Preliminary Engineering Report

Lem Turner Rd (SR 115) over Trout River Bridge Replacement

Duval County, Florida

Financial Management Number: 437437-2-22-01

ETDM Number: 14449

FDOT

August 2023

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

TECHNICAL REPORT COVERSHEET

Preliminary Engineering Report

Florida Department of Transportation District Two

LEM TURNER RD (SR 115) OVER TROUT RIVER BRIDGE REPLACEMENT

Limits of Project: from North of Trout River Boulevard to South of Broward Road

Duval County, Florida

Financial Management Number: 437437-2-22-01

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Date: August 2023

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 Federal Highway Administration and FDOT.

Authorized Signature

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Print/Type Name

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Title

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PROFESSIONAL ENGINEER CERTIFICATION

PRELIMINARY ENGINEERING REPORT

Project: LEM TURNER RD (SR 115) OVER TROUT RIVER BRIDGE REPLACEMENT

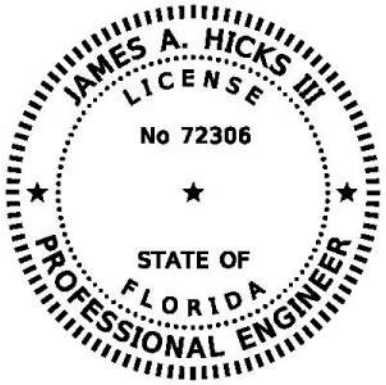
ETDM Number: 14449

Financial Project ID: 437437-2-22-01

Federal Aid Project Number: D222-044-B

This preliminary engineering report contains engineering information that fulfills the purpose and need for the SR 115 (Lem Turner) Project Development & Environment Study over the Trout River in Duval 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 Parsons Transportation Group, 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 James A. Hicks III, PE 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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1.0 PROJECT SUMMARY

1.1 Project Description

This project will replace the existing Lem Turner Road (SR 115) Bridge (No. 720033) over Trout River in Duval County. The project limits are from north of Trout River Boulevard (mile post (MP) 4.731) to south of Broward Road (MP 5.144), a distance of 0.413 miles. Lem Turner Road is classified as an urban minor arterial within the study area. The current bridge is a four-lane undivided facility as is Lem Turner Road on the south approach to the bridge but is a four-lane divided facility on the north approach. The total length of the existing bridge is 732'. The project location is shown in **Figure 1-1**.

Trout River is a navigable waterway with a channel depth of 22' under the bridge. The bridge provides a 40' navigational horizontal clearance and a 17.9' vertical clearance. Additionally, Lem Turner Road (SR 115) is designated as an emergency evacuation route by the City of Jacksonville Emergency Preparedness Office.

The proposed project will maintain the existing number of lanes across the bridge, while improving bicyclists and pedestrian access. The existing horizontal and vertical navigational clearances will also be maintained.

The proposed project is identified in the Efficient Transportation Decision Making (ETDM) system as Project #14449, entitled "Lem Turner Road (SR 115) over Trout River Bridge Replacement".

The anticipated class of action for the project is a Type 2 Categorical Exclusion.

This project is currently planned to start design in fiscal year (FY) 2024, with right-of-way funding in FY 2025 and construction in FY 2027.

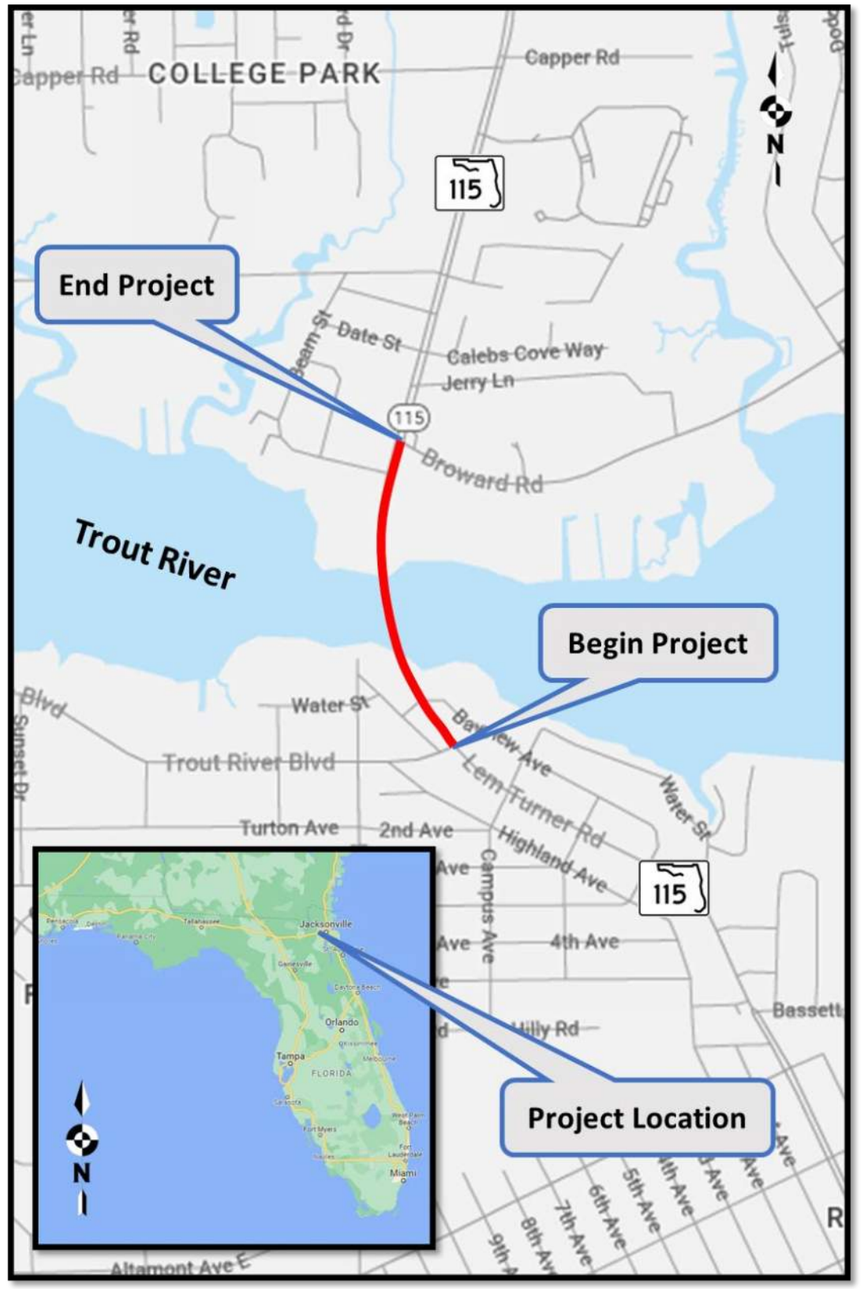


FIGURE 1-1: PROJECT LOCATION MAP

1.2 Purpose & Need

The purpose of this project is to address structural issues related to the existing Lem Turner Road (SR 115) Bridge (No. 720033) over the Trout River. The current bridge structure was constructed in 1957 and is considered structurally deficient by the Florida Department of Transportation (FDOT) and will need replacement due to deteriorating conditions.

The need for this project stems from the fact that the existing 63-year-old Lem Turner Road (SR 115) Bridge (No. 720033), also known as the C. Ray Green Bridge, over the Trout River is considered structurally deficient by the FDOT. The bridge structure has undergone several renovations including a fender replacement in 2005, the installment of pile jackets as part of a cathodic protection in 2012, and the installation of cross brace struts to stabilize the bridge piers in 2021 that had been compromised due to scour.

A bridge sufficiency survey conducted by FDOT in 2018 resulted in a score of 22.0 on a scale of 0-100. Sufficiency rating is essentially an overall rating of a bridge's fitness to remain in service. A bridge with a sufficiency rating of 80 or less is eligible for bridge rehabilitation funding. A sufficiency rating below 50.0 qualifies a bridge for replacement funds.

Additionally, bridge elements are rated on a scale of Satisfactory to Failed. The bridge conditions are as follows:

- Deck: Satisfactory
- Superstructure: Satisfactory
- Substructure: Serious
- Performance Rating: Poor
- Channel: Bank Protections Failed

1.3 Implementation Measures and Commitments

FDOT will adhere to the following implementation measures and project commitments regarding plant and wildlife species. These items are discussed in greater detail as part of the Natural Resources Evaluation (NRE) and NRE addendum. See **Section 1.6** for technical documents version.

Implementation Measures:

- FDOT will conduct surveys for protected plants and animals within the project area as part of project permitting. If state or federally-listed plants or wildlife are identified within the project area, FDOT will coordinate with the appropriate agency and adhere to the most current protection measures for applicable species.
- FDOT will inspect all bridges and culverts within the project area for the presence of bats prior to construction.

Project Commitments:

- FDOT will implement the US Fish and Wildlife Service (USFWS) Standard Protection Measures for the Eastern Indigo Snake during the construction of the project.
- FDOT will adhere to the National Oceanic and Atmospheric Administration's (NOAA) Measures for Reducing Entrapment Risk to Protected Species and specific Construction Conditions for protected species for any in-water work.
- FDOT will adhere to the NOAA Southeast Regional Office Protected Species Construction Conditions and Vessel Strike Avoidance Measures for in-water work.
- FDOT will implement the USFWS' Standard Manatee Conditions for In-water Work for in-water work.
- FDOT will coordinate with National Marine Fisheries Service (NMFS) as necessary regarding Essential Fish Habitat (EFH) during the design and permitting phases that involves potential EFH impact.
- If bats are present in bridges or culverts, FDOT will implement agency approved bat exclusion methods during project construction.

1.4 Alternatives Analysis Summary

The No-Build (No-Action) Alternative and Build Alternative were evaluated as part of the Lem Turner Road (SR 115) over Trout River Bridge Replacement PD&E Study.

The No-Build Alternative will not replace the structural deficient bridge. The existing structure will remain carrying 4-lanes of traffic with substandard pedestrian accommodations. Continuous repairs and maintenance would be required for the remaining life span of the bridge.

The Build Alternative would provide a new bridge with a typical section that includes four 11' travel lanes, 8' outside shoulders, a 7' median, and a 10' shared use path on each side.

The Build Alternative is the only alternative consistent with the North Florida Transportation Planning Organization (NFTPO) adopted Transportation Improvement Program (TIP) Fiscal Years 2023/24 to 2027/28. The Build Alternative is discussed in greater detail in **Section 4** of this report.

The Build Alternative has been selected as the Preferred Alternative.

1.5 Description of Preferred Alternative

The Preferred Alternative will provide improvements along the Lem Turner Road over Trout River bridge, with some minor improvements on the approaches to the bridge. Below is a brief description, with more detailed figures and explanations on the following pages. The concept plan can be found in **Appendix A**, along with the typical section package in **Appendix B**.

The Preferred Alternative will have a wider structure than the existing bridge. The proposed structure will consist of four 11' travel lanes that are separated by a 7' median with a 4' traffic separator. Along the outside of the travel lanes will be an 8' shoulder that can be used by bicyclists. A 10' shared use path will also be provided along each side of the bridge and will be separated from vehicles by a traffic railing. The proposed piers will be arranged to maintain a minimum 40' horizontal clearance at the navigational channel, as exists today.

In order in maintain vertical clearance, the bridge profile would be adjusted requiring a portion of roadway south and north of the bridge to be reconstructed. Within these reconstruction areas, the roadway typical section would consist of four 11' travel lanes, raised median, 7' bike lanes, and sidewalks along each side.

The Preferred Alternative is shown in **Figure 1-2**.

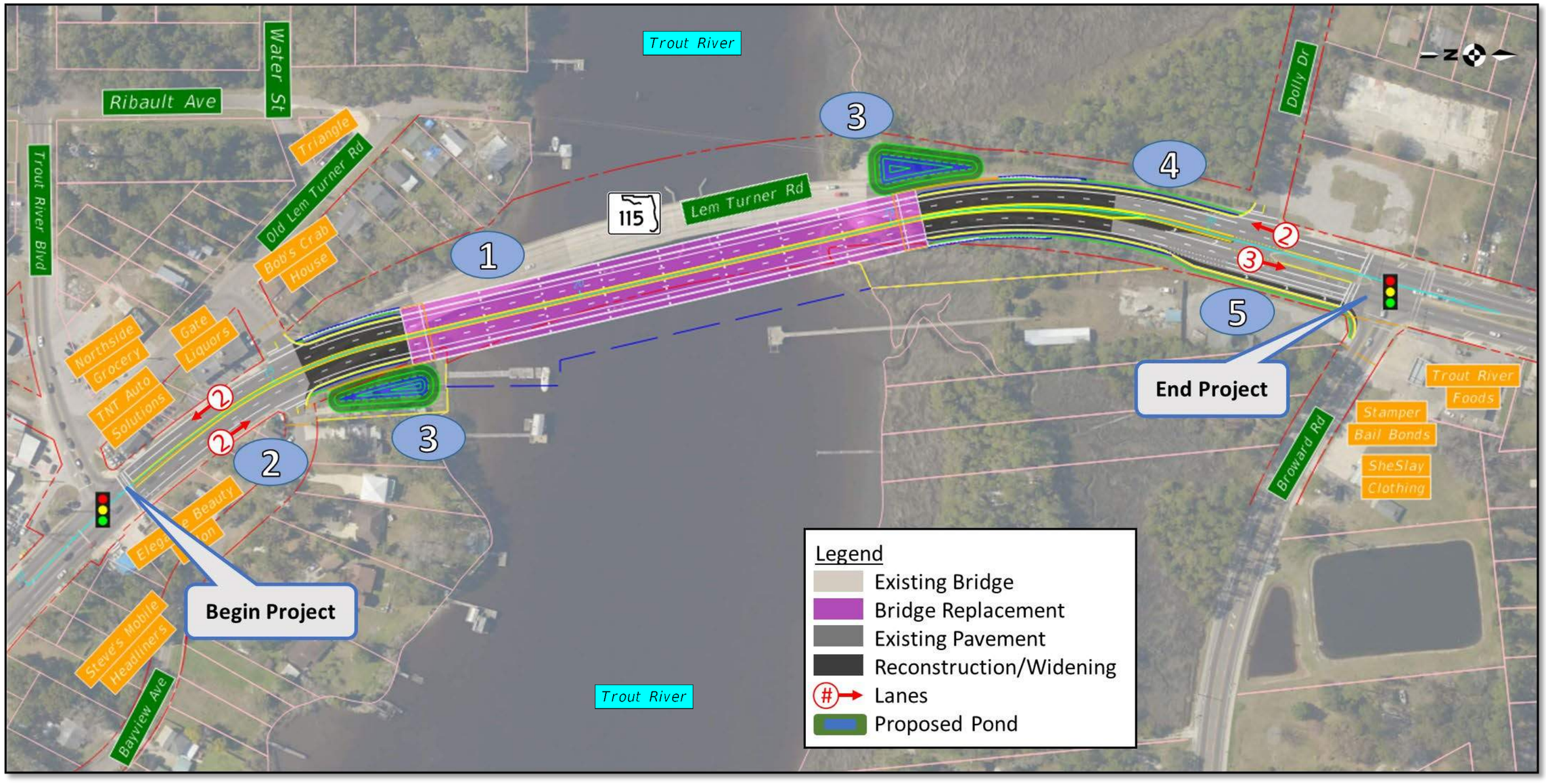


FIGURE 1-2: PREFERRED ALTERNATIVE PROPOSED IMPROVEMENTS

1. Construct a new 4-lane bridge with raised median, 8’ shoulders, and 10’ shared use path. Remove existing bridge. Raise profile to maintain existing navigational clearance.
2. Construct raised median consisting of 4’ traffic separator.
3. Provide stormwater treatment.
4. Widen roadway for 7’ bike lane and extend left turn lane to Dolly Drive.
5. Widen roadway for 7’ bicycle keyhole and extended right turn lane to Broward Road.

1.6 List of Technical Documents

The following technical documents have also been produced in support of the Type 2 Categorical Exclusion and the Preliminary Engineering Report (PER). Any references within this report to the documents below are referring to the versions listed, unless otherwise noted.

Public Involvement

- Public Involvement Plan (PIP)
  - Prepared By: Parsons Corporation, Inc.
  - Date: July 14, 2023

Engineering

- Protect Traffic Analysis Report (PTAR)
  - Prepared By: BW Engineers & Planners, Inc.
  - Date: July 2023
- Maintenance of Traffic Memorandum
  - Prepared By: BW Engineers & Planners, Inc.
  - Date: June 2023
- Bridge Hydraulics Report (BHR)
  - Prepared By: Intera Incorporated
  - Date: June 2023
- Location Hydraulic Report (LHR)
  - Prepared By: Parsons Corporation, Inc.
  - Date: July 2023
- Value Engineering (VE) Study
  - Prepared By: Richard Johnson
  - Date: May 27, 2022
- Preliminary Geotechnical Report Soil Survey Study
  - Prepared By: CSI Geo, Inc.
  - Date: September 17, 2021

Environmental

- Traffic Noise Impact Assessment Technical Memorandum
  - Prepared By: FDOT
  - Date: April 25, 2023
- Conceptual Stage Relocation Plan (CSRP)
  - Prepared By: Meredith Saunders
  - Date: June 6, 2023
- Contamination Screening Evaluation (CSE) Report
  - Prepared By: Aerostar SES LLC
  - Date: August 2, 2021
- CSE Addendum
  - Prepared By: Aerostar SES LLC
  - Date: June 23, 2023
- Natural Resource Evaluation (NRE)
  - Prepared By: Environmental Resource Solutions
  - Date: August 2021
- NRE Addendum Technical Memorandum
  - Prepared By: Environmental Resource Solutions
  - Date: July 18, 2023
- Cultural Resources Assessment Survey (CRAS)
  - Prepared By: SEARCH
  - Date: July 2021
- CRAS Addendum
  - Prepared By: SEARCH
  - Date: August 2023
- Water Quality Impact Evaluation Checklist (WQIE)
  - Prepared By: FDOT
  - Date: February 22, 2023
- Sociocultural Effects Evaluation (SCE) Technical Memorandum
  - Prepared By: Atkins Global
  - Date: June 2023

2.0 EXISTING CONDITIONS

2.1 Roadway

Lem Turner Road (SR 115) (Roadway #72150000) is a 4-lane facility within the project limits. From Begin Project to north of the existing bridge, the roadway is an undivided roadway. North of the bridge, the roadway widens, and a raised median exists. The existing conditions within the project limits are shown in **Figure 2-1**.

2.2 Intersection Layouts and Traffic Pattern

The project includes two signalized intersections, with one intersection bookending each end of the project limits. An aerial for the project limits showing existing lane configuration and intersection movements is shown on **Figure 2-1**.

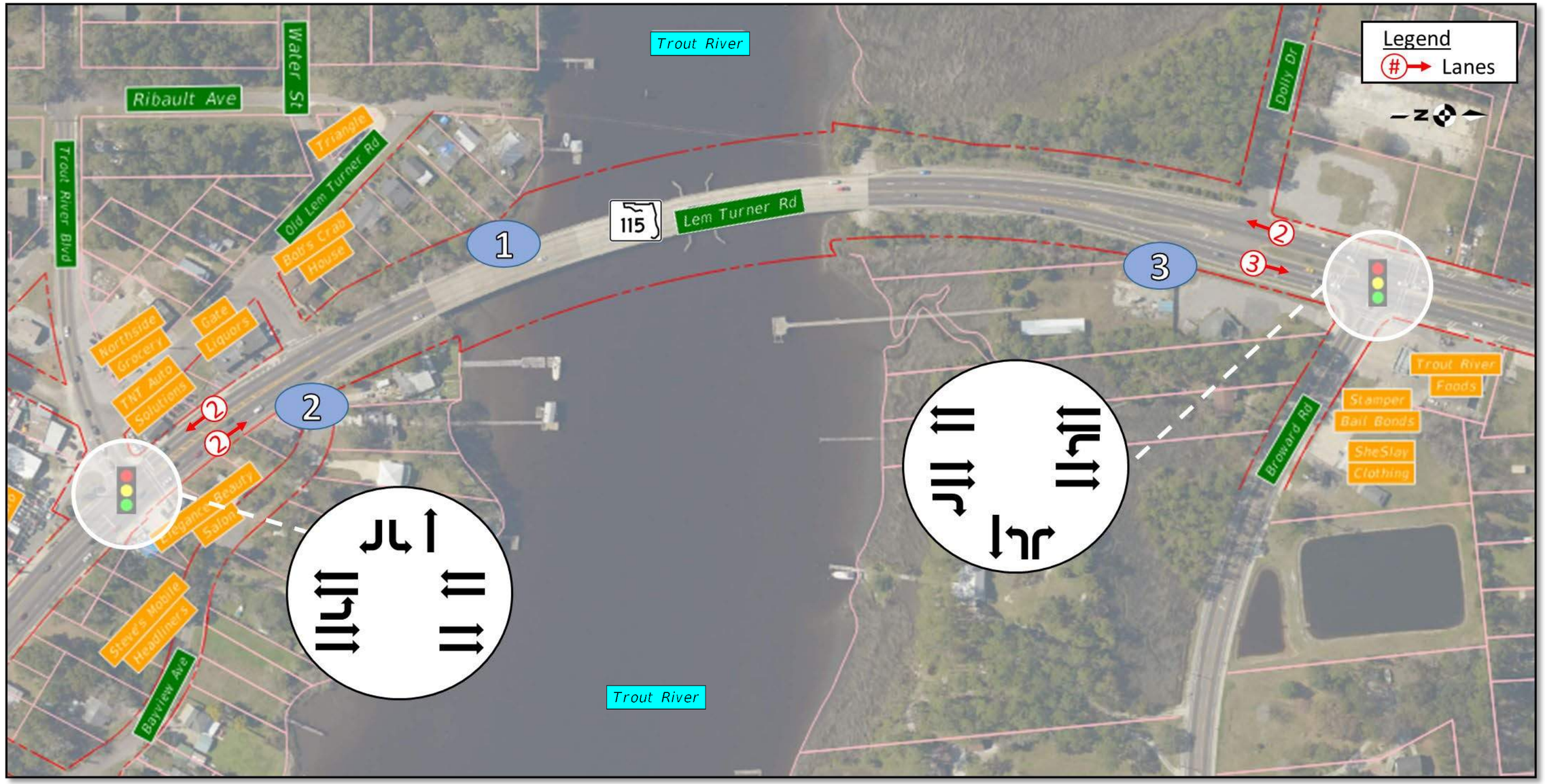


FIGURE 2-1: EXISTING CONDITIONS

1. Structural deficient bridge structure.
2. Undivided 4-lane roadway.
3. Substandard left turn lane to Dolly Drive and right turn lane to Broward Road.

2.3 Right-of-Way

The existing right-of-way within the project limits varies throughout. The Lem Turner Road corridor has a minimum of approximately 149' right-of-way.

2.4 Adjacent Land Use

The existing land use along the Lem Turner Road is mainly commercial directly adjacent to the roadway with residential and some pockets of planned unit development adjacent to the commercial areas. Other land use types, such as mixed use and public facilities are located adjacent to the residential areas. **Figure 2-2** through **Figure 2-5** show examples of the adjacent land use along the project corridor.

FIGURE 2-2: ADJACENT LAND USE – LEM TURNER RD. SOUTH OF BRIDGE, WEST

FIGURE 2-3: ADJACENT LAND USE – LEM TURNER RD. SOUTH OF BRIDGE, EAST

FIGURE 2-4: ADJACENT LAND USE – LEM TURNER RD. NORTH OF BRIDGE, WEST

FIGURE 2-5: ADJACENT LAND USE – LEM TURNER RD. NORTH OF BRIDGE, EAST

The Existing Adjacent Land Use is shown in **Figure 2-6**.

FIGURE 2-6: EXISTING ADJACENT LAND USE

2.4.1 Communities

A community is made up of a diverse group of residents, businesses, and institutions within a defined geographic area. Although there could be many differences among individuals, people who comprise a community generally share similar social, cultural, ethnic, economic, political, and/or religious characteristics. They may attend the same schools, churches, or social clubs, and often share similar values.

There are several communities on both sides of the bridge. To the south is the Riverview neighborhood. Within the Riverview neighborhood on the west side of Lem Turner Road between the bridge and Trout River Boulevard, there are homes, businesses, a gentlemen's club, bar, grocery and seafood stores, auto dealership, and other small businesses. In the neighborhood east of the Lem Turner Road there are residential areas with numerous new houses under construction or and others being renovated. There are also a few newer homes that appeared to be larger in size than the regular housing stock. Closer to the river the houses are larger and have their own boat docks.

On the east side Lem Turner Road are homes, auto sales stores, a tax service, a beauty salon, and a plumbing repair shop.

North of the bridge to Broward Road there is a vision store and houses with deep lots extending down to the river along Broward Road. On the west side is a food truck court at Dolly Road and an older group of homes along Dolly Road with large lots.

2.4.2 Community Focal Points

Community focal points are public or private locations, facilities, or organizations that are important to local resident's daily lives. Community focal points include schools, worship centers, community centers, parks, cemeteries, fire stations, law enforcement facilities, government buildings, healthcare facilities, and social service facilities. All community focal points within a ¼-mile study area (marked with an asterisk) and surrounding lands beyond the ¼-mile buffer area were identified, shown in **Figure 2-7** and listed below.

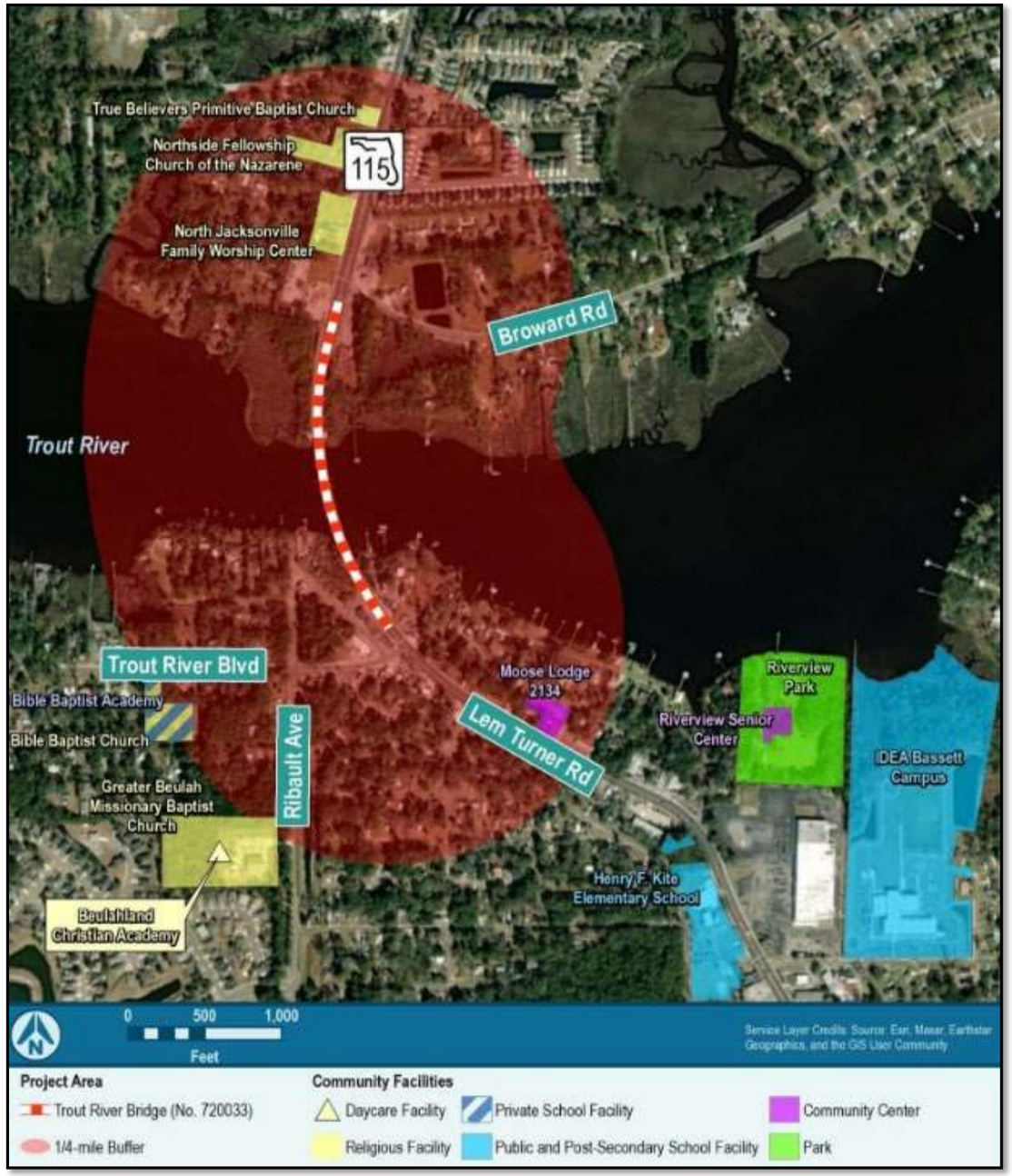


FIGURE 2-7: COMMUNITY FACILITIES

Religious Centers

- True Believers Primitive Baptist Church*
- Northside Fellowship Church of the Nazarene*
- North Jacksonville Family Worship Center*
- Bible Baptist Church*
- Greater Beulah Missionary Baptist Church*

Community Centers

- Moose Lodge 2134*
- Riverview Senior Center

Park

- Riverview Park

Schools

- Bible Baptist Academy*
- Beulahland Christian Academy
- Henry F. Kite Elementary School
- IDEA Bassett Campus

Section 4(f) applies to parks and recreational areas of national, state, or local significance that are both publicly owned and open to the public. Additionally, Section 4(f) applies to all historic sites that are listed, or eligible for inclusion in the National Register of Historic Places (NRHP) at the local, state, or national level of significance regardless of whether or not the historic site is publicly owned or open to the public.


Northside Fellowship Church of the Nazarene


Moose Lodge 2134

IDEA Bassett Campus

2.4.3 Development

No known development is currently planned within the study area.

2.4.4 Adjacent Projects

There is one ongoing and/or planned projects within the project vicinity, which include:

1. FDOT: SR 115 from Soutel Drive to Nassau C/L Resurfacing (FPID 437320-1) – Project is currently under construction.

2.4.6 Demographic Profile

A demographic profile of the study area was prepared and compared against Duval County. The demographic profile utilizes data from the Environmental Screening Tool (EST) Sociocultural Data Report (SDR). The SDR uses the 2017 to 2021 American Community Survey (ACS) from the U.S. Census Bureau data and reflects the approximation of the

population based on the area of a ¼-mile buffer intersecting the Census block groups along the project corridor. The most current ACS data is used to characterize the population with potential to be directly affected by the project. The project limits cover Lem Turner Road over Trout River Bridge and traverse five Census block groups (120310104011, 120310110001, 120310109001, 120310105032, and 120310110004). Using the ¼-mile project buffer area, the SDR identified that the total population is approximately 810 people that make up 309 households.

Table 2-1 below compares the demographic and socioeconomic estimates between the study area and Duval County.

TABLE 2-1: STUDY AREA DEMOGRAPHIC PROFILE

	Study Area	Duval County
Overall Statistic		
Total Population	810	983,153
Total Households	309	387,008
Race		
White Alone	20.12%	56.10%
Black or African American Alone	73.33%	29.44%
Native Hawaiian and Other Pacific Islander Alone	0.00%	0.07%
Asian Alone	0.62%	4.73%
American Indian and Alaska Native Alone	0.49%	0.19%
Claimed Two or More Races	3.70%	6.46%
Some Other Race Alone	1.23%	3.02%
Ethnicity		
Hispanic or Latino Any Race	5.19%	10.63%
Not Hispanic or Latino	94.81%	89.37%
Minority Population		
Minority	83.21%	49.15%
Non-Minority	16.79%	50.85%
Age Trends*		
Young (Age under 18)	21.85%	22.72%
Adult (Age 19-64)	64.94%	63.11%
Elderly (Age 65 and over)	12.72%	14.16%
Median Age	42.0	36.5
Income Trends		
Median Household Income	$49,108	$59,541
Poverty Trends		
Population below Poverty	15.43%	14.46%
Households below Poverty	22.33%	13.62%
Households receiving Public Assistance Income	4.21%	2.97%
Disability Trends		
Population (20-64 years) with a Disability	11.88%	10.99%
Language Trends		
Speak English "Less than Very Well"	2.99%	5.92%
Housing Trends		
Occupied Housing with No Vehicle	9.03%	7.37%

** Age Trends for the Study Area do not add up to 100% but reflect the data provided in the SDR.*

According to the SDR, the study area comprises approximately 83.21% minority population, defined as Black or African American, Hispanic, Asian American, American Indian/Alaskan Native, and Native Hawaiian or Pacific Islander. The SDR further defines "Minority" as individuals who list a race other than White and/or list their ethnicity as Hispanic/Latino. In other words, people who are multi-racial, any single race other than White, or Hispanic/Latino of any race are considered minorities. As shown in **Table 2-1**, the study area contains a much higher percentage of "Black or African American Alone" population (difference of over 43.89%) and a lower percentage of "White Alone" population (difference of 35.98%) than Duval County. There is also a lower percentage of "Claimed Two or More Races" population (difference of 2.76%), "Some Other Race Alone" population (difference 1.79%), and "Asian Alone" population (difference of 4.11%).

The median household income of the study area is lower than Duval County (with a difference of over $10,000). The study area contains a higher percentage of "Households below Poverty" with 22.33% than 13.62% in Duval County.

The population that speaks English "less than very well" (i.e., limited-English proficient) represents 2.99% of the study area population. Compared to the County's limited-English proficient population which are higher at 5.92%.

Regarding age, the study area with a median age of 42.0 indicates an older population than the countywide median age of 36.5. The study area has a lower percentage of population under the age 18 with 21.85% than Duval County with 22.72%. Persons aged 20 to 64 with a disability represent 11.88% in the study area as compared to 10.99% in Duval County. Of the occupied housing units, there are 9.03% in the study area that do not have a vehicle compared to 7.37% without a vehicle in Duval County.

A review of the US Environmental Protection Agency's (USEPA) Environmental Justice Screening and Mapping Tool (EJScreen) confirmed minority and low-income populations are present in the project area. EJScreen shows minority populations south of the bridge are 83% in the areas surrounding Old Lem Turner Road and 68% in the areas surrounding Bayview Avenue. North of the bridge the minority population is 69% in the area surrounding Broward Road and 92% surrounding Dolly Drive. Low-income population south of the bridge is 63% in the areas surrounding Old Lem Turner Road and 54% in the areas surrounding Bayview Avenue. North of the bridge the low-income population is 36% in the area surrounding Broward Road and 44% surrounding Dolly Drive.

2.5 Access Management Classification

A major contributing factor to congestion and functional deterioration of any highway system is unregulated access to the system. The FDOT access management classification system under Rules 14-97 F.A.C. divides surface transportation facilities into seven classes depending in part on the ability of motorists to cross the median and make left turns. Non-State-owned roadways are not given Access Management Classifications.

Lem Turner Road is a Restrictive Facility classified as Access Class 5.

2.6 Context Classification

FDOT has adopted a roadway classification system comprised of eight context classifications for all non-limited access state roadways. The context classification of a roadway must be considered, along with its transportation characteristics to understand who the users are, what the regional and local travel demand of the roadway is, and the challenges and opportunities of each roadway user. The context classification and transportation characteristics of a roadway will determine key design criteria for all non-limited access state roadways.

Lem Turner Road has a context classification of C4, Urban General.

2.7 Functional Classification

Federal functional classification is required by FHWA. The principal purpose of roadway classification is to establish the relative importance of a roadway in the overall hierarchy of roadways. Functional classification is used for planning, budgeting, programming, and for fiscal management. It is used to evaluate Federal, State, and local highway programs. It is used by other offices within and outside of FDOT, directly and indirectly, to help meet other federal requirements, including the preparation of FDOT's Work Program and the Metropolitan Planning Organization's (MPO) Transportation Improvement Programs.

TABLE 2-2: EXISTING HORIZONTAL ALIGNMENT

P.C. Station	P.I. Station	P.T. Station	Delta	Degree	T	L	R	e
SR 115 (from Begin Project to End Project)								
100+00.00	115+25.49	125+74.40	77° 13' 55" (RT)	3° 00' 0.00"	1,525.49	2,574.40	1,909.86	0.046

TABLE 2-3: EXISTING VERTICAL ALIGNMENT

Type	Length	PVC Station	PVC Elevation	PVI Station	PVI Elevation	PVT Station	PVT Elevation	Grade In (%)	Grade Out (%)	Algebraic Difference	K
SR 115 (from Begin Project to End Project)											
Crest	1000'	112+00.00	15.65	117+00.00	31.65	122+00.00	15.65	(+) 3.200%	(-) 3.200%	6.400%	156.25

Lem Turner Road is classified as an urban minor arterial.

2.8 Posted Speed

This section of Lem Turner Road is currently posted at 45 mph.

2.9 Vertical and Horizontal Alignment

The existing horizontal and vertical alignments of Lem Turner Road was determined by reviewing FDOT As-Built Plans. Within the project limits, there is one horizontal curve and one vertical crest curve as shown in **Table 2-2** and **Table 2-3**.

2.10 Pedestrian Accommodations

Sidewalks exist along both sides of Lem Turner Road south and north of the bridge. The bridge has raised 3.5' sidewalks along both sides, which do not meet minimum Americas with Disability Act (ADA) criteria. **Figure 2-8** and **Figure 2-9** shows the existing walkway along the bridge and existing sidewalk.

FIGURE 2-8: EXISTING SIDEWALK ON BRIDGE, FACING SOUTH

FIGURE 2-9: EXISTING SIDEWALK, FACING NORTH

2.11 Bicycle Facilities

There are currently no bicycle facilities located within the project limits.

2.12 Transit Facilities

A review of the Jacksonville Transportation Authority (JTA) schedules and maps indicated that 3 of JTA's 37 current bus routes utilize Lem Turner Road within or adjacent to the project corridor. Route 3 includes a bus stop within the project limits along Lem Turner Road southbound, just north of the Trout River Boulevard intersection, as shown in **Figure 2-10**.

FIGURE 2-10: EXISTING BUS STOP AT TROUT RIVER BLVD, FACING SOUTH

An aerial of each bus route is shown in the following figures:

- **Figure 2-11**: Route 3 – Moncrief
- **Figure 2-12**: Route 12 – Myrtle/Lem Turner
- **Figure 2-12**: First Coast Flyer – Green Line

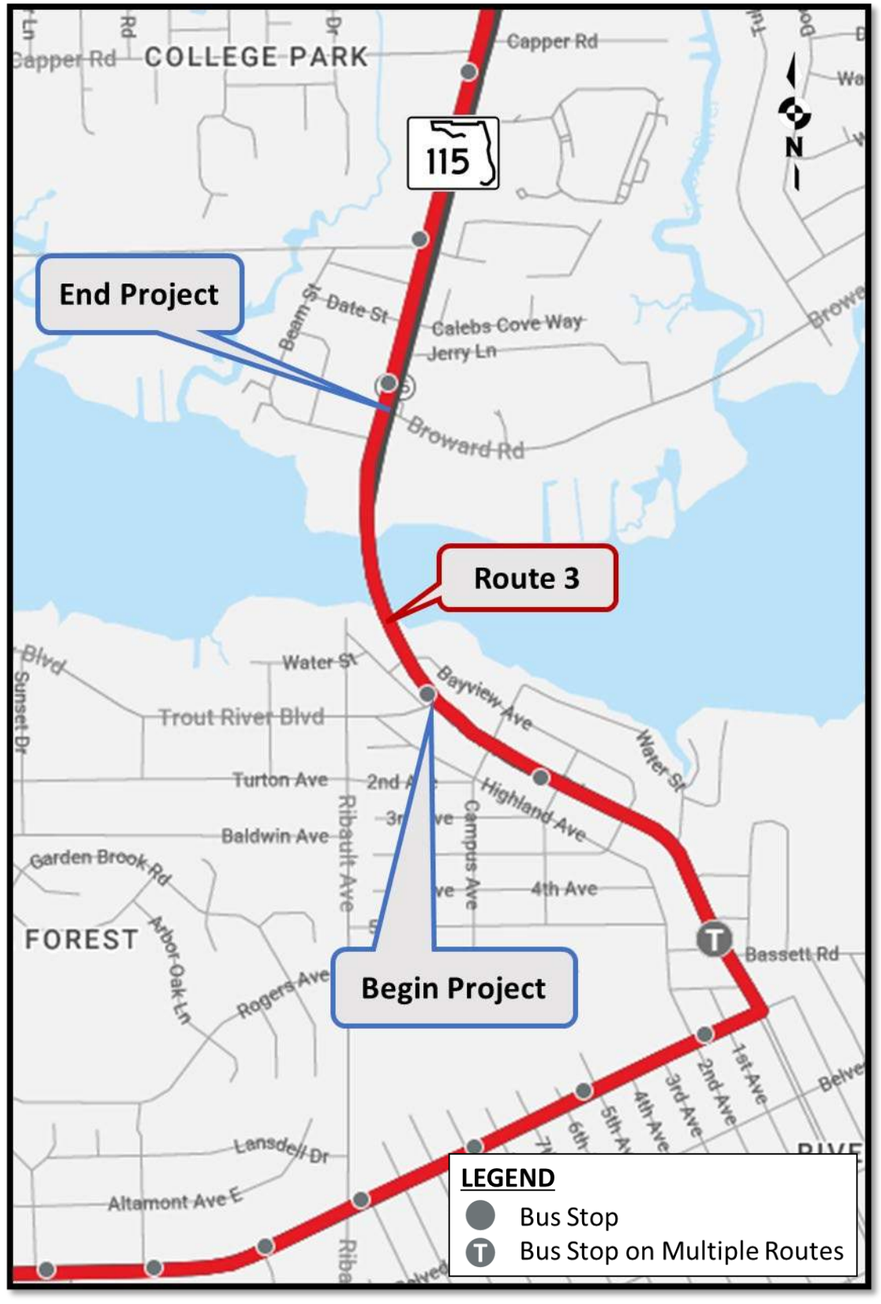


FIGURE 2-11: JTA ROUTE 3 – MONCRIEF

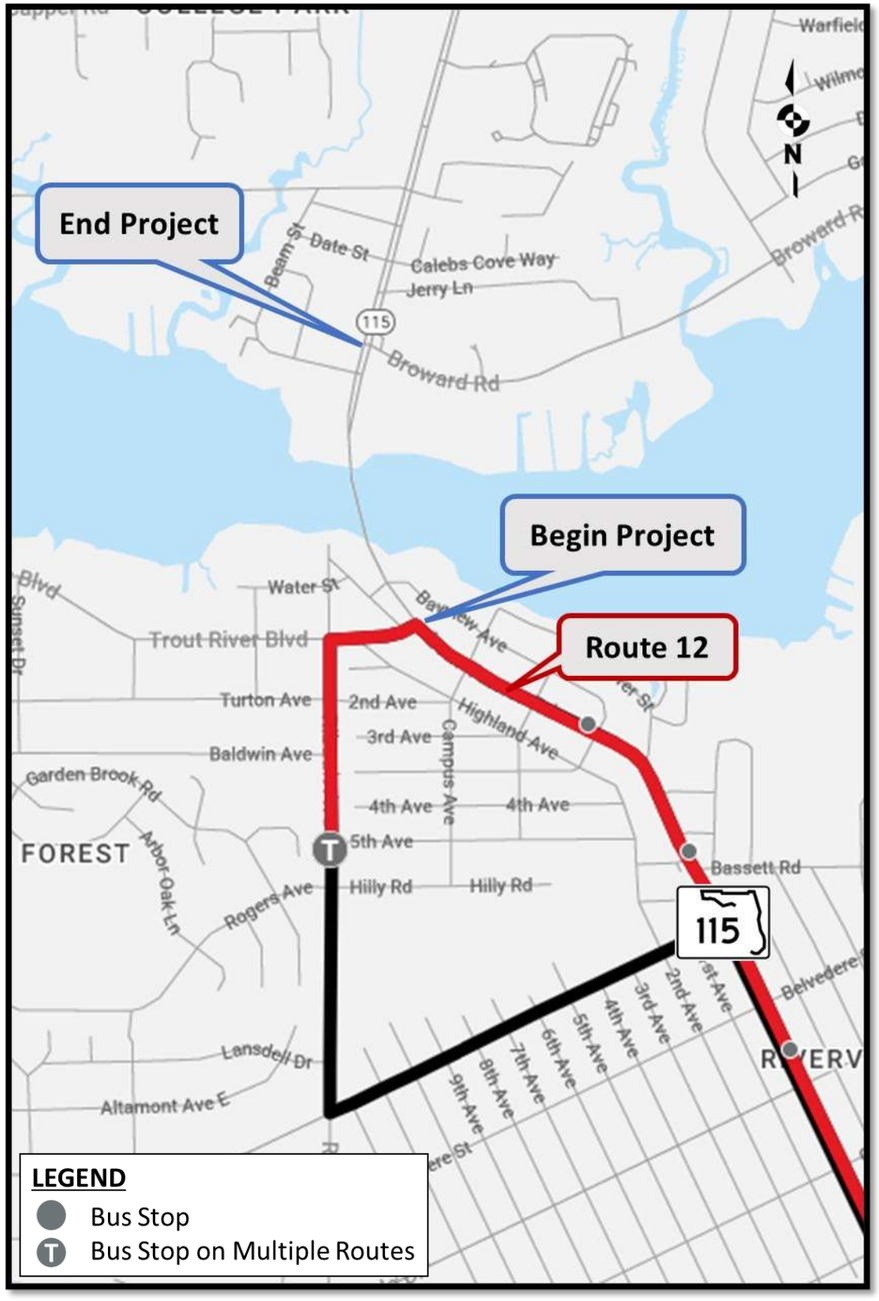


FIGURE 2-12: JTA ROUTE 12 – MYRTLE/LEM TURNER

FIGURE 2-13: JTA FIRST COAST FLYER – GREEN LINE

2.13 Pavement Conditions

The FDOT State Materials Office collects pavement data on all roadways under FDOT jurisdiction. Each section of pavement is rated for cracking and ride on a 0-10 scale, with 0 being the worst and 10 being the best. **Table 2-4** below summarizes the pavement conditions within the project limits.

TABLE 2-4: PAVEMENT CONDITIONS

Roadway ID	Roadway Name	Begin MP	End MP	Rating		Year Surveyed
				Cracking	Ride	
72150000	SR 115	4.731	4.844	9.5	7.9	2023
		4.844	4.985	N/A – Bridge		
		4.985	5.144	9.5	7.9	2023

** A pavement ranking of 6.4 or less is considered deficient pavement and is flagged; however, there are two exceptions:*

1) *Starting in 2002, a ride rating of 6 is not considered deficient when the speed limit is less than 45 mph; and*
2) *Starting in 2006, a ride rating of 6 is not considered deficient when the speed limit is less than 50 mph.*

2.14 Traffic Volumes and Operational Conditions

A Project Traffic Analysis Report (PTAR) has been prepared and is included under sperate cover. Below is a summary of the existing traffic information from the PTAR.

Existing traffic data was collected from 2022 Florida Traffic Online. The existing Annual Average Daily Traffic (AADT) for Lem Turner Road within the study area is 29,000.

The directional distribution factor (D) and the adjusted daily percentage of truck traffic (T_{24}) was derived from the 5-year average (2018 to 2022) of data collected from Florida Traffic Online. The Design Hour Truck (DHT) percentage of truck traffic during the peak hour is estimated as half of the T_{24} percentage. Additionally, the standard peak hour factor (K) for arterials located in urban areas from the Florida Project Traffic Forecasting Handbook was used.

The traffic characteristics are as follows:

- K Factor (proportion of Annual Average Daily Traffic occurring in the peak hour) = 9.0%
- D Factor (percentage of the total, two-way design hour traffic traveling in the peak direction) = 55.2%
- T24 (percentage of trucks using a roadway during a day) = 2.2%
- DHT (percentage of trucks using a roadway during the design hour) = 1.1%

2.15 Railroad Crossings

There are no railroad crossings within the limits of this project.

2.16 Crash Data

A Project Traffic Analysis Report (PTAR) has been prepared and is included under sperate cover. Below is a summary of the existing crash data from the PTAR.

Vehicular crash data along Lem Turner Bridge was obtained from the University of Florida's Signal Four Analytics database. Signal Four Analytics is an approved source of historic crash data, as outlined in the FDOT Safety Crash Data Guidance, February 2022. The database is maintained by the GeoPlan Center of the University of Florida and provides information on various characteristics associated with each crash, including collision type, severity, weather conditions, road surface conditions, and date/time information.

The crash data from January 1, 2018, to December 31, 2022 was analyzed and summarized in **Table2-5**.

TABLE 2-5: LEM TURNER ROAD CRASH DATA SUMMARY

Crash Type		Number of Crashes					Total	% of Total
		2018	2019	2020	2021	2022		
Crash Type	Front to Rear (Rear End)	0	2	5	7	3	17	46.0%
	Front to Front	1	0	0	1	1	3	8.1%
	Angle	1	1	1	0	1	4	10.8%
	Sideswipe, Opposite Direction	0	1	0	0	0	1	2.7%
	Sideswipe, Same Direction	2	0	1	0	2	5	13.5%
	Crash with Pedestrian	0	0	1	1	0	2	5.4%
	Crash with Other Non-Fixed Object	0	0	0	1	1	2	5.4%
	Crashes with Fixed Objects	0	2	0	1	0	3	8.1%
	Total	**4**	**6**	**8**	**11**	**8**	**37**	**100.0%**
Severity	Property Damage Only	3	2	4	6	4	19	51.4%
	Fatality	0	0	0	0	0	0	0.0%
	Injury	1	4	4	5	4	18	48.6%
Lighting Conditions	Daylight	2	4	7	8	6	27	73.0%
	Dusk	0	0	0	0	0	0	0.0%
	Dawn	0	0	0	0	0	0	0.0%
	Dark – Not Lighted	1	0	0	0	0	1	2.7%
	Dark – Lighted	1	2	1	3	1	8	21.6%
	Dark – Unknown Lighting	0	0	0	0	1	1	2.7%
	Unknown	0	0	0	0	0	0	0.0%
Surface Conditions	Dry	4	4	7	8	7	30	81.1%
	Wet	0	2	1	3	1	7	18.9%
	Mud, Dirt. Gravel	0	0	0	0	0	0	0.0%
	Water (Standing/Moving)	0	0	0	0	0	0	0.0%
	Unknown	0	0	0	0	0	0	0.0%
Weather Conditions	Clear	3	5	4	8	6	26	70.3%
	Cloudy	1	0	3	2	1	7	18.9%
	Rain	0	1	1	1	1	4	10.8%
	Fog, Smog, Smoke	0	0	0	0	0	0	0.0%
	Other	0	0	0	0	0	0	0.0%
Alcohol/Drug	No	4	5	8	11	8	36	97.3%
	Alcohol	0	1	0	0	0	1	2.7%
	Drug	0	0	0	0	0	0	0.0%
	Alcohol & Drug	0	0	0	0	0	0	0.0%

2.17 Safety Analysis

A Project Traffic Analysis Report (PTAR) has been prepared and is included under sperate cover. Below is a summary of the safety analysis from the PTAR.

The crashes at the Lem Turner Bridge were analyzed to determine crash frequencies and rates at the bridge to provide a better understanding of the existing crash patterns.

The analysis used the 'Average Crash Rate Method,' which calculates the actual crash rate based on segment length, AADT, and the number of crashes that occurred. For the study segment the actual crash rate was compared with the statewide average crash rate for the same type of facility. The statewide average crash rate was also calculated using the 'Average Crash Rate Method' and based on similar criteria as the study segments.

The safety analysis summary is shown in **Table 2-6**. The results show that the study area has a lower crash rate than the statewide average and therefore is not considered a high crash location.

TABLE 2-6: EXISTING CRASH FREQUENCIES AND RATES

Segment	Number of Crashes	AADT	Crash Frequency	Distance (miles)	Crash Rate*	Statewide Average Crash Rate	High Crash Location
Lem Turner Road	37	29,000	7.4	0.28	0.699	10.265	No

* Segment: Crashes per million vehicle miles traveled.

2.18 Drainage

In general, all stormwater within the project limits flows into Trout River. Trout River is a tributary of the St. Johns River and is subject to the ebb and flow of the tide. At the bridge crossing, Trout River's water is brackish in character.

On the south and north roadway approaches, stormwater runoff is collected within a closed drainage system via a network of inlets and pipes and is discharged into the river. Along the bridge, bridge scuppers allow water to drain directly into the river. **Figure 2-14** depicts the existing south roadway drainage system that outfalls into Trout River.

FIGURE 2-14: EXISTING SOUTH ROADWAY SYSTEM OUTFALL

There are no stormwater treatment ponds within the project limits. Additionally, there are no cross drains located within the project limits.

Two receiving Waterbody Identifications (WBIDs) exist within the project corridor, which are WBID 2203A and WBID 2203E (see **Figure 2-15**). WBID 2203A Trout River (Lower Reach) is impaired and on the Verified List for Chlorophyll-a. WBID 2203E Tributary to Trout River (Marine Segment) was ordinally part of WBID 2203A but was split to represent the basin hydrology more accurately. Both WBID's have established Total Maximum Daily Load (TDML) criteria for fecal coliform release within the basin. The Statewide Basin Management Action Plan (BMAP) for the Lower St. Johns River Basin covers both WBID's for Total Nitrogen (TN) and Total Phosphorus (TP). Lastly, Site Specific Alternative Criteria (SSAC) for Dissolved Oxygen exists for both WBID's.

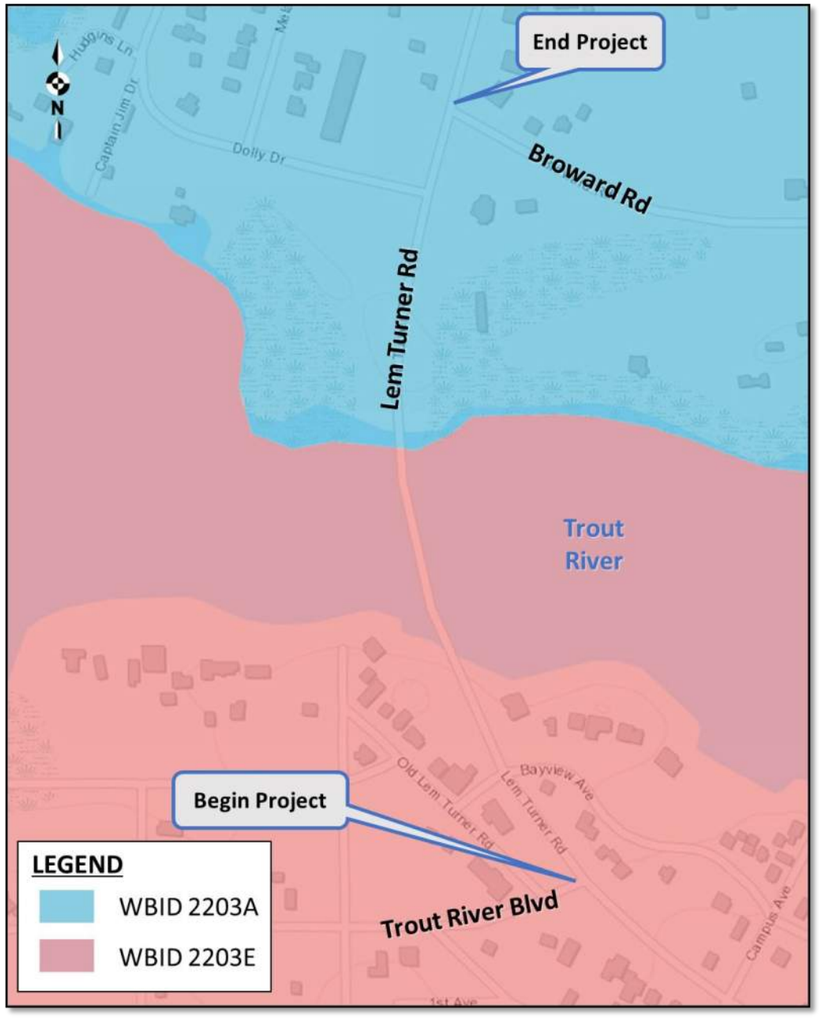


FIGURE 2-15: WBID LOCATIONS

2.18.1 Conservation Easements

No conservation easements fall within the project limits. The closest recorded easement is approximately 400' east of the project along Broward Road. All known conservation easements within the project corridor are shown on **Figure 2-16**.

FIGURE 2-16: EXISTING CONSERVATION EASEMENTS

2.18.2 Wetlands and Other Surface Waters

Vegetated wetlands are present along the southern and northern edges of Trout River within the project limits and are classified as saltmarsh. Dominant vegetation consists of cordgrasses, sawgrass, marshelder, and false indigo. Existing saltmarsh is located along both the south and north banks. An example picture of the saltmarsh is shown in **Figure 2-17**.

FIGURE 2-17: EXISTING SALTMARSH EXAMPLE, DOWNSTREAM SIDE FACING NORTH

2.18.3 Floodplains

The project is located within the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FRIM) panel 12031C0187J. The project limits are not within a regulatory FEMA floodway. However, the project is located within floodplains and FEMA Zone AE, which shows the area is subject to a 1% annual chance for a flood event and wave heights less than 1.5'. The FEMA Flood Map is shown in **Exhibit 2-18**.

FIGURE 2-18: FEMA FIRM MAP

2.19 Soils and Geotechnical Data

A Preliminary Geotechnical Report Soil Survey Study was prepared for the project, below is a summary.

Data from the United States Department of Agriculture (USDA) and the National Resources Conservation Service (NRCS) Soil Survey was used to identify various soil classifications. The soil types are identified in **Table 2-7** and shown on **Figure 2-19.**

FIGURE 2-19: EXISTING SOIL CONDITIONS

TABLE 2-7: SOIL DATA		
Soil Name	**Map Unit Symbol**	**Hydrologic Group**
Kureb Fine Sand	29	A
Mascotte Fine Sand	38	C/D
Surrency Loamy Fine Sand, Depressional	66	B/D
Tisonia Mucky Peat, Very Frequently Flooded	68	D
Urban Land	69	n/a
Urban Land-Ortega-Kershaw Complex	72	A
Water	99	n/a

Hydrologic Group Legend
Group A – High Infiltration Rate (low runoff potential) when thoroughly wet
Group B – Moderate Infiltration Rate when thoroughly wet
Group C. Soils having a slow infiltration rate when thoroughly wet
Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet
If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

2.20 Utilities

Utilities located along and across the Lem Turner Road corridor were identified using Sunshine 811 on May 15, 2023. Utility Agency Owners (UAO) identified by the Sunshine 811 design tickets are listed below in **Table 2-8**. **Figure 2-20** shows existing utilities attached to the Lem Turner Road bridge over Trout River.

TABLE 2-8: EXISTING UTILITY AGENCIES/OWNERS		
Utility Agency/Owner	**Utility Type**	**Contact Information**
AT&T Distribution	Telephone	Dino Farruggio (561) 633-2729
City of Jacksonville Traffic	Conduit, Traffic Signals	Darryl Lott (904) 738-6898
Comcast Cable Communications	CATV	Andrew Sweeney (904) 738-6898
Crown Castle NG	Fiber	Fiberdig Team (888) 632-0931 x2
Jacksonville Electric Authority Electric	Electric	JEA Development (904) 665-5703
Jacksonville Electric Authority Sewer	Sewer	JEA Development (904) 665-5703
Jacksonville Electric Authority Water	Water	JEA Development (904) 665-5703
Uniti Fiber LLC	Fiber	Charlie Croft (251) 214-7059

FIGURE 2-20: EXISTING UTILITIES ATTACHED TO BRIDGE, FACING SOUTH

2.21 Lighting

There is existing conventional lighting within the project limits. Minimal lighting exists south and north of the bridge with overhead lights mounted to the existing utility poles, see **Figure 2-21**. In addition, overhead lighting is mounted along both sides of the existing bridge, see **Figure 2-22**.

FIGURE 2-21: EXISTING ROADWAY LIGHTING

FIGURE 2-22: EXISTING BRIDGE LIGHTING

2.22 Intelligent Transportation System (ITS)

Within the project limits, existing fiber optic cable is located along the southwest side of Lem Turner Road, crosses underneath the bridge along the south end bent, and is attached to the Trout River bridge along the east side. The City of Jacksonville (COJ) maintains the existing fiber, which is used as a traffic signal interconnect along SR 115 from I-95 to I-295. **Figure 2-23** shows the conduit attached to the bridge.

FIGURE 2-23: EXISTING COJ FIBER OPTIC CABLE, FACING EAST SIDE

2.23 Traffic Monitoring Site

No existing Traffic Monitoring Sites (TMS) are located within the project limits.

2.24 Signalization

Two existing signalize intersections exist just beyond the project limits, with one located at each end of the project.

Three mast arms are located at the T-intersection of Lem Turner Road and Trout River Boulevard, equipped with pedestrian signal heads and push button indicators. The traffic cabinet is located on the southwest side of the intersection. **Figure 2-24** shows the existing intersection.

FIGURE 2-24: TROUT RIVER BLVD. INTERSECTION, FACING NORTH

Three mast arms are located as the T-intersection of Lem Turn Road and Broward Road, equipped with pedestrian head and push button indicators. An additional pole is located in the southeast corner for the pedestrian equipment, along with the traffic cabinet. **Figure 2-25** shows the existing intersection.

FIGURE 2-25: BROWARD RD. INTERSECTION, FACING NORTH

These two intersections are interconnected with fiber optic cable, see **Section 2.22**.

2.25 Aesthetics Features

There are no aesthetic features are located within the project limits.

2.26 Outdoor Advertising Signs

There are no existing outdoor advertising signs within the project limits. Source: FDOT Outdoor Advertising Database (http://fdotewp1.dot.state.fl.us/RightOfWay/CountySections?ID=72)

2.27 Roadway Signage

The existing roadway signage is comprised of ground mounted signs.

2.28 Bridges and Structures

There is one bridge within the project limits (see **Table 2-15**), which fall under the jurisdiction of FDOT.

TABLE 2-9: EXISTING BRIDGES

Facility	Crosses	Bridge Number	Stationing (Sta. to Sta.)	Bridge Length	Year Constructed	Sufficiency Rating	Vertical Clearance
Lem Turner Rd	Trout River	720033	112+44 to 119+76	732’	1957	56.9	17.9’

The Trout River Bridge (Bridge No. 720033) was constructed in 1957. It consists of 20 spans and is 732'-0” long and carries 4 lanes of traffic. The bridge is located over a tidally influenced river and has a substructure classification of “extremely aggressive”. The typical section is 57’-3” out-to-out with two 12’ lanes in each direction and two 3’-6” raised sidewalks, see **Figure 2-26**. The superstructure consists of a simple span reinforced concrete tee beam system. The intermediate bents are a combination of regular pile bents and tower bents, consisting of eight 20” square prestressed concrete piles. The existing bridge abutments are pile bents with cement bag slope protection. The bridge structure has undergone several renovations including a fender replacement in 2005, the installment of pile jackets as part of a cathodic protection in 2012, and the installation of cross brace struts to stabilize the bridge piers in 2021 that had been compromised due to scour.

A bridge sufficiency survey was conducted by FDOT in 2018 resulted in a score of 22.0 on a scale of 0-100. The bridge was also rated as “Scour Critical” and “Functionally Obsolete”. After the cross brace struts stabilization project, FDOT preformed another bridge sufficiency survey in October 2022. This survey resulted in a score of 56.9 and still found the bridge to be “Scour Criteria” and “Functionally Obsolete”.

See **Figure 2-27** through **Figure 2-31** for pictures of the existing bridge, including the superstructure, substructure, and end bents.

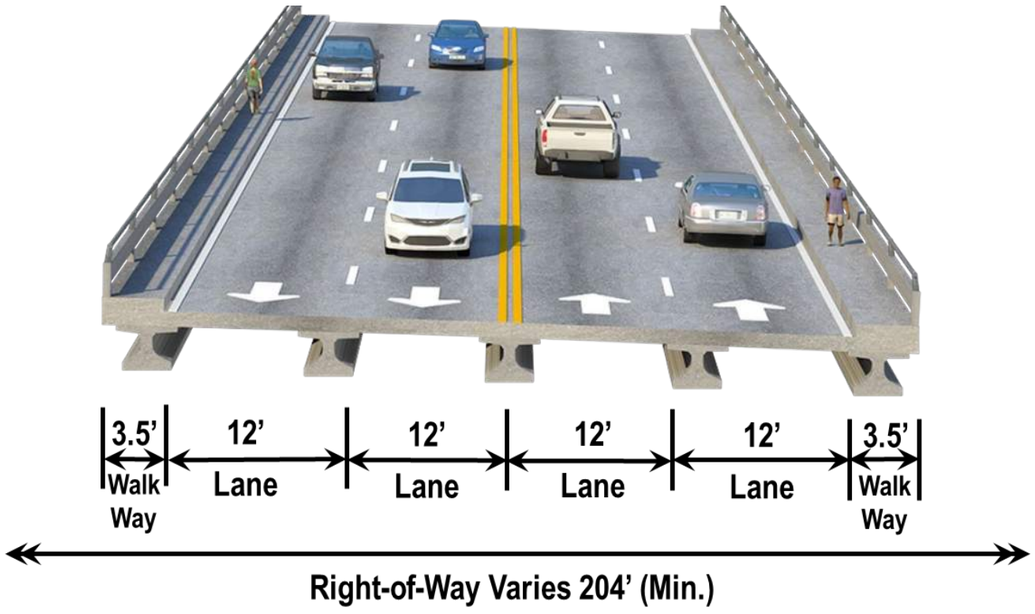


FIGURE 2-26: EXISTING BRIDE TYPICAL SECTION

FIGURE 2-27: EXISTING BRIDGE, DOWNSTREAM SIDE FACING NORTH 1

FIGURE 2-28: EXISTING BRIDGE, DOWNSTREAM SIDE FACING NORTH 2

FIGURE 2-29: EXISTING BRIDGE, DOWNSTREAM SIDE FACING SOUTH

FIGURE 2-30: EXISTING NORTH BRIDGE ABUTMENT

FIGURE 2-31: UNDERNEATH EXISTING BRIDGE, FACING SOUTH

Trout River is a navigable waterway, so the existing structure is equipped with a fender system and navigation lighting. The closest bridge crossings are the I-295 structures approximately 2.5-miles upstream and the I-95 structures approximately 2.8-miles downstream. See **Figure 2-32** for a picture of the existing fender system and **Figure 2-33** for adjacent structures locations.

FIGURE 2-32: EXISTING FENDER SYSTEM, DOWNSTREAM SIDE FACING NORTH

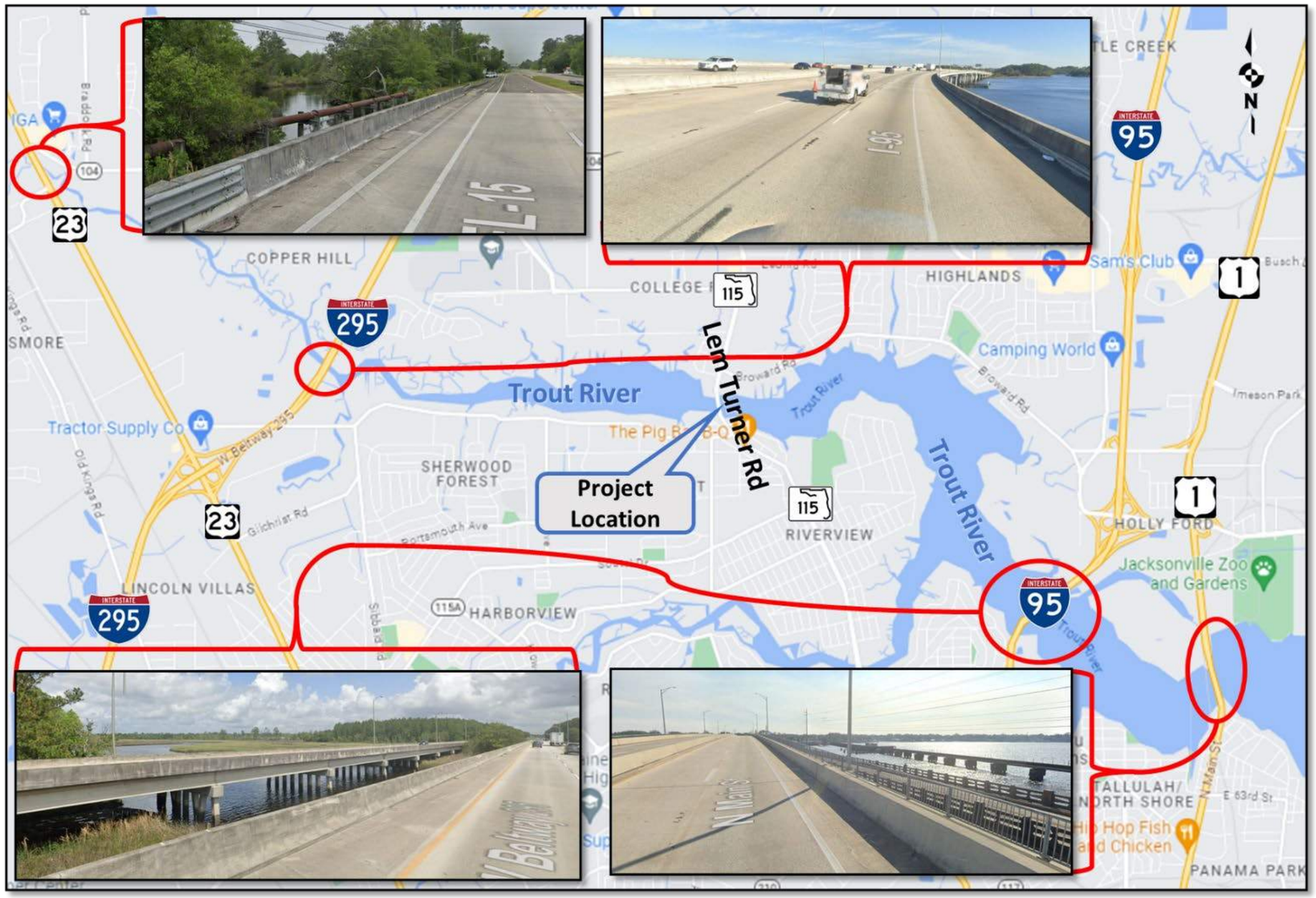


FIGURE 2-33: ADJACENT BRIDGE STRUCTURES

A vessel survey was conducted to determine number, type, size, and frequency of aquatic vehicles that pass beneath the existing bridge structure. Below is a summary of the results:

- Vessel survey is on-going. Information will be provided once complete.

3.0 PROJECT DESIGN CONTROLS & CRITERIA

3.1 Design Control and Criteria

The design criteria used in the development of this project are based on the requirements set forth in the Florida Design Manual (FDM), 2023; FDOT Standard Plans (FY 2023-24); the FDOT Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways, 2018 (Florida Greenbook); and/or AASHTO's A Policy on Geometric Design of Highway and Streets, 2018, 7th edition.

The design criteria for Arterials and Collectors (Lem Turner Road) is shown below in **Table 3-1**.

Table 3-1: Arterial & Collector Criteria

Design Element	Design Criteria		Source
SIS Type	Non-SIS		FDOT SIS System Map
Context Class	C4: Urban General		FDOT
Access Class	Class 5 Restrictive		FDOT SLD
Design Vehicle	WB-62FL		FDM Section 201.6.2
Allowable Design Speed Range	25-45 MPH		FDM Table 201.5.1
Target/Design Speed	45 MPH; Low Speed		Typical Section Package; FDM Section 201.5
Lane Width	11'		FDM Table 210.2.1
Median Width	22', 19.5' (minimum)		FDM Table 210.3.1
Clear Zone	Varies, 4' (typical for most objects)		FDM Table 215.2.2
Border Width	14'		FDM Table 210.7.1
Deflections in Alignment	1°00'00"		FDM Section 210.8.1
Superelevation	e_{MAX} = 5%		FDM Section 210.9
Stopping Sight Distance	360'		FDM Table 210.11.1
Length of Horizontal Curve	45 MPH	Minimum: 400'	FDM Table 210.8.1
		Desirable: 675'	
Grade (maximum)	6%		FDM Table 210.10.1
K-Value (minimum)	45 MPH	Sag: 79	FDM Table 210.10.3
		Crest (New Construction): 98	
		Crest (Resurfacing): 61	
Length of Vertical Curve (Minimum)	135'		FDM Table 210.10.4
Vertical Clearance	17.9' (minimum)		Maintain Existing

4.0 ALTERNATIVES ANALYSIS

4.1 Previous Planning Studies

No other previous planning studies have been completed.

4.2 No-Build (No-Action) Alternative

The No-Build (No-Action) alternative would retain the existing lane geometry as it is today. The No-Build alternative would require frequent maintenance to keep the bridge in service due to its deteriorating condition and structural deficiencies. Bridge repair and rehabilitation efforts may result in closure of the bridge that would result in dividing of the communities north and south of the bridge including a road surface detour distance of approximately 7.5-miles to the east and 8.8-miles to the west.

4.3 Transportation Systems Management and Operations Alternative

Transportation Systems Management and Operations (TSM&O) is a set of strategies that focus on operational improvements that can maintain and even restore the performance of the existing transportation system before extra capacity is needed. The goal is to get the most performance out of the transportation facilities that currently exists. This requires knowledge, skills, and techniques to administer comprehensive solutions that can be quickly implemented at relatively low cost. Such strategies include upgrades or additions to the existing facility, such as ramp signals, arterial traffic management systems, traffic incident management, work zone traffic management, road weather management, traveler information services, congestion pricing, parking management, traffic control, commercial vehicle operations, transit priority signals systems, and freight management.

Given the project purpose of addressing existing structural issues for the Lem Turner Road bridge and the fact that no capacity is being added along the corridor, TSMO strategies are nonviable. The Build Alternative is the only alternative that will address the purpose and need of the project.

4.4 Future Conditions

During the last two decades, the population of Duval County has increased 22% from 778,879 in 2000 to an estimated 950,416 in 2020. The latest data from the Bureau of Economic and Business Research shows that the population for Duval County could rise as high as 1,587,000 by 2050, as shown in **Figure 4-1**. Additional population growth places added strain on the roadway networks. A focused evaluation of the traffic demand for the project area was completed and is discussed in **Section 4.6.1**.

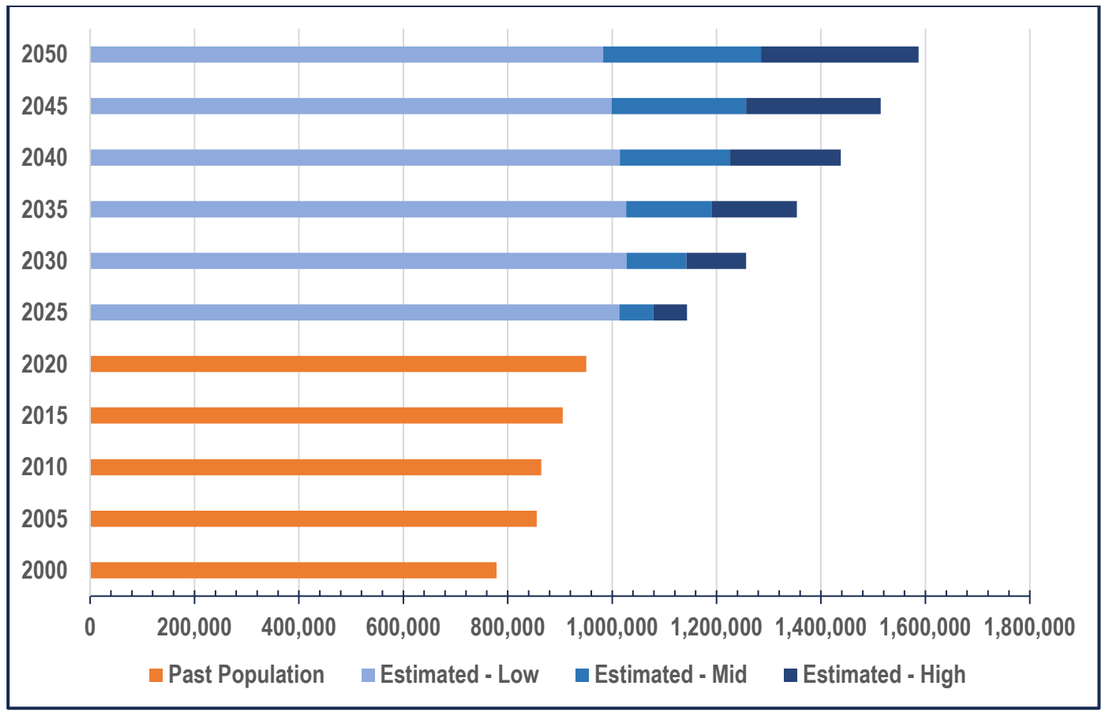


FIGURE 4-1: DUVAL COUNTY'S ESTIMATED POPULATION GROWTH

4.5 Build Alternative(s)

As part of this PD&E study, 12 alternatives were investigated during the initial concept development phase. All but two alternatives were eliminated because of adverse impacts along the corridor due to reduced number of temporary travel lanes during construction. The final two alternatives were examined; however, it was evident that one alternative was not practical due to increased construction costs; increased right-of-way costs and business impacts; increased environmental impacts to saltmarsh, wetlands, and essential fish habitat; increased impacts to utilities; and longer construction duration. The remaining alternative was progressed forward as the Build Alternative.

The Lem Turner Road Bridge Replacement PD&E Study evaluated one Build Alternative. Below is a brief description, with more detailed figures and explanations on the following pages. The concept plan can be found in **Appendix A**, along with the typical section package in **Appendix B**.

The Build Alternative would replace the existing bridge structure with a 4-lane bridge where the northbound and southbound directions are divided by a 7' median with a 4' traffic separator. Eight-foot shoulders will be along the outside of each direction. A traffic railing will be located along the shoulder to provide protection for a 10' shared use path on each side of the bridge.

The proposed bridge would be a multiple span Florida I-Beam (FIB) structure with intermediate pile bents and armored retaining wall end bents. The proposed structure would span the existing navigation channel to maintain the existing 40' horizontal clearance and 17.9' vertical clearance. A new fender system and navigational lights will be installed.

To facility the bridge replacement, the proposed bridge will be shifted east of the existing structure. This horizontal alignment shift will allow traffic to be temporary maintained on the existing bridge while a portion of the proposed bridge is constructed. Once that first segment of the new bridge is completed, traffic can be shifted on to it and the old bridge removed and the remainder of the proposed structure completed.

The vertical alignment will be raised to maintain the minimum navigational clearance, requiring short segments of roadway reconstruction on the south and north approaches. Bike lanes will be added along the roadway where reconstruction and widening are to occur.

Two new ponds (Pond 1 and Pond 2) will be constructed within the project limits. This will provide treatment within the basins where no treatment currently exists.

Additional improvements will include signing & pavement markings and lighting.

Figure 4-2 and **Figure 4-3** shows the Build Alternative proposed bridge and roadway typical sections.

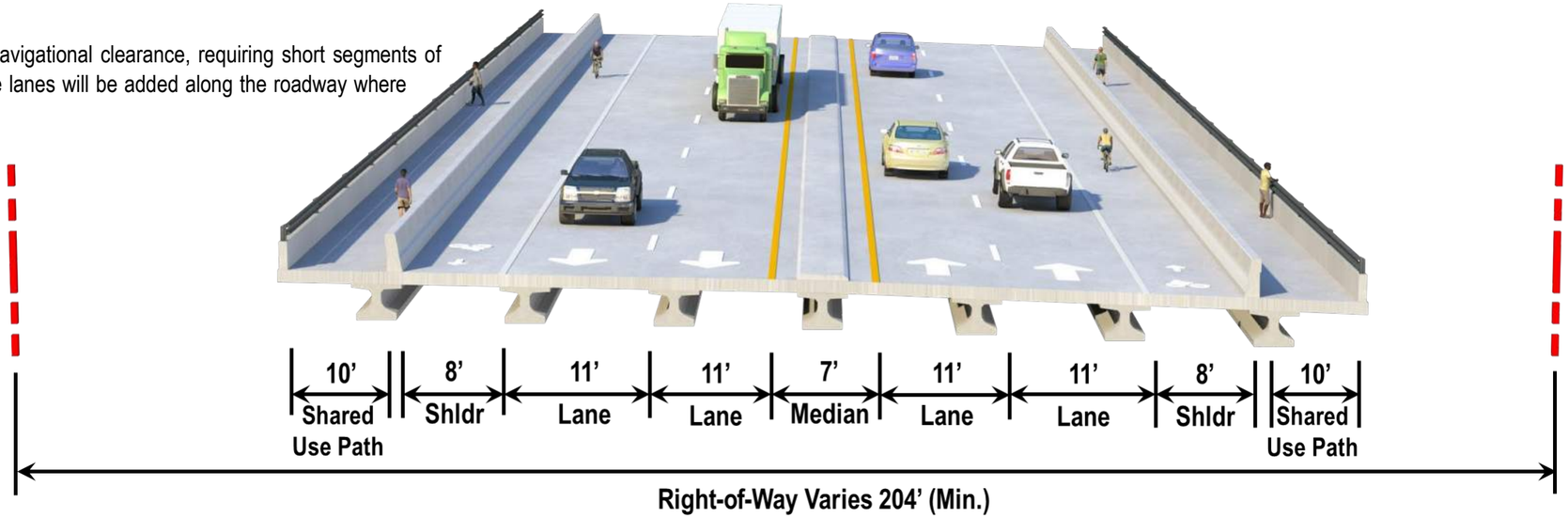


FIGURE 4-2: LEM TURNER ROAD PROPOSED BRIDGE TYPICAL SECTION

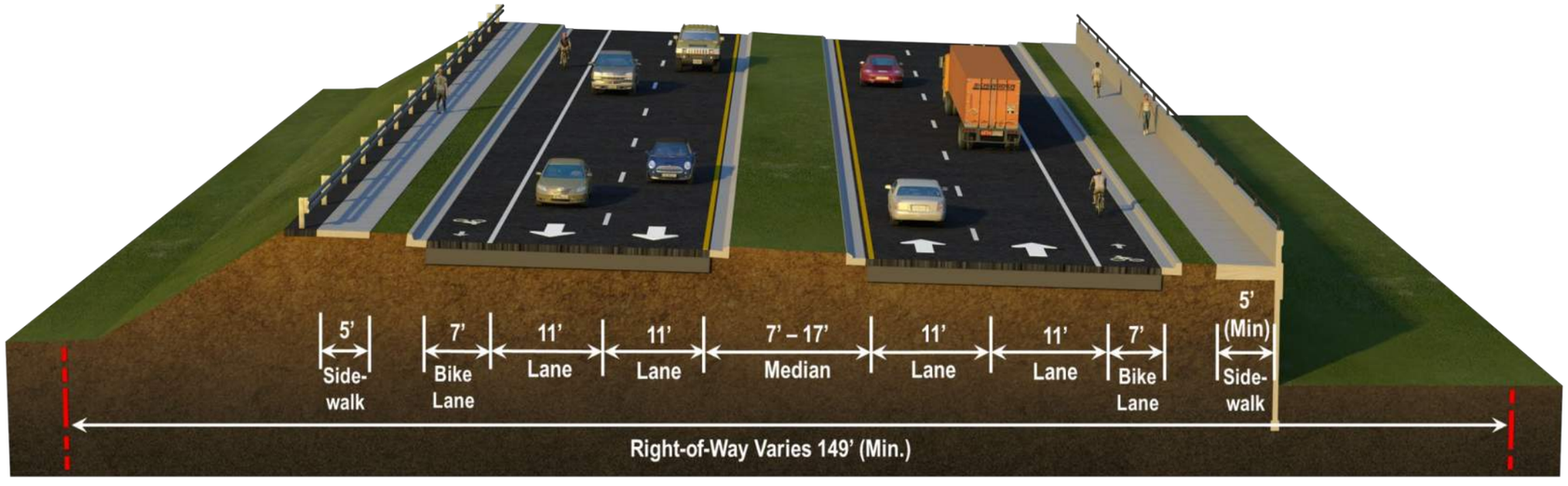


FIGURE 4-3: LEM TURNER ROAD PROPOSED ROADWAY TYPICAL SECTION

Figure 4-4 shows the plan view improvements for the Build Alternative.

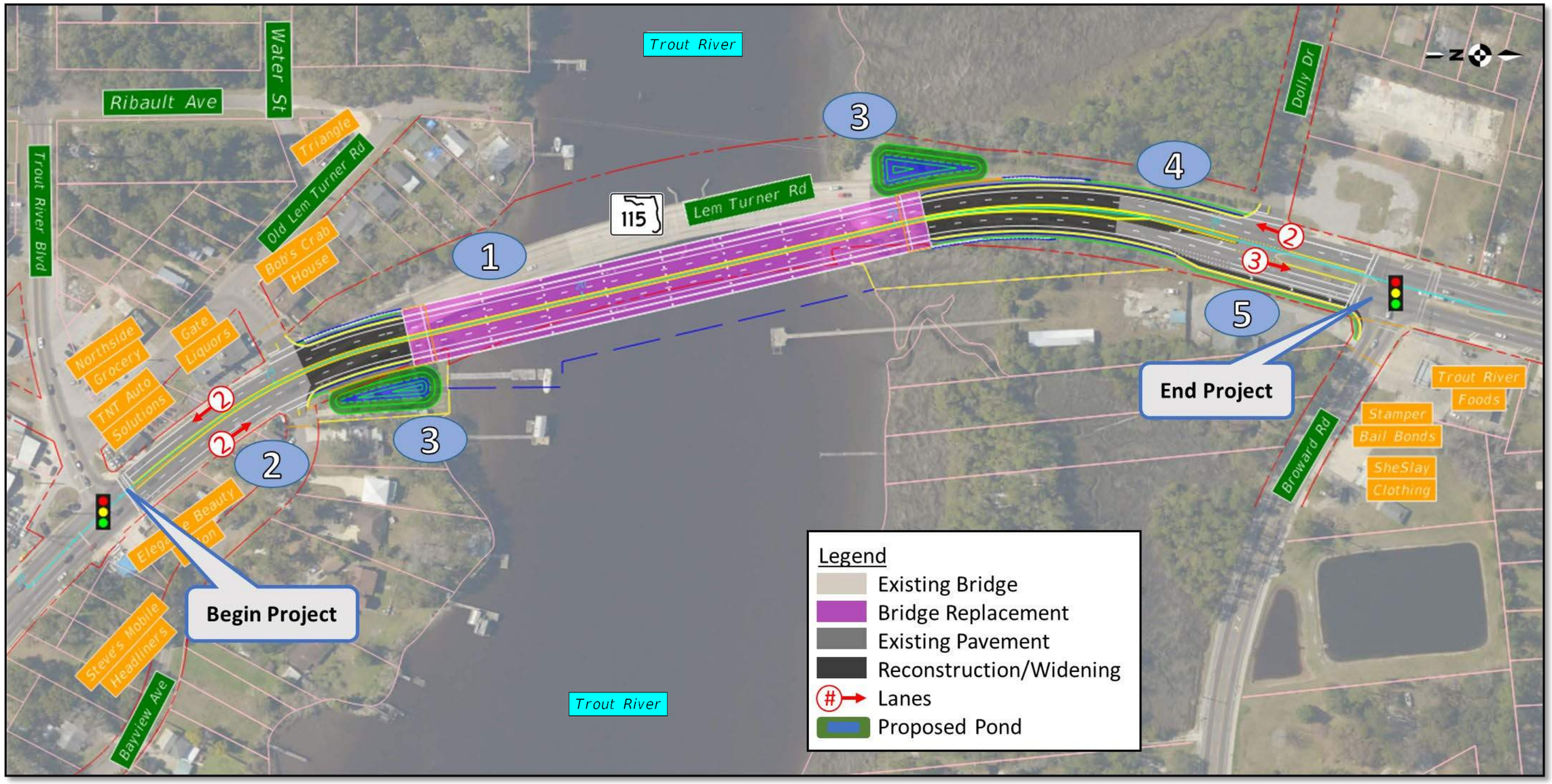


FIGURE 4-4: BUILD ALTERNATIVE PROPOSED IMPROVEMENTS

1. Construct a new 4-lane bridge with raised median, 8’ shoulders, and 10’ shared use path. Remove existing bridge. Raise profile to maintain existing navigational clearance.
2. Construct raised median consisting of 4’ traffic separator.
3. Provide stormwater treatment.
4. Widen roadway for 7’ bike lane and extend left turn lane to Dolly Drive.
5. Widen roadway for 7’ bicycle keyhole and extended right turn lane to Broward Road.

4.6 Comparative Alternatives Evaluation

The I-95 PD&E Study evaluated two alternatives, the No-Build Alternative and the Build Alternative. **Table 4-1** summarizes the ability of each alternative to meet the purpose and need, potential environment effects, and project cost.

The project construction cost was developed using the FDOT Long Range Estimating (LRE) software, and the LRE report is attached as **Appendix C**. Wetland costs were calculated assuming a mitigation cost of $125,000/acre. Right-of-way costs were received from FDOT. Construction & Engineering Inspection was assumed to be 12% of the construction costs.

TABLE 4-1: ALTERNATIVE EVALUATION MATRIX

Metric	No-Build	Build
Purpose and Need		
Replaces Lem Turner Bridge over Trout River	No	Yes
Meets Level of Service	Yes	Yes
Provides Bicycle and Pedestrian Connectivity	No	Yes
Improves Safety	No	Yes See Section 4.6.2 for a detailed safety analysis.
Consistent with Adopted TIP 2023/24 to 2027/28	No	Yes
Impact to the Environment		
Wetlands and Surface Water Impacts	0 acres	1.02 acres
Total Parcels Impacted	0	7
Business Parcels	0	0
Residential Parcels	0	1
Vacant Parcels	0	2
State of Florida (TIITF)	0	1
Government (City of Jacksonville) Parcels	0	3
Relocations	0	1
Project Cost		
Wetland Mitigation	$0	$127,500
Right-of-Way	$0	$1,021,685
Design	$0	$5,918,653
Construction	$0	$59,336,531
Asbestos Abatement	$0	$500,000
Construction & Engineering Inspection	$0	$7,120,384
Total Cost	**$0**	**$74,024,753**

4.6.1 Operational Analysis

A Project Traffic Analysis Report (PTAR) has been prepared and is included under sperate cover. Below is a summary of the operational analysis for the No-Build and Build alternatives.

The latest adopted Northeast Regional Planning Model-Activity Based (NERPM-AB) was used as a reference to estimate future years daily traffic forecasts for this study. The traffic volumes on the Lem Turner Road are projected to grow at an annual rate of 1% until year 2045. It should be noted however, that the 2045 Annual Average Daily Traffic (AADT) from the model is lower than the existing AADT obtained from Florida Traffic Online (FTO).

Additionally, the historical AADT volumes at the Lem Turner Bridge were obtained from FTO for the past 10 years (2013-2022) to study the historical linear growth trend. The historical growth rate was estimated using linear regression analysis from FDOT count station 723020 located on Lem Turner Bridge. The 10-year trend analysis showed no growth.

Based on the above information, a 0.5% linear growth rate was applied to the existing traffic volume to estimate the 2030 Opening Year and 2050 Design Year traffic volumes.

To assess the impact of these future volumes along Lem Turner Road for the No-Build and Build Alternatives, a segment analysis was performed using Generalized Service Volume Tables to determine the Level of Service (LOS).

The No-Build Alternative would maintain the existing lane configuration as it exists today. **Table 4-2** shows 2030 Opening Year and 2050 Design Year traffic volumes and corresponding LOS for the No-Build Alternative.

TABLE 4-2: NO-BUILD TRAFFIC SEGMENT ANALYSIS

Segment	Context Classification	LOS Target	2030		2050	
			AADT	LOS	AADT	LOS
Lem Turner Road	C4	D	30,000	D	33,000	D

Table 4-3 shows 2030 Opening Year and 2050 Design Year traffic volumes and corresponding Level of Service (LOS) for the No-Build alternative.

TABLE 4-3: BUILD TRAFFIC SEGMENT ANALYSIS

Segment	Context Classification	LOS Target	2030		2050	
			AADT	LOS	AADT	LOS
Lem Turner Road	C4	D	30,000	D	33,000	D

In summary, both the No-Build Alternative and the Build Alternative operate at an acceptable LOS for the 2030 Opening Year and 2050 Design Year.

4.6.2 Safety Analysis

A quantitative predictive safety analysis was conducted for the No-Build and Build Alternatives, using the Highway Safety Manual (HSM) predictive crash analysis for urban and suburban roadway segments and 2050 Design Traffic volumes. The HSM crash analysis allows for a calibration factor to be inputted into the calculation to allow for alignment of predicted crashes with observed crashes. To determine the calibration factor, 2022 existing traffic volumes and current roadway characteristics were used to determine the "predicted" crashes for a Base condition. This resulted in 4.2 crashes per year, which was compared to the average 7.4 observed crashes per year (2018 to 2022) detailed in **Section 2.16**. The observed crashes (7.4) were divided by predicted Base crashes (4.2) to determine the calibration factor of 1.76, which was used in the analysis for the No-Build and Build Alternatives.

Table 4-4 summarizes the quantitative safety analysis for the No-Build and Build Alternatives. The results show that the Build Alternative is expected to have fewer crashes than the No-Build Alternative.

TABLE 4-4: PREDICTED CRASH FREQUENCY COMPARISON

Location	Alternative	Fatal & Injury	Property Damage Only	Total
Lem Turner Road	No-Build	2.6	6.1	8.7
	Build	1.4	3.5	4.9
	Change	**-1.2**	**-2.6**	**-3.8**

Note: All numbers have units in crashes/year.

The HSM crash analysis results for the Base, No-Build, and Build Alternatives can be found in **Appendix E**.

4.7 Selection of the Preferred Alternative

The Build Alternative is the only alternative that facilitates the replacement of the Lem Turn Road bridge over Trout River. The No-Build would not address the need to replace the deteriorating bridge, which is the driving need for the project. If the bridge is not replaced, increasing maintenance would be required to keep the bridge operational until finally the bridge is considered unsafe for use. This would result losing a direct connection across Trout River, ultimately dividing the existing community, creating long detours, and adding strain to the surrounding roadway networks.

Therefore, the Build Alternative is selected as the Preferred Alternative. The concept plan for the Preferred Alternative is included in **Appendix A**.

4.8 Value Engineering

A Value Engineering (VE) study was held from April 18 to April 22, 2022. The VE study was conducted for State Road (SR) 115 Bridge Replacement project over the Trout River in Duval County, Florida. Below are the VE study recommendations and resolution of management action.

- Recommendation 1: Instead of vertical abutments use slopes in front to minimize scour.
  - Potential Cost Savings: $708,000
  - Management Action: Further Study
- Recommendation 2: Use the existing bridge by closing two lanes while construction the ACROW Bridge.
  - Potential Cost Savings: $2,650,000
  - Management Action: Further Study
- Recommendation 3: Phase the demolition of the existing bridge to carry traffic while building the new bridge.
  - Potential Cost Savings: $3,206,000
  - Management Action: Further Study
- Recommendation 9: Reduce the shared-use path width on one side of the bridge.
  - Potential Cost Savings: $2,048,000
  - Management Action: Not Accepted
- Recommendation 14: Shift Alternative H Mod 3 slightly east to phase construction of the bridge.
  - Potential Cost Savings: $4,482,000
  - Management Action: Not Accepted
- Recommendation 17: Capture the north ramp runoff in a swale to treat there instead of taking it to the pond.
  - Potential Cost Savings: $646,000
  - Management Action: Further Study
- Recommendation 18: Instead of rip rap use articulated concrete block around abutments.
  - Potential Cost Savings: $390,000
  - Management Action: Not Accepted

5.0 PROJECT COORDINATION & PUBLIC INVOLVEMENT

5.1 Agency Coordination

The project was screened through the Environmental Screening Tool (EST) as part of the Efficient Transportation Decision Making (ETDM) Programming Screen phase (ETDM #14449).

During the screening, six issues were classified as "Moderate" or "Substantial" by the Environmental Technical Advisory Team (ETAT). These issues included social; wetlands and surface waters; floodplains; wildlife and habitat; coastal and marine; and navigation.

Social (Moderate)

The US Environmental Protection Agency (USEPA) commented that the new roadway will likely result in social impacts such as property and business relocations, noise, vibration, construction detours, and travel pattern disruptions. USEPA recommended that this issue is reevaluated as the project continues into future phases of project development. Involvement from the local and surrounding communities is recommended and public involvement activities should be a part of the project development phases. Public involvement should continue throughout design and construction as well. The project should avoid or minimize social impacts to the greatest extent practicable.

The USEPA added that in accordance with Executive Order 12898, Federal actions must address Environmental Justice (EJ) in minority and low-income populations. Most federal agencies have made EJ part of their mission by identifying and addressing disproportionately high and adverse human health or environmental effects of programs, policies, and activities on minority and low-income populations. There is a sizeable minority population within the proposed project area. The PD&E study should include analysis of information relating to characteristics of potentially impacted populations for the proposed alternatives.

Wetlands and Surface Waters (Moderate)

US Army Corps of Engineers

The US Army Corps of Engineers (USACE) commented that the level of importance would be moderate for a new bridge replacement across the Trout River. Any estuarine wetlands and surface waters would be jurisdictional associated with the new bridge replacement under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. A Section 10/404 authorization would be required for any permanent or temporary fill material placed due to construction of the new bridge abutments or approaches and any scouring countermeasure fill placed at the high tide line or below. These wetlands and surface waters would also be considered Essential Fish Habitat (EFH).

The USACE recommended a continued emphasis on wetland avoidance and minimization opportunities throughout the planning process. A wetland survey should be conducted for the project corridor to identify any existing wetlands, and if any are found, a jurisdictional determination should be completed. A review of the USACE Regulatory In Lieu Fee and Bank Information Tracking System (RIBITS) indicates that the proposed project corridor would traverse the geographical service areas of the federally approved North Florida Saltwater Marsh Mitigation Bank. The North Florida Saltwater Marsh Mitigation Bank currently has 11.69 Uniform Mitigation Assessment Method (UMAM) Estuarine Intertidal, Emergent credits available. These credits might be used to offset any fill functional loss to Estuarine Sub-tidal surface waters for the construction of the bridge abutments. The functional loss for any anticipated surface water fill impacts should be assessed using UMAM. If a Corps Department of Army authorization is required, a Nationwide 3 (Maintenance) would be appropriate as the project development and planning moves forward if the impacts to waters of the U.S. are overall minimum impacts. If the project does not qualify for a nationwide permit, then it would need to be permitted using a Standard Individual Permit which includes the need to publish a Public Notice to other federally and State resource agencies as well as all adjacent property owners.

The USACE added that new, previously non-disturbed, adjacent wetlands would incur secondary effects along the new bridge footprint. This assumes the current bridge would remain until the new bridge is constructed along the current bridge alignment.

US Environmental Protection Agency

The US Environmental Protection Agency (USEPA) commented that potential impacts are anticipated to be moderate, but every effort should be made to maximize the collection and treatment of stormwater. Stormwater runoff should be diverted away from surface waters. Best management practices (BMPs) should be implemented during construction. Additionally, stormwater collection and treatment mechanisms should be designed to protect the function of surrounding wetlands and surface water features. The environmental phase should focus on identifying wetland areas that will be impacted by the project. The wetland study should include a delineation of wetlands; functional analysis of wetlands to determine their value and function; avoidance and minimization strategies for wetlands; and mitigation plans to compensate for adverse impacts. To the extent practicable, USEPA encourages avoidance, minimization, and mitigation of impacts on wetlands, surface waters and groundwater in the project vicinity. Stormwater runoff and its potential impact on water quality should be properly evaluated and addressed during the Project Development and Environment (PD&E) study. Appropriate stormwater treatment systems and BMPs must be employed during construction, and throughout the operational life of the facility, to protect surface waters and prevent impacts to groundwater. To this end, the USEPA also recommends evaluating Low-Impact Development (LID) stormwater management practices during the PD&E study.

National Marine Fisheries Service

The National Marine Fisheries Service (NMFS) commented that the South Atlantic Fishery Management Council (SAFMC) has identified the estuarine wetland habitats associated with the Trout River as essential fish habitat (EFH) for white shrimp, brown shrimp, and estuarine-dependent species of the snapper-grouper complex, such as grey snapper. Estuarine salt marshes and wetlands are EFH for these species because larvae and juveniles concentrate and feed extensively within these habitats. As a consequence, growth rates are high and predation rates are low, which makes these habitats effective nursery areas for shrimp and snapper.

Impacts to wetlands should be sequentially avoided, minimized, and compensated with appropriate mitigation. If the project continues to PD&E without this sequential mitigation, NMFS would likely find it necessary to issue EFH conservation recommendations.

The Trout River is a verified impaired Florida water. If impervious surface is expanded as a result of this project, surface and stormwater runoff into the surrounding waters may result. The discharge of hydrocarbons and other contaminants may degrade water quality. Subsequently, National Oceanic and Atmospheric Administration (NOAA) trust resources located in the receiving waters could be adversely affected. To the extent practicable, runoff from the new roads should be treated before being discharged into receiving waters.

NMFS recommended the following measures be taken as project development progresses from Programming to PD&E, design, and construction phases:

1. Adverse impacts to wetlands should be sequentially avoided and/or minimized, and unavoidable impacts should be offset in a manner that precludes a net loss of wetland function.
2. A habitat characterization of the wetlands within the project site, including the size and location of wetlands that would be directly and/or indirectly impacted by the proposed project should be prepared.
3. Information on measures to avoid and/or minimize adverse impacts to EFH (if present) within the vicinity of the project site should be identified.
4. Conservation measures (i.e., BMPs for water quality and erosion control) should be included in the project design and implemented during project construction.
5. A Stormwater Management Plan for containment/treatment of surface and stormwater runoff from impervious surfaces should be prepared.
6. A mitigation plan should be developed.
7. Timely coordination between NMFS and FDOT staff should continue through project planning and until environmental issues are addressed and resolved.

The NMFS added that the Trout River, a tributary of the St. Johns River, is habitat for green, Kemps ridley, and loggerhead sea turtles, smalltooth sawfish, shortnose sturgeon, and Atlantic sturgeon. Consultation pursuant to Section 7 of the Endangered Species Act (ESA) may be necessary. As the Federal Highway Administration's non-federal designee, it will be incumbent upon FDOT to make effects determinations regarding these species and initiate consultation, if necessary, which may include providing the NMFS an Endangered Species Biological Assessment for review. Please coordinate closely with the USFWS for other species listed under the ESA that may require consultation.

FDOT responded to the NMFS comments that based upon Florida Fish and Wildlife Conservation Commission (FWC) sea turtle stranding data, the Trout River in the project area does not appear to be habitat for marine turtles. The bridge is located approximately 5 miles upstream of the confluence with the St. Johns River. FWC sea turtle stranding data indicate most documented occurrences of sea turtles in this reach of the St. Johns are well over 10 miles downstream of the project site. One loggerhead stranding was documented in the Trout River in 1991, approximately 3.5 miles downstream of the project site. Also, based upon Florida Museum of Natural History (FLMNH) data for smalltooth sawfish occurrences, the Trout River does not appear to be documented habitat for smalltooth sawfish. As NMFS has indicated to FDOT in past coordination, smalltooth sawfish populations have constricted significantly since the 1960's and appear to be mainly found in SW Florida. This is supported by smalltooth sawfish range data currently provided by FWC. Documented occurrences of smalltooth sawfish in northeast Florida appear to be extremely rare, and those closest to the project site are located at the mouth of the St. Johns River, over 20 miles downstream. Lastly, the nearest documented occurrences of shortnose and Atlantic sturgeon are in the main stem of the St. Johns River. The project area is approximately 5 miles upstream of the Trout River confluence with the St. Johns.

St. Johns River Water Management District

The St. Johns River Water Management District (SJRWMD) stated that the proposed bridge will impact wetlands. It appears most of the impacts will be over open water but appears some marsh wetlands will be impacted as well and will require mitigation. Where possible the existing footprint should be utilized. Since this is an existing bridge site the effects should only be minimal to moderate. Wetland impacts in this area should be eliminated and reduced to maximum extent practicable by utilizing the existing bridge footprint where possible. To demonstrate elimination and reduction the existing footprint should be used as much as possible. The proposed project is located within mitigation drainage basin 4. This basin has two nested basins 5 and 6 which also have mitigation banks available. The SJRWMD provided mitigation banks names and approximate credits available for these basins at the time of their review in their EST comment. During the permitting of the bridge improvements the appropriate type and credit availability will need to be determined.

US Fish and Wildlife Service

The US Fish and Wildlife Service (USFWS) stated that they believe that the loss of wetlands within a Core Foraging Area (CFA) due to an action could result in the loss of foraging habitat for the wood stork. To minimize adverse effects to the wood stork, USFWS recommended that any lost foraging habitat resulting from the project be replaced within the CFA of the affected nesting colony. Moreover, wetlands provided as mitigation should adequately replace the wetland functions lost as a result of the action. In some cases, the USFWS accepts wetlands compensation located outside the CFA of the affected wood stork nesting colony. Specifically, wetland credits purchased from a "Service Approved" mitigation bank located outside of the CFA would be acceptable to the USFWS provided that the impacted wetland occur within the permitted service area of the bank.

To minimize adverse effects to the wood stork and other wetland dependent species, USFWS recommended that impacts to suitable foraging habitat be avoided. If avoidance is not possible, minimization measure should be employed and BMPs to avoid further degradation of the site, wetland and other aquatic resources from erosion, siltation, and nutrient discharges associated with the project site.

USFWS recommended that the project be designed to avoid these valuable resources to the greatest extent practicable. If impacts to wetlands are unavoidable, USFWS recommended that the FDOT provide mitigation that fully compensates for the loss of wetland resources. Mitigation for wetland impacts should be discussed with USFWS and will require further coordination. Please refer to the North Florida Field Office website for WOST colony locations. http://www.fws.gov/northflorida.

Florida Department of Environmental Protection

The Florida Department of Environmental Protection (FDEP) commented that an Environmental Resource Permit (ERP) may be required from the Southwest Florida and Saint Johns River Water Management District. The FDEP noted in their EST comment that the ERP applicant will be required to eliminate or reduce the proposed wetland resource impacts of construction to the greatest extent practicable. The FDEP provided additional information on this requirement.

The FDOT would like to note that this project is not within the jurisdiction of the SWFWMD.

Floodplains (Moderate)

The St. Johns River Water Management District (SJRWMD) stated that designing the project to meet the applicable Water Management District design criteria, and the conditions for issuance of a General Permit in 62-330.443, F.A.C, or an Individual Environmental Resource Permit (ERP) in 62-330.301 and 302, F.A.C., would provide reasonable assurance that the project would not result in adverse flooding to on-site or off-site property and would not result in adverse impacts to existing floodplain or surface water storage and conveyance capabilities.

The SJRWMD added that if the project exceeds the threshold for an Individual ERP, where encroachment into the floodplain cannot be avoided or is not practicable, compensatory storage or other design considerations should be made to prevent a net reduction in flood storage within the 10-year and 100-year floodplains. Additionally, the project should be designed such that the levels of flood flows or velocities are not adversely affected. Existing drainage patterns should be considered in the project design to ensure that conveyance of runoff or surface water from off-site areas to the floodplain is not adversely affected.

Wildlife and Habitat (Moderate)

Florida Fish and Wildlife Conservation Commission

The Florida Fish and Wildlife Conservation Commission (FWC) commented that the following listed species listed by the Federal Endangered Species Act and the State of Florida as Federally Threatened (FT) and State-Threatened (ST), have the potential to occur in the project area: Eastern indigo snake (FT), West Indian manatee (FT), wood stork (FT), gopher tortoise (ST), little blue heron (ST), Florida sandhill crane (ST), and tricolored heron (ST). All aquatic and wetland species either likely or potentially utilize appropriate habitats in the vicinity of the bridge. In addition, The GIS analysis revealed several specific characteristics associated with lands along the project alignment that provide an indication of potential habitat quality or sensitivity that will require field studies to verify the presence or absence of listed wildlife species and the quality of wildlife habitat resources. Approximately 34.86% or 24.3 acres of the assessment area is within Critical Habitat for the West Indian manatee. In the FWC's Aggregated CLIP Priorities, 36.28% of the assessment area ranked Priority 1, while 31.82% ranked Priority 2. In the FWC's Biodiversity Resource Priorities, 31.98% of the assessment area was ranked Priority 2. The project is within the Core Forging Area (CFA) of at least one wood stork colony. The project is within the Occasional Range of the Florida black bear, but no Florida black bear road kills or nuisance bear reports have been documented within one mile of the project area.

Primary wildlife issues associated with this project include adverse impact to habitat; potential for injury to manatees and other aquatic life during in-water construction operations; potential adverse effects to a moderate number of species listed by the Federal Endangered Species Act as Endangered or Threatened, or by the State of Florida as Threatened; and potential for water quality impacts during construction.

Based on the project information provided, direct and indirect effects of this project could be moderate provided that wetland impacts are minimized and adequately mitigated, if construction is limited to the maximum degree possible to the existing right-of-way, and Best Management Practices (BMPs) are followed for treatment of stormwater runoff.

Lastly, the FWC in their EST comment provided detailed measures for conserving fish and wildlife and habitat resources.

US Fish and Wildlife Service

The US Fish and Wildlife Service (USFWS) stated that the action area falls within the Core Forging Area (CFA) of the wood stork. The project is located less than 3 miles away from the Jacksonville Zoo wood stork nesting colony. It is very likely that wood storks are utilizing the project area for foraging. The USFWS believes that the loss of wetlands within a CFA due to an action could result in the loss of foraging habitat for the wood stork. To minimize adverse effects to the wood stork, USFWS recommended that any lost foraging habitat resulting from the project be replaced within the CFA of the affected nesting colony. Moreover, wetlands provided as mitigation should adequately replace the wetland functions lost as a result of the action. In some cases, the USFWS accepts wetlands compensation located outside the CFA of the affected wood stork nesting colony. Specifically, wetland credits purchased from a "Service Approved" mitigation bank located outside of the CFA would be acceptable to the USFWS provided that the impacted wetland occur within the permitted service area of the bank.

To minimize adverse effects to the wood stork and other wetland dependent species, USFWS recommended that impacts to suitable foraging habitat be avoided. If avoidance is not possible, minimization measure should be employed and BMPs to avoid further degradation of the site, wetland and other aquatic resources from erosion, siltation, and nutrient discharges associated with the project site.

USFWS recommended that the project be designed to avoid these valuable resources to the greatest extent practicable. If impacts to wetlands are unavoidable, USFWS recommended that the FDOT provide mitigation that fully compensates for the loss of wetland resources. Mitigation for wetland impacts should be discussed with USFWS and will require further coordination. Please refer to the North Florida Field Office website for WOST colony locations. http://www.fws.gov/northflorida.

> *Dependent upon the alternative(s) selected, the proposed project is expected to result in minimal to moderate involvement with wildlife and habitat resources. If it is determined the project will affect any federally listed species and/or their habitat, the FDOT will initiate consultation with FWS during the Project Development process. If applicable, coordination with the Office of Migratory birds will be needed for all projects involving migratory birds and eagles, please contact Ulgonda Kilpatrick in our Migratory Birds Permit Office.*

Coastal and Marine (Moderate)

National Marine *Fisheries Service*

The National Marine Fisheries Service (NMFS) commented that the South Atlantic Fishery Management Council (SAFMC) has identified the estuarine wetland habitats associated with the Trout River as Essential Fish Habitat (EFH) for white shrimp, brown shrimp, and estuarine-dependent species of the snapper-grouper complex, such as grey snapper. Estuarine salt marshes and wetlands are EFH for these species because larvae and juveniles concentrate and feed extensively within these habitats. As a consequence, growth rates are high and predation rates are low, which makes these habitats effective nursery areas for shrimp and snapper.

Impacts to wetlands should be sequentially avoided, minimized, and compensated with appropriate mitigation. If the project continues to Project Development and Environment (PD&E) without this sequential mitigation, NMFS would likely find it necessary to issue EFH conservation recommendations.

The Trout River is a verified impaired Florida water. If impervious surface is expanded as a result of this project, surface and stormwater runoff into the surrounding waters may result. The discharge of hydrocarbons and other contaminants may degrade water quality. Subsequently, National Oceanic and Atmospheric Administration (NOAA) trust resources located in the receiving waters could be adversely affected. To the extent practicable, runoff from the new roads should be treated before being discharged into receiving waters.

In their EST comment, NMFS recommended the following measures be taken as project development progresses from Programming to PD&E, design, and construction phases:

1. Adverse impacts to wetlands should be sequentially avoided and/or minimized, and unavoidable impacts should be offset in a manner that precludes a net loss of wetland function.

2. A habitat characterization of the wetlands within the project site, including the size and location of wetlands that would be directly and/or indirectly impacted by the proposed project should be prepared.
3. Information on measures to avoid and/or minimize adverse impacts to EFH (if present) within the vicinity of the project site should be identified.
4. Conservation measures (i.e., BMPs for water quality and erosion control) should be included in the project design and implemented during project construction.
5. A Stormwater Management Plan for containment/treatment of surface and stormwater runoff from impervious surfaces should be prepared.
6. A mitigation plan should be developed.
7. Timely coordination between NMFS and FDOT staff should continue through project planning and until environmental issues are addressed and resolved.

The NMFS added that the Trout River, a tributary of the St. Johns River, is habitat for green, Kemps ridley, and loggerhead sea turtles, smalltooth sawfish, shortnose sturgeon, and Atlantic sturgeon. Consultation pursuant to Section 7 of the Endangered Species Act (ESA) may be necessary. As the Federal Highway Administration's non-federal designee, it will be incumbent upon FDOT to make effects determinations regarding these species and initiate consultation if necessary, which may include providing the NMFS an Endangered Species Biological Assessment for review. Please coordinate closely with the U.S. Fish and Wildlife Service for other species listed under the ESA that may require consultation.

The FDOT responded the NMFS comments that based upon FWC sea turtle stranding data, the Trout River in the project area does not appear to be habitat for marine turtles. The bridge is located approximately 5 miles upstream of the confluence with the St. Johns River. FWC sea turtle stranding data indicate most documented occurrences of sea turtles in this reach of the St. Johns are well over 10 miles downstream of the project site. One loggerhead stranding was documented in the Trout River in 1991, approximately 3.5 miles downstream of the project site. Also, based upon Florida Museum of Natural History (FLMNH) data for smalltooth sawfish occurrences, the Trout River does not appear to be documented habitat for smalltooth sawfish. As NMFS has indicated to FDOT in past coordination, smalltooth sawfish populations have constricted significantly since the 1960's and appear to be mainly found in SW Florida. This is supported by smalltooth sawfish range data currently provided by FWC. Documented occurrences of smalltooth sawfish in northeast Florida appear to be extremely rare, and those closest to the project site are located at the mouth of the St. Johns River, over 20 miles downstream. Lastly, the nearest documented occurrences of shortnose and Atlantic sturgeon are in the main stem of the St. Johns River. The project area is approximately 5 miles upstream of the Trout River confluence with the St. Johns.

St. Johns River Water Management District

The St. Johns River Water Management District (SJRWMD) stated that the project is landward of the coastal construction line. An Environmental Resource Permit (ERP) permit will be required for the proposed project. Two existing ERP string numbers appear to have been used in this location numbers 153282 and 153478. These numbers appear to have history with permitting improvements to SR 155 over Trout River.

Navigation (Moderate)

US Coast Guard

The US Coast Guard (USCG) commented that surrounding area has multiple residences with vessels present. Boaters in the area could be impacted during construction. USCG selected that a bridge permit is required in their comment.

US Army Corps of Engineers

The US Army Corps of Engineers (USACE) added that the project proposes to construct a new bridge over the Trout River, which is a navigable water of the U.S. under Section 10 of the Rivers and Harbors Act of 1899. Any discharge of fill material into waters of the U.S. in conjunction with the bridge replacements will require a Corps permit. There may be temporary impacts to navigation during construction activities. If a Corps Department of Army authorization is required, a Nationwide 3 (Maintenance) would be appropriate as the project development and planning moves forward if the impacts to waters of the U.S. are overall minimum impacts. If the project does not qualify for a nationwide permit, then it would need to be permitted using a Standard Individual Permit which includes the need to publish a Public Notice to other federally and State resource agencies as well as all adjacent property owners.

The ETDM comments were used to refine alternatives, minimize impacts to the environment, and prepare necessary technical reports to justify mitigation options. For the issues listed above, the following steps were taken during the PD&E Study.

Social (Moderate)

During the PD&E Study, a Public Hearing will be held to garner input from the local community. Additionally, information flyers will be distributed to inform the community of the upcoming project.

The Sociocultural Effects Evaluation (SCE) Technical Memorandum has been prepared for the project and is included under separate cover. The SCE summarizes the anticipated impacts to the surrounding community. The SCE will be coordinated with USEPA and other federal and/or state resource/regulatory agencies as applicable.

Wetlands and Surface Waters (Moderate)

A Natural Resources Evaluation (NRE) has been prepared for the project and is included under separate cover. The NRE summarizes the assessment efforts based on the location, type, and quality of wetland areas as well as estimate the anticipated impacts from the chosen alternative. Also, the NRE addresses impacts to EFH. The NRE will be coordinated with the USACE, USFWS, NMFS and other federal and/or state resource/regulatory agencies as applicable.

Floodplains (Moderate)

Efforts during concept development have been made to avoid or minimize impacts to floodplain resources and functions. Engineering design features and hydrological drainage structures will be designed such that stormwater transport, flow, and discharge meet or exceed flood control requirements.

A Bridge Hydraulics Report (BHR) has been prepared for the project and is included under separate cover. The BHR will be coordinated with the SJRWMD and other federal and/or state resource/regulatory agencies as applicable.

Wildlife and Habitat (Moderate)

A Natural Resources Evaluation (NRE) has been prepared with effects determinations and mitigation strategies and is included under separate cover. The NRE also addresses potential floral and faunal species within the corridor as well as potential habitat for these species. The NRE will be coordinated with FWC, USFWS, and other federal and/or state resource/regulatory agencies as applicable.

Coastal and Marine (Moderate)

A Natural Resources Evaluation (NRE) has been prepared with effects determinations and mitigation strategies and is included under separate cover. The NRE also addresses potential floral and faunal species within the corridor as well as potential habitat for these species and essential fish habitat. The NRE will be coordinated with NMFS, SJRWMD, and other federal and/or state resource/regulatory agencies as applicable.

Navigation (Moderate)

Coordination with USCG took place to regarding the bridge permit. A Bridge Permit Initiation Request and vessel survey approach have been provided to USCG. Coordination and permitting with USACE will be required and completed during final design activities.

5.2 Public Involvement

A Public Involvement Plan (PIP) was developed for this study as is included under separate cover. Below is a summary of the Public Involvement approach.

The Sociocultural Data Report (SDR) identified 23.38% of households were below the poverty level and 2.6% receiving public assistance. Additionally, the minority population makes up 83% of the total population within the study area.

FDOT will avoid or minimize impacts to the surrounding low income and minority populations as much as possible by conducting a detailed analysis of the neighborhoods and developing a "community-selected" alternative. A proactive public involvement program will be implemented to ensure that all residents and businesses along the proposed corridor can provide input to the project. This project will be developed without regard to race, color, national origin, age, sex, religion, disability, or family status. Based on this analysis and public coordination, the proposed project is expected to result in moderate involvement with social resources.

The Osceola Forest, Riverview, and College Park communities border the project. There are also several local homeowner and neighborhood associations representing the following residential developments: Trout River, Timber Oaks, Cambridge Estates, Trout River Station Town Homes, NorthRidge, Northbrook, and Dunns Crossing. Neighborhood associations and owners of properties within 300' of the project will be included in the public outreach. During the course of the study, local, state and national public interest groups or organizations expressing interest in the project study will be included in the stakeholder database.

Techniques to ensure minority and low-income participation will be implemented by the FDOT, which will include: publishing notices in local newspapers, newsletter mailings, and expanding the buffer for neighborhoods that do not have an HOA to ensure these stakeholders receive information and are engaged.

Proposed public involvement activities include the following:

1. **Media**: FDOT District 2 Public Information Office (PIO) will deal directly with the media, with support from the consultant team. The PIO will distribute the press release to media outlets and post on social media pages.
2. **Letters/Newsletters**: Invitational and newsletters will be distributed to elected and appointed officials, property owners/tenants, business owners/operators, and interested parties. A detailed project information brochure, or newsletter, will be mailed out early in the project development process to notify stakeholders of the proposed project and upcoming events.
3. **Public Notices/Advertisements**: A public hearing advertisement will be published in the Florida Times Union and The Florida Star prior to the public hearing, and to announce Location and Design Concept Acceptance (LDCA) at the end of the study. The Florida Times Union is an area newspaper with the largest circulation in Duval County. The Florida Star is a is a weekly newspaper serving the African-American communities in Jacksonville since 1951.
4. **Public Announcements**: In order to distribute PD&E phase information, fliers will be made available to organizations such as neighborhood/civic groups, the FDOT, and Duval County, to publish in existing newsletters and websites. Any such correspondence will be coordinated through the District's Public Information Office (PIO).
5. **Direct Mail List for Notifications**: The following will be contacted by direct mail in order to obtain input throughout the project development process and/or in order to provide project information:
    - Those whose property lies, in whole or part, within at least 300' on either side of the project, as well as other local citizens who may be impacted by the construction of this project. This portion of the mailing list will be based on the County Property appointed public officials or individuals who request to be placed on the mailing list for this project.
    - Public and private groups, organizations Appraiser's tax rolls.
    - Local elected and, agencies, or businesses that request to be placed on the mailing list for this project.
6. **Public Hearing**: A public hearing is anticipated for this project due to anticipated right-of-way impacts. The public hearing will be conducted by FDOT to present the project and the conceptual project alternatives considered and the preferred alternative, and to obtain comments from the general public.

    A hybrid public hearing will be held to provide greater flexibility for stakeholders to attend the hearing either virtually and/or in person. The virtual component of the public hearing will be held to offer a better opportunity for those attending virtually to view the project, talk with the project team, and provide their input. Project information will also be posted on the project website well in advance of the public hearing to allow stakeholders to become more familiar with the project, providing greater opportunity to ask questions and provide input. Also, the virtual and in-person meetings will be held on different days to accommodate the availability of attendees depending on their schedule.

5.2.1 Public Hearing Meeting

To be completed after meeting is held.

5.2.2 Additional Public Involvement

To be completed as needed.

6.0 DESIGN FEATURES OF THE PREFERRED ALTERNATIVE

6.1 Engineering Details of the Preferred Alternative

6.1.1 Preferred Alternative

The preferred alternative will replace the existing Lem Turner Road bridge over Trout River. Specifics of all improvements have been detailed in **Section 4.5**.

Minor improvements will be implemented on the south and north roadway approaches to the bridge. These are mainly due to horizontal and vertical alignment changes discussed in **Section 6.1.7**.

The concept plan can be found in **Appendix A** along with the typical section package in **Appendix B**.

6.1.2 Access Management Classification

The Preferred Alternative will not modify any of the Access Management Classifications as shown in **Section 2.5**.

6.1.3 Context Classification

The Preferred Alternative will not modify any of the Context Classifications as shown in **Section 2.6**.

6.1.4 Functional Classification

The Preferred Alternative will not modify any of the Functional Classifications as shown in **Section 2.7**.

6.1.5 Design, Posted, and Target Speeds

Target Speed is the highest speed at which vehicles should operate on a thoroughfare in a specific context, consistent with the level of multi-modal activity generated by adjacent land uses, to provide both mobility for motor vehicles, and a supportive environment for pedestrians, bicyclists, and public transit users. Target Speed must:

- Be within the range of Design Speeds for the context classification;
- Reflect the needs of safety, quality of life, and economic development of the corridor; and
- Be established by a team that includes, but is not limited to, Design, Traffic Operations, Safety, Planning, and Program Management offices.

The established target speed for the Preferred Alternative is 45 mph.

The Design Speed for Lem Turner Road is equal to the Target Speeds shown above. This information can also be found in the Typical Section Package in **Appendix B**.

The Preferred Alternative will not modify any of the posted speeds shown in **Section 2.8**.

6.1.6 Bridges and Structures

The Preferred Alternative will replace the existing Lem Turner Road bridge over Trout River. Improvements include adding a raised median, shoulders that can be utilized by bicyclists, and shared use paths along both directions. The proposed bridge structure is 91'-10" from out-to-out. **Figure 6-1** depicts the proposed bridge typical section.

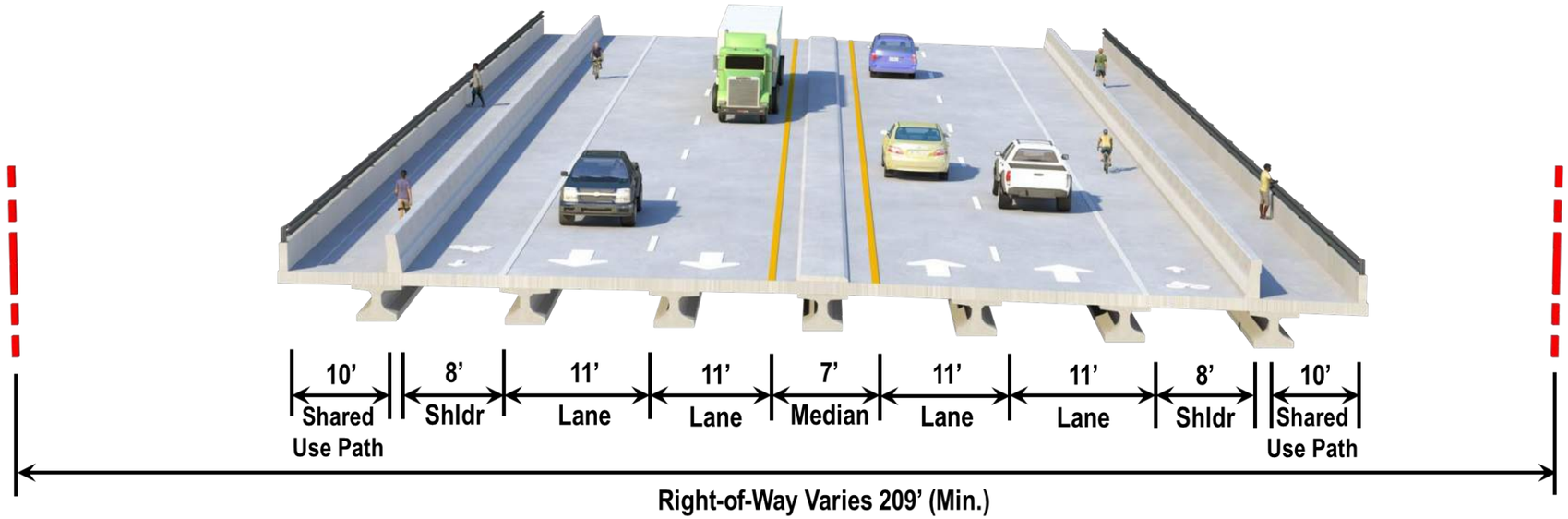


FIGURE 6-1: PROPOSED BRIDGE TYPICAL SECTION

The typical section for the proposed bridge is included in **Appendix B**.

The preliminary span arrangement of the Preferred Alternative includes eight, 96' spans. This equates to the proposed structure being 768' long, which is 36' longer than the existing bridge. The substructure would be pile bents with a Florida I-Beam (FIB) superstructure and cast-in-place concrete deck. The pilings for Span 5 over the navigational channel would be arranged to maintain a minimum of 40' clear.

The proposed end bents will be a retaining wall system. The wall will be armored with bank and shore rip-rap that sits atop a layer of filter fabric and bedding stone. The exact type of retaining wall system will be finalized during design.

The vertical profile of the bridge will also be modified, as discussed in **Section 6.1.7**. However, the existing 17.9' navigational clearance will be maintained.

A fender system along with navigational lighting will also be installed for the proposed structure.

6.1.7 Horizontal and Vertical Geometry

The Preferred Alternative will modify both the horizontal and vertical alignments from the existing condition, as shown on the concept plan that can be found in **Append A**.

As mentioned in **Section 2.28**, the existing structure has been compromised due to scour and underwent a project to install cross brace struts to stabilize the bridge piers in 2021. It was determined that partial removal of the existing structure was not economically sensible as the cross brace structs would need to be modified for a temporary condition. Furthermore, reducing the existing bridge width created additional concerns with lateral stability given the scour critical

nature of the structure. Factoring in these items, it was determined that shifting the Preferred Alternative horizonal alignment reduced the Department's risk.

The Preferred Alternative's horizontal alignment will be shifted east of the existing alignment to facility construction. This horizontal shift will allow approximately half of the proposed bridge structure to be constructed while traffic is maintained on the existing bridge structure. Once the first half of the proposed bridge is constructed, traffic will be shifted to the partially constructed new bridge, the old structure can then be removed, and the remainder of the new bridge completed. A preliminary Temporary Traffic Control Plan can be found in Appendix A. The preliminary horizontal geometry is shown in **Table 6-1**.

TABLE 6-1: PROPOSED HORIZONTAL ALIGNMENT

P.C. Station	P.I. Station	P.T. Station	Delta	Degree	T	L	R	e
10+00.00	11+14.89	12+29.50	6° 51' 58" (RT)	2° 59' 31"	114.89	229.50	1915.09	Exist
12+29.50	13+28.66	14+27.52	7° 42' 06" (RT)	3° 53' 22"	99.16	198.02	1473.11	Exist
14+27.52	15+59.32	16+88.41	20° 09' 32" (RT)	7° 43' 37"	131.81	260.89	741.50	0.042
25+12.78	27+50.43	29+78.24	28° 29' 39" (RT)	6° 07' 18"	237.65	465.45	935.94	0.021

The Preferred Alternative's vertical alignment will be modified. Due to the wider proposed structure and anticipated super structure type, as discussed in Section 6.1.6, the proposed profile will be raised to maintain the existing 17.9' navigational clearance. The preliminary vertical geometry is shown in **Table 6-2** with the profile is shown in Appendix A.

TABLE 6-2: PROPOSED VERTICAL ALIGNMENT

Type	Length	PVC Station	PVC Elevation	PVI Station	PVI Elevation	PVT Station	PVT Elevation	Grade In	Grade Out	Algebraic Difference	K
Sag	235'	15+62.69	12.28	16+80.19	13.38	17+97.69	17.97	(+) 0.934%	(+) 3.908%	2.974%	79
Crest	885'	18+03.53	18.20	22+46.03	35.49	26+88.53	17.79	(+) 3.908%	(-) 4.000%	7.908%	112

6.1.8 Right-of-Way and Relocations

Right-of-way will be required as part of the Preferred Alternative, which include:

- Fee Take
  - Private property southeast quadrant of Lem Turner Road and the bridge. Requires relocation.
  - Private property northeast quadrant of Lem Turner Road and the bridge.
  - Private property adjacent to northeast quadrant parcel for riparian rights.
- Trustees of the Internal Improvement Trust Fund (TIITF) Easement: State of Florida
- Temporary Construction Easement: City of Jacksonville (3 parcels)

A Conceptual Stage Relocation Plan (CSRP) has been prepared under a separate cover. In summary, no adverse relocation impacts for the replacement of Lem Turner Road over Trout River are expected for the construction Preferred Alternative. The project requires the residents of one single-family home to be relocated. Per market research, decent, safe, and sanitary replacement homes are available for the displaced residents in the area.

6.1.9 Bicycle and Pedestrian Accommodations

The Preferred Alternative will improve bicycle and pedestrian access as part of this project. The concept plan found in Appendix A shows the location of all bicycle lanes and sidewalks.

Bicyclists

Along the roadway approaches, bicycle lanes will be added where the roadway is being reconstructed or widened. Across the bridge, a 8' shoulder is being proposed which will have pavement markings for bicycles.

Pedestrians

Along the roadway, sidewalks already exists along both sides of the roadway, south and north of the bridge. Sidewalks will be reconstructed where needed to maintain connectivity. Across the bridge, a 10' shared use path will be located along both sides of the bridge.

6.1.10 Lighting

The Preferred Alternative will install conventional lighting throughout the project limits. This will include bridge mounted roadway lighting.

6.1.11 Signing

The Preferred Alternative will install ground mounted signage throughout the project.

6.1.12 Signalization

The Preferred Alternative will require some minor signalization work on the Broward Road intersection discussed in Section 2.24. It is anticipated that the intersection configuration at Trout River Boulevard will remain the same. At the Broward Road intersection, the controller cabinet and pedestrian equipment in the southeast corner will be impacted due to roadway widening and the bicycle keyhole.

The City of Jacksonville (COJ) SR 115 fiber optic traffic signal interconnect will be impacted where it is attached to the existing bridge. The Preferred Alternative will seek to complete minor incidental fiber splicing of the COJ fiber to FDOT's fiber at I-295 on the north end, providing backup communications for all traffic signals north of the bridge. The traffic signals south of the bridge would utilize the existing interconnect to FDOT's fiber at I-95.

Additional improvements/upgrades will be examined at that intersection during final design.

6.1.13 Transit Accommodations

The existing transit routes are detailed in Section 2.12. The Preferred Alternative will not alter the existing routes nor are there any provisions to add any additional transit to the corridor.

6.1.14 Intelligent Transportation System

The Preferred Alternative will not have any impacts to Intelligent Transportation System (ITS) infrastructure.

6.1.15 Traffic Monitoring Site

The Preferred Alternative will have no impact on traffic monitoring sites.

6.1.16 Utilities

The Preferred Alternative will impact some of the existing utilities. However, the exact impacts to the Utility Agency Owners (UAO's) facilities will not be known until more design details have been developed.

Further coordination with the UAO's shown in Section 2.20 will take place during the design phase.

6.1.17 Drainage and Stormwater Management Facilities

The proposed stormwater management facilities were located along the project corridor where hydraulically feasible and are shown on the concept plan in Appendix A

The proposed stormwater management facilities will meet all St. Johns River Water Management District (SJRWMD) and FDOT criteria for quantity (attenuation or pre vs. post) and quality (treatment). Since the proposed stormwater management facilities are to outfall to Trout River, attenuation will not be a governing criterion. Trout River is a tidal water body with approximately 2.5' difference between mean high water and mean low water and as such, does not require attenuation criteria to be meet (i.e. pre stormwater runoff peak design volume less than post stormwater runoff peak design volume). However, by the default nature of the pond design proposed, some attenuation will be provided.

The controlling criterion will be quality or treatment. The ponds were sized to provide treatment volume based on the 1" over the entire basin area or 2.5" over the impervious area, whichever is greater.

Below is a summary of proposed stormwater management facilities:

1. **Pond 1:** Pond 1 will be a new, wet detention stormwater management facility. Pond 1 will be located in the southeast quadrant of Lem Turner Road and the proposed bridge structure. The pond will be located on a remnant parcel that is being acquired to facility the roadway and bridge realignment as well as temporary construction activities. The proposed outfall will be Trout River.
2. **Pond 2:** Pond 2 will be a new, wet detention stormwater management facility. Pond 2 will be located in the northwest quadrant of Lem Turner Road and the proposed bridge structure. The pond will be located within existing FDOT right-of-way. The proposed outfall will be Trout River.

Furthermore, as discussed in **Section 2.18**, the Trout River drainage basins are impaired for fecal coliform, Chlorophyll-a, and dissolved oxygen. Fecal coliform is associated with illicit sanitary sewer, wild and domestic animals, and septic tanks, which are unrelated to roadway projects. The St. Johns River, which Trout River eventually flows into, is additionally impaired for the nutrients phosphorus and nitrogen. Only the nutrient impairments for phosphorus and nitrogen will affect how the stormwater treatment systems are designed; however, the basins that the ponds outfall are not directly impaired for these nutrients. Dissolved oxygen and Chlorophyll-a are typically associated with nutrients, which will be reduced with the removal of nutrients.

Currently, all existing stormwater runoff flows directly into Trout River with no stormwater treatment or nutrient removal. The proposed two ponds will provide nutrient removal, which will reduce the nutrient loading that is currently flowing into Trout River and eventually to the St. Johns River.

6.1.18 Hydraulics

A Bridge Hydraulics Report (BHR) was completed and is included under a sperate cover. The Preferred Alternative and Trout River was analyzed to understand how the proposed structure may affect the river and how the river may affect the proposed structure.

Existing data was collected from two National Oceanic and Atmospheric Administration (NOAA) tidal benchmark stations located within the Trout River. Bathymetric survey was collected for the riverbed upstream and downstream of the project. Additionally, geotechnical data collected as part of FDOT FPID 437437-1-52-01 (Trout River Bridge Cross Brace Struts project) was utilized. The above information was used to modify the existing Advanced Circulation Model for Coastal Ocean Hydrodynamics (ADCIRC) model of the St. Johns River and tributaries, which was the basis for the hydraulic analysis of the Preferred Alternative.

As part of the Preferred Alternative hydraulic analysis, the flow rates for the basin were developed by the Federal Emergency Management Agency (FEMA) in 2018. Additionally, NOAA tidal benchmark stations were used to determine the affects of Sea Level Rise over the 75-year expected life span of the proposed bridge, which equated to 1.00'. Below are the results of the Preferred Alternative hydraulic modeling.

The design conditions at the Lem Turner Road Bridge over Trout River are controlled by hurricane storm surge events and riverine runoff. Using the velocity results from the storm surge and riverine runoff, scour was analyzed at the bridge crossing.

Storm Surge

Velocities decreased for larger return period events. This counterintuitive condition occurs frequently in storm surge simulations since water surface gradients are not a linear function of the maximum surge. Furthermore, discharges also decrease with increasing return period. Total amount of flux is larger for larger events, but due to the change in the shape of the hydrograph lower maximum flows may be observed. Velocities peak before and after the maximum surge. The ebb flow creates the largest velocities.

Riverine Runoff

Runoff conditions were simulated using the total flow rates upstream of the bridge as the upstream boundary condition and the mean low water as the downstream boundary condition. This creates the largest elevation gradients and velocities. Higher water elevations at the downstream boundary would create higher surge elevations, but these would still be much lower than the storm surge elevations. Riverine runoff with a mean low water boundary condition caused no increase in stage but lead to higher velocities.

Storm Surge and Riverine Runoff

The worst-case conditions from storm surge and the riverine runoff create the hydraulic design conditions. **Table 6-3** summarizes the results, which were used in the scour analysis discussed below.

TABLE 6-3: HYDRAULIC DESIGN DATA

Parameter	Design (50-year) Flood	Base (100-year) Flood	Greatest (500-year) Flood
Stage Elevation (ft-NAVD)	+5.5	+6.3	+8.6
Discharge (cfs)	15,641	15,641	16,623
Maximum Velocity (ft/s)	2.45	2.45	2.59
Average Velocity (ft/s)	1.83	1.83	2.03
Exceedance Probability (%)	2	1	0.2
Frequency (year)	50	100	500

Scour

Total scour consists of three components: (1) long-term scour (aggradation/degradation and channel migration), (2) contraction scour, and (3) local scour.

1. **Long-term Scour (Aggradation/Degradation and Channel Migration)**: Aggradation and degradation refer to the long-term raising or lowering of the stream bed. Aggradation and degradation are the result of excess or insufficient sediment transport in a stream to maintain its bed elevation. Aggradation and degradation are typically long-term processes, but significant changes in an upstream drainage basin, such as the installation of a dam or construction of a large development resulting in a drastic change in land-use, may result in accelerations in aggradation or degradation. The most reliable method for assessing aggradation and degradation is through inspection of historic bed profiles at the bridge crossing. These are often cataloged within bridge inspection reports.

   For this bridge, the FDOT provided channel cross-sections from March 1956, October 2014, April 2018, September 2018, and April 2019. **Figure 6-2** presents the left and right profiles, and **Figure 6-3** presents the left

and right average change across bents 2-20 since 1956. Bent 1 was not included in the average change, because it was not measured some years. The waterway experienced 2.5' degradation from 1956 to 2014, but it is relatively stable from 2014 to 2019 with fluctuations around 0.5'. It is not clear if the waterway became stable after an initial adjustment after the bridge construction or still going through a slow degradation. There is no survey between 1956 to 2019 to confirm the long-term stability of the waterway, so a linear degradation pattern is assumed. The waterway degraded 2.5' in 63 years, so 3.0' degradation will be assumed for the 75-year planned lifetime of the bridge.

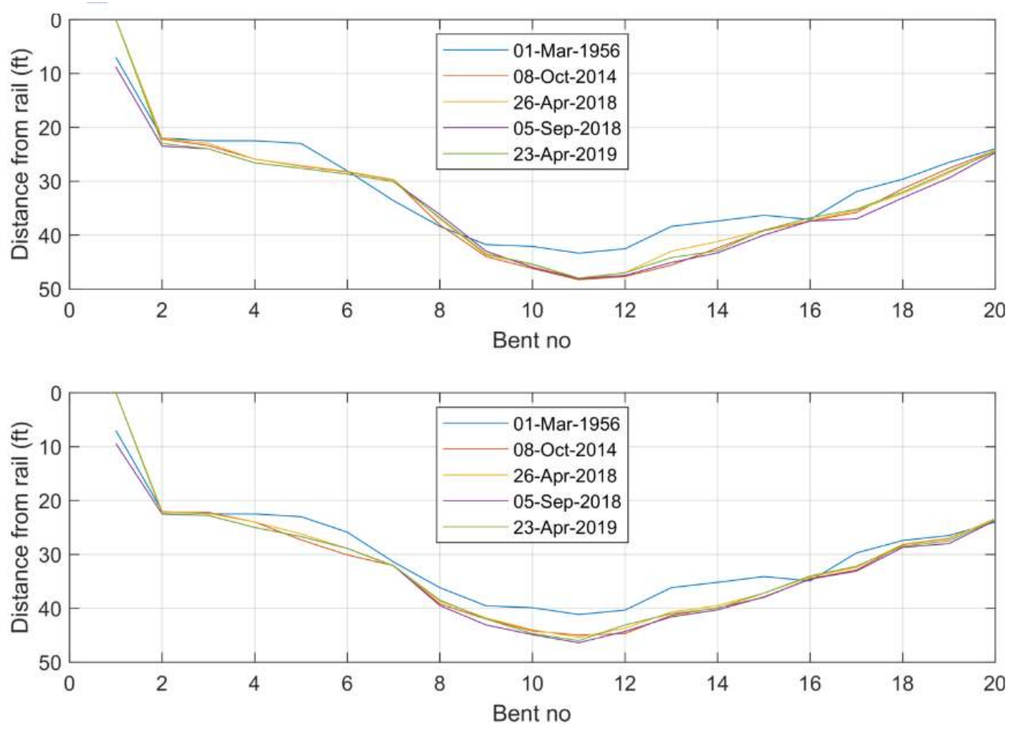


FIGURE 6-2: SCOUR – LEFT AND RIGHT PROFILES

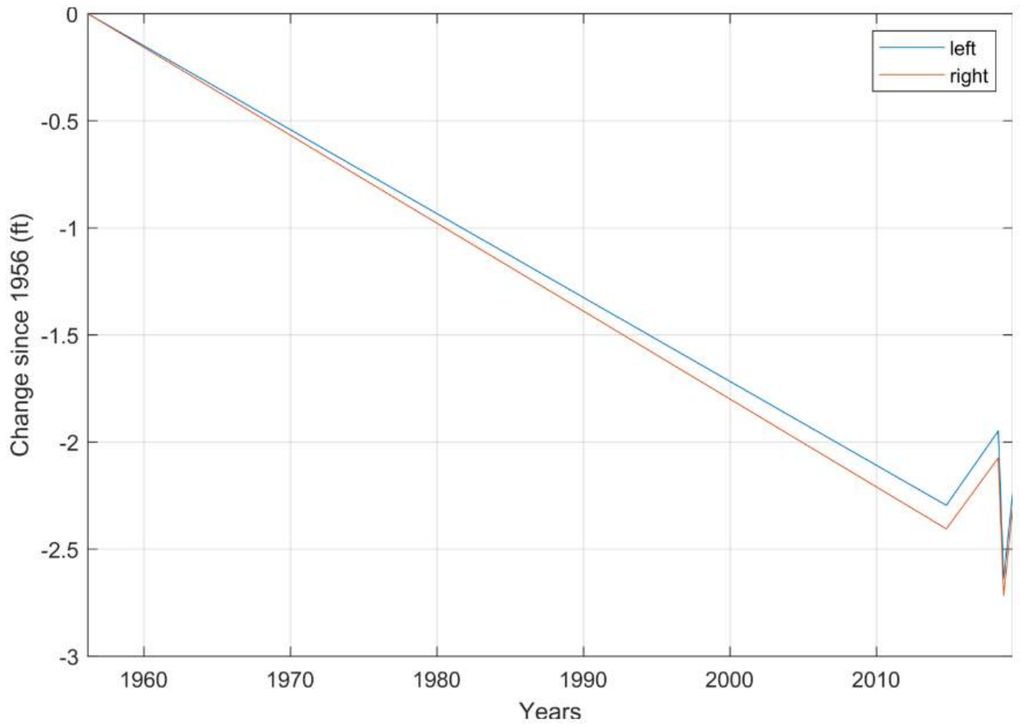


FIGURE 6-3: SCOUR – LEFT AND RIGHT AVERAGES

Lateral channel migration is an important factor to consider when deciding on a bridge's location. Rivers and streams, dynamic entities, can continually shift bank lines and move both laterally and downstream. Bridges, on the other hand, are static entities that fix the river/stream at a specific location. This juxtaposition of a bridge's immobility and a river's instability can lead to erosion of the approach embankment, changes in the contraction or local scour due to changes in flow direction or increases in abutment scour. Factors affecting lateral channel migration include stream geomorphology, bridge crossing location, flood characteristics, characteristics of the bed and bank material, and wash load.

Identification of lateral channel migration occurs through examination of historic aerial photographs, historic shoreline locations, historic bathymetries, bridge inspection reports, and current condition of the upstream and downstream banks. Historic aerial images of the project location spanning from 1959 to 2021 were examined. During this period, the area surrounding the bridge was lightly developed, but the riverbank lines appear stable in the imagery record. Lateral migration is not a likely source of long-term scour for this bridge.

2. **Contraction Scour**: An abrupt decrease in cross-sectional area at a bridge induces an increase in velocity, which causes contraction scour (a lowering of the channel bottom over the entire width of the cross section). Changes in cross-sectional area can result from natural channel constriction and encroachment of a bridge structure by both the abutments and the piles.

Surge conditions created the largest flow rates, which were used for contraction scour. Based on their average flows, water depths, velocities, and the Preferred Alternative bridge geometry, both the base flood and the greatest flood produce zero contraction scour. This is mainly due to the depths at the bridge cross-section already being larger than the approach cross-section.

3. **Local Scour**: Local scour refers to bed erosion around obstacles in the path of flow such as bridge piers and abutments. Local scour results from increased shear and normal stresses applied to the bed near the structure due to the presence of the structure. Local pier scour depends on structure geometry, current velocity, angle of attack (the angle between the flow direction and the major axis of the pier/pile group), flow depth, and soil characteristics. Local scour may occur at bridge piers and abutments, but this report only addresses local pier scour since the abutments will have scour protection.

Table 6-4 and **Table 6-5** summarizes the total scour (degradation + contraction + local) for the 100-year and 500-year storm events.

TABLE 6-4: 100-YEAR SCOUR SUMMARY

Bent	Degradation Scour (ft)	Contraction Scour (ft)	Local Scour (ft)	Total Scour (ft)
2	3.0	0.0	7.8	**10.8**
3	3.0	0.0	9.0	**12.0**
4	3.0	0.0	9.5	**12.5**
5	3.0	0.0	9.2	**12.2**
6	3.0	0.0	8.7	**11.7**
7	3.0	0.0	7.4	**10.4**
8	3.0	0.0	4.4	**7.4**

TABLE 6-5: 500-YEAR SCOUR SUMMARY

Bent	Degradation Scour (ft)	Contraction Scour (ft)	Local Scour (ft)	Total Scour (ft)
2	3.0	0.0	7.9	**10.9**
3	3.0	0.0	9.0	**12.0**
4	3.0	0.0	9.5	**12.5**
5	3.0	0.0	9.3	**12.3**
6	3.0	0.0	8.8	**11.8**
7	3.0	0.0	7.7	**10.7**
8	3.0	0.0	2.7	**5.7**

6.1.19 Transportation Management Plan

It is anticipated that the project will be deemed a “significant project” and a Transportation Management Plan will be developed during the design phase. The Transportation Management Plan will include a Temporary Traffic Control Plan (TTCP). Work zone speeds, bicycle and pedestrian accommodation along arterials, and lane closure analysis will be included in the TTCP. The TTCP will be follow the latest FDOT Standard Plans, Index 102 Series.

Temporary Traffic Control Plan

The preliminary approach will be to phase the construction of the new structure. A portion of the new structure will be constructed east of the existing bridge, allowing traffic to still utilize the existing bridge as it does today. Once the new portion of the bridge is constructed, traffic will be placed on new structure, the old bridge removed, and the remainder of the new structure completed. The roadway approaches will be constructed in multiple phases, due to the changes in vertical alignment.

Traffic Analysis

Due to the limited working right-of-way, it is anticipated that the existing number of lanes would need to be reduced from four lanes to three lanes during construction. Given a higher percentage of traffic on the northbound direction, closing a southbound lane was examined. The preliminary TTCP is shown in **Appendix A**. It should be noted that not all phases require the southbound lane closure.

A Maintenance of Traffic Memorandum was developed to examine the effects of closing a southbound lane for an extended timeframe and as is included under separate cover. Below is a summary of the findings.

Streetlight Insight web platform was used to extract and analyze travel patterns along the bridge and surrounding areas. Streetlight data collection locations are referred to as zones. Twenty-eight zones were placed in the Streetlight web platform to capture trips going north and south of the Lem Turner Bridge. The zones were grouped into relative locations to the bridge to determine Origin-Destinations (O-D). Given the O-D and discussion with FDOT, it was decided a 25% diversion rate was to be used in the temporary traffic analysis. Additionally, a 0.5% growth rate was applied to the 2016 peak hour volumes to obtain the 2027 peak hour volumes used in the analysis.

1. **Segment Analysis**: If one southbound lane is closed on the bridge, the segment analysis shows that the Lem Turner Road southbound can experience Level of Service (LOS) E or worse conditions during the AM and PM without traffic diverting. If 25% of the traffic diverts as expected in the TTCP diversion scenario, then Lem Turner Road southbound operates at LOS E or worse during the PM peak hour. Southbound traffic is not anticipated to experience any failures during the AM peak hour.
2. **Hours of Potential Failing Conditions**: There is one hour of failure expected during the TTCP diversion scenario, which is southbound between 5:00 PM and 6:00 PM.
3. **Queue Lengths**: Vissim analysis was performed to determine maximum queue lengths resulting from 25% of the traffic being diverted. The two TTCP phases that require a southbound lane closure were analyzed. Phase 1B, the southbound through lane drop occurs south of the Broward Road intersection. In Phase 2, the southbound through lane drop occurs north of the Broward Road intersection.

   The maximum queues reported from Phase 1B and Phase 2 are less than 1,000’. These queues are expected during TTCP scenarios with lane reduction. However, the queues are not observed for the entire hours and are expected to clear within two cycle lengths. No congestion remained at the end of the simulation.

Bridge Construction

The new structure will most likely be constructed using a top-down construction method from a temporary trestle. The temporary trestle would most likely be constructed in line with the proposed bridge, working from one side of the river to the next. A smaller trestle may be constructed parallel to the bridge for access and materials.

There is potential to utilize a barge for the bridge construction; however, it would need to be launched upstream of the US 1 and CSX river crossings (i.e. – not floated from the St. Johns River), as the existing openings at that location are

not wide enough for a barge to navigate. A segmented barge could possibly be launched from upstream of the Lem Turner Road crossing; however, the existing opening at Lem Turner Road is only 40' providing additional restrictions. Additionally, the areas of Trout River near the south and north banks become shallow during low tide, which may also prohibit the use of a barge in these locations.

6.1.20 Special Features
There are no special features within the project limits.

6.1.21 Outdoor Advertising Signs
The Preferred Alternative will have no impacts to outdoor advertising signage, as no signage existing within or adjacent to the project limits, see **Section 2.26**.

6.1.22 Aesthetics Features
Currently no aesthetics features are planned to be incorporated into the Preferred Alternative.

6.1.23 Design Variations and Design Exceptions
The Preferred Alternative will require one variation for median width. As Lem Turner Road will have a design speed of 45 mph, considered a low-speed roadway, median width is not considered a controlling design element and thus only requires a variation.

The variations limits will extend from Begin Project to north of the bridge and include all areas where the median is less than 22' or 19.5' in limited right-of-way scenarios.

6.1.24 Cost Estimates
The project construction cost was developed using the FDOT Long Range Estimating (LRE) software, and the LRE report is attached as **Appendix C**. Wetland costs were calculated assuming a mitigation cost of $125,000/acre. Right-of-wat costs were received from FDOT. Construction & Engineering Inspection was assumed to be 12% of the construction costs.

TABLE 6-6: PROJECT COSTS

Phase	Cost (rounded)
Wetland Mitigation	$127,500
Right-of-Way	$1,021,685
Design	$5,918,653
Construction	$59,336,531
Asbestos Abatement	$500,000
Construction & Engineering Inspection	$7,120,384
Total	**$74,024,753**

6.2 Environmental Considerations of the Preferred Alternative
6.2.1 Future Land Use
The future land use within the project limits was obtained from the City of Jacksonville Future Land Use Map from JaxGIS and Jacksonville 2030 Comprehensive Plan. Based on the information obtained, additional residential housing can be anticipated within the project corridor. Future land uses throughout the project area are very similar to the existing land uses and primarily consists of commercial along the roadway and residential surrounding the commercial areas. **Figure 6-4** illustrates the future land uses planned within the study area limits.

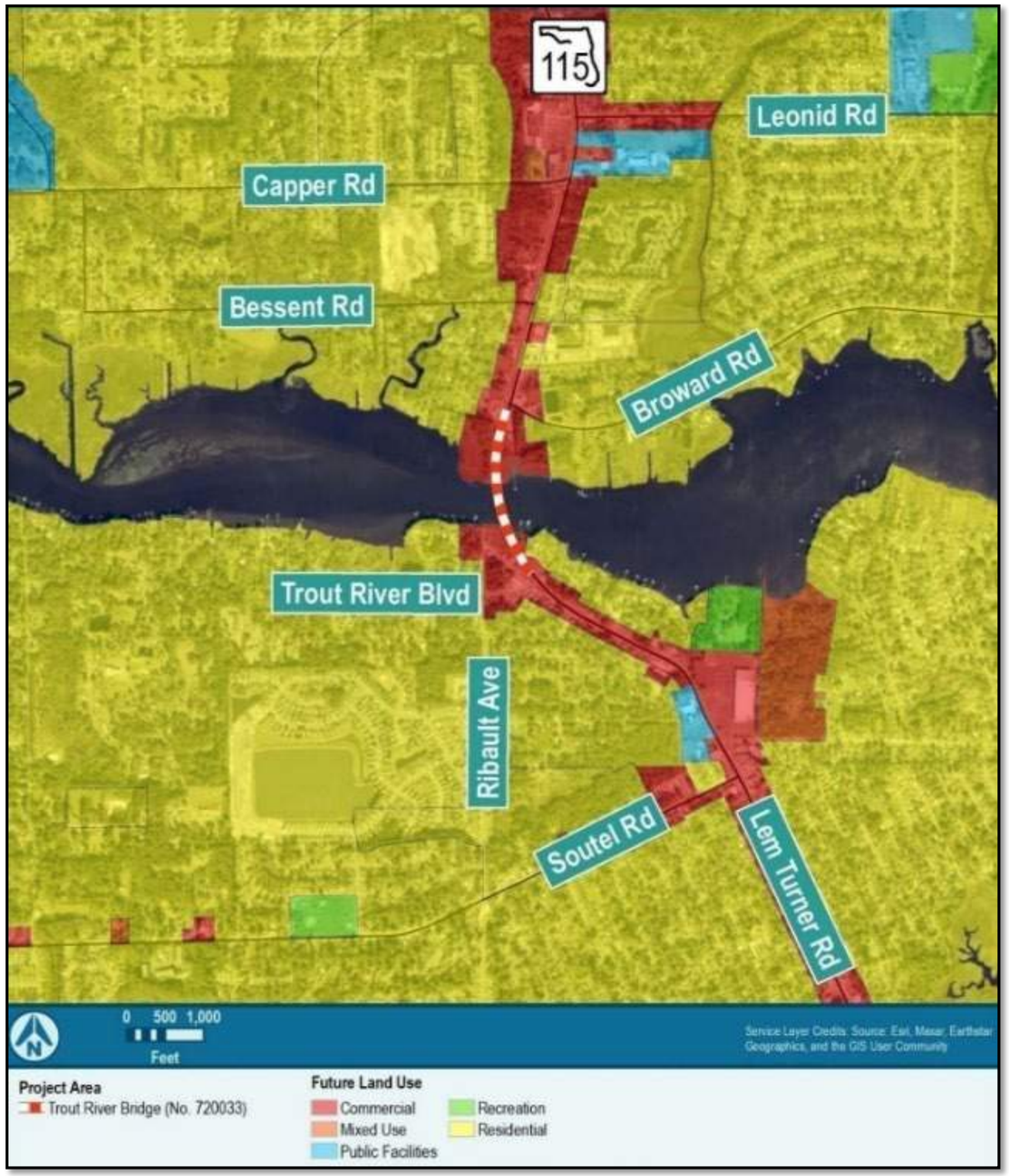


FIGURE 6-4: FUTURE LAND USE

6.2.2 Section 4(f)

The Preferred Alternative will not require any permanent or temporary acquisition of land, no changes to access, and no proximity impacts to any Section 4(f) property discussed in **Section 2.4.2.**

6.2.3 Cultural Resources

A Cultural Resource Assessment Survey (CRAS) and CRAS Addendum was conducted in support of the Preferred Alternative and is included under a separate cover. Below is a summary of the findings.

The CRAS included archeological, architectural, and remote-sensing surveys for two Area of Potential Effects (APE), as shown in **Figure 6-5**.

First, an archaeological pedestrian survey within the Trout River bridge terrestrial APE was conducted. Ground conditions prevented subsurface testing due to hardscape and buried utilities. Extension corridor modifications including roadway improvements, utilities, and development has left no portion of the proposed corridor undisturbed. No intact soils were identified, and no artifacts recovered from the APE. No further archaeological survey was recommended.

Second, an architectural survey within the Trout River bridge terrestrial APE was conducted. This resulted in the identification and evaluation of 12 newly recorded historic resources (8DU22975 through 8DU22986), as shown in **Figure 6-6**. These 12 resources lack the architectural distinction and significant historical associations necessary to be considered for listing in the National Register of Historic Places (NHRP) and have been recommended ineligible for inclusion in the NRHP. The State Historic Preservation Office (SHPO) concurrence with this recommendation can be found in Appendix D. No further architectural survey was recommended.

Lastly, a remote-sensing survey within the Trout River bridge maritime APE was conducted. In total, 16 magnetic anomalies, 30 acoustic contacts, and no unique acoustic reflectors were recorded. Analysis of the collected data suggest that the anomalies and acoustic contacts likely represent single source objects such as crab traps or other debris. None of the 16 magnetic anomalies nor 30 acoustic contacts are interpreted to represent potential submerged cultural resources.

FIGURE 6-5: CRAS APE'S

FIGURE 6-6: EVALUATED HISTORIC RESOURCES, CRAS

The CRAS Addendum included archaeological and architectural surveys of the Preferred Alternative's two pond sites.

Figure 6-7 shows the revised APE that was evaluated as part of the CRAS Addendum as well as the limits of the previous cultural surveys within the project area.

FIGURE 6-7: CRAS ADDENDUM APE AND PREVIOUS CULTURAL SURVEYS

The archaeological survey consisted of the excavation on one shovel test and pedestrian survey within the two pond sites. One shovel test was excavated within the northwest corner of Pond 1 and was negative for artifacts. Modern conditions, such as buried utilities, pavement, wetlands, and existing buildings, precluded subsurface testing within the majority of the APE. No subsurface testing was completed within the Lem Turner corridor or Pond 2. No artifacts were recovered, and no archaeological features were observed. No further archaeological survey is recommended.

The architectural survey resulted in the identification and evaluation of two newly recorded resources in the APE, see **Figure 6-8** for locations. Resources 8DU23534 and 8DU23535 lack the architectural or engineering distinction and the significant historical associations necessary to be considered eligible for listing in the NHRP and are recommended ineligible. No existing or potential historic districts were identified. No further architectural history survey is recommended.

Given the results of the CRAS and CRAS Addendum, the Preferred Alternative will cause no adverse effects to any properties eligible or potentially eligible for the NRHP.

FIGURE 6-8: EVALUATED HISTORIC RESOURCES, CRAS ADDENDUM

6.2.4 Wetlands

A Natural Resource Evaluation (NRE) Report was prepared along with a NRE addendum to address the Preferred Alternative. Both the NRE and NRE addendum are included under separate covers. Below is a summary of the findings as it relates to wetlands.

The project study area contains an estimated total of 0.746 acre of saltmarsh wetlands and 3.252 acres of open water. An estimated total of 0.746 acre of saltmarsh wetlands and 0.497 acre of open water would be impacted by the Preferred Alternative. For the PD&E study, it is assumed that all wetlands and surface waters within the project study area are jurisdictional, and impacts would require permits and mitigation through St. Johns River Water Management District (SJRWMD) and the US Army Corps of Engineers (USACE). It is estimated that up to 1.02 units of saltmarsh functional gain would be required to offset wetland and surface water impacts through mitigation. Wetland impact acreages and mitigation requirements would be finalized during the permitting process and FDOT would provide appropriate mitigation to satisfy final mitigation needs.

A Wetlands Finding was made in accordance with Executive Order 11990. It is as follows:

Wetland impacts are expected to be minor and will be finalized during the permitting process. The proposed action will include all practicable measures to minimize harm to wetlands. Wetland impacts which could result from the construction of the Preferred Alternative would be mitigated pursuant to Section 373.4137, F.S., to satisfy all mitigation requirements of Part IV of Chapter 373, F.S., and 33 U.S.C. 1344. Therefore, the Preferred Alternative is expected to have no significant impacts to wetlands and other surface waters.

Figure 6-9 shows the locations of the impacted saltmarsh and open waters.

Florida Fish and Wildlife Conservation (FWC) documentation can be found in **Appendix D**.

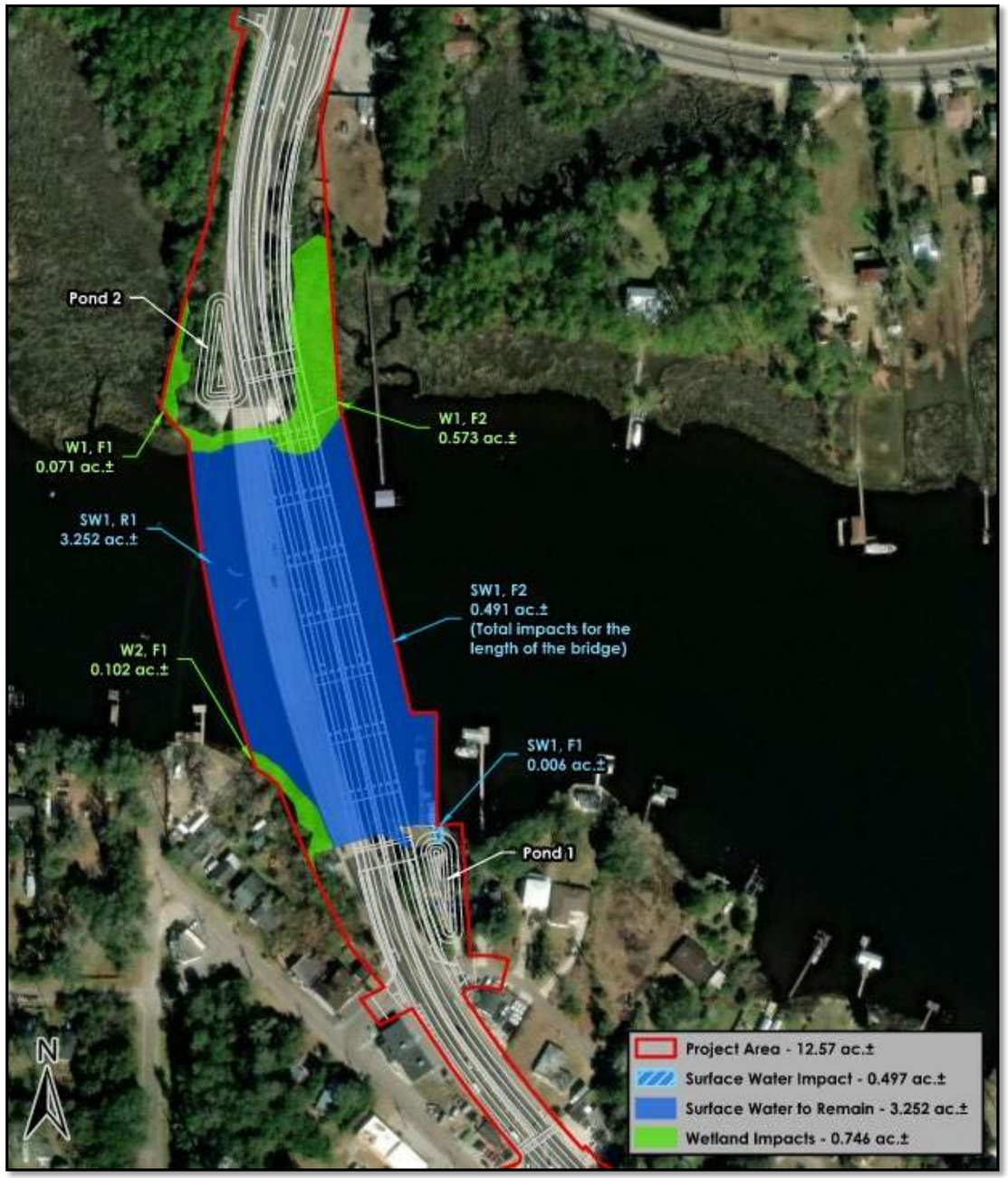


FIGURE 6-9: IMPACTED SALTMARSH AND OPEN WATERS

6.2.5 Floodplains

A location Hydraulics Report (LHR) was prepared to address the Preferred Alternative and is included under a separate cover. Below is a summary of the findings.

The project is expected to have Minimal Encroachments to the existing floodplains.

It is anticipated that approximately 1.243 acres of floodplains are anticipated for the Preferred Alternative. However, based on the hydraulic modeling found in the Bridge Hydraulics Report (BHR), the estimated elevation (not including sea level rise) would fall within the Federal Emergency Management Agency (FEMA) Still Water Elevation (SWE) range that currently exists today. Based on the information above, no floodplain compensation would be required. Furthermore, the inclusion of stormwater ponds for the project will help control discharge rates to Trout River.

The proposed bridge structure will be longer than the existing and require less pilings within the river, reducing impacts. Additionally, the anticipated temporary traffic control will allow emergency transportation facilities and evacuation routes to remain functional.

6.2.6 Protected Species and Habitat

A Natural Resource Evaluation (NRE) Report was prepared along with a NRE addendum to address the Preferred Alternative. Both the NRE and NRE addendum are included under separate covers. Below is a summary of the findings as it relates to protected species and their habitat.

A total of 21 species that are federally-listed, candidates or proposed for federal listing, and/or state-listed were determined to have some probability of occurrence in the project study area.

A total of 10 federally-listed species were given some probability of occurrence within the project study area. The shortnose sturgeon, Atlantic sturgeon, smalltooth sawfish, eastern indigo snake, Kemp's ridley sea turtle, and eastern black rail are all given a low probability of occurrence. The loggerhead and green sea turtles were both given a moderate probability of occurrence. The wood stork and West Indian manatee were given a high probability of occurrence. It is anticipated that impacts to saltmarshes and areas of suitable foraging habitat will be minimized and offset by mitigation, and that US Fish and Wildlife Service (USFWS) will determine that in-water work and/or wetland impacts may affect, but is not likely to adversely affect, the above federally-listed species.

A total of nine state-listed species were given some probability of occurrence within the project area. The anglepod milkvine, erect pricklypear, rainlily, Treat's rainlily, gopher tortoise, and Worthington's marsh wren were given a low probability of occurrence. The roseate spoonbill, little blue heron, and tricolored heron were given a high probability of occurrence. No adverse effect is anticipated for any of the state-listed species above that have some probability of occurring in the project area. No effect is anticipated for state-listed species that have no probability of occurrence within the project study area.

No adult or juvenile monarch butterflies were observed during field investigations. The project study area is unlikely to contain milkweeds that could support breeding of the species. The tricolored bat was recently proposed for listing as federally endangered (September 2022). This bat species is unlikely to occur due to rarity and is not highly likely to use large structures such as the Trout River bridge. No clear evidence of bat occupation was observed when the visible portions of the undersides of the bridge approaches on the southern and northern edges of the river were inspected on June 28, 2021. Both the monarch butterfly and the tricolored bat have been given a low probability of occurrence in the project study area. An effect determination will be made for these species if they become federally listed before the project is constructed. No active bald eagle nests are located near enough to place work restrictions on the project.

The project will have no effect on species that are determined to have no probability of occurrence.

FDOT will adhere to the implementation measures and project commitments shown in **Section 1.3**.

Continued agency coordination will occur during the design phase to address final determination of impacts, implementation of protection measures, and mitigation is necessary.

Figure 6-10 through **Figure 6-12** shows the locations of the West Indian Manatee habitat; Wood Stork core forging areas; and documented occurrences of protected wildlife.

USFWS documentation can be found in **Appendix D**.

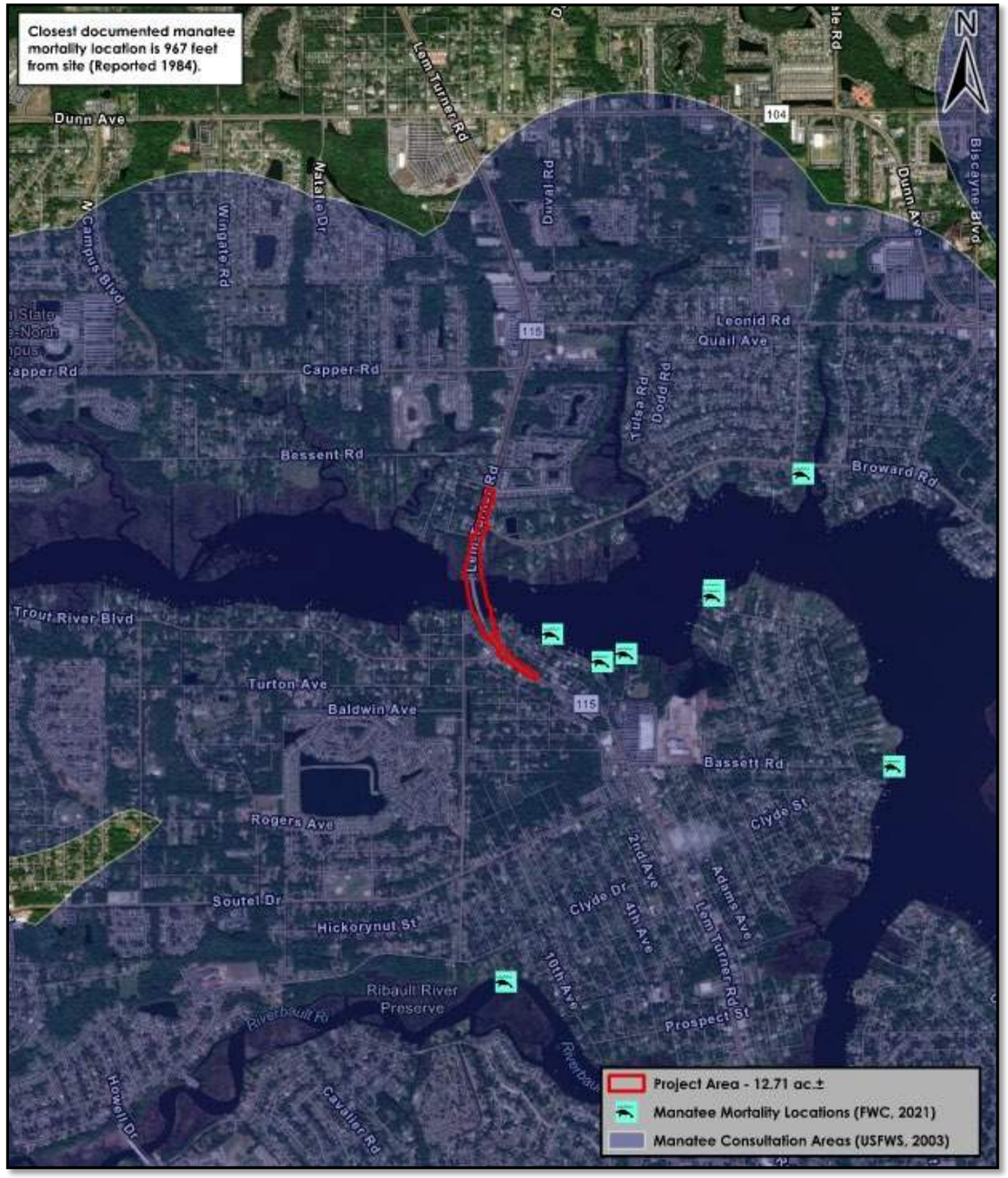


FIGURE 6-10: WEST INDIAN MANATEE HABITAT MAP

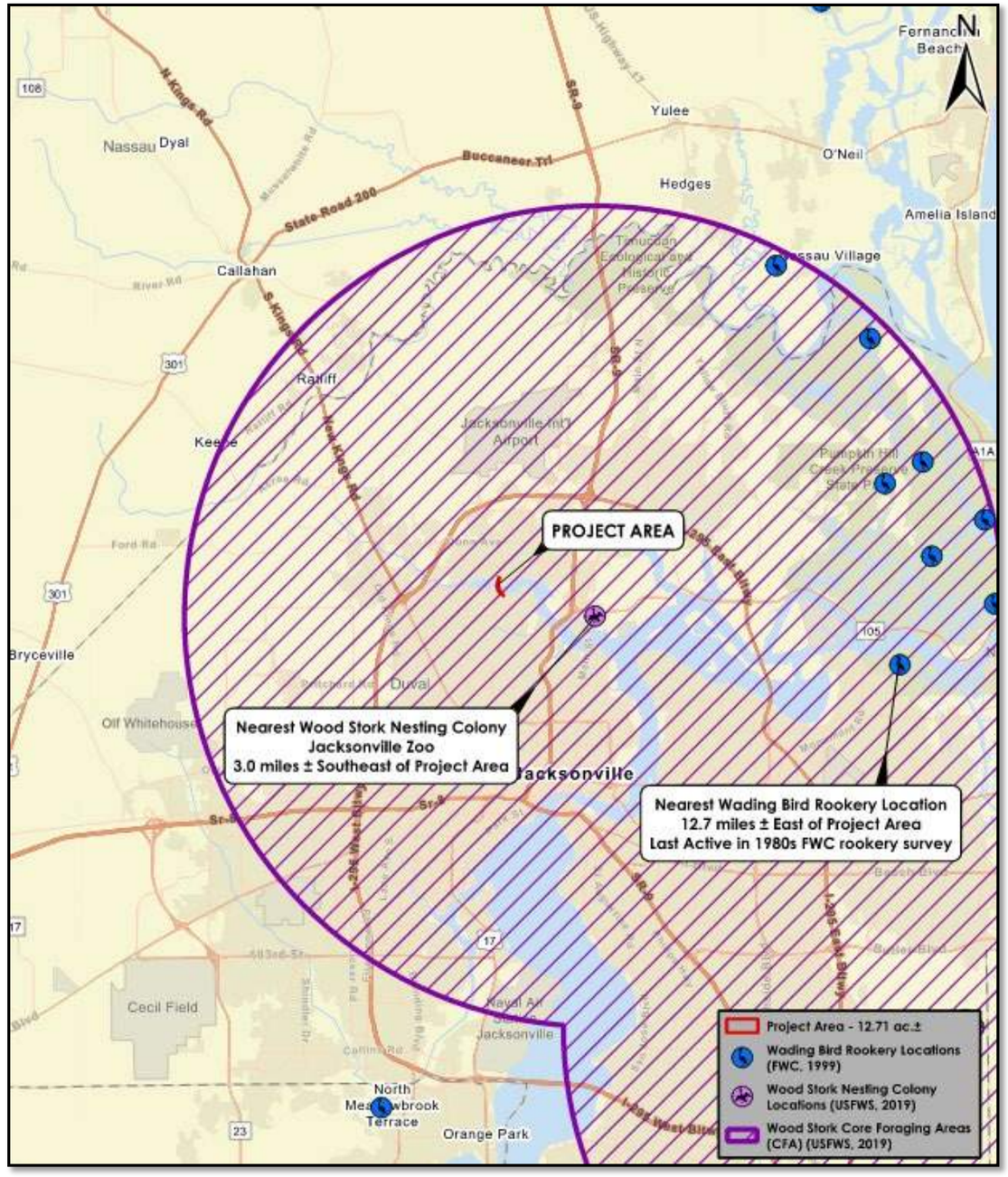


FIGURE 6-11: WOOD STORK CORE FORGING AREAS

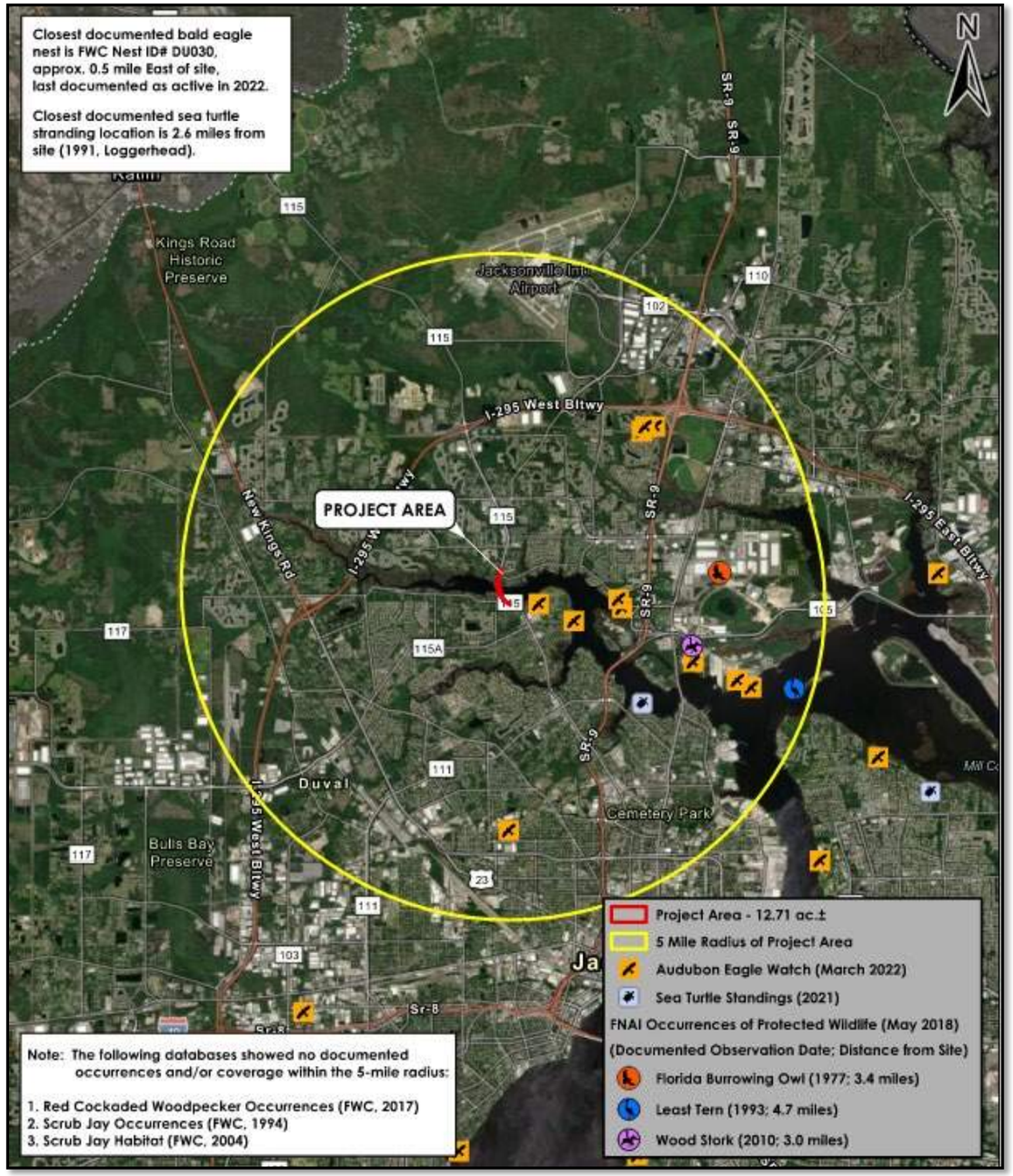


FIGURE 6-12: DOCUMENTED OCCURRENCES OF PROTECTED WILDLIFE

6.2.7 Essential Fish Habitat

A Natural Resource Evaluation (NRE) Report was prepared along with a NRE addendum to address the Preferred Alternative. Both the NRE and NRE addendum are included under separate covers. Below is a summary of the findings as it relates to Essential Fish Habitat (EFH).

All wetlands and tidal waters within the project study area are EFH. Approximately 1.243 acres of EFH is expected to be impacted by the Preferred Alternative, requiring approximately 1.02 units of saltmarsh functional gain. FDOT will provide saltmarsh mitigation functional gain to offset the loss of EFH as required. Therefore, all impacts to EFH are expected to be offset. During the permitting phase, FDOT would coordinate with National Marine Fisheries Service (NMFS) to determine the preferred method to mitigate for the loss of EFH values and regarding the three managed species of shrimp that can be found in the Trout River.

NMFS documentation can be found in **Appendix D**.

6.2.8 Conservation Easements

No impacts are anticipated to the conservation easements discussed in **Section 2.18.1**.

6.2.9 Highway Traffic Noise

A Traffic Noise Impact Assessment Technical Memorandum was prepared under separate cover. Below is a summary of the findings.

It was determined that a noise study was not required based on criteria outlined in the FDOT PD&E Manual Chapter 18, Part 2.

6.2.10 Sociocultural Effects

A Sociocultural Effects Evaluation Technical Memorandum (SCE) was prepared under sperate cover. Below is a summary of the potential effects of the Preferred Alternative, both positive and negative, on the human environments.

Demographics

No changes to the population or demographic characteristics are anticipated as a result of the Preferred Alternative. No information about previous impacts to minority populations by other public projects in the area has been identified.

Neighborhoods and Community Cohesion

The Preferred Alternative will allow for three lanes of traffic and pedestrian access during construction, following current design standards. Additionally, the Preferred Alternative does not divide or isolate portions of the community or generate new development, change the neighborhood character, nor impact travel patterns that could affect neighborhood quality of life.

Social Groups

With the exception of the parcel acquisitions as discussed in **Section 6.1.8**, the Preferred Alternative will be constructed within existing FDOT right-of-way. There will be temporary impacts to pedestrian facilities, but pedestrian access will be maintained during construction. Transit dependent, elderly, and/or disabled populations will be able to access destinations using the propose pedestrian walkway. Once construction is complete the new bridge will provide a 10' shared use path on each side. It is anticipated that there will be no adverse impacts to any underrepresented populations.

Safety/Emergency Response

The Preferred Alternative is not anticipated to have an adverse impact on safety/emergency response, as a sufficient number of lanes with be maintained during and after construction.

Economic
The Preferred Alternative will maintain access to the surrounding area, so no impacts are anticipated on any adjacent businesses. Business visibility and access will be maintained. A new bridge will continue to provide access to area businesses and communities as well as direct access to I-295 to the north and Downtown Jacksonville to the south.

The proposed construction activities will generate a number of construction-related jobs. Construction activity will contribute to regional economic output and household incomes. However, these potential positive effects will be temporary, lasting only for the duration of construction. Ultimately, business and employment impacts associated with the project are beneficial.

Land Use
The Preferred Alternative is consistent with local land use and growth management plans. The Preferred Alternative will maintain the existing character as the bridge is an existing facility and there will be no changes to recreation or open space. The existing and future land uses within the surrounding area will continue to be supported by the project. Therefore, secondary development is not anticipated as a result of this project.

Mobility
The Preferred Alternative will maintain navigational clearances and continue to accommodate four lanes of traffic. Replacement of the bridge will maintain access to public transportation, activity centers in the area, and movement of goods and freight in the greater Jacksonville region. The Preferred Alternative is expected to benefit the mobility within the project area and regionally. The new bridge will provide improvements to bicycle and pedestrian facilities and support the non-driving population (e.g., elderly, young, or disabled) with a safer facility.

Aesthetics
The Preferred Alternative viewshed will be visually consistent with the current bridge and is likely to be perceived as being compatible and in character with the community's aesthetic values. Visual impacts associated with clearing and grubbing, storage of construction materials, and establishment of temporary construction facilities are expected to be minimal and brief in duration.

Relocation
The Preferred Alternative will require permanent right-of-way acquisitions, as discussed in **Section 6.1.8**, with one relocation anticipated. The Department provides advance notification of impeding right-of-way acquisition to the property owner. Before acquiring right-of-way, all properties are appraised on the basis of comparable sales and lane use values in the area. Property owners will be offered and paid fair market value for their property.

The Department assigns a relocation specialist to each project to assist property owners, as needed. Additionally, financial assistance is available to eligible relocates.

6.2.11 Contamination

A Level 1 Contamination Screening Evaluation (CSE) report was prepared along with a CSE addendum to address the Preferred Alternative. Both the CSE and CSE addendum are included under separate covers. Below is a summary of the findings as it relates to contamination.

No known contamination has been noted within the existing right-of-way or the proposed right-of-way acquisition areas south and north of the bridge; however, an asbestos survey, discussed below, identified contamination on some bridge elements. Multiple areas of known and/or potential contamination have been identified within the vicinity of the subject corridor. Potential contaminated sites identified within the vicinity of the subject corridor include former fuel oil service facilities, former service stations, current and former gas stations, current and former auto repair facilities, former dry cleaner facilities, a former printing facility, and a former carpet cleaning facility. Petroleum and solvent related contaminants are associated with these facilities.

A total of nine sites were identified as having the potential to impact the subject corridor from hazardous substance and/or petroleum contamination.

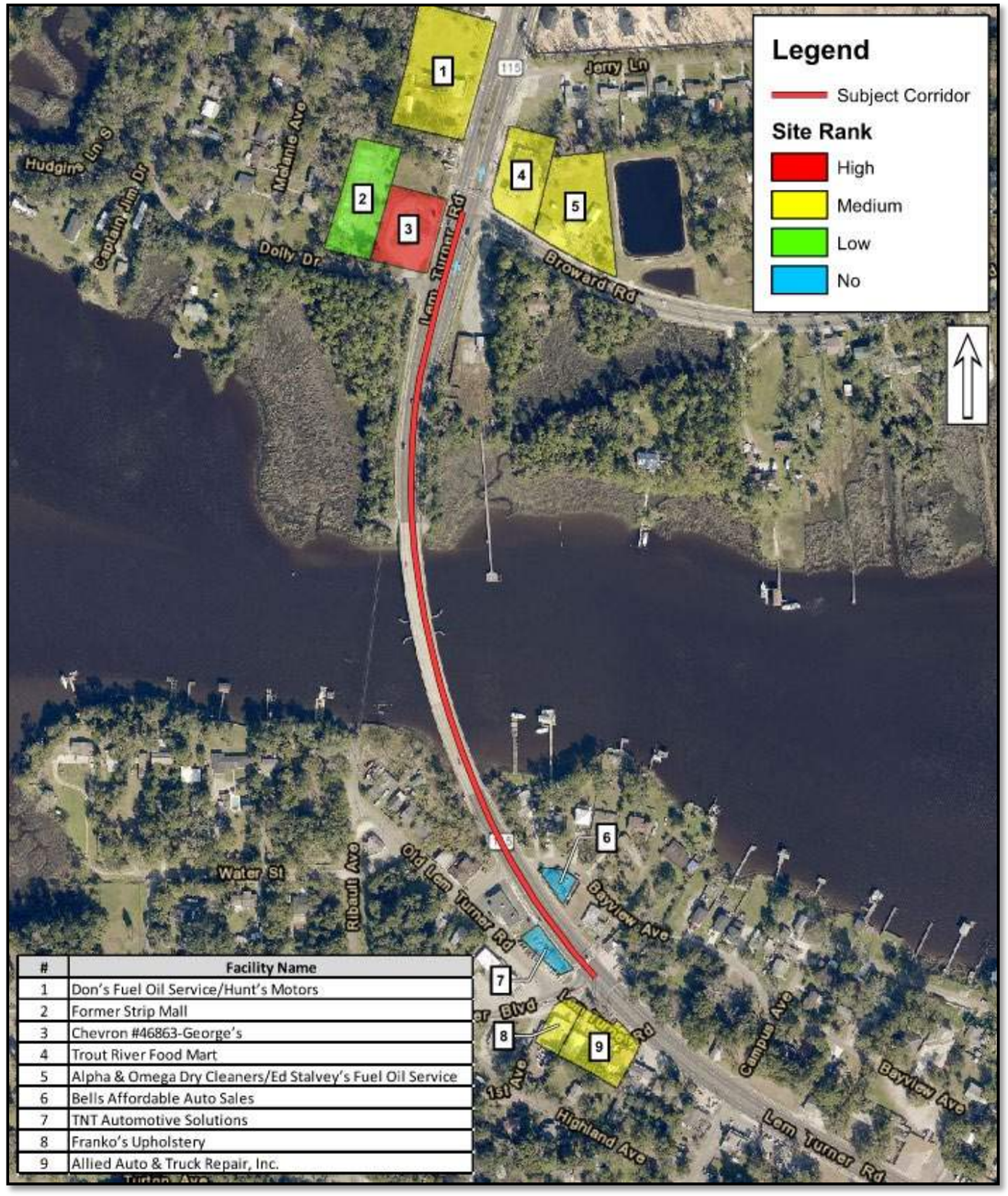
- Site 1. Don's Fuel Oil Service/Hunt's Motors – a former fuel oil service facility; a former automotive facility.
- Site 2. Former Strip Mall – a former printing facility; a former carpet cleaning facility.
- Site 3. Chevron #46863-George's – a registered Resource Conservation and Recovery Act Generator (RCRAGN), Facility Index System (FINDS), Underground Storage Tank (UST), and Leaking UST (LUST) facility; a former gas and service station.
- Site 4. Trout River Food Mart – a registered UST and LUST facility; a current and former gas station; a former service station.
- Site 5. Alpha & Omega Dry Cleaners/Ed Stalvey's Fuel Oil Service – a registered UST facility; a former fuel oil service facility; a former drycleaner facility.
- Site 6. Bells Affordable Auto Sales – a current automotive sales facility, a former auto detailing facility.
- Site 7. TNT Automotive Solutions – a current automotive sales facility.
- Site 8. Franko's Upholstery – a former service station; a former auto repair facility.
- Site 9. Allied Auto & Truck Repair, Inc. – a registered RCRAGN facility; a current and former auto repair facility; a former dry cleaner facility.

Of the nine sites investigated, two sites received a "No" risk rating, one site received a "Low" risk rating, five sites received a "Medium" risk rating, and one site received a "High" risk rating. Further assessment in the vicinity of the sites that received a "Medium" or "High" risk rating should include soil and/or groundwater sampling if subsurface is work is proposed on, or adjacent to, the site. Impacts to construction are not anticipated at this time from the sites that received a "No" or "Low" risk rating.

Figure 6-13 shows the contamination site ranks for the nine locations.

The two pond sites were evaluated as part of the CES addendum and found "No" risk rating. However, three sites are when the vicinity of Pond A.

Figure 6-14 shows the contamination site ranks for the three sites near Pond 1.



#	Facility Name
1	Don's Fuel Oil Service/Hunt's Motors
2	Former Strip Mall
3	Chevron #46863-George's
4	Trout River Food Mart
5	Alpha & Omega Dry Cleaners/Ed Stalvey's Fuel Oil Service
6	Bells Affordable Auto Sales
7	TNT Automotive Solutions
8	Franko's Upholstery
9	Allied Auto & Truck Repair, Inc.

FIGURE 6-13: CONTAMINATION SITE RANKING MAP

FIGURE 6-14: CONTAMINATION SITE RANKING MAP

In addition to the Level 1 CSE and CSE addendum, an asbestos survey report was completed by APTIM Environmental & Infrastructure, Inc. (dated February 10, 2021). The results showed that 57 bridge scuppers and 1 sq-ft of gray mastic tested positive for asbestos.

The scuppers are considered to be Category II nonfriable Asbestos-Containing Material (ACM) at the time of the survey and would likely become Regulated ACM (RACM) during bridge demolition. Prior to any demolition, it is recommended that both the scuppers and end caps be removed utilizing a Florida licensed asbestos abatement contractor.

Figure 6-15 shows an example of one of the ACM bridge scuppers and **Figure 6-16** shows an example of the ACM gray mastic.

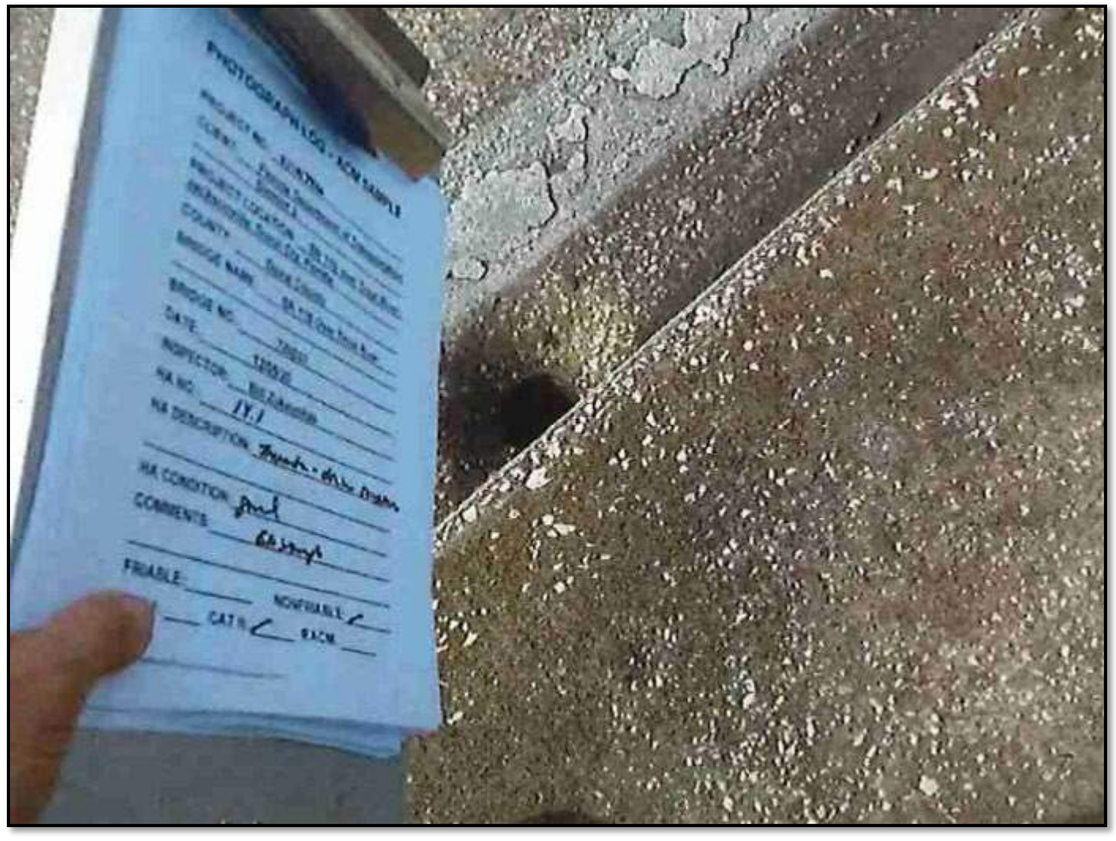


FIGURE 6-15: ACM BRIDGE SCUPPER

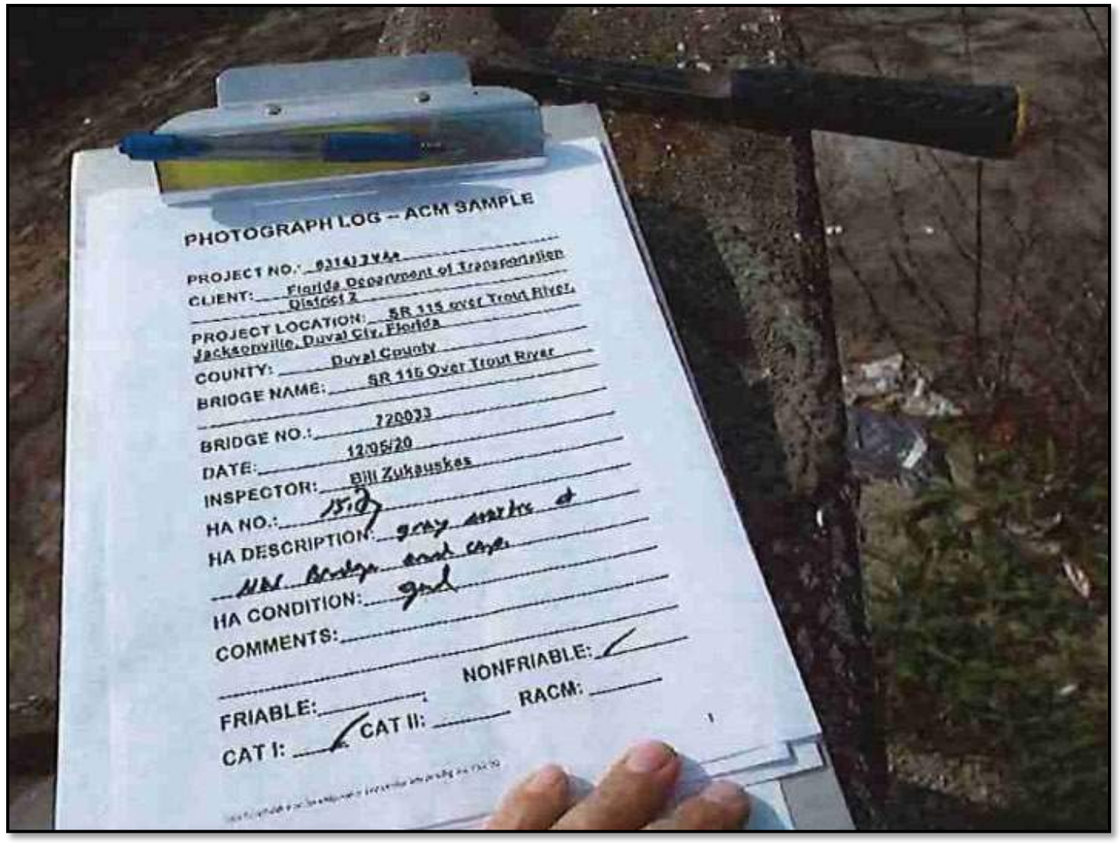


FIGURE 6-16: ACM GRAY MASTIC

Additionally, a limited Level 2 Soil Assessment was preformed at the intersection of Lem Turner Road and Trout River Boulevard by Aptim Environmental & Infrastructure, Inc. (dated June 17, 2020. This Level 2 was completed for FPID 440552-1-52-06 light pole installation project. The report concluded that no anticipated impacts existed. **Figure 6-17** shows the sample locations.

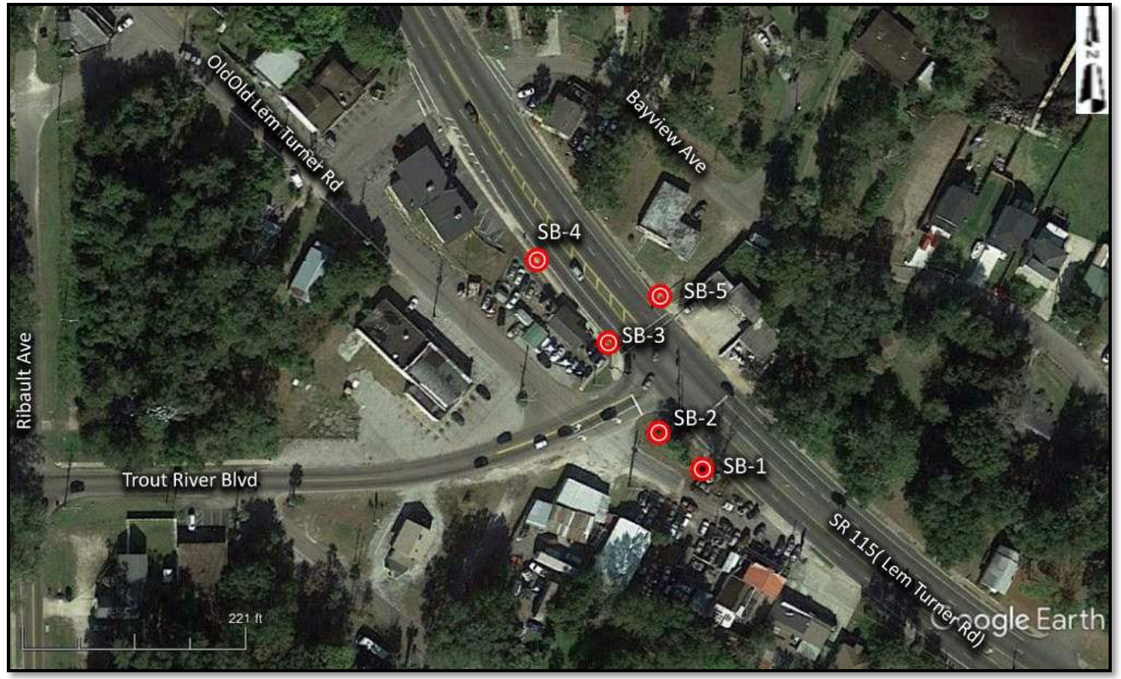


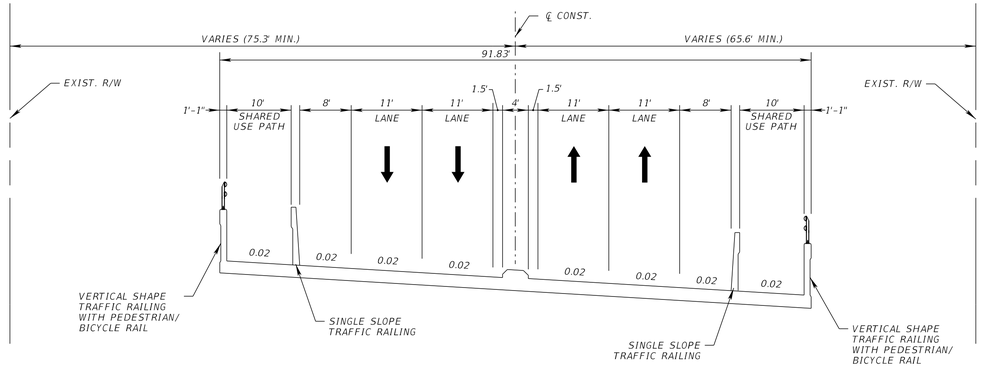
FIGURE 6-17: LEVEL 2 SAMPLE LOCATIONS

Appendix A: Concept Plan

SR 115 (LEM TURNER) at TROUT RIVER

FPID: 437437-2-22-01

PREFERRED ALTERNATIVE



LEGEND

- PARCEL LINE
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- TEMPORARY CONSTRUCTION EASEMENT
- PROPOSED TIITF EASEMENT
- WIDENING / RECONSTRUCTION
- MILLING & RESURFACING
- BRIDGE
- PONDS

0 20 100 Feet

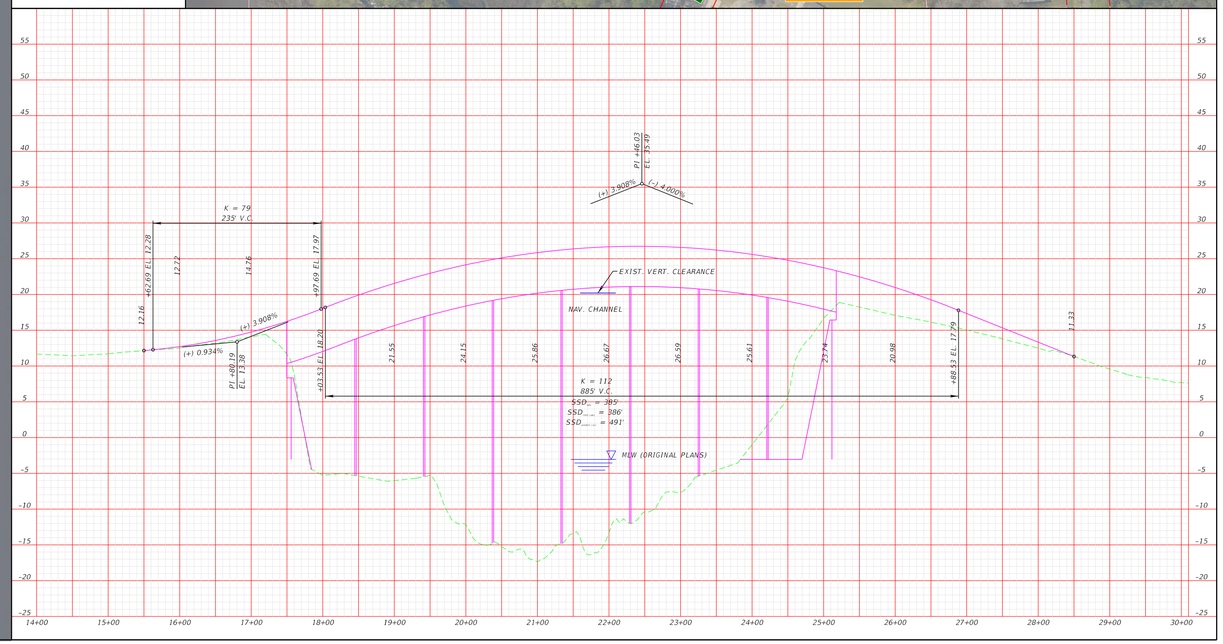
FDOT

July 26, 2023

Trout River
Water St
Ribault Ave
Triangle
Old Lem Turner Rd
Trout River Blvd
Bob's Crab House
Gate Liquors
Northside Grocery
TNT Auto Solutions
Highland Ave
Allied Auto
Elegance Beauty Salon
Steve's Mobile Headliners
Tire Depot
Campus Ave
The Pig BBQ
Bayview Ave
Lem Turner Rd
Loyal Order of Moose
Water St
Trout River
Pond 2
Bridge 720033
Pond 1
Dolly Dr
Lem Turner Rd
Trout River Foods
Stamper Bail Bonds
SheSlay Clothing
Broward Rd

CURVE DATA BLS-SR115-1	CURVE DATA BLC-PRE-ALT-1
PI STA. = 115+25.49 Δ = 77° 13' 55" (RT) D = 3° 00' 00" T = 1,525.49 L = 2,574.40 R = 1,909.86 PC STA. = 100+00.00 PT STA. = 125+74.40	PI STA. = 11+14.89 Δ = 6° 51' 58" (RT) D = 2° 59' 31" T = 114.89 L = 229.50 R = 1,915.09 PC STA. = 10+00.00 PT STA. = 12+29.50
	CURVE DATA BLC-PRE-ALT-2 PI STA. = 13+28.66 Δ = 7° 42' 06" (RT) D = 3° 53' 22" T = 99.16 L = 198.02 R = 1,473.11 PC STA. = 12+29.50 PT STA. = 14+27.52
	CURVE DATA BLC-PRE-ALT-3 PI STA. = 15+59.32 Δ = 20° 09' 32" (RT) D = 7° 43' 37" T = 131.81 L = 260.89 R = 741.50 PC STA. = 14+27.52 PT STA. = 16+88.41
	CURVE DATA BLC-PRE-ALT-4 PI STA. = 27+50.43 Δ = 20° 29' 39" (RT) D = 6° 07' 18" T = 237.65 L = 465.45 R = 935.94 PC STA. = 25+12.78 PT STA. = 29+78.24

PROFILE



PREFERRED ALT
TTCP Phase 1A

SR 115 (LEM TURNER) at TROUT RIVER

FPID: 437437-2-22-01

LEGEND

- PROPOSED IMPROVEMENTS
- TTCP LANE CONFIGURATION
- TTCP PEDESTRIAN WALKWAY
- WORK ZONE
- DRUMS
- PEDESTRIAN LCD

0 20 100
Feet

FDOT

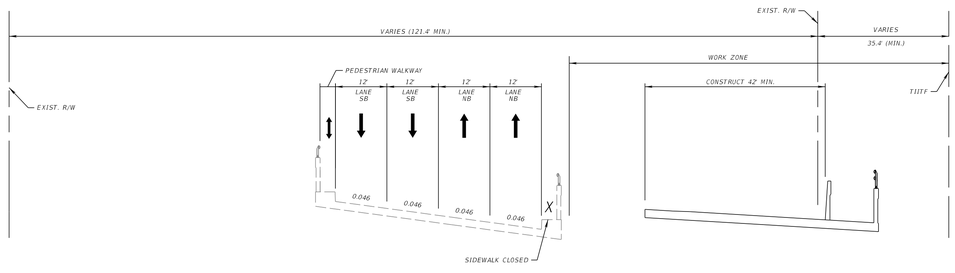
July 26, 2023

Trout River
Water St
Ribault Ave
Triangle
Old Lem Turner Rd
Bob's Crab House
Trout River Blvd
Dolly Dr
Lem Turner Rd
Trout River
Foods
Stamper Bail Bonds
SheSlay Clothing
Broward Rd
Northside Grocery
Gate Liquors
TNT Auto Solutions
Highland Ave
Allied Auto
Elegance Beauty Salon
Tire Depot
Steve's Mobile Headliners
Campus Ave
Bayview Ave
The Pig BBQ
Lem Turner Rd
Loyal Order of Moose
Water St
Trout River

TEMP. TRAFFIC CONTROL

NOTES PHASE 1A:

1. MAINTAIN TRAFFIC ON EXISTING BRIDGE.
2. CONSTRUCT A PORTION OF THE NEW STRUCTURE.
3. BEGIN CONSTRUCTION ON THE ROADWAY APPROACHES.
4. CONSTRUCT POND SOUTH OF TROUT RIVER.



PREFERRED ALT
TTCP Phase 1B

SR 115 (LEM TURNER) at TROUT RIVER

FPID: 437437-2-22-01

LEGEND

- PROPOSED IMPROVEMENTS
- TTCP LANE CONFIGURATION
- TTCP PEDESTRIAN WALKWAY
- WORK ZONE
- DRUMS
- PEDESTRIAN LCD

0 20 100
Feet

FDOT

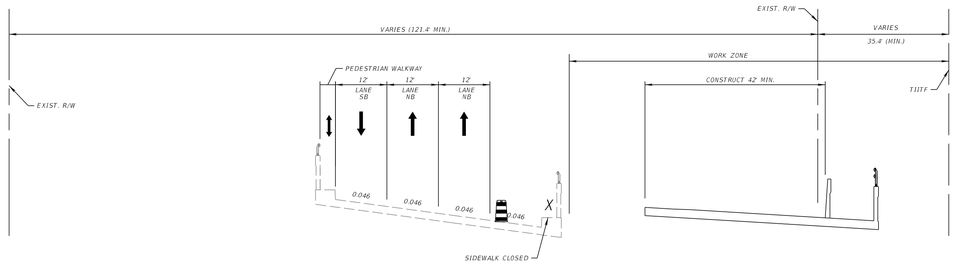
July 26, 2023

Trout River
Water St
Ribault Ave
Triangle
Old Lem Turner Rd
Bob's Crab House
Trout River Blvd
Northside Grocery
Gate Liquors
TNT Auto Solutions
Highland Ave
Allied Auto
Elegance Beauty Salon
Steve's Mobile Headliners
Tire Depot
Campus Ave
The Pig BBQ
Bayview Ave
Lem Turner Rd
Loyal Order of Moose
Water St
Trout River
Dolly Dr
Lem Turner Rd
Trout River Foods
Stamper Bail Bonds
SheSlay Clothing
Broward Rd

TEMP. TRAFFIC CONTROL

NOTES PHASE 1B (INTENDED TO BE A SHORT PHASE NEAR COMPLETION OF THE PHASE 1A STRUCTURE):

1. MAINTAIN TRAFFIC ON EXISTING BRIDGE. REDUCE TO 3-LANES TO FACILITATE CONSTRUCTION OF THE ROADWAY APPROACHES.
2. FINISH CONSTRUCTION OF THE PORTION OF THE NEW STRUCTURE BEGAN IN PHASE 1A.
3. CONTINUE CONSTRUCTION ON THE ROADWAY APPROACHES.



PREFERRED ALT
TTCP Phase 2 & 3

SR 115 (LEM TURNER) at TROUT RIVER

FPID: 437437-2-22-01

LEGEND

- PROPOSED IMPROVEMENTS
- TTCP LANE CONFIGURATION
- TTCP PEDESTRIAN WALKWAY
- WORK ZONE
- DRUMS
- PEDESTRIAN LCD

0 20 100
Feet

FDOT

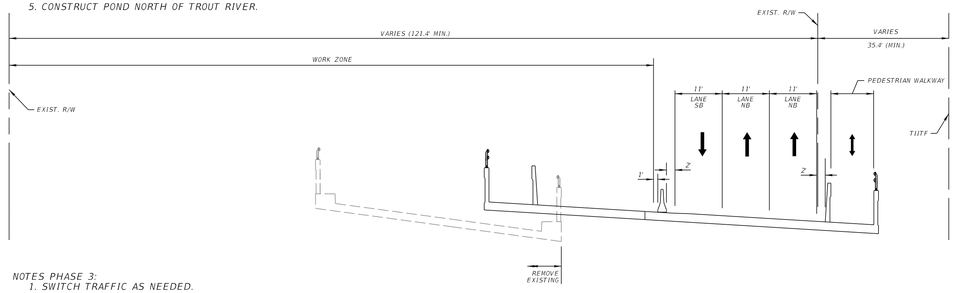
July 26, 2023

Trout River
Ribault Ave
Water St
Triangle
Old Lem Turner Rd
Bob's Crab House
Trout River Blvd
Northside Grocery
Gate Liquors
TNT Auto Solutions
Highland Ave
Allied Auto
Elegance Beauty Salon
Steve's Mobile Headliners
Tire Depot
Campus Ave
The Pig BBQ
Bayview Ave
Lem Turner Rd
Loyal Order of Moose
Water St
Trout River
Dolly Dr
Lem Turner Rd
Trout River Foods
Stamper Bail Bonds
SheSlay Clothing
Broward Rd

TEMP. TRAFFIC CONTROL

NOTES PHASE 2:

1. SWITCH TRAFFIC TO NEW STRUCTURE.
2. REMOVE EXISTING BRIDGE.
3. CONSTRUCT REMAINING PORTION OF THE NEW STRUCTURE.
4. CONTINUE CONSTRUCTION ON THE ROADWAY APPROACHES.
5. CONSTRUCT POND NORTH OF TROUT RIVER.



NOTES PHASE 3:

1. SWITCH TRAFFIC AS NEEDED.
2. CONSTRUCT TRAFFIC SEPARATOR ON NEW STRUCTURE.
3. FINISH WORK ON THE ROADWAY APPROACHES.

Appendix B: Typical Section Package

STATE OF FLORIDA

DEPARTMENT OF TRANSPORTATION

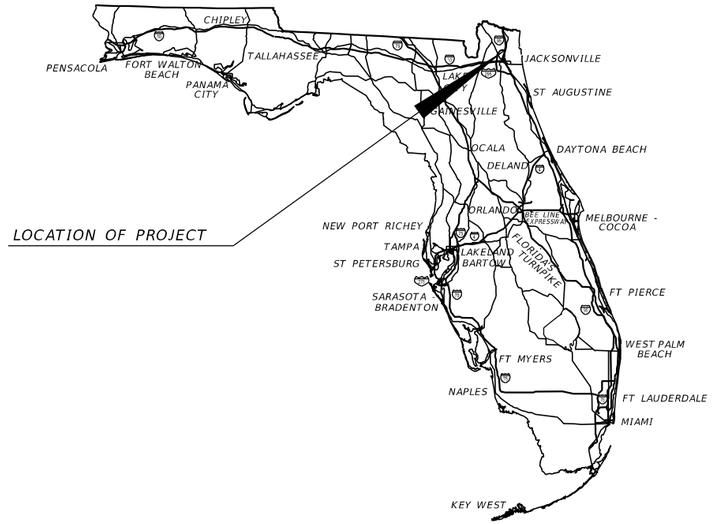
TYPICAL SECTION PACKAGE

FINANCIAL PROJECT ID 437437-2-52-01

DUVAL COUNTY (72150)

STATE ROAD NO. SR 115

SR 115 (LEM TURNER ROAD) OVER TROUT RIVER BRIDGE REPLACEMENT



FDOT DISTRICT DESIGN ENGINEER

CONCURRING WITH:
TYPICAL SECTION ELEMENTS
TARGET SPEED
DESIGN & POSTED SPEEDS

FDOT DISTRICT TRAFFIC OPERATIONS ENGINEER

CONCURRING WITH:
TARGET SPEED
DESIGN & POSTED SPEEDS

FDOT DISTRICT INTERMODAL SYSTEMS DEVELOPMENT MANAGER

CONCURRING WITH:
CONTEXT CLASSIFICATION
TARGET SPEED

FDOT DISTRICT STRUCTURES DESIGN ENGINEER

CONCURRING WITH:
TYPICAL SECTION ELEMENTS

FHWA TRANSPORTATION ENGINEER

CONCURRING WITH:
TYPICAL SECTION ELEMENTS

LOCAL TRANSPORTATION ENGINEER

CONCURRING WITH:
TYPICAL SECTION ELEMENTS

NOT USED

CONCURRING WITH:

NOT USED

CONCURRING WITH:

PROJECT LOCATION URL:	https://tinyurl.com/yzhhptpr
PROJECT LIMITS:	BEGIN MP 4.731 – END MP 5.144
EXCEPTIONS:	NONE
BRIDGE LIMITS:	(720033) MP 4.839 – MP 4.984
RAILROAD CROSSING:	NONE

APPROVED BY:

JAMES A. HICKS III
LICENSE
No 72306
STATE OF
FLORIDA
PROFESSIONAL ENGINEER

THIS ITEM HAS BEEN DIGITALLY SIGNED AND SEALED BY

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.

PARSONS TRANSPORTATION GROUP
1300 RIVERPLACE BLVD., SUITE 200
JACKSONVILLE, FL 32207
JAMES A. HICK III, P.E. NO 72306

THE ABOVE NAMED PROFESSIONAL ENGINEER SHALL BE RESPONSIBLE FOR THE FOLLOWING SHEETS IN ACCORDANCE WITH RULE 61G15-23.004, F.A.C.

INDEX OF SHEETS

SHEET NO.
1

7/26/2023 1:29:50 PM p0043788
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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) C3C : SUBURBAN COMM.
(X) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE
( ) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
( ) PRINCIPAL ARTERIAL
(X) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

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

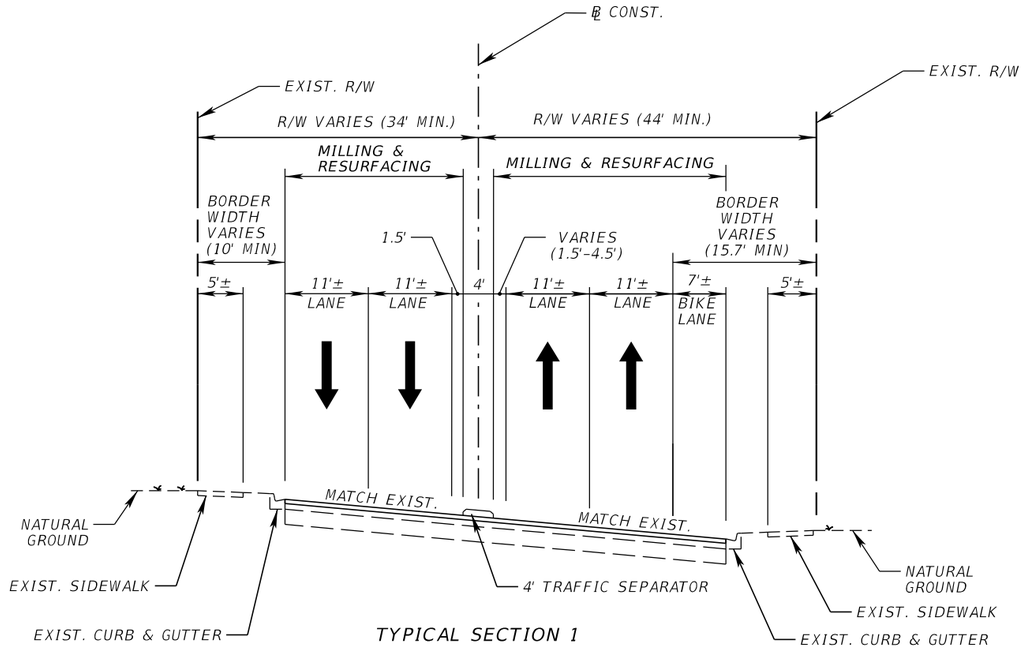
CRITERIA

( ) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
(X) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

1. MEDIAN WIDTH VARIATION

TYPICAL SECTION No. 01



TYPICAL SECTION 1
SR 115 (LEM TURNER RD)
MP 4.731 TO MP 4.801

TRAFFIC DATA

CURRENT YEAR =2022 AADT = 29,000
ESTIMATED OPENING YEAR = 2030 AADT = 30,000
ESTMATED DESIGN YEAR = 2050 AADT = 33,000
K = 9.0% D = 55.2% T = 2.2% (24 HOUR)
DESIGN HOUR T = 1.1%
DESIGN SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
437437-2-52-01	2

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	(X)	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
(X)	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

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

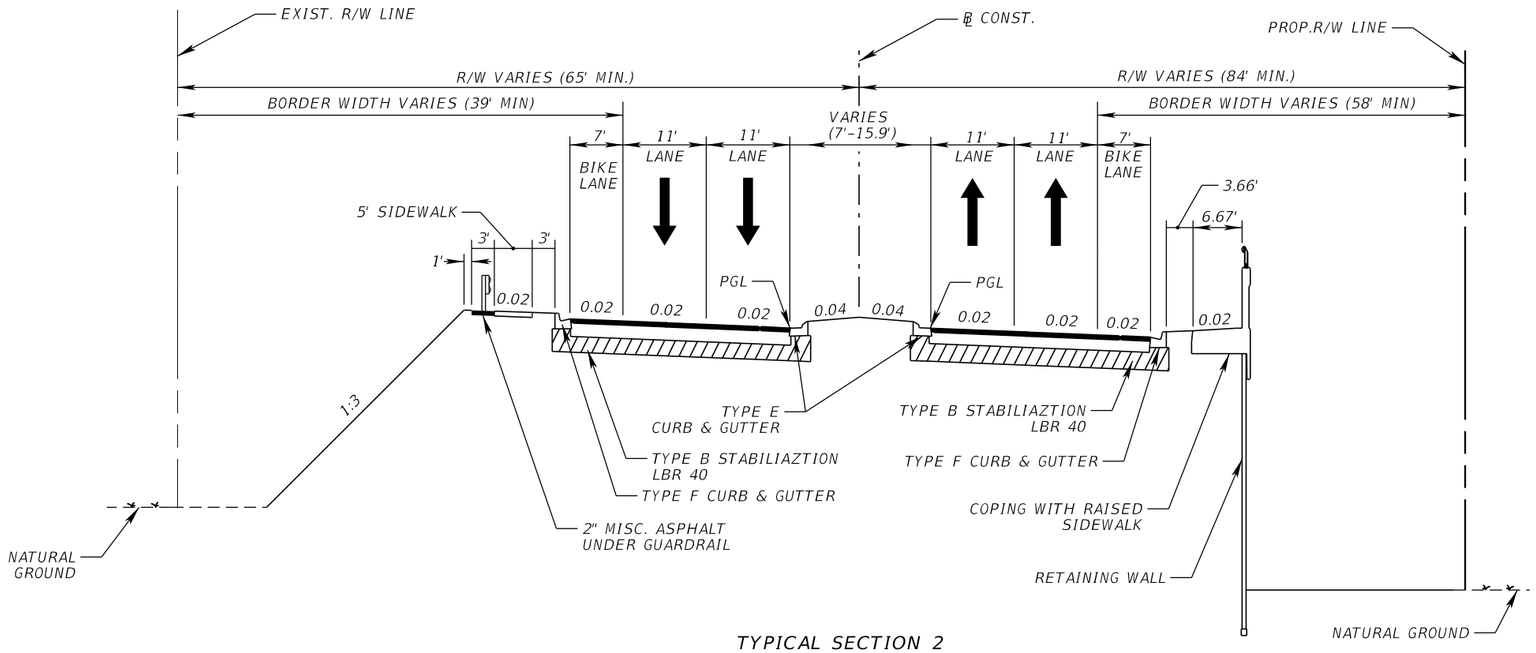
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

1. MEDIAN WIDTH VARIATION

TYPICAL SECTION No. 02



TYPICAL SECTION 2
SR 115 (LEM TURNER RD)
MP 4.801 TO MP 4.839
MP 4.984 TO MP 5.047

TRAFFIC DATA

CURRENT YEAR =2022 AADT = 29,000
ESTIMATED OPENING YEAR = 2030 AADT = 30,000
ESTMATED DESIGN YEAR = 2050 AADT = 33,000
K = 9.0% D = 55.2% T = 2.2% (24 HOUR)
DESIGN HOUR T = 1.1%
DESIGN SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
437437-2-52-01	3

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( )	C1 : NATURAL	( )	C3C : SUBURBAN COMM.
( )	C2 : RURAL	(X)	C4 : URBAN GENERAL
( )	C2T : RURAL TOWN	( )	C5 : URBAN CENTER
( )	C3R : SUBURBAN RES.	( )	C6 : URBAN CORE
( )	N/A : L.A. FACILITY		

FUNCTIONAL CLASSIFICATION

( )	INTERSTATE	( )	MAJOR COLLECTOR
( )	FREEWAY/EXPWY.	( )	MINOR COLLECTOR
( )	PRINCIPAL ARTERIAL	( )	LOCAL
(X)	MINOR ARTERIAL		

HIGHWAY SYSTEM

- ( ) NATIONAL HIGHWAY SYSTEM
- ( ) STRATEGIC INTERMODAL SYSTEM
- (X) STATE HIGHWAY SYSTEM
- ( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

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

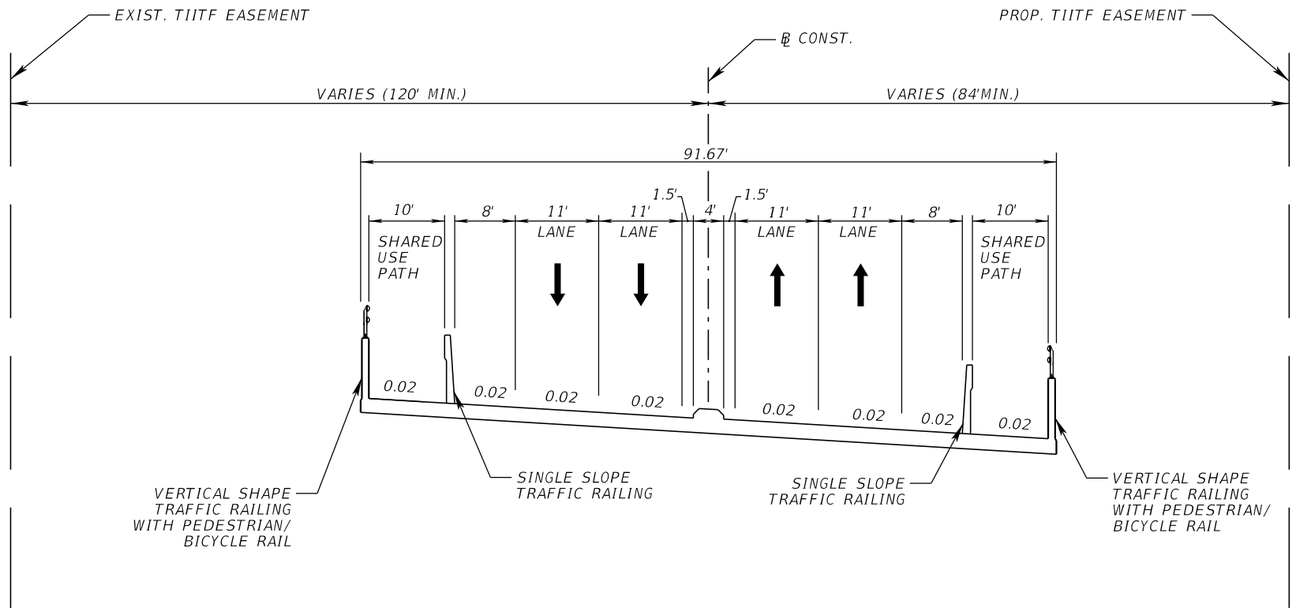
CRITERIA

- (X) NEW CONSTRUCTION / RECONSTRUCTION
- ( ) RESURFACING (LA FACILITIES)
- ( ) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

1. MEDIAN WIDTH VARIATION

TYPICAL SECTION No. 03



TYPICAL SECTION 3
BRIDGE # 720033
SR 115 (LEM TURNER RD)
OVER TROUT RIVER
MP 4.839 TO MP 4.984

TRAFFIC DATA

CURRENT YEAR =2022 AADT = 29,000
ESTIMATED OPENING YEAR = 2030 AADT = 30,000
ESTMATED DESIGN YEAR = 2050 AADT = 33,000
K = 9.0% D = 55.2% T = 2.2% (24 HOUR)
DESIGN HOUR T = 1.1%
DESIGN SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
437437-2-52-01	4

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

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PROJECT CONTROLS

CONTEXT CLASSIFICATION

( ) C1 : NATURAL
( ) C2 : RURAL
( ) C2T : RURAL TOWN
( ) C3R : SUBURBAN RES.
( ) C3C : SUBURBAN COMM.
(X) C4 : URBAN GENERAL
( ) C5 : URBAN CENTER
( ) C6 : URBAN CORE
( ) N/A : L.A. FACILITY

FUNCTIONAL CLASSIFICATION

( ) INTERSTATE
( ) FREEWAY/EXPWY.
( ) PRINCIPAL ARTERIAL
(X) MINOR ARTERIAL
( ) MAJOR COLLECTOR
( ) MINOR COLLECTOR
( ) LOCAL

HIGHWAY SYSTEM

( ) NATIONAL HIGHWAY SYSTEM
( ) STRATEGIC INTERMODAL SYSTEM
(X) STATE HIGHWAY SYSTEM
( ) OFF-STATE HIGHWAY SYSTEM

ACCESS CLASSIFICATION

( ) 1 - FREEWAY
( ) 2 - RESTRICTIVE w/Service Roads
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( ) 6 - NON-RESTRICTIVE w/1320 ft. Signal Spacing
( ) 7 - BOTH MEDIAN TYPES

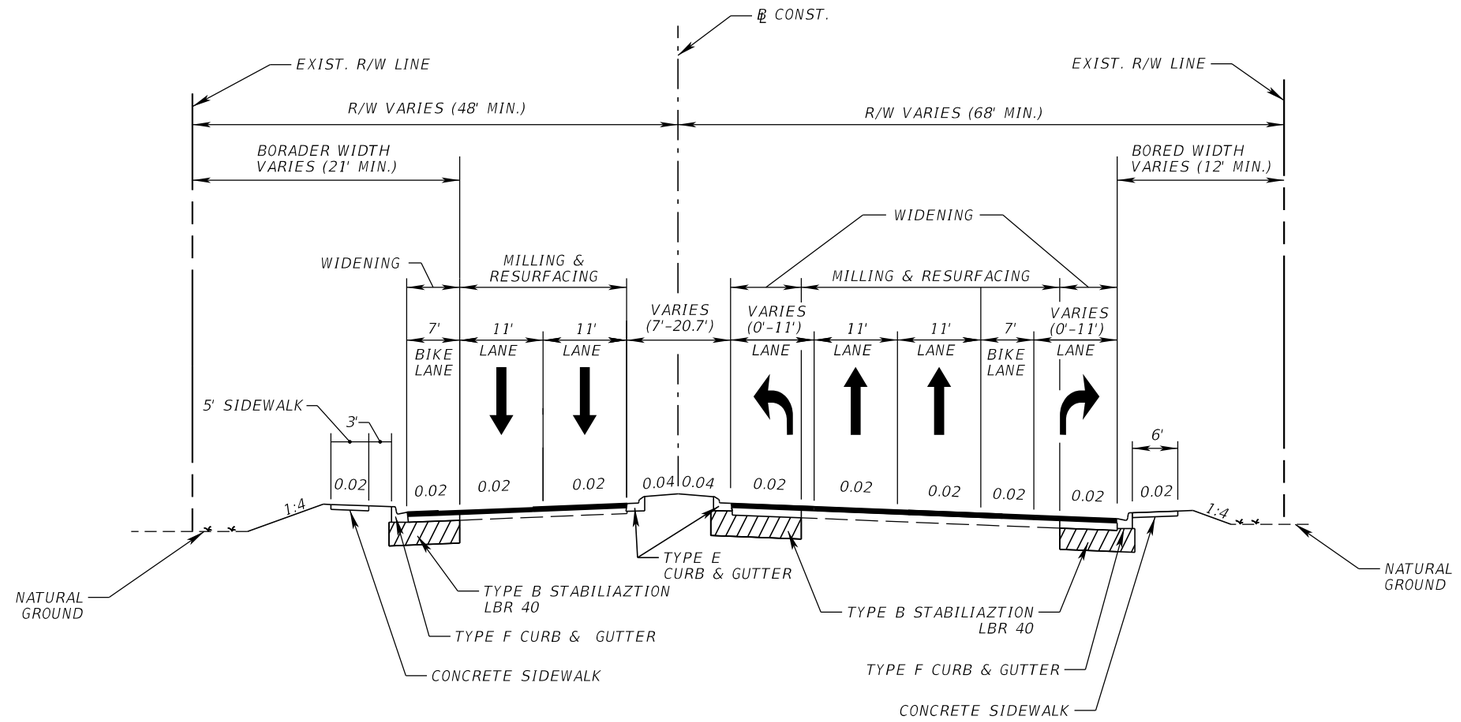
CRITERIA

( ) NEW CONSTRUCTION / RECONSTRUCTION
( ) RESURFACING (LA FACILITIES)
(X) RRR (ARTERIALS & COLLECTORS)

POTENTIAL EXCEPTIONS AND VARIATIONS RELATED TO TYPICAL SECTION:

1. MEDIAN WIDTH VARIATION

TYPICAL SECTION No. 04



TYPICAL SECTION 4
SR 115 (LEM TURNER)
MP 5.047 TO MP 5.144

TRAFFIC DATA

CURRENT YEAR =2022 AADT = 29,000
ESTIMATED OPENING YEAR = 2030 AADT = 30,000
ESTMATED DESIGN YEAR = 2050 AADT = 33,000
K = 9.0% D = 55.2% T = 2.2% (24 HOUR)
DESIGN HOUR T = 1.1%
DESIGN SPEED = 45 MPH

FINANCIAL PROJECT ID	SHEET NO.
437437-2-52-01	5

NOTICE: THE OFFICIAL RECORD OF THIS SHEET IS THE ELECTRONIC FILE SIGNED AND SEALED UNDER RULE 61G15-23.004, F.A.C.

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Appendix C: Long Range Estimate (LRE)

Date: 7/26/2023 2:18:57 PM

FDOT Long Range Estimating System - Production

R3: Project Details by Sequence Report

Project: 437437-2-52-01 **Letting Date:** 07/2026

Description: SR115/TROUT RIVER BRIDGE #720033

District: 02 **County:** 72 DUVAL **Market Area:** 05 **Units:** English

Contract Class: 9 **Lump Sum Project:** N **Design/Build:** Y **Project Length:** 0.160 MI

Project Manager: KT/RA/ES/JB

Version 18-P Project Grand Total **$65,255,183.85**

Description: vc3/7/23 version of V15 3/3/23Updated Prices Copied V13- Alt E Mod 1: New structure on east side with R/W takes. No ACROW and phased construction of the new Trout River bridge

Sequence: 1 WDU - Widen/Resurface, Divided, Urban **Net Length:** 0.392 MI 2,071 LF

Description: Widening of SR 115 (Lem Turner Rd) and the Trout River bridge replacement from Trout River Blvd to Broward Rd

Special Conditions: Shapes measured in CADD

EARTHWORK COMPONENT

User Input Data

Description	Value
Standard Clearing and Grubbing Limits L/R	25.00 / 25.00
Incidental Clearing and Grubbing Area	0.00
Alignment Number	1
Distance	0.250
Top of Structural Course For Begin Section	105.00
Top of Structural Course For End Section	105.00
Horizontal Elevation For Begin Section	100.00
Horizontal Elevation For End Section	100.00
Existing Front Slope L/R	2 to 1 / 2 to 1
Existing Median Shoulder Cross Slope L/R	4.00 % / 4.00 %
Existing Outside Shoulder Cross Slope L/R	2.00 % / 2.00 %
Front Slope L/R	3 to 1 / 3 to 1
Median Shoulder Cross Slope L/R	4.00 % / 4.00 %
Outside Shoulder Cross Slope L/R	2.00 % / 2.00 %
Roadway Cross Slope L/R	2.00 % / 2.00 %

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	2.38	AC	$75,000.00	$178,500.00
120-1	REGULAR EXCAVATION	135.91	CY	$7.40	$1,005.73
120-2-2	BORROW EXCAVATION, TRUCK MEASURE	4,820.44	CY	$40.48	$195,131.41

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
120-1	REGULAR EXCAVATION	2,000.00	CY	$7.40	$14,800.00
120-6	EMBANKMENT	4,000.00	CY	$40.48	$161,920.00
	Comment: 2000 CY Permanent & 2000 CY Temporary				

Earthwork Component Total $551,357.14

ROADWAY COMPONENT

User Input Data

Description	Value
Number of Lanes	4
Existing Roadway Pavement Width L/R	11.46 / 12.64
Structural Spread Rate	165
Friction Course Spread Rate	165
Widened Outside Pavement Width L/R	7.50 / 7.97
Widened Inside Pavement Width L/R	0.00 / 0.69
Widened Structural Spread Rate	385
Widened Friction Course Spread Rate	165

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
160-4	TYPE B STABILIZATION	5,499.17	SY	$13.64	$75,008.68
285-709	OPTIONAL BASE,BASE GROUP 09	3,946.05	SY	$45.00	$177,572.25
327-70-4	MILLING EXIST ASPH PAVT, 3" AVG DEPTH	5,545.19	SY	$4.16	$23,067.99
334-1-53	SUPERPAVE ASPH CONC, TRAF C, PG76-22	715.77	TN	$250.00	$178,942.50
334-1-53	SUPERPAVE ASPH CONC, TRAF C, PG76-22	457.48	TN	$250.00	$114,370.00
337-7-83	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	457.48	TN	$300.00	$137,244.00
337-7-83	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	306.76	TN	$300.00	$92,028.00

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
327-70-4	MILLING EXIST ASPH PAVT, 3" AVG DEPTH	6,667.00	SY	$4.16	$27,734.72
	Comment: Extra M&R for TTCP: Assumed 500' each side x 60' wide = 2*500*60/9 = 6667 SY				
334-1-53	SUPERPAVE ASPH CONC, TRAF C, PG76-22	550.00	TN	$250.00	$137,500.00
	Comment: Extra superpave for TTCP: Assumed 500' each side x 60' wide x 1.5" = 2*500*60/9 = 6667*1.5*110/2000 = 550 TN				
337-7-83	ASPH CONC FC,TRAFFIC C,FC-12.5,PG 76-22	550.00	TN	$300.00	$165,000.00
	Comment: Extra friction for TTCP: Assumed 500' each side x 60' wide x 1.5" = 2*500*60/9 = 6667*1.5*110/2000 = 550 TN				
339-1	MISCELLANEOUS ASPHALT PAVEMENT	20.10	TN	$700.00	$14,070.00
	Comment: 1805sf/9 = 201sy x 2in x 100 lb/syxin / 2000 = 20.1				
515-2-111	PED/BICYCLE RAILING,NS, 42" TYPE 1	1,928.00	LF	$113.36	$218,558.08
	Comment: 1656'(bridge) + 123'(SE) + 149'(NE) = 1928'				
519-78	BOLLARDS	8.00	EA	$1,075.75	$8,606.00
	Comment: 2 on each side of bridge				
530-3-3	RIPRAP- RUBBLE, BANK AND SHORE	2,906.00	TN	$158.92	$461,821.52
	Comment: 15,000sf(plan area)x3'(depth) = 45,000cf x 2.3 x 62.4 x .90 / 2000 = 2906 TN				

530-74	BEDDING STONE	863.00 TN	$174.02	$150,179.26
	Comment: 15,000sf(plan area)x1'(depth) = 15,000cf x 115 lb/cf / 2000 = 863 TN			
536-1-1	GUARDRAIL- ROADWAY, GEN TL-3	470.00 LF	$32.02	$15,049.40
536-8-113	GUARDRL TRANS CONN TO RIGID BA, F&I, TR	3.00 EA	$2,809.22	$8,427.66
536-73	GUARDRAIL REMOVAL	956.00 LF	$4.26	$4,072.56
536-85-20	GUARDRAIL END TREAT-TRAILING ANCHORAGE	2.00 EA	$1,907.82	$3,815.64
536-85-24	GUARDRAIL END TREATMENT-PARA APP TERM	1.00 EA	$3,513.09	$3,513.09

Pavement Marking Subcomponent

Description	Value
Include Thermo/Tape/Other	Y
Pavement Type	Asphalt
Solid Stripe No. of Paint Applications	1
Solid Stripe No. of Stripes	4
Skip Stripe No. of Paint Applications	1
Skip Stripe No. of Stripes	2

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
706-1-1	RAISED PAVMT MARK, TYPE B W/O FINAL SURF	159.00	EA	$10.46	$1,663.14
710-11-101	PAINTED PAVT MARK,STD,WHITE,SOLID,6"	1.57	GM	$1,294.20	$2,031.89
710-11-131	PAINTED PAVT MARK,STD,WHITE,SKIP, 6"	0.78	GM	$570.66	$445.11
711-16-101	THERMOPLASTIC, STD-OTH, WHITE, SOLID, 6"	1.57	GM	$5,465.58	$8,580.96
711-16-102	THERMOPLASTIC, STD-OTH, WHITE, SOLID, 8"	1.57	GM	$7,173.07	$11,261.72
711-16-131	THERMOPLASTIC, STD-OTH, WHITE, SKIP, 6"	0.78	GM	$2,190.54	$1,708.62
	Roadway Component Total				$2,042,272.79

SHOULDER COMPONENT

User Input Data

Description	Value
Existing Total Outside Shoulder Width L/R	12.25 / 12.25
New Total Outside Shoulder Width L/R	9.25 / 9.75
Total Outside Shoulder Perf. Turf Width L/R	5.00 / 5.00
Sidewalk Width L/R	2.00 / 2.50

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-10	CONCRETE CURB & GUTTER, TYPE F	2,070.82	LF	$50.25	$104,058.70
520-1-10	CONCRETE CURB & GUTTER, TYPE F	2,070.82	LF	$50.25	$104,058.70
522-1	CONCRETE SIDEWALK AND DRIVEWAYS, 4"	1,035.41	SY	$75.28	$77,945.66
570-1-1	PERFORMANCE TURF	2,300.91	SY	$2.60	$5,982.37

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-1-7	CONCRETE CURB & GUTTER, TYPE E	738.00	LF	$56.64	$41,800.32
	Comment: For median				

Erosion Control

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
104-10-3	SEDIMENT BARRIER	4,141.63	LF	$2.62	$10,851.07
104-11	FLOATING TURBIDITY BARRIER	1,600.00	LF	$200.00	$320,000.00
104-12	STAKED TURBIDITY BARRIER-NYL REINF PVC	500.00	LF	$9.04	$4,520.00
104-15	SOIL TRACKING PREVENTION DEVICE	2.00	EA	$4,500.00	$9,000.00
104-18	INLET PROTECTION SYSTEM	50.00	EA	$205.69	$10,284.50
107-1	LITTER REMOVAL	3.42	AC	$15,000.00	$51,300.00
107-2	MOWING	3.42	AC	$15,000.00	$51,300.00
	Shoulder Component Total				$791,101.34

MEDIAN COMPONENT

User Input Data

Description	Value
Total Median Width	22.00
Performance Turf Width	5.34

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
520-5-21	TRAF SEP CONC - TYPE II, 4' WIDE	619.00	LF	$293.10	$181,428.90
570-1-1	PERFORMANCE TURF	1,228.68	SY	$2.60	$3,194.57
	Median Component Total				$184,623.47

DRAINAGE COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
425-1-351	INLETS, CURB, TYPE P-5, <10'	15.00	EA	$12,000.00	$180,000.00
425-1-451	INLETS, CURB, TYPE J-5, <10'	4.00	EA	$19,288.33	$77,153.32
430-175-124	PIPE CULV, OPT MATL, ROUND, 24"S/CD	224.00	LF	$275.00	$61,600.00
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	64.00	LF	$275.69	$17,644.16
570-1-1	PERFORMANCE TURF	119.23	SY	$2.60	$310.00

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
430-175-118	PIPE CULV, OPT MATL, ROUND, 18"S/CD	752.00	LF	$175.00	$131,600.00

Retention Basin 1

Description	Value
Size	.5 AC

Multiplier	1
Depth	8.00
Description	Pond South of Trout River

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	0.50	AC	$75,000.00	$37,500.00
120-1	REGULAR EXCAVATION	6,453.33	CY	$7.40	$47,754.64
425-1-541	INLETS, DT BOT, TYPE D, <10'	1.00	EA	$16,000.00	$16,000.00
425-2-71	MANHOLES, J-7, <10'	1.00	EA	$19,811.46	$19,811.46
570-1-1	PERFORMANCE TURF	2,420.00	SY	$2.60	$6,292.00

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	200.00	LF	$275.69	$55,138.00

Retention Basin 2

Description	Value
Size	.5 AC
Multiplier	1
Depth	8.00
Description	Pond North of Trout River

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-1-1	CLEARING & GRUBBING	0.50	AC	$75,000.00	$37,500.00
120-1	REGULAR EXCAVATION	6,453.33	CY	$7.40	$47,754.64
425-1-541	INLETS, DT BOT, TYPE D, <10'	1.00	EA	$16,000.00	$16,000.00
425-2-71	MANHOLES, J-7, <10'	1.00	EA	$19,811.46	$19,811.46
430-175-142	PIPE CULV, OPT MATL, ROUND, 42"S/CD	56.00	LF	$347.25	$19,446.00
430-175-160	PIPE CULV, OPT MATL, ROUND, 60"S/CD	200.00	LF	$1,075.00	$215,000.00
570-1-1	PERFORMANCE TURF	2,420.00	SY	$2.60	$6,292.00

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
430-175-136	PIPE CULV, OPT MATL, ROUND, 36"S/CD	200.00	LF	$275.69	$55,138.00

Drainage Component Total $1,067,745.68

SIGNING COMPONENT

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
700-1-11	SINGLE POST SIGN, F&I GM, <12 SF	9.00	AS	$550.00	$4,950.00
700-1-12	SINGLE POST SIGN, F&I GM, 12-20 SF	1.00	AS	$1,600.00	$1,600.00
700-1-50	SINGLE POST SIGN, RELOCATE	1.00	AS	$379.98	$379.98
700-1-60	SINGLE POST SIGN, REMOVE	9.00	AS	$50.00	$450.00
700-2-14	MULTI- POST SIGN, F&I GM, 31-50 SF	1.00	AS	$7,800.00	$7,800.00
700-2-60	MULTI- POST SIGN, REMOVE	1.00	AS	$954.32	$954.32

Signing Component Total	$16,134.30

SIGNALIZATIONS COMPONENT

Signalization 1

Description	Value
Type	2 Lane Mast Arm
Multiplier	1
Description	Lem Turner at Trout River Blvd

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	800.00	LF	$16.21	$12,968.00
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	200.00	LF	$35.00	$7,000.00
632-7-1	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL	1.00	PI	$6,716.68	$6,716.68
633-3-11	FIBER OPTIC CONN HDWR, SPLICE ENCLOSURE	2.00	EA	$1,664.68	$3,329.36
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	12.00	EA	$1,318.71	$15,824.52
639-1-112	ELECTRICAL POWER SRV,F&I,OH,M,PUR BY CON	1.00	AS	$3,800.00	$3,800.00
639-2-1	ELECTRICAL SERVICE WIRE, F&I	60.00	LF	$9.47	$568.20
649-21-4	STEEL MAST ARM ASSEMBLY, F&I, 40'- 30'	4.00	EA	$60,000.00	$240,000.00
650-1-14	VEH TRAF SIGNAL,F&I ALUMINUM, 3 S 1 W	8.00	AS	$1,611.14	$12,889.12
653-1-11	PEDESTRIAN SIGNAL, F&I LED COUNT, 1 WAY	8.00	AS	$934.88	$7,479.04
660-1-102	LOOP DETECTOR INDUCTIVE, F&I, TYPE 2	8.00	EA	$416.37	$3,330.96
660-2-106	LOOP ASSEMBLY, F&I, TYPE F	8.00	AS	$1,521.39	$12,171.12
665-1-11	PEDESTRIAN DETECTOR, F&I, STANDARD	8.00	EA	$395.79	$3,166.32
670-5-111	TRAF CNTL ASSEM, F&I, NEMA, 1 PREEMPT	1.00	AS	$45,000.00	$45,000.00
700-3-101	SIGN PANEL, F&I GM, UP TO 12 SF	4.00	EA	$283.00	$1,132.00

Signalization 2

Description	Value
Type	2 Lane Mast Arm
Multiplier	1
Description	Lem Turner Rd at Broward Rd

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	800.00	LF	$16.21	$12,968.00
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	200.00	LF	$35.00	$7,000.00
632-7-1	SIGNAL CABLE- NEW OR RECO, FUR & INSTALL	1.00	PI	$6,716.68	$6,716.68
633-3-11	FIBER OPTIC CONN HDWR, SPLICE ENCLOSURE	2.00	EA	$1,664.68	$3,329.36
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	12.00	EA	$1,318.71	$15,824.52

639-1-112	ELECTRICAL POWER SRV,F&I,OH,M,PUR BY CON	1.00	AS	$3,800.00	$3,800.00
639-2-1	ELECTRICAL SERVICE WIRE, F&I	60.00	LF	$9.47	$568.20
649-21-4	STEEL MAST ARM ASSEMBLY, F&I, 40'- 30'	4.00	EA	$60,000.00	$240,000.00
650-1-14	VEH TRAF SIGNAL,F&I ALUMINUM, 3 S 1 W	8.00	AS	$1,611.14	$12,889.12
653-1-11	PEDESTRIAN SIGNAL, F&I LED COUNT, 1 WAY	8.00	AS	$934.88	$7,479.04
660-1-102	LOOP DETECTOR INDUCTIVE, F&I, TYPE 2	8.00	EA	$416.37	$3,330.96
660-2-106	LOOP ASSEMBLY, F&I, TYPE F	8.00	AS	$1,521.39	$12,171.12
665-1-11	PEDESTRIAN DETECTOR, F&I, STANDARD	8.00	EA	$395.79	$3,166.32
670-5-111	TRAF CNTL ASSEM, F&I, NEMA, 1 PREEMPT	1.00	AS	$45,000.00	$45,000.00
700-3-101	SIGN PANEL, F&I GM, UP TO 12 SF	4.00	EA	$283.00	$1,132.00
	Signalizations Component Total				$750,750.64

LIGHTING COMPONENT

Conventional Lighting Subcomponent

Description	**Value**
Spacing	MIN

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
630-2-11	CONDUIT, F& I, OPEN TRENCH	2,070.82	LF	$16.21	$33,567.99
630-2-12	CONDUIT, F& I, DIRECTIONAL BORE	411.03	LF	$35.00	$14,386.05
635-2-11	PULL & SPLICE BOX, F&I, 13" x 24"	14.00	EA	$1,318.71	$18,461.94
715-1-13	LIGHTING CONDUCTORS, F&I, INSUL, NO.4-2	7,563.18	LF	$2.84	$21,479.43
715-4-13	LIGHT POLE COMPLETE, F&I-STD, 40'	14.00	EA	$9,179.69	$128,515.66
715-500-1	POLE CABLE DIST SYS, CONVENTIONAL	14.00	EA	$800.00	$11,200.00
	Subcomponent Total				$227,611.07
	Lighting Component Total				$227,611.07

BRIDGES COMPONENT

Bridge 1

Description	**Value**
Estimate Type	SF Estimate
Primary Estimate	YES
Length (LF)	768.00
Width (LF)	91.67
Type	Medium Level
Cost Factor	2.00
Structure No.	720033
Removal of Existing Structures area	41,795.00
Default Cost per SF	$140.00
Factored Cost per SF	$280.00
Final Cost per SF	**$362.53**
Basic Bridge Cost	**$19,712,716.80**

Description	LEM TURNER OVER TROUT RIVER - UPPED COST FACTOR FROM 1.85 TO 2.0 DUE TO PHASED CONSTRUCTION

Bridge Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-3	REMOVAL OF EXISTING STRUCTURES/BRIDGES	41,795.00	SF	$77.12	$3,223,230.40
400-2-10	CONC CLASS II, APPROACH SLABS	203.71	CY	$887.17	$180,725.40
415-1-9	REINF STEEL- APPROACH SLABS	35,649.25	LB	$1.65	$58,821.26

Bridge X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
110-71-1	BRIDGE FENDER SYSTEM, REMOVAL & DISPOSAL	250.00	LF	$442.03	$110,507.50
471-3-2	POLYMERIC FENDER SYSTEM, 41-200 KIP-FT	1.00	LS	$1,760,000.00	$1,760,000.00
510-1	NAVIGATION LIGHTS- FIXED BRIDGE, SYSTEM	1.00	LS	$200,000.00	$200,000.00

Bridge EX-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
AESTHETICS	AESTHETICS	1.00	LS	$1,000,000.00	$1,000,000.00
TRESTLE	TEMP TRESTLE	1.00	LS	$2,500,000.00	$2,500,000.00
	Comment: To construct proposed bridge over Trout River (Phase 1 - entire crossing, Phase 2 - partial)				
	Bridge 1 Total				$28,746,001.36
	Bridges Component Total				$28,746,001.36

RETAINING WALLS COMPONENT

X-Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
521-8-7	CONC BARRIER, W/JUNCT SL, 36 SS	272.00	LF	$360.00	$97,920.00
	Comment: Substituted # for MSE cap (521-6-34) needed to mount ped railing 123' SE + 149' NW = 272'				

Retaining Wall 1

Description	Value
Length	92.00
Begin height	15.00
End Height	15.00
Multiplier	1

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
548-12	RET WALL SYSTEM, PERM, EX BARRIER	1,380.00	SF	$61.76	$85,228.80

Retaining Wall 2

Description	Value
Length	92.00

Begin height	20.00
End Height	20.00
Multiplier	1

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
548-12	RET WALL SYSTEM, PERM, EX BARRIER	1,840.00	SF	$61.76	$113,638.40

Retaining Wall 3

Description	Value
Length	160.00
Begin height	20.00
End Height	5.00
Multiplier	1

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
548-12	RET WALL SYSTEM, PERM, EX BARRIER	2,000.00	SF	$61.76	$123,520.00

Retaining Wall 4

Description	Value
Length	36.00
Begin height	20.00
End Height	20.00
Multiplier	1

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
548-12	RET WALL SYSTEM, PERM, EX BARRIER	720.00	SF	$61.76	$44,467.20

Retaining Wall 5

Description	Value
Length	36.00
Begin height	25.00
End Height	25.00
Multiplier	1

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
548-12	RET WALL SYSTEM, PERM, EX BARRIER	900.00	SF	$61.76	$55,584.00

Retaining Wall 6

Description	Value
Length	185.00
Begin height	25.00
End Height	10.00
Multiplier	1

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
548-12	RET WALL SYSTEM, PERM, EX BARRIER	3,237.50	SF	$61.76	$199,948.00

Retaining Wall 7

Description	Value
Length	500.00
Begin height	20.00
End Height	20.00
Multiplier	1

Pay Items

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
548-13	RETAINING WALL SYSTEM,TEMP, EXC BAR.	10,000.00	SF	$25.00	$250,000.00
	Retaining Walls Component Total				$970,306.40

Sequence 1 Total $35,347,904.19

Date: 7/26/2023 2:18:58 PM

FDOT Long Range Estimating System - Production

R3: Project Details by Sequence Report

Project: 437437-2-52-01 **Letting Date:** 07/2026

Description: SR115/TROUT RIVER BRIDGE #720033

District: 02 **County:** 72 DUVAL **Market Area:** 05 **Units:** English

Contract Class: 9 **Lump Sum Project:** N **Design/Build:** Y **Project Length:** 0.160 MI

Project Manager: KT/RA/ES/JB

Version 18-P Project Grand Total **$65,255,183.85**

Description: vc3/7/23 version of V15 3/3/23Updated Prices Copied V13- Alt E Mod 1: New structure on east side with R/W takes. No ACROW and phased construction of the new Trout River bridge

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Project Sequences Subtotal **$35,347,904.19**

102-1	Maintenance of Traffic	12.00 %	$4,241,748.50
101-1	Mobilization	15.00 %	$5,938,447.90

Project Sequences Total **$45,528,100.59**

Project Unknowns	30.00 %	$13,658,430.18
Justification for high %:	cost	
Design/Build	10.00 %	$5,918,653.08

Non-Bid Components:

Pay item	Description	Quantity	Unit	Unit Price	Extended Amount
999-25	INITIAL CONTINGENCY AMOUNT (DO NOT BID)		LS	$150,000.00	$150,000.00

Project Non-Bid Subtotal **$150,000.00**

Version 18-P Project Grand Total **$65,255,183.85**

Appendix D: Agency Concurrence

Florida Department of Transportation

RON DESANTIS
GOVERNOR

1109 South Marion Avenue
Lake City, Florida 32025-5874

KEVIN J. THIBAULT, P.E.
SECRETARY

August 26, 2021

Timothy A. Parsons, Ph.D.,
Director and State Historic Preservation Officer
Florida Division of Historical Resources
Florida Department of State
R.A. Gray Building
500 South Bronough Street
Tallahassee, Florida 32399-0250

Attn: Transportation Compliance Review Program

RE: Cultural Resource Assessment Survey
SR 115 (Lem Turner Road) Bridge Replacement
Duval County, Florida
Financial Management No.: 437437-2

Dear Dr. Parsons,

Enclosed please find one copy of the report titled *Cultural Resource Assessment Survey for the Lem Turner Road (SR 115) over Trout River Bridge Replacement, Duval County, Florida.* This report presents the findings of a cultural resource assessment survey (CRAS) conducted in support of the proposed replacement of the Lem Turner Road (State Road [SR] 115) Bridge (Bridge No. 720033) in Duval County, Florida. The Florida Department of Transportation (FDOT), District 2, is proposing to replace Bridge No. 720033, which carries Lem Turner Road (SR 115) over Trout River. Total project length is approximately 0.40 miles (0.65 kilometers). This project is federally funded.

The terrestrial Area of Potential Effects (APE) was defined to include a composite footprint of two bridge replacement alignments. The ultimate bridge replacement alignment will occur within the combined APE, which accounts for the existing and proposed right-of-way. To encompass all potential terrestrial improvements, the terrestrial APE was defined to include the existing and proposed SR 115 right-of-way from Broward Road to Trout River Boulevard. This APE was extended to the back or side property lines of parcels adjacent to the right-of-way for a distance of no more than 100 meters (m) (330 feet [ft]) from the right-of-way line. The terrestrial archaeological survey was conducted within the existing and proposed right-of-way. The historic structure survey was conducted within the entire terrestrial APE.

The submerged maritime archaeological APE was defined as the existing 91-m (300- ft)-wide limited access right-of-way centered on the proposed bridge alignment, plus an additional 152 m (500 ft) on either side of the right-of-way, for a combined total width of 396 m (1,300 ft). This

APE is designed to capture any potential ground disturbing activities such as mooring or temporary anchoring which may take place outside of the current right-of-way during construction-related activities. The submerged APE extends the length of the Trout River (approximately 152 m [500 ft]) for an approximate submerged APE size of 88 acres (36 hectares).

This CRAS was conducted in accordance with the requirements set forth in Section 106 of the National Historic Preservation Act of 1966, as amended, found in 36 CFR Part 800 (Protection of Historic Properties). The studies also comply with Chapter 267 of the Florida Statutes and Rule Chapter 1A-46, Florida Administrative Code and Section 267.12, Florida Statutes, Chapter 1A-32. All work was performed in accordance with Part 2, Chapter 8 of FDOT's PD&E Manual (revised July 2020), FDOT's Cultural Resources Management Handbook, and the standards stipulated in the Florida Division of Historical Resources' (FDHR) Cultural Resource Management Standards & Operations Manual, Module Three: Guidelines for Use by Historic Preservation Professionals. The Principal Investigator for this project meets the Secretary of the Interior's Standards and Guidelines for Archeology and Historic Preservation (48 FR 44716-42). This study also complies with Public Law 113-287 (Title 54 U.S.C.), which incorporates the provisions of the National Historic Preservation Act of 1966, as amended, and the Archeological and Historic Preservation Act of 1979, as amended.

The terrestrial archaeological survey was limited to a pedestrian survey due to extensive disturbance throughout the APE. No artifacts were recovered, and no archaeological sites or occurrences were identified. No further archaeological survey is recommended.

The archaeological survey consisted of pedestrian survey within the project right-of-way, as field conditions precluded the excavation of subsurface tests. No artifacts were recovered, and no archaeological sites or occurrences were identified within the APE. No further archaeological survey is recommended in support of the proposed SR 115 over Trout River bridge replacement.

The architectural survey resulted in the identification and evaluation of 12 newly recorded historic resources (8DU22975-8DU22986) within the Trout River Bridge Terrestrial APE. These 12 resources lack the architectural distinction and significant historical associations necessary to be considered for listing in the National Register of Historic Places (NRHP) and are recommended ineligible for inclusion in the NRHP. No existing or potential historic districts were identified. No further architectural survey is recommended in support of the proposed SR 115 over Trout River bridge replacement.

The maritime archaeological investigation, including archival research and remote-sensing data analysis, was completed to identify potential submerged cultural resources within the submerged APE. A total of 16 magnetic anomalies, 30 acoustic contacts, and no buried reflectors were identified in the marine remote-sensing record. Five of the magnetic anomalies correlate with seven acoustic contacts. None of the anomalies share magnetic characteristics with verified submerged cultural resources. No acoustic contacts appear to represent significant cultural resources. The majority of the magnetic anomalies and acoustic contacts are low gamma, short duration anomalies indicative of isolated ferrous metal objects or known manmade features such

as current bridge or residential dock pilings. These anomalies and acoustic contacts likely represent single-source debris objects, such as modern debris to be expected in a heavily developed waterway such as Trout River, and not potential submerged cultural resources.

Based on the results of this study, it is the opinion of the District that the proposed undertaking will have no effect on NRHP-listed or -eligible historic properties. No further work is recommended.

I respectfully request your concurrence with the findings of the enclosed report.

If you have any questions or need further assistance, please contact Ian Pawn at (386) 961-7886.

Sincerely,

DocuSigned by:
Ian Pawn
D23D48BCDF514AD...

Stephen Browning
District Planning and Environmental Manager

cc: Terri Newman, Environmental Administrator, FDOT
Ian Pawn, Cultural Resources Coordinator, FDOT
Lindsay Rothrock, Cultural and Historic Resource Specialist

The Florida State Historic Preservation Officer finds the attached Cultural Resource Assessment Survey Report complete and sufficient and ☑ concurs / ☐ does not concur with the recommendations and findings provided in this cover letter for SHPO/FDHR Project File Number 2020-2189. Or, the SHPO finds the attached document contains _____ insufficient information.

In accordance with the Programmatic Agreement among the FHWA, ACHP, FDHR, SHPO, and FDOT Regarding Implementation of the Federal-Aid Highway Program in Florida, if providing concurrence with a finding of No Historic Properties Affected for a project as a whole, or to No Adverse Effect on a specific historic property, SHPO shall presume that FHWA will proceed with a *de minimis* Section 4(f) finding at its discretion for the use of land from the historic property.

SHPO Comments:

Jason Aldridge DSHPO

Timothy A. Parsons, PhD, Director, and
State Historic Preservation Officer
Florida Division of Historical Resources

September 13, 2021
Date

Florida Fish and Wildlife Conservation Commission

Commissioners
Rodney Barreto
Chairman
Coral Gables

Michael W. Sole
Vice Chairman
Tequesta

Steven Hudson
Fort Lauderdale

Gary Lester
Oxford

Gary Nicklaus
Jupiter

Sonya Rood
St. Augustine

Robert A. Spottswood
Key West

Office of the Executive Director
Eric Sutton
Executive Director

Thomas H. Eason, Ph.D.
Assistant Executive Director

Jennifer Fitzwater
Chief of Staff

850-487-3796
850-921-5786 FAX

Managing fish and wildlife resources for their long-term well-being and the benefit of people.

620 South Meridian Street
Tallahassee, Florida
32399-1600
Voice: 850-488-4676

Hearing/speech-impaired:
800-955-8771 (T)
800 955-8770 (V)

MyFWC.com

October 29, 2021

Terri Newman
District 2 Environmental Management Office
Florida Department of Transportation
1109 South Marion Avenue
Lake City, Florida 32025
Terri.Newman@dot.state.fl.us

Re: Trout River Bridge Replacement at Lem Turner Road, Natural Resource Evaluation, Duval County

Dear Ms. Newman:

Florida Fish and Wildlife Conservation Commission (FWC) staff reviewed the above-referenced Natural Resource Evaluation (NRE) in accordance with FWC's authorities under Chapter 379, Florida Statutes and Rule 68A-27, Florida Administrative Code.

The Florida Department of Transportation (FDOT) proposes improvements to a 0.6-mile portion of SR 115 (Lem Turner Road) from north of Trout River Boulevard to South of Broward Road in Duval County. The 742-foot long four-laned Trout River bridge constructed in 1957, is now considered to be structurally deficient and will be replaced. The two Alternatives proposed by FDOT are: a temporary bridge construction to the west of the existing structure for Alternative 1, and a temporary bridge to the east for Alternative 2. FDOT relates that the overall traffic capacity of the bridge will not change.

An estimated 0.334 acres of wetlands occur in the existing Right-of-Way (ROW), and an additional 0.884 acres of wetlands occur within the temporary construction easements and ROW for alternatives. FDOT states that 0.334 acres of wetlands in the existing ROW will be permanently impacted, and may require mitigation, and made a determination of no adverse effects for State listed species.

FWC's staff finds the determination of effect and project commitments are appropriate to avoid, minimize, and mitigate protected species impacts and there are no additional comments or recommendations regarding the subject NRE.

For specific technical questions regarding this information, please contact Terry Gilbert at (850) 728-1103 or Terry.Gilbert@MyFWC.com. All other inquires may be directed to ConservationPlanningServices@MyFWC.com.

Sincerely,

Jason Hight, Director
Office of Conservation Planning Services

jh/tg
Trout River Bridge Replacement at Lem Turner Road NRE Duval County _45684_10292021

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
263 13th Avenue South
St. Petersburg, Florida 33701-5505
https://www.fisheries.noaa.gov/region/southeast

November 16, 2021 F/SER47:KG/pw

(Sent via Electronic Mail)
Ms. Terri Newman, Environmental Manager
Florida Department of Transportation, District 2
1109 South Marion Street
Lake City, Florida 32025

Dear Ms. Newman:

NOAA's National Marine Fisheries Service (NMFS) reviewed the letter dated October 5,2021, from the Florida Department of Transportation District 2 (FDOT) regarding a Project Development and Environment study for replacing the State Road 115 bridge over the Trout River (FPN-437437-2), City of Jacksonville, Duval County. The 0.6-mile-long project includes construction of a temporary bridge, demolition of the existing bridge, and construction of a new bridge. The letter included a Natural Resource Evaluation (NRE) examining potential impacts to surface waters, wetlands, essential fish habitat (EFH) designated under the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), and species and habitats protected under the Endangered Species Act (ESA). FDOT requests the NMFS provide a general review of the project and the NRE.

Essential Fish Habitat within the Project Area
The project area is a tidal river, with open water and salt marsh habitats, that is a tributary to the St. Johns River. The NRE considers two alternatives. Alternative 1 includes impacts to 0.414 acres of salt marsh while Alternative 2 proposes 0.501 acres of impacts to salt marsh. The South Atlantic Fishery Management Council (SAFMC) designates salt marsh and shallow tidal waters as EFH for penaeid shrimp and estuarine-dependent species of the snapper/grouper complex because larvae and juveniles may concentrate and feed within these habitats. Consequently, growth rates may be high and predation rates low, making salt marsh and shallow waters an effective nursery area. The SAFMC provides additional information on EFH and its support of federally managed fishery species in the *Fishery Ecosystem Plan of the South Atlantic Region*, which is available at *www.safmc.net*.

The project area connects to the Atlantic Ocean via the St. Johns River. The river's estuarine ecosystems serve as nursery and forage habitat for state-managed species such as red drum, black drum, Atlantic menhaden, southern flounder, spotted seatrout, and blue crab. Many of these species are prey for other fish managed under the Magnuson-Stevens Act, such as mackerels, snappers, groupers, billfish, and sharks. Red drum is important as a recreationally caught species, and estuarine wetlands within the project area provide habitat necessary for development and survival throughout all life stages of red drum.

Recommendations for Essential Fish Habitat
If FDOT anticipates the project will impact salt marsh or other EFH within the Trout River, FDOT should avoid and minimize these impacts to the extent practicable by selecting

construction methods, including staging, causing the least disruption to tidal wetlands and surrounding habitats. FDOT should employ best management practices to control turbidity and prevent sediments disturbed by this project from affecting areas outside the project site. As mentioned in the NRE, FDOT anticipates refining estimates of project impacts to EFH and proposing mitigation for those impacts during permitting. NMFS recommends FDOT work with the NMFS to develop an appropriate mitigation strategy, ideally within the same watershed as the project.

Recommendations for the Endangered Species Act

The NRE includes preliminary determinations of effects to ESA-listed species under the purview of the NMFS, including Atlantic sturgeon, shortnose sturgeon, and loggerhead, green and Kemp's ridley sea turtles. The information provided appears consistent with FDOT's preliminary determination of not likely to adversely affect for these species. The NMFS recommends FDOT reassess this determination once final project designs are available. Ultimately, as the Federal Highway Administration's non-federal designee, it is incumbent upon FDOT to make effects determinations regarding ESA-listed species. If necessary, an Endangered Species Biological Assessment should be prepared and submitted to the NMFS for review.

Conclusion

The NMFS will continue to work with FDOT and other regulatory agencies as the project progresses into permitting. We appreciate the opportunity to provide these comments and look forward to reviewing the project as FDOT refines the design. Please direct related correspondence to the attention of Kurtis Gregg in the West Palm Beach Field Office, located at 400 North Congress Avenue, Suite 270, West Palm Beach, FL 33401. Kurtis Gregg can be reached by telephone at (561) 440-3167 or by email at Kurtis.Gregg@noaa.gov.

Sincerely,

Pace Wilber
Acting Assistant Regional Administrator
Habitat Conservation Division

cc: COE, Randy.L.Turner@usace.army.mil
FDOT, District 2,Terri.Newman@dot.state.fl.us
F/SER47, Kurtis.Gregg@noaa.gov

FDOT

Florida Department of Transportation

RON DESANTIS
GOVERNOR

1109 S. Marion Av
Lake City, FL 3

Florida Ecological Services Field Office

FWS Log No 2022-TA-0068

The Service concurs with your effect determination(s) for resources protected by the Endangered Species Act of 1973, as amended (16 U.S.C. 1531 et seq.). This finding fulfills the requirements of the Act.

Environmental Review Supervisor Date

October 5, 2021

Attn: Zakia Williams
U.S. Fish and Wildlife Service
North Florida Ecological Services Office
7915 Baymeadows Way, Suite 200
Jacksonville, FL 32256-7517

RE: State Road 115 (Lem Turner Road) over Trout River Bridge #720033, Duval County
FDOT Financial Project Number: 437437-2

Ms. Williams,

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study to evaluate the replacement of the Trout River (Bridge No. 720033) at State Road 115 (Lem Turner Road) in Duval County. The approximate 0.6-mile project corridor includes the replacement of the existing bridge with a new bridge consisting of four 11-foot travel lanes, a 7-foot median, and a 10-foot shared use trail. Please find attached the Natural Resources Evaluation (NRE) that discusses potential surface water and wetland impacts associated with the project, as well as potential involvement with Endangered Species Act (ESA) listed species.

Several species protected under the ESA are documented to occur within the project study area. Based upon the findings of the NRE, FDOT has determined the project may affect but is not likely to adversely affect: the eastern indigo snake, eastern black rail, wood stork and West Indian manatee. Furthermore, FDOT has determined the project may affect but is not likely to adversely affect Critical Habitat for West Indian manatee. Any impacts to above listed species' habitat will be offset by a wetland mitigation plan, as applicable. Continued agency coordination will occur during design and permitting to address final determination of impacts, implementation of protection measures, and mitigation if necessary.

FDOT requests your review and concurrence with these findings at your earliest convenience. If you have questions regarding the project or FDOT's findings, please contact me at 386-961-7713.

Sincerely,

DocuSigned by:
Terri Newman
3EBF0D0EAE2D4B1...

Terri Newman
D2 Environmental Manager

Attachment: *Natural Resources Evaluation – Trout River Bridge Replacement at Lem Turner Road (SR 115)*

Appendix E: Highway Safety Manual (HSM) Predictive Crash Analysis

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	Hicks	Roadway	Lem Turner Road
Agency or Company	Parsons	Roadway Section	MP 4.731 to MP 5.144
Date Performed	07/25/23	Jurisdiction	FDOT D2
	Base with 2022 Traffic	Analysis Year	2022

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	4U
Length of segment, L (mi)		--	0.413
AADT (veh/day)	$AADT_{MAX}$ = 40,100 (veh/day)	--	29,000
Type of on-street parking (none/parallel/angle)		--	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		--	Not Present
Lighting (present / not present)		--	Present
Auto speed enforcement (present / not present)		--	Not Present
Major commercial driveways (number)		--	2
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		--	0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		--	2
Calibration Factor, Cr		--	1.00

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
1.00	1.00	1.00	0.92	1.00	0.92

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-11.63	1.33	1.01	3.163	1.000	3.163	0.92	1.00	2.901
Fatal and Injury (FI)	-12.08	1.25	0.99	0.886	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.292	0.924	0.92	1.00	0.847
Property Damage Only (PDO)	-12.53	1.38	1.08	2.150	$(5)_{TOTAL}-(5)_{FI}$ = 0.708	2.239	0.92	1.00	2.054

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	0.847	1.000	2.054	2.901
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.511	0.433	0.506	1.039	1.472
Head-on collision	0.077	0.065	0.004	0.008	0.073
Angle collision	0.181	0.153	0.130	0.267	0.420
Sideswipe, same direction	0.093	0.079	0.249	0.511	0.590
Sideswipe, opposite direction	0.082	0.069	0.031	0.064	0.133
Other multiple-vehicle collision	0.056	0.047	0.080	0.164	0.212

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-7.99	0.81	0.91	0.576	1.000	0.576	0.92	1.00	0.528
Fatal and Injury (FI)	-7.37	0.61	0.54	0.137	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.226	0.130	0.92	1.00	0.119
Property Damage Only (PDO)	-8.50	0.84	0.97	0.471	$(5)_{TOTAL}-(5)_{FI}$ = 0.774	0.446	0.92	1.00	0.409

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.119	1.000	0.409	0.528
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.000	0.001
Collision with fixed object	0.612	0.073	0.809	0.331	0.404
Collision with other object	0.020	0.002	0.029	0.012	0.014
Other single-vehicle collision	0.367	0.044	0.161	0.066	0.110

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	2	0.182	1.172	0.788	
Minor commercial	0	0.058	1.172	0.000	
Major industrial/institutional	0	0.198	1.172	0.000	
Minor industrial/institutional	0	0.026	1.172	0.000	--
Major residential	0	0.096	1.172	0.000	
Minor residential	0	0.018	1.172	0.000	
Other	0	0.029	1.172	0.000	
Total	--	--	--	0.788	0.81

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL} * (3)$	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.788	1.000	0.788	0.92	1.00	0.723
Fatal and injury (FI)	--	0.342	0.270	0.92	1.00	0.247
Property damage only (PDO)	--	0.658	0.519	0.92	1.00	0.476

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	2.901	0.528	0.723	4.152	0.009	1.00	0.037
Fatal and injury (FI)	--	--	--	--	--	1.00	0.037

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	2.901	0.528	0.723	4.152	0.002	1.00	0.008
Fatal and injury (FI)	--	--	--	--	--	1.00	0.008

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.433	1.039	1.472
Head-on collisions (from Worksheet 1D)	0.065	0.008	0.073
Angle collisions (from Worksheet 1D)	0.153	0.267	0.420
Sideswipe, same direction (from Worksheet 1D)	0.079	0.511	0.590
Sideswipe, opposite direction (from Worksheet 1D)	0.069	0.064	0.133
Driveway-related collisions (from Worksheet 1H)	0.247	0.476	0.723
Other multiple-vehicle collision (from Worksheet 1D)	0.047	0.164	0.212
Subtotal	1.094	2.530	3.624
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.000	0.001
Collision with fixed object (from Worksheet 1F)	0.073	0.331	0.404
Collision with other object (from Worksheet 1F)	0.002	0.012	0.014
Other single-vehicle collision (from Worksheet 1F)	0.044	0.066	0.110
Collision with pedestrian (from Worksheet 1I)	0.037	0.000	0.037
Collision with bicycle (from Worksheet 1J)	0.008	0.000	0.008
Subtotal	0.165	0.409	0.574
Total	1.259	2.939	4.198

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	4.2	0.41	10.2
Fatal and injury (FI)	1.3	0.41	3.0
Property damage only (PDO)	2.9	0.41	7.1

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	Hicks	Roadway	Lem Turner Road
Agency or Company	Parsons	Roadway Section	MP 4.731 to MP 5.144
Date Performed	07/25/23	Jurisdiction	FDOT D2
	No-Build Alternative	Analysis Year	2050

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	4U
Length of segment, L (mi)		--	0.413
AADT (veh/day)	$AADT_{MAX}$ = 40,100 (veh/day)	--	33,000
Type of on-street parking (none/parallel/angle)		--	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		--	Not Present
Lighting (present / not present)		--	Present
Auto speed enforcement (present / not present)		--	Not Present
Major commercial driveways (number)		--	2
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		--	0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		--	2
Calibration Factor, Cr		--	1.76

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
1.00	1.00	1.00	0.92	1.00	0.92

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-11.63	1.33	1.01	3.756	1.000	3.756	0.92	1.76	6.063
Fatal and Injury (FI)	-12.08	1.25	0.99	1.042	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.289	1.084	0.92	1.76	1.749
Property Damage Only (PDO)	-12.53	1.38	1.08	2.569	$(5)_{TOTAL}-(5)_{FI}$ = 0.711	2.672	0.92	1.76	4.314

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	1.749	1.000	4.314	6.063
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.511	0.894	0.506	2.183	3.077
Head-on collision	0.077	0.135	0.004	0.017	0.152
Angle collision	0.181	0.317	0.130	0.561	0.877
Sideswipe, same direction	0.093	0.163	0.249	1.074	1.237
Sideswipe, opposite direction	0.082	0.143	0.031	0.134	0.277
Other multiple-vehicle collision	0.056	0.098	0.080	0.345	0.443

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-7.99	0.81	0.91	0.640	1.000	0.640	0.92	1.76	1.033
Fatal and Injury (FI)	-7.37	0.61	0.54	0.148	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.220	0.141	0.92	1.76	0.228
Property Damage Only (PDO)	-8.50	0.84	0.97	0.525	$(5)_{TOTAL}-(5)_{FI}$ = 0.780	0.499	0.92	1.76	0.805

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.228	1.000	0.805	1.033
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.001	0.001	0.001
Collision with fixed object	0.612	0.139	0.809	0.651	0.790
Collision with other object	0.020	0.005	0.029	0.023	0.028
Other single-vehicle collision	0.367	0.084	0.161	0.130	0.213

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	2	0.182	1.172	0.917	--
Minor commercial	0	0.058	1.172	0.000	
Major industrial/institutional	0	0.198	1.172	0.000	
Minor industrial/institutional	0	0.026	1.172	0.000	
Major residential	0	0.096	1.172	0.000	
Minor residential	0	0.018	1.172	0.000	
Other	0	0.029	1.172	0.000	
Total	--	--	--	0.917	0.81

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL} * (3)$	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.917	1.000	0.917	0.92	1.76	1.480
Fatal and injury (FI)	--	0.342	0.314	0.92	1.76	0.506
Property damage only (PDO)	--	0.658	0.603	0.92	1.76	0.974

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	6.063	1.033	1.480	8.576	0.009	1.76	0.136
Fatal and injury (FI)	--	--	--	--	--	1.76	0.136

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	6.063	1.033	1.480	8.576	0.002	1.76	0.030
Fatal and injury (FI)	--	--	--	--	--	1.76	0.030

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.894	2.183	3.077
Head-on collisions (from Worksheet 1D)	0.135	0.017	0.152
Angle collisions (from Worksheet 1D)	0.317	0.561	0.877
Sideswipe, same direction (from Worksheet 1D)	0.163	1.074	1.237
Sideswipe, opposite direction (from Worksheet 1D)	0.143	0.134	0.277
Driveway-related collisions (from Worksheet 1H)	0.506	0.974	1.480
Other multiple-vehicle collision (from Worksheet 1D)	0.098	0.345	0.443
Subtotal	2.256	5.288	7.544
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.001	0.001
Collision with fixed object (from Worksheet 1F)	0.139	0.651	0.790
Collision with other object (from Worksheet 1F)	0.005	0.023	0.028
Other single-vehicle collision (from Worksheet 1F)	0.084	0.130	0.213
Collision with pedestrian (from Worksheet 1I)	0.136	0.000	0.136
Collision with bicycle (from Worksheet 1J)	0.030	0.000	0.030
Subtotal	0.394	0.805	1.199
Total	2.649	6.093	8.742

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments			
(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	8.7	0.41	21.2
Fatal and injury (FI)	2.6	0.41	6.4
Property damage only (PDO)	6.1	0.41	14.8

Worksheet 1A -- General Information and Input Data for Urban and Suburban Roadway Segments

General Information		Location Information	
Analyst	Hicks	Roadway	Lem Turner Road
Agency or Company	Parsons	Roadway Section	MP 4.731 to MP 5.144
Date Performed	07/25/23	Jurisdiction	FDOT D2
	Build Alternative	Analysis Year	2050

Input Data		Base Conditions	Site Conditions
Roadway type (2U, 3T, 4U, 4D, ST)		--	4D
Length of segment, L (mi)		--	0.413
AADT (veh/day)	$AADT_{MAX}$ = 66,000 (veh/day)	--	33,000
Type of on-street parking (none/parallel/angle)		None	None
Proportion of curb length with on-street parking		--	0
Median width (ft) - for divided only		15	40
Lighting (present / not present)		Not Present	Present
Auto speed enforcement (present / not present)		Not Present	Not Present
Major commercial driveways (number)		--	2
Minor commercial driveways (number)		--	0
Major industrial / institutional driveways (number)		--	0
Minor industrial / institutional driveways (number)		--	0
Major residential driveways (number)		--	0
Minor residential driveways (number)		--	0
Other driveways (number)		--	0
Speed Category		--	Posted Speed Greater than 30 mph
Roadside fixed object density (fixed objects / mi)		0	0
Offset to roadside fixed objects (ft) [If greater than 30 or Not Present, input 30]		30	8
Calibration Factor, Cr		1.00	1.76

Worksheet 1B -- Crash Modification Factors for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
CMF for On-Street Parking	CMF for Roadside Fixed Objects	CMF for Median Width	CMF for Lighting	CMF for Automated Speed Enforcement	Combined CMF
CMF 1r	*CMF 2r*	*CMF 3r*	*CMF 4r*	*CMF 5r*	*CMF comb*
from Equation 12-32	from Equation 12-33	from Table 12-22	from Equation 12-34	from Section 12.7.1	(1)*(2)*(3)*(4)*(5)
1.00	1.00	0.97	0.91	1.00	0.89

Worksheet 1C -- Multiple-Vehicle Nondriveway Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brmv}**	**Proportion of Total Crashes**	**Adjusted N_{brmv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brmv}**
	from Table 12-3		from Table 12-3	from Equation 12-10		$(4)_{TOTAL}$*(5)	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-12.34	1.36	1.32	2.523	1.000	2.523	0.89	1.76	3.937
Fatal and Injury (FI)	-12.76	1.28	1.31	0.721	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.271	0.683	0.89	1.76	1.066
Property Damage Only (PDO)	-12.81	1.38	1.34	1.942	$(5)_{TOTAL}-(5)_{FI}$ = 0.729	1.840	0.89	1.76	2.870

Worksheet 1D -- Multiple-Vehicle Nondriveway Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brmv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brmv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brmv\ (TOTAL)}$ (crashes/year)**
	from Table 12-4	$(9)_{FI}$ from Worksheet 1C	from Table 12-4	$(9)_{PDO}$ from Worksheet 1C	$(9)_{TOTAL}$ from Worksheet 1C
Total	1.000	1.066	1.000	2.870	3.937
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Rear-end collision	0.832	0.887	0.662	1.900	2.787
Head-on collision	0.020	0.021	0.007	0.020	0.041
Angle collision	0.040	0.043	0.036	0.103	0.146
Sideswipe, same direction	0.050	0.053	0.223	0.640	0.693
Sideswipe, opposite direction	0.010	0.011	0.001	0.003	0.014
Other multiple-vehicle collision	0.048	0.051	0.071	0.204	0.255

Worksheet 1E -- Single-Vehicle Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)		(3)	(4)	(5)	(6)	(7)	(8)	(9)
Crash Severity Level	**SPF Coefficients**		**Overdispersion Parameter, k**	**Initial N_{brsv}**	**Proportion of Total Crashes**	**Adjusted N_{brsv}**	**Combined CMFs**	**Calibration Factor, Cr**	**Predicted N_{brsv}**
	from Table 12-5		from Table 12-5	from Equation 12-13		$(4)_{TOTAL}*(5)$	(6) from Worksheet 1B		(6)*(7)*(8)
	a	b							
Total	-5.05	0.47	0.86	0.352	1.000	0.352	0.89	1.76	0.549
Fatal and Injury (FI)	-8.71	0.66	0.28	0.065	$(4)_{FI}/((4)_{FI}+(4)_{PDO})$ = 0.185	0.065	0.89	1.76	0.101
Property Damage Only (PDO)	-5.04	0.45	1.06	0.289	$(5)_{TOTAL}-(5)_{FI}$ = 0.815	0.287	0.89	1.76	0.448

Worksheet 1F -- Single-Vehicle Collisions by Collision Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Collision Type	**Proportion of Collision Type$_{(FI)}$**	**Predicted N $_{brsv\ (FI)}$ (crashes/year)**	**Proportion of Collision Type $_{(PDO)}$**	**Predicted N $_{brsv\ (PDO)}$ (crashes/year)**	**Predicted N $_{brsv\ (TOTAL)}$ (crashes/year)**
	from Table 12-6	$(9)_{FI}$ from Worksheet 1E	from Table 12-6	$(9)_{PDO}$ from Worksheet 1E	$(9)_{TOTAL}$ from Worksheet 1E
Total	1.000	0.101	1.000	0.448	0.549
		$(2)*(3)_{FI}$		$(4)*(5)_{PDO}$	(3)+(5)
Collision with animal	0.001	0.000	0.063	0.028	0.028
Collision with fixed object	0.500	0.051	0.813	0.364	0.415
Collision with other object	0.028	0.003	0.016	0.007	0.010
Other single-vehicle collision	0.471	0.048	0.108	0.048	0.096

Worksheet 1G -- Multiple-Vehicle Driveway-Related Collisions by Driveway Type for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)
Driveway Type	**Number of driveways, n_j**	**Crashes per driveway per year, N_j**	**Coefficient for traffic adjustment, t**	**Initial N_{brdwy}**	**Overdispersion parameter, k**
		from Table 12-7	from Table 12-7	Equation 12-16 $n_j * N_j * (AADT/15,000)^t$	from Table 12-7
Major commercial	2	0.033	1.106	0.158	
Minor commercial	0	0.011	1.106	0.000	
Major industrial/institutional	0	0.036	1.106	0.000	
Minor industrial/institutional	0	0.005	1.106	0.000	--
Major residential	0	0.018	1.106	0.000	
Minor residential	0	0.003	1.106	0.000	
Other	0	0.005	1.106	0.000	
Total	--	--	--	0.158	1.39

Worksheet 1H -- Multiple-Vehicle Driveway-Related Collisions by Severity Level for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)
Crash Severity Level	**Initial N_{brdwy}**	**Proportion of total crashes (f_{dwy})**	**Adjusted N_{brdwy}**	**Combined CMFs**	**Calibration factor, C_r**	**Predicted N_{brdwy}**
	$(5)_{TOTAL}$ from Worksheet 1G	from Table 12-7	$(2)_{TOTAL} * (3)$	(6) from Worksheet 1B		(4)*(5)*(6)
Total	0.158	1.000	0.158	0.89	1.76	0.246
Fatal and injury (FI)	--	0.284	0.045	0.89	1.76	0.070
Property damage only (PDO)	--	0.716	0.113	0.89	1.76	0.176

Worksheet 1I -- Vehicle-Pedestrian Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{pedr}**	**Calibration factor, C_r**	**Predicted N_{pedr}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-8		(5)*(6)*(7)
Total	3.937	0.549	0.246	4.732	0.019	1.76	0.158
Fatal and injury (FI)	--	--	--	--	--	1.76	0.158

Worksheet 1J -- Vehicle-Bicycle Collisions for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Crash Severity Level	**Predicted N_{brmv}**	**Predicted N_{brsv}**	**Predicted N_{brdwy}**	**Predicted N_{br}**	**f_{biker}**	**Calibration factor, C_r**	**Predicted N_{biker}**
	(9) from Worksheet 1C	(9) from Worksheet 1E	(7) from Worksheet 1H	(2)+(3)+(4)	from Table 12-9		(5)*(6)*(7)
Total	3.937	0.549	0.246	4.732	0.005	1.76	0.042
Fatal and injury (FI)	--	--	--	--	--	1.76	0.042

Worksheet 1K -- Crash Severity Distribution for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)
Collision type	**Fatal and injury (FI)**	**Property damage only (PDO)**	**Total**
	(3) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J	(5) from Worksheet 1D and 1F; and (7) from Worksheet 1H	(6) from Worksheet 1D and 1F; (7) from Worksheet 1H; and (8) from Worksheet 1I and 1J
MULTIPLE-VEHICLE			
Rear-end collisions (from Worksheet 1D)	0.887	1.900	2.787
Head-on collisions (from Worksheet 1D)	0.021	0.020	0.041
Angle collisions (from Worksheet 1D)	0.043	0.103	0.146
Sideswipe, same direction (from Worksheet 1D)	0.053	0.640	0.693
Sideswipe, opposite direction (from Worksheet 1D)	0.011	0.003	0.014
Driveway-related collisions (from Worksheet 1H)	0.070	0.176	0.246
Other multiple-vehicle collision (from Worksheet 1D)	0.051	0.204	0.255
Subtotal	1.136	3.047	4.183
SINGLE-VEHICLE			
Collision with animal (from Worksheet 1F)	0.000	0.028	0.028
Collision with fixed object (from Worksheet 1F)	0.051	0.364	0.415
Collision with other object (from Worksheet 1F)	0.003	0.007	0.010
Other single-vehicle collision (from Worksheet 1F)	0.048	0.048	0.096
Collision with pedestrian (from Worksheet 1I)	0.158	0.000	0.158
Collision with bicycle (from Worksheet 1J)	0.042	0.000	0.042
Subtotal	0.301	0.448	0.749
Total	1.437	3.494	4.932

Worksheet 1L -- Summary Results for Urban and Suburban Roadway Segments

(1)	(2)	(3)	(4)
Crash Severity Level	**Predicted average crash frequency, $N_{predicted\ rs}$ (crashes/year)**	**Roadway segment length, L (mi)**	**Crash rate (crashes/mi/year)**
	(Total) from Worksheet 1K		(2) / (3)
Total	4.9	0.41	11.9
Fatal and injury (FI)	1.4	0.41	3.5
Property damage only (PDO)	3.5	0.41	8.5