tr>
<td>715-500-2</td>
<td>POLE CABLE DISTRIBUTION SYS, HIGH MAST POLE</td>
<td>6.00 EA</td>
<td>$292.36</td>
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</table>

Subcomponent Total $390,717.00

#### LANDSCAPING COMPONENT

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<tr>
<th>User Input Data</th>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost %</td>
<td>3.00</td>
<td></td>
</tr>
<tr>
<td>Component Detail</td>
<td>N</td>
<td></td>
</tr>
</tbody>
</table>

Landscaping Component Total $467,509.37

#### RETAINING WALLS COMPONENT

Retaining Wall 1
### Description

<table>
<thead>
<tr>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Length</td>
</tr>
<tr>
<td>Begin height</td>
</tr>
<tr>
<td>End Height</td>
</tr>
<tr>
<td>Multiplier</td>
</tr>
</tbody>
</table>

### Pay Items

#### Pay item Description
- **548-12**: RET WALL SYSTEM, PERM, EX BARRIER

<table>
<thead>
<tr>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>165,000.00</td>
<td>SF</td>
<td>$27.00</td>
<td>$4,455,000.00</td>
</tr>
</tbody>
</table>

**Retaining Walls Component Total**: $4,455,000.00

### Sequence 3 Total

Sequence: 3 Total: $16,051,154.95

### Sequence: 4 NUR - New Construction, Undivided, Rural

<table>
<thead>
<tr>
<th>Description</th>
<th>Length</th>
<th>Special Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td>One lane ramps: SR 482 (SAND LAKE RD).</td>
<td>0.287 MI</td>
<td>Bridges: 100 ft Road: 1515 ft</td>
</tr>
</tbody>
</table>

### EARTHWORK COMPONENT

#### User Input Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Clearing and Grubbing Limits L/R</td>
<td>0.00 / 30.00</td>
</tr>
<tr>
<td>Incidental Clearing and Grubbing Area</td>
<td>0.00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alignment Number</td>
<td>1</td>
</tr>
<tr>
<td>Distance</td>
<td>0.287</td>
</tr>
<tr>
<td>Top of Structural Course For Begin Section</td>
<td>100.00</td>
</tr>
<tr>
<td>Top of Structural Course For End Section</td>
<td>124.00</td>
</tr>
<tr>
<td>Horizontal Elevation For Begin Section</td>
<td>100.00</td>
</tr>
<tr>
<td>Horizontal Elevation For End Section</td>
<td>100.00</td>
</tr>
<tr>
<td>Front Slope L/R</td>
<td>6 to 1 / 6 to 1</td>
</tr>
<tr>
<td>Outside Shoulder Cross Slope L/R</td>
<td>6.00 % / 6.00 %</td>
</tr>
<tr>
<td>Roadway Cross Slope L/R</td>
<td>2.00 % / 2.00 %</td>
</tr>
</tbody>
</table>

#### Pay Items

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLEARING &amp; GRUBBING</td>
<td>1.04 AC</td>
<td>$10,000.00</td>
<td>$10,400.00</td>
<td></td>
</tr>
<tr>
<td>EMBANKMENT</td>
<td>64,177.18 CY</td>
<td>$7.00</td>
<td>$449,240.26</td>
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**Earthwork Component Total**: $459,640.26

### ROADWAY COMPONENT

#### User Input Data

<table>
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<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Lanes</td>
<td>1</td>
</tr>
<tr>
<td>Roadway Pavement Width L/R</td>
<td>0.00 / 15.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>495</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
</tbody>
</table>

### Pay Items

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
</table>

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8/12/2016

LRE - R3: Project Details by Sequence Report

file:///C:/Users/amourad/AppData/Local/Microsoft/Windows/Temporary%20Internet%20Files/Content.IE5/LJXFSUU/R3%20(1).htm

18/67
D-18
### Pavement Marking Subcomponent

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Include Thermo/Tape/Other</td>
<td>Y</td>
</tr>
<tr>
<td>Pavement Type</td>
<td>Asphalt</td>
</tr>
<tr>
<td>Solid Stripe No. of Paint Applications</td>
<td>1</td>
</tr>
<tr>
<td>Solid Stripe No. of Stripes</td>
<td>2</td>
</tr>
<tr>
<td>Skip Stripe No. of Paint Applications</td>
<td>1</td>
</tr>
<tr>
<td>Skip Stripe No. of Stripes</td>
<td>0</td>
</tr>
</tbody>
</table>

**Pay Items**

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>710-11-111</td>
<td>PAINTED PAVT MARK, STD, WHITE, SOLID, 6&quot;</td>
<td>0.57</td>
<td>NM</td>
<td>$939.29</td>
<td>$535.40</td>
</tr>
<tr>
<td>711-11-111</td>
<td>THERMOPLASTIC, STD, WHITE, SOLID, 6&quot;</td>
<td>0.57</td>
<td>NM</td>
<td>$3,138.35</td>
<td>$1,788.86</td>
</tr>
</tbody>
</table>

**Roadway Component Total**

$138,810.88

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### SHOULDER COMPONENT

**User Input Data**

<table>
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<th>Description</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Total Outside Shoulder Width L/R</td>
<td>6.00 / 6.00</td>
</tr>
<tr>
<td>Total Outside Shoulder Perf. Turf Width L/R</td>
<td>0.00 / 0.00</td>
</tr>
<tr>
<td>Paved Outside Shoulder Width L/R</td>
<td>6.00 / 6.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>220</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
<td>O</td>
</tr>
<tr>
<td>Rumble Strips No. of Sides</td>
<td>0</td>
</tr>
</tbody>
</table>

**Pay Items**

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>285-708</td>
<td>OPTIONAL BASE, BASE GROUP 08</td>
<td>2,130.86</td>
<td>SY</td>
<td>$14.00</td>
<td>$29,832.04</td>
</tr>
<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>222.18</td>
<td>TN</td>
<td>$97.61</td>
<td>$21,686.99</td>
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</table>

**Erosion Control**

**Pay Items**

<table>
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<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>104-10-3</td>
<td>SEDIMENT BARRIER</td>
<td>3,938.56</td>
<td>LF</td>
<td>$1.15</td>
<td>$4,529.34</td>
</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>71.72</td>
<td>LF</td>
<td>$9.87</td>
<td>$707.88</td>
</tr>
<tr>
<td>104-12</td>
<td>STAKED TURBIDITY BARRIER- NYL REINF PVC</td>
<td>71.72</td>
<td>LF</td>
<td>$5.02</td>
<td>$360.03</td>
</tr>
<tr>
<td>104-15</td>
<td>SOIL TRACKING PREVENTION DEVICE</td>
<td>1.00</td>
<td>EA</td>
<td>$1,940.20</td>
<td>$1,940.20</td>
</tr>
<tr>
<td>107-1</td>
<td>LITTER REMOVAL</td>
<td>3.48</td>
<td>AC</td>
<td>$24.31</td>
<td>$84.60</td>
</tr>
<tr>
<td>107-2</td>
<td>MOWING</td>
<td>3.48</td>
<td>AC</td>
<td>$54.17</td>
<td>$188.51</td>
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</table>

**Shoulder Component Total**

$59,329.59
### DRAINAGE COMPONENT

<table>
<thead>
<tr>
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<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>400-2-2</td>
<td>CONC CLASS II, ENDWALLS</td>
<td>5.16</td>
<td>CY</td>
<td>$750.00</td>
<td>$3,870.00</td>
</tr>
<tr>
<td>430-174-124</td>
<td>PIPE CULV, OPT MATL, ROUND, 24&quot;SD</td>
<td>232.00</td>
<td>LF</td>
<td>$70.00</td>
<td>$16,240.00</td>
</tr>
<tr>
<td>430-175-136</td>
<td>PIPE CULV, OPT MATL, ROUND, 36&quot;S/CD</td>
<td>56.00</td>
<td>LF</td>
<td>$103.45</td>
<td>$5,793.20</td>
</tr>
<tr>
<td>430-984-129</td>
<td>MITERED END SECT, OPTIONAL RD, 24&quot; SD</td>
<td>12.00</td>
<td>EA</td>
<td>$1,200.00</td>
<td>$14,400.00</td>
</tr>
<tr>
<td>570-1-1</td>
<td>PERFORMANCE TURF</td>
<td></td>
<td>SY</td>
<td>$0.75</td>
<td>$151.49</td>
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</table>

Drainage Component Total $40,454.69

### SIGNING COMPONENT

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<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>700-1-11</td>
<td>SINGLE POST SIGN, F&amp;I GM, &lt;12 SF</td>
<td>1.00</td>
<td>AS</td>
<td>$324.12</td>
<td>$324.12</td>
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<tr>
<td>700-1-12</td>
<td>SINGLE POST SIGN, F&amp;I GM, 12-20 SF</td>
<td>6.00</td>
<td>AS</td>
<td>$1,117.07</td>
<td>$6,702.42</td>
</tr>
<tr>
<td>700-2-14</td>
<td>MULTI-POST SIGN, F&amp;I GM, 31-50 SF</td>
<td>1.00</td>
<td>AS</td>
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<td>$4,361.29</td>
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Signing Component Total $11,387.83

### LANDSCAPING COMPONENT

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</table>

Landscaping Component Total $38,515.75

### BRIDGES COMPONENT

#### Bridge TURKEY

<table>
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<tbody>
<tr>
<td>Estimate Type</td>
<td>SF Estimate</td>
</tr>
<tr>
<td>Primary Estimate</td>
<td>YES</td>
</tr>
<tr>
<td>Length (LF)</td>
<td>100.00</td>
</tr>
<tr>
<td>Width (LF)</td>
<td>30.00</td>
</tr>
<tr>
<td>Type</td>
<td>Low Level</td>
</tr>
<tr>
<td>Cost Factor</td>
<td>1.25</td>
</tr>
<tr>
<td>Structure No.</td>
<td></td>
</tr>
<tr>
<td>Removal of Existing Structures area</td>
<td>0.00</td>
</tr>
<tr>
<td>Default Cost per SF</td>
<td>$135.00</td>
</tr>
<tr>
<td>Factored Cost per SF</td>
<td>$168.75</td>
</tr>
<tr>
<td>Final Cost per SF</td>
<td>$180.61</td>
</tr>
<tr>
<td>Basic Bridge Cost</td>
<td>$506,250.00</td>
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Description WB SAND LAKE RD TO TURKEY LAKE RD LOOP.

<table>
<thead>
<tr>
<th>Pay Items</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>SY</td>
<td>$0.75</td>
<td>$151.49</td>
</tr>
</tbody>
</table>
Retaining Wall 1
Description: RET WALL SYSTEM, PERM, EX BARRIER
Length: 30.00
Begin height: 20.00
End Height: 20.00
Multiplier: 1
Quantity: 600.00
Unit: SF
Unit Price: $27.00
Extended Amount: $16,200.00

Retaining Wall 2
Description: RET WALL SYSTEM, PERM, EX BARRIER
Length: 30.00
Begin height: 20.00
End Height: 20.00
Multiplier: 1
Quantity: 600.00
Unit: SF
Unit Price: $27.00
Extended Amount: $16,200.00

Retaining Walls Component Total:
$32,400.00

Sequence 4 Total:
$1,322,374.11

Sequence: 5 NUR - New Construction, Undivided, Rural
Net Length: 1.402 MI
Description: Two lane ramps: CFP RAMPS AT SR 528.

EARTHWORK COMPONENT

User Input Data
Description: Standard Clearing and Grubbing Limits L/R
Value: 47.00 / 47.00
Description: Incidental Clearing and Grubbing Area
Value: 0.00

Alignment Number: 1
Distance: 1.401
Top of Structural Course For Begin Section: 103.00
Top of Structural Course For End Section: 103.00
Horizontal Elevation For Begin Section: 100.00
Horizontal Elevation For End Section: 100.00
Front Slope L/R: 0 to 1 / 0 to 1
Outside Shoulder Cross Slope L/R: 6.00% / 6.00%
Roadway Cross Slope L/R: 2.00% / 2.00%

**Pay Items**

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>110-1-1</td>
<td>CLEARING &amp; GRUBBING</td>
<td>15.97</td>
<td>AC</td>
<td>$10,000.00</td>
<td>$159,700.00</td>
</tr>
<tr>
<td>120-6</td>
<td>EMBANKMENT</td>
<td>30,526.11</td>
<td>CY</td>
<td>$7.00</td>
<td>$213,682.77</td>
</tr>
</tbody>
</table>

**Earthwork Component Total**

$373,382.77

**ROADWAY COMPONENT**

**User Input Data**

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Lanes</td>
<td>4</td>
</tr>
<tr>
<td>Roadway Pavement Width L/R</td>
<td>24.00 / 24.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>495</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
</tbody>
</table>

**Pay Items**

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>160-4</td>
<td>TYPE B STABILIZATION</td>
<td>59,199.36</td>
<td>SY</td>
<td>$3.25</td>
<td>$192,397.92</td>
</tr>
<tr>
<td>285-712</td>
<td>OPTIONAL BASE,BASE GROUP 12</td>
<td>40,008.90</td>
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<td>334-1-25</td>
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<td>$898,645.88</td>
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**Pavement Marking Subcomponent**

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<tr>
<td>Include Thermo/Tape/Other</td>
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<tr>
<td>Pavement Type</td>
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<td>Solid Stripe No. of Paint Applications</td>
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<td>Skip Stripe No. of Stripes</td>
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**Pay Items**

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<th>Unit</th>
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<th>Extended Amount</th>
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<tbody>
<tr>
<td>706-3</td>
<td>RETRO-REFLECTIVE PAVEMENT MARKERS</td>
<td>946.00</td>
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<td>NM</td>
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<td>$1,888.07</td>
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<td>NM</td>
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**Roadway Component Total**

$2,121,007.93

**SHOULDER COMPONENT**

**User Input Data**
### Description

<table>
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<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>Total Outside Shoulder Width L/R</td>
<td>12.00 /12.00</td>
</tr>
<tr>
<td>Total Outside Shoulder Perf. Turf Width L/R</td>
<td>0.00 /0.00</td>
</tr>
<tr>
<td>Paved Outside Shoulder Width L/R</td>
<td>12.00 /12.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>220</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
<td>O</td>
</tr>
<tr>
<td>Rumble Strips No. of Sides</td>
<td>0</td>
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### Pay Items

#### Pay Item

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<th>Unit Price</th>
<th>Extended Amount</th>
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</thead>
<tbody>
<tr>
<td>285-708</td>
<td>OPTIONAL BASE, BASE GROUP 08</td>
<td>20,275.78</td>
<td>SY</td>
<td>$14.00</td>
<td>$283,860.92</td>
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<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>2,170.64</td>
<td>TN</td>
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<td>$211,876.17</td>
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#### Erosion Control

<table>
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<tr>
<td>104-1-3</td>
<td>SEDIMENT BARRIER</td>
<td>19,239.79</td>
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<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>350.38</td>
<td>LF</td>
<td>$9.87</td>
<td>$3,458.25</td>
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<td>STAKED TURBIDITY BARRIER- NYL REINF PVC</td>
<td>350.38</td>
<td>LF</td>
<td>$5.02</td>
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<tr>
<td>104-15</td>
<td>SOIL TRACKING PREVENTION DEVICE</td>
<td>2.00</td>
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<td>$1,940.20</td>
<td>$3,880.40</td>
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<tr>
<td>107-1</td>
<td>LITTER REMOVAL</td>
<td>16.99</td>
<td>AC</td>
<td>$24.31</td>
<td>$413.03</td>
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<tr>
<td>107-2</td>
<td>MOWING</td>
<td>16.99</td>
<td>AC</td>
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**Shoulder Component Total**

$533,720.04

### DRAINAGE COMPONENT

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<th>Extended Amount</th>
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<tr>
<td>400-2-2</td>
<td>CONC CLASS II, ENDWALLS</td>
<td>25.23</td>
<td>CY</td>
<td>$750.00</td>
<td>$18,922.50</td>
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<tr>
<td>430-174-124</td>
<td>PIPE CULV, OPT MATL, ROUND, 24&quot; SD</td>
<td>1,128.00</td>
<td>LF</td>
<td>$70.00</td>
<td>$78,960.00</td>
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<tr>
<td>430-175-136</td>
<td>PIPE CULV, OPT MATL, ROUND, 36&quot; S/CD</td>
<td>240.00</td>
<td>LF</td>
<td>$103.45</td>
<td>$24,828.00</td>
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<tr>
<td>430-984-129</td>
<td>MITERED END SECT, OPTIONAL RD, 24&quot; SD</td>
<td>57.00</td>
<td>EA</td>
<td>$1,200.00</td>
<td>$68,400.00</td>
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<td>570-1-1</td>
<td>PERFORMANCE TURF</td>
<td>986.66</td>
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**Drainage Component Total**

$191,850.50

### SIGNING COMPONENT

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<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>700-1-11</td>
<td>SINGLE POST SIGN, F&amp;I GM, &lt;12 SF</td>
<td>3.00</td>
<td>AS</td>
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<tr>
<td>700-1-12</td>
<td>SINGLE POST SIGN, F&amp;I GM, 12-20 SF</td>
<td>29.00</td>
<td>AS</td>
<td>$1,117.07</td>
<td>$32,395.03</td>
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<tr>
<td>700-2-14</td>
<td>MULTI- POST SIGN, F&amp;I GM, 31-50 SF</td>
<td>3.00</td>
<td>AS</td>
<td>$4,361.29</td>
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LANDSCAPING COMPONENT

User Input Data

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<tbody>
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<td>Cost %</td>
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<tr>
<td>Component Detail</td>
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**Landscaping Component Total** $97,992.38

Sequence 5 Total $3,364,404.88

Sequence: 6 NUR - New Construction, Undivided, Rural  
Net Length: 0.417 MI  
2,200 LF  
Description: Three lane ramp. SR 528 WB to I4 WB.

EARTHWORK COMPONENT

User Input Data

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Standard Clearing and Grubbing Limits L/R</td>
<td>0.00 / 0.00</td>
</tr>
<tr>
<td>Incidental Clearing and Grubbing Area</td>
<td>0.00</td>
</tr>
<tr>
<td>Alignment Number</td>
<td>1</td>
</tr>
<tr>
<td>Distance</td>
<td>0.420</td>
</tr>
<tr>
<td>Top of Structural Course For Begin Section</td>
<td>100.00</td>
</tr>
<tr>
<td>Top of Structural Course For End Section</td>
<td>124.00</td>
</tr>
<tr>
<td>Horizontal Elevation For Begin Section</td>
<td>100.00</td>
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<tr>
<td>Horizontal Elevation For End Section</td>
<td>100.00</td>
</tr>
<tr>
<td>Front Slope L/R</td>
<td>1 to 1 / 1 to 1</td>
</tr>
<tr>
<td>Outside Shoulder Cross Slope L/R</td>
<td>6.00 % / 6.00 %</td>
</tr>
<tr>
<td>Roadway Cross Slope L/R</td>
<td>2.00 % / 2.00 %</td>
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Pay Items

<table>
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<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
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**Earthwork Component Total** $614,937.19

ROADWAY COMPONENT

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<tr>
<td>Number of Lanes</td>
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</tr>
<tr>
<td>Roadway Pavement Width L/R</td>
<td>18.00 / 18.00</td>
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<tr>
<td>Structural Spread Rate</td>
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<tr>
<td>Friction Course Spread Rate</td>
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Pay Items

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<tr>
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<tr>
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### Pay Items

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<th>Extended Amount</th>
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<tbody>
<tr>
<td>706-3</td>
<td>RETRO-REFLECTIVE PAVEMENT MARKERS</td>
<td>225.00</td>
<td>EA</td>
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<tr>
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<td>0.83</td>
<td>NM</td>
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<tr>
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<td>THERMOPLASTIC, STD, WHITE, SOLID, 6&quot;</td>
<td>0.83</td>
<td>NM</td>
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<tr>
<td>711-11-131</td>
<td>THERMOPLASTIC, STD, WHITE, SKIP, 6&quot;</td>
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#### Roadway Component Total

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### SHOULDER COMPONENT

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<td>12.00 / 12.00</td>
</tr>
<tr>
<td>Total Outside Shoulder Perf. Turf Width L/R</td>
<td>0.00 / 0.00</td>
</tr>
<tr>
<td>Paved Outside Shoulder Width L/R</td>
<td>12.00 / 12.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>220</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
<td>0</td>
</tr>
<tr>
<td>Rumble Strips No. of Sides</td>
<td>0</td>
</tr>
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#### Pay Items

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<tr>
<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>285-708</td>
<td>OPTIONAL BASE, BASE GROUP 08</td>
<td>6,028.48</td>
<td>SY</td>
<td>$14.00</td>
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<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>645.38</td>
<td>TN</td>
<td>$97.61</td>
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#### Erosion Control

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<tr>
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<tr>
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<tr>
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<td>FLOATING TURBIDITY BARRIER</td>
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<td>LF</td>
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<tr>
<td>104-12</td>
<td>STAKED TURBIDITY BARRIER- NYL REINF PVC</td>
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<td>LF</td>
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<td>$522.98</td>
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<td>104-15</td>
<td>SOIL TRACKING PREVENTION DEVICE</td>
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<td>EA</td>
<td>$1,940.20</td>
<td>$1,940.20</td>
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<tr>
<td>107-1</td>
<td>LITTER REMOVAL</td>
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<td>MOWING</td>
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### Shoulder Component Total

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### DRAINAGE COMPONENT

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<th>Pay Items</th>
<th>Description</th>
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<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
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<tbody>
<tr>
<td>430-174-124</td>
<td>PIPE CULV, OPT MATL, ROUND, 24&quot;SD</td>
<td>336.00</td>
<td>LF</td>
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<td>$23,520.00</td>
</tr>
<tr>
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<td>PIPE CULV, OPT MATL, ROUND, 36&quot;S/CD</td>
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**X-Items**

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**Comment:** TOTAL DIST/300' INTERVAL

### Drainage Component Total

$106,586.11

### SIGNING COMPONENT

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<th>Description</th>
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<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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</thead>
<tbody>
<tr>
<td>700-1-11</td>
<td>SINGLE POST SIGN, F&amp;I GM, &lt;12 SF</td>
<td>1.00</td>
<td>AS</td>
<td>$324.12</td>
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<tr>
<td>700-1-12</td>
<td>SINGLE POST SIGN, F&amp;I GM, 12-20 SF</td>
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<td>AS</td>
<td>$1,117.07</td>
<td>$10,053.63</td>
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<td>700-2-14</td>
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### Signing Component Total

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### LANDSCAPING COMPONENT

**User Input Data**

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### Landscaping Component Total

$41,125.29

### Sequence 6 Total

$1,411,968.40

### Sequence: 7 NUU - New Construction, Undivided, Urban

**Net Length:** 0.338 MI

**Description:** Turkey Lake Road

### EARTHWORK COMPONENT

**User Input Data**

<table>
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<th>Description</th>
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<tr>
<td>Incidental Clearing and Grubbing Area</td>
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**Alignment Number**

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Distance 0.340
Top of Structural Course For Begin Section 103.00
Top of Structural Course For End Section 103.00
Horizontal Elevation For Begin Section 100.00
Horizontal Elevation For End Section 100.00
Front Slope L/R 6 to 1 / 6 to 1
Outside Shoulder Cross Slope L/R 2.00 % / 2.00 %
Roadway Cross Slope L/R 2.00 % / 2.00 %

<table>
<thead>
<tr>
<th>Pay Items</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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Earthwork Component Total $133,223.39

ROADWAY COMPONENT

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Pavement Marking Subcomponent

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<td>Skip Stripe No. of Stripes</td>
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<td>RETRO-REFLECTIVE PAVEMENT MARKERS</td>
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<td>NM</td>
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Roadway Component Total $423,714.66

SHOULDER COMPONENT
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<td>Total Outside Shoulder Perf. Turf Width L/R</td>
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<td>Sidewalk Width L/R</td>
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### Pay Items

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<th>Extended Amount</th>
</tr>
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<tbody>
<tr>
<td>520-1-10</td>
<td>CONCRETE CURB &amp; GUTTER, TYPE F</td>
<td>1,783.06</td>
<td>LF</td>
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<td>$32,095.08</td>
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<td>520-1-10</td>
<td>CONCRETE CURB &amp; GUTTER, TYPE F</td>
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<td>LF</td>
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<td>$32,095.08</td>
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<tr>
<td>522-1</td>
<td>CONCRETE SIDEWALK AND DRIVEWAYS, 4&quot;</td>
<td>990.59</td>
<td>SY</td>
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### Erosion Control

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<td>FLOATING TURBIDITY BARRIER</td>
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<td>LF</td>
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<td>SOIL TRACKING PREVENTION DEVICE</td>
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<td>AC</td>
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<td>MOWING</td>
<td>4.09</td>
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**Shoulder Component Total**

$106,900.58

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### DRAINAGE COMPONENT

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<td>425-1-351</td>
<td>INLETS, CURB, TYPE P-5, &lt;10'</td>
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<td>425-1-521</td>
<td>INLETS, DT BOT, TYPE C, &lt;10'</td>
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<td>$2,667.22</td>
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<td>425-2-41</td>
<td>MANHOLES, P-7, &lt;10'</td>
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<td>430-175-124</td>
<td>PIPE CULV, OPT MATL, ROUND, 24&quot;S/CD</td>
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**Drainage Component Total**

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### INTERSECTIONS COMPONENT

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<td>Mainline No. of Right Turn Lanes</td>
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<td>Mainline Design Speed</td>
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<td>Cross Street Thru Lanes</td>
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<td>Cross Street No. of Left Turn Lanes</td>
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<tr>
<td>Cross Street No. of Right Turn Lanes</td>
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Cross Street Design Speed | 40
---|---
T-Intersection? | Y
Multiplier | 1
Description | Turkey Lake and Central Fl Parkway

### Pay Items

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<th>Extended Amount</th>
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<tbody>
<tr>
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<td>CLEARING &amp; GRUBBING</td>
<td>0.59</td>
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**Intersections Component Total** | $178,981.41

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**Signing Component Total** | $8,251.66

### LIGHTING COMPONENT

**Conventional Lighting Subcomponent**

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<td>INSUL, NO.4-2</td>
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Subcomponent Total: $65,738.99

Lighting Component Total: $65,739.00

### LANDSCAPING COMPONENT

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Landscaping Component Total: $33,972.95

### EARTHWORK COMPONENT

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Pay Items

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<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<td>EMBANKMENT</td>
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Earthwork Component Total: $591,640.91

### ROADWAY COMPONENT

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Pay Items

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<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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Roadway Component Total: $591,640.91

**Sequence 7 Total:** $1,166,404.47

**Sequence:** 9 NDR - New Construction, Divided, Rural

Net Length: 3.780 MI

19,958 LF

Description: 2 Express lanes in each direction from station 1345+48.48 to station 1540+50

Special Conditions: August 2016 Update: Express Lanes with Asphalt Pavement
Number of Lanes 4
Roadway Pavement Width L/R 24.00 / 24.00
Structural Spread Rate 660
Friction Course Spread Rate 80

Pay Items

<table>
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<tr>
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<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
<td>160-4</td>
<td>TYPE B STABILIZATION</td>
<td>168,533.14</td>
<td>SY</td>
<td>$3.25</td>
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<tr>
<td>285-712</td>
<td>OPTIONAL BASE, BASE GROUP 12</td>
<td>109,369.14</td>
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<td>ASPH CONC FC, INC BIT, FC-5, PG76-22, PMA</td>
<td>4,257.68</td>
<td>TN</td>
<td>$125.00</td>
<td>$532,210.00</td>
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</table>

Pavement Marking Subcomponent

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Include Thermo/Tape/Other</td>
<td>N</td>
</tr>
<tr>
<td>Pavement Type</td>
<td>Asphalt</td>
</tr>
<tr>
<td>Solid Stripe No. of Paint Applications</td>
<td>2</td>
</tr>
<tr>
<td>Solid Stripe No. of Stripes</td>
<td>8</td>
</tr>
<tr>
<td>Skip Stripe No. of Paint Applications</td>
<td>2</td>
</tr>
<tr>
<td>Skip Stripe No. of Stripes</td>
<td>2</td>
</tr>
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</table>

Pay Items

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>706-3</td>
<td>RETRO-REFLECTIVE PAVEMENT MARKERS</td>
<td>1,531.00</td>
<td>EA</td>
<td>$3.57</td>
<td>$5,465.67</td>
</tr>
<tr>
<td>710-11-111</td>
<td>PAINTED PAVT MARK, STD, WHITE, SOLID, 6&quot;</td>
<td>60.48</td>
<td>NM</td>
<td>$939.29</td>
<td>$56,808.26</td>
</tr>
<tr>
<td>710-11-131</td>
<td>PAINTED PAVT MARK, STD, WHITE, SKIP, 6&quot;</td>
<td>15.12</td>
<td>GM</td>
<td>$449.54</td>
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Peripherals Subcomponent

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<tbody>
<tr>
<td>Off Road Bike Path(s)</td>
<td>0</td>
</tr>
<tr>
<td>Off Road Bike Path Width L/R</td>
<td>0.00 / 0.00</td>
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<tr>
<td>Bike Path Structural Spread Rate</td>
<td>0</td>
</tr>
<tr>
<td>Noise Barrier Wall Length</td>
<td>0.00</td>
</tr>
<tr>
<td>Noise Barrier Wall Begin Height</td>
<td>0.00</td>
</tr>
<tr>
<td>Noise Barrier Wall End Height</td>
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Roadway Component Total $6,567,974.68

SHOULDER COMPONENT

User Input Data

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<th>Value</th>
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<tbody>
<tr>
<td>Total Outside Shoulder Width L/R</td>
<td>10.00 / 10.00</td>
</tr>
<tr>
<td>Total Outside Shoulder Perf. Turf Width L/R</td>
<td>0.00 / 0.00</td>
</tr>
<tr>
<td>Paved Outside Shoulder Width L/R</td>
<td>10.00 / 10.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>330</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
<td>O</td>
</tr>
<tr>
<td>Rumble Strips No. of Sides</td>
<td>2</td>
</tr>
</tbody>
</table>

Pay Items
<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>285-708</td>
<td>OPTIONAL BASE, BASE GROUP 08</td>
<td>45,814.40</td>
<td>SY</td>
<td>$14.00</td>
<td>$641,401.60</td>
</tr>
<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>7,317.89</td>
<td>TN</td>
<td>$97.61</td>
<td>$714,299.24</td>
</tr>
<tr>
<td>546-72-51</td>
<td>RUMBLE STRIPS, GROUND-IN, 16&quot; MIN. WIDTH</td>
<td>7.56 PM</td>
<td></td>
<td>$1,625.39</td>
<td>$12,287.95</td>
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**Shoulder Component Total**

$1,367,988.79

### MEDIAN COMPONENT

**User Input Data**

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<tbody>
<tr>
<td>Total Median Width</td>
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<tr>
<td>Performance Turf Width</td>
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</tr>
<tr>
<td>Total Median Shoulder Width L/R</td>
<td>4.00 / 4.00</td>
</tr>
<tr>
<td>Paved Median Shoulder Width L/R</td>
<td>4.00 / 4.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>330</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
<td>O</td>
</tr>
<tr>
<td>Rumble Strips No. of Sides</td>
<td>0</td>
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**Pay Items**

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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</thead>
<tbody>
<tr>
<td>285-708</td>
<td>OPTIONAL BASE, BASE GROUP 08</td>
<td>19,203.91</td>
<td>SY</td>
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<td>$268,854.74</td>
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<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>2,927.15</td>
<td>TN</td>
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**Median Component Total**

$554,573.85

### DRAINAGE COMPONENT

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<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>400-2-2</td>
<td>CONC CLASS II, ENDWALLS</td>
<td>68.04 CY</td>
<td></td>
<td>$750.00</td>
<td>$51,030.00</td>
</tr>
<tr>
<td>425-1-551</td>
<td>INLETS, DT BOT, TYPE E, &lt;10'</td>
<td>23.00 EA</td>
<td></td>
<td>$3,578.49</td>
<td>$82,305.27</td>
</tr>
<tr>
<td>430-174-124</td>
<td>PIPE CULV, OPT MATL, ROUND, 24&quot; SD</td>
<td>3,024.00 LF</td>
<td></td>
<td>$70.00</td>
<td>$211,680.00</td>
</tr>
<tr>
<td>430-175-124</td>
<td>PIPE CULV, OPT MATL, ROUND, 24&quot; S/CD</td>
<td>1,304.00 LF</td>
<td></td>
<td>$66.82</td>
<td>$87,133.28</td>
</tr>
<tr>
<td>430-175-136</td>
<td>PIPE CULV, OPT MATL, ROUND, 36&quot; S/CD</td>
<td>1,120.00 LF</td>
<td></td>
<td>$103.45</td>
<td>$115,864.00</td>
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<tr>
<td>430-984-129</td>
<td>MITERED END SECT, OPTIONAL RD, 24&quot; SD</td>
<td>152.00 EA</td>
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<td>$1,200.00</td>
<td>$182,400.00</td>
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<tr>
<td>524-1-1</td>
<td>CONCRETE DITCH PAVT, NR, 3&quot;</td>
<td>7,559.80 SY</td>
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<td>$56.70</td>
<td>$428,640.66</td>
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<tr>
<td>570-1-1</td>
<td>PERFORMANCE TURF</td>
<td>2,661.05 SY</td>
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<td>$0.75</td>
<td>$1,995.79</td>
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**Drainage Component Total**

$1,161,049.00

### SIGNING COMPONENT
### Signing Component Total

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<tr>
<th>Description</th>
<th>Value</th>
<th>AS</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>SINGLE POST SIGN, F&amp;I GM, &lt;12 SF</td>
<td>8.00 AS</td>
<td>$324.12</td>
<td>$2,592.96</td>
</tr>
<tr>
<td>SINGLE POST SIGN, F&amp;I GM, 12-20 SF</td>
<td>91.00 AS</td>
<td>$1,117.07</td>
<td>$101,653.37</td>
</tr>
<tr>
<td>MULTI- POST SIGN, F&amp;I GM, 31-50 SF</td>
<td>8.00 AS</td>
<td>$4,361.29</td>
<td>$34,890.32</td>
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<tr>
<td>MULTI- POST SIGN, F&amp;I GM, 51-100 SF</td>
<td>23.00 AS</td>
<td>$4,865.75</td>
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<td><strong>Signing Component Total</strong></td>
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<td><strong>$251,048.90</strong></td>
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### LIGHTING COMPONENT

#### High Mast Lighting Subcomponent

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
<th>Multiplier (Number of Poles)</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>CONDUIT, F&amp; I, OPEN TRENCH PULL &amp; SPLICE BOX, F&amp;I, 13&quot; x 24&quot;</td>
<td>4,000.00 LF</td>
<td>$6.35</td>
<td>$25,400.00</td>
</tr>
<tr>
<td>LIGHTING CONDUCTORS, F&amp;I, INSUL, NO.8-6</td>
<td>4,000.00 LF</td>
<td>$1.40</td>
<td>$5,600.00</td>
</tr>
<tr>
<td>LIGHTING CONDUCTORS, F&amp;I, INSUL, NO.4-2</td>
<td>12,000.00 LF</td>
<td>$1.94</td>
<td>$23,280.00</td>
</tr>
<tr>
<td>LOAD CENTER, F&amp;I, SECONDARY VOLTAGE</td>
<td>1.00 EA</td>
<td>$10,862.88</td>
<td>$10,862.88</td>
</tr>
<tr>
<td>HIGH MAST LIGHT POLE, F&amp;I, WS-150, 120'</td>
<td>8.00 EA</td>
<td>$55,000.00</td>
<td>$440,000.00</td>
</tr>
<tr>
<td>POLE CABLE DISTRIBUTION SYS, HIGH MAST</td>
<td>8.00 EA</td>
<td>$292.36</td>
<td>$2,338.88</td>
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<tr>
<td><strong>Subcomponent Total</strong></td>
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#### LANDSCAPING COMPONENT

<table>
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<tbody>
<tr>
<td>Cost %</td>
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<tr>
<td>Component Detail</td>
<td>N</td>
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<td><strong>Landscaping Component Total</strong></td>
<td><strong>$330,348.34</strong></td>
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### Sequence 9 Total

<table>
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<tbody>
<tr>
<td><strong>Sequence: 9 Total</strong></td>
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### EARTHWORK COMPONENT

<table>
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<th>Description</th>
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<tbody>
<tr>
<td>Standard Clearing and grubbing limits L/R</td>
<td>0.00 / 0.00</td>
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</tbody>
</table>
Incidental Clearing and Grubbing Area

<table>
<thead>
<tr>
<th>Alignment Number</th>
<th>Distance</th>
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</tr>
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<tbody>
<tr>
<td>Top of Structural Course For Begin Section</td>
<td>103.00</td>
<td></td>
</tr>
<tr>
<td>Top of Structural Course For End Section</td>
<td>103.00</td>
<td></td>
</tr>
<tr>
<td>Horizontal Elevation For Begin Section</td>
<td>100.00</td>
<td></td>
</tr>
<tr>
<td>Horizontal Elevation For End Section</td>
<td>100.00</td>
<td></td>
</tr>
<tr>
<td>Front Slope L/R</td>
<td>0 to 1 / 0 to 1</td>
<td></td>
</tr>
<tr>
<td>Median Slope L/R</td>
<td>0 to 1 / 0 to 1</td>
<td></td>
</tr>
<tr>
<td>Median Shoulder Cross Slope L/R</td>
<td>5.00 % / 5.00 %</td>
<td></td>
</tr>
<tr>
<td>Outside Shoulder Cross Slope L/R</td>
<td>6.00 % / 6.00 %</td>
<td></td>
</tr>
<tr>
<td>Roadway Cross Slope L/R</td>
<td>2.00 % / 2.00 %</td>
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</tr>
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**Pay Items**

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>120-6</td>
<td>EMBANKMENT</td>
<td>15,162.31 CY</td>
<td>$7.00</td>
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</table>

Earthwork Component Total $106,136.17

**ROADWAY COMPONENT**

User Input Data

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<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Number of Lanes</td>
<td>1</td>
</tr>
<tr>
<td>Roadway Pavement Width L/R</td>
<td>12.00 / 12.00</td>
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<tr>
<td>Structural Spread Rate</td>
<td>660</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
</tbody>
</table>

**Pay Items**

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>160-4</td>
<td>TYPE B STABILIZATION</td>
<td>32,360.06 SY</td>
<td>$3.25</td>
<td>$105,170.20</td>
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<tr>
<td>285-712</td>
<td>OPTIONAL BASE,BASE GROUP 12</td>
<td>34,139.87 SY</td>
<td>$20.00</td>
<td>$682,797.40</td>
</tr>
<tr>
<td>334-1-25</td>
<td>SUPERPAVE ASPH CONC, TRAF E, PG76-22,PMA</td>
<td>10,678.82 TN</td>
<td>$92.00</td>
<td>$982,451.44</td>
</tr>
<tr>
<td>337-7-22</td>
<td>ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA</td>
<td>1,294.40 TN</td>
<td>$125.00</td>
<td>$161,800.00</td>
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Pavement Marking Subcomponent

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Include Thermo/Tape/Other</td>
<td>N</td>
</tr>
<tr>
<td>Pavement Type</td>
<td>Asphalt</td>
</tr>
<tr>
<td>Solid Stripe No. of Paint Applications</td>
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</tr>
<tr>
<td>Solid Stripe No. of Stripes</td>
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</tr>
<tr>
<td>Skip Stripe No. of Paint Applications</td>
<td>2</td>
</tr>
<tr>
<td>Skip Stripe No. of Stripes</td>
<td>0</td>
</tr>
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**Pay Items**

<table>
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<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>710-11-111</td>
<td>PAINTED PAVT MARK,STD,WHITE,SOLID,6&quot;</td>
<td>18.39 NM</td>
<td>$939.29</td>
<td>$17,273.54</td>
</tr>
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Roadway Component Total $1,949,492.58
## SHOULDER COMPONENT

### User Input Data

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<tr>
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<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Outside Shoulder Width L/R</td>
<td>0.00 / 0.00</td>
</tr>
<tr>
<td>Total Outside Shoulder Perf. Turf Width L/R</td>
<td>0.00 / 0.00</td>
</tr>
<tr>
<td>Paved Outside Shoulder Width L/R</td>
<td>0.00 / 0.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>330</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
<td>0</td>
</tr>
<tr>
<td>Rumble Strips No. of Sides</td>
<td>0</td>
</tr>
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### Erosion Control

#### Pay Items

<table>
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<th>Description</th>
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<th>Unit</th>
<th>Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
<td>104-10-3</td>
<td>SEDIMENT BARRIER</td>
<td>31,551.06 LF</td>
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<td>$36,283.72</td>
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</tr>
<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>574.57 LF</td>
<td>$9.87</td>
<td>$5,671.01</td>
<td></td>
</tr>
<tr>
<td>104-12</td>
<td>STAKED TURBIDITY BARRIER-NYL REINF PVC</td>
<td>574.57 LF</td>
<td>$5.02</td>
<td>$2,884.34</td>
<td></td>
</tr>
<tr>
<td>104-15</td>
<td>SOIL TRACKING PREVENTION DEVICE</td>
<td>3.00 EA</td>
<td>$1,940.20</td>
<td>$5,820.60</td>
<td></td>
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<tr>
<td>104-18</td>
<td>INLET PROTECTION SYSTEM</td>
<td>14.00 EA</td>
<td>$85.00</td>
<td>$1,190.00</td>
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</tr>
<tr>
<td>107-1</td>
<td>LITTER REMOVAL</td>
<td>55.71 AC</td>
<td>$24.31</td>
<td>$1,354.31</td>
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</tr>
<tr>
<td>107-2</td>
<td>MOWING</td>
<td>55.71 AC</td>
<td>$54.17</td>
<td>$3,017.81</td>
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</tr>
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</table>

Shoulder Component Total

$56,221.79

### DRAINAGE COMPONENT

#### Pay Items

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>400-2-2</td>
<td>CONC CLASS II, ENDWALLS</td>
<td>41.37 CY</td>
<td>$750.00</td>
<td>$31,027.50</td>
<td></td>
</tr>
<tr>
<td>425-1-551</td>
<td>INLETS, DT BOT, TYPE E, &lt;10'</td>
<td>14.00 EA</td>
<td>$3,578.49</td>
<td>$50,098.86</td>
<td></td>
</tr>
<tr>
<td>430-174-124</td>
<td>PIPE CULV, OPT MATL, ROUND,24&quot;SD</td>
<td>1,840.00 LF</td>
<td>$70.00</td>
<td>$128,800.00</td>
<td></td>
</tr>
<tr>
<td>430-175-124</td>
<td>PIPE CULV, OPT MATL, ROUND, 24&quot;S/CD</td>
<td>792.00 LF</td>
<td>$66.82</td>
<td>$52,921.44</td>
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</tr>
<tr>
<td>430-175-136</td>
<td>PIPE CULV, OPT MATL, ROUND, 36&quot;S/CD</td>
<td>688.00 LF</td>
<td>$103.45</td>
<td>$71,173.60</td>
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</tr>
<tr>
<td>430-984-129</td>
<td>MITERED END SECT, OPTIONAL RD, 24&quot;SD</td>
<td>92.00 EA</td>
<td>$1,200.00</td>
<td>$110,400.00</td>
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</tr>
<tr>
<td>524-1-1</td>
<td>CONCRETE DITCH PAVT, NR, 3&quot;</td>
<td>4,596.60 SY</td>
<td>$56.70</td>
<td>$260,627.22</td>
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<tr>
<td>570-1-1</td>
<td>PERFORMANCE TURF</td>
<td>1,618.00 SY</td>
<td>$0.75</td>
<td>$1,213.50</td>
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</table>

Drainage Component Total

$706,262.12

### SIGNING COMPONENT

#### Pay Items

<table>
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<tr>
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<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>700-1-11</td>
<td>SINGLE POST SIGN, F&amp;I GM, &lt;12 SF</td>
<td>5.00 AS</td>
<td>$324.12</td>
<td>$1,620.60</td>
<td></td>
</tr>
<tr>
<td>700-1-12</td>
<td>SINGLE POST SIGN, F&amp;I GM, 12-20 SF</td>
<td>56.00 AS</td>
<td>$1,117.07</td>
<td>$62,555.92</td>
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file:///C:/Users/amourad/AppData/Local/Microsoft/Windows/Temporary%20Internet%20Files/Content.IE5/LJXF5XUJR3%20(1).htm
### LANDSCAPING COMPONENT

**User Input Data**

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<td>Component Detail</td>
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**Landscaping Component Total**

$89,166.48

### EARTHWORK COMPONENT

**User Input Data**

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<td>0.00 / 47.00</td>
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<tr>
<td>Incidental Clearing and grubbing Area</td>
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<table>
<thead>
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<tr>
<td>Distance</td>
<td>0.833</td>
</tr>
<tr>
<td>Top of Structural Course For Begin Section</td>
<td>110.00</td>
</tr>
<tr>
<td>Top of Structural Course For End Section</td>
<td>110.00</td>
</tr>
<tr>
<td>Horizontal Elevation For Begin Section</td>
<td>100.00</td>
</tr>
<tr>
<td>Horizontal Elevation For End Section</td>
<td>100.00</td>
</tr>
<tr>
<td>Front Slope L/R</td>
<td>0 to 1 / 0 to 1</td>
</tr>
<tr>
<td>Outside Shoulder Cross Slope L/R</td>
<td>6.00 % / 6.00 %</td>
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<tr>
<td>Roadway Cross Slope L/R</td>
<td>2.00 % / 2.00 %</td>
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</table>

**Pay Items**

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>110-1-1</td>
<td>CLEARING &amp; GRUBBING</td>
<td>4.75</td>
<td>AC</td>
<td>$10,000.00</td>
<td>$47,500.00</td>
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<td>120-6</td>
<td>EMBANKMENT</td>
<td>50,125.28</td>
<td>CY</td>
<td>$7.00</td>
<td>$350,876.96</td>
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**Earthwork Component Total**

$398,376.96

### ROADWAY COMPONENT

**User Input Data**

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<tr>
<td>Number of Lanes</td>
<td>2</td>
</tr>
<tr>
<td>Roadway Pavement Width L/R</td>
<td>0.00 / 24.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>495</td>
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<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
</tbody>
</table>

**Sequence: 11 NUR - New Construction, Undivided, Rural**

**Net Length:** 0.833 MI

**Description:** Two lane ramps: I-4 to/from SR 528

**Special Conditions:** Roadway length: 4400 ft
### Pay Items

<table>
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<tr>
<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
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<th>Extended Amount</th>
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<tbody>
<tr>
<td>160-4</td>
<td>TYPE B STABILIZATION</td>
<td>17,599.30</td>
<td>SY</td>
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<tr>
<td>285-712</td>
<td>OPTIONAL BASE,BASE GROUP 12</td>
<td>11,894.19</td>
<td>SY</td>
<td>$20.00</td>
<td>$237,883.80</td>
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<tr>
<td>334-1-25</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC E, PG76-22,PMA</td>
<td>2,903.88</td>
<td>TN</td>
<td>$92.00</td>
<td>$267,156.96</td>
</tr>
<tr>
<td>337-7-22</td>
<td>ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA</td>
<td>469.31</td>
<td>TN</td>
<td>$125.00</td>
<td>$58,663.75</td>
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</table>

### Pavement Marking Subcomponent

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<tbody>
<tr>
<td>Include Thermo/Tape/Other</td>
<td>Y</td>
</tr>
<tr>
<td>Pavement Type</td>
<td>asphalt</td>
</tr>
<tr>
<td>Solid Stripe No. of Paint Applications</td>
<td>1</td>
</tr>
<tr>
<td>Solid Stripe No. of Stripes</td>
<td>2</td>
</tr>
<tr>
<td>Skip Stripe No. of Paint Applications</td>
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</tr>
<tr>
<td>Skip Stripe No. of Stripes</td>
<td>1</td>
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### Pay Items

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<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>706-3</td>
<td>RETRO-REFLECTIVE PAVEMENT MARKERS</td>
<td>112.00</td>
<td>EA</td>
<td>$3.57</td>
<td>$399.84</td>
</tr>
<tr>
<td>710-11-111</td>
<td>PAINTED PAVT MARK,STD,WHITE,SOLID,6&quot;</td>
<td>1.67</td>
<td>NM</td>
<td>$939.29</td>
<td>$1,568.61</td>
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<tr>
<td>710-11-131</td>
<td>PAINTED PAVT MARK,STD,WHITE,SKIP,6&quot;</td>
<td>0.83</td>
<td>GM</td>
<td>$449.54</td>
<td>$373.12</td>
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<tr>
<td>711-11-111</td>
<td>THERMOPLASTIC, STD, WHITE, SOLID, 6&quot;</td>
<td>1.67</td>
<td>NM</td>
<td>$3,138.35</td>
<td>$5,241.04</td>
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<tr>
<td>711-11-131</td>
<td>THERMOPLASTIC, STD, WHITE, SKIP, 6&quot;</td>
<td>0.83</td>
<td>GM</td>
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**Roadway Component Total**

$629,337.38

### SHOULDER COMPONENT

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<th>Value</th>
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<tr>
<td>Total Outside Shoulder Width L/R</td>
<td>0.00 / 12.00</td>
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<tr>
<td>Total Outside Shoulder Perf. Turf Width L/R</td>
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<tr>
<td>Paved Outside Shoulder Width L/R</td>
<td>0.00 / 12.00</td>
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<tr>
<td>Structural Spread Rate</td>
<td>220</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
<td>0</td>
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<tr>
<td>Rumble Strips No. of Sides</td>
<td>0</td>
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### Pay Items

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>285-708</td>
<td>OPTIONAL BASE,BASE GROUP 08</td>
<td>6,027.76</td>
<td>SY</td>
<td>$14.00</td>
<td>$84,388.64</td>
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<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>645.31</td>
<td>TN</td>
<td>$97.61</td>
<td>$62,988.71</td>
</tr>
<tr>
<td>337-7-22</td>
<td>ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA</td>
<td>12.91</td>
<td>TN</td>
<td>$125.00</td>
<td>$1,613.75</td>
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### Erosion Control

<table>
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<tr>
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<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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</thead>
<tbody>
<tr>
<td>Pay Item</td>
<td>Description</td>
<td>Quantity</td>
<td>Unit</td>
<td>Unit Price</td>
<td>Extended Amount</td>
</tr>
<tr>
<td>---------</td>
<td>---------------------------------------------</td>
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<td>-------</td>
<td>------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>104-10-3</td>
<td>SEDIMENT BARRIER</td>
<td>11,439.54</td>
<td>LF</td>
<td>$1.15</td>
<td>$13,155.47</td>
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<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>208.32</td>
<td>LF</td>
<td>$9.87</td>
<td>$2,056.12</td>
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<tr>
<td>104-12</td>
<td>STAKED TURBIDITY BARRIER- NYL REINF PVC</td>
<td>208.32</td>
<td>LF</td>
<td>$5.02</td>
<td>$1,045.77</td>
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<tr>
<td>104-15</td>
<td>SOIL TRACKING PREVENTION DEVICE</td>
<td>1.00</td>
<td>EA</td>
<td>$1,940.20</td>
<td>$1,940.20</td>
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<tr>
<td>107-1</td>
<td>LITTER REMOVAL</td>
<td>10.10</td>
<td>AC</td>
<td>$24.31</td>
<td>$245.53</td>
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<tr>
<td>107-2</td>
<td>MOWING</td>
<td>10.10</td>
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Shoulder Component Total $167,981.31

### DRAINAGE COMPONENT

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<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>400-2-2</td>
<td>CONC CLASS II, ENDWALLS</td>
<td>15.00</td>
<td>CY</td>
<td>$750.00</td>
<td>$11,250.00</td>
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<tr>
<td>430-174-124</td>
<td>PIPE CULV, OPT MATL, ROUND,24&quot;SD</td>
<td>672.00</td>
<td>LF</td>
<td>$70.00</td>
<td>$47,040.00</td>
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<td>430-175-136</td>
<td>PIPE CULV, OPT MATL, ROUND, 36&quot;S/CD</td>
<td>144.00</td>
<td>LF</td>
<td>$103.45</td>
<td>$14,896.80</td>
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<tr>
<td>430-984-129</td>
<td>MITERED END SECT, OPTIONAL RD, 24&quot; SD</td>
<td>34.00</td>
<td>EA</td>
<td>$1,200.00</td>
<td>$40,800.00</td>
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<tr>
<td>570-1-1</td>
<td>PERFORMANCE TURF</td>
<td>586.64</td>
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Drainage Component Total $114,426.78

### SIGNING COMPONENT

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<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
<td>700-1-11</td>
<td>SINGLE POST SIGN, F&amp;I GM, &lt;12 SF</td>
<td>2.00</td>
<td>AS</td>
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<tr>
<td>700-1-12</td>
<td>SINGLE POST SIGN, F&amp;I GM, 12-20 SF</td>
<td>17.00</td>
<td>AS</td>
<td>$1,117.07</td>
<td>$18,990.19</td>
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<tr>
<td>700-2-14</td>
<td>MULTI- POST SIGN, F&amp;I GM, 31-50 SF</td>
<td>2.00</td>
<td>AS</td>
<td>$4,361.29</td>
<td>$8,722.58</td>
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Signing Component Total $28,361.01

### LANDSCAPING COMPONENT

User Input Data

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<td>Component Detail</td>
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Landscaping Component Total $1,299,423.90

### BRIDGES COMPONENT

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<th>Value</th>
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<tbody>
<tr>
<td>Estimate Type</td>
<td>SF Estimate</td>
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<tr>
<td>Primary Estimate</td>
<td>YES</td>
</tr>
<tr>
<td>Length (LF)</td>
<td>108.00</td>
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<tr>
<td>Width (LF)</td>
<td>47.00</td>
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</tbody>
</table>
### Type
- Low Level

### Cost Factor
- 1.25

### Structure No.

### Removal of Existing Structures area
- 0.00

### Default Cost per SF
- $135.00

### Factored Cost per SF
- $168.75

### Final Cost per SF
- $179.73

### Basic Bridge Cost
- $856,575.00

#### I-4 EB GUL TO SR 528 EB GUL

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>400-2-10</td>
<td>CONC CLASS II, APPROACH SLABS</td>
<td>104.44 CY</td>
<td>CY</td>
<td>$350.00</td>
<td>$36,554.00</td>
</tr>
<tr>
<td>415-1-9</td>
<td>REINF STEEL- APPROACH SLABS</td>
<td>18,277.00 LB</td>
<td>LB</td>
<td>$1.05</td>
<td>$19,190.85</td>
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**Bridge EBTOEB Total**

- $912,319.85

#### Bridge WBTOWB

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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</thead>
<tbody>
<tr>
<td>Estimate Type</td>
<td>SF Estimate</td>
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<tr>
<td>Primary Estimate</td>
<td>YES</td>
</tr>
<tr>
<td>Length (LF)</td>
<td>1,450.00</td>
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<tr>
<td>Width (LF)</td>
<td>51.00</td>
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<tr>
<td>Type</td>
<td>Low Level</td>
</tr>
<tr>
<td>Cost Factor</td>
<td>1.25</td>
</tr>
<tr>
<td>Structure No.</td>
<td></td>
</tr>
<tr>
<td>Removal of Existing Structures area</td>
<td>0.00</td>
</tr>
<tr>
<td>Default Cost per SF</td>
<td>$135.00</td>
</tr>
<tr>
<td>Factored Cost per SF</td>
<td>$168.75</td>
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<tr>
<td>Final Cost per SF</td>
<td>$169.57</td>
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<tr>
<td>Basic Bridge Cost</td>
<td>$12,479,062.50</td>
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</table>

#### Description
- SR 528 WB GUL TO I-4 WB GUL

**Bridge WBTOWB Total**

- $12,539,552.39

#### Bridge WBTOEB

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
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<td>SF Estimate</td>
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<tr>
<td>Primary Estimate</td>
<td>YES</td>
</tr>
<tr>
<td>Length (LF)</td>
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<td>Width (LF)</td>
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</tr>
<tr>
<td>Removal of Existing Structures area</td>
<td>0.00</td>
</tr>
<tr>
<td>Default Cost per SF</td>
<td>$135.00</td>
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<td>Factored Cost per SF</td>
<td>$168.75</td>
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<td>Final Cost per SF</td>
<td>$169.62</td>
</tr>
<tr>
<td>Basic Bridge Cost</td>
<td>$9,875,756.25</td>
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#### Description
- I-4 WB GUL TO SR 528 EB GUL

**Bridge WBTOEB Total**

- $9,875,756.25
### Bridge Pay Items

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>400-2-10</td>
<td>CONC CLASS II, APPROACH SLABS</td>
<td>95.56 CY</td>
<td>CY</td>
<td>$350.00</td>
<td>$33,446.00</td>
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<tr>
<td>415-1-9</td>
<td>REINF STEEL- APPROACH SLABS</td>
<td>16,723.00 LB</td>
<td>$1.05</td>
<td>$17,559.15</td>
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</table>

**Bridge WBTOEB Total**

$9,926,761.40

### Bridge 2

**Description**

- **Value**
  - SF Estimate: YES
  - Length (LF): 1,174.00
  - Width (LF): 31.00
  - Type: Low Level
  - Cost Factor: 1.25
  - Structure No.: 0.00
  - Default Cost per SF: $135.00
  - Factored Cost per SF: $168.75
  - Final Cost per SF: $169.76
  - Basic Bridge Cost: $6,141,487.50

**Bridge Pay Items**

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
<td>400-2-10</td>
<td>CONC CLASS II, APPROACH SLABS</td>
<td>68.89 CY</td>
<td>CY</td>
<td>$350.00</td>
<td>$24,111.50</td>
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<tr>
<td>415-1-9</td>
<td>REINF STEEL- APPROACH SLABS</td>
<td>12,055.75 LB</td>
<td>$1.05</td>
<td>$12,658.54</td>
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**Bridge 2 Total**

$6,178,257.54

### Bridge 3

**Description**

- **Value**
  - SF Estimate: YES
  - Length (LF): 1,190.00
  - Width (LF): 30.00
  - Type: Low Level
  - Cost Factor: 1.25
  - Structure No.: 0.00
  - Default Cost per SF: $135.00
  - Factored Cost per SF: $168.75
  - Final Cost per SF: $169.75
  - Basic Bridge Cost: $6,024,375.00

**Bridge Pay Items**

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>400-2-10</td>
<td>CONC CLASS II, APPROACH SLABS</td>
<td>66.67 CY</td>
<td>CY</td>
<td>$350.00</td>
<td>$23,334.50</td>
</tr>
<tr>
<td>415-1-9</td>
<td>REINF STEEL- APPROACH SLABS</td>
<td>11,667.25 LB</td>
<td>$1.05</td>
<td>$12,250.61</td>
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</table>

**Bridge 3 Total**

$6,059,960.11

### Bridge 5
### Description

<table>
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<tr>
<th>Description</th>
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<tbody>
<tr>
<td>Estimate Type</td>
<td>SF Estimate</td>
</tr>
<tr>
<td>Primary Estimate</td>
<td>YES</td>
</tr>
<tr>
<td>Length (LF)</td>
<td>480.00</td>
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<tr>
<td>Width (LF)</td>
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<tr>
<td>Type</td>
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</tr>
<tr>
<td>Cost Factor</td>
<td>1.25</td>
</tr>
<tr>
<td>Removal of Existing Structures area</td>
<td>0.00</td>
</tr>
<tr>
<td>Default Cost per SF</td>
<td>$135.00</td>
</tr>
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<td>Factored Cost per SF</td>
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<tr>
<td>Final Cost per SF</td>
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<td>Basic Bridge Cost</td>
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### Bridge Pay Items

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<th>Extended Amount</th>
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<tbody>
<tr>
<td>400-2-10</td>
<td>CONC CLASS II, APPROACH SLABS</td>
<td>66.67 CY</td>
<td>$350.00</td>
<td></td>
<td>$23,334.50</td>
</tr>
<tr>
<td>415-1-9</td>
<td>REINF STEEL- APPROACH SLABS</td>
<td>11,667.25 LB</td>
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<td>$12,250.61</td>
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**Bridge 5 Total**

$2,465,585.11

### Bridge 6

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### Bridge Pay Items

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<td>REINF STEEL- APPROACH SLABS</td>
<td>11,667.25 LB</td>
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**Bridge 6 Total**

$3,731,210.11

**Bridges Component Total**

$41,813,646.51

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### RETAINING WALLS COMPONENT

#### Retaining Wall 1

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<tbody>
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<td>Begin height</td>
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<tr>
<td>Pay Items</td>
<td>Description</td>
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<tr>
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<tr>
<td>548-12</td>
<td>RET WALL SYSTEM, PERM, EX BARRIER</td>
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Retaining Wall 2

<table>
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<td>End Height</td>
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<td>Multiplier</td>
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<table>
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<td>548-12</td>
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Retaining Wall 3

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Retaining Wall 4

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<th>Extended Amount</th>
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Retaining Wall 5

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<table>
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<th>Unit</th>
<th>Unit Price</th>
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</thead>
<tbody>
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Retaining Wall 6

<table>
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<td>SF</td>
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### Retaining Walls

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<th>Unit Price</th>
<th>Extended Amount</th>
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</thead>
<tbody>
<tr>
<td>548-12</td>
<td>RET WALL SYSTEM, PERM, EX BARRIER</td>
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Retaining Walls Component Total: $162,000.00

Sequence 11 Total: $44,613,553.85

### Earthwork Component

**Sequence:** 12 NDR - New Construction, Divided, Rural  
**Net Length:** 0.677 MI  
**Description:** TWO LANE RAMPS: SAND LAKE INTERCHANGE

#### User Input Data

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<tr>
<td>Incidental Clearing and Grubbing Area</td>
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<tr>
<td>Alignment Number</td>
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<tr>
<td>Distance</td>
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<tr>
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<tr>
<td>Top of Structural Course For End Section</td>
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<tr>
<td>Horizontal Elevation For Begin Section</td>
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</tr>
<tr>
<td>Horizontal Elevation For End Section</td>
<td>100.00</td>
</tr>
<tr>
<td>Front Slope L/R</td>
<td>6 to 1 / 6 to 1</td>
</tr>
<tr>
<td>Median Slope L/R</td>
<td>6 to 1 / 6 to 1</td>
</tr>
<tr>
<td>Median Shoulder Cross Slope L/R</td>
<td>5.00 % / 5.00 %</td>
</tr>
<tr>
<td>Outside Shoulder Cross Slope L/R</td>
<td>6.00 % / 6.00 %</td>
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<tr>
<td>Roadway Cross Slope L/R</td>
<td>2.00 % / 2.00 %</td>
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#### Pay Items

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<td>120-6</td>
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Earthwork Component Total: $1,275,970.73

### Roadway Component

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<td>Friction Course Spread Rate</td>
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#### Pay Items

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<tr>
<td>160-4</td>
<td>TYPE B STABILIZATION</td>
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<td>Pavement Type</td>
<td>Asphalt</td>
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<tr>
<td>Solid Stripe No. of Paint Applications</td>
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<td>Solid Stripe No. of Stripes</td>
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<tr>
<td>Skip Stripe No. of Paint Applications</td>
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#### Pay Items

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<th>Unit</th>
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<th>Extended Amount</th>
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<tbody>
<tr>
<td>706-3</td>
<td>RETRO-REFLECTIVE PAVEMENT MARKERS</td>
<td>91.00</td>
<td>EA</td>
<td>$3.57</td>
<td>$324.87</td>
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<td>710-11-111</td>
<td>PAINTED PAVT MARK, STD, WHITE, SOLID, 6&quot;</td>
<td>2.71</td>
<td>NM</td>
<td>$939.29</td>
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Roadway Component Total

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### SHOULDER COMPONENT

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<tr>
<td>Total Outside Shoulder Perf. Turf Width L/R</td>
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<tr>
<td>Paved Outside Shoulder Width L/R</td>
<td>8.00 / 12.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
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<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
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<tr>
<td>Rumble Strips No. of Sides</td>
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#### Pay Items

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
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<th>Extended Amount</th>
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<tr>
<td>285-704</td>
<td>OPTIONAL BASE, BASE GROUP 04</td>
<td>8,201.96</td>
<td>SY</td>
<td>$11.00</td>
<td>$90,221.56</td>
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<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
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<td>TN</td>
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<td>337-7-22</td>
<td>ASPH CONC FC, INC BIT, FC-5, PG76-22, PMA</td>
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<th>Extended Amount</th>
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<tr>
<td>521-8-1</td>
<td>CONC TRAF RAIL BAR, JCT SLAB, 32&quot; SHAPE</td>
<td>3,500.00</td>
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#### Erosion Control

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<th>Extended Amount</th>
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<tr>
<td>104-10-3</td>
<td>SEDIMENT BARRIER</td>
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<td>FLOATING TURBIDITY BARRIER</td>
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<td>LF</td>
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<td>104-12</td>
<td>STAKED TURBIDITY BARRIER-NYL REINF PVC</td>
<td>169.18</td>
<td>LF</td>
<td>$5.02</td>
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<td>104-15</td>
<td>SOIL TRACKING PREVENTION</td>
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<td>EA</td>
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## LRE - R3: Project Details by Sequence Report

### Shoulder Component Total

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<th>INLET PROTECTION SYSTEM</th>
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<td>107-1</td>
<td>LITTER REMOVAL</td>
<td>16.40 AC</td>
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<td>MOWING</td>
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### MEDIAN COMPONENT

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<tr>
<td>Performance Turf Width</td>
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<tr>
<td>Total Median Shoulder Width L/R</td>
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<tr>
<td>Paved Median Shoulder Width L/R</td>
<td>0.00 / 8.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>110</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
<td>T</td>
</tr>
<tr>
<td>Rumble Strips No. of Sides</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pay Items</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>285-704</td>
<td>OPTIONAL BASE,BASE GROUP 04</td>
<td>3,306.99</td>
<td>SY</td>
<td>$11.00</td>
<td>$36,376.89</td>
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<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>174.68</td>
<td>TN</td>
<td>$97.61</td>
<td>$17,050.51</td>
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<td>337-7-22</td>
<td>ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA</td>
<td>127.04</td>
<td>TN</td>
<td>$125.00</td>
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<td></td>
<td><strong>Median Component Total</strong></td>
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<td></td>
<td><strong>$69,307.40</strong></td>
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</tbody>
</table>

### DRAINAGE COMPONENT

<table>
<thead>
<tr>
<th>Pay Items</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
<td>400-2-2</td>
<td>CONC CLASS II, ENDWALLS</td>
<td>12.18 CY</td>
<td>CY</td>
<td>$750.00</td>
<td>$9,135.00</td>
</tr>
<tr>
<td>425-1-551</td>
<td>INLETS, DT BOT, TYPE E, &lt;10'</td>
<td>5.00 EA</td>
<td>EA</td>
<td>$3,578.49</td>
<td>$17,892.45</td>
</tr>
<tr>
<td>430-175-124</td>
<td>PIPE CULV, OPT MATL, ROUND, 24&quot;S/CD</td>
<td>232.00 LF</td>
<td>LF</td>
<td>$66.82</td>
<td>$15,502.24</td>
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<td>430-984-129</td>
<td>MITERED END SECT, OPTIONAL RD, 24&quot; SD</td>
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<td><strong>Drainage Component Total</strong></td>
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<td><strong>$76,129.69</strong></td>
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### SIGNING COMPONENT

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<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>700-1-11</td>
<td>SINGLE POST SIGN, F&amp;I GM, &lt;12 SF</td>
<td>2.00 AS</td>
<td>AS</td>
<td>$324.12</td>
<td>$648.24</td>
</tr>
<tr>
<td>700-1-12</td>
<td>SINGLE POST SIGN, F&amp;I GM, 12-20 SF</td>
<td>17.00 AS</td>
<td>AS</td>
<td>$1,117.07</td>
<td>$18,990.19</td>
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<tr>
<td>700-2-14</td>
<td>MULTI- POST SIGN, F&amp;I GM, 31-50 SF</td>
<td>2.00 AS</td>
<td>AS</td>
<td>$4,361.29</td>
<td>$8,722.58</td>
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<tr>
<td>700-2-15</td>
<td>MULTI- POST SIGN, F&amp;I GM, 51-100 SF</td>
<td>5.00 AS</td>
<td>AS</td>
<td>$4,865.75</td>
<td>$24,328.75</td>
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<td><strong>Signing Component Total</strong></td>
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LANDSCAPING COMPONENT

User Input Data

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<td>Component Detail</td>
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Landscaping Component Total $139,575.02

BRIDGES COMPONENT

Bridge TURK2

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<td>SF Estimate</td>
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<tr>
<td>Primary Estimate</td>
<td>YES</td>
</tr>
<tr>
<td>Length (LF)</td>
<td>200.00</td>
</tr>
<tr>
<td>Width (LF)</td>
<td>50.00</td>
</tr>
<tr>
<td>Type</td>
<td>Low Level</td>
</tr>
<tr>
<td>Cost Factor</td>
<td>1.25</td>
</tr>
<tr>
<td>Removal of Existing Structures area</td>
<td>0.00</td>
</tr>
<tr>
<td>Default Cost per SF</td>
<td>$135.00</td>
</tr>
<tr>
<td>Factored Cost per SF</td>
<td>$168.75</td>
</tr>
<tr>
<td>Final Cost per SF</td>
<td>$174.68</td>
</tr>
<tr>
<td>Basic Bridge Cost</td>
<td>$1,687,500.00</td>
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</table>

Description
2 LANE RAMP OVER WB I-4 GUL ON RAMP.

Bridge Pay Items

<table>
<thead>
<tr>
<th>Pay item</th>
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<th>Quantity</th>
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<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>400-2-10</td>
<td>CONC CLASS II, APPROACH SLABS</td>
<td>111.11</td>
<td>CY</td>
<td>$350.00</td>
<td>$38,888.50</td>
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<td>415-1-9</td>
<td>REINF STEEL- APPROACH SLABS</td>
<td>19,444.25</td>
<td>LB</td>
<td>$1.05</td>
<td>$20,416.46</td>
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Bridge TURK2 Total $1,746,804.96

Bridges Component Total $1,746,804.96

RETAINING WALLS COMPONENT

Retaining Wall 1

<table>
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<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>Length</td>
<td>50.00</td>
</tr>
<tr>
<td>Begin height</td>
<td>20.00</td>
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<tr>
<td>End Height</td>
<td>20.00</td>
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<tr>
<td>Multiplier</td>
<td>1</td>
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Pay Items

<table>
<thead>
<tr>
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<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>548-12</td>
<td>RET WALL SYSTEM, PERM, EX BARRIER</td>
<td>1,000.00</td>
<td>SF</td>
<td>$27.00</td>
<td>$27,000.00</td>
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</tbody>
</table>

Retaining Walls Component Total $27,000.00
**Sequence 12 Total**

$4,792,075.73

**Sequence: 13 NDR - New Construction, Divided, Rural**

**Net Length:**

- MI 0.230
- LF 1,214

**Description:** 3 LANE RAMPS: SAND LAKE INTERCHANGE

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**EARTHWORK COMPONENT**

**User Input Data**

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<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>Standard Clearing and Grubbing Limits L/R</td>
<td>0.00 / 50.00</td>
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<tr>
<td>Incidental Clearing and Grubbing Area</td>
<td>0.00</td>
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</tbody>
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| Alignment Number | 1        |
| Distance         | 0.229    |
| Top of Structural Course For Begin Section        | 100.00     |
| Top of Structural Course For End Section          | 124.00     |
| Horizontal Elevation For Begin Section            | 100.00     |
| Horizontal Elevation For End Section              | 100.00     |
| Front Slope L/R                                    | 6 to 1 / 6 to 1|
| Median Slope L/R                                   | 6 to 1 / 6 to 1|
| Median Shoulder Cross Slope L/R                   | 5.00 % / 5.00 %|
| Outside Shoulder Cross Slope L/R                  | 6.00 % / 6.00 %|
| Roadway Cross Slope L/R                           | 2.00 % / 2.00 %|

**Pay Items**

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>110-1-1</td>
<td>CLEARING &amp; GRUBBING</td>
<td>1.39 AC</td>
<td>$10,000.00</td>
<td>$13,900.00</td>
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<tr>
<td>120-6</td>
<td>EMBANKMENT</td>
<td>64,814.21 CY</td>
<td>$7.00</td>
<td>$453,699.47</td>
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**Earthwork Component Total**

$467,599.47

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**ROADWAY COMPONENT**

**User Input Data**

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<tbody>
<tr>
<td>Number of Lanes</td>
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</tr>
<tr>
<td>Roadway Pavement Width L/R</td>
<td>0.00 / 36.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>330</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
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</table>

**Pay Items**

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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</thead>
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<tr>
<td>160-4</td>
<td>TYPE B STABILIZATION</td>
<td>7,283.23 SY</td>
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<td>$23,670.50</td>
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</tr>
<tr>
<td>285-709</td>
<td>OPTIONAL BASE,BASE GROUP 09</td>
<td>4,944.51 SY</td>
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<td>$79,112.16</td>
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</tr>
<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>801.16 TN</td>
<td>$97.61</td>
<td>$78,201.23</td>
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</tr>
<tr>
<td>337-7-22</td>
<td>ASPH CONC FC,INC BIT,FC-5,P76-22,PMA</td>
<td>194.22 TN</td>
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<td>$24,277.50</td>
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**Pavement Marking Subcomponent**

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<tr>
<td>Include Thermo/Tape/Other</td>
<td>N</td>
</tr>
<tr>
<td>Pavement Type</td>
<td>Asphalt</td>
</tr>
<tr>
<td>Solid Stripe No. of Paint Applications</td>
<td>2</td>
</tr>
<tr>
<td>Solid Stripe No. of Stripes</td>
<td>2</td>
</tr>
<tr>
<td>Skip Stripe No. of Paint Applications</td>
<td>2</td>
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**Pay Items**

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>706-3</td>
<td>RETRO-REFLECTIVE PAVEMENT MARKERS</td>
<td>62.00</td>
<td>EA</td>
<td>$3.57</td>
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<tr>
<td>710-11-111</td>
<td>PAINTED PAVT MARK, STD, WHITE, SOLID, 6&quot;</td>
<td>0.92</td>
<td>NM</td>
<td>$939.29</td>
<td>$864.15</td>
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<td>710-11-131</td>
<td>PAINTED PAVT MARK, STD, WHITE, SKIP, 6&quot;</td>
<td>0.46</td>
<td>GM</td>
<td>$449.54</td>
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Roadway Component Total $206,553.67

**SHOULDER COMPONENT**

**User Input Data**

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<tr>
<td>Total Outside Shoulder Width L/R</td>
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</tr>
<tr>
<td>Total Outside Shoulder Perf. Turf Width L/R</td>
<td>0.00 / 2.00</td>
</tr>
<tr>
<td>Paved Outside Shoulder Width L/R</td>
<td>0.00 / 10.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>110</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
<td>T</td>
</tr>
<tr>
<td>Rumble Strips No. of Sides</td>
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</table>

**Pay Items**

<table>
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<tr>
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<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
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<td>OPTIONAL BASE, BASE GROUP 04</td>
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<td>SY</td>
<td>$11.00</td>
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</tr>
<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>74.18</td>
<td>TN</td>
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<td>$7,240.71</td>
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<td>337-7-22</td>
<td>ASPH CONC FC, INC BIT, FC-5, PG76-22, PMA</td>
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<td>TN</td>
<td>$125.00</td>
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<tr>
<td>570-1-1</td>
<td>PERFORMANCE TURF</td>
<td>269.75</td>
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Erosion Control

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<tr>
<td>104-10-3</td>
<td>SEDIMENT BARRIER</td>
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<td>LF</td>
<td>$1.15</td>
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<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>57.48</td>
<td>LF</td>
<td>$9.87</td>
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<tr>
<td>104-12</td>
<td>STAKED TURBIDITY BARRIER-NYL REINF PVC</td>
<td>57.48</td>
<td>LF</td>
<td>$5.02</td>
<td>$288.55</td>
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<td>104-15</td>
<td>SOIL TRACKING PREVENTION DEVICE</td>
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<td>INLET PROTECTION SYSTEM</td>
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<td>LITTER REMOVAL</td>
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Shoulder Component Total $36,545.33

**MEDIAN COMPONENT**

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<tr>
<td>Performance Turf Width</td>
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</tr>
<tr>
<td>Total Median Shoulder Width L/R</td>
<td>0.00 / 6.00</td>
</tr>
<tr>
<td>Paved Median Shoulder Width L/R</td>
<td>0.00 / 4.00</td>
</tr>
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</table>

file:///C:/Users/amourad/AppData/Local/Microsoft/Windows/Temporary%20Internet%20Files/Content.IE5/LJXF5XUU/R3%20(1).htm
### Pay Items

<table>
<thead>
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<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
<td>285-704</td>
<td>OPTIONAL BASE,BASE GROUP 04 SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>584.01</td>
<td>SY</td>
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<td>29.67</td>
<td>TN</td>
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**Median Component Total**

$12,017.70

### DRAINAGE COMPONENT

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<tr>
<td>400-2-2</td>
<td>CONC CLASS II, ENDWALLS</td>
<td>4.14</td>
<td>CY</td>
<td>$750.00</td>
<td>$3,105.00</td>
</tr>
<tr>
<td>425-1-551</td>
<td>INLETS, DT BOT, TYPE E, &lt;10'</td>
<td>2.00</td>
<td>EA</td>
<td>$3,578.49</td>
<td>$7,156.98</td>
</tr>
<tr>
<td>430-174-124</td>
<td>PIPE CULV, OPT MATL, ROUND,24&quot;SD</td>
<td>184.00</td>
<td>LF</td>
<td>$70.00</td>
<td>$12,880.00</td>
</tr>
<tr>
<td>430-175-124</td>
<td>PIPE CULV, OPT MATL, ROUND, 24&quot;S/CD</td>
<td>80.00</td>
<td>LF</td>
<td>$66.82</td>
<td>$5,345.60</td>
</tr>
<tr>
<td>430-175-136</td>
<td>PIPE CULV, OPT MATL, ROUND, 36&quot;S/CD</td>
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<td>LF</td>
<td>$103.45</td>
<td>$7,448.40</td>
</tr>
<tr>
<td>430-984-129</td>
<td>MITERED END SECT, OPTIONAL RD, 24&quot; SD</td>
<td>10.00</td>
<td>EA</td>
<td>$1,200.00</td>
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<tr>
<td>524-1-1</td>
<td>CONCRETE DITCH PAVT, NR, 3&quot;</td>
<td>459.80</td>
<td>SY</td>
<td>$56.70</td>
<td>$26,070.66</td>
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<tr>
<td>570-1-1</td>
<td>PERFORMANCE TURF</td>
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**Drainage Component Total**

$74,128.03

### SIGNING COMPONENT

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<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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</thead>
<tbody>
<tr>
<td>700-1-11</td>
<td>SINGLE POST SIGN, F&amp;I GM, &lt;12 SF</td>
<td>1.00</td>
<td>AS</td>
<td>$324.12</td>
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</tr>
<tr>
<td>700-1-12</td>
<td>SINGLE POST SIGN, F&amp;I GM, 12-20 SF</td>
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<tr>
<td>700-2-14</td>
<td>MULTI- POST SIGN, F&amp;I GM, 31-50 SF</td>
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<td>AS</td>
<td>$4,361.29</td>
<td>$4,361.29</td>
</tr>
<tr>
<td>700-2-15</td>
<td>MULTI- POST SIGN, F&amp;I GM, 51-100 SF</td>
<td>2.00</td>
<td>AS</td>
<td>$4,865.75</td>
<td>$9,731.50</td>
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</table>

**Signing Component Total**

$21,119.33

### LANDSCAPING COMPONENT

<table>
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<th>Value</th>
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<tbody>
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<tr>
<td>Component Detail</td>
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**Landscaping Component Total**

$24,538.91

**Sequence 13 Total**

$842,502.44

**Sequence: 14 NDR - New Construction, Divided, Rural**

**Net Length:** 0.242 Mi

**Description:** 4 LANE RAMPS: SAND LAKE INTERCHANGE

### EARTHWORK COMPONENT

**User Input Data**

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<tr>
<td>Incidental Clearing and Grubbing Area</td>
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</table>

**Alignment Number**

1

**Distance**

0.242

**Top of Structural Course For Begin Section**

100.00

**Top of Structural Course For End Section**

124.00

**Horizontal Elevation For Begin Section**

100.00

**Horizontal Elevation For End Section**

100.00

**Front Slope L/R**

6 to 1 / 6 to 1

**Median Slope L/R**

6 to 1 / 6 to 1

**Median Shoulder Cross Slope L/R**

5.00 % / 5.00 %

**Outside Shoulder Cross Slope L/R**

6.00 % / 6.00 %

**Roadway Cross Slope L/R**

2.00 % / 2.00 %

**Pay Items**

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
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<td>CLEARING &amp; GRUBBING</td>
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**Earthwork Component Total**

$536,133.99

### ROADWAY COMPONENT

**User Input Data**

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<tr>
<td>Roadway Pavement Width L/R</td>
<td>0.00 / 48.00</td>
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<tr>
<td>Structural Spread Rate</td>
<td>330</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
</tbody>
</table>

**Pay Items**

<table>
<thead>
<tr>
<th>Pay Item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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</thead>
<tbody>
<tr>
<td>160-4</td>
<td>TYPE B STABILIZATION</td>
<td>9,366.37 SY</td>
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<td>$30,440.70</td>
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<tr>
<td>285-709</td>
<td>OPTIONAL BASE,BASE GROUP 09</td>
<td>6,905.57 SY</td>
<td>$16.00</td>
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<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>1,123.96 TN</td>
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<td>ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA</td>
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**Pavement Marking Subcomponent**

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<td>Include Thermo/Tape/Other</td>
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<tr>
<td>Pavement Type</td>
<td>Asphalt</td>
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Solid Stripe No. of Paint Applications 2
Solid Stripe No. of Stripes 2
Skip Stripe No. of Paint Applications 2
Skip Stripe No. of Stripes 2

Pay Items

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<tr>
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<th>Unit</th>
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<tbody>
<tr>
<td>706-3</td>
<td>RETRO-REFLECTIVE PAVEMENT MARKERS</td>
<td>98.00</td>
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<td>$349.86</td>
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<td>PAINTED PAVT MARK,STD,WHITE,SOLID,6&quot;</td>
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<td>NM</td>
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Roadway Component Total

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Shoulder Component

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<tr>
<td>Total Outside Shoulder Perf. Turf Width L/R</td>
<td>0.00 / 2.00</td>
</tr>
<tr>
<td>Paved Outside Shoulder Width L/R</td>
<td>0.00 / 10.00</td>
</tr>
<tr>
<td>Structural Spread Rate</td>
<td>110</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
</tr>
<tr>
<td>Total Width (T) / 8&quot; Overlap (O)</td>
<td>T</td>
</tr>
<tr>
<td>Rumble Strips No. of Sides</td>
<td>0</td>
</tr>
</tbody>
</table>

Pay Items

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
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<th>Extended Amount</th>
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</thead>
<tbody>
<tr>
<td>285-704</td>
<td>OPTIONAL BASE,BASE GROUP 04</td>
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<td>$16,125.78</td>
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<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>78.05</td>
<td>TN</td>
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<td>$7,618.46</td>
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<tr>
<td>337-7-22</td>
<td>ASPH CONC FC,INC BIT,FC-5,PG76-22,PMA</td>
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<td>TN</td>
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<td>570-1-1</td>
<td>PERFORMANCE TURF</td>
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Erosion Control

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<tr>
<td>Total Median Width</td>
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Pay Items

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<tr>
<td>104-10-3</td>
<td>SEDIMENT BARRIER</td>
<td>3,320.80</td>
<td>LF</td>
<td>$1.15</td>
<td>$3,818.92</td>
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<tr>
<td>104-11</td>
<td>FLOATING TURBIDITY BARRIER</td>
<td>60.48</td>
<td>LF</td>
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<td>104-12</td>
<td>STAKED TURBIDITY BARRIER- NYL REINF PVC</td>
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<td>LF</td>
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<td>SOIL TRACKING PREVENTION DEVICE</td>
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<td>104-18</td>
<td>INLET PROTECTION SYSTEM</td>
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<td>LITTER REMOVAL</td>
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Shoulder Component Total

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Median Component

User Input Data

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**LRE - R3: Project Details by Sequence Report**

### Performance Turf Width

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<th>Extended Amount</th>
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</thead>
<tbody>
<tr>
<td>0.00</td>
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</table>

### Total Median Shoulder Width L/R

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<th>Unit</th>
<th>Unit Price</th>
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<tbody>
<tr>
<td>0.00 / 6.00</td>
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### Paved Median Shoulder Width L/R

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</thead>
<tbody>
<tr>
<td>0.00 / 4.00</td>
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### Structural Spread Rate

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<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>110</td>
<td></td>
<td></td>
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</table>

### Friction Course Spread Rate

<table>
<thead>
<tr>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
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<tbody>
<tr>
<td>80</td>
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</table>

### Total Width (T) / 8” Overlap (O)

<table>
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<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
<td>T</td>
<td></td>
<td></td>
<td></td>
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### Rumble Strips No. of Sides

<table>
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<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
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### Pay Items

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<tbody>
<tr>
<td>285-704</td>
<td>OPTIONAL BASE,BASE GROUP 04</td>
<td>614.49</td>
<td>SY</td>
<td>$11.00</td>
<td>$6,759.39</td>
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<tr>
<td>334-1-12</td>
<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC B</td>
<td>31.22</td>
<td>TN</td>
<td>$97.61</td>
<td>$3,047.38</td>
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<tr>
<td>337-7-22</td>
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<td>22.71</td>
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**Median Component Total**

$12,645.52

### DRAINAGE COMPONENT

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<th>Extended Amount</th>
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<td>4.35</td>
<td>CY</td>
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<td>425-1-551</td>
<td>INLETS, DT BOT, TYPE E, &lt;10'</td>
<td>2.00</td>
<td>EA</td>
<td>$3,578.49</td>
<td>$7,156.98</td>
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<tr>
<td>430-174-124</td>
<td>PIPE CULV, OPT MATL, ROUND,24&quot;SD</td>
<td>200.00</td>
<td>LF</td>
<td>$70.00</td>
<td>$14,000.00</td>
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<tr>
<td>430-175-124</td>
<td>PIPE CULV, OPT MATL, ROUND,24&quot;S/CD</td>
<td>88.00</td>
<td>LF</td>
<td>$66.82</td>
<td>$5,880.16</td>
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<tr>
<td>430-175-136</td>
<td>PIPE CULV, OPT MATL, ROUND,36&quot;S/CD</td>
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<td>LF</td>
<td>$103.45</td>
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<td>430-984-129</td>
<td>MITERED END SECT, OPTIONAL RD, 24&quot; SD</td>
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<td>EA</td>
<td>$1,200.00</td>
<td>$12,000.00</td>
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<td>CONCRETE DITCH PAVT, NR, 3&quot;</td>
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<td>SY</td>
<td>$56.70</td>
<td>$27,431.46</td>
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<tr>
<td>570-1-1</td>
<td>PERFORMANCE TURF</td>
<td>170.30</td>
<td>SY</td>
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<td>$127.72</td>
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**Drainage Component Total**

$77,307.23

### SIGNING COMPONENT

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<th>Extended Amount</th>
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<tbody>
<tr>
<td>700-1-11</td>
<td>SINGLE POST SIGN, F&amp;I GM, &lt;12 SF</td>
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<td>AS</td>
<td>$324.12</td>
<td>$324.12</td>
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<tr>
<td>700-1-12</td>
<td>SINGLE POST SIGN, F&amp;I GM, 12-20 SF</td>
<td>6.00</td>
<td>AS</td>
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<td>700-2-14</td>
<td>MULTI- POST SIGN, F&amp;I GM, 31-50 SF</td>
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<td>$4,361.29</td>
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**Signing Component Total**

$21,119.33

### LANDSCAPING COMPONENT

<table>
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<tr>
<th>Description</th>
<th>Value</th>
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User Input Data

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### Cost %
- 3.00

### Component Detail
- N

#### Landscaping Component Total
- $29,158.37

#### Sequence 14 Total
- $1,001,103.95

### Sequence: 15 NDU - New Construction, Divided, Urban
- **Net Length:** 0.530 MI
- **Description:** SR 482 (SAND LAKE RD) DDI ROADWAY

### EARTHWORK COMPONENT

<table>
<thead>
<tr>
<th>Description</th>
<th>Value</th>
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<tbody>
<tr>
<td>Standard Clearing and Grubbing Limits L/R</td>
<td>75.00 / 75.00</td>
</tr>
<tr>
<td>Incidental Clearing and Grubbing Area</td>
<td>0.00</td>
</tr>
</tbody>
</table>

- **Alignment Number:** 1
- **Distance:** 0.530
- **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

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
</tr>
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<tbody>
<tr>
<td>110-1-1</td>
<td>CLEARING &amp; GRUBBING</td>
<td>9.64 AC</td>
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**Earthwork Component Total**
- $627,314.51

### ROADWAY COMPONENT

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<td>Roadway Pavement Width L/R</td>
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<tr>
<td>Structural Spread Rate</td>
<td>330</td>
</tr>
<tr>
<td>Friction Course Spread Rate</td>
<td>80</td>
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#### Pay Items

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<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tbody>
<tr>
<td>160-4</td>
<td>TYPE B STABILIZATION</td>
<td>39,299.33 SY</td>
<td>$3.25</td>
<td>$127,722.82</td>
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<td>OPTIONAL BASE,BASE GROUP 09</td>
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<td>SUPERPAVE ASPHALTIC CONC, TRAFFIC C</td>
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<td>ASPH CONC FC,TRAFFIC C.FC-12.5,PG 76-22</td>
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#### X-Items

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<th>Extended Amount</th>
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521-8-1 CONC TRAF RAIL BAR, JCT SLAB, 32" SHAPE 4,195.50 LF $225.00 $943,987.50

Pavement Marking Subcomponent

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Pay Items

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Roadway Component Total $3,145,650.41

SHOULDER COMPONENT

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Pay Items

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**Shoulder Component Total**

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### MEDIAN COMPONENT

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**Median Component Total**

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### DRAINAGE COMPONENT

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**Drainage Component Total**

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### Cross Street Thru Lanes
4

### Cross Street No. of Left Turn Lanes
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### Cross Street No. of Right Turn Lanes
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### Cross Street Design Speed
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### T-Intersection?
N

### Multiplier
1

### Description
SAND LAKE RD AND TURKEY LAKE RD

#### Pay Items

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<tr>
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### Pay Items

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**Intersections Component Total**

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### SIGNING COMPONENT

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**Signing Component Total** $35,684.20

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<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<td>EA</td>
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<td>CONDUIT, F&amp;I, OPEN TRENCH</td>
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<td>LF</td>
<td>$6.35</td>
<td>$4,445.00</td>
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<tr>
<td>630-2-12</td>
<td>CONDUIT, F&amp;I, DIRECTIONAL BORE</td>
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<td>$5,142.00</td>
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<td>$5,579.66</td>
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<td>PULL &amp; SPLICE BOX, F&amp;I, 13&quot; x 24&quot;</td>
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## Pay Items

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<td>670-5-111</td>
<td>TRAF CNTL ASSEM, F&amp;I, NEMA, 1 PREEMPT</td>
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<td>$21,799.81</td>
<td>$21,799.81</td>
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<td>700-3-101</td>
<td>SIGN PANEL, F&amp;I GM, UP TO 12 SF</td>
<td>4.00 EA</td>
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**Signalizations Component Total**

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### LIGHTING COMPONENT

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<th>Extended Amount</th>
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60/67
D-60
### Landscaping Component

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#### Pay Items

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#### Retaining Walls Component Total

$1,361,675.70

### Sequence 15 Total

$7,804,491.72

### Earthwork Component

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<td>Distance</td>
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### Sequence: 16 NDU - New Construction, Divided, Urban

**Net Length:** 0.858 MI

**Description:** TURKEY LAKE RD
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

<table>
<thead>
<tr>
<th>Pay item</th>
<th>Description</th>
<th>Quantity</th>
<th>Unit</th>
<th>Unit Price</th>
<th>Extended Amount</th>
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<tr>
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Earthwork Component Total: $835,569.59

### ROADWAY COMPONENT

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<td>Friction Course Spread Rate</td>
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Roadway Component Total: $981,745.48

### Pavement Marking Subcomponent

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<td>Solid Stripe No. of Stripes</td>
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<td>EA</td>
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<td>$1,242.36</td>
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<tr>
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<td>NM</td>
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Roadway Component Total: $981,745.48

### SHOULDER COMPONENT

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#### Pavement Marking Subcomponent

- Include Thermo/Tape/Other: N
- Pavement Type: Asphalt
- Solid Stripe No. of Paint Applications: 2
- Solid Stripe No. of Stripes: 4
- Skip Stripe No. of Paint Applications: 2
- Skip Stripe No. of Stripes: 2

#### Pay Items

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<tr>
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<td>GM</td>
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Roadway Component Total: $981,745.48
Total Outside Shoulder Width L/R: 12.25 / 12.25
Total Outside Shoulder Perf. Turf Width L/R: 5.00 / 5.00
Sidewalk Width L/R: 5.00 / 5.00

**Pay Items**

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<td>520-1-10</td>
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**Erosion Control**

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<td>SEDIMENT BARRIER</td>
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**Shoulder Component Total**

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**MEDIAN COMPONENT**

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<td>Performance Turf Width</td>
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<th>Extended Amount</th>
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**Median Component Total**

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**DRAINAGE COMPONENT**

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**User Input Data**

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<tr>
<td>Total Median Width</td>
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<tr>
<td>Performance Turf Width</td>
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### INTERSECTIONS COMPONENT

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Description: NEW INTERSECTION. RAMP AND TURKEY LAKE RD.

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**Intersections Component Total**  
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### SIGNING COMPONENT

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**Intersections Component Total**  
$155,419.48
<table>
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<th>Description</th>
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<th>Unit</th>
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<th>Extended Amount</th>
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<tbody>
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**Signing Component Total**

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### SIGNALIZATIONS COMPONENT

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#### Pay Items

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<td>EA</td>
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<td>670-5-111</td>
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<td>700-3-101</td>
<td>SIGN PANEL, F&amp;I GM, UP TO 12 SF</td>
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#### Signalization 2

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<tr>
<td>630-2-11</td>
<td>CONDUIT, F&amp; I, OPEN TRENCH</td>
</tr>
<tr>
<td>630-2-12</td>
<td>CONDUIT, F&amp; I, DIRECTIONAL BORE</td>
</tr>
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<td>632-7-1</td>
<td>SIGNAL CABLE- NEW OR RECO, FUR &amp; INSTALL</td>
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<td>635-2-11</td>
<td>PULL &amp; SPLICE BOX, F&amp;I, 13&quot; x 24&quot;</td>
</tr>
<tr>
<td>639-1-112</td>
<td>ELECTRICAL POWER SRV,F&amp;I,OH,M,PUR BY CON</td>
</tr>
<tr>
<td>639-2-1</td>
<td>ELECTRICAL SERVICE WIRE, F&amp;I</td>
</tr>
<tr>
<td>641-2-11</td>
<td>PREST CNC POLE,F&amp;I, TYP P-II, PEDESTAL</td>
</tr>
<tr>
<td>649-1-10</td>
<td>STEEL STRAIN POLE, F&amp;I, PEDESTAL</td>
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<tr>
<td>649-31-105</td>
<td>M/ARM,F&amp;I, WS-150, SINGLE ARM, W/0 LUM-75</td>
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<tr>
<td>650-1-311</td>
<td>TRAFFIC SIGNAL, F&amp;I, 3 SECT, 1 WAY, ALUMINUM</td>
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<tr>
<td>653-191</td>
<td>PEDESTRIAN SIGNAL, F&amp;I, LED-COUNT DWN, 1</td>
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<tr>
<td>660-1-102</td>
<td>LOOP DETECTOR INDUCTIVE, F&amp;I, TYPE 2</td>
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<td>660-2-106</td>
<td>LOOP ASSEMBLY, F&amp;I, TYPE F</td>
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<td>665-1-11</td>
<td>PEDESTRIAN DETECTOR, F&amp;I, STANDARD</td>
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<tr>
<td>670-5-111</td>
<td>TRAF CNTL ASSEM, F&amp;I, NEMA, 1 PREEMPT</td>
</tr>
<tr>
<td>700-3-101</td>
<td>SIGN PANEL, F&amp;I GM, UP TO 12 SF</td>
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**Signalizations Component Total**

**$524,049.08**

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**LIGHTING COMPONENT**

**Conventional Lighting Subcomponent**

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<tr>
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<th>Unit Price</th>
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<td>630-2-11</td>
<td>CONDUIT, F&amp; I, OPEN TRENCH</td>
<td>4,531.82 LF</td>
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<td>PULL &amp; SPLICE BOX, F&amp;I, 13&quot; x 24&quot;</td>
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<td>715-1-13</td>
<td>LIGHTING CONDUCTORS, F&amp;I, INSUL, NO.4-2</td>
<td>16,551.46 LF</td>
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<td>715-4-111</td>
<td>LIGHT POLE COMP, F&amp;I, WS150, 40'</td>
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<td>31.00 EA</td>
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**Subcomponent Total**

**$226,254.73**

**Lighting Component Total**

**$226,254.73**

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**LANDSCAPING COMPONENT**

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<td>Component Detail</td>
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**Landscaping Component Total**  
$132,083.96

**Sequence 16 Total**  
$4,534,882.61

**FDOT Long Range Estimating System - Production**  
**R3: Project Details by Sequence Report**

**Project:** 242484-7-52-01  
**Letting Date:** 07/2024

**Description:** SR 400 I-4 FROM W OF SR528 BEACHLINE MP 5.650 TO W OF SR 435 KIRKMAN RD MP 9.249.

**District:** 05  
**County:** 75 ORANGE  
**Market Area:** 08  
**Units:** English  
**Contract Class:** 1  
**Lump Sum Project:** N  
**Design/Build:** N  
**Project Length:** 3.900 MI  
**Project Manager:** BSP

**Version 29 Project Grand Total**  
$244,431,025.24

**Description:** I-4 (SR 400) FROM W OF SR 528 (BEELINE) (Sta. 714+97, MP 5.65) TO W OF SR 435 (KIRKMAN RD) (Sta. 905+00, MP 9.249). HNTB January 2016 Update (New CD System) - A-List. HNTB August 2016 Update : Express Lanes with Asphalt Pavement

**Project Sequences Subtotal**  
$192,271,566.50

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<td>102-1</td>
<td>Maintenance of Traffic</td>
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<td>101-1</td>
<td>Mobilization</td>
<td>10.00 %</td>
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<td>$21,149,872.32</td>
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**Project Sequences Total**  
$232,648,595.47

**Project Unknowns**  
5.00 %  
$11,632,429.77

**Design/Build**  
0.00 %  
$0.00

**Non-Bid Components:**

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<td>INITIAL CONTINGENCY AMOUNT (DO NOT BID)</td>
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**Project Non-Bid Subtotal**  
$150,000.00

**Version 29 Project Grand Total**  
$244,431,025.24
Engineer's Estimate
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<th>Quantity</th>
<th>Total Cost</th>
<th>Remarks</th>
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<td>0110 1</td>
<td>Clearing &amp; Grubbing</td>
<td>AC</td>
<td>$7724</td>
<td>133</td>
<td>$1,023,937</td>
<td>Total Area of mainline section - R/W to R/W</td>
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<tr>
<td>0110 3</td>
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<td>SF</td>
<td>$24</td>
<td>888</td>
<td>$20,921</td>
<td>Area of existing bridge - SR 528 over I-Drive</td>
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<tr>
<td>160 4</td>
<td>Stabilization Type B LBR 40</td>
<td>SY</td>
<td>$2.90</td>
<td>282,349</td>
<td>$818,811</td>
<td>Total Area of mainline section</td>
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<tr>
<td>285 706</td>
<td>Base optional (base group 6) ML</td>
<td>SY</td>
<td>$13.69</td>
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<tr>
<td>285 712</td>
<td>Base optional (base group 12) ML</td>
<td>SY</td>
<td>$14.02</td>
<td>151,907</td>
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<td>Total Roadway area</td>
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<tr>
<td>334 1 12</td>
<td>Superpave asphaltic concrete (Traffic B)</td>
<td>TN</td>
<td>$87.28</td>
<td>6,437</td>
<td>$561,821</td>
<td>Used 110 lb /sy&quot;inch lift (2&quot;-thk) - Shoulder</td>
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<tr>
<td>334 1 14</td>
<td>Superpave asphaltic concrete (Traffic D)</td>
<td>TN</td>
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<td>25,065</td>
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<td>Used 110 lb /sy&quot;inch lift (3&quot;-thk) - Roadway</td>
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<td>Superpave asphaltic concrete (Traffic D-PG 76-22)</td>
<td>TN</td>
<td>$89.64</td>
<td>16,710</td>
<td>$1,497,884</td>
<td>Used 110 lb /sy&quot;inch lift (2&quot;-thk) - Roadway</td>
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<td>537 7 22</td>
<td>Asphaltic Concr friction course (FC-5) (PG 76-22)</td>
<td>TN</td>
<td>$117.20</td>
<td>6,266</td>
<td>$734,375</td>
<td>Used 110 lb /sy&quot;inch lift (0.75&quot;-thk) - Roadway</td>
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<td>Plain Cement Conc Pavt, 8&quot;</td>
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<td>Express Lanes</td>
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<td>LF</td>
<td>$243</td>
<td>96,723</td>
<td>$23,522,066</td>
<td>Concrete, Double face</td>
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<td>Thermoplastic, White, Striping</td>
<td>NM</td>
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<td>Vehicle Impact Attenuator</td>
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<td>Embankment</td>
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<td>MSE wall</td>
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<td></td>
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**Subtotal Cost**

| LS | $68,689,075 |

**Compensable Utility Relocation**

| LS | $3,434,454 | Assume 5% of Construction Subtotal Cost |

**Mobilization**

| LS | $6,668,908 | Assume 10% of Construction Subtotal Cost |

**Maintenance of Traffic (MOT)**

| LS | $6,668,908 | Assume 10% of Construction Subtotal Cost |

**Lighting**

| LS | $3,434,454 | Assume 5% of Construction Subtotal Cost |

**Signage**

| LS | $3,434,454 | Assume 5% of Construction Subtotal Cost |

**Drainage**

| LS | $13,737,815 | Assume 20% of Construction Subtotal Cost |

**ITS**

| LS | $3,434,454 | Assume 5% of Construction Subtotal Cost |

**Erosion Control**

| LS | $686,891 | Assume 1% of Construction Subtotal Cost |

**Construction Subtotal**

| LS | $110,589,411 |

**Contingency**

| LS | $16,588,412 | Assume 15% of Construction Subtotal |

**Grand Total**

<p>| $127,177,823 |</p>
<table>
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<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Quantity</th>
<th>Total Cost</th>
<th>Remarks</th>
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<td>Clearing &amp; Grubbing</td>
<td>AC</td>
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<td>SF</td>
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<td>SY</td>
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<td>334 1 12</td>
<td>Superpave asphaltic concrete (Traff B)</td>
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<td>$87.28</td>
<td>11,732</td>
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<td>Used 110 lb/sq*inch lift (0.75&quot; thick) - Roadway</td>
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<tr>
<td>521 72 10</td>
<td>Barrier Wall</td>
<td>LF</td>
<td>$243</td>
<td>16,297</td>
<td>$3,963,146</td>
<td>Concrete, Double face</td>
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<td>36</td>
<td>$115,968</td>
<td>EOP and lane lines</td>
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<td>Vehicle Impact Attenuator</td>
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<td>$18,327.83</td>
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<td>SR 528 Bridge</td>
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<td>$461,160</td>
<td>Used 28' from edge of shoulder for impacts</td>
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</tbody>
</table>

**Subtotal Cost**: $59,816,405

- Compensable Utility Relocation: $2,980,820 (Assume 5% of Construction Subtotal Cost)
- Mobilization: $5,961,641 (Assume 10% of Construction Subtotal Cost)
- Maintenance of Traffic (MOT): $5,961,641 (Assume 10% of Construction Subtotal Cost)
- Lighting: $5,961,641 (Assume 10% of Construction Subtotal Cost)
- Signage: $5,961,641 (Assume 10% of Construction Subtotal Cost)
- Drainage: $5,961,641 (Assume 5% of Construction Subtotal Cost)
- ITS: $5,961,641 (Assume 5% of Construction Subtotal Cost)
- Erosion Control: $5,961,641 (Assume 1% of Construction Subtotal Cost)

**Construction Subtotal**: $95,982,413

**Contingency**: $14,397,362 (Assume 15% of Construction Subtotal)

**Grand Total**: $110,379,775
<table>
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<tr>
<th>Item</th>
<th>Description</th>
<th>Unit</th>
<th>Unit Cost</th>
<th>Quantity</th>
<th>Total Cost</th>
<th>Remarks</th>
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<td>0110 1 1</td>
<td>Clearing &amp; Grubbing</td>
<td>AC</td>
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<td>128</td>
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<td>Total Area of mainline section - R/W to R/W</td>
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<tr>
<td>0110 3</td>
<td>Removal of Existing Structure</td>
<td>SF</td>
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<td>$10.00</td>
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**Grand Total** | **$100,052,877**
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<td>19,752</td>
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<td>Assume 3' over entire roadway area</td>
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<td>SF</td>
<td>$ 34.00</td>
<td>7,194</td>
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<td>Drainage</td>
<td>LS</td>
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<td>0110 1</td>
<td>Clearing &amp; Grubbing</td>
<td>AC</td>
<td>$7,724</td>
<td>11</td>
<td>$82,765</td>
<td>Total Area of mainline section - RW to RW</td>
</tr>
<tr>
<td>0110 3</td>
<td>Removal of Existing Structure</td>
<td>SF</td>
<td>$24</td>
<td>24,595</td>
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<td>Area of existing bridge - SR 528 over I-Drive</td>
</tr>
<tr>
<td>160 4</td>
<td>Stabilization Type B LBR 40</td>
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<td>Base optional (base group 12) ML</td>
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<td>334 1 12</td>
<td>Superpave asphaltic concrete (Traffic B)</td>
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<td>$87.28</td>
<td>668</td>
<td>$58,291</td>
<td>Used 110 lb /sq&quot;inch lift (2&quot; thick) - Shoulder</td>
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<td>$658,509</td>
<td>Used 110 lb /sq&quot;inch lift (3&quot; thick) - Roadway</td>
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<tr>
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<td>TN</td>
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<td>Asphaltic Conc friction course (FC-5) (PG 76-22)</td>
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<td>1,888</td>
<td>$221,240</td>
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<td>521 72 10</td>
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<td>LF</td>
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<td>13,471</td>
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<td>$802,336</td>
<td>Assume 5% of Construction Subtotal Cost</td>
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<td>$802,336</td>
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<td>Total Cost</td>
<td>Remarks</td>
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<tr>
<td>0110 1 1</td>
<td>Clearing &amp; Grubbing</td>
<td>AC</td>
<td>$7,724</td>
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<td>Total Area of mainline section - R/W to R/W</td>
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<tr>
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<td>694</td>
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<td>Used 110 lb /sq inch lift (3&quot; thk) - Roadway</td>
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<td>TN</td>
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<td>1,866</td>
<td>$218,678</td>
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<td>LF</td>
<td>$243.35</td>
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<td>Concrete, Double face</td>
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<tr>
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<td>Thermoplastic, White, Striping</td>
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<td>Used 25' from edge of shoulder for impacts</td>
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<td>LS</td>
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<td>LS</td>
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<td>Assume 5% of Construction Subtotal Cost</td>
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<td>Quantity</td>
<td>Total Cost</td>
<td>Remarks</td>
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<td>0110 1 1</td>
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<td>$269,458</td>
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<td>$2.90</td>
<td>75,754</td>
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<td>1,221</td>
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<td>8,333</td>
<td>$764,965</td>
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<td>Asphaltic Conc friction course (FC-5) (PG 76-22)</td>
<td>TN</td>
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<td>3,125</td>
<td>$366,233</td>
<td>Used 110 lb /sy&quot;inch lift (0.75&quot; thk) - Roadway</td>
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<td>LF</td>
<td>$243</td>
<td>4,835</td>
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<td>Concrete, Double face</td>
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<tr>
<td>Th, 0013 1</td>
<td>Thermoplastic, White, Striping</td>
<td>NM</td>
<td>$3,178</td>
<td>15</td>
<td>$48,703</td>
<td>EOP and lane lines</td>
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<tr>
<td>Fence</td>
<td>EA</td>
<td>$18,327.63</td>
<td>2</td>
<td>$36,655</td>
<td>At goes</td>
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<tr>
<td>Embankment</td>
<td>LF</td>
<td>$10.00</td>
<td>10,000</td>
<td>$100,000</td>
<td>LA R/W fence</td>
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</tr>
<tr>
<td>MSE wall</td>
<td>SY</td>
<td>$5.94</td>
<td>11,405</td>
<td>$67,744</td>
<td>Assume 3' over entire roadway area</td>
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<tr>
<td>0520 1 10</td>
<td>Concrete Curb &amp; Gutter, Type F</td>
<td>LF</td>
<td>$34.00</td>
<td>48,510</td>
<td>$1,649,340</td>
<td>Roadway raised 3' x length of section x 2 sides</td>
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<tr>
<td>0522 1</td>
<td>Sidewalk Conc (4&quot; Thk)</td>
<td>SY</td>
<td>$21.90</td>
<td>4,173</td>
<td>$91,391</td>
<td>New construction</td>
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<tr>
<td>Sand Lake Bridge</td>
<td>SF</td>
<td>$160</td>
<td>60,417</td>
<td>$9,666,720</td>
<td>Concrete</td>
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<tr>
<td>Wetland Mitigation</td>
<td>AC</td>
<td>$108,000.00</td>
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<tr>
<td>Subtotal Cost</td>
<td>LS</td>
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<tr>
<td>Compensable Utility Relocation</td>
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<td>$875,592</td>
<td></td>
<td>Assume 5% of Construction Subtotal Cost</td>
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<tr>
<td>Mobilization</td>
<td>LS</td>
<td>$1,751,185</td>
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<td>Assume 10% of Construction Subtotal Cost</td>
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<tr>
<td>Maintenance of Traffic (MOT)</td>
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<td>Assume 10% of Construction Subtotal Cost</td>
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</tr>
<tr>
<td>Lighting</td>
<td>LS</td>
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<td></td>
<td>Assume 5% of Construction Subtotal Cost</td>
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</tr>
<tr>
<td>Signage</td>
<td>LS</td>
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<tr>
<td>Drainage</td>
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<td>$3,502,370</td>
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<tr>
<td>ITS</td>
<td>LS</td>
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<td>Assume 5% of Construction Subtotal Cost</td>
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<tr>
<td>Erosion Control</td>
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<td>Construction Subtotal</td>
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<tr>
<td>Contingency</td>
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