PRELIMINARY ENGINEERING REPORT

Florida Department of Transportation (FDOT)

District One

SR 31 Project Development & Environment (PD&E) Study

From SR 80 (Palm Beach Boulevard) to SR 78 (Bayshore Road)

Lee County, Florida

Financial Project ID Number: 441942-1-22-01

ETDM Number: 14359

November 2024

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022, and executed by the Federal Highway Administration and FDOT.

PROFESSIONAL ENGINEER CERTIFICATION

PRELIMINARY ENGINEERING REPORT

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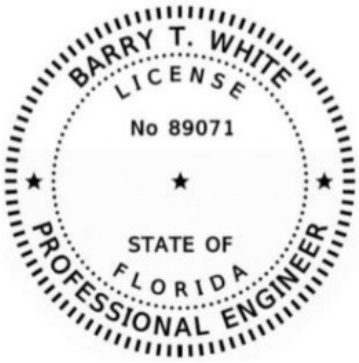
Federal Aid Project Number: TBD

This preliminary engineering report contains engineering information that fulfills the purpose and need for the SR 31 Project Development & Environment Study from SR 80 (Palm Beach Boulevard) to SR 78 (Bayshore Road) in Lee County, Florida. I acknowledge that the procedures and references used to develop the results contained in this report are standard to the professional practice of transportation engineering as applied through professional judgment and experience.

I hereby certify that I am a registered professional engineer in the State of Florida practicing with DRMP, Inc. and that I have prepared or approved the evaluation, findings, opinions, conclusions, or technical advice for this project.



This item has been digitally signed and sealed by ***Barry T. White, P.E.*** on the date adjacent to the seal.

Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.

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1 PROJECT SUMMARY

1.1 Project Description

The FDOT, District One (Department) is conducting a Project Development and Environment (PD&E) Study in accordance with the National Environmental Policy Act (NEPA) to evaluate capacity, operational, structural, and modal improvements to about 1.4 miles of State Road (SR) 31 from SR 80 (Palm Beach Boulevard) to SR 78 (Bayshore Road) in an unincorporated area of northeastern Lee County (see **Figure 1-1**). The study includes the evaluation of capacity improvements to its current two-lane configuration, as well as pedestrian and bicycle accommodations. The study also includes evaluating repair/rehabilitation and replacement options for the Wilson Pigott Bridge over the Caloosahatchee River and improvement alternatives for the SR 31/SR 80 intersection.

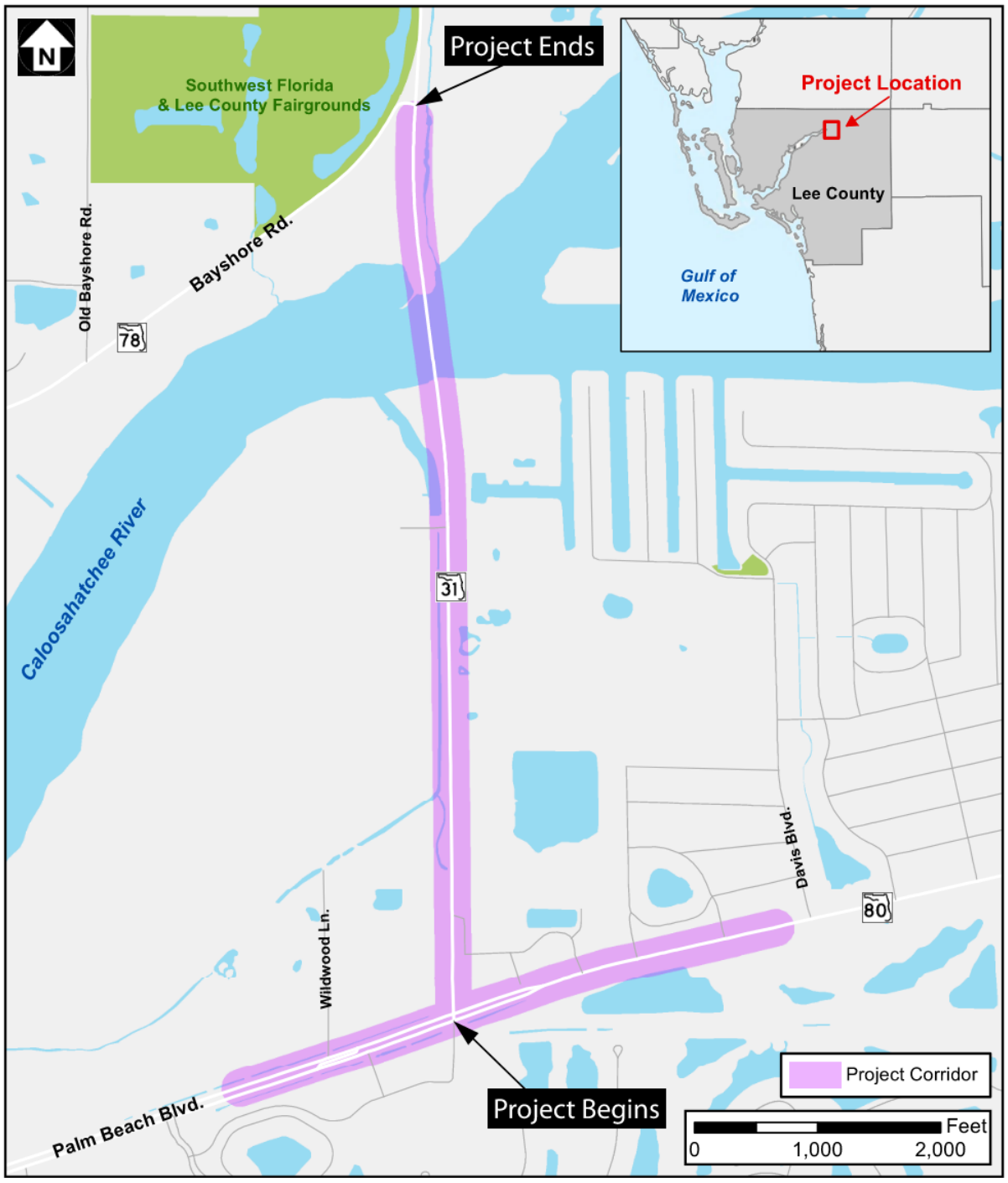
Existing Facility and Conditions

SR 31 in the project study area is classified by the Department as an Urban Minor Arterial. SR 31 is considered an Emerging Strategic Intermodal System (SIS) Corridor. The existing typical section is a two-lane, undivided rural roadway with two 12-foot travel lanes and 5-foot paved outside shoulders centered within a 100-foot right-of-way. The existing bridge is a 14-span low-level bascule structure with 10-foot lanes, 4-foot outside shoulders, and 3.5-foot raised sidewalks on both sides with no separation from motor vehicles. There are no existing bike lanes along this segment of SR 31 and no existing sidewalks beyond those currently on the bridge. The existing vertical clearance over the channel is 26 feet. The SR 31/SR 80 intersection is currently an at-grade signalized intersection.

The posted speed limit in this section of SR 31 is 40 mph. The surrounding land uses are a mixture of rural residential, commercial, and undeveloped land. The Lee County Future Land Use map (as of October 2023) reveals that most of the study area is zoned as "Future Urban Areas-Suburban". "Sub-Outlying Suburban", "Non-Urban Areas-Rural", and "Environmentally Critical Areas-Wetlands" designations are also in the project vicinity.

Stormwater runoff is collected in open drainage swales adjacent to the roadway with ultimate outfall to the Caloosahatchee River. SR 31 has no existing stormwater management facilities. The project is located within Waterbody ID (WBID) 3240C, which is impaired for Nutrients. There are four existing cross drains within the project limits.

Figure 1-1. Project Location



1.2 Purpose & Need

The purpose of the project is to address capacity, operational, and structural deficiencies of SR 31 from SR 80 (Palm Beach Boulevard) to SR 78 (Bayshore Road) in northeastern Lee County. In order to address future travel demand, the study evaluated the potential widening improvements to its current two-lane configuration, including paved shoulders, sidewalks, bike lanes, and/or shared-use path. Repair/rehabilitation and replacement options for the Wilson Pigott Bridge were evaluated as part of the project, as design elements of the bridge are substandard.

The need for the project is based on the following primary and secondary criteria:

PRIMARY CRITERIA

CAPACITY/TRANSPORTATION DEMAND: Improve Operational Conditions

The existing year [2022] Annual Average Daily Traffic (AADT) volume for the SR 31 project corridor is 16,600 vehicles per day (vpd), operating at Level of Service (LOS) C. As SR 31 is a designated highway corridor of Florida's Emerging SIS and a Tier I Freight Corridor of Lee County, approximately 25% of existing traffic along the roadway is composed of trucks. The SIS network includes the state's most significant transportation facilities, as these facilities carry the highest volume of freight and commuter traffic. The projected demand along the corridor exceeds the maximum threshold of 20,000 AADT for a two-lane facility. As an Emerging SIS facility, LOS D is the minimum acceptable LOS for SR 31. Without capacity improvements, the corridor is projected to operate at LOS F.

Much of the growth contributing to the increase in traffic comes from the Babcock Ranch Development of Regional Impact (DRI) located to the north of the SR 31 project segment. Although the Babcock Ranch DRI is in Charlotte County, some development is expected to occur in Lee County, such as the Babcock Ranch Mixed-use Planned Development (MPD) and a marina to be sited northeast of the project corridor. The Babcock Ranch DRI and MPD is approved for 19,500 residential dwelling units, almost 5 million square feet of office and retail space, and 600 hotel rooms. In addition, the DRI is approved for 650,000 square feet of industrial space, which will further increase the volume of trucks moving freight along the corridor. Also, eight Planned Unit Developments exist or are proposed along the SR 31 project segment, including a mixed-use development southeast of SR 31 and SR 80. The Sweetwater Landing Marina, located along the corridor, has expanded operations.

Increased congestion along SR 31 between SR 80 and SR 78 is anticipated due to this noted growth. Conditions along the roadway are anticipated to be exacerbated if no improvements occur, as the roadway lacks the operational capacity to accommodate future travel demand. In addition, freight traffic and multimodal activity are expected to increase along the corridor due to projected growth in the area.

SUBSTANDARD BRIDGE ELEMENTS: Address Mechanical Malfunctions & Design Deficiencies

The Wilson Pigott Bridge was constructed in 1960 and has exceeded its fifty-year design life. Based on a FDOT bridge inspection report conducted in October 2021, the Wilson Pigott Bridge received a sufficiency rating of 52.0 (on a scale of 0-100). Sufficiency rating is essentially an overall rating of a bridge's fitness to remain in service. A sufficiency rating below 50.0 qualifies a bridge for replacement funds. The bridge inspection report also revealed a health index of

95.52 for the Wilson Pigott Bridge. The health index uses the condition rating of several important bridge components to develop a number from 1 to 100. The lower the number, the more work is required to improve the bridge's overall condition. Below 85 generally means repairs are needed. A low health index may also indicate that it would be more economical to replace the bridge than to repair it. Additionally, insights from Lee County Metropolitan Planning Organization (MPO) staff indicated that the Wilson Pigott Bridge frequently experiences mechanical malfunctions leaving the bascule span in the up position disrupting traffic flow and circulation in the area.

Although the current bridge inspection report indicates a health index over 90 due to the most recent bridge repairs, the bridge has substandard design elements, such as:

- Narrow roadway widths [ten-foot travel lanes and four-foot shoulders]
- Narrow pedestrian facilities [three-foot six-inch sidewalks on both sides with no guardrail separating pedestrians and motor vehicles]
- Substandard bridge rails

As the Caloosahatchee River is a navigable waterway, the United States Coast Guard (USCG) regulates the horizontal and vertical clearance requirements for bridges constructed over navigable waters. The following minimum movable bridge clearance guidelines for the Caloosahatchee River at the project location are: Horizontal Clearance = 90 feet; Vertical Clearance (closed) = 21 feet. While the vertical clearance for the Wilson Pigott Bridge (closed) is 26 feet at the center and 23 feet at the fenders, the horizontal clearance is 86.6 feet. Based on this condition, the Wilson Pigott Bridge does not meet the current USCG guide for horizontal clearance.

SECONDARY CRITERIA

AREA WIDE NETWORK/SYSTEM LINKAGE: Enhance Regional Connectivity

Planned immediately north of the SR 31 project segment is the widening of SR 31 from SR 78 in Lee County to North of Cook Brown Road in Charlotte County. The proposed widening of SR 31 from SR 80 to SR 78 will provide a continuous connection from Lee County into Charlotte County and a viable north-south alternate route to I-75.

SAFETY: Improve Emergency Evacuation and Response Times

Serving as part of the emergency evacuation route network designated by the Florida Division of Emergency Management and Lee County, SR 31 [including the Wilson Pigott Bridge] plays a critical role in facilitating traffic during emergency evacuation periods as one of seven crossings over the Caloosahatchee River within Lee County. The project is in Lee County's Evacuation Zone "A", and all the neighborhoods in proximity to the project corridor are within the 100-year floodplain. Improving the operational capacity of the roadway and maintaining the functionality of the Wilson Pigott Bridge will further enhance emergency evacuation efficiency leading to improved evacuation and response times.

1.3 Commitments

FDOT is including the following commitments as part of the project:

Protected Species

To ensure the project will not adversely affect protected species or their habitats, the Department and/or contractor will commit to perform or adhere to the following measures.

- The National Marine Fisheries Service (NMFS) *Protected Species Construction Conditions*, National Oceanic and Atmospheric Administration (NOAA) Fisheries Southeast Regional Office will be utilized during construction.
- The most recent version of the United States Fish and Wildlife Service (USFWS) *Standard Protection Measures for the Eastern Indigo Snake* will be utilized during construction.
- The USFWS and Fish and Wildlife Conservation (FWC) *Standard Manatee Conditions for In-Water Work* will be utilized during construction.
- FDOT will require contractors to remove garbage daily from the construction site or use bear proof containers for securing food and other debris from the project work area to prevent these items from becoming an attractant for the Florida black bear. Any interaction with nuisance bears will be reported to the FWC Wildlife Alert hotline.
- FDOT will provide mitigation for impacts to wood stork Suitable Foraging Habitat within the Service Area of a Service-approved wetland mitigation bank or wood stork conservation bank.
- Prior to demolition of Wilson Pigott Bridge, bat exclusion must be completed to comply with FAC rule 88A-4.001 General Prohibitions; and rule 68A-9.010 Taking Nuisance Wildlife. Per regulations, exclusion is not permitted during bat maternity season of April 15 through August 15. Exclusion devices must be left up for a minimum of four nights and the low temperature must be forecasted to remain above 50 degrees Fahrenheit during that time period.
- Should the listing status of the tricolored bat be elevated by USFWS to Threatened or Endangered and the Preferred Alternative is located within the consultation area during design and permitting phase of the proposed project, FDOT commits to re-initiating consultation with the USFWS to determine the appropriate survey methodology and to address USFWS regulations regarding the protection of the tricolored bat.
- The NMFS *Vessel Strike Avoidance Measures*, NOAA Fisheries Southeast Regional Office will be utilized during construction.
- A survey for giant leather fern will be performed during the design phase and coordination with Florida Department of Agriculture and Consumer Services (FDACS) will occur if impacts to the species are anticipated.
- In-water pile driving should be conducted during daylight hours and a "ramp-up" procedure should be used for all in-water driving.
- If FDOT becomes aware of any take of any ESA-listed species under NMFS's purview that occurs during the proposed action, FDOT shall report the take to NMFS SERO PRD via the NMFS SERO Endangered Species Take Report Form and reinitiate consultation, if warranted.
- FDOT must immediately notify (within 24 hours, if communication is possible) the Office of Protected Resources if a take of a listed marine mammal occurs.

1.4 Alternatives Analysis Summary

An alternatives analysis process consists of developing, evaluating, and eliminating project alternatives based on the purpose and need for the project. This process also considers the engineering and environmental factors, along with public and stakeholder input. The No-Build and Preferred Alternative are presented in this document. The *SR 31 over the Caloosahatchee River Bridge Development Report (BDR)* (March 2023) documents the alternatives analysis for the replacement of the Caloosahatchee River Bridge. The *SR 31 at SR 80 ICE Stage 1* (March 2020) and *SR 31 at SR 80 ICE Stage 2* (August 2022) documents the analysis of alternatives for the SR 31/ SR 80 intersection.

Section 5.3 provides additional detail regarding the evaluation of Build Alternatives.

NO-BUILD ALTERNATIVE

Under the provisions of NEPA, the effects of not implementing the proposed action must also be considered in the decision-making process. The No-Build (or No-Action) Alternative also serves as the baseline for comparing the impacts of the Build Alternative in the Design Year (2045). This alternative assumes that the transportation system for Lee County will evolve as currently planned in the Lee County MPO 2045 Long Range Transportation Plan (LRTP) but without major improvements to the existing SR 31 corridor between SR 80 and SR 78.

Under the No-Build Alternative, the Department will continue maintenance and repairs of the existing roadway and Wilson Pigott Bridge. This option will not alter the existing typical section of SR 31 or the SR 31/SR 80 intersection and will not include a bridge replacement. Advantages of the No-Build include no impacts to the natural environment and no new costs for design and construction. However, the No-Build option has other costs associated with it; maintenance becomes increasingly costly and disruptive, and each repair requires programming funds for design and construction.

The No-Build Alternative is inconsistent with the Lee County MPO 2045 LRTP. Additionally, the No-Build Alternative does not meet the project purpose and need, including the need to: meet future travel demand, address poor level of service and congestion at the SR 31/SR 80 intersection, address bridge age and malfunctions, improve pedestrian safety along SR 31, improve emergency evacuation, and enhance regional connectivity.

1.5 Description of Preferred Alternative

The Preferred Alternative consists of the following:

- Widening the existing two-lane undivided roadway to a six-lane divided roadway from SR 80 to SR 78
- Replacing the Wilson Pigott Bridge over the Caloosahatchee River
- Improvements to the SR 31/SR 80 intersection

As shown in **Figure 1-2**, the proposed SR 31 roadway typical section from SR 80 to SR 78 will include three, 11-foot travel lanes in each direction separated by a 22-foot raised median with Type E and F curb along the inside and outside lanes, respectively. A 12-foot wide shared-use path is proposed on each side of SR 31 (northbound and southbound) with a 9-foot utility strip between the back of curb and path. This typical section will require approximately 40 acres of new right-of-way.

The Preferred Alternative is a combination of widening existing SR 31 from SR 80 for about 0.7 miles, then shifting 300 feet east prior to the Wilson Pigott Bridge to minimize impacts to the existing Florida Gas Transmission (FGT) line. This portion of the alignment will be located east of the existing two-lane roadway and the 50-foot FGT easement.

The proposed design speed for the project is 45 miles per hour. The Preferred Alternative raises the profile above the current 100-year floodplain. The profile will be raised approximately three feet above existing SR 31 due to the updated 100-year floodplain elevation (from seven feet to ten feet) in the project corridor.

A new high-level fixed bridge will be constructed to replace the existing Wilson Pigott Bridge (Bridge No. 120064). The proposed bridge will meet USCG vertical clearance requirements of 55 feet for a high-level fixed bridge. As shown in **Figure 1-3**, the bridge will have three, 11-foot travel lanes in each direction, and 8-foot shoulders and 12-foot shared-use path on each side. Pedestrians and bicyclists will be protected via a raised barrier and railing. The minimum vertical clearance over the channel for this bridge is 55 feet, which is 29 feet higher than the existing bridge, and will not disrupt traffic from drawbridge openings. Through coordination with the United States Army of Corps of Engineers (USACE) and USCG, it was determined that the channel will keep the existing alignment.

Figure 1-2. Proposed SR 31 Roadway Typical Section

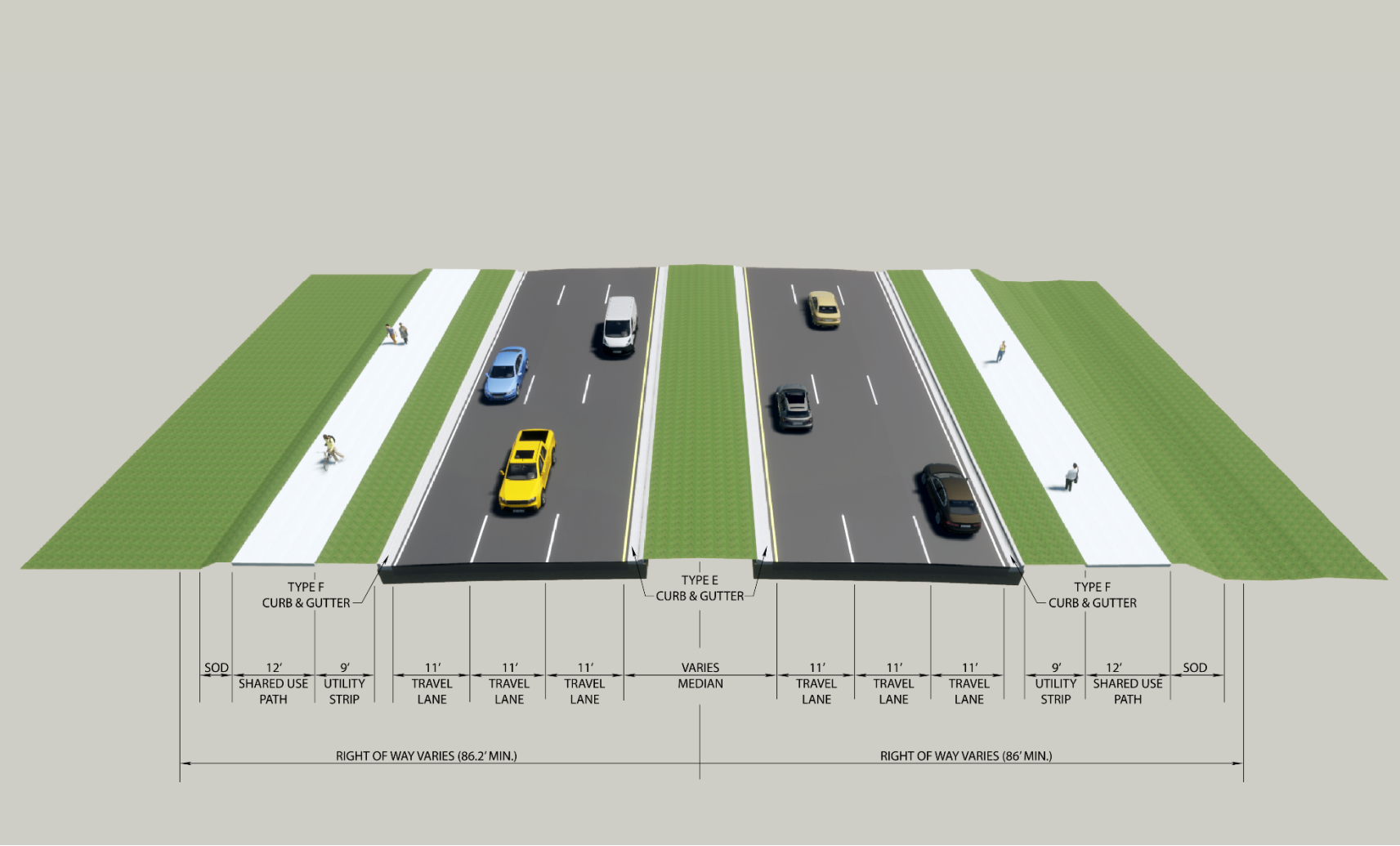
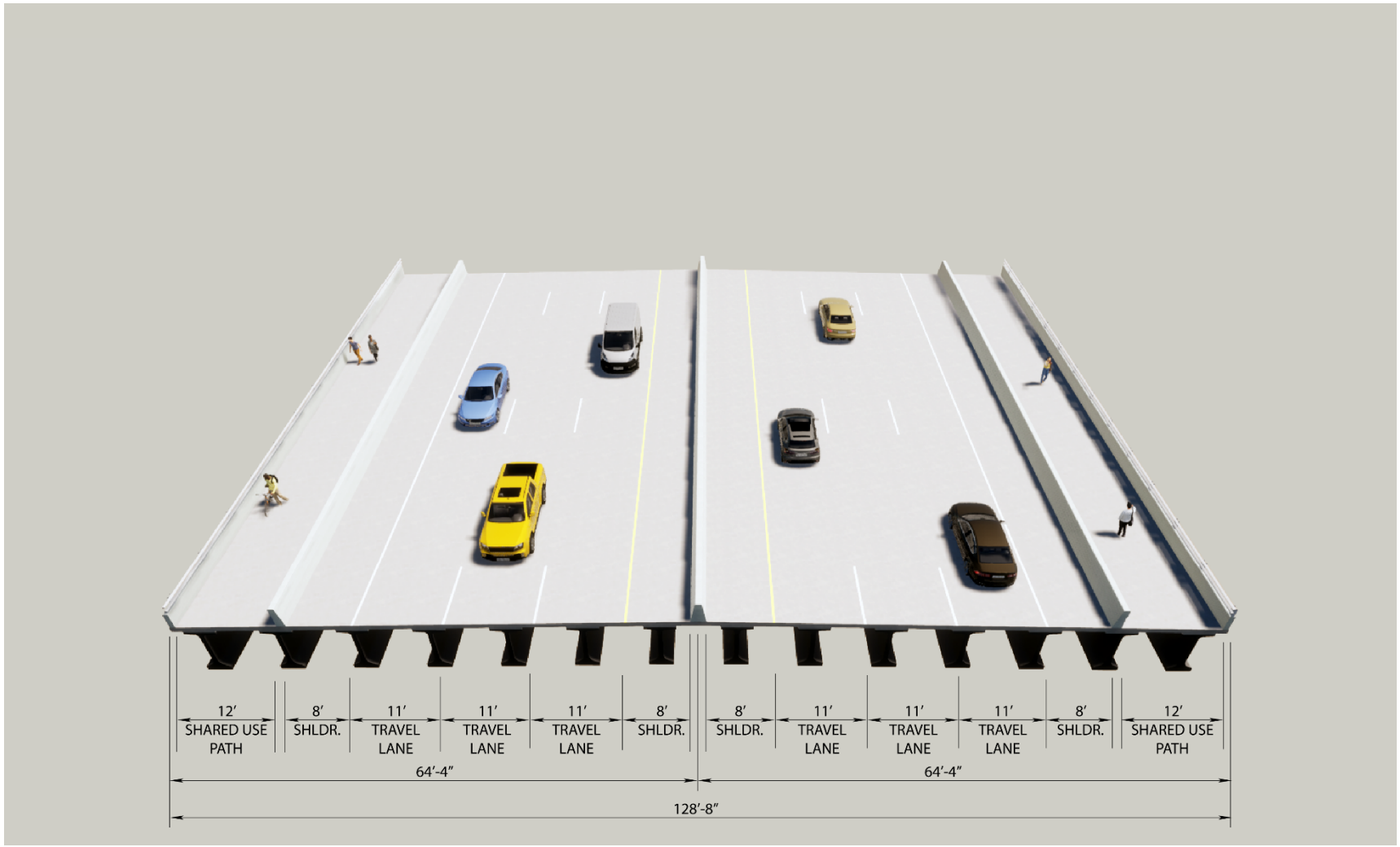


Figure 1-3. Proposed Bridge Typical Section



The Preferred Alternative also includes reconfiguring the existing intersection of SR 31/SR 80 to a grade-separated intersection. The grade-separation will introduce two new flyover bridges for SR 31 and SR 80 movements and will also include a new signal at a crossover intersection on SR 31. The SR 31/SR 80 intersection improvements will accommodate the future widening of SR 80.

From north to south beginning near the Caloosahatchee River, the SR 31 roadway typical section (**Figure 1-2**) includes 11-foot travel lanes. As SR 31 approaches the crossover intersection just north of Merchandise Way, the lanes transition to 14-foot to accommodate design vehicle off-tracking through the crossover. South of the crossover intersection and through the flyover ramps, the lanes transition back to the required 12-foot width (24-foot total) and maintain this width as they connect with SR 80, which also has 12-foot lanes.

Figure 1-4 depicts how travelers will use the flyovers. Southbound SR 31 travelers such as those coming from Lee Civic Center or Babcock Ranch, who want to go eastbound on SR 80, will use the flyover bridge and cross over at a new signal on SR 31. Similarly, eastbound SR 80 travelers, including those coming from Fort Myers who want to go northbound on SR 31, will use the flyover bridge and cross over at a new signal on SR 31. A signal on SR 31 northbound at Merchandise Way would allow a left turn movement onto the eastbound flyover ramp.

Figure 1-5 depicts the typical section for the SR 31 widening associated with the proposed flyovers.

Figure 1-6 and **Figure 1-7** depict the northbound and southbound typical sections for the flyover.

Figure 1-8 and **Figure 1-9** depict the proposed typical sections along SR 80 west and east of the intersection. **Figure 1-8** depicts the eastbound SR 80 to northbound SR 31 flyover ramp typical section, and **Figure 1-9** depicts the southbound SR 31 to eastbound SR 80 flyover ramp typical section.

Stormwater runoff from the project will be collected and conveyed in closed drainage systems to one proposed offsite pond for water quality treatment and attenuation per state and federal requirements. The pond will discharge at or near the same outfall ditch that carries the roadway runoff in the existing condition. An additional 13.5 acres of right-of-way will be required for the proposed pond and associated access easements.

Figure 1-4. SR 31/SR 80 Proposed Flyover Traffic Movements

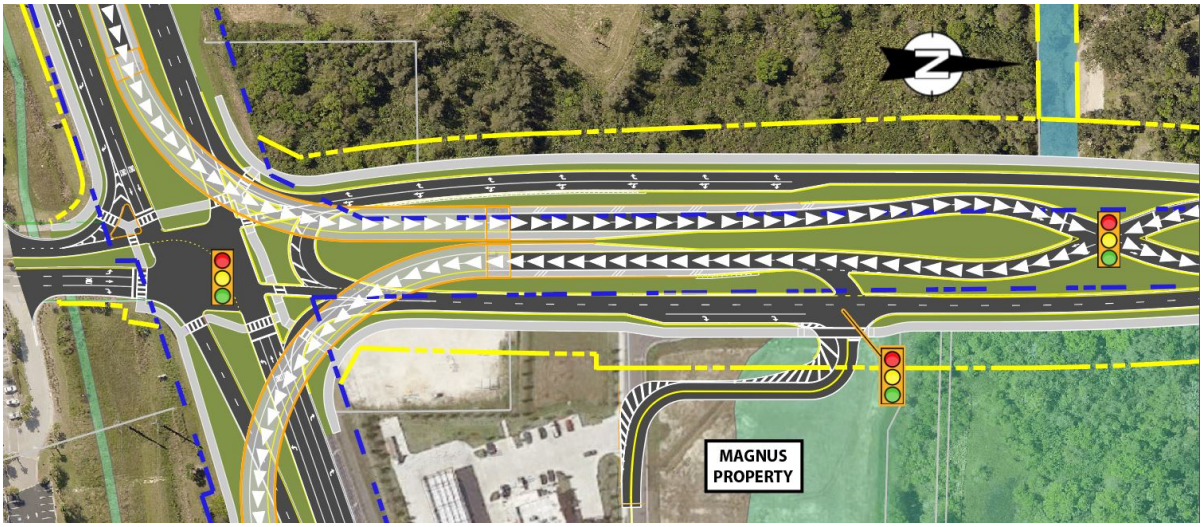


Figure 1-5. Proposed SR 31 Typical Section (at Flyovers)

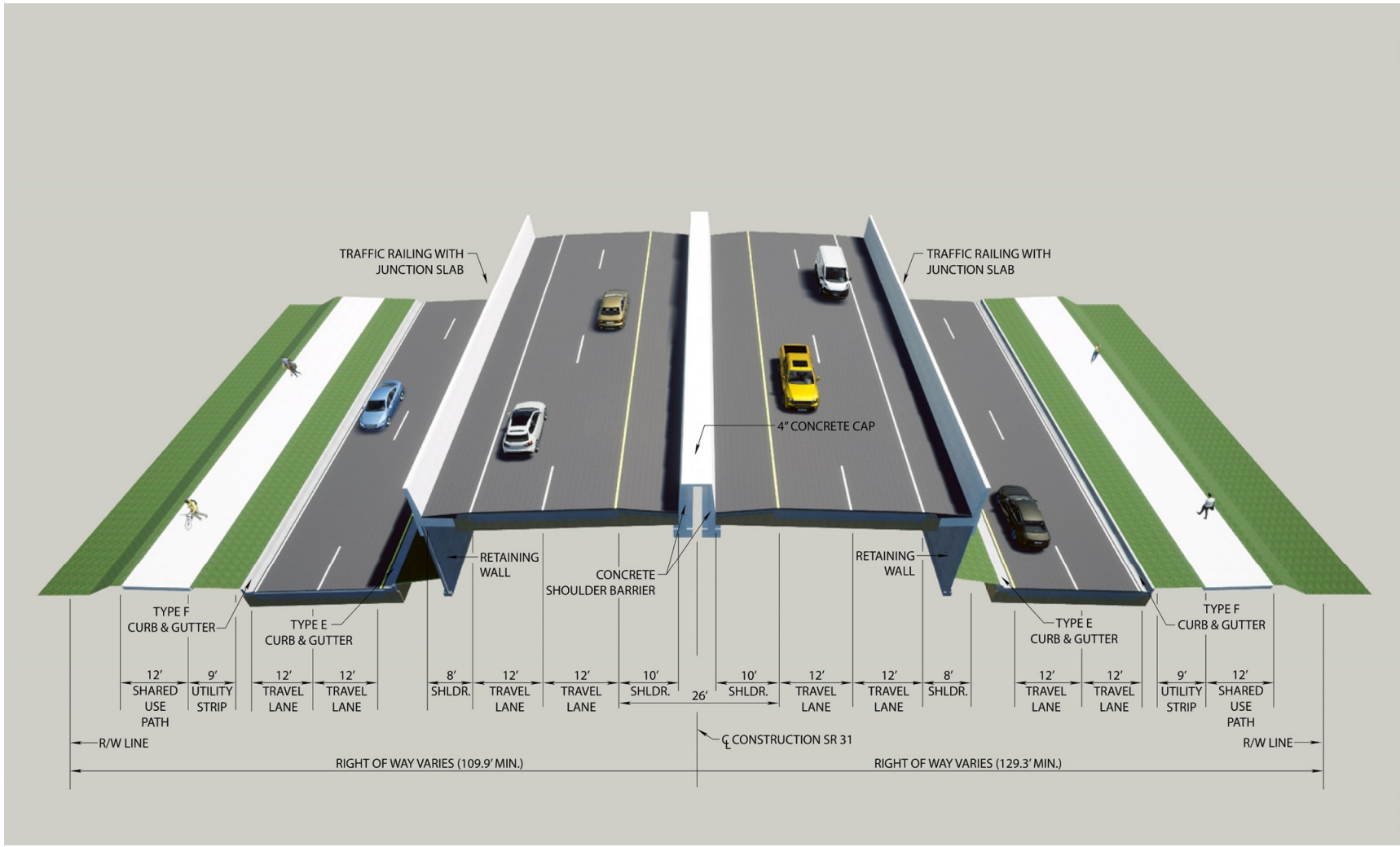


Figure 1-6. Proposed NB Flyover Typical Section

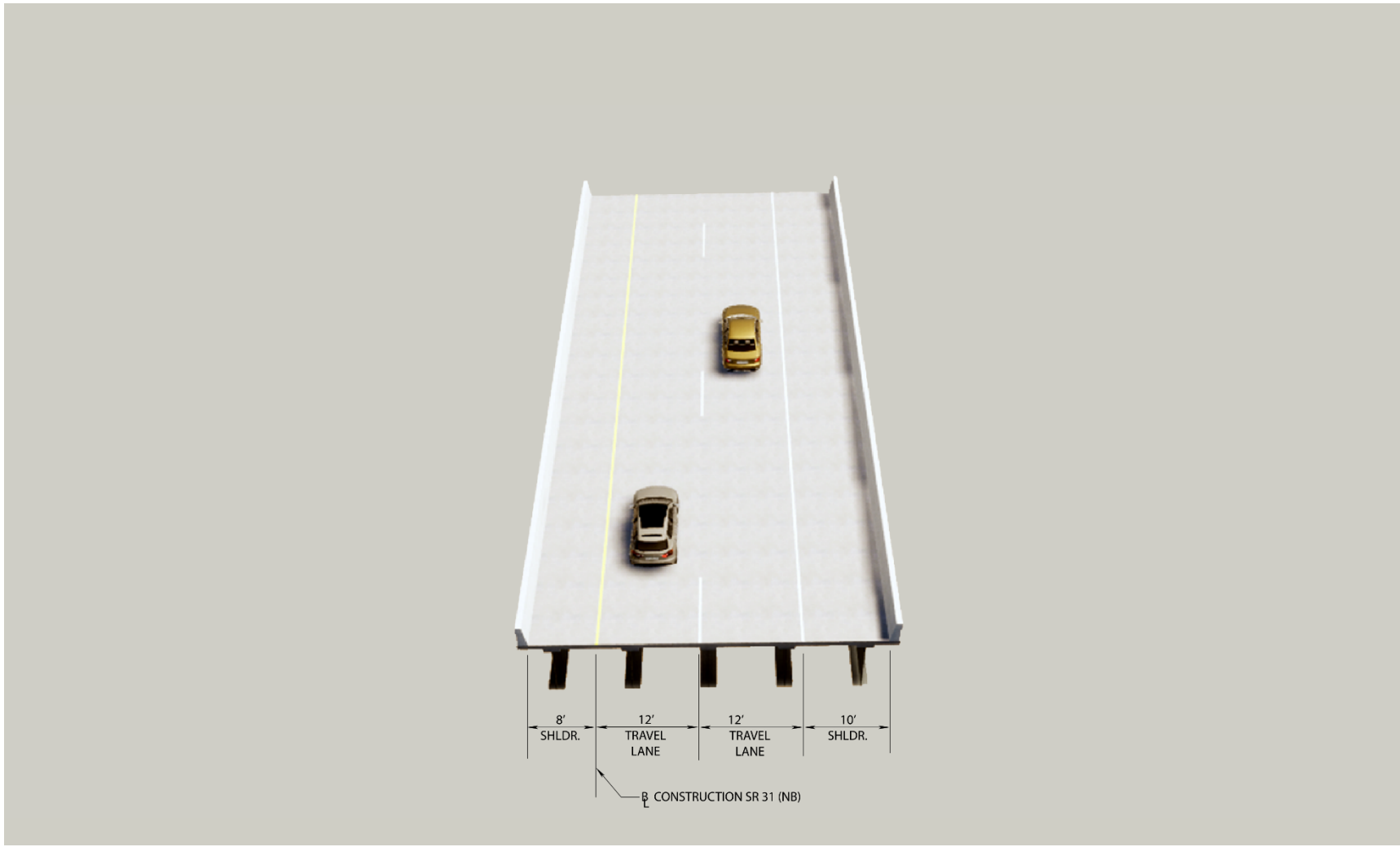


Figure 1-7. Proposed SB Flyover Typical Section

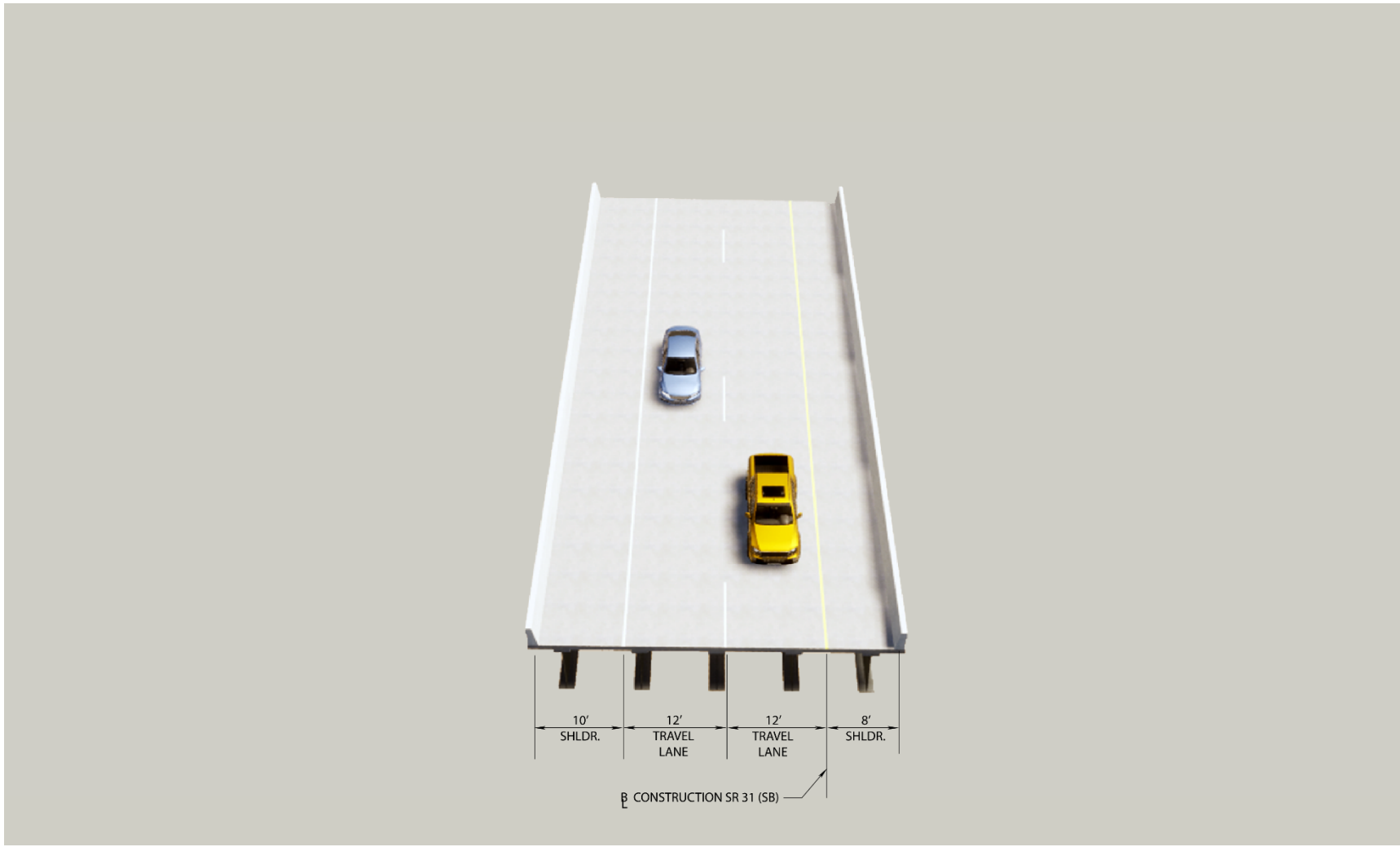


Figure 1-8. Proposed SR 80 Roadway Typical Section (West of SR 31)

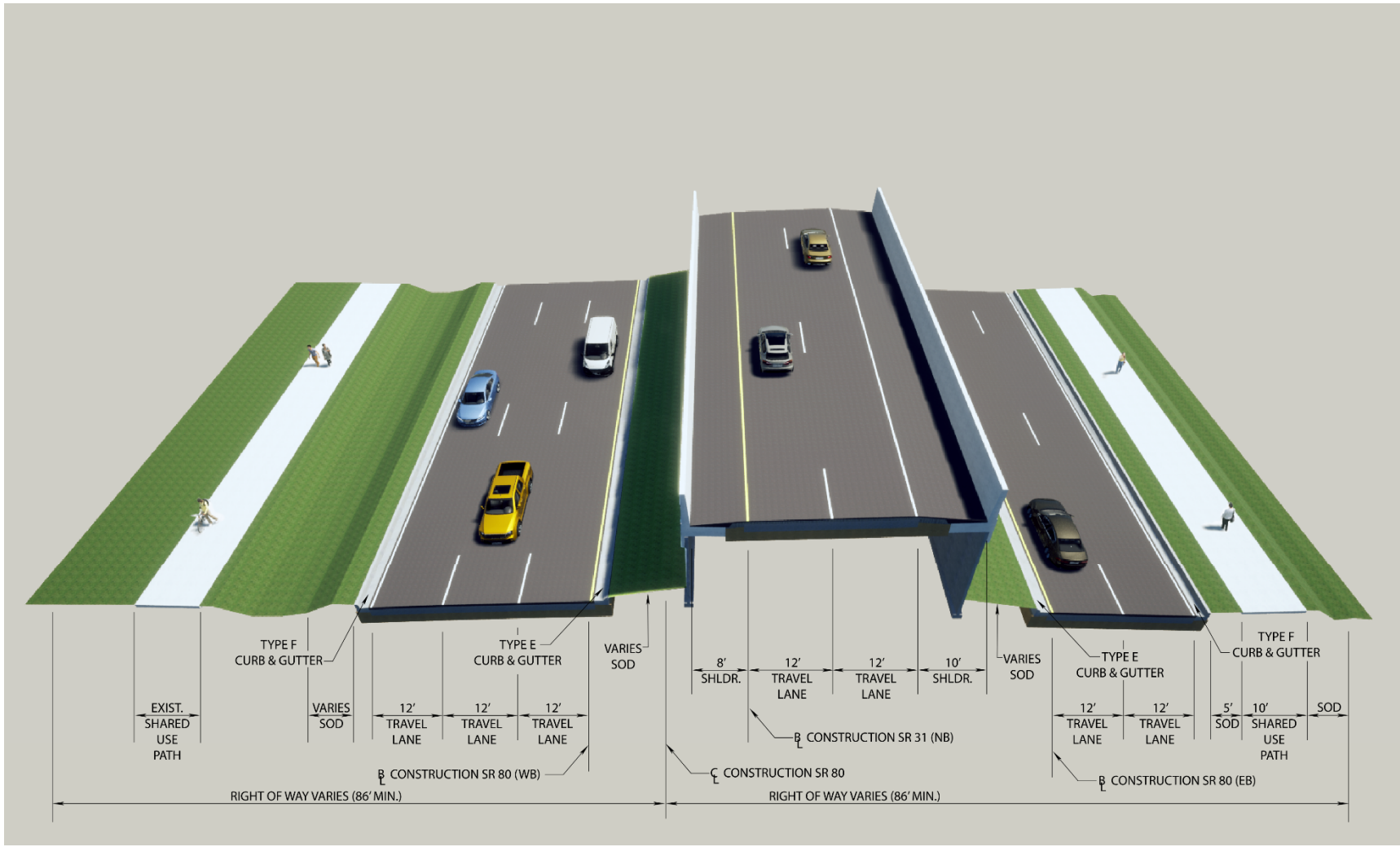
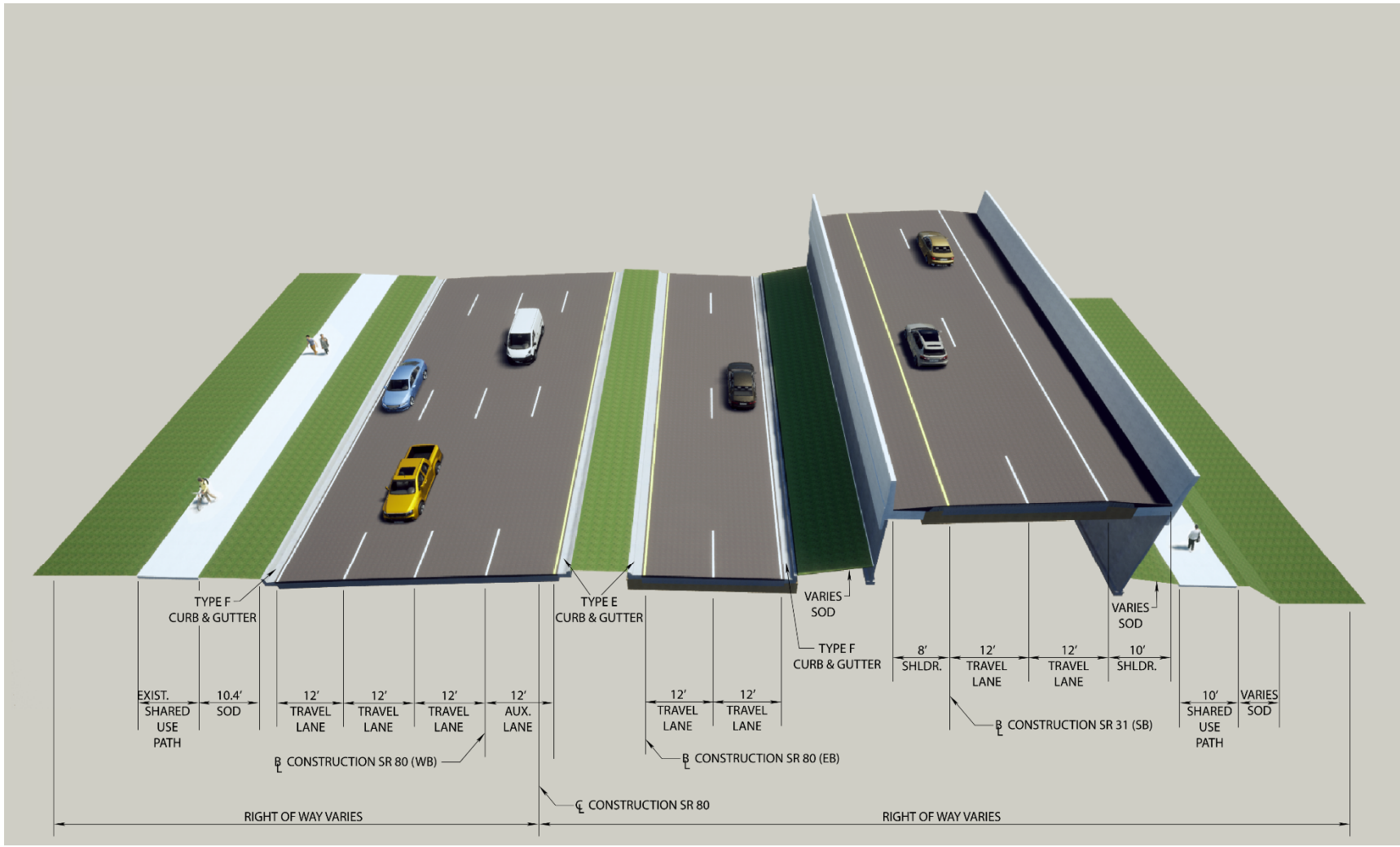


Figure 1-9. Proposed SR 80 Roadway Typical Section (East of SR 31)



1.6 List of Technical Documents

The following technical reports document engineering and environmental studies and analyses conducted as part of the PD&E Study. This list also includes documents completed as part of the original SR 31 PD&E Study.

Public Involvement

- *Public Involvement Plan (PIP) (February 2019)*
- *Public Hearing Transcript (November 2023)*

Environmental

- *Type 2 Categorical Exclusion (November 2024)*
- *Natural Resources Evaluation Report (NRE) (October 2023)*
- *Contamination Screening Evaluation Report (CSER) (September 2023)*
- *Cultural Resource Assessment Survey (CRAS) (September 2023)*
- *CRAS of SR 31 from SR 80 to CR 78 (North River Road) (July 2012)*
- *Technical Memorandum: CRAS Update for the Project Development and Environment Study of SR 31 from SR 78 to CR 78 (2020)*
- *Cultural Resource Assessment Survey of the Caloosa Landing Project Area (November 2005)*
- *Noise Study Report (NSR) (April 2024)*
- *Section 4(f) Determination of Applicability (April 2024)*

Engineering

- *Project Traffic Analysis Report (PTAR) (April 2020)*
- *PTAR Addendum (May 2023)*
- *Location Hydraulic Report (LHR) (June 2022)*
- *Bridge Hydraulic Report (BHR) (March 2023)*
- *SR 31 over the Caloosahatchee River BDR (March 2023)*
- *Intersection Control Evaluation (ICE) Technical Analysis Memorandum Stage 1 – Traffic and Safety Analysis at SR 80 and SR 31 (March 2020)*
- *ICE Technical Analysis Memorandum Stage 2– Traffic and Safety Analysis at SR 80 and SR 31 (August 2022)*
- *Final Pond Siting Report (PSR) (May 2023)*
- *SR 31/SR 80 Flyover 1 BDR (February 2024)*
- *SR 31/SR 80 Flyover 2 BDR (February 2024)*
- *Utility Assessment Package (April 2024)*
- *Alignment Evaluation Memo (December 2020)*
- *Water Quality Impact Evaluation (WQIE) (April 2023)*
- *Context Classification Memorandum (May 2018)*
- *Lighting Justification Report (February 2024)*

2 EXISTING CONDITIONS

The existing conditions summarized below for SR 31 within the project limits were identified from Geographic Information System (GIS) data, available as-built construction plans, FDOT Roadway Characteristics Inventory (RCI), straight-line diagrams (SLD), right-of-way maps, field reviews, survey information, and as documented in supporting technical studies/reports.

2.1 Previous Planning Studies

The project corridor was originally part of a larger SR 31 PD&E Study from SR 80 to north of CR 78 (North River Road). Subsequently, the project was divided and the portion north of SR 78 was advanced as part of the original study.

The proposed project will tie into the adjacent SR 31 North Design-Build Project, which will widen SR 31 from SR 78 to Horseshoe Road/Lake Babcock Drive. This project includes the remaining portion of SR 31 just south of SR 78, as the improvements to the SR 31/SR 78 intersection are integrated into the SR 78 PD&E Study. As such, this project will tie into the proposed design for that study.

Studies conducted as part of the earlier SR 31 PD&E study go as far back as 2012. However, research and documentation were updated to ensure the most current evaluation of potential project impacts within the current study area.

2.2 Roadway and Bridge Typical Sections

The existing SR 31 typical section is a two-lane, undivided rural roadway with two 12-foot travel lanes and five-foot paved outside shoulders centered within a 100-foot right-of-way. The existing bridge is a 14-span low-level bascule structure carrying 10-foot lanes, 4-foot outside shoulders, and 3.5-foot raised sidewalks on both sides with no separation from motor vehicles. The existing vertical clearance over the channel is 26 feet.

The existing typical sections for SR 31 and the Caloosahatchee River Bridge (Bridge No. 120064) are shown in **Figure 2-1** and **Figure 2-2**, respectively. Additional information on the bridge can be found in the *SR 31 over the Caloosahatchee River BDR* (March 2023).

Figure 2-1. Existing Roadway Typical Section

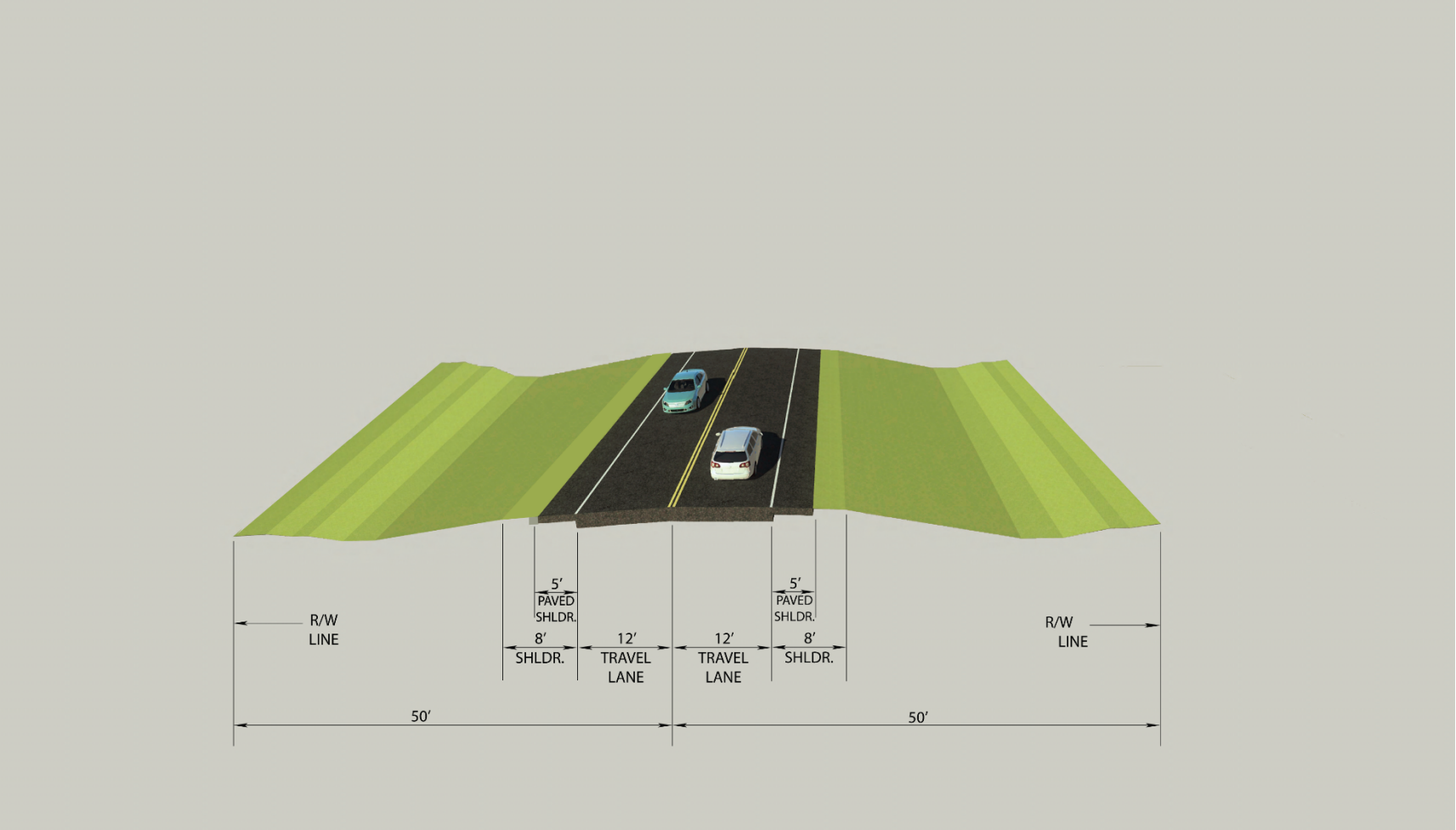
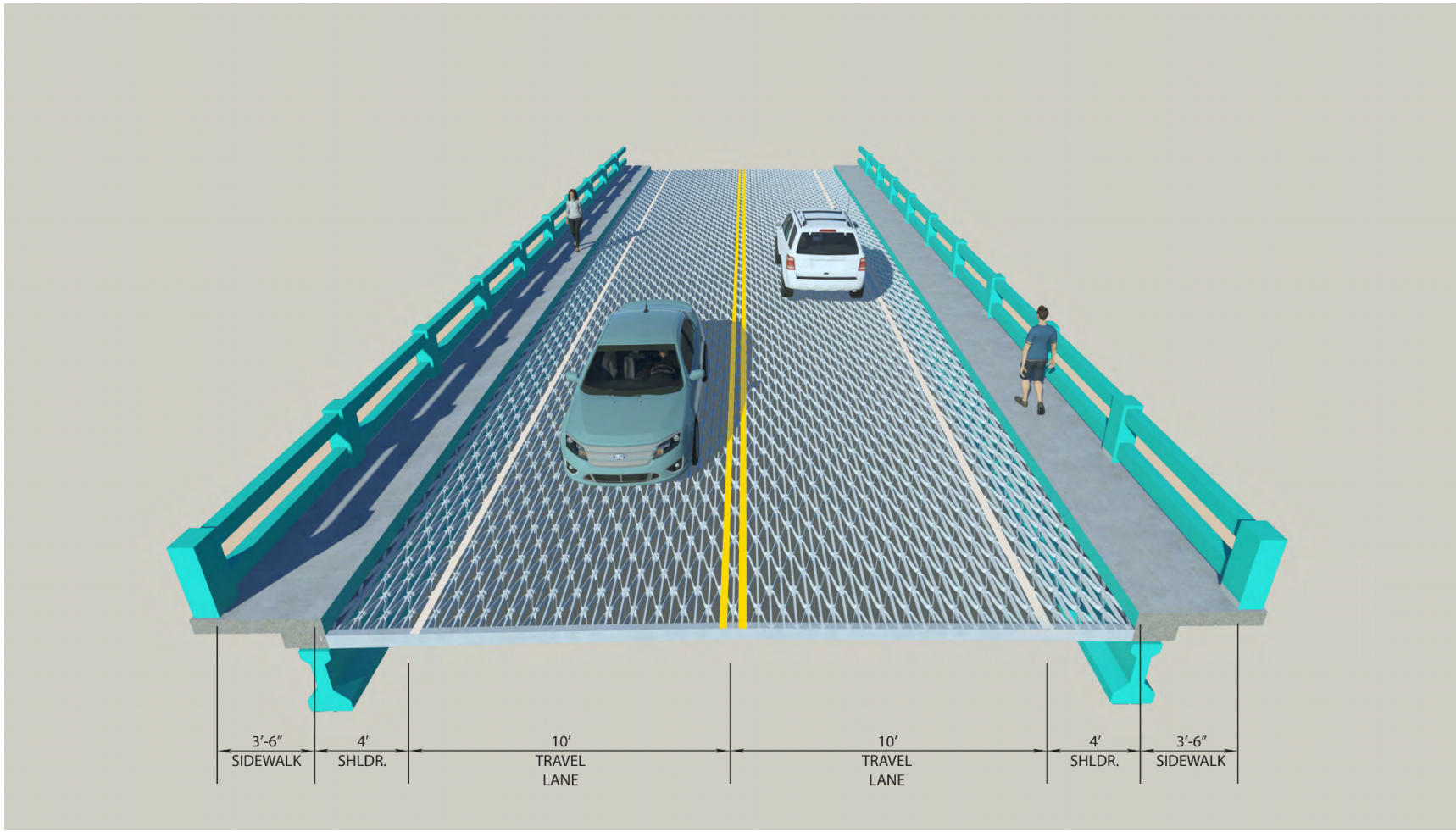


Figure 2-2. Existing Bridge Typical Section



2.3 Roadway Functional & Context Classification

SR 31 is an Emerging SIS corridor from SR 80 to SR 70 in Desoto County and has a functional classification of an Urban Minor Arterial within the project limits. Its context classification is Rural (C2) throughout the study area. SR 80 is a SIS corridor from I-75 in Lee County to US 27 in Hendry County and has a functional classification of an Urban Principal Arterial – Other. Its context classification is Suburban Commercial (C3C) throughout the study area. **Table 2-1** includes the roadway classification for SR 31 and SR 80. In addition, both SR 31 and SR 80 are designated hurricane evacuation routes.

Table 2-1. Functional Classification

Characteristic	SR 31	SR 80
Limits	SR 80 (Palm Beach Blvd) to South of SR 78 (Bayshore Rd)	At SR 31
Functional Classification	Urban Minor Arterial	Urban Principal Arterial – Other
SIS Facility	Emerging SIS Corridor	SIS Corridor

2.4 Access Management Classification

Since the corridor is undivided, existing access management is non-restrictive. There are nine driveways (ranging from residential dirt driveways to asphalt and/or concrete commercial driveways) and access to Marina Drive. There are three access points into the Sweetwater Marina and associated properties. The southernmost and northernmost driveways allow access to both NB SR 31 and SB SR 31 and have dedicated left and right turn lanes of varying lengths. The middle entrance is right-in/right-out only with a dedicated right-turn lane from SB SR 31.

SR 31 is designated as Access Class 4 due to its non-restrictive median type and connection spacing range per Florida Design Manual (FDM) Table 201.3.2.

2.5 Right-of-Way

The right-of-way width throughout the corridor varies based on milepost. The milepost ranges and corresponding right-of-way width are summarized below:

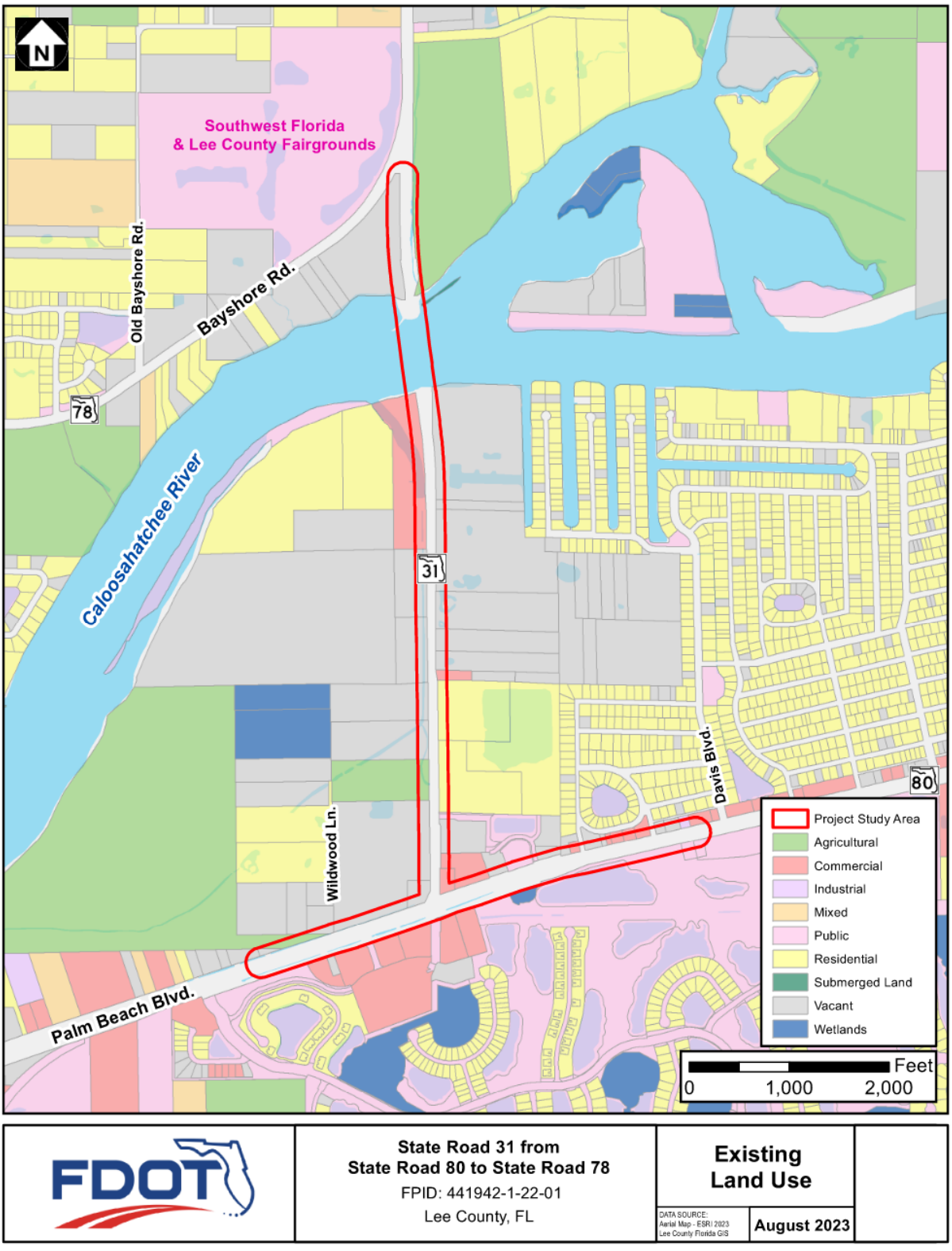
Table 2-2. Existing Corridor Right-of-Way

Milepost	Right-of-Way Width
SR 31	
0.00-1.407	100'
SR 80	
7.802-8.346	200'-250'
8.346-8.666	135'-145'

2.6 Adjacent Land Use

The area surrounding the existing corridor has generally transitioned to suburban character, with mostly undeveloped land to the east and west of SR 31. Land uses along SR 31 are predominately vacant or zoned for agricultural use, with the exception of a few commercial properties. Commercial development and residential land uses (Fort Myers Shores and Verandah) are primarily located in the vicinity of the SR 31/SR 80 intersection, with SR 80 providing direct access to these subdivisions and other adjacent uses. **Figure 2-3** depicts the existing land use along the corridor.

Figure 2-3. Existing Land Use



2.7 Vertical and Horizontal Alignment

SR 31 is a vital connector in Southwest Florida. The highway predominantly follows a north-south direction in terms of its horizontal alignment, with minimal curvature. The existing horizontal curve data is shown in **Table 2-3** below.

The vertical alignment of SR 31 is influenced by the surrounding terrain and the presence of bridges. The highway has a gradual slope from south to north, with an elevation of about 10-feet above sea level at both SR 80 and SR 78. The bridge over the Caloosahatchee River has a 23-foot minimum vertical clearance at the face of fenders when lowered and a 26-foot vertical clearance at the channel center above the water level. Additional information on the bridge is included in the *SR 31 over the Caloosahatchee River BDR* (March 2023).

Table 2-3. Existing Horizontal Curve Data

PC	PT	Degree of Curvature	Radius (ft.)	Curve Length (ft.)
SR 31				
STA 241+56.79	STA 248+41.61	1°00'	5729.58	684.82
STA 261+79.47	STA 269+63.44	1°00'	5729.58	783.96
SR 80				
STA 426+61.55	STA 43218.22	1°00'	5729.58	556.67

2.8 Multi-Modal Facilities

2.8.1 Pedestrian Facilities

Sidewalk is present in the project study area, including in a limited area of SR 31 near the improved RaceTrac entrance north of the SR 80 intersection on the eastern side. This 435-foot section of sidewalk does not provide connectivity to SR 80 shared-use path or sidewalk. A shared-use path is present on the northern and southern sides of SR 80.

2.8.2 Bicycle Facilities

There are no continuous bike lanes on SR 31 or SR 80 in the project study area. Cyclists currently have use of the shoulder on SR 31 and markings are provided both north and south of the Wilson Pigott Bridge. There is a bicycle keyhole lane provided north of the SR 78 intersection that was added during construction of turn lanes.

2.8.3 Transit Facilities

There are no bus services along SR 31 in the project study area. However, Route 100 (Rosa Parks/Riverdale) of Lee County Transit (LeeTran) runs along SR 80 within the study area. Bus stops are present along SR 80 on both sides of the SR 31 intersection.

2.9 Pavement Condition

Existing pavement along SR 31 through the project is in good condition. It has a cracking rating ranging from 6.5-10, ride rating ranging from 7.2-8.6, and rutting rating ranging from 8-9. Pavement sections with a rating below 6.5 are classified as deficient, with an exception to those with a posted speed limit less than 50 mph and a ride rating between 5.5 and 6.4.

Table 2-4. Existing Pavement Conditions

Roadway ID	Begin Mile Post	End Mile Post	AADT	% Trucks	Pavement Age	Cracking 2020	Ride 2020	Rutting 2020	Lane Miles
12090000	0.000	1.118	11,500	18.6	19	6.5	7.2	8.0	2.236
12090000	1.118	4.684	7,959	26.9	2	10.0	8.6	9.0	7.132

Source: FDOT District 1 Pavement Condition Survey (2020)

2.10 Traffic Volumes and Operational Conditions

The *Project Traffic Analysis Report (PTAR)* (April 2020) and the *PTAR Addendum* (May 2023) documents information on existing roadway conditions, outlines the traffic analysis methodology, which has also been employed in previous District One PD&E studies, and presents detailed findings for future conditions. The PTAR containing the detailed traffic analysis is incorporated by reference.

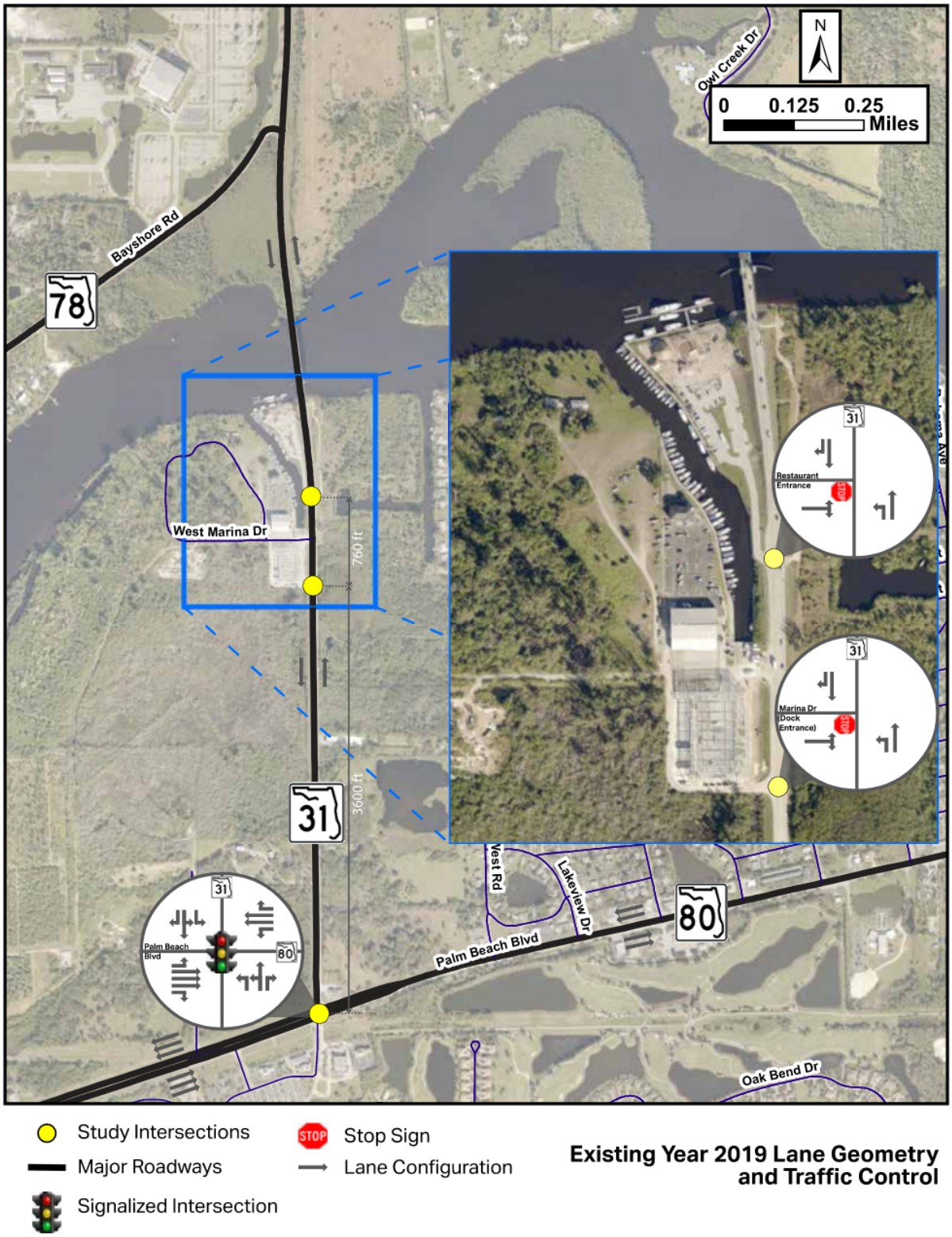
2.10.1 Existing Roadway and Intersection Characteristics

The following intersections were evaluated as part of the PD&E study:

- SR 31 at SR 80 – Signalized
- SR 31 at Marina Drive (Boat ramps driveway) – Unsignalized
- SR 31 at Restaurant Driveway – Unsignalized

Figure 2-4 depicts the Existing Year (2019) roadway and intersection geometry along with intersection spacing and traffic control for the SR 31 corridor.

Figure 2-4. Existing Year (2019) Lane Geometry and Traffic Control



2.10.2 Existing Year (2019) Daily Traffic Volumes

The 2019 AADT volumes along the study corridor range between 7,200 vehicles per day (vpd) and 13,000 vpd along SR 31 and between 36,000 vpd and 39,000 vpd along SR 80. The Existing Year (2019) AADT volumes are included in **Table 2-5** and depicted in **Figure 2-5**.

Table 2-5. Existing Year (2019) AADT

Roadway	AADT
SR 31	
North of SR 80	13,000
South of SR 80 (commercial access)	7,200
SR 80	
West of SR 31	36,000
East of SR 31	39,000

Note: 2018 FDOT Peak Season Factor Category Report utilized.
2018 Axle Factor Category Report utilized.
AADT = average of counts on March 26 and 28, 2019. (27th discarded due to crash/SR 31 closure during PM peak hours).

2.10.3 Design Characteristics

The existing peak hour traffic characteristics are summarized in **Table 2-6**.

Vehicle composition for the classification count was broken into two primary vehicle types:

- Passenger vehicles – Motorcycles, cars, and single unit trucks
- Heavy vehicles – Buses, single-unit trucks, and articulated trucks

Table 2-6. Existing Year (2019) Traffic Conditions

Roadway	PM Peak Hour Volume		NB/EB		SB/WB		Measured K		Measured D		Measured T_{24}	
	Day 1	Day 3	Day 1	Day 3	Day 1	Day 3	Day 1	Day 3	Day 1	Day 3	Day 1	Day 3
SR 31												
North of SR 80	1,227	1,249	632	628	595	621	8.60%	8.38%	51.51%	50.28%	10.70%	10.43%
South of SR 80 (commercial access)	672	768	424	487	248	281	8.76%	9.67%	63.10%	63.41%	2.23%	2.79%
SR 80												
West of SR 31	3,119	3,166	2,013	1,999	1,106	1,167	8.08%	8.08%	64.54%	63.14%	7.20%	7.23%
East of SR 31	3,556	3,587	2,301	2,309	1,255	1,278	8.48%	8.43%	64.71%	64.37%	6.61%	6.52%

Figure 2-5. Existing Year (2019) Annual Average Daily Traffic (AADT)

2.10.4 Existing Year (2019) Peak Hour Roadway Segment Operational Analysis

Traffic operations for roadways are measured in terms of LOS by comparing the peak hour traffic demand with the available roadway capacity. Existing roadway segment operating conditions (2019) were evaluated using the generalized service volume tables (GSVTs) obtained from the FDOT 2013 Quality/Level of Service Handbook. Utilization of the GSVT for the roadway LOS is documented and approved in the PTAR. While the GSVTs have documented limitations, they clearly demonstrate the need to widen the two-lane roadway due to exceeding capacity thresholds. Additionally, intersection performance tends to be the driving factor for operations for an arterial. As shown in **Table 2-8**, the existing intersection of SR 31 and SR 80 currently experiences several failing movements.

Table 2-7. Existing Year (2019) Intersection Analysis Summary

Intersection	Control Type	Lane Group/Approach	Movement	AM Peak			PM Peak		
				V/C Ratio	Average Delay	LOS	V/C Ratio	Average Delay	LOS
SR 31 at SR 80	Signalized	Eastbound	Left	0.66	41.5	D	0.53	15.3	B
			Through	0.18	11.5	B	0.58	24.2	C
			Right	0.03	0.1	A	0.07	0.2	A
			Approach	**-**	**16.3**	B	**-**	**22.3**	C
		Westbound	Left	0.11	8.0	A	0.60	25.9	C
			Through	0.80	28.8	C	0.44	24.3	C
			Right	0.28	3.9	A	0.29	3.0	A
			Approach	**-**	**24.6**	C	**-**	**19.6**	C
		Northbound	Left	0.49	85.6	F	0.69	92.0	F
			Through	0.49	85.5	F	0.80	104.0	F
			Right	0.22	2.3	A	0.77	34.3	C
			Approach	**-**	**58.6**	E	**-**	**64.8**	E
		Southbound	Left	0.71	90.4	F	0.92	106.0	F
			Through	0.71	90.0	F	0.91	103.2	F
			Right	0.70	25.5	C	0.47	11.4	B
			Approach	**-**	**57.6**	E	**-**	**77.7**	E
Overall Intersection					**28.5**	**C**	**-**	**33.8**	**C**
SR 31 at Marina Drive	Unsignalized	Eastbound	Left	0.02	13.7	B	0.06	21.3	C
			Right	-	-	-	-	-	-
		Northbound	Left	0.01	8.4	A	0.01	9.1	A
			Through	-	-	-	-	-	-
		Southbound	Through	-	-	-	-	-	-
			Right	-	-	-	-	-	-
SR 31 at Restaurant Driveway	Unsignalized	Eastbound	Left	0.11	13.4	B	0.36	22.3	C
			Right	-	-	-	-	-	-
		Northbound	Left	0.04	8.5	A	0.04	8.9	A
			Through	-	-	-	-	-	-
		Southbound	Through	-	-	-	-	-	-
			Right	-	-	-	-	-	-

The analysis indicated that SR 31 operates at LOS C conditions in the Existing Year (2019). **Table 2-8** summaries the existing (2019) roadway segment operational analysis results. The SR 31

corridor from SR 80 to SR 78 currently operates at an acceptable level of service during both AM and PM peak hours.

Table 2-8. Existing Roadway LOS Summary

Roadway/ Segment	LOS Std	Posted Speed Limit	Peak Hour Directional Service Volume	AM Peak				PM Peak			
				Total	NB	SB	Peak Dir LOS	Total	NB	SB	Peak Dir LOS
SR 31											
SR 80 to SR 78	D	40	880	864	438	426	C	1,158	578	580	C

Intersection operating conditions were evaluated using Synchro Studio 10 software. As shown in **Table 2-7**, all intersections are currently operating at acceptable LOS. However, some of the movements experience high delays. Currently, all movements are operating within acceptable LOS at the unsignalized driveway intersections along SR 31.

2.11 Railroad Crossings

There are no railroad facilities located within the project limits.

2.12 Crash Data and Safety Analysis

Crash data for the SR 31 segment between SR 80 and SR 78 was obtained for the most recent five-year period (2017-2021) from FDOT District One and State Safety Office GIS (SSOGis) (2017). A total of 33 crashes were reported during the five-year analysis period. Out of the 33 crashes reported, one (3%) was a fatal crash, 11 (33%) of the crashes resulted in injuries, and the remaining 21 (64%) were property damage only crashes.

Along the project corridor, one pedestrian crash (3%) and one bicycle crash (3%) were reported. The pedestrian crash was a fatal crash, which occurred during the daylight, clear weather, dry roadway surface condition and the event happened on the shoulder along SR 31. The bicycle crash was an injury crash. Rear-end crashes accounted for 34% (11) of the total crashes. The majority of crashes (64%) occurred under daylight conditions. Four crashes were reported due to bridge gate operations. Two of the crashes involved hitting the barrier arm, and two vehicles failed to stop after the bridge gate warning, causing rear-end collisions.

A total of seven crashes were reported at the West Marina Drive intersection. The crash types were rear-end crashes (3), head-on crashes (2), angle crashes (1), and other (1). The ICE memorandum (August 2022) contains crash data for the SR 31 at SR 80 intersection.

2.13 Drainage

The project is located within the Tidal Caloosahatchee sub-basin of the Caloosahatchee River Watershed, as defined by the South Florida Water Management District (SFWMD). The tidal portion of the Caloosahatchee River extends 33.2 miles upstream from the Gulf of Mexico to the Franklin Lock. The Caloosahatchee River traverses the project limits and serves as the primary outfall for the project area. This segment of SR 31 is located within WBID 3240C - Caloosahatchee Estuary (Tidal Segment 3 – per the current 303(d) list) and is listed as impaired for Nutrients and Dissolved Oxygen. A Total Maximum Daily Load (TMDL) has been adopted for this WBID and a

water quality nutrient loading analysis has been performed for Environmental Resources Permit (ERP) purposes.

There are four existing cross drains and one existing bridge (movable) within the project limits, as summarized in **Table 2-9** and shown in **Figure 2-6**. The cross drains provide conveyance of offsite and onsite runoff through the roadway corridor with eventual discharge into the Caloosahatchee River. In the proposed conditions, the cross drains have been designed to accommodate offsite flows and maintain current drainage patterns.

Roadway runoff sheet flows to adjacent natural wetlands and undeveloped properties, which then outfall to the Caloosahatchee River without providing formal water quality treatment or attenuation. The roadway project corridor is divided into two roadway basins: Basin 1 south of the river (between SR 80 and the profile high point over the Caloosahatchee River), and Basin 2 north of the river (between the profile high point over the Caloosahatchee River and SR 78). Although the project corridor is comprised of two roadway drainage basins, only Basin 1 was evaluated for pond siting. The Basin 2 (from the proposed bridge high point to north of the Caloosahatchee River to the End Project at SR 78) SMF (named Pond 2) recommended alternative was determined under the adjacent SR 31 North Design-Build project to the north (FPID 428917-1-22-01 & 442027-2-54-01).

Table 2-9. Summary of Existing Cross Drains

Structure Number	FDOT Milepost	Description
CD-01	0.221	Double 36" RCP
CD-02	0.682	Double 32" RCP
#120064	0.970 – 1.118	777.9' Bridge over Caloosahatchee River (Wilson Pigott Bridge)
CD-03	1.425	Single 24" RCP
CD-04	8.401 (SR 80)	Double 36" RCP

Figure 2-6. Cross Darin Locations

2.13.1 Floodways/Floodplains

The Federal Emergency Management Agency (FEMA) has developed a Flood Insurance Rate Map (FIRM) for the study area. The relevant FIRM panel numbers are 12071C0282F and 12071C0284F for Lee County, dated June 28, 2019. The majority of the project is designated Zone AE with the 100-yr flood stage at elevation 10 NAVD 88 while the shorelines adjacent to the Caloosahatchee River are Zone AE elevation 11 NAVD 88.

Per a coordination meeting with SFWMD in September 2019, floodplain compensation (FPC) sites will not be required for the project because the floodplain is in the Tidal Caloosahatchee River Basin and the Franklin Lock further east is considered the tidal limits. Existing SFWMD permits were researched in the project vicinity and no floodplain compensation has been required for adjacent development.

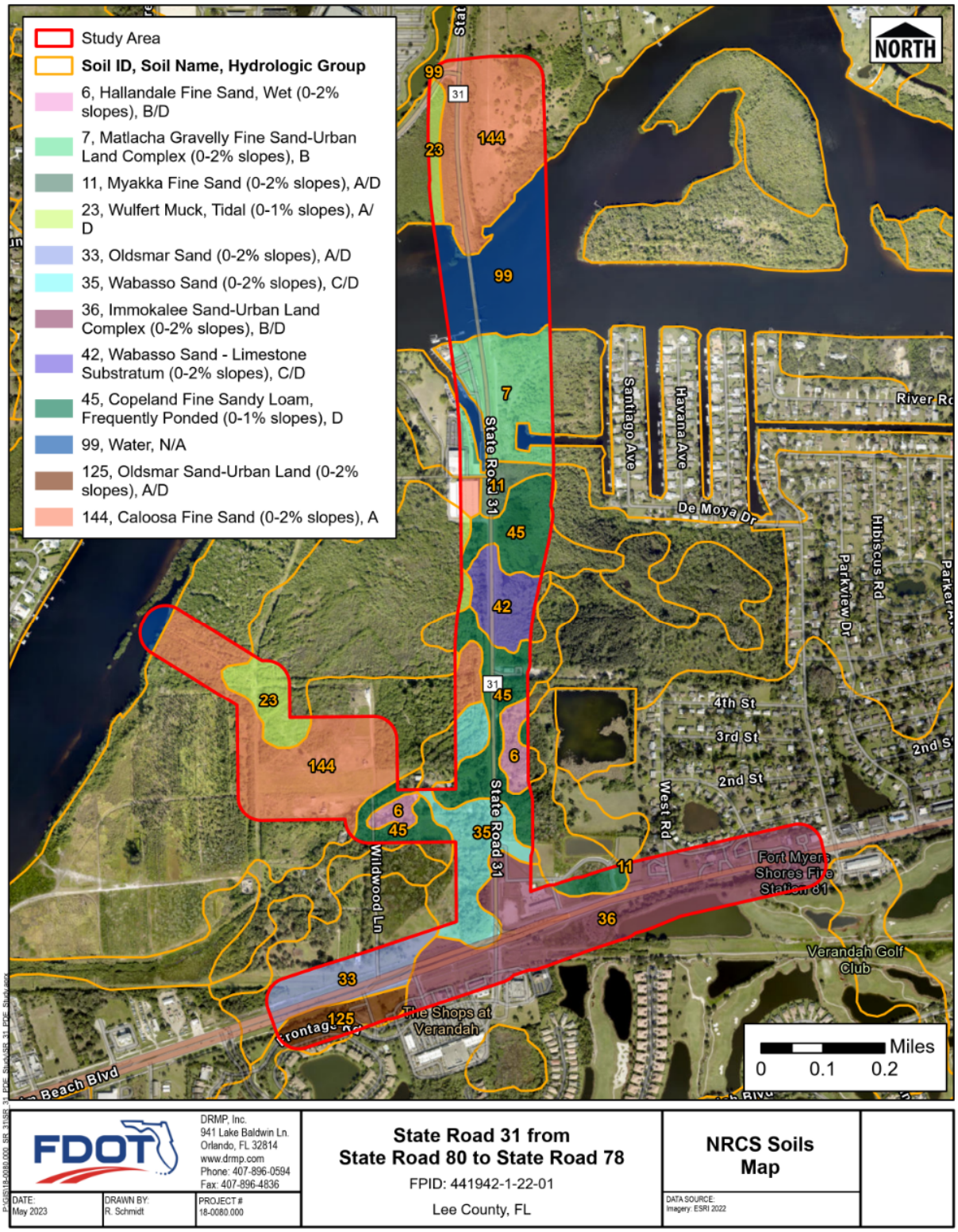
The area of the Caloosahatchee River that is located within the limits of the project is downstream of the Franklin Lock (S-79), which is located to the east of the project. The Franklin Lock separates the freshwater portion of the Caloosahatchee Canal on the east, from the 33.2-mile long, saline tidal estuarine portion of the Caloosahatchee River on the west.

2.14 Soils and Geotechnical Data

The Soil Survey of Lee County, FL (Natural Resources Conservation Service [NRCS], 2021) was reviewed to determine the soil types and characteristics within the study area. According to the soil survey, there are 12 different soil types located within the study area. The Soil Survey results are included in the *Natural Resources Report* (NRE) (October 2023), prepared under separate cover.

The majority of soils encountered within the study area are classified as Hydrologic Soil Group (HSG) B or D soils. HSG B consists of moderately deep or deep, moderate to well drained soils that have a moderately fine to course texture. HSG D consists of soils with permanently high water tables and often indicative of wetlands or depressions. These types of soils are poorly to very poorly drained soils with high groundwater tables. **Figure 2-7** depicts the location of the soils mapped within the study area.

Figure 2-7. NRCS Soils Map



2.15 Utilities

Thirteen Utility Agencies/Owners (UAO) have been identified in the project area through utility coordination efforts and a Sunshine 811 Design Ticket. **Table 2-10** identifies utility owners, locations, and types in the project area. Utility contact information is included in the *Utility Assessment Package (UAP)* (April 2024). Base maps were sent to utility providers with a request to provide information on existing and planned utilities. At the time of utility efforts, none of the UAOs indicated future planned facilities or upgrades to existing facilities within the project limits.

Table 2-10. Existing Utilities in the Study Area

Utility Company	Description
Comcast	• Overhead facilities on the FP&L Distribution poles running east and west along the north side of SR 80 throughout the entirety of the project limits. • Underground facility risers down the FP&L Distribution pole, just east of Lakeview Drive. This facility crosses SR 80 and runs west, along the south side of SR 80, before turning and running south along the east side of Babcock Ranch Road and out of the project limits. • Overhead facilities on the FP&L Distribution poles start on the northeast intersection of SR 31/SR 80 and run north, along the eastside of SR 31, ending just south of the bridge. • Underground facility starts just south of the drawbridge on the east side of SR 31 and runs north for approximately 0.4 miles. This facility then turns and runs west, crossing SR 31, and continuing south along the west side of SR 78 for approximately 100'. This facility then crosses SR 78 and risers up the Lee County Electric pole, where it continues to run south along the east side of SR 78 and out of the project limits. • Underground facility risers down the FP&L Distribution pole just east of W Marina Road. This facility crosses SR 31 and ends in a pedestal. • Underground facility risers down the PF&L Distribution pole on the east side of SR 31, approximately 800' south of the bridge. This facility then crosses SR 31 and runs north along the east side of the service road.
CenturyLink – Local	• 8-4" Duct with BT and FOC that enters the project limits from the eastern limits of SR 80. These facilities run west, along the north side of SR 80, ending in a handhole just east of Wildwood Lane. CenturyLink has three handholes along this run. • 100BT exits the handhole just east of Wildwood Lane and runs north out of the project limits. • Overhead telephone facilities on the FP&L Distribution poles cross SR 31 at Wildwood Lane. These facilities end in the handhole just east of Wildwood Lane. • 100BT exits the handhole on the northeast corner of SR 31/SR 80 and runs north, along the east side of SR 31, ending in a pedestal just east of W Marina Drive. CenturyLink has 3 pedestals just east of W Marina Drive. • 100BT exists the handhold just east of W Marina Drive and runs west, crossing SR 31 and tying into a pedestal. This BT then runs north, along the west side of SR 31, ending in a pedestal just south of the drawbridge. CenturyLink has three pedestals along this run.
CenturyLink – National	No Response Provided
City of Fort Myers	• 30" concrete reinforced pressure water main runs east and west along the south side of SR 80 through the entirety of the project limits. The facility is about 30' deep.
Crown Castle	• (4) 1.5" Conduit (1) with 216 CT FOC runs east and west along the south side of SR 80. Crown Castle has three Handholes within the project limits along this fiber run. • (4) 1.5" Conduit (1) with 216 CT FOC south along the west side of the Western Public shopping plaza entrance. • Aerial fiber enters the project limits along the east side of SR 78. This fiber runs north, before ending in a Handhole approximately 300' south of the SR 78 & SR 31 interchange. (4) 1.5" conduit (1) with 72 CT FOC leave this Handhole and run west, crossing SR 78, into another Handhole. This facility then runs north, along the west side of SR 78, for approximately 300' before it turns and runs east, crossing SR 31, and ending in a Handhole. This fiber then runs north, along the east side of SR 31, for approximately 150'. This fiber then becomes aerial and runs north, out of the project limits.
Florida Gas Transmission (FGT)	• 26" Natural Gas pipeline enters the project limits from the north, running south along the east side of SR 31. This pipeline continues to run south until it turns and runs west, just south of W Marina Drive.

Florida Power & Light – Distribution	• Overhead facilities run east and west along the north side of SR 80 throughout the entirety of the project limits. • Overhead facilities begin on the northeast corner of Wildwood Lane and SR 80 and run south, crossing SR 31, before ending. • Overhead facilities begin on the northeast corner of SR 31/SR 80 intersection. These facilities run north, along the east side of SR 31, ending just south of the bridge. • Overhead facilities cross SR 31 just north of W Marina Road. These facilities run north along the west side of SR 31, ending just south of the bridge.
Florida Power & Light – Transmission	• 138kV TX lines enters the project just east of the western project limits on SR 80. This facility crosses SR 80 and runs east, along the south side of SR 80. This facility then crosses Babcock Ranch Road before it turns and runs southeast, outside of the project limits. • 230kV TX line enters the project just east of the western project limits on SR 80. This facility crosses SR 80 and runs east, along the south side of SR 80. This facility then crosses Babcock Ranch Road before it turns and runs southeast, outside of the project limits.
Lee County Electric Cooperative	• (2) 25kV powerlines enter the project limits on the east side of SR 78. These lines run north, crossing SR 31 just north of the SR 31/SR 78 interchange. These lines then run north, along the east side of SR 31 and out of the project limits. • Overhead street lighting circuits run along the west side of SR 31 near the northern limits of the project. These facilities have been marked to be removed.
Lee County Traffic	Lee County Traffic is the maintain agency for the FDPT BFOC and street lighting runs east and west along SR 80.
Lee County Utilities	**Sanitary** • 24" Force Main runs east and west along the north side of SR 80 throughout the entirety of the project limits. • 4" Force Main crosses SR 80, just west of Wildwood Lane. • 4" Force Main starts on the northwest corner of SR 31/SR 80. This facility crosses SR 80 and continues south, along the west side of Babcock Ranch Road. • 6" Force Main starts on the northwest corner of SR 31/SR 80. This facility runs north, along the west side of SR 31 for approximately one mile. This facility then runs along the service road at W Marina Drive and continues north, crossing the river, and then continuing north along the west side of SR 31. This facility then crosses SR 78 (at the SR 31/SR 78 intersection) and continues to run west out of the project limits. **Water** • 24" Water Main runs east and west along the north side of SR 80 throughout the entirety of the project limits. • Water service line crosses SR 80, just west of Wildwood Lane. • Six hydrants along the north side of SR 80 within the project limits. • 12" Water Main begins on the northwest corner of SR 31/SR 80. This facility then runs north, along the west side of SR 31 for approximately one mile. This facility then runs along service road at W Marina Drive and continues north before ending just before the river. • 12" Water Main crosses SR 31 approximately 400' north of the SR 31/SR 80 intersection.
Summit Broadband	• Underground 144ct FOC in conduit runs east and west along the south side of SR 80 throughout the entirety of the project limits.
TECO Peoples Gas	• 2" PE Gas Main enters the project from the eastern limits of SR 80. This facility runs west, along the north side of SR 80, before ending in the northeast corner of the SR 31/SR 80 intersection. • 8" Steel Gas Main enters the project from the eastern limits of SR 80. This facility runs west, along the south side of SR 80 to the southeast corner of the SR 31/Babcock Ranch Road intersection. This facility then turns and runs north, crossing SR 80, along the east side of SR 31 for approximately 1.4 miles. This facility then turns and runs west, crossing SR 31, and typing into an existing 8" steel gas main along the west side of SR 78. • 8" Steel Gas Main enters the project limits along the west side of SR 78. This facility runs north, along the west side of SR 78 and continues north along the west side of SR 31 and out of the project limits. • 6" PE Gas Main runs along the west side of the service road at W Marina Drive. This facility crosses SR 31 at W Marina Drive and ties into the existing Gas Main along the east side.

2.16 Lighting

There is no consistent lighting within the project limits. Lighting within the project limits is sporadic, located mainly at the beginning and end of the bascule bridge and before the intersection of SR 80 and SR 31.

The light poles at the beginning and end of the bascule bridge are Drop Glass HPS GE Cobrahead and are owned by FDOT District One. The lighting located adjacent to SR 80 on SR 31 are all collocated LED Acuity Brands ATB Luminares located on Florida Power and Light poles.

2.17 Signs

There are no overhead signs within the project limits on either SR 31 or SR 80. As shown in the **Table 2-11**, there are two multi-post signs on SR 31, along with a small number of single post signs.

Table 2-11. Existing Signs

SR 31 MP Signage	SR 80 MP Signage
Arcadia 38	Labelle 21 Clewiston 53
Labelle Fort Myers	Davis Boulevard Second Signal

2.18 Aesthetics Features

The visual landscape for most of the project corridor consists of rural views with vacant fields and wooded area. There are short sections of suburban transition area with commercial and retail nodes at major intersections. The view of the Caloosahatchee River can be considered a unique visual resource in the project corridor. Notable stakeholders that may be sensitive to aesthetic effects of the project include the Sweetwater Landing Marina and recreational users (i.e., boaters).

2.19 Bridges and Structures

The Wilson Pigott Bridge (Structure No. 120064) over the Caloosahatchee River was constructed in 1960. The existing structure spans 777'-9" and consists of one 140'-0" movable span flanked on both ends by adjacent 38'-10½" steel beam spans, three 40-foot concrete beam approach spans to the south, and eight concrete beam approach spans to the north (six 60-foot spans and two 40-foot spans). The superstructure is supported on concrete pile bents and piers founded on steel piles.

The existing typical section for the structure is comprised of two 10'-0" lanes carrying bi-directional traffic, and 3'-6" sidewalks along the edges of the deck. The movable span provides a clear navigational width of 90-feet, measured between the inside face of fenders. When closed, the bascule span provides approximately 23-feet of clearance at the face of its fenders, and 26-feet of clearance at the center of the span above mean high water (M.H.W.) for passage of lower height vessels. Several major repairs have been completed, including an emergency repair in 2006.

Major bridge repairs were completed in 1986, 1994, and 2008. Emergency repairs were performed in 2006 and a major strengthening project was completed in 2020.

Based on the bridge inspection report/study conducted by FDOT in October 2021, the existing structure received a sufficiency rating of 52. Although the health index is 95.52 due to the most recent repairs, the bridge has substandard elements with design deficiencies, including:

- Narrow roadway widths
- Narrow pedestrian facilities
- Substandard bridge rails

The Wilson Pigott Bridge has reached a critical threshold in which deterioration is expected to accelerate. Based on the age of the bridge with respect to its intended design life and structural condition, the bridge was programmed by FDOT for replacement.

More information is included in the *BDR (March 2023) – Wilson Pigott Bridge* (#120064).

3 FUTURE CONDITIONS

3.1 Roadway Segments

3.1.1 Future Context Classification

The future roadway context classification for SR 31 is Suburban Commercial (C3C) from SR 80 to SR 78. The future roadway context classification for SR 80 will remain Suburban Commercial (C3C). Additional information on the SR 31 context classification is included in the *Context Classification Memorandum* (May 2018).

3.1.2 Future Daily Traffic Volumes

The *Project Traffic Analysis Report* (PTAR) (April 2020) and the *PTAR Addendum* (May 2023) document the development of the Existing Year (2019), Opening Year (2025), and Design Year (2045) AADT volumes for the SR 31 study corridor. **Table 3-1** summarizes the future year AADTs for the road segments in the study area. The PTAR provides more information on the methodology for evaluation of future conditions, including documentation and approval of the utilization of the GSVT for the roadway LOS. While the GSVTs have documented limitations, they clearly demonstrate the need to widen the two-lane roadway due to exceeding capacity thresholds. Additionally, intersection performance tends to be the driving factor for operations for an arterial.

Table 3-1. Future Year AADT Volumes

Roadway	Year 2019	Year 2025[1]	Year 2045[1]
SR 31			
North of SR 80	13,000	31,500	63,000
South of SR 80 (commercial access)	7,200	8,600	12,500
SR 80			
West of SR 31	36,000	37,500	53,500
East of SR 31	39,000	37,900	49,300

Note: 1) Opening Year (2025) and Design Year (2045) volumes are based on six-lanes.

3.1.3 Future Year No-Build Alternative Levels of Service

The No-Build Alternative assumes that the existing geometric configurations will remain as is for the roadways within the project limits. FDOT has classified the study segment along SR 31 between SR 80 and SR 78 as an Urban Minor Arterial with a LOS target of "D."

To assess the arterial LOS of this segment, the generalized peak hour directional service volumes from the 2013 FDOT Quality/Level of Service Handbook were used. As shown in **Table 3-2**, the SR 31 corridor from SR 80 to SR 78 is anticipated to operate below acceptable level of service during both AM and PM peak hours for the No-Build Alternative.

Table 3-2. No-Build Design Year (2045) Roadway LOS Summary

Roadway/ Segment	LOS Std	Posted Speed Limit	Peak Hour Directional Service Volume	AM Peak				PM Peak			
				Total	NB	SB	Peak Dir LOS	Total	NB	SB	Peak Dir LOS
No-Build Alternative											
SR 80 to SR 78	D	40	880	5,087	2,350	2,737	F	5,162	2799	2363	F

3.2 Intersections

3.2.1 Future Year Intersection Analysis

Intersection analysis was not conducted for the No-Build Alternative as the segment analysis reported LOS F conditions. Given this, capacity improvements would be necessary, which in turn necessitates widening/improvement of the SR 31/SR 80 intersection to accommodate additional travel lanes. Expanding the No-Build Analysis to the intersections would yield a redundant outcome already indicated by the failing roadway. Additionally, attempting to load future volumes onto a two-lane road would produce software errors and would yield impractical results.

3.3 Future Land Use

The overall SR 31 corridor is transitioning from more rural uses to suburban, including Babcock Ranch. Retail and commercial market activity has followed the area's growth, and the corridor provides access to services and activity centers within and outside the project corridor, such as nearby commercial and shopping areas, the Sweetwater Landing Marina, the Lee Civic Center, and the Southwest Florida Lee County Fairgrounds. Growing activity centers have become notable traffic generators for commuters living in the area.

Much of the growth contributing to the increase in traffic comes from the Babcock Ranch Development of Regional Impact (DRI) located to the north of the SR 31 project segment. Although the Babcock Ranch DRI is in Charlotte County, some development is expected to occur in Lee County, such as the Babcock Ranch Mixed-use Planned Development (MPD) and a marina to be sited northeast of the project corridor.

The Babcock Ranch DRI and MPD is approved for 19,500 residential dwelling units, almost 5 million square feet of office and retail space, and 600 hotel rooms. In addition, the DRI is approved for 650,000 square feet of industrial space, which will further increase the volume of trucks moving freight along the corridor. Also, eight Planned Unit Developments exist or are proposed along the SR 31 project segment, including a mixed-use development southeast of SR 31 and SR 80. The Sweetwater Landing Marina, located along the corridor, has expanded operations.

Development trends in the surrounding area include conversion of adjacent vacant or underutilized properties, with several projects in the early stages of planning or under construction. The most notable growth pressure within the project limits is generally east of SR 31 and at the intersection with SR 80.

4 PROJECT DESIGN CONTROLS & CRITERIA

The design criteria for the proposed project adheres to the FDM, January 2023, where applicable. The proposed design speed along the project corridor is 45 mph and 30 mph on the flyover ramps. The design year for the proposed improvements is 2045. The design criteria used for this PD&E study are listed in **Table 4-1**.

Table 4-1. Design Criteria

Design Criteria		
Design Element	**Design Standard**	**Sources**
Design Vehicle	WB-62FL	2023 FDM, Section 201.6.2
Functional Classification		
SR 31	Urban Minor Arterial	FDOT Functional Classification Update GIS Dataset
SR 80	Urban Principal Arterial – Other	FDOT Functional Classification Update GIS Dataset
Context Classification		
SR 31	Suburban Commercial (C3C)	FDOT Preliminary Context Classification TDA
SR 80	Suburban Commercial (C3C)	FDOT Preliminary Context Classification TDA
Access Management		
SR 31	Class 5	FDOT Access Management Classification KMZ
SR 80	Class 5	FDOT Access Management Classification KMZ
Design Speed		
SR 31	45 mph	2023 FDM, Table 201.5.1 (Note 2)
SR 80	45 mph	2023 FDM, Table 201.5.1 (Note 2)
Flyover Ramps	30 mph	2023 FDM, Table 201.5.2
Shared-Use Path	18 mph	2023 FDM, Section 224.9
Median Widths		
SR 31	22-ft	2023 FDM, Table 210.3.1
SR 80	22-ft	2023 FDM, Table 210.3.1
Border Width		
SR 31	14-ft	2023 FDM, Table 210.7.1
SR 80	14-ft	2023 FDM, Table 210.7.1
Maximum Degree of Curve		
SR 31 & SR 80	8° 15' (e_{max} = 0.05)	2023 FDM, Table 210.9.2
Flyover Ramps	20° 00' (e_{max} = 0.05)	2023 FDM, Table 210.9.2
Shared-Use Path	25° 00'	2023 FDM, Table 224.10.1
Horizontal Curve Length (Min)		
SR 31 & SR 80	675-ft (Desired), (400-ft min)	2023 FDM, Table 210.8.1
Flyover Ramps	450 (Desired), 400 (min) @ 30 mph	2023 FDM, Table 211.7.1
Min. Stopping Sight Distance		
SR 31 & SR 80	360-ft (<2%) 385-ft (4% Downgrade) 339-ft (4% Upgrade)	2023 FDM, Table 210.11.1
Flyover Ramps	200-ft (<2%) 208-ft (4% Downgrade) 188-ft (4% Upgrade)	2023 FDM, Table 211.10.2
Shared-Use Path	156-ft (4% Grade) Downhill 120-ft (4% Grade) Uphill	2023 FDM, Table 224.10.2
Decision Sight Distance		
SR 31 & SR 80	800 lf (Avoid. Maneuver B)	2018 AASHTO, Table 3-3, pg. 3-7
Flyover Ramps	490 lf (Avoid. Maneuver B)	2018 AASHTO, Table 3-3, pg. 3-7
Maximum Profile Grades		
SR 31 & SR 80	4%	2023 FDM, Table 210.10.1 (Note 1)
Flyover Ramps	4%	2023 FDM, Table 211.9.1 (Note 1)

Shared-Use Path	5% (w/o landings)	2023 FDM, Section 224.6
Maximum Change in Grade without a VC		
SR 31 & SR 80	0.70%	2023 FDM, Table 210.10.2
Flyover Ramps	1%	2023 FDM, Table 210.10.2
Crest Vertical Curves (K_{MIN} & L_{MIN})		
SR 31 & SR 80	K=98, L=135-ft	2023 FDM, Table 210.10.3 and 210.10.4
Flyover Ramps	K=31, L=90-ft	2023 FDM, Table 211.9.2 and 211.9.3
Sag Vertical Curves (K_{MIN} & L_{MIN})		
SR 31 & SR 80	K=79, L=135-ft	2023 FDM, Table 210.10.3 and 210.10.4
Flyover Ramps	K=37, L=90-ft	2023 FDM, Table 211.9.2 and 211.9.3
Vertical Clearance		
Road over Roadway	16.50-ft	2023 FDM, Table 260.6.1
Road over Roadway (Construction affecting Existing Bridge)	16.00-ft	2023 FDM, Table 260.6.1
Road over Waterway	55-ft above Mean High Water (MHW) (90-ft horizontal clearance)	USCG Clearance Guide (Index 42, Tice to Moore Haven)
Overhead Signs	17.50-ft	2023 FDM, Table 210.10.3
Traffic Signals	17.50-ft	2023 FDM, Table 210.10.3
Dynamic Message Sign (DMS)	19.50-ft	2023 FDM, Table 210.10.3
Lane Widths & Cross Slope		
SR 31 & SR 80	11-ft min.	2023 FDM, Table 210.2.1
Two-Lane Ramps	24-ft min	2023 FDM, Table 211.2.1
Maximum Lane "Cross Slope"	4% Tangent Sections	2023 FDM, Figure 210.2.1 / 2023 FDM, Figure 211.2.1
Maximum Δ in Cross Slope at Cross Over Line (%)	6% Ramp Gores <35mph	2023 FDM, Table 211.2.2
Roadway Cross-Slopes in same direction	2 lanes 2%; Additional Lane 3%	2023 FDM, Figures 210.2.1, 211.2.1, & Section 260.4
Lane Width – Shared-Use Path	10-ft min. to 14-ft (12-ft standard)	2023 FDM, Section 224.4
Shoulder Width – Bridges		
Flyover Ramps	6-ft min. to 8-ft Inside, 10-ft Outside	2023 FDM, Figure 260.1.1
Shoulder Width – Roadway		
SR 31 & SR 80	Type E Curb Inside Type F Curb Outside	2024 FDM Exhibit 913-4
Max. Deflections w/o Curve		
SR 31 & SR 80	1°	2023 FDM, Section 210.8.1
Flyover Ramps (40 mph or less)	2°	2023 FDM, Section 211.7.1

5 ALTERNATIVES ANALYSIS

The alternative analysis process is essential for evaluating the effectiveness of project alternatives in meeting the project purpose and need, and for assessing potential impacts on the social, cultural, natural, and physical environment. Also, input from the public, local representatives, and state and federal resource/regulatory agencies is integral to the evaluation process. The process culminates in selecting a Preferred Alternative, which will advance through additional stages for project implementation.

The following section summarizes the alternatives evaluation for the project. The process included evaluating multiple options for typical section and alignment options, bridge options, and intersection options. Alternatives were compared and evaluated on factors such as future traffic operations conditions, potential environmental impacts, constructability, access requirements, utility impacts, and cost. Certain alignment and intersection options were excluded from further consideration as feasible build alternatives for detailed study based on specific factors or a combination of these factors.

The future AADT along the corridor is projected to range from 56,800 to 63,000 vpd in the 2045 Design Year. As noted in **Section 2.3**, the SR 31 context classification is Rural (C2) throughout the project limits. Overall, SR 31 is transitioning to Suburban Commercial (C3C) in the project study area.

Table 5-1 and **Table 5-2** include generalized service volume thresholds and associated levels of service. The projected demand on SR 31(63,000 vpd) exceeds the maximum threshold AADTs associated with a LOS D for a two-lane and four-lane facility for both the C2 and C3C roadways. Based on the transitioning context classification and projected conditions, the six-lane facility will provide better overall traffic conditions in the design year. Furthermore, the planned grade-separation of SR 80 signalized intersection at the south end of the project will enhance mobility and safety along the SR 31 study corridor.

Table 5-1. C2 (Rural) Motor Vehicle Highway Generalized Service Volume

Facility	B	C	D	E
2-Lane Facility	4,600	8,200	14,000	28,500
4-Lane Facility	32,000	45,800	55,700	63,900
6-Lane Facility	48,000	68,300	83,700	95,900

Source: FDOT 2023 Multimodal Quality/LOS Handbook, January 2023.

Table 5-2. C3C (Suburban Commercial) Motor Vehicle Highway Generalized Service Volume

Facility	B	C	D	E
2-Lane Facility	*	15,300	21,700	*
4-Lane Facility	*	30,700	36,600	*
6-Lane Facility	*	47,700	54,100	*
8-Lane Facility	*	64,000	64,200	*

Source: FDOT 2023 Multimodal Quality/LOS Handbook, January 2023.

5.1 No-Build (No-Action) Alternative

Under the provisions of NEPA, the effects of not implementing the proposed action must also be considered in the decision-making process. The No-Build (or No-Action) Alternative also serves as

the baseline for comparing the impacts of the build alternatives in the Design Year (2045). This alternative assumes that the transportation system for Lee County would evolve as currently planned in the Lee County MPO *2045 LRTP* but without major improvements to the existing SR 31 corridor between SR 80 and SR 78.

Under the No-Build Alternative, the Department would continue maintenance and repairs of the existing roadway and Wilson Pigott Bridge. This option would not alter the existing typical section of SR 31 or the SR 31/SR 80 intersection and would not include a bridge replacement.

Advantages of the No-Build Alternative include no impacts to the natural environment and no new costs for design and construction. However, the No-Build option has other costs associated with it; maintenance becomes increasingly costly and disruptive, and each repair requires programming funds for design and construction.

The No-Build Alternative is inconsistent with the Lee County MPO *2045 LRTP* and its designation as an Emerging SIS. Additionally, the No-Build Alternative does not meet the purpose and need for the study, including the need to: accommodate future travel demand, address poor level of service and congestion at the SR 31/SR 80 intersection, address bridge age and malfunctions, improve pedestrian safety along SR 31, improve emergency evacuation, and enhance regional connectivity.

5.2 Transportation Systems Management and Operations (TSM&O) Alternative

TSM&O alternatives involve improvements designed to maximize the utilization and efficiency of the existing facility through improved system and demand management. The various TSM&O options generally include traffic signal and intersection improvements, access management, and transit improvements. The additional capacity required to meet the projected traffic volumes along SR 31 in the design year cannot be provided solely through the implementation of TSM&O improvements, but TSM&O strategies of access management and intersection improvements are included as part of the Build Alternatives for the corridor.

5.3 Build Alternative(s)

This section provides detail on the alternatives considered for this project, which includes the following actions:

- Widen the existing two-lane roadway
- Replace the Wilson Pigott Bridge over the Caloosahatchee River
- Improve the SR 31/SR 80 intersection

Widening/Reconstruction and Alignment Options

A "best-fit" roadway alignment was developed based on a six-lane median divided typical section. The existing right-of-way width varies throughout the project corridor, and additional right-of-way will be needed to improve the existing roadway. Consideration was given to minimizing impacts to adjacent resources, development, and the FGT line.

Widening of the roadway on existing alignment is not feasible due to raising the grade above the 100-year flood plain. Therefore, SR 31 will be reconstructed. The horizontal alignment developed for the SR 31 reconstruction generally follows the existing SR 31 baseline between the crossover and the shift eastward prior to the bridge. The alignment was optimized to minimize

impacts to the FGT easement and to minimize impacts to adjacent property owners and developments.

Three alignments (Center, West, and East) were screened for the proposed bridge replacement over the Caloosahatchee River (see **Figure 5-1**), prior to the SR 31 North Design-Build project establishing an alignment. The options were compared based on engineering factors, including horizontal alignment length, bridge length, marina access, SR 78 intersection elevation, bridge requirements, degree angle of channel to bridge, maintenance of traffic (MOT), and constructability. Other evaluation factors included business impacts, utility impacts (e.g., FGT easement encroachment), right-of-way requirements, and potential for wetland impacts.

The three alignment options evaluated during the PD&E process are summarized below.

Center Alignment – This option would replace the existing bascule bridge with two high-level fixed bridges. The new alignment would extend from the Sweetwater Landing Marina's dry storage unit to the south bank of the river. Access to the Marina would be extended south to accommodate the new bridge. A frontage road centered beneath the raised roadway would provide SR 31 access to the marina as well as Boathouse Tiki Bar and Grill. North of the river, the alignment would cross the FGT easement diagonally to connect to the SR 78 intersection (i.e., the southern terminus of the SR 31 North Design-Build project).

West Alignment – This option would place a single high-level fixed bridge 650 feet west of the existing bridge and would connect to existing SR 31 with curves both north and south of the river. South of the river, the elevated alignment would avoid all impacts to the FGT and other utilities located near the existing bridge but would require relocation of utilities at the intersection of SR 78 and elevating the new intersection with SR 78 to meet bridge height and grade requirements. North of the river, it would cross FGT diagonally to join the southern terminus of the SR 31 North Design-Build project, requiring modifications to that project's limits.

This option would impact the Lee Civic Center's stormwater pond and would require an access road about 900 feet south of the marina. A complex MOT plan would be necessary, including a temporary intersection and access to the civic center.

East Alignment – This option would place a single high-level fixed bridge 350 feet east of the existing bridge. South of the river, it would connect to the existing SR 31 corridor south of Sweetwater Landing Marina without crossing FGT and avoiding other utilities. The marina and restaurant would access SR 31 from an at-grade intersection just south of the marina's dry storage unit. The bridge construction would not impact travel on SR 31 and can be completed in a single phase. North of the river, it would connect to the southern terminus of the SR 31 North Design-Build project without crossing FGT. A separate project (FPID 444937-1) would address the SR 78 crossing of the FGT easement perpendicularly to connect to SR 31.

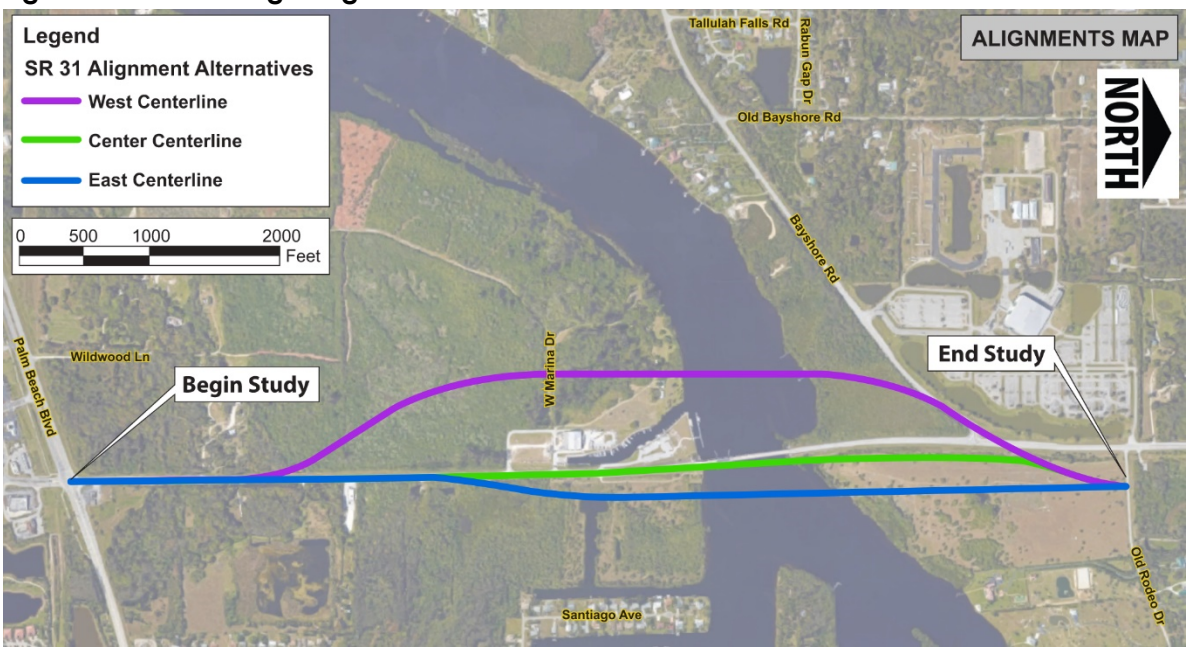
Notable differences include:

- Center option would require the longest bridge length, resulting in the longest access road to the marina and would require two bridges
- Center option would impact the most parcels, but the least overall right-of-way
- West option is substantially farther away from the existing bridge than the East option
- West option would have the highest acreage of wetland impacts and the Center option would have the lowest acreage of wetland impacts

The analysis resulted in removing the Center and West alternatives from further consideration.

The East Alignment was carried forward for evaluating the Build Alternatives in greater detail. The East option was more favorable in terms of weighing engineering, constructability, and potential for overall impacts. The East option has the most advantageous roadway geometrics, least amount of business and utility impacts, simplest MOT and construction effort, a preferred angle of the river channel to the bridge, and moderate wetland impacts.

Figure 5-1. SR 31 Bridge Alignment Alternatives



Bridge Alternatives (High-Level Fixed and Movable)

Two bridge alternatives were evaluated for the proposed Wilson Pigott Bridge replacement. The High-Level Fixed Bridge option would have three 11-foot lanes in each direction, and 8-foot shoulders and 12-foot shared use paths on each side. Pedestrians and bicyclists would be protected via a raised barrier and railing. This bridge would be 34 feet higher than the current bridge and would not disrupt traffic. The minimum vertical clearance over the channel for this bridge alternative is 55 feet, which is 29 feet higher than the existing bridge.

The Movable Bridge option would replace the existing bridge with the same type, pausing traffic movement over the bridge to allow boater passage. This option has the same typical section for the travel lanes and shoulders as the fixed bridge alternative but includes a 10-foot raised median outside of the movable portion of the bridge. The minimum vertical clearance over the channel for this bridge alternative is 26 feet.

SR 31/SR 80 Intersection Alternatives

Intersection analyses for the project are documented in the following Intersection Control Evaluation (ICE) technical memoranda:

- SR 31 at SR 80 ICE Stage 2 (August 2022)
- SR 31 at SR 80 ICE Stage 1 (March 2020)

Several options were evaluated for the intersection of SR 31 at SR 80:

- Signalized (existing)
- Quadrant Roadway (NW Quadrant)
- Displaced Left-Turn Lane/Median U-Turn
- Center Turning Overpass (centered over intersection)
- Center Turning Overpass (off-centered to south of intersection)
- Two independent flyovers with a crossover intersection on SR 31 north of SR 80

The ICE process concluded the following:

- The Signalized control option is the best operating at-grade alternative in the opening year but degrades substantially as the worst operating alternative in the design year.
- The Quadrant Roadway would result in the worst operating conditions in the opening year and the second worst operating conditions in the design year due to high left turn volumes.
- The Partial Displaced Left Turn/MUT was the third worst operating alternative in the opening year and design year due to high left turn volumes.
- Both Center Turning Overpass options would result in the best and second-best operating conditions, respectively, but would not perform as well as the Flyover.
- The Flyover alternative results in the best operating conditions and high benefit/cost ratio. This option is the highest ranked among the grade-separated options and is projected to provide the best operations in the design year.

The quadrant roadway (NW quadrant) and displaced left-turn lane/median U-turn had similar operational issues on SR 31. The displaced left-turn crossover intersection on SR 31 and the intersection at SR 31 with the quadrant roadway experience substantial left-turn traffic volumes at this signalized intersection, resulting in significant delays projected for the design year. Therefore, these options would have delay issues in the design year.

To identify the most suitable alternative, planning-level right-of-way and construction cost estimates were generated for each intersection control type. The right-of-way and construction cost estimates were compared to the safety and delay costs to calculate overall benefit/cost (B/C) ratios. The future delay and safety costs were calculated using the ICE Tool. Using the conventional signalized intersection option as the base case for benefit-cost comparison,

Table 5-3 provides the benefit result calculated using the ICE tool.

Table 5-3. ICE Benefit/Cost Analysis Results

Benefit Category	Northwest Quadrant Roadway	Displaced Left-Turn Lane/Median U-Turn	Center Turning Overpass (centered)	Center Turning Overpass (south)	Dual Flyover
Auto Passenger Delay	$(45,922,495)	$(12,143,731)	$29,857,861	$30,375,202	$36,729,974
Truck Delay	$(11,225,695)	$(2,924,143)	$7,437,188	$7,566,452	$9,134,624
Safety	$(24,531,245)	$17,130,559	$4,666,746	$10,750,431	$7,530,695
Net Present Value of Benefits	$(81,6,79,434)	$2,062,686	$41,961,795	$48,692,085	$53,395,294
Net Present Value of Costs	$9,331,228	$7,979,048	$20,667,409	$21,267,409	$18,267,409
Net Present Value of Improvement	$(91,010,663)	$(5,916,362)	$21,294,386	$27,424,676	$35,127,885
Benefit/Cost (B/C) Ratio	Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.	0.26	2.03	2.29	2.92
Delay B/C	Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.	Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.	1.80	1.78	2.51
Safety B/C	Control Strategy not preferred. Benefits are less than base case and cost is greater than base case.	2.15	0.23	0.51	0.41

The Flyover alternative was carried forward for evaluating the Build alternatives in greater detail because it will provide the best operating conditions in the design year. This alternative also has the highest B/C ratio.

5.4 Comparative Alternatives Evaluation

Reasonable options carried forward for the bridge type and intersection configuration were combined to form four individual Build Alternatives: 1A, 1B, 2A, 2B (see **Table 5-4**). All Build Alternatives included the six-lane typical section.

Table 5-4. Build Alternatives Considered

Alternative	High-Level Fixed Bridge	Mid-Level Movable Bridge	Traditional Signalized	Flyover Intersection

			Intersection	
1A	*		*	
1B	*			*
2A		*	*	
2B		*		*

The comparative evaluation results of the No-Build and Build Alternatives is provided in **Table 5-5**. The matrix includes estimated project effects such as future operating conditions, environmental (natural, cultural, physical) impacts, and estimated costs. Final design and construction costs in the table were based on 2022 LRE estimates, CEI costs were based on 12% of construction, and wetlands mitigation costs were based on the functional loss calculated in the UMAM and the cost of mitigation credits at Little Pine Island Mitigation Bank (LPIMB). As seen in **Table 5-5**, the No-Build Alternative does not meet the project purpose and need but is included as a baseline comparison option.

5.5 Selection of the Preferred Alternative

The Preferred Alternative is Alternative 1B (Six-lane widening/High-Level Fixed Bridge/Flyover Intersection at SR 80). Although all Build Alternatives would meet the project purpose and need, this alternative was selected for the following reasons:

- Notable community support at the January 31, 2023, public meeting
- Locally preferred (Lee County preference)
- Lowest long-term maintenance bridge
- Minimal impacts to the surrounding area
- Best and longest viability to accommodate traffic

Figure 5-2 illustrates the preliminary lane geometry for the Preferred Alternative. The graphic was created prior to the SR 31 North Design-Build establishing an alignment.

Appendix A includes the preliminary design plans for the Preferred Alternative.

Figure 5-2. Preferred Alternative Lane Geometry

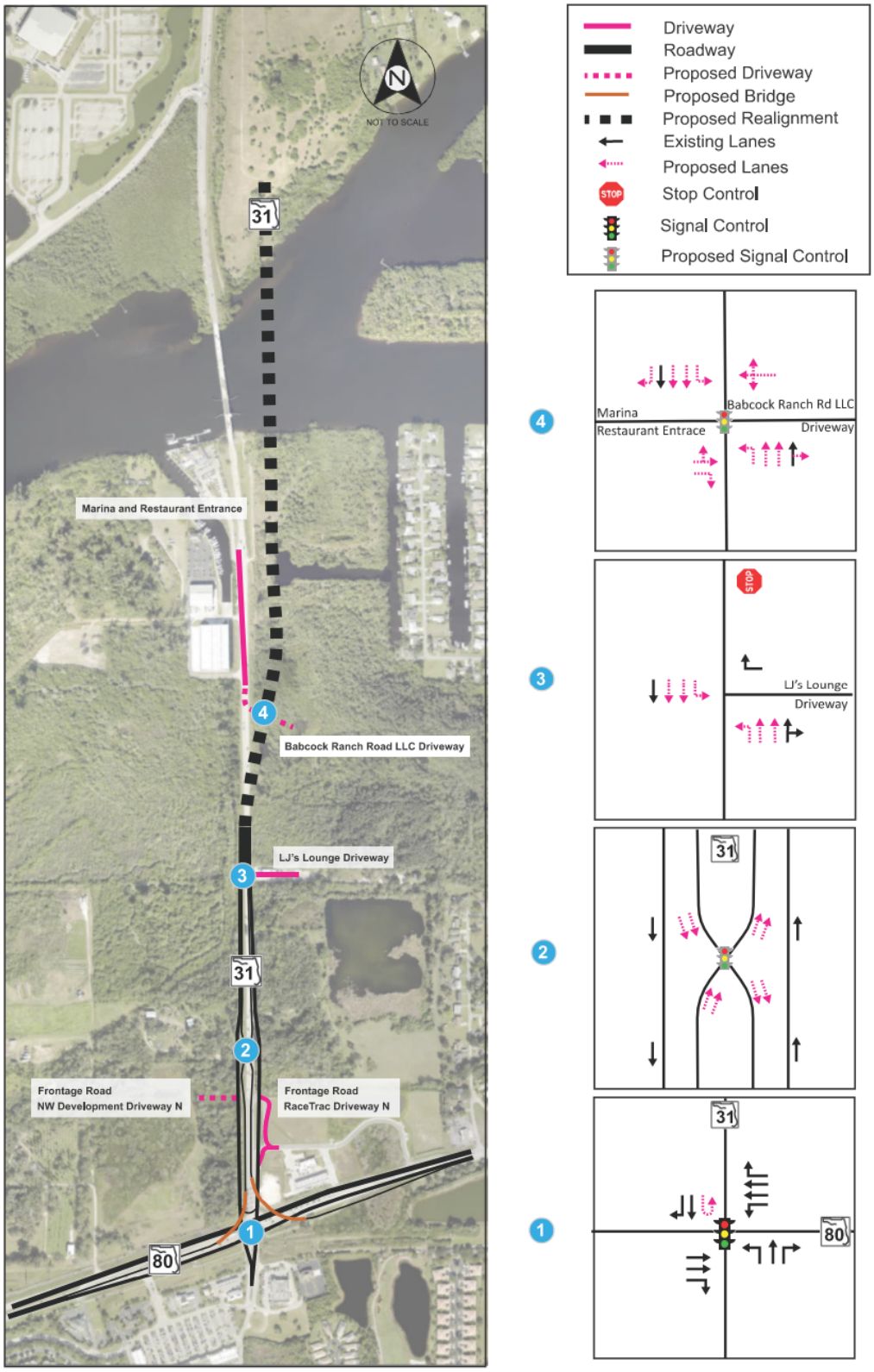


Table 5-5. Alternatives Evaluation Matrix

EVALUATION FACTORS	ALTERNATIVE	Alternative 1A	Alternative 1B	Alternative 2A	Alternative 2B	No-Build
	Roadway	Widen SR 31 to 6 Lanes	Widen SR 31 to 6 Lanes	Widen SR 31 to 6 Lanes	Widen SR 31 to 6 Lanes	No Widening
	Bridge	Replace bridge with high-level fixed	Replace bridge with high-level fixed	Replace bridge with mid-level movable (drawbridge)	Replace bridge with mid-level movable (drawbridge)	No Widening and No Replacement
	Intersection	Conventional signal at SR 80	Flyover at SR 80	Conventional signal at SR 80	Flyover at SR 80	No Improvements
ABILITY TO MEET PURPOSE AND NEED						
Accommodate future traffic demand		☑	☑	☑	☑	☒
Address bridge deficiencies						
Improve emergency evacuation/response						
POTENTIAL RIGHT OF WAY IMPACTS						
Relocations (#Business | #Residential | #Other)		0	0	0	0	0
Parcels (#Business | #Residential | #Other)		6 | 13 | 6	8 | 12 | 6	6 | 13 | 6	8 | 12 | 6	0
Right of Way to be acquired (acres)		33.8	31.8	33.8	31.8	0
POTENTIAL ENVIRONMENTAL IMPACTS						
Archaeological/Historic Resources Potential		Low	Low	Low	Low	N/A
Wetlands (acres)		13.3	13.1	13.3	13.1	0
Surface Waters (acres)		1.17	1.18	1.17	1.18	0
Floodplains (acres)		34.7	36.1	34.7	36.1	0
Noise Sensitive Receptors (#)		0	0	0	0	0
Public Recreation Resources (#)		0	0	0	0	0
Threatened/Endangered Species Potential		Moderate	Moderate	Moderate	Moderate	N/A
Utilities		Yes	Yes	Yes	Yes	0
Contamination Sites (#High | #Medium Risk)		0 | 1	0 | 1	0 | 1	0 | 1	0 | 0
TRAFFIC OPERATIONS						
SR 80 Intersection 2045 Average Delay+Travel Time (sec. AM | PM)		152.5 | 164.8	97.9 | 100.8	152.5 | 164.8	97.9 | 100.8	Over Capacity
Bridge Opening		No Openings	No Openings	Reduced Openings	Reduced Openings	No Change
ESTIMATED PROJECT COSTS (2022 $)						
Right-of-Way for Roadway and Stormwater Pond		$10,990,000	$11,160,000	$10,990,000	$11,160,000	$0
Wetland Mitigation		$2,930,000	$2,880,000	$2,930,000	$2,880,000	$0
Final Design and Construction		$131,000,000	$149,140,000	$173,390,000	$189,700,000	$0
Construction Engineering and Inspection		$15,720,000	$17,900,000	$20,810,000	$22,760,000	$0
Preliminary Estimate of Total Project Cost*		$160,640,000*	$181,080,000*	$208,120,000*	$226,500,000*	*

*Source: FDOT Long-Range Estimating System. Preliminary Estimate of Total Project Cost does not include maintenance costs; No-Build would result in higher maintenance costs.

6 PROJECT COORDINATION & PUBLIC INVOLVEMENT

A *Public Involvement Plan* (PIP) was prepared in February 2019 to detail the public involvement approach for the project. A *Comments and Coordination Report*, prepared under separate cover, fully documents the public and stakeholder involvement conducted for this project. Below is a summary of the public involvement activities.

6.1 Agency Coordination

Numerous local, state, and federal agencies were identified and initially contacted (June 22, 2018) by the FDOT through the Advance Notification (AN) process at the outset of the project in accordance with the PD&E Manual. As other concerned public agencies and stakeholders were identified, they were also contacted by FDOT. State and federal agencies with a high level of involvement in the project were also contacted directly.

FDOT coordinated with Lee County Department of Transportation (DOT) on November 3, 2022, and May 5, 2023, to provide presentations on the project. Attendees for the November 3rd presentation included representatives from Lee County DOT, FDOT, and consultants for both the SR 31 and SR 78 PD&E studies. Two additional presentations were made to the Lee County MPO Bike and Pedestrian Advisory Committee (BPAC) and Traffic Management and Operations Committee (TMOC) in June and July 2023. These presentations provided an overview of the project, including project limits, adjacent projects, and schedule. The public involvement process, including meeting summaries, comments/responses, and materials, are included in the *Comments and Coordination Report*.

6.2 Public Involvement

6.2.1 Public Workshop

The FDOT conducted an in-person Alternatives Public Meeting on Tuesday, January 31, 2023, at the Field House at Babcock Ranch. Subsequently, a virtual/online Alternatives Public Meeting was held on Tuesday, February 7, 2023, at 6 p.m. FDOT held the public meetings to present the Build Alternatives and the No-Build Alternative for the project.

A joint in-person Alternatives Public Meeting was initially planned for both this SR 31 PD&E and the SR 78 (I-75 to SR 31) PD&E studies for Tuesday, December 6, 2022, as the studies are in proximity to each other. The meeting was advertised, and notifications were sent the week of November 8, 2022, to elected and appointed officials, Environmental Technical Advisory Team (ETAT) members, and stakeholders for both studies. However, on November 22, 2022, the Lee County Civic Center, the intended venue for the meeting, informed the project team that their venue was no longer available because their facility was needed for Hurricane Ian relief efforts. FDOT distributed cancellation notices/advertisements shortly thereafter and the public meeting was able to be rescheduled for just the SR 31 PD&E Study. Due to uncertainty surrounding hurricane relief efforts at the civic center, FDOT made the decision to host the public at the Field House at Babcock Ranch.

FDOT distributed email notifications to elected and appointed officials, ETAT members, and interested parties/stakeholders. FDOT also prepared and mailed a newsletter announcing the public meetings to property owners along the corridor, advertised the public meetings in the

Florida Administrative Register and the News-Press, prepared and disseminated a press release to local media partners, and announced the in-person and online meetings on the project webpage and on the FDOT public meeting notice site.

At the in-person public meeting, 108 citizens and one elected official signed in. During the live online public meeting, 35 citizens attended. Attendees, whether in-person or online, were given the opportunity to provide feedback to FDOT regarding the four Build Alternatives discussed in **Section 5.4** and No-Build Alternative. Public comments were encouraged, and FDOT provided various outlets to obtain verbal or written comments, including with FDOT/consultant staff at the meeting or through other methods (mail, email, or website). A continuous project video presentation as well as mapping and displays provided project information, including project purpose and need, alternatives evaluation, and schedule. Representatives and project information from the adjacent SR 31 North Design-Build (428917-1) and SR 78 (444937-1) projects were also available to allow individuals to engage with those project teams.

Attendees were provided a project handout that included an overview of the PD&E study process, project purpose, alternatives evaluation results, project schedule and a comment form. During the comment period, 37 comments were received. The comments were generally in favor of the project, the flyover, and the fixed bridge. Multiple comments were concerned with the impacts to businesses, noise, and others had questions about the duration of construction. All comments received were considered prior to advancing the Preferred Alternative to final design.

Given the interest from the public and proximity of the study limits for both the SR 31 and SR 78 PD&E studies, project representatives attended the in-person SR 78 PD&E Study Alternatives Public Meeting in May 2023 and were available to answer questions about the SR 31 study.

6.2.2 Public Hearing

The public hearing was held on Tuesday, November 2, 2023, at the Field House at Babcock Ranch, 43281 Cypress Parkway, Babcock Ranch, Florida 33982. The formal hearing portion was live streamed online through GoToWebinar. Meeting materials were posted to the project website on October 26, 2023. The Draft Categorical Exclusion and supporting technical reports were made available for public review at the Riverdale Public Library and the FDOT SWIFT SunGuide Center from October 11 through November 12, 2023.

A total of 85 attendees participated in person and 36 joined virtually. Attendees were provided with a handout and the project team explained the comment process. The in-person event included an open house from 5-6 p.m., followed by the formal portion of the hearing at 6 p.m. for both in-person and online attendees. A project presentation was played, and the public had the opportunity to provide verbal comments. Two verbal comments were provided at the in-person event and there were no verbal comments from virtual attendees.

In addition to the verbal comments, other comments were submitted either by email, website, or by mail. In-person attendees were able to leave written comments. Two comment forms were received at the in-person hearing and two were received during the 10-day comments period following the meeting, ending November 12, 2023. A total of 11 comments were received with the majority submitted prior to the in-person hearing. The comments were generally in support of the project, with some comments concerned with intersection changes at SR 31/SR 80, property impacts, and noise. Responses to comments were sent out on January 12, 2024.

7 DESIGN FEATURES OF THE PREFERRED ALTERNATIVE

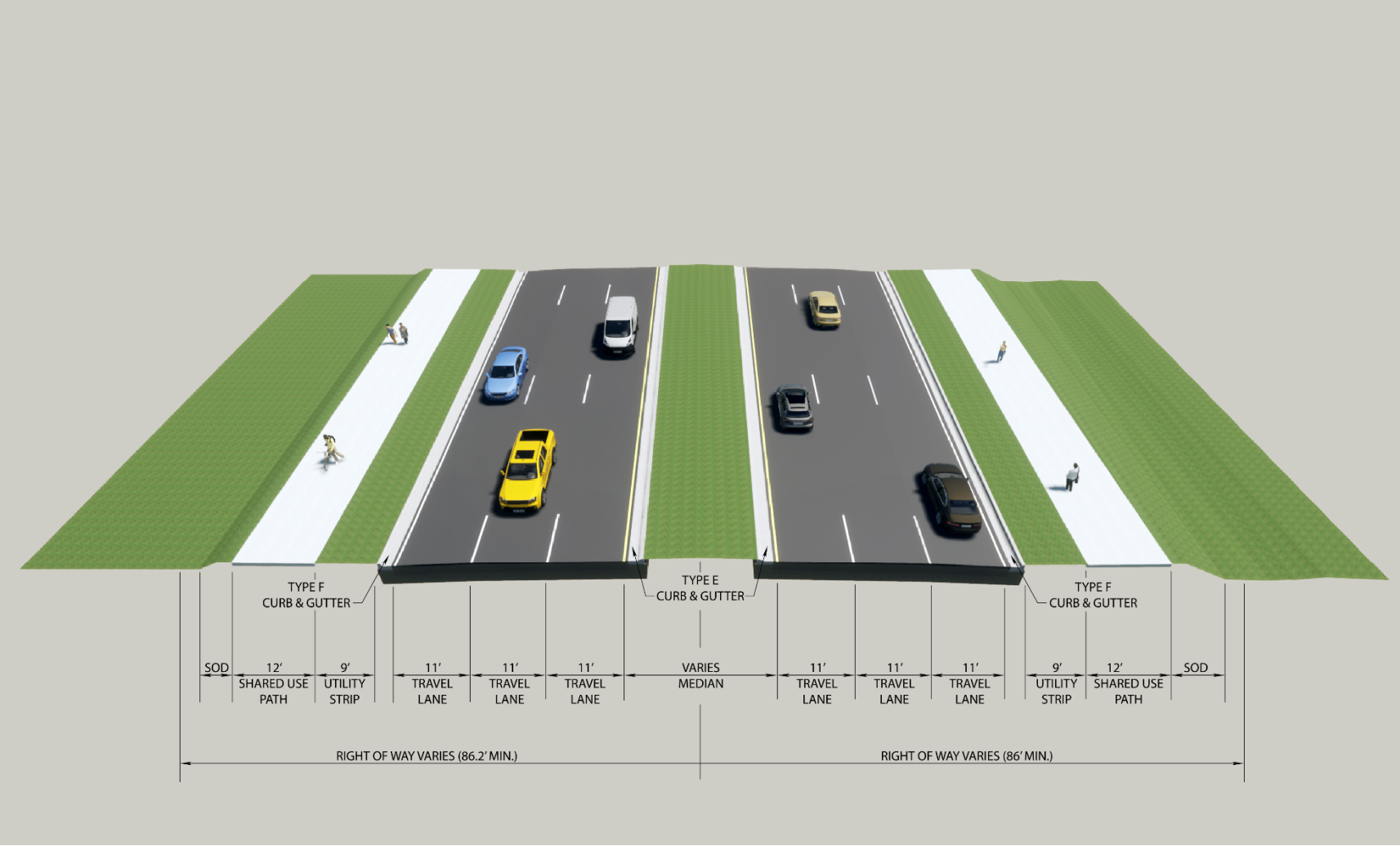
7.1 Engineering Details of the Preferred Alternative (Alternative 1B)

7.1.1 Roadway Typical Sections

The proposed roadway improvements utilize a realignment of SR 31, which would allow construction to take place without closing the Wilson Pigott Bridge. The approach roadway would include three 11-foot travel lanes in each direction separated by a 22-foot raised median with Type E and F curb along the inside and outside lanes, respectively. A 12-foot wide shared-use path is proposed on each side of SR 31 with a 9-foot utility strip between the back of curb and path (see **Figure 7-1**). The typical sections for the Preferred Alternative are included in **Appendix B**.

The design and posted speed for this corridor will be 45 mph.

Figure 7-1. Proposed SR 31 Roadway Typical Section



7.1.2 Bridges and Structures

A new high-level fixed bridge would be constructed to replace the existing Wilson Pigott Bridge. The proposed bridge will have three 11-foot lanes in each direction, and 8-foot shoulders and 12-foot shared use paths on each side. Pedestrians and bicyclists would be protected via a raised barrier and railing (see **Figure 7-3**). The minimum vertical clearance over the channel for this bridge alternative is 55 feet, which is 21 feet higher than the existing bridge. **Appendix C** includes correspondence regarding the USCG minimum vertical clearance requirement.

The grade-separated intersection of SR 31 and SR 80 would include two new flyover bridges for SR 31 and SR 80 movements: Southbound SR 31 travelers such as those coming from Lee Civic Center or Babcock Ranch, who want to go eastbound on SR 80, would use the flyover bridge. These travelers coming from the north will cross over at the proposed signal on SR 31. Similarly, eastbound SR 80 travelers, including those coming from Fort Myers who want to go northbound on SR 31, would use the flyover bridge. These travelers will cross over at the proposed signal on SR 31 (see **Figure 7-2**).

A signal on SR 31 northbound at Merchandise Way would allow a left turn movement onto the eastbound flyover ramp. Further analysis will be conducted during final design to determine a final decision.

Figure 7-4 depicts the typical section for the SR 31 widening associated with the proposed flyovers.

Figure 7-5 and **Figure 7-6** depict the northbound and southbound typical sections for the flyover.

Figure 7-7 and **Figure 7-8** depict the proposed typical sections along SR 80 west and east of the intersection. **Figure 7-7** depicts the eastbound SR 80 to northbound SR 31 flyover ramp typical section, and **Figure 7-8** depicts the southbound SR 31 to eastbound SR 80 flyover ramp typical section.

Figure 7-2. SR 31/SR 80 Proposed Flyover Traffic Movements

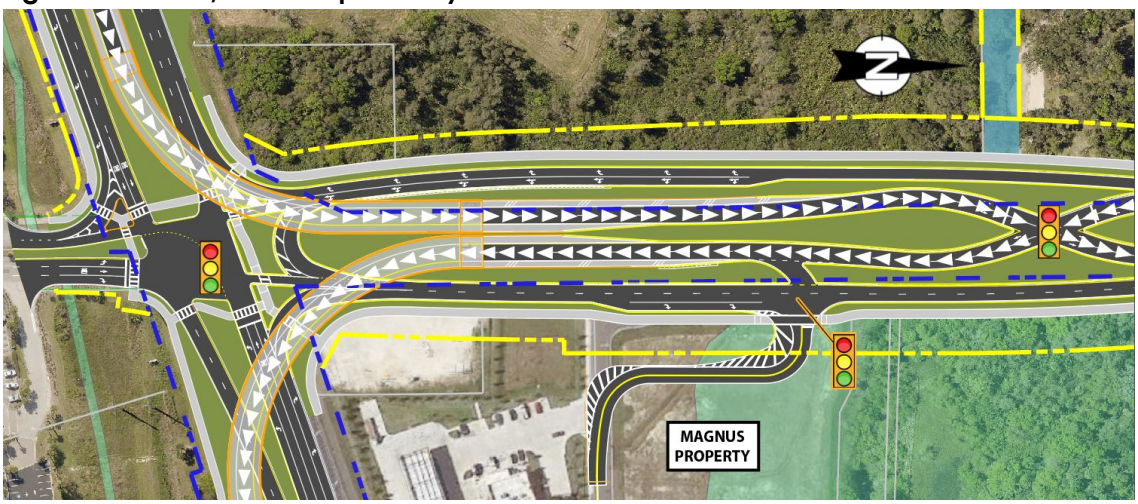


Figure 7-3. Proposed Bridge Typical Section

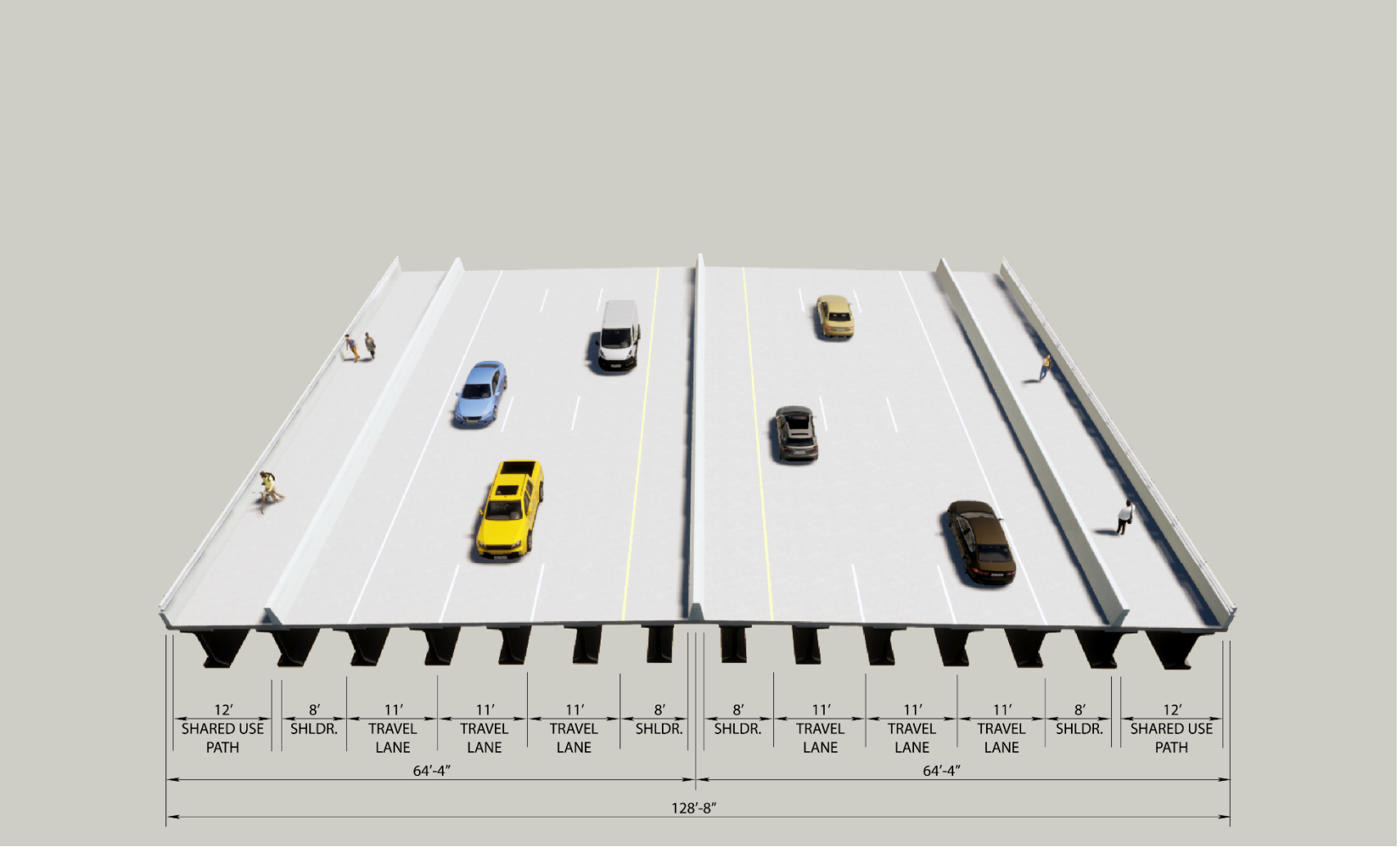


Figure 7-4. Proposed SR 31 Typical Section (at Flyovers)

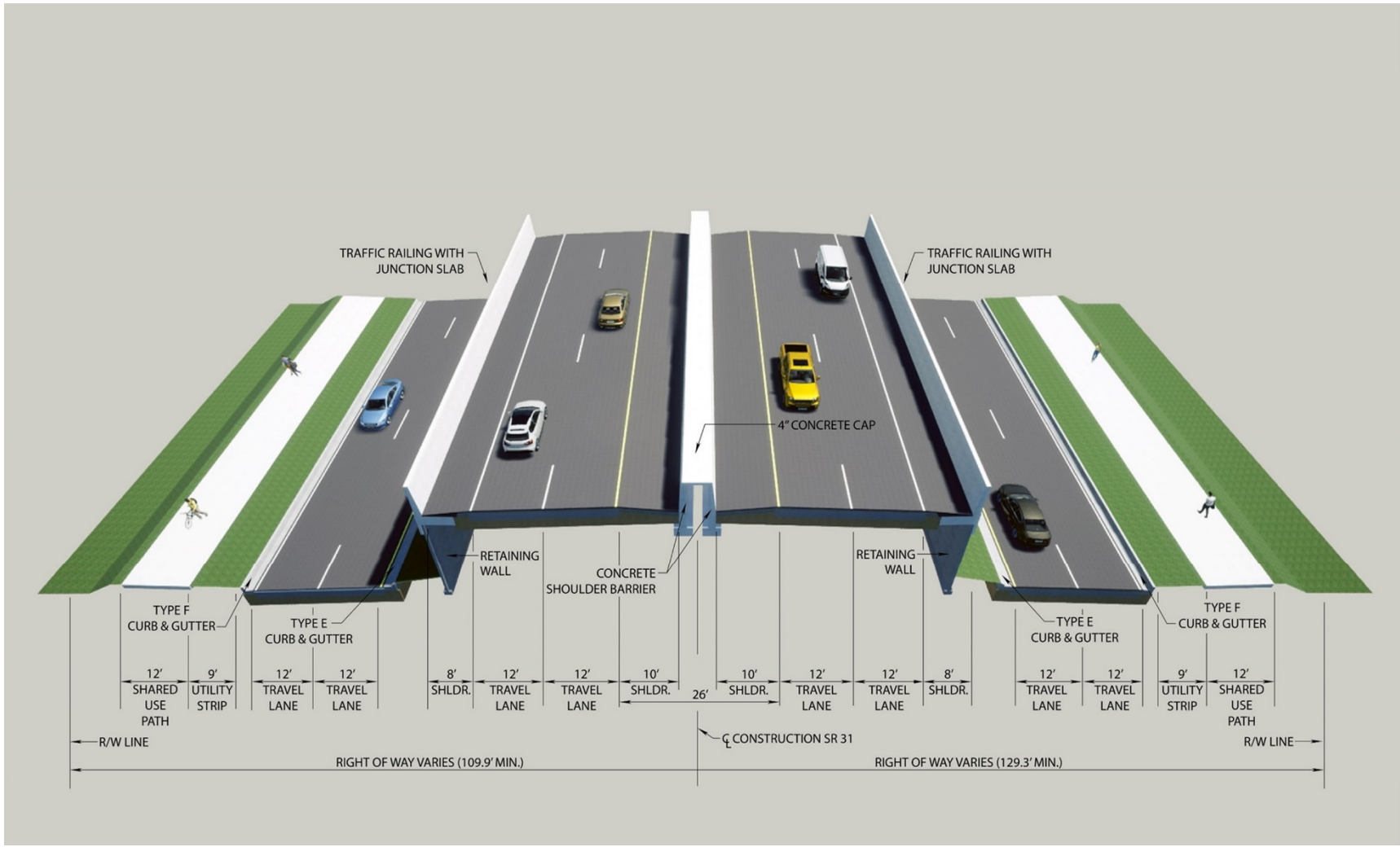


Figure 7-5. Proposed NB Flyover Typical Section

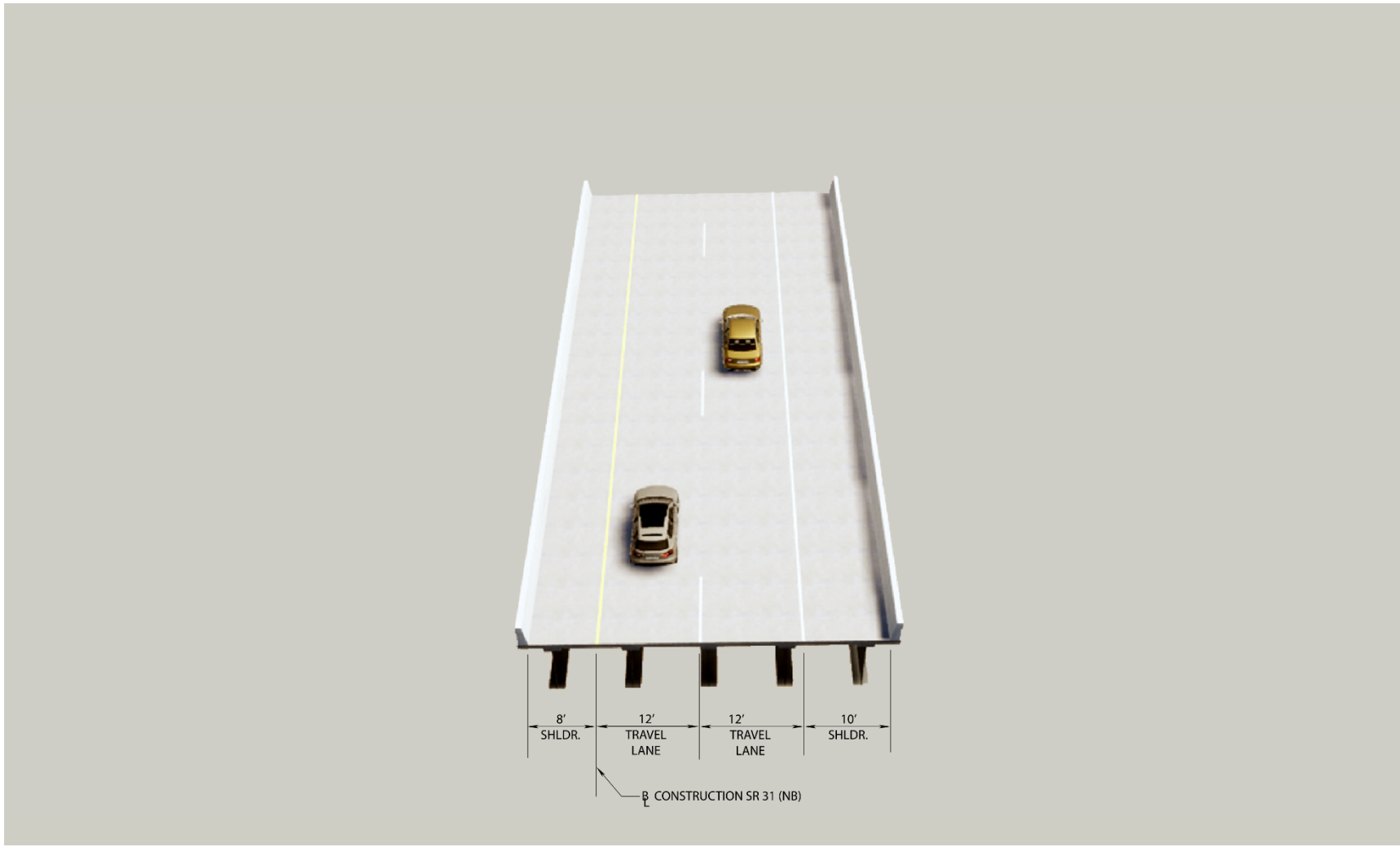


Figure 7-6. Proposed SB Flyover Typical Section

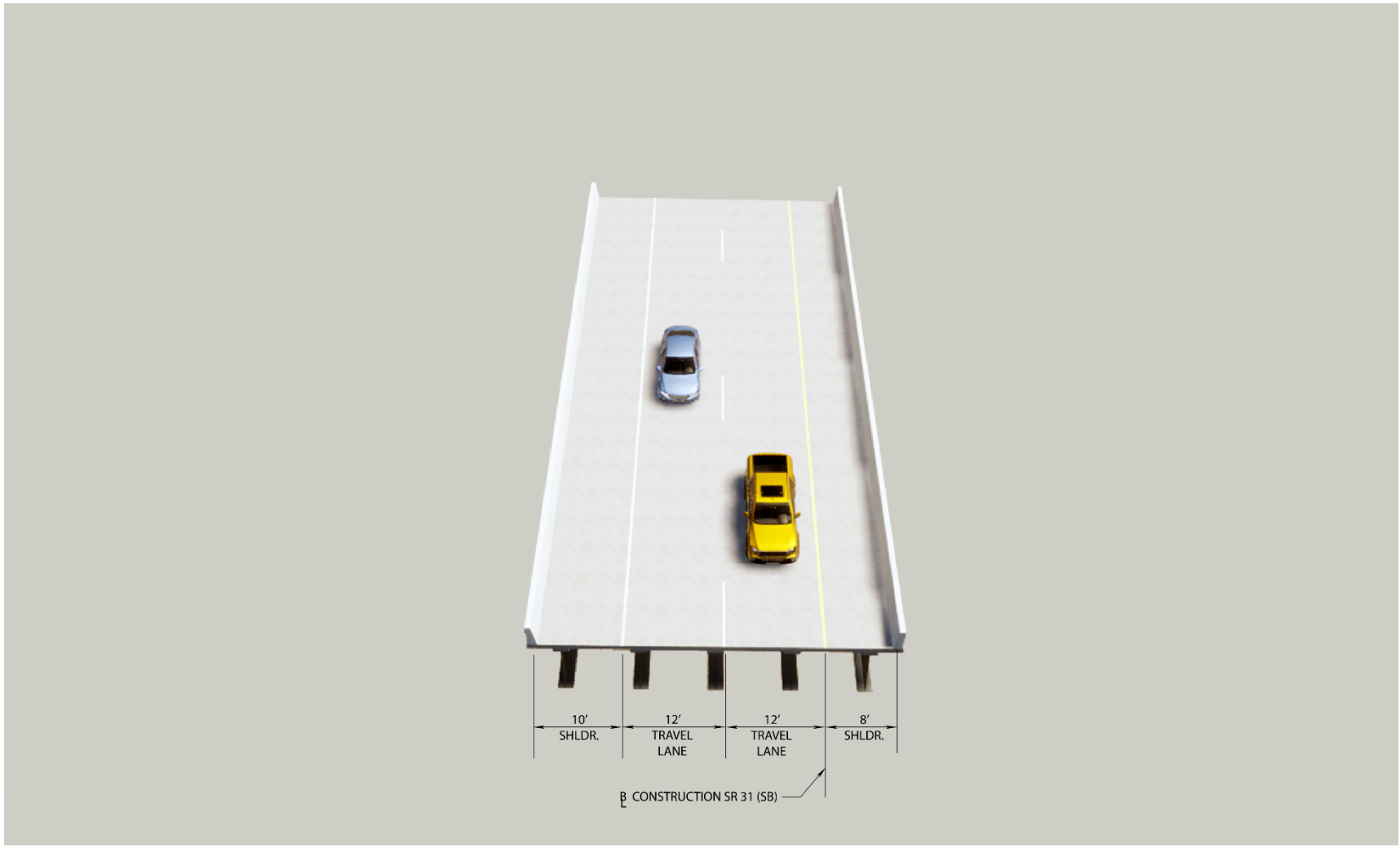


Figure 7-7. Proposed SR 80 Roadway Typical Section (West of SR 31)

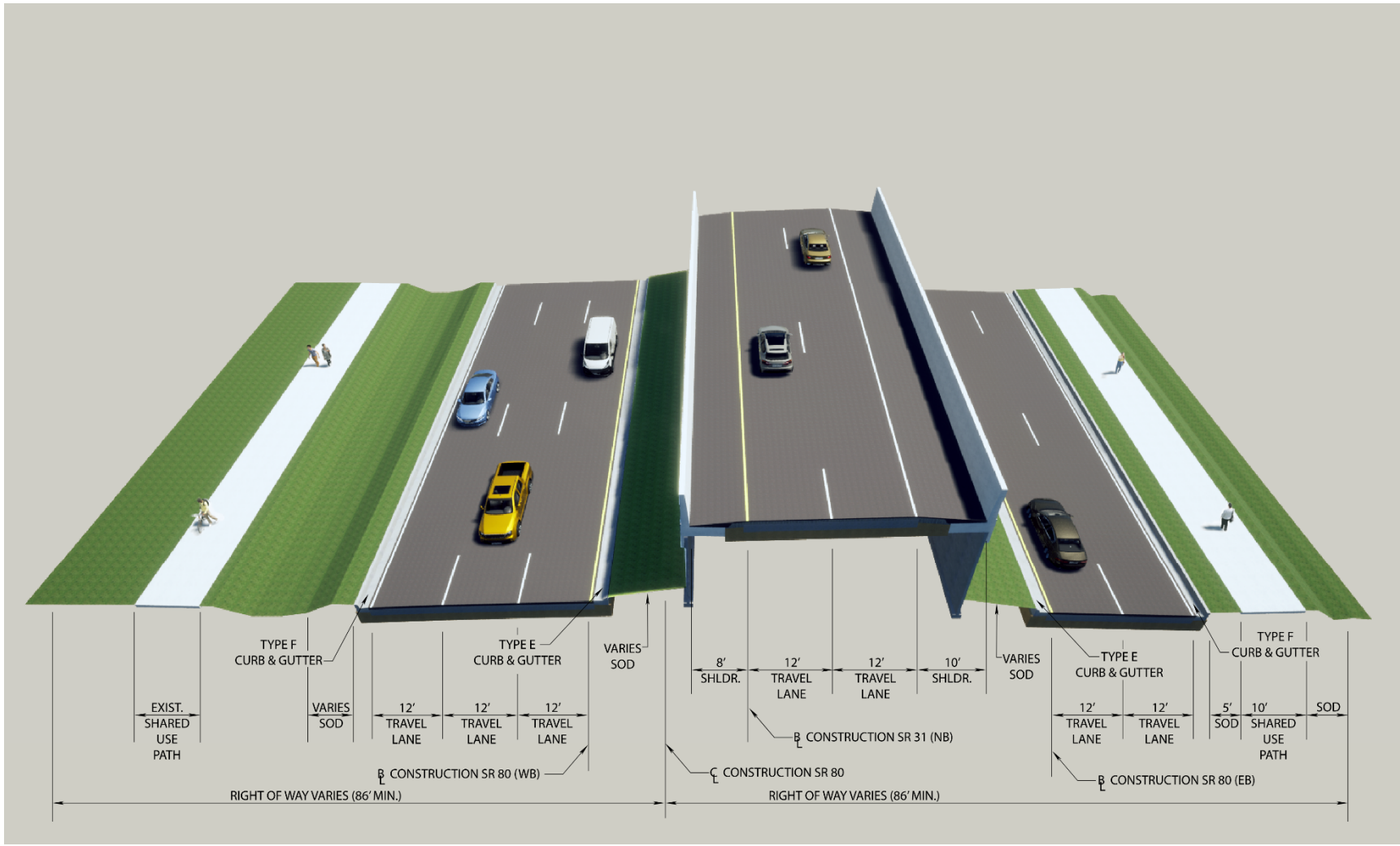
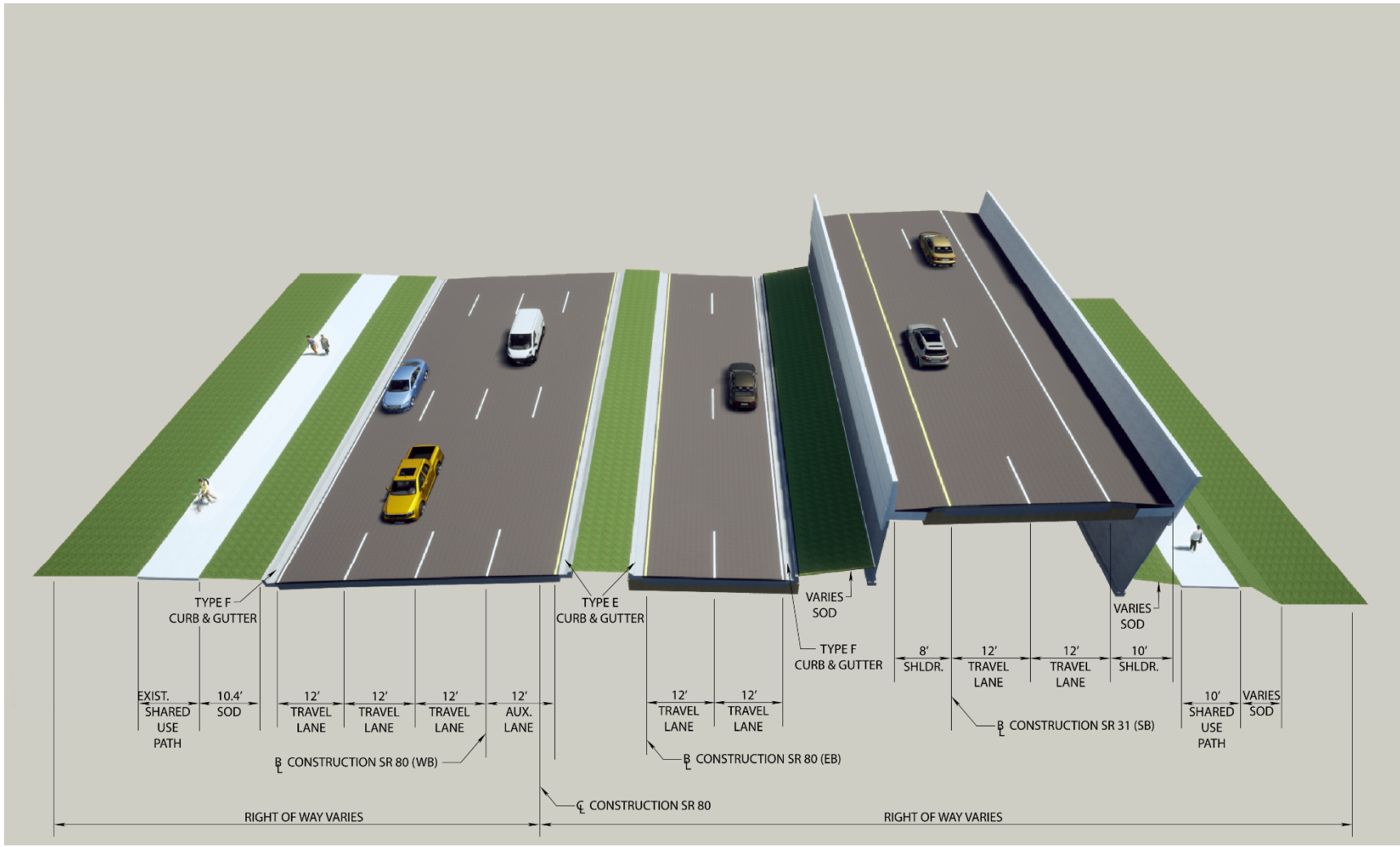


Figure 7-8. Proposed SR 80 Roadway Typical Section (East of SR 31)



7.1.3 Right-of-Way and Relocations

The proposed project, as currently designed, will not displace any residences, businesses, or other uses. The Preferred Alternative would require approximately 46 acres of additional right-of-way from 26 parcels. Should this change over the course of the project, a Right of Way and Relocation Assistance Program will be carried out in accordance with Florida Statute 421.55, Relocation of displaced persons, and the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law 91-646 as amended by Public Law 100-17).

7.1.4 Horizontal and Vertical Geometry

The Preferred Alternative maintains the current horizontal alignment of SR 31 from the SR 80 intersection to about 2,600 feet north. Then, the alignment shifts eastward to avoid impacts to the existing marina, the existing FGT transmission line, and to connect to the SR 31 North Design-Build project alignment. These shifts will also allow for the new 1,933-ft bridge to be constructed while maintaining traffic flow on the existing bridge. Preliminary concept plans showing the horizontal geometry for the Preferred Alternative are provided in **Appendix A**. Additional horizontal and vertical alignment information will be provided during the final design phase.

To improve drainage and avoid flooding, SR 31 will be elevated to meet FEMA 100-year floodplain standards. Both approaches will utilize a 4% grade to achieve sufficient vertical clearance over the Caloosahatchee River.

7.1.5 Multi-Modal Accommodations

Bicycle and pedestrian facilities will be included in the widening of SR 31 with the addition of a 12-foot shared-use path along both sides of SR 31. The 12-foot shared-use path will continue along the edges of the bridge deck, separated with a crash tested barrier. These improvements are consistent with the Lee County Greenways Master Plan that includes the Pine Island/Hendry Trail within the limits of the study.

The proposed improvements are not expected to have any impact on the existing SR 80 transit route discussed in **Section 2.5**.

7.1.6 Access Management

The SR 31 study corridor meets the Access Class 5 guidelines for the Preferred Alternative, which includes a grade-separated flyover overpass with crossover at the SR 31 at SR 80 intersection. Access will be maintained for all the parcels adjacent to the SR 31 study corridor with a few limitations/changes:

- To access the RaceTrac site, traffic along southbound SR 31 will follow a new pattern that involves making a U-turn at the proposed Texas U-turn located near the SR 80 intersection.
- The distance between driveways and side roads will be restricted to a minimum of 245 feet apart, while spacing for median openings and signals will be restricted to a minimum of 1,320 feet apart.

7.1.7 Intersection and Interchange Concepts

The grade-separated intersection of SR 31 and SR 80 would introduce two new flyover bridges for SR 31 and SR 80 movements. Southbound SR 31 travelers such as those coming from Lee Civic Center or Babcock Ranch, who want to go eastbound on SR 80, would use the flyover bridge. These travelers coming from the north will cross over at the proposed signal on SR 31. Similarly,

eastbound SR 80 travelers, including those coming from Fort Myers who want to go northbound on SR 31, would use the flyover bridge. These travelers will cross over at the proposed signal on SR 31.

A signal on SR 31 northbound at Merchandise Way would allow a left turn movement onto the eastbound flyover ramp. Further analysis will be conducted during final design to determine a final decision.

As discussed in the *PTAR Addendum* (May 2023), there is a need for signalization at the intersection of SR 31 and Marina Entrance/Babcock Ranch Road LLC Driveway. A conventional traffic signal intersection control strategy will be considered for the intersection; however, this determination will be made after further analysis.

7.1.8 Intelligent Transportation System and TSMO Strategies

There are no existing or planned ITS elements along this section of SR 31, but these strategies will be reassessed during final design.

7.1.9 Lighting

A *Lighting Justification Report* (February 2024) was prepared for this project to determine if continuous lighting is warranted and justified. The American Association of State Highway and Transportation Officials (AASHTO) and Transportation Association of Canada (TAC) warrants were used to analyze SR 31 between SR 80 and SR 78, including SR 80. The TAC warrant was met for continuous lighting; lighting is required at signalized intersections. Due to the predicted traffic conditions, it is recommended to install lighting.

7.1.10 Permits

The Preferred Alternative requires permits from state and federal regulatory agencies for impacts to wetlands, other surface waters, and water quality. Several agencies, such as USFWS, NMFS, Environmental Protection Agency (EPA), FWC, and the State Historic Preservation Officer (SHPO), would also have the opportunity to review and comment on the permit applications. The Florida Department of Environmental Protection (FDEP) regulates stormwater discharges during construction to prevent sediment and pollutants that could significantly impact water quality from entering the adjacent wetlands and surface waters. The anticipated permits associated with the construction of the Preferred Alternative are listed in **Table 7-2.**

Table 7-1. Summary of Proposed Drainage Basins

Permit Type	Agency
Section 404 Permit	USACE
Individual Environmental Resource Permit (ERP)	SFWMD
Bridge Permit	USCG
National Pollution Discharge Prevention and Elimination System (NPDES)*	FDEP
SFWMD Right-of-Way Occupancy Permit	SFWMD
*This permit will be obtained by the selected construction contractor.	

In addition, the new Wilson Pigott Bridge crosses the Caloosahatchee River, land that is designated by the State of Florida as Sovereign Submerged Land (SSL). A new public easement from the Board of Trustees would be required along with a sketch and legal description for the new bridge and construction area that documents the location of this easement.

7.1.11 Utilities

A Utility Assessment Package (UAP) (April 2024) was prepared for this project. Twelve utility companies have potential conflicts between their facilities and the proposed project. Potential conflicts include buried fiber, buried copper, water mains, wastewater mains, gas mains, and power poles. If Florida Power & Light or Lee County Electric is in conflict, then the joint users on their poles will be in conflict as well. If utility relocation is required, FGT would be eligible for reimbursement, but it is unknown whether the remaining UAOs would be at the expense of the utility owner or would be eligible for reimbursement.

Most of the UAOs have the capability to adjust their services without causing major inconvenience to their customers. Mitigation measures should include minimizing service disruptions, allowing service disruptions only during periods of minimum usage, and installing alternative or new services before disconnecting the existing service.

There are no active or inactive railroad facilities or crossings within or adjacent to the project limits.

7.1.12 Drainage and Stormwater Management Facilities

A Pond Siting Report (PSR) (May 2023) was prepared for this project and provides a detailed discussion of the proposed stormwater management approach.

Roadway runoff sheet flows to the adjacent natural wetlands and undeveloped properties which then outfall to the Caloosahatchee River without providing formal water quality treatment or attenuation. Existing ditches along SR 80 accommodate water quality treatment and attenuation. The roadway project corridor is divided into two roadway basins: Basin 1 south of the river (between SR 80 and the profile high point over the Caloosahatchee River), and Basin 2 north of the river (between the profile high point over the Caloosahatchee River and SR 78).

Although the project corridor is comprised of two roadway drainage basins only Basin 1 was evaluated for pond siting. The Basin 2 (from the proposed bridge high point to north of the Caloosahatchee River to the End Project at SR 78) stormwater management facility (SMF, named Pond 2) preferred alternative has been determined under the adjacent SR 31 Project (FPID 428917-1-22-01 & 442027-2-54-01) to the north.

The total area to be routed through the recommended SMF alternative (dry retention and wet detention) will treat and attenuate (if necessary) a total of 45.15 acres as summarized in **Table 7-2**.

Table 7-2. Summary of Proposed Drainage Basins

Basin Number	From Station	To Station	Total Basin Area (Acres)	Outfall Location
1 SR 31 SR 80	50+00 394+34	108+59 440+00	24.40 20.75	Adjacent wetlands and conveyance features with eventual outfall to the Caloosahatchee River
2 Included in the Adjacent North PD&E Project	108+59	127+45.38	N/A	Caloosahatchee River

The proposed stormwater management system will consist of an off-site SMF designed to treat and attenuate the stormwater runoff from the improved project corridor. The analysis estimates

pond right-of-way needs using a volumetric analysis approach that accounts for water quality treatment and water quantity for peak discharge attenuation where required. Potential SMF alternatives were identified along the project limits and were designed as a combination of dry retention/wet detention system to meet ERP permit requirements. For SMF discharges directly to the Caloosahatchee River (tidally influenced), peak discharge attenuation is not required, otherwise post development peak discharge attenuation is based on the 25-year/72-hour design storm event. FDOT Critical Duration analysis is not required per FDOT District One. The PSR evaluated five SMF site alternatives for Basin 1 and preferred Alternative 1-E based on the parameters identified in the SMF Site Evaluation Matrix and on the Pond Alternatives Map. Low potential for contamination/hazardous materials, no identified protected species, low potential for archaeological/historic sites, a favorable soil types (i.e., HSG A and A/D), and low construction cost all contributed to the recommendation of SMF 1-E.

The location of the existing FGT gas transmission line (in the vicinity of the river) is a major constraint impacting the ability to locate an efficient and economically suited stormwater pond site. It is anticipated that a National Pollutant Discharge Elimination System (NPDES) construction permit will be acquired, and a Stormwater Runoff Control Concept (SRCC) will be developed during design.

The SMF recommendations are based on size and locations determined from preliminary data calculations, best available data, reasonable engineering judgment, and assumptions. SMF sizes and configurations may change during final design as specific site information (seasonal high ground water table, actual topographic elevation data, wetland hydrologic information, and final roadway geometry) is obtained.

Table 7-3. Stormwater Management Facility Alternatives Summary

SMF Name	SMF Right-of-Way (Acres) (Including Access & Outfall Easements)	Recommended SMF Site
1-A	11.86	
1-B	10.96	
1-C	10.75	
1-E	13.48	X
1-F	15.78	

7.1.13 Floodplain Analysis

An Environmental Resource Permit (ERP) coordination meeting was held with the SFWMD on September 13, 2019. It was determined that floodplain impact compensation is not required for the project. The floodplain associated with the tidal Caloosahatchee River is considered a surge floodplain and will not be affected by fill encroachments.

Floodplain impacts due to the proposed roadway and stormwater management facilities were analyzed in the PSR. A preliminary analysis of cross drains was performed to determine whether the existing cross drains along SR 31 can be extended or would require replacement. Five cross drains and one bridge were analyzed in proposed conditions to ensure no rise in headwater elevation. It was determined that the floodplain encroachment is classified as "minimal" as stated in the Location Hydraulic Report (LHR) (June 2022).

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

Additional information is included in the LHR (June 2022).

7.1.14 Transportation Management Plan

The goals of the Transportation Management Plan include accommodating existing traffic along the corridor with minimal disruptions. Work along SR 80 and SR 31 in areas of the existing roadway will be phased construction to allow a minimum of two lanes of traffic along SR 31 to match existing number of lanes, and a minimum of four lanes along SR 80, and the utilization of nighttime lane closures. Construction of the segment that shifts east of existing SR 31, including the new river crossing bridge, can be completed while maintaining traffic along existing SR 31 and the existing Wilson Pigott Bridge. Phased construction will be addressed during the final design phase.

7.1.15 Constructability

Construction phasing and a MOT plan will be prepared for the Preferred Alternative to minimize disruption to roadway users and adjacent businesses.

7.1.16 Construction Impacts

Construction activities for the proposed project will have temporary air, noise, water quality, traffic flow, and visual effects for residents and travelers within the immediate vicinity of the project. These effects will be minimized through the application of the FDOT *Standard Specifications for Road and Bridge Construction*.

7.1.17 Special Features

The preferred alternative uses MSE walls for both approaches to the flyover ramps as well as the approaches to the new river crossing bridge. These walls will minimize right-of-way impacts adjacent to the structures. A crossover intersection is also utilized north of SR 80 on SR 31 to move traffic to the opposite side of the road to eliminate left turn conflicts. This is a similar concept implemented in Diverging Diamond Interchanges (DDI) throughout the country.

7.1.18 Design Variations and Design Exceptions

No variations or exceptions are expected for the proposed project.

7.1.19 Cost Estimates

Preliminary project costs for construction, preliminary engineering (PE), right-of-way, and construction engineering and inspection (CEI) were developed for the Preferred Alternative and are included in **Table 7-4**. The project LRE included in **Appendix D** summarizes the design and construction costs for the Preferred Alternative.

Table 7-4. Preliminary Cost Estimate of Preferred Alternative

Evaluation Factors	Estimated Project Costs (2023 $)
Right-of-Way for Roadway and Stormwater Pond	$22,700,000
Wetland Mitigation	$2,100,000
Final Design and Construction	$162,100,000
Construction Engineering and Inspection	$19,500,000
Preliminary Estimate of Total Project Cost	$206,400,000*

*__Source:__ FDOT Long-Range Estimating System. Preliminary Estimate of Total Project Cost does not include maintenance costs; No-Build would result in higher maintenance costs.

7.2 Summary of Environmental Impacts of the Preferred Alternative

The following section summarizes the anticipated environmental impacts of the Preferred Alternative.

7.2.1 Future Land Use

Development trends in the surrounding area include conversion of adjacent vacant or underutilized properties, with several projects in the early stages of planning or under construction. The most notable growth pressure within the project limits is generally east of SR 31 and at the intersection with SR 80. Development pressure in the area and associated changes in land use for parcels along the corridor are not necessarily dependent upon construction of the Preferred Alternative; development in the area is more dependent upon market conditions. The project would change the character of the existing facility, but it would not solely contribute to changes in land use. Under the preferred alternative, land use would continue to be guided by adopted zoning and land use plans.

The project will require additional right-of-way from immediately adjacent parcels, converting land from its existing use to a transportation use. The direct conversion of some land to roadway right-of-way would be compatible with the remaining lands, which would benefit from having access to a more efficient roadway. The proposed project is within an area that is mostly identified as "Future Urban Areas-Suburban" in the Lee County Future Land Use Map (The Lee Plan, as amended January 2023).

7.2.2 Section 4(f)

Consistent with the PD&E Manual, Section 4(f) properties were analyzed within a 500-foot buffer around the project study area. Based upon review of existing field conditions within the project study area, review of the ETDM Final Programming Screen Summary Report published on May 17, 2023, and Florida Department of Environmental Protection Greenways and Trails map, there are two potential Section 4(f) resources located within the project study area.

The first resource identified is the Great Calusa Blueway, a paddling trail that passes through the coastal waters of Lee County, spanning from the Pine Island Sound to Estero Bay, up the Caloosahatchee River and through its tributaries. This 190-mile trail supports outdoor recreation, guiding canoeists and kayakers through clearly marked brown-and-white signs located along the course of the trail. The trail is accessible to the general public at no cost. The Caloosahatchee segment of the blueway can be accessed in Lee County through a series of 20 launch sites, located on both public and private properties.

The proposed improvement of SR 31 includes replacement of the existing Bridge#120064 over the Caloosahatchee River. No physical improvement made as part of the blueway is present within the bounds of the project. The project will maintain vessel traffic on the Caloosahatchee in the future condition and during construction. No effects to the attributes, features, or activities that qualify the Great Calusa Blueway for protection under Section 4(f) are anticipated. The FDOT Office of Environmental Management (OEM) concurred with the recommended "no use" on April 18, 2024.

The second resource identified is a single 10-foot multi-use trail that exists on the north side of SR 80. The Caloosahatchee Trail, designated as part of the Florida Shared-Use Nonmotorized Trail Network (Florida SUN Trail Network), extends 22 miles in Lee County from US 41 to the Hendry County Line. The SUN Trail Network is one part of the statewide system of trails, funded by the FDOT, that functions as part of a multi-modal transportation system. The same corridor is listed as part of the Pine Island – Hendry Trail and is included in the Lee County Greenways Master Plan. The trail consists of a combination of existing and planned trail segments along portions of SR 78, SR 31, and SR 80. Within the project limits, the Caloosahatchee Trail is listed as an unfunded need on SR 31. The proposed improvement of SR 31 (as part of this project) includes a 12-foot shared-use trail to support the planned/existing trail system.

The Florida SUN Trail Network consists of multi-use trails and shared-use paths physically separated from motor vehicle traffic which, by virtue of design, location, and extent of connectivity, provide nonmotorized transportation opportunities for bicyclists and pedestrians statewide. The Florida SUN Trail Network is intended to support a range of use by the public ranging from transportation-based use to recreational activities such as walking, biking, or jogging. The Caloosahatchee Trail meets the qualifications for 23 CFR 774.13(f)(4) trails, paths, bikeways, and sidewalks that are part of the local transportation system and which function primarily for transportation. The FDOT OEM concurred with the recommended exception on April 18, 2024.

Due to its eligibility for the National Register of Historic Places, the Caloosahatchee River Canal (8LL2586) qualifies for protection under Section 4(f). As part of the project improvements, the construction of the new bridge includes new supports/concrete piers within the Caloosahatchee River Canal and rip rap will be installed immediately adjacent to the bridge ends at the shoreline. On July 24, 2023, the State Historic Preservation Officer (SHPO) concurred with the Section 106 finding that there will be no adverse effects on the Caloosahatchee River Canal and the linear resource will remain eligible for inclusion in the National Register due to its importance to drainage of the Everglades. The improvements will not involve changes that would compromise the integrity of the canal, such as rerouting, cutting off or filling in, widening, severing from other waterways, change of function, or removal of ancillary structures or features that contribute to its significance.

The improvements do not require the direct use or conversion of the Caloosahatchee River Canal to permanent right-of-way (ROW) and there is no change in ownership or impairments to the Section 4(f) linear resource. Under Section 4(f) it appears that the improvements within the Caloosahatchee River Canal would meet the requirements for a temporary occupancy exception: they are temporary, they are minor, there are no permanent adverse physical impacts and no adverse effects under Section 106; and any changes that occur during construction of the new bridge in the Caloosahatchee River Canal will be restored back to their

pre-construction condition following construction. The FDOT OEM concurred with the recommended exception on October 11, 2023.

7.2.3 Cultural Resources

A *Cultural Resource Assessment Survey* (CRAS), (September 2023) was prepared for the project. Much of the Area of Potential Effect (APE) is within areas of existing and proposed right-of-way that have been previously surveyed for archaeological resources during the following surveys, each of which previously received concurrence from the Florida Division of Historic Resources (FDHR)/SHPO:

- *Cultural Resource Assessment Survey of State Road 31 from State Road 80 (Palm Beach Boulevard) to North of County Road 78 (North River Road) Lee County, Florida* (Southeastern Archaeological Research, Inc. [SEARCH] 2012; Florida Master Site File [FMSF] Manuscript No. 20161)
- *Technical Memorandum: Cultural Resource Assessment Survey Update for the Project Development and Environment Study of State Road 31 from State Road 78 to County Road 78, Lee County, Florida* (SEARCH 2020; FMSF Manuscript No. 27269)
- *Cultural Resource Assessment Survey of the Caloosa Landing Project Area in Lee County, Florida* (Panamerican Consultants, Inc. 2005; FMSF Manuscript No. 12279)
- *Cultural Resource Reassessment Survey of a Segment of SR 80 in Lee County, Florida* (VBallo 1989; FMSP Manuscript No. 2165)

No archaeological sites were recorded within or adjacent to the current APE during prior survey efforts. No archaeological sites or archaeological occurrences were identified during the current survey. Subsurface testing was conducted within the APE where feasible and focused on areas of proposed right-of-way not included in previous surveys. Based on the results of the current and previous survey efforts, the archaeological APE exhibits a low potential for encountering intact archaeological deposits or significant archaeological sites.

Six historic resources were identified within the APE. Four of these were previously recorded and two were newly recorded. The Caloosahatchee River Canal (8LL2586) was determined eligible for the National Register of Historic Places (NRHP) by the SHPO in 2012 under Criterion A for its association with late-19th-Century efforts to drain the Everglades and the agricultural development of South Florida. Two resources have been determined ineligible by the SHPO. SR 31 was previously determined ineligible outside of the APE. The section within the current APE exhibits modern improvements and lacks historic associations. It is considered ineligible for the National Register. The FMSF form for SR 31 was updated since the roadway had not been previously recorded within the current APE. FMSF forms were not updated for the other previously recorded resources as they did not exhibit alterations or changes in their National Register eligibility since they were last recorded. The two newly recorded structures exhibit common architectural styles in South Florida and lack historical associations. Therefore, they are considered ineligible for the National Register. FMSF forms were completed for the two newly identified resources.

Of these resources, only the Caloosahatchee River Canal was recommended as National Register-eligible. In a letter signed on April 22, 2024, SHPO concurred that there will be no adverse effects to the Caloosahatchee River Canal, and that the linear resource will remain eligible for inclusion in the National Register due to its importance to drainage of the Everglades.

The letter also stated the improvements will not involve changes that would compromise the integrity of the canal such as rerouting, cutting of or filling in, widening, severing from other waterways, change of function, or removal of ancillary structures or features that contribute to its significance.

7.2.4 Wetlands

The Preferred Alternative will directly impact 22.6 acres and indirectly impact 5.16 acres of wetlands and surface waters. Based on the Uniform Mitigation Assessment Method (UMAM), the 20.48 acres of direct and indirect wetland impacts may require 1.23 estuarine mangrove credits and 7.86 freshwater forested credits from an approved wetland mitigation bank or equivalent regional mitigation area (**Table 7-5**). These values may be refined though coordination and review by the regulatory agencies during project design and permitting.

Table 7-5. Anticipated Wetland and Surface Water Impacts and Functional Loss

Wetland or other surface waters (OSW) ID	Florida Land Use, Cover, and Forms Classification System (FLUCFCS) Code and Name	Direct Impacts		Indirect Impacts	
		Acre(s)	Functional Loss	Acre(s)	Functional Loss
Wetland A	6120: Mangrove Swamps	1.35	1.04	0.28	0.05
Wetland B	6120: Mangrove Swamps	0.19	0.13	0.06	0.01
Wetland C	6170: Mixed Wetland Hardwoods	5.12	2.92	0.68	0.12
Wetland D	6170: Mixed Wetland Hardwoods	1.00	0.47	0.25	0.03
Wetland E	6170: Mixed Wetland Hardwoods	0.28	0.14	0.12	0.01
Wetland F	6170: Mixed Wetland Hardwoods	0.11	0.05	0.04	0
Wetland G	6170: Mixed Wetland Hardwoods	0.32	0.20	0.17	0.02
Wetland H	6170: Mixed Wetland Hardwoods	<0.01	0	0.03	0
Wetland I	6210: Cypress	0.67	0.40	0.20	0.02
Wetland J	6170: Mixed Wetland Hardwoods	0.27	0.15	0.20	0.02
Wetland K	6310: Wetland Scrub	3.58	1.54	2.02	0.20
Wetland L	6170: Mixed Wetland Hardwoods	2.35	1.41	0.90	0.09
Wetland N	6170: Mixed Wetland Hardwoods	0.07	0.04	0.21	0.03
Total Wetland Impacts and Functional Loss		**15.32**	**8.49**	**5.16**	**0.60**
Surface Water 1	5110: Natural River, Stream, Waterway	5.93	-	-	-
Surface Water 2	5120: Channelized River, Stream, Waterway	0.89	-	-	-
OSW 1	5140: Upland Cut Ditch	0.16	-	-	-
OSW 2	5140: Upland Cut Ditch	0.09	-	-	-
OSW 3	5140: Upland Cut Ditch	0.03	-	-	-
OSW 4	5140: Upland Cut Ditch	0.13	-	-	-
OSW 6	5140: Upland Cut Ditch	0.05	-	-	-
Total OSW Impacts		**7.28**	**-**	**-**	**-**
Total Wetland and OSW Impacts		**22.60**	**-**	**5.16**	**-**

7.2.5 Protected Species and Habitat

A *Natural Resources Evaluation* (NRE) (October 2023) was completed for the project to document and summarize the potential impacts to natural resources, including federal and state protected species. The NRE also documents commitments and implementation measures considered to avoid, minimize, and mitigate for potential impacts.

To ensure the project will not adversely affect protected species or contribute to water quality degradation, the Department will perform or adhere to the following measures. Analysis for the presence of federal and state protected species and their suitable habitat was performed to comply with the above listed federal regulation and in accordance with 68A-27 Florida Administrative Code (FAC) Rules Relating to Endangered or Threatened Species and the PD&E Manual. The United States Fish and Wildlife Service (USFWS) South Florida Ecological Field Office concurred with the findings for potential impacts to federally protected species per Section 7 of the Endangered Species Act (ESA) on November 20, 2023, and no further action is required. The National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) Southeast Regional Office reviewed the NRE and provided technical assistance. FDOT initiated Section 7 informal and formal consultation for Essential Fish Habitat (EFH) and smalltooth sawfish (*Pristis pectinata*) critical habitat impacts. For state protected species, the Florida Fish and Wildlife Conservation Commission (FWC) oversees protection of listed wildlife, and the Florida Department of Agriculture and Consumer Services (FDACS) oversees the protection of native plants. The FWC provided concurrence on the findings detailed in the NRE on December 18, 2023.

On June 7, 2024, NMFS provided concurrence regarding Essential Fish Habitat issues. NMFS indicated that the project commitments and purchase of 1.23 estuarine mangrove credits from the Little Pine Island Mitigation Bank, as compensatory mitigation to offset the loss of ecological functions due to project-related mangrove losses, satisfies the consultation procedures under regulations (50 CFR Section 600.920) implementing the EFH provisions of the Magnuson-Stevens Fishery Conservation and Management Act.

The concurrence letter is included in the project file. Based on NMFS technical assistance, NMFS determined that only smalltooth sawfish and its designated critical habitat should be included in the Section 7 formal consultation. While sea turtles are found in estuarine bay systems and perhaps near river mouths in those bay systems, it is highly unlikely that a sea turtle would travel 23 miles upriver to the project location. Guidance from NMFS includes a project commitment to only conduct in-water pile driving during daylight hours and a "ramp-up" procedure will be used for all in-water impact driving.

On October 23, 2024, NMFS issued a Biological Opinion that concluded that the proposed action is not likely to adversely affect smalltooth sawfish. While the action is likely to adversely affect designated critical habitat (Charlotte Harbor Estuary Unit) for smalltooth sawfish, it is not likely to result in the destruction or adverse modification of this habitat. If FDOT becomes aware of any take of an ESA-listed species under NMFS's purview during the proposed action, it must report the take to NMFS Southeast Regional Office Protected Resources Division (SERO PRD) using the NMFS SERO Endangered Species Take Report Form and reinitiate consultation, if warranted. Additionally, FDOT must immediately notify the Office of Protected Resources (within 24 hours, if communication is possible) if a take of a listed marine mammal occurs.

Literature reviews, agency database searches, and field reviews (between June 2020 and April 2023) for protected species and their suitable habitat were conducted within and adjacent to the project corridor. Based on this evaluation, a list of potential species were identified as potentially occurring within the project study area. Pursuant to the ESA, federally listed species with potential to occur within the study area are summarized in **Table 7-6** and state listed species with potential to occur within the study area are summarized in **Table 7-7**. The study area occurs

within critical habitat for the west Indian manatee (*Trichechus manatus*) and smalltooth sawfish (*Pristis pectinata*). It is anticipated that the Preferred Alternative will result in "no destruction or adverse modification" of both species' critical habitat. The Bald Eagle (*Haliaeetus leucocephalus*), Florida Black Bear (*Ursus americanus floridanus*), and non-listed bats were included in the analysis due to the regulatory protections associated with the species. All federally listed species are also considered state listed species.

Table 7-6. Summary of Federally Listed Species and Anticipated Effect Determinations

Protected Species		Effect Determination
Common Name	**Scientific Name**	
FISH		
Smalltooth sawfish	*Pristis pectinata*	"May affect, not likely to adversely affect"
REPTILES		
American crocodile	*Crocodylus acutus*	"May affect, not likely to adversely affect"
Eastern indigo snake	*Drymarchon couperi*	"May affect, not likely to adversely affect"
Green sea turtle	*Chelonia mydas*	"May affect, not likely to adversely affect"
Kemp's ridley sea turtle	*Lepidochelys kempii*	"May affect, not likely to adversely affect"
Loggerhead sea turtle	*Caretta*	"May affect, not likely to adversely affect"
BIRDS		
Audubon's crested caracara	*Polyborus plancus audubonii*	"May affect, not likely to adversely affect"
Florida grasshopper sparrow	*Ammodramus savannarum floridanus*	No effect
Red-cockaded woodpecker	*Picoides borealis*	No effect
Wood stork	*Mycteria americana*	"May affect, not likely to adversely affect"
MAMMALS		
Florida bonneted bat	*Eumops floridanus*	"May affect, + further coordination"
Florida panther	*Puma concolor coryi*	No effect
West Indian manatee	*Trichechus manatus*	"May affect, not likely to adversely affect"
PLANTS		
Aboriginal pricklyapple	*Harrisia aboriginum*	No effect
Beautiful pawpaw	*Deeringothamnus pulchellus*	No effect

Table 7-7. Summary of State Listed Species and Anticipated Effect Determinations

Protected Species		Effect Determination
Common Name	**Scientific Name**	
REPTILES		
Gopher tortoise	*Gopherus polyphemus*	No adverse effect anticipated
BIRDS		
Florida sandhill crane	*Antigone canadensis pratensis*	No adverse effect anticipated
Least tern	*Sternula antillarum*	No adverse effect anticipated
Little blue heron	*Egretta caerulea*	No adverse effect anticipated
Reddish egret	*Egretta rufescens*	No adverse effect anticipated
Roseate spoonbill	*Platalea ajaja*	No adverse effect anticipated
Tri-colored heron	*Egretta tricolor*	No adverse effect anticipated
Southeastern American kestrel	*Falco sparverius paulus*	No adverse effect anticipated

PLANTS		
American bird's nest fern	*Asplenium serratum*	No effect anticipated
Banded wild-pine	*Tillandsia flexuosa*	No effect anticipated
Florida beargrass	*Nolina atopocarpa*	No effect anticipated
Giant leather fern	*Acrostichum aureum*	Potential for adverse effect
Giant orchis	*Dendrophylax lindenii*	No effect anticipated
Hand fern	*Ophioglossum palmatum*	No effect anticipated
Redmargin zephyrlily	*Zephyranthes simpsonii*	No effect anticipated
Sanibel lovegrass	*Eragrostis pectinacean var tracyi*	No adverse effect anticipated

7.2.6 Essential Fish Habitat

The project is located within the jurisdiction of the Gulf of Mexico Fishery Management Council. Essential Fish Habitat (EFH) for several managed fisheries is located in the project area and includes mangrove swamps, estuarine water column, and mud sand, shell, and rock substrates. Due to design refinements made since the NRE was developed, the EFH impact values have been updated accordingly. While the Preferred Alternative will impact 1.77 acres of EFH, compensatory mitigation will be provided through the purchase of credits from the LPIMB. In addition, design measures and best management practices during construction will be implemented to prevent runoff and sediment from entering estuarine and marine habitats. Based on the assessment and proposed mitigation, the Department has determined the project would have "more than minimal but less than substantial" potential for adverse effects to EFH. Per NMFS recommendation during coordination, in-water impact driving will only be conducted during daylight hours and a "ramp-up" procedure will be used for all in-water impact driving (i.e., the contractors will use a "ramp up" or "slow start" technique at the start of each day's impact pile driving, using low force blows initially and gradually increasing to full force hammer blows. The "ramp up/slow start" technique will be reinitiated after any break in impact pile driving of over an hour). NMFS provided the EFH Letter of Concurrence on June 7, 2024 and it is included in the project file. Any changes to mitigation credit availability will be coordinated with the NMFS during project design and permitting.

7.2.7 Highway Traffic Noise

A highway traffic noise analysis was performed following FDOT procedures that comply with Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772) – Procedures for Abatement of Highway Traffic Noise and Construction Noise and guidance from the FDOT's Traffic Noise Modeling and Analysis Practitioners Handbook and A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations document. Predicted noise levels were determined using the Federal Highway Administration Traffic Noise Model version 2.5. Detailed information about the traffic noise analysis is included in the *Noise Study Report* (April 2024).

The analysis evaluated 33 receptors, which represented 45 residences, three outdoor dining areas, an active sports area (golf course), a medical facility (dental office), and a fire station for a total of 51 properties.

The results of the analysis indicate that the existing (year 2019) exterior traffic noise levels range from 44.6 to 66.1 dB(A) (A-weighted sound levels), and the interior traffic noise levels at the medical facility and the fire station are predicted to be 34.6 and 43.5 dB(A), respectively. The

future (year2045) without the proposed project improvements (No-Build Alternative), exterior traffic noise levels are predicted to range from 46.9 to 66.1 dB(A), and the interior noise levels at the medical facility and the fire station are predicted to be 35.5 and 43.5 dB(A), respectively. With the proposed Preferred Alternative, future conditions for exterior traffic noise levels are predicted to range from 53.3 to 65.8 dB(A), and interior levels at the medical facility and fire station are predicted to be 36.4 and 42.6 dB(A), respectively.

Based on these results, highway traffic noise levels do not approach, meet, or exceed the Noise Abatement Criteria (NAC) in the future with the proposed project improvements at any of the evaluated receptors. The results of the analysis also indicate that when compared to existing conditions, traffic noise levels with the proposed improvements would not increase more than 9.5 dB(A) at any receptor. As such, the project will not substantially increase highway traffic noise (i.e., an increase of 15 dB(A) or more).

Based on the results, there are no highway traffic noise impacted land uses within the project area that require abatement consideration. Should the proposed improvements change during the project's final design phase such that a re-analysis of highway traffic is warranted, and impacts are identified in the analysis, an evaluation of noise abatement measures would be performed.

7.2.8 Contamination

A *Contamination Screening Evaluation Report* (CSER) (September 2023) was prepared to document risks associated with contamination, in accordance with FDOT PD&E Manual.

A Level I contamination assessment was conducted to assess the risk of encountering petroleum or hazardous substance contamination of soil, groundwater, surface water, or sediment that could adversely affect the project. The CSER activities included a review of public regulatory files and historical data sources, and a site reconnaissance of the project study area.

Based on the CSER, a total of 21 potential contamination sites were identified within the project study area. Three sites received a risk rating of 'No', 12 sites received a risk rating of 'Low', four sites received a risk rating of 'Medium', and two sites received a risk rating of 'High'. Additionally, one SMF site (Pond 1-E) was evaluated and assigned a 'Medium' risk rating for the project.

- For the sites rated 'No' or 'Low' for potential contamination, no further action is required. These locations have been determined not to have any contamination risk to the study area at this time.
- A total of six contamination sites were rated 'Medium' or 'High'. Although Sites 9 and 21 were rated 'Medium' and 'High', no testing is recommended. For Site 9 (Accident SR 31 & Palm Beach Boulevard) with a 'Medium' rating, additional file review is recommended to determine if testing is warranted in consideration of NPDES permitting. No further testing is recommended for Site 21 (Wilson Pigott Bridge, FDOT No. 120064) with a 'High' rating since an asbestos survey and screening for Metals-Based Coatings were already performed. Further evaluation and Level II testing, if deemed appropriate by the District Contamination Impact Coordinator, is recommended for the following four sites:
    - Site 6 – 7-Eleven (11891 Palm Beach Blvd) ('Medium' rating)
    - Site 7 – Former Gas Station (12002-12010 Palm Beach Blvd) ('High' rating)
    - Site 8 – RaceTrac (12050 Palm Beach Blvd) ('Medium' rating)

- Site 11 – Former Circle K #2707335/Redbone Spirits (12255 Palm Beach Blvd) ('Medium' rating)

Additional information may become available or site-specific conditions may change from the time these reports were prepared and should be considered prior to acquiring right-of-way and/or proceeding with roadway construction.

APPENDICES