

FEASIBILITY REPORT

Florida Department of Transportation
District 1

North Jones Loop Road (CR 768)

From Burnt Store Road (CR 765) to Piper Road
Charlotte County, Florida

Financial Management Number: 436563-1-22-01

ETDM Number: 13797

August, 2022



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

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LIST OF ACRONYMS

AADT	ANNUAL AVERAGE DAILY TRAFFIC
ACF	AXLE CORRECTION FACTOR
BEBR	BUREAU OF ECONOMIC AND BUSINESS RESEARCH
BGPA	BALD AND GOLDEN EAGLE PROTECTION ACT
BSR	BURNT STORE ROAD
CA	CONSULTATION AREA
CAP-X	CAPACITY ANALYSIS AT JUNCTIONS
CARS	CRASH ANALYSIS REPORTING SYSTEM
CATV	COMMUNITY ANTENNA TELEVISION
CHAZ	COMPLIANCE AND ENFORCEMENT TRACKING FOR HAZARDOUS
CL	CENTER LINE
CMF	CRASH MODIFICATION FACTOR
CR	COUNTY ROAD
CZMA	COASTAL ZONE MANAGEMENT ACT
D1	DISTRICT ONE
D1RPM	DISTRICT ONE REGIONAL PLANNING MODEL
DDE	DISTRICT DESIGN ENGINEER
DEP	DEPARTMENT OF ENVIRONMENTAL PROTECTION
DFIRM	DIGITAL FLOOD INSURANCE RATE MAP
DHW	DESIGN HIGH WATER
EB	EASTBOUND
ECAP	ENTERPRISE CHARLOTTE AIRPORT PARK
EL	ELEVATION
EOP	EDGE OF PAVEMENT
EPA	ENVIRONMENTAL PROTECTION AGENCY
ERIC	ENVIRONMENTAL RESTORATION INTEGRATED CLEANUP
ERP	ENVIRONMENTAL RESOURCE PERMIT
ETDM	EFFICIENT TRANSPORTATION DECISION MAKING
FAC	FLORIDA ADMINISTRATIVE CODE
FBB	FLORIDA BONNETED BAT
FDEP	FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION
FDM	FLORIDA DESIGN MANUAL
FDOT	FLORIDA DEPARTMENT OF TRANSPORTATION
FE	FEDERAL ENDANGERED
FEMA	FEDERAL EMERGENCY MANAGEMENT AGENCY
FGB	FLORIDA GREEN BOOK
FGDL	FLORIDA GEOGRAPHIC DATA LIBRARY
FIRM	FLOOD INSURANCE RATE MAP
FL	FLORIDA
FLUCFCS	FLORIDA LAND USE, COVER, FORMS AND CLASSIFICATION SYSTEM
FM	FINANCIAL MANAGEMENT
FMSF	FLORIDA MASTER SITE FILE
FNAI	FLORIDA NATURAL AREAS INVENTORY

FOC	FIBER OPTIC CABLE
FPL	FLORIDA POWER & LIGHT
FSJ	FLORIDA SCRUB-JAY
FT	FEDERAL THREATENED
FTO	FLORIDA TRAFFIC ONLINE
FWC	FLORIDA FISH AND WILDLIFE CONSERVATION COMMISSION
GIS	GEOGRAPHIC INFORMATION SYSTEM
HC	HIGHWAY COMMERCIAL
HCM	HIGHWAY CAPACITY MANUAL
HSM	HIGHWAY SAFETY MANUAL
ICE	INTERSECTION CONTROL EVALUATION
ID	IDENTIFICATION
ITS	INTELLIGENT TRANSPORTATION SYSTEM
L/A	LIMITED ACCESS
LOS	LEVEL OF SERVICE
LRTP	LONG RANGE TRANSPORTATION PLAN
LT	LEFT
MBTA	MIGRATORY BIRD TREATY ACT
MEV	MILLION ENTERING VEHICLES
MHC	MANUFACTURED HOME COMMUNITY
MOE	MEASURES OF EFFECTIVENESS
MPH	MILES PER HOUR
MPO	METROPOLITAN PLANNING ORGANIZATION
MVMT	MILLION VEHICLE MILES TRAVELED
N/A	NOT APPLICABLE
NB	NORTHBOUND
NC	NORMAL CROWN
NJLR	NORTH JONES LOOP ROAD
NPDES	NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
NRCS	NATIONAL RESOURCE CONSERVATION SERVICE
NRHP	NATIONAL REGISTER OF HISTORIC PLACES
NWI	NATIONAL WETLAND INVENTORY
OFW	OUTSTANDING FLORIDA WATERS
OGT	OFFICE OF GREENWAYS AND TRAILS
PD&E	PROJECT DEVELOPMENT AND ENVIRONMENT
PDN	PLANNED DEVELOPMENT NEIGHBORHOOD
PDO	PROPERTY DAMAGE ONLY
PE	PROFESSIONAL ENGINEER
PGL	PROFILE GRADE LINE
PI	POINT OF INFLECTION
PIP	PUBLIC INVOLVEMENT PLAN
PTAR	PROJECT TRAFFIC ANALYSIS REPORT
R/W	RIGHT-OF-WAY
RC	REVERSE CROWN

RCRA	RESOURCE CONSERVATION AND RECOVERY ACT
ROW	RIGHT-OF-WAY
RT	RIGHT
RV	RECREATIONAL VEHICLE
SB	SOUTHBOUND
SCL	SEABOARD COAST LINE
SE	SUPERELEVATION
SF	SEASONAL FACTOR
SHGWT	SEASONAL HIGH GROUND WATER TABLE
SHPO	STATE HISTORIC PRESERVATION OFFICER
SHS	STATE HIGHWAY SYSTEM
SIS	STRATEGIC INTERMODAL SYSTEM
SMF	STORMWATER MANAGEMENT FACILITY
SPICE	SAFETY PERFORMANCE FOR INTERSECTION CONTROL EVALUATION
SSOGIS	STATE SAFETY OFFICE GEOGRAPHIC INFORMATION SYSTEM
ST	STATE THREATENED
STA	STATION
STCM	STORAGE TANK CONTAMINATION MONITORING
SUN	SHARED-USE NONMOTORIZED
SWFWMD	SOUTHWEST FLORIDA WATER MANAGEMENT DISTRICT
TBD	TO BE DETERMINED
TIIF	TRUSTEES OF THE INTERNAL IMPROVEMENT TRUST FUND
TIP	TRANSPORTATION IMPROVEMENT PROGRAM
TMC	TURNING MOVEMENT COUNT
TMV	TURNING MOVEMENT VOLUME
TRI	TOXIC RELEASE INVENTORY
UAO	UTILITY AGENCY/OWNER
US	UNITED STATES
USA	UNITED STATES OF AMERICA
USC	UNITED STATES CODE
USFWS	UNITED STATES FISH AND WILDLIFE SERVICE
UTE	ULTRA-TECH ENTERPRISES
VPI	VERTICAL POINT OF INFLECTION
WB	WESTBOUND
WBID	WATERBODY IDENTIFICATION
WMA	WILDLIFE MANAGEMENT AREA

1 PROJECT SUMMARY

1.1 General Description

This Feasibility Study represents the initial step in the planning and design process for this project. It is a preliminary effort to develop and evaluate potential roadway alternatives, identify potential impacts, and ensure the alternatives can meet the project's purpose and need.

This study evaluates the feasibility of various alternatives for the potential widening of 1.81 miles of North Jones Loop Road (CR 768) up to six lanes from Burnt Store Road (CR 765) to Piper Road within the City of Punta Gorda and unincorporated Charlotte County. The proposed project may also include paved shoulders/marked bicycle lanes, sidewalks, and a shared-use path as consistent with the Charlotte County-Punta Gorda Metropolitan Planning Organization's 2040 Long Range Transportation Plan; the project is anticipated to include a portion of the South Charlotte and North Lee Trail [which extends from the Lee County Line following along US 41, Taylor Road (CR 765A), North Jones Loop Road, and Piper Road to US 17].

North Jones Loop Road is classified as a four-lane, divided 'Urban Minor Arterial' from Burnt Store Road to approximately 700 feet east of Mac Drive and then transitions to a divided 'Rural Minor Arterial' from east of Mac Drive to Piper Road. North Jones Loop Road facilitates the east-west movement of local and regional traffic in central Charlotte County. It connects to major transportation facilities, including US 41 and I-75 [a Strategic Intermodal System (SIS) highway corridor]. It additionally provides access to Punta Gorda Airport (a SIS airport) via Piper Road. It should be noted that the segment of the project corridor extending from I-75 to Piper Road is designated as a Strategic Growth Highway Connector of the State of Florida [a corridor expected to meet established SIS designation criteria and thresholds in the future].

The roadway features two twelve-foot travel lanes in each direction, with left and right turn lanes dispersed throughout the length of the corridor. Sidewalks exist on both sides of North Jones Loop Road from Burnt Store Road to Mac Drive; a 300-foot long keyhole bicycle lane is present at the entrance into the Wawa gas station located to the east of the Taylor Road intersection on the north side of the corridor. The roadway also features a network of vegetated swales; curb and gutter exist at the Piper Road intersection. Paved shoulders are present intermittently along the corridor. The speed limit posted within the project segment ranges from 35 miles per hour to 45 miles per hour. The existing roadway right-of-way is generally between 170 and 200 feet, expanding to approximately 330 feet at the western limit. Minimal additional right-of-way, if any, is expected to be required; right-of-way requirements will be determined during the Project Development and Environment Study. **Figure 1-1** depicts the study area limits.

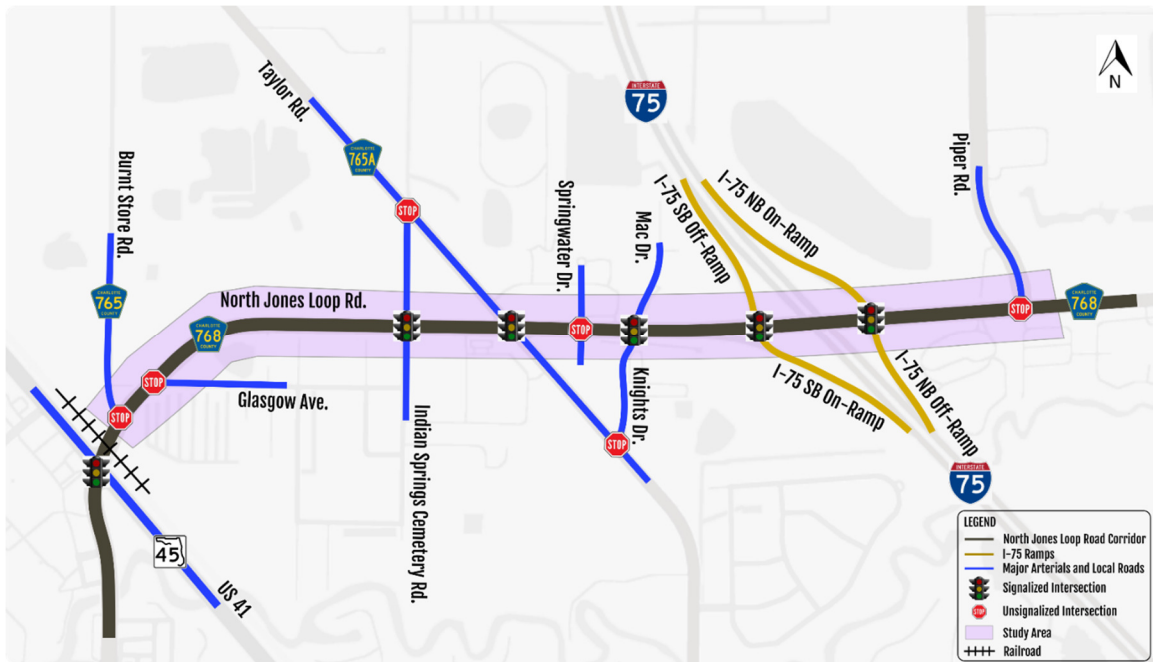


Figure 1-1: Study Area

1.2 Purpose, Need, and Performance Measure

The purpose of this project is to maintain the operational capacity of North Jones Loop Road in the future condition to support local economic development initiatives and planned area growth. The project will evaluate the need for the potential widening of the roadway up to six lanes from Burnt Store Road to Piper Road. Other project goals include improving area-wide connectivity and enhancing emergency evacuation and response times. The need for the project is based on the criteria of capacity/transportation demand, area-wide network/system linkage, and safety.

1.2.1 Capacity/Transportation Demand: Maintain Operational Conditions

During the development of the Charlotte County-Punta Gorda Metropolitan Planning Organization's (MPO) 2040 Long Range Transportation Plan (LRTP), citizens identified North Jones Loop Road as one of the top roads to invest in within the south county area of Charlotte County (where the project is located) given the growth occurring and expected to continue within this portion of the County. According to the 2040 LRTP, the population of Charlotte County as a whole is expected to increase by 32 percent from 156,600 residents in 2010 to 207,214 residents in 2040; countywide employment is expected to increase comparatively by 30 percent, from 64,797 workers in 2010 to 84,387 workers in 2040. Most of Charlotte County's population growth is expected to occur within existing or redeveloped areas/neighborhoods, such as the City of Punta Gorda.

The project is in an area that is transitioning from a rural to an urban environment. Per the City of Punta Gorda and Charlotte County Future Land Use Maps, the corridor is intended to support commercial uses and the economic district of Punta Gorda Interstate Airport Park [formerly Enterprise Charlotte Airport Park], which is located east of I-75 and immediately north of North Jones Loop Road and includes Punta Gorda Airport. The Punta Gorda Interstate Airport Park is a designated Foreign Trade Zone and encompasses 4,300 acres of land available for aviation, manufacturing, and distribution companies. Numerous businesses have relocated to the area in the last five years, such as Cheney Brothers distribution facility (creating 500 new jobs), Amigo Pallets, and MetalCraft Marine.

During conversations with Charlotte County-Punta Gorda MPO staff, other developments that are proposed/approved within the area were identified. They are scheduled to be built out by the year 2035 and will impact traffic on North Jones Loop Road:

- Tuckers Point: 1,700 units of residential, 480,000 sq. ft. of commercial, and a 400-room hotel.
- Harper McNew: 3,109 units of residential, 719,461 sq. ft. of commercial, and 126,964 sq. ft. of industrial.
- Neslund Master Development Plan: 1,384 units of residential and 77,000 sq. ft. of commercial.

Initially, the 2040 FDOT District One Regional Planning Model (D1RPM) does not account for the above developments identified within the area. After a discussion with Charlotte County, the socio-economic data of the D1RPM model was updated to include the mentioned projects.

The Existing Year (2020) and projected Design Year (2045) traffic volumes and operating conditions along the study corridor are presented in **Table 1-1**. The reported traffic volumes are from the approved 2021 Project Traffic Analysis Report (PTAR) developed for this study. The PTAR document is provided in **Appendix A**.

Table 1-1: Existing Year (2020) and Design Year (2045) Traffic Volumes

North Jones Loop Road Segment	2020 AADT ¹	% Daily Trucks ¹	2020 LOS ²	2045 AADT ¹	2045 LOS ²
Burnt Store Rd to Taylor Rd	15,000	14.0%	C	22,000	C
Taylor Rd to I-75	21,000	21.5%	C	38,500	F
I-75 to Piper Rd	10,500	14.0%	C	23,000	C

Notes/Sources:

AADT = Annual Average Daily Traffic

LOS = Level of Service

1. 2020 and 2045 AADT and daily truck traffic percentage derived from PTAR.

2. LOS based on 2020 FDOT Quality/Level of Service Handbook Tables: Generalized Annual Average Daily Volumes - Table 1 Urbanized Areas, State Signalized Arterials, Class I (Speed of 40 mph or higher) with Non-State Road Adjustments.

Currently, the roadway segments along the North Jones Loop Road corridor operate at LOS C. However, the roadway segment between Taylor Road and I-75 will operate at LOS F in the Design Year (2045). This failing condition is mainly due to insufficient roadway capacity to accommodate future traffic demand. The proposed project is anticipated to enhance the future operating conditions of the study corridor by increasing its capacity.

1.2.1.1 Performance Measures

Based on the policy (000-525-006) for the LOS targets on the State Highway Systems (SHS), the targeted LOS for the study corridor is D to ensure the capacity needs of the project are met. Operational performance of No-Build and Build Alternative will be evaluated using Synchro 10, HCM 6th Edition module.

1.2.2 Area Wide Network/System Linkage: Improve Transportation Network Connectivity

This project is intended to improve area wide connectivity and local and regional mobility by:

- Improving the ability of the roadway to serve as a proximate, viable east-west alternative to US 17, accommodating the travel demand of the growing Punta Gorda urban area and economic district to the east.
- Enhancing access for freight and commuter traffic to major north-south corridors of Charlotte County (including US 41, Burnt Store Road east of US 41, Taylor Road, I-75, and Piper Road) as it provides direct connections to these major facilities.
- Maintaining a critical link to the SIS network as it provides access to I-75 and Punta Gorda Airport (SIS facilities).

1.2.2.1 Performance Measure

With future development along the study corridor, the LOS is expected to deteriorate and degrade the travel times for freight and commuter traffic to/from I-75 and Punta Gorda International Airport. The travel times from Synchro will be compared between No-Build and Build Alternatives to estimate travel time benefits from the proposed improvements.

With planned future shared-use path along Taylor Road from US 41 to Airport Rd, the pedestrian and bicycle traffic demand is also expected to increase in the future. The proposed improvements will ensure to include pedestrian and bicycle features to connect to the planned future shared-use path along Taylor Road.

1.2.3 Safety: Enhance Emergency Evacuation and Response Capabilities

North Jones Loop Road serves as part of the emergency evacuation route network designated by the Florida Division of Emergency Management. Connecting directly to three other designated facilities of the state evacuation route network (i.e., US 41, Burnt Store Road west of US 41, and I-75), this roadway plays a critical role in facilitating east-west traffic movement within central Charlotte County during coastal storm evacuation periods. The roadway also plays a vital role in facilitating and diverting traffic during incidents on major north-south corridors of the County (including US 41, Burnt Store Road east of US 41, Taylor Road, I-75, and Piper Road) as it provides a direct east-west connection to these facilities. The project is intended to:

- Increase the number of residents that can be evacuated safely during an emergency event (primarily from the City of Punta Gorda and the City of Cape Coral in Lee County).
- Enhance access to other designated state evacuation routes.
- Facilitate traffic better and improve response times during incidents in central Charlotte County.

There are numerous driveways along the North Jones Loop Road between Taylor Road and I-75. A majority of the crashes are concentrated within this segment. With the expected increase in traffic, the safety performance of this segment will further deteriorate.

1.2.3.1 Performance Measure

The travel times from Synchro will be compared between No-Build and Build Alternatives to estimate travel time benefits from the proposed improvements. The latest 5-year historical crash data will be summarized for roadway segments and intersections to identify safety deficiencies along the study corridor. In addition, the estimated crash rates will be compared to the statewide average crash rates for similar roadway facilities, and the potential safety improvements will be recommended to improve the safety performance of the study corridor. In addition, the SPICE analysis will be conducted for all study intersections to evaluate the safety performance of viable alternatives.

1.3 List of Technical Documents

The following technical documents were utilized to support this Feasibility Study.

- Public Involvement Plan (PIP) February/2021
- Project Traffic Analysis Report (PTAR) May/2021
- ETDM Summary Report (Project #1379 7 - North Jones Loop Road) August/2020
- Comments and Coordination Report (This document will be finalized after the feasibility study is approved).

Additional documentation required by the FDOT PD&E manual may be prepared during the later phases of the project. Depending on the proposed improvements and funding availability, various improvements can be implemented as separate projects.

2 PROJECT COORDINATION & PUBLIC INVOLVEMENT

2.1 Agency Coordination

Per the Efficient Transportation Decision Making (ETDM) summary report (Project # 13797), public outreach activities were conducted during the project's planning phase to gather key stakeholders and public inputs for future needs of the North Jones Loop Road (CR 768) corridor within the study limits. Overall, the public outreach activities revealed that key stakeholders and the public support widening (4 to 6 lanes) of the study corridor due to its need and benefits to the growing urban area of Punta Gorda. The ETDM summary report (Project # 13797) is provided in **Appendix B**.

Agency coordination has been conducted since the project's onset, including task items such as email notifications and virtual coordination meetings. An email notification announcing the start of the project was sent to local agencies and local elected officials. The agency and elected official lists are attached in **Appendix C**. Project presentations have been given to agencies, including Charlotte County on Monday, March 22, 2021, the Punta Gorda Airport on Tuesday, March 23, 2021, and the Charlotte County MPO, the City of Punta Gorda on Wednesday, March 24, 2021. Additionally, a presentation was given to Commissioner Christopher Constance, who represents District 2 which is located north of the Lee/Charlotte County line and south of the Peace River, on Thursday, April 22, 2021, and a preliminary alternatives presentation was given collectively to all municipalities on Wednesday, August 11, 2021. Agency and elected official meeting minutes are attached in **Appendix D**.

Presentations were given to the MPO Technical Advisory Committee and Citizen Advisory Committee on Wednesday, June 30, 2021, and the MPO Board on Monday, July 19, 2021.

2.2 Public Outreach

Public involvement has been a critical component to the success of the North Jones Loop Road Feasibility Study. A kick-off newsletter announcing the start of the project was sent on January 5, 2021, to local businesses, property owners, and residents. A stakeholder list was prepared to include all interested parties located within the project study area. These stakeholders have been contacted throughout the duration of the project with updates and information as it became available. The stakeholder coordination list is attached in **Appendix E**.

3 EXISTING RESOURCES

3.1 Land Use Plans

The project is located in central Charlotte County. It primarily consists of a mix of vacant land and commercial land use, which is typical for transitioning areas with direct interchange access to the interstate highway system (I-75). The land-use types include agricultural, vacant lands, commercial-retail shopping, hotels, truck stops, restaurants, a private horse track, a decommissioned FDOT Rest Area, and residential areas.

The economic district of Punta Gorda Interstate Airport Park (formerly Enterprise Charlotte Airport Park) is located immediately north of North Jones Loop Road (CR 768), just east of I-75, and includes Punta Gorda Airport. This area is a designated Foreign Trade Zone and a Florida Enterprise Zone (Charlotte County - EZ0801); it also currently overlaps with a designated brownfield [Enterprise Charlotte Airport Park]. According to the Future Land Use Maps for Charlotte County and the City of Punta Gorda, the area surrounding the corridor will primarily support commercial development and the established economic district. Other developments proposed and approved within proximity to the study corridor (including residential, commercial, and industrial activities) will also be accommodated. For these reasons, minimal impacts or changes to proximate land uses are anticipated as a result of the project.

The three authorities that provide control and guidance over the project area are Charlotte County, Charlotte County Airport Authority, and the City of Punta Gorda. The Charlotte County future land use map (**Figure 3-1**) identifies four major land-use types: agriculture (light yellow), low density residential (yellow), commercial (light red), and Enterprise Charlotte Airport Park (dark red).

The land use shown in **Figure 3-1** as light blue is within the City of Punta Gorda jurisdiction. The City of Punta Gorda zoning map is shown in **Figure 3-2**. The dotted red line includes two land use or zoning designations: Planned Development Neighborhood (PDN) and Highway Commercial (HC).

3.1.1 Enterprise Charlotte Airport Park (ECAP)

The ECAP district intends to create a mixed industrial and business-oriented zoning district that includes 2540 acres around the Punta Gorda Airport and surrounding lands. The provisions of this district are intended to enhance and promote economic development and provide for quality and consistency in site design and development while still maintaining flexibility for market responsiveness.

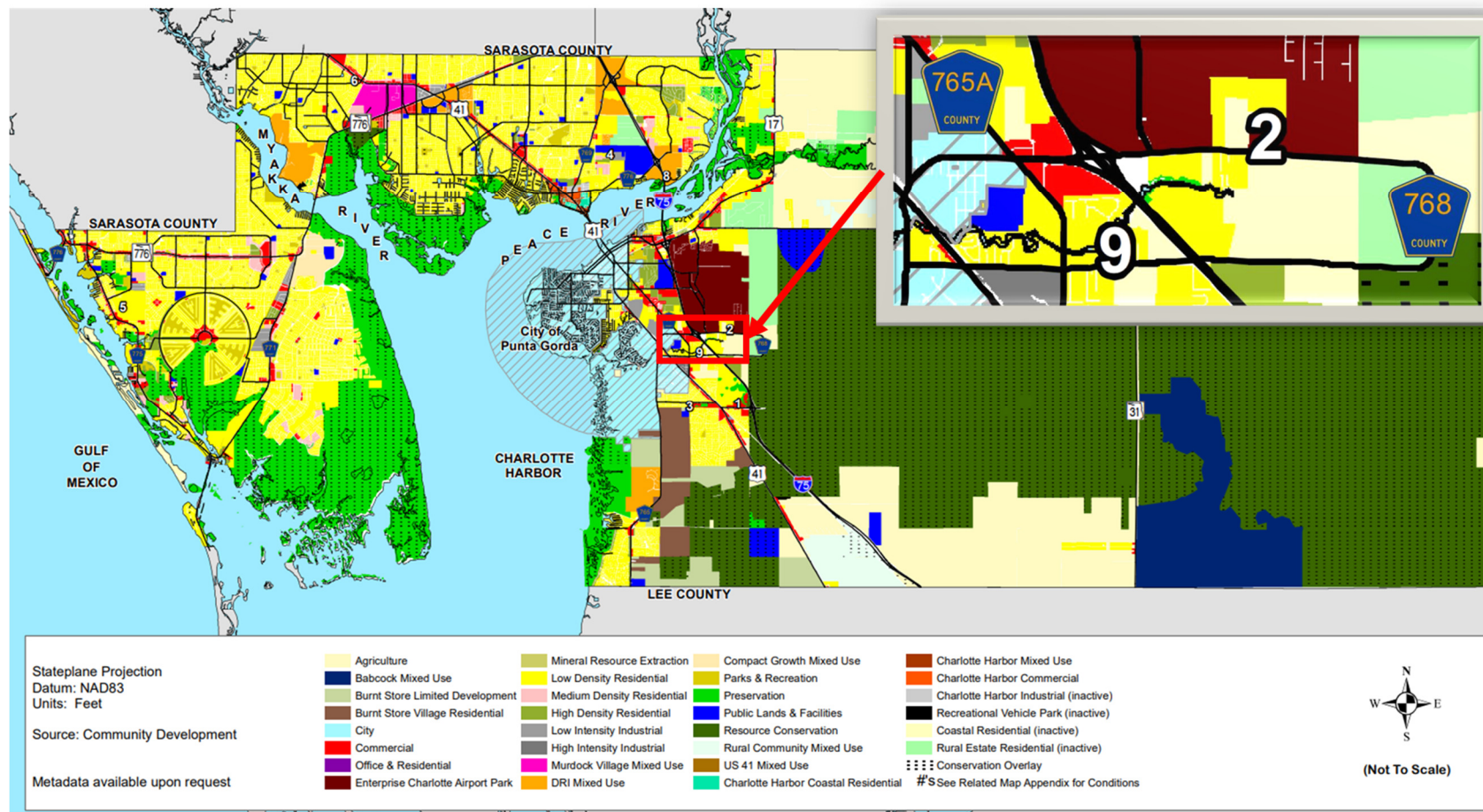


Figure 3-1: Charlotte County Future Land Use Map

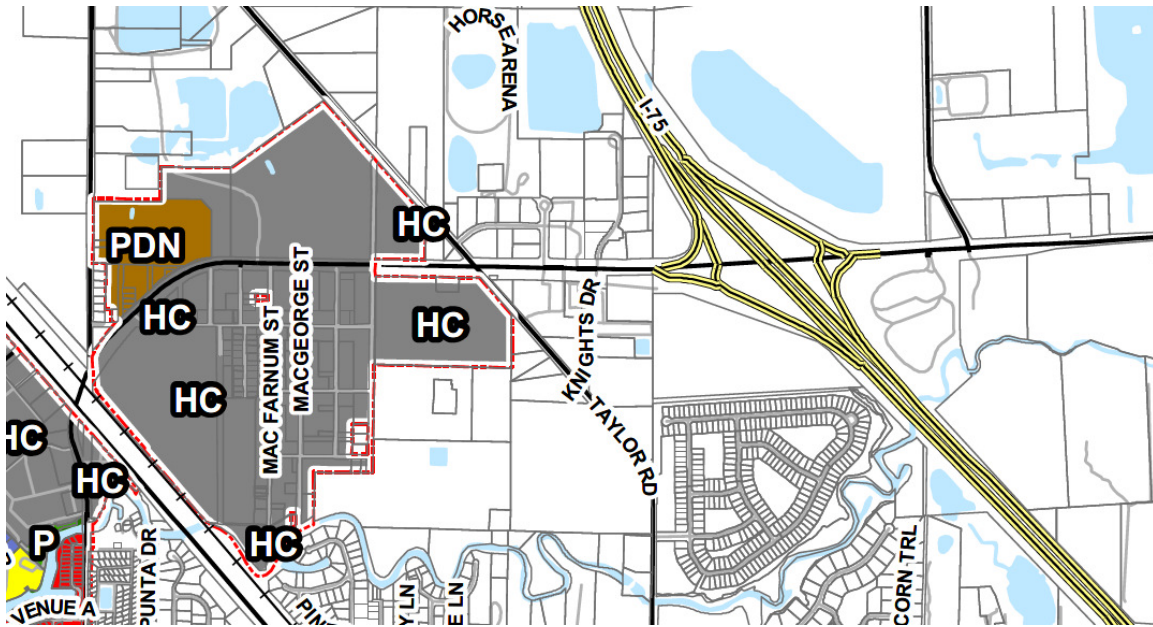


Figure 3-2: Excerpt from the City of Punta Gorda Zoning Map

3.2 Multimodal Facilities

Within the 1,320-foot project buffer, there are three existing recreation trails (Burnt Store Road Phase I, US 41 Multi-Use Trail, and Charlotte County Spine Trail 2 Corridor). There is a planned multi-use trail (South Charlotte and North Lee Trail) within the study area, extending from the Lee County Line, along US 41, Taylor Road, North Jones Loop Road, and Piper Road to US 17. As per the Office of Greenways and Trails (OGT), the planned South Charlotte and North Lee Trail is designated as an opportunity corridor, which will be implemented based on the funding availability. Therefore, none of the South Charlotte and North Lee Trail facilities are expected to be constructed within the study area prior to this project's construction. **Figure 3-3** shows planned pedestrian and bicycle facilities in the region.

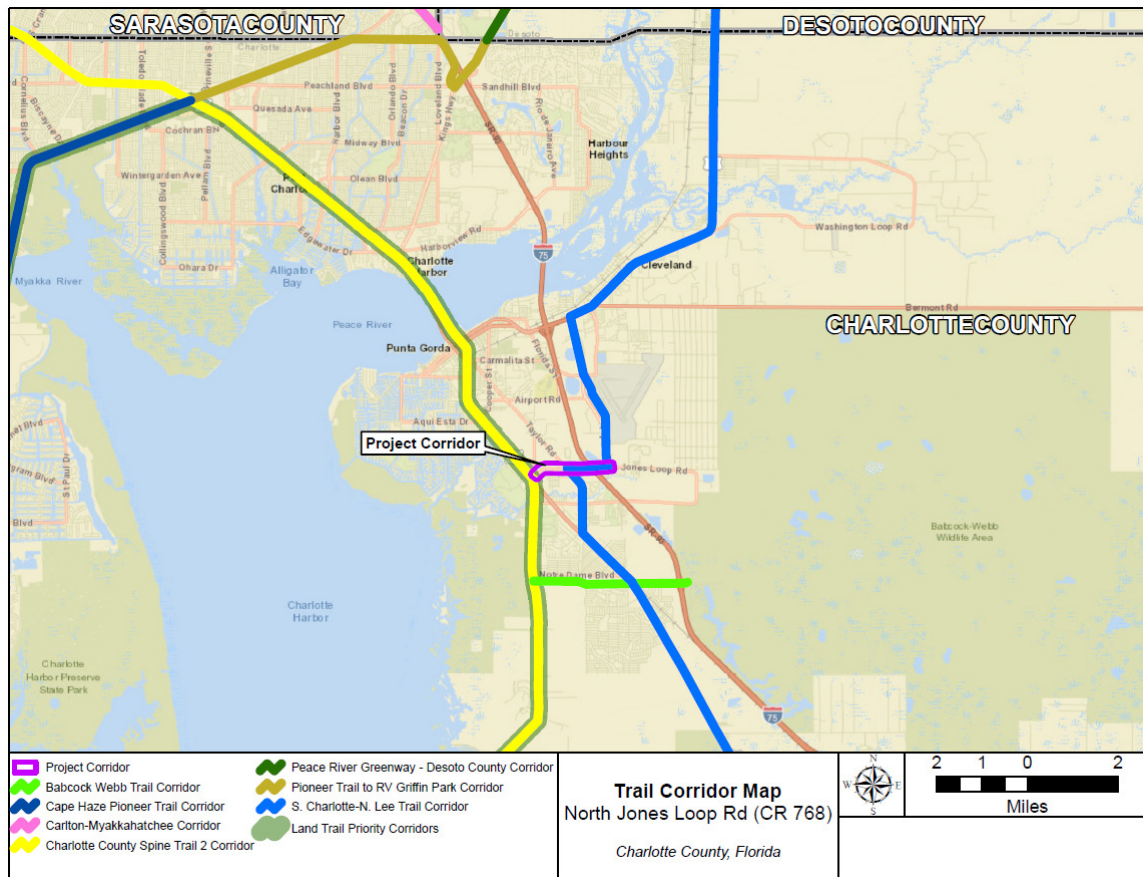


Figure 3-3: Trail Corridor Map

3.2.1 Pedestrian Accommodation

Sidewalks exist along both sides of North Jones Loop Road between Knights Drive/Mac Drive and US 41 within study limits. Crosswalks are present to accommodate pedestrian movements at all signalized intersections with the study limits except at the I-75 ramp terminal intersections where pedestrian access is restricted. There is an existing sidewalk on the east side of Piper Road. None of the other intersecting streets have sidewalks within the study limits except on the west side of Taylor Road from the intersection with North Jones Loop Road to the Walmart driveway.

3.2.2 Bicycle Facilities

Dedicated bicycle facilities are limited within the study limits. There are existing paved shoulders that are adequate for bicycle traffic, but there are no bicycle keyholes at right turn lanes except at the entrance to the Wawa. **Figure 3-4** shows the existing bike routes near the project area.

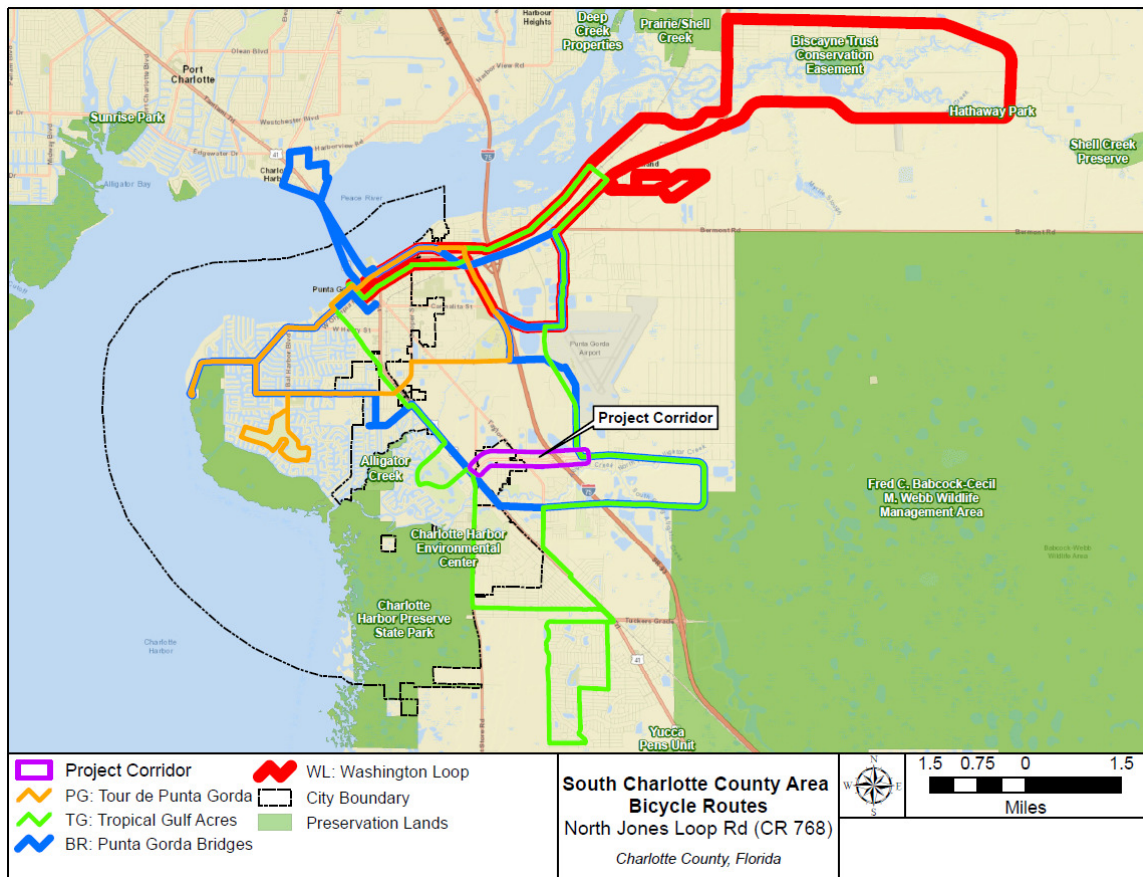


Figure 3-4: South Charlotte County Area Bicycle Routes

3.2.3 Transit Facilities

The project corridor is within Charlotte County's on-demand "curb-to-curb" dial-a-ride service open to the public. The service area consists of all of Charlotte County and includes Punta Gorda and surrounding areas. Services are provided Monday through Friday from 6:30 am to 6:00 pm and in a limited-service area on Saturday from 9:00 am to 6:00 pm.

3.3 Physical Resources

3.3.1 Potential Contamination Sites

An electronic database search of federal, state, and local agency records was undertaken along the project corridor and around the project study area. Specifically, databases within the Florida Department of Environmental Protection (FDEP) and the Florida Geographic Data Library (FGDL) were reviewed. Sites and facilities sought in the review were cleanup sites, petroleum contamination monitoring discharge sites, and spills of other potential environmental contaminants. Notably, not all of the reviewed databases returned results (i.e., only the databases with potential contamination sites are reported).

The number of potential contamination records within each database are listed in **Table 3-1**. Because a potential contamination site can be listed in more than one database, the 179 database records in Table 3-1 were mapped resulting in only 76 potentially contaminated sites. The locations of the 76 sites are shown in **Figure 3-5**, and a list of associated databases for each site is listed in **Appendix L**.

Table 3-1: Number of Database Records Indicating Potential Contamination

Database Description	Number of Database Records¹
Brownfield Areas	1
Closed Hazardous Waste Facilities	1
Compliance and Enforcement Tracking for HAZardous (CHAZ) Waste Facilities	10
Dry cleaning Solvent Program Cleanup Site	1
County Small Quantity Generators (SQG) - County SQGS	22
EPA Resource Conservation and Recovery Act (RCRA) Regulated Facilities	11
ERIC Waste Cleanup Sites (Closed, Open, On Hold, and Closed with Conditions)	3
Florida DEP Cleanup Sites (Brownfield Sites, Petroleum, Superfund, and Other Waste Cleanup)	4
Petroleum Contamination Monitoring (PCTS) Discharges	9
Registered Tanks from Storage Tank Contamination Monitoring (STCM)	20
Small Quantity Hazardous Waste Generators (SQGs)	5
Solid Waste Facilities (Facility, General Disposal Area, and Waste Processing Area)	4
Storage Tank Contamination Monitoring (STCM)	20
Super Act Risk Sources	7
Super Act Wells	2
US EPA National Pollutant Discharge Elimination System (NPDES)	57
US EPA Toxic Release Inventory (TRI)	2
Total Number of Sites Listed In the Above Databases	179
¹ Potential contamination sites could overlap sites in other databases.	

Source: Florida Department of Environmental Protection (FDEP) and the Florida Geographic Data Library (FGDL), January 2022.

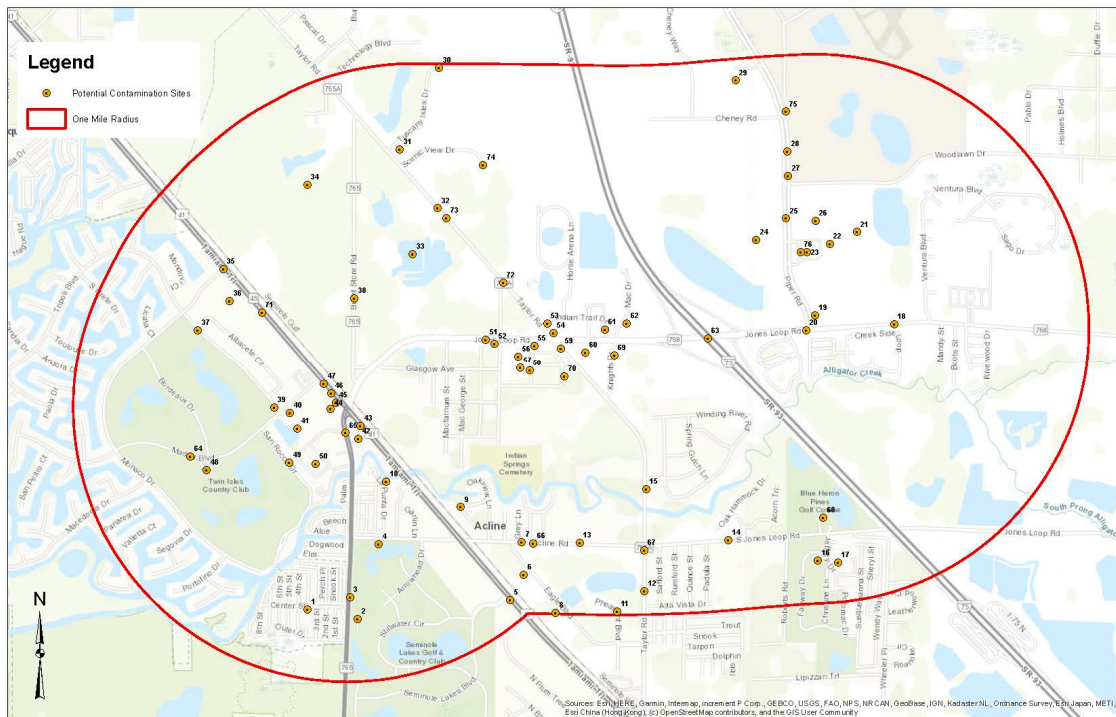


Figure 3-5: Potential Contamination Sites Locations

The results of this search do not identify contamination sites that may be in favor of or discourage the development of proposed alternatives. A more detailed screening analysis will be performed for the project study area after the project's preferred build alternative is selected.

3.3.2 Potential Noise Sensitive Sites

A review of the noise sensitive sites along the North Jones Loop Road project corridor was performed. Six noise sensitive sites were identified as having the potential to be impacted by traffic noise. These sites include an outdoor use area at the Knights Inn Motel, an outdoor dining area at the Dairy Queen/Marathon Gas Station, and four residences located along Burnt Store Road and Glasgow Avenue.

3.4 Socioeconomic

The project area consists of agricultural, commercial/retail/office, vacant non-residential land uses, and a few single-family homes on the western end of the corridor. Community features identified within the 500-foot project buffer include:

- The US 41 Multi-Use Trail located to the west along US 41
- The proposed South Charlotte and North Lee Trail
- The Charlotte County Spine Trail 2 Corridor
- The Burnt Store Road Phase I Trail

The South Charlotte and North Lee Trail and the Charlotte County Spine Trail 2 Corridor are planned multi-use trail developments by the Office Greenways and Trails (OGT). The Charlotte County Spine Trail 2 Corridor is part of the Shared-Use Nonmotorized (SUN) Trail Network.

Table 3-2 shows the comparison of demographic characteristics between Charlotte County and the project area. Compared to Charlotte County, the project area contains a higher White population, a lower minority population, a lower percentage of individuals age 18 and under, and a higher percentage of individuals age 65 and over. Populations within the project area also show a

lower percentage of housing units with no vehicle available and a notably higher median family income.

Table 3-2: Comparison of Charlotte County and Project Area Demographics

Demographic Characteristics	Project Area	Charlotte County
White (Race)	94.2%	90.0%
Minority	5.8%	10.0%
Age 18 and Under	11.7%	14.3%
Age 65 and Over	34.1.1%	34.1%
Housing Units with No Vehicles Available	2.6%	4.8%
Median Family Income	\$64,106	\$54,889

Sources: US Census Bureau (2010 US Census) and US Census Bureau (2010 American Community Survey)

In the long term, the proposed project is intended to enhance the social environment and community cohesion by improving the connectivity and mobility of residents and the local workforce with employment centers in Charlotte County. These connections will be enhanced through the planned inclusion of pedestrian and bicycle facilities along the corridor. Neighborhood division or social isolation is not evident and is not expected to occur as a result of the project. Social environment and community cohesion impacts are anticipated to be minimal as access to proximate residences, businesses, and community features along the project corridor would only be temporarily affected or modified by the project.

3.4.1 Farmlands

Farmlands of Unique Importance designated as cropland and pastureland occur adjacent to the project. West of the I-75 interchange is considered North-Port-Port Charlotte urban area and is exempt from the farmlands evaluation. A farmlands evaluation and coordination with the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) may be required for the interchange and east of the interchange. Additionally, if ponds are located north of North Jones Loop Road or east of Taylor Road, a farmlands evaluation may also be required.

3.5 Cultural Resources

3.5.1 Archaeological/Historical Resources

The Florida Master Site File (FMSF) GIS database review indicates that ten (10) previously recorded historical buildings are located within the 500-foot buffer. All ten (10) buildings have been determined ineligible for listing in the National Register of Historic Places (NRHP) by the Florida State Historic Preservation Officer (SHPO). Six historic resource groups, including the Seminole Gulf Railway, the Red Fish Lodge Resource Group, Burnt Store Road, Jones Loop Road, US 41/Tamiami Trail, and Taylor Road, have been recorded within the 500-foot buffer. Of these, there is insufficient information to evaluate the Seminole Gulf Railway; the remaining five resource groups have been determined not eligible for the NRHP by the SHPO. The buffer also includes one historic bridge that has not been evaluated by the SHPO and two archaeological sites that currently have insufficient information to evaluate. It should also be noted that 21 parcels containing pre-1978 buildings are located within the 500-foot buffer, indicating that additional unrecorded resources are present. Archaeological probability is generally low along Jones Loop Road; however, the archaeological potential is high in the vicinity of Alligator Creek, where numerous archaeological sites have been recorded.

In April 2021, a cultural resource desktop analysis was completed of the proposed improvements to North Jones Loop Road in Charlotte County, Florida. The desktop analysis is provided in **Appendix F**.

3.5.2 Section 4(f)

Potential Section 4(f) resources within the 500-foot project buffer include existing and proposed publicly-owned trails and historic linear resources. Existing and proposed trails identified within the 500-foot project buffer include:

- The US 41 Multi-Use Trail located to the west along US 41 (Maintained by FDOT)
- Charlotte County Spine Trail 2 Corridor / Burnt Store Road Phase I Trail located to the west along Burnt Store Road (Maintained by Charlotte County)
- Proposed South Charlotte and North Lee Trail located along North Jones Loop (Maintenance is to be determined)

Cultural resources are located within the probable Area of Potential Effects (APE) and will be evaluated by the SHPO should the project proceed with a PD&E Study and/or permit.

3.6 Natural Resources

3.6.1 Wetlands and Surface Waters

The extent and types of wetlands in the project study limits were identified through the review of available GIS data and a field windshield survey. The following information sources were reviewed prior to conducting the field review:

- U. S. Fish and Wildlife Service National Wetland Inventory (USFWS NWI) maps.
- Southwest Florida Water Management District (SWFWMD) Land use and land cover maps (Florida Land Use, Cover, Forms and Classification System maps, FLUCFCS 2017).
- FDOT's Efficient Transportation Decision Making Summary Report (ETDM Project No. 13797, 2019); and
- True color aerial photography (2020).

Following the desktop review of the above materials, a windshield field review was conducted by experienced biologists on February 10, 2022.

The project area and surrounding buffer contain both wetlands and surface waters. **Figure 3-6** shows the field-verified land use/land cover, emphasizing the wetlands (FLUCFCS 6000) and surface waters (FLUCFCS 5000). Wetlands within the project area include palustrine forested (mixed wetland hardwood, mixed exotic hardwood) and palustrine emergent (freshwater marsh and wet prairie) systems. Surface waters generally consist of open water bodies within pasture and stormwater ponds associated with commercial and residential development.

Except for Alligator Creek, wetlands and surface waters within the project area are designated as Class III waters in accordance with Florida Administrative Code (FAC) Chapter 62-302 (Surface Water Quality Standards). Alligator Creek is situated to the south (outside) of the study area and is a Class I waterbody, Outstanding Florida Water, and part of Gasparilla-Sound Charlotte Harbor Aquatic Preserve.

Analysis of GIS data within the 500-foot project buffer for wetland and surface water FLUCFCS codes is shown in **Table 3-3**.

Table 3-3: Wetlands and Surface Waters with the Project Buffer Area

FLUCFCS Code	Description	Acres
5300	RESERVOIRS	14.08
6172	MIXED WETLAND HARDWOOD	0.04
6190	MIXED EXOTIC HARDWOOD	0.40
6410	FRESHWATER MARSHES	5.52
6430	WET PRAIRIES	3.63

Because there are only small pockets of wetland located directly adjacent to existing rights-of-way, wetland impacts are anticipated to be minimal. Should wetland impacts be proposed, the project will require an Environmental Resource Permit from SWFWMD and a State 404 permit from the Florida Department of Environmental Protection (FDEP).

3.6.2 Water Resources

Stormwater runoff from North Jones Loop Road is currently collected and treated by vegetated swales prior to offsite conveyance within the project corridor. Water quality and quantity resources within the project area include four Water Body Identifications (WBIDs), all associated with Alligator Creek and one verified impaired Florida water (Alligator Creek, WBID: 2074), the Surficial Aquifer System, one recharge area of the Floridan Aquifer, 35 Southwest Florida Water Management District (SWFWMD) Environmental Resource Permits, one SWFWMD Stormwater Management Permit, one SWFWMD Water Use Permit, 58 SWFWMD Well Construction Permits, and one National Pollutant Discharge Elimination System (NPDES) Stormwater Permit. The proposed stormwater management system associated with the project will be developed to meet the design and performance criteria established in the SWFWMD Environmental Resource Permit Applicant's Handbook Volumes I and II for the treatment and attenuation of discharges to impaired waters. The design will make every effort to maximize the treatment of stormwater runoff from the proposed roadway improvements. A Storm Water Pollution Prevention Plan will also be implemented to control the effects of stormwater runoff during construction. Therefore, minimal involvement regarding water quality and quantity resources is expected.

3.6.3 Floodplains

According to the Digital Flood Insurance Rate Map (DFIRM) 100 Year Flood Zone data, 6.92 acres (8.09 percent) of the 200-foot project buffer is located within the 100-year floodplain (Zone AE). The 100-year floodplain is primarily concentrated at the western project terminus. Due to the small extent of the 100-year floodplain within the 200-foot project buffer, minimal impact regarding floodplains is anticipated.

3.6.4 Protected Species and Habitat

The potential for the occurrence of protected species and their habitat was evaluated through the review of available GIS data and other resources, including:

- Florida Natural Areas Inventory (FNAI) protected plant and animal species lists;
- Florida Fish and Wildlife Conservation Commission (FWC) – Bald EagleNest Locator for Charlotte County
- Audubon Florida EagleWatch Public Nest App;
- FWC – Waterbird colony locator (1999);

- USFWS – Critical Habitat for threatened and endangered species;
- USFWS – South Florida wood stork Core Foraging Areas (CFA, 18.6-mile radius); and
- ETDM Summary Report (Project No. 13797, 2019).

Subsequently, a field windshield survey was conducted on February 10, 2022. Land use/land cover mapping (**Figure 3-6**) was updated to reflect the current field conditions.

Figure 3-7 depicts historically protected species occurrences from database searches. In addition, the project is located within the USFWS Consultation Areas (CA) for the Florida scrub-jay (FSJ), Audubon's crested caracara, red-cockaded woodpecker, and Florida bonneted bat (FBB). The project is outside the Charlotte County permitting area for FSJ; however, there is a suitable habitat present. Suitable roosting and foraging habitat is also available for FBB, and known roosts are located at Babcock Webb Wildlife Management Area (WMA) (~2.9 miles SE). Although the American crocodile CA does not intersect our project, Charlotte Harbor is located downstream, is in the CA, and crocodiles have been documented in Alligator Creek located just south of the project. There is potential for other protected species occurrence, including:

- Wood stork – suitable habitat observed during field review;
- Florida sandhill crane - juveniles observed during field review;
- Florida burrowing owl – suitable habitat observed during field review;
- Gopher tortoise – suitable habitat observed during field review;
- Eastern indigo snake – suitable habitat observed during field review; and
- Bald eagle - the closest documented bald eagle nests (CH027 and CH027A) are located north of North Jones Loop Road along Taylor Road. The nest east of Taylor Road (CH027) was determined to be active during the field review (one adult on the nest and one adult perched in the same tree nearby). The nest west of Taylor Road (CH027A) could not be located during the field review.

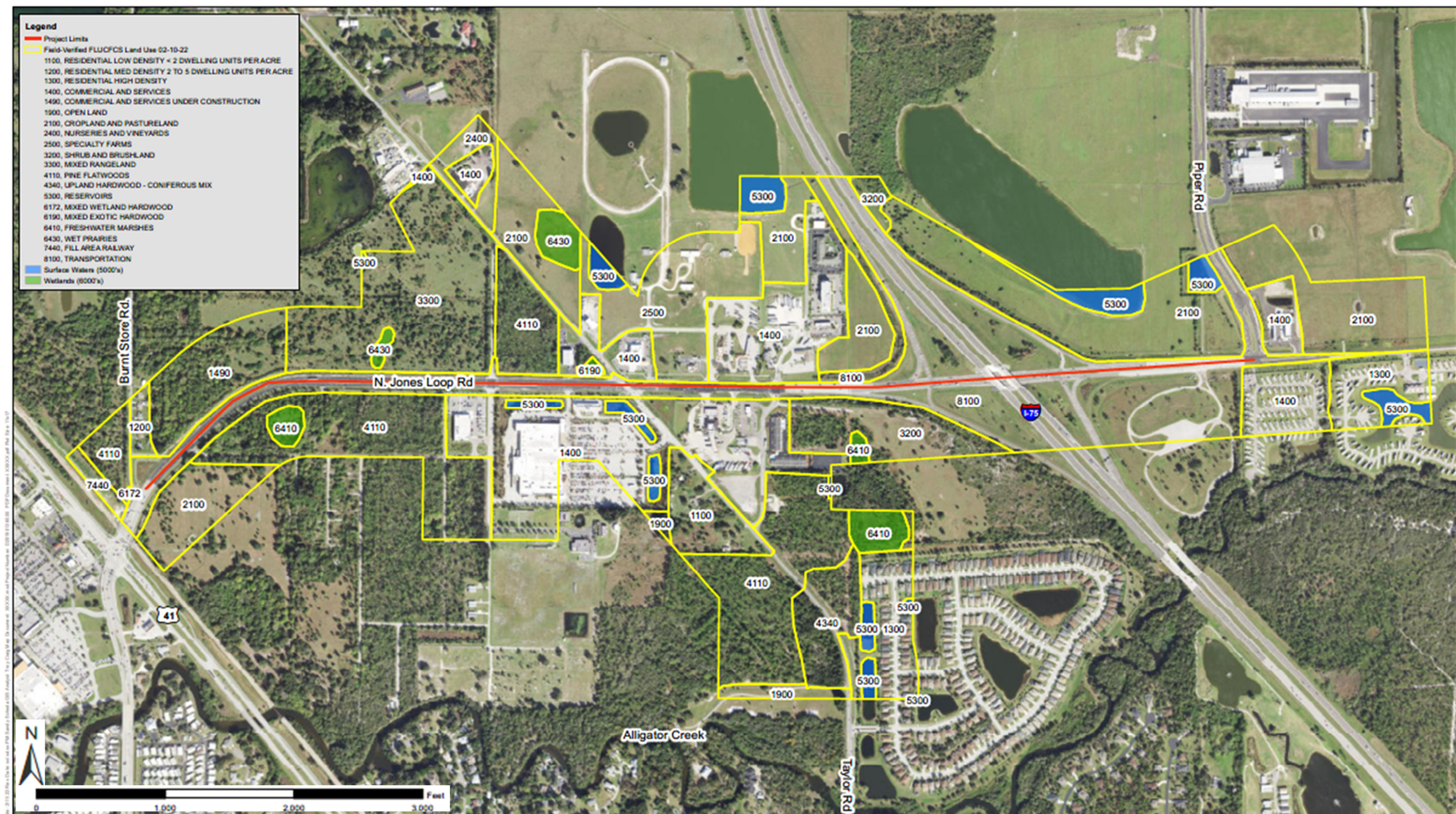
Table 3-4 presents a preliminary summary of the potential for protected species involvement. However, based on the windshield survey and that a limited additional right-of-way will be needed for project alternatives, the potential for impact to protected species is low.

Table 3-4: Potential for Protected Species Involvement

Common Name	Scientific Name	Status	USFWS CA/CFA	Potential Involvement
Audubon's crested caracara	<i>Polyborus plancus audubonii</i>	FT	CA	Unlikely
Bald Eagle	<i>Haliaeetus leucocephalus</i>	MBTA/BGPA	*	Possible
Eastern indigo snake	<i>Drymarchon corais couperi</i>	FT	*	Standard Protection Measures
Florida bonneted bat	<i>Eumops floridanus</i>	FE	CA	Possible
Florida burrowing owl	<i>Athene cunicularia floridana</i>	ST	*	Preconstruction Surveys
Florida sandhill crane	<i>Antigone canadensis pratensis</i>	ST	*	Preconstruction Surveys
Florida scrub-jay	<i>Aphelocoma coerulescens</i>	FT	CA	Possible
Gopher tortoise	<i>Gopherus polyphemus</i>	ST	*	Preconstruction Surveys
Red-cockaded woodpecker	<i>Picoides borealis</i>	FE	CA	Unlikely
Southern fox squirrel	<i>Sciurus niger niger</i>	Not listed	*	Preconstruction Surveys
Wood stork	<i>Mycteria americana</i>	FT	CFA	Likely

Notes:

FE Federal Endangered
 FT Federal Threatened
 ST State Threatened
 MBTA Migratory Bird Treaty Act
 BGPA Bald and Golden Eagle Protection Act
 CA Consultation Area



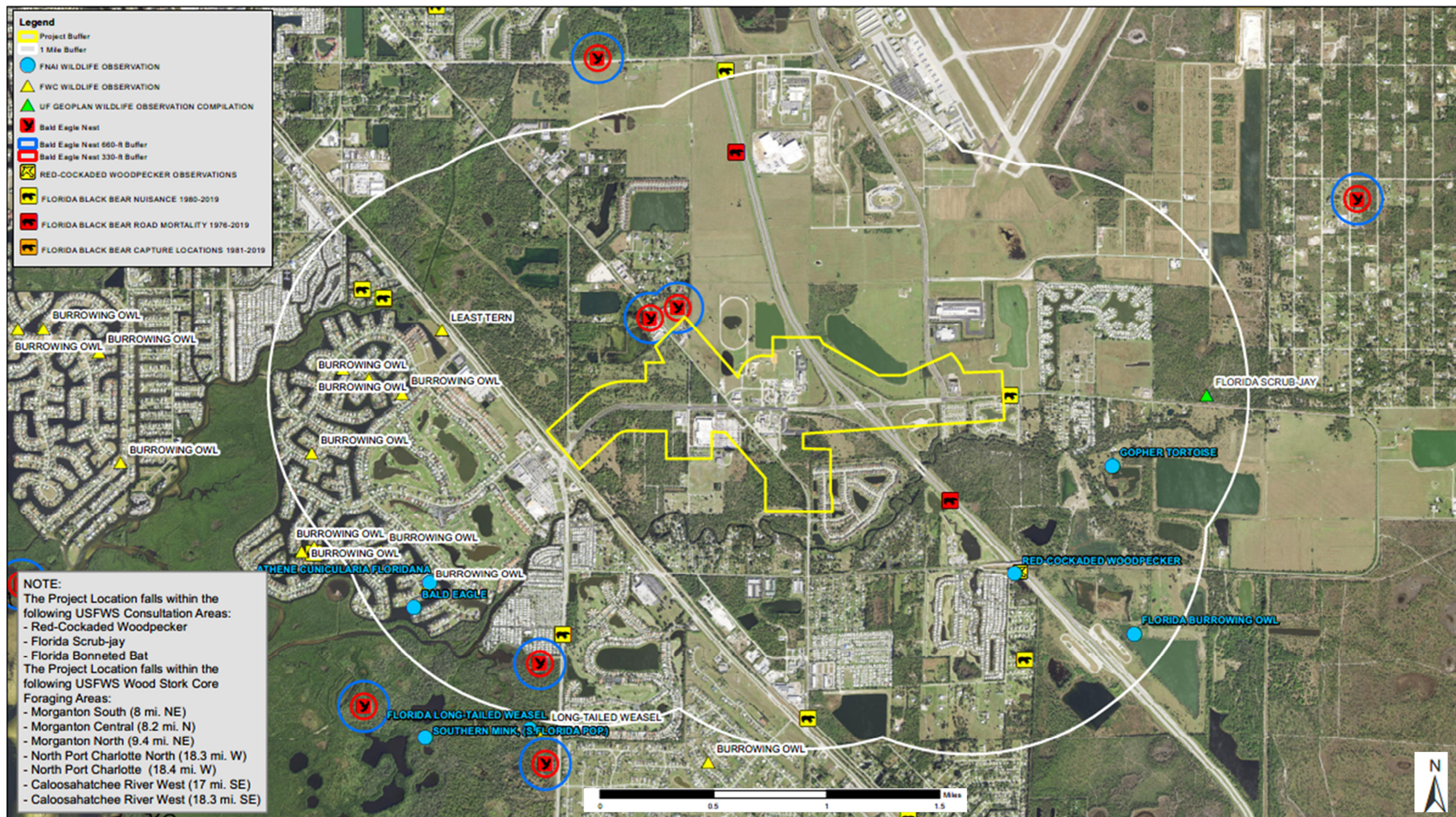


Figure 3-7: Listed Species - Historic Location Data

3.6.5 Coastal and Marine

The project is located within the Charlotte Harbor Estuarine Drainage Area. In addition, the project occurs within a coastal county under the Coastal Zone Management Act (CZMA). While the project is located approximately 0.25-mile from the nearest coastline, coastal resources will not be directly impacted. The project will be designed to meet state water quality and quantity requirements. Moreover, the best management practices will be adhered to during project construction to prevent water quality impacts downstream estuarine habitats. Therefore, minimal involvement regarding coastal and marine resources is anticipated.

3.7 Right-of-Way

North Jones Loop Road is located within Charlotte County right-of-way, except for the segment within the I-75 Interchange, which has L/A right-of-way. The following resources were utilized for estimating the existing right-of-way.

- The available existing roadway plans.
- I-75 right-of-way Map from FDOT Online Map system (01075-2402), F.A. Project No: I-75-5(16)363
- I-75 Rest Area right-of-way Map, FM 429355-1-52-01, (01075)

The existing North Jones Loop Road right-of-way varies from 170 to 200 feet. The typical width of the right-of-way is:

- 170 ft from Burnt Store Road to Taylor Road
- 200 ft from Taylor Rd to I-75 L/A right-of-way
- 200 ft within the I-75 Interchange, with L/A right-of-way
- 190 ft from the I-75 Interchange to Piper Road.

The I-75 L/A right-of-way begins just east of Mac/Knights Drive with 100 ft left/right of the baseline, providing a 200 ft wide right-of-way. In the southwest corner of the interchange, adjacent to the south L/A right-of-way, is a 60 ft wide county right-of-way for property access. A 100 ft TILF Reservation is noted along North Jones Loop Rd through the interchange. The L/A right-of-way ends at Piper Road with a 190 ft width.

The closed I-75 Rest Area property is in the southeast corner of the interchange. The right-of-way extends from North Jones Loop Road southward to Alligator Creek.

3.8 Roadway

The existing conditions information was gathered from various resources from FDOT, Charlotte County, City of Punta Gorda, available database sets, and on-site field reviews. **Table 3-5** summarizes the roadway plans which were reviewed.

Table 3-5: Previous Projects

Project #	Project Name	Agency
08821	North Jones Loop Road Extension	Charlotte County Department of Transportation
429355-1-52-01	I-75 at Jones Loop Road Rest Area Access	FDOT
4010971	Widening of Jones Loop Road and Taylor Road	Charlotte County Department of Public Works
412691-1-52-01	State Road No. 93 (I-75) at North Jones Loop Road Northbound Off-Ramp	FDOT
412691-2-52-01	State Road No. 93 (I-75) at North Jones Loop Road Southbound Off-Ramp	FDOT
413042-4-52-01	I-75 Widening from South of North Jones Loop Road to North of US 17	FDOT

3.8.1 Functional Classification

The Charlotte 2050 Comprehensive Plan Transportation Element classifies North Jones Loop Road as a minor arterial from Burnt Store Road to Piper Road. The segment of the project corridor extending from I-75 to Piper Road is designated as a Strategic Growth Highway Connector of the State of Florida, which is part of the Strategic Intermodal System (SIS) network.

The four-lane divided roadway matches a context classification of C3C due to the primarily non-residential uses with large commercial parking lots, truck stops, hotels with a disconnected or sparse roadway network, and only two residential areas located at each end of the project limits. (Source: Figure 5 of FDOT Context Classification Guide).

3.8.2 Speed

The roadway has a context classification of C3C and is within or directly adjacent to the Urban Service Area of Charlotte County and the City of Punta Gorda. According to FL Greenbook, Table 3-1, the allowable design speeds range from a minimum of 30 miles per hour (mph) to a maximum of 60 mph.

The segment from I-75 to Piper Road is classified as an SIS Strategic Growth Highway Connector. SIS Procedure 525-030-260 identifies 45 mph as the minimum design speed for SIS Connectors off the State Highway System. The existing design speed is 45 mph throughout the project limits. The existing posted speed is 35 mph from Burnt Store Rd to Glasgow Ave and 45 mph from Glasgow Ave to Piper Road.

3.8.3 Access Management

The applicable access management requirements for this roadway are defined by Charlotte County (east of I-75) and FDOT SIS criteria (from I-75 to Piper Road). The existing median openings and spacing are summarized in **Table 3-6**.

Table 3-6: Existing Access

Access Management Classification: County Standards				
Functional Classification: Urban Minor Arterial				
Speed Limit: 45 MPH				
Strategic Intermodal Systems (SIS) Facility: Yes (from I-75 to Piper Rd)				
Existing Opening within Study Area	Mile Post	Existing Median Opening Type	Median Opening Spacing Existing / Standard (Feet)	Connection Spacing Existing / Standard (Feet)
Burnt Store Road	0.10	Full	525 / 1,320	525 / 440
Glasgow Ave	0.20	Full	531 / 1,320	531 / 440
MacCarty St (turnout only)	0.43	Full	1,214 / 1,320	1,214 / 440
Indian Springs Cemetery Rd	0.68	Signal	1,313 / 1,320	1,313 / 440
Walmart Driveway	0.70	None	N/A	454 / 440
Taylor Road	0.88	Signal	1,039 / 1,320	585 / 440
WaWa Driveway	0.92	None	N/A	190 / 440
Springwater Drive / Pilot Driveway	1.00	Directional	658 / 1,320	460 / 440
Pilot / Wendy's Driveway	1.04	None	N/A	322 / 440
Indian Trail Driveway	1.07	None	N/A	338 / 440
Mac / Knights Drive	1.10	Signal	528 / 1,320	190 / 440
I-75 SB Ramps	1.33	Signal	1,214 / 1,320	1,214 / 440
I-75 NB Ramps	1.52	Signal	1,003 / 1,320	1,003 / 440
FDOT Rest Area (Closed)	1.73	Full	1,109 / 1,320	411 / 440
Piper Road (including Creekside RV Resort maintenance access)	1.81	Full	422 / 1,320	422 / 440
7-11 Driveway	1.87	N/A	N/A	342
Creekside RV Resort Driveway	2.03	N/A	N/A	1,202 / 440

3.8.4 Intersection Layout

Five (5) signalized intersections and three (3) unsignalized intersections exist within the study limits. Two intersections are at North Jones Loop Road and the I-75 Ramps. Any proposed improvements at the I-75 interchange will be coordinated with FDOT District 1 Interstate group. These improvements will be further evaluated as part of the regional I-75 project.

3.8.4.1 Burnt Store Road Intersection

In 1993, Burnt Store Road was relocated to connect with the newly constructed North Jones Loop Road, as shown below in **Figure 3-8**. This two-lane roadway continues north for 1 mile and connects with Taylor Road. The eastbound to northbound left-turn has an 85 ft storage lane and 85 ft taper. Per the 1993 plans, this intersection is within a superelevated section ($e=0.04$) with some pavement plateau at the intersection. North Jones Loop Road has a posted speed of 35 mph at this location. It is in close proximity (approximately 325') of the existing railroad crossing to the west, adjacent to US 41.

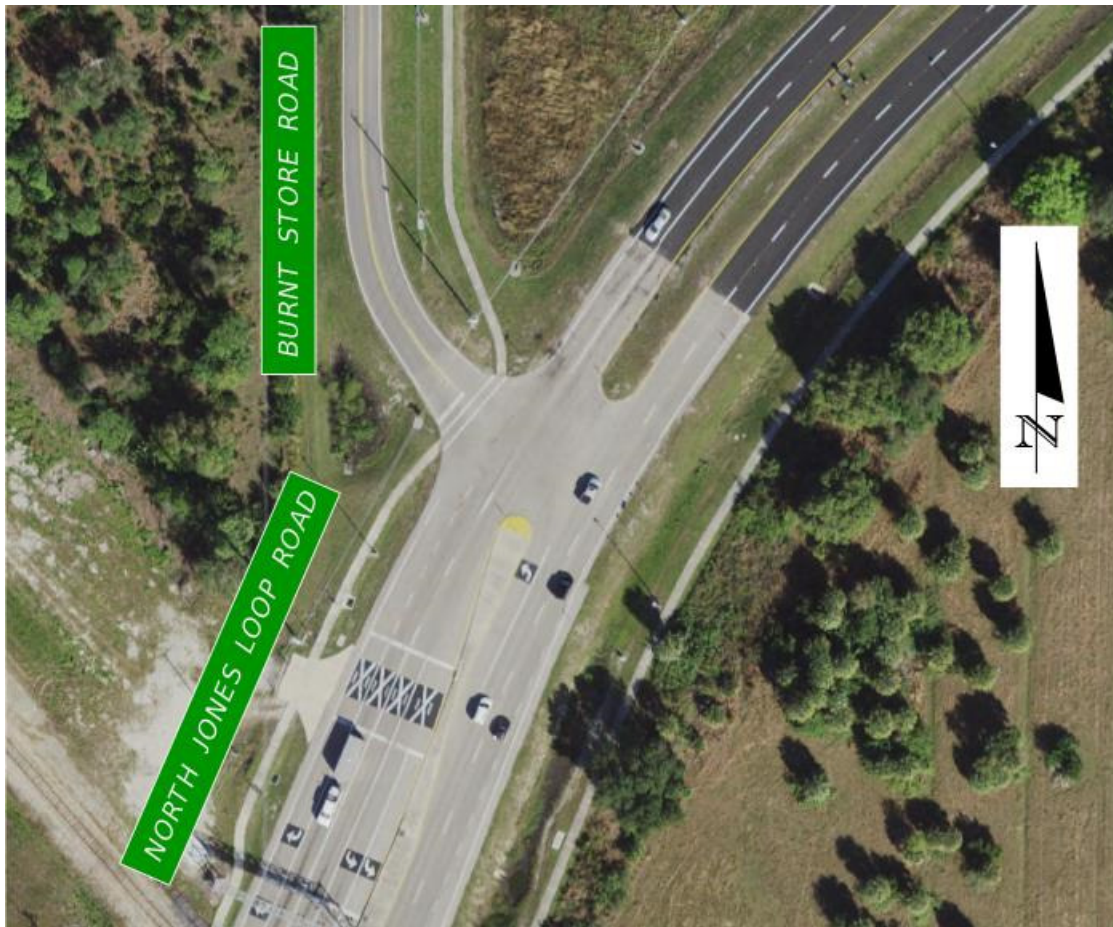


Figure 3-8: Burnt Store Road Intersection

3.8.4.2 Glasgow Avenue Intersection

The Glasgow Avenue intersection is an unsignalized three legged intersection shown in **Figure 3-9**. At this intersection, there is a single turn lane for the eastbound left turn to Glasgow Avenue with 75 feet of storage and a taper of 150 feet. Glasgow Avenue is a minor local road providing residential access and eventually terminating at Indian Springs Cemetery Road. North Jones Loop Road has a posted speed of 35 mph at this location. The north leg provides a minor road connection to Taylor Road. A pedestrian crosswalk is provided across the Glasgow Avenue approach.



Figure 3-9: Glasgow Avenue Intersection

3.8.4.3 Indian Springs Cemetery Road Intersection

The Indian Springs Cemetery Road intersection is signalized with mast arm signals, as shown in **Figure 3-10**. The eastbound left-turn lane has a 75 ft storage lane plus a 175 ft taper, and the westbound left-turn lane has 265 ft of storage plus a 50 ft taper. The south leg serves the Aldi market and Walmart Supercenter. North Jones Loop Road has a posted speed of 45 mph at this location. The north leg provides a minor road connection to Taylor Road. Pedestrian crosswalks are provided on all approaches.



Figure 3-10: Indian Springs Cemetery Road Intersection

3.8.4.4 Taylor Road Intersection

The Taylor Road intersection is skewed 47° and has mast arm signals for all approaches, as shown in **Figure 3-11**. The south leg continues 1.5 miles south to US 41, and the north leg continues 3.4 miles to US 41. The left turn storage lengths are: 195 ft eastbound, 165 ft westbound, 300 ft northbound, and 95 ft southbound. The eastbound approach right turn lane has 160 ft of storage. The westbound approach has no dedicated right turn lane. Both the northbound and southbound approaches have directional right turn lanes with no storage. Pedestrian crosswalks are provided on all approaches. North Jones Loop Road has a posted speed of 45 mph at this location.



Figure 3-11: Taylor Road Intersection

3.8.4.5 Mac Drive / Knights Drive Intersection

This intersection serves Mac Drive on the north leg and Knights Drive on the south leg. Mac Drive serves as an access road to the hotels and fast-food restaurants. Knights Drive is an active connection to Taylor Road and serves as a bypass link to avoid the skewed Taylor Road intersection. Mast arm signals are provided on all approaches, as shown in **Figure 3-12**. The eastbound and westbound left-turn lanes have a 150 ft storage lane plus 75-90 ft tapers. The eastbound approach has a right turn lane with 40 ft storage plus a 90 ft taper. The northbound right turn lane has 45 ft of storage, and the southbound right turn lane has 65 ft of storage. Pedestrian features stop at this intersection and do not continue east through the I-75 interchange area. On the west leg, one pedestrian crosswalk is provided across North Jones Loop Road. North Jones Loop Road has a posted speed of 45 mph at this location.

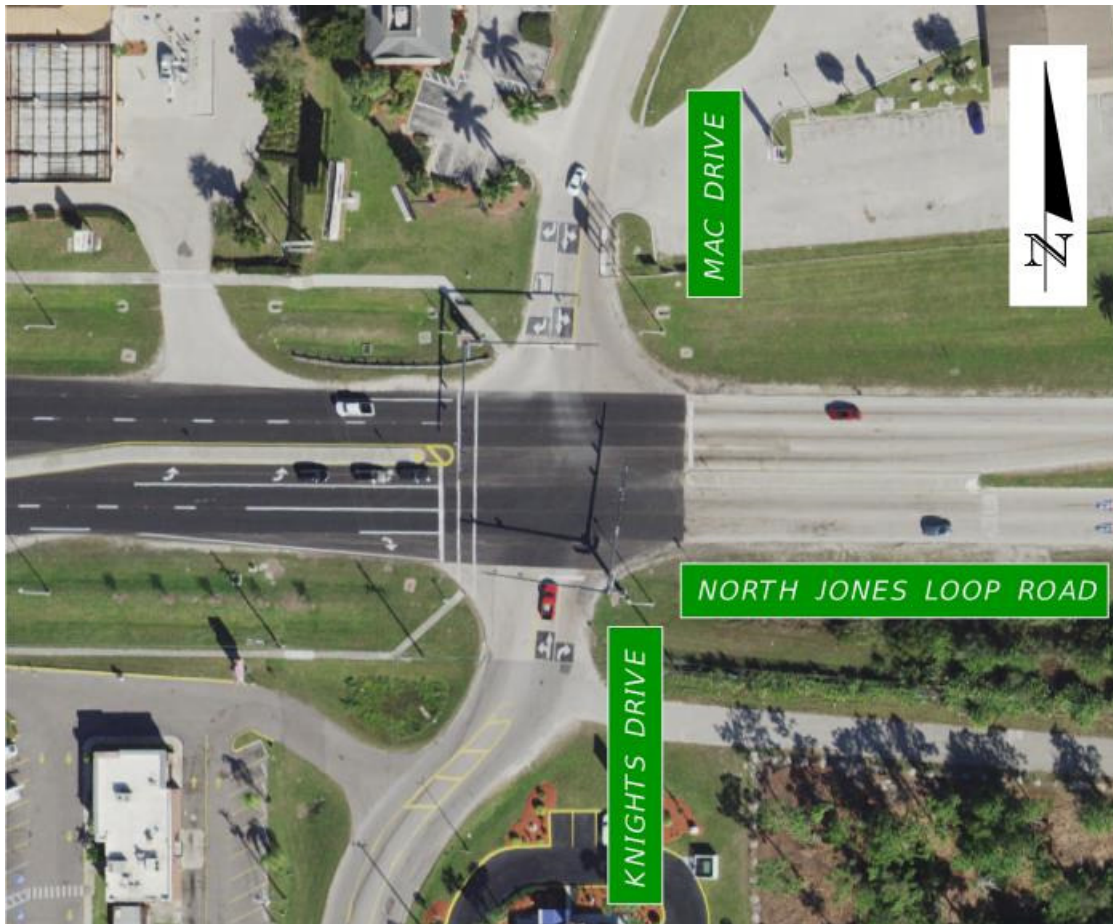


Figure 3-12: Mac Drive / Knights Drive Intersection

3.8.4.6 I-75 Southbound Ramp Intersection

This intersection is one of two that make up the I-75 interchange. The I-75 interchange at North Jones Loop Road is a typical diamond interchange, and this intersection provides access to and from the southbound lanes of I-75. Mast arm signals are provided on all approaches, as shown in **Figure 3-13**. Ramp traffic is one way from north to south. The southbound off-ramp has dual left-turn lanes and right turn lanes, both signalized. The westbound left turn lane has a 225 ft storage lane plus a 100 ft taper. There are no existing pedestrian facilities at this intersection or anywhere within the I-75 interchange. North Jones Loop Road has a posted speed of 45 mph at this location.



Figure 3-13: I-75 Southbound Ramp Intersection

3.8.4.7 I-75 Northbound Ramp Intersection

This intersection is one of two which make up the I-75 interchange. The I-75 interchange at North Jones Loop Road is a typical diamond interchange, and this intersection provides access to and from the northbound lanes of I-75. Mast arm signals are provided on all approaches, as shown in **Figure 3-14**. Ramp traffic is one way from south to north. The northbound off-ramp has dual left-turn lanes and right turn lanes, both signalized. The eastbound left-turn lane has a 135 ft storage lane plus a 100 ft taper. There are no existing pedestrian facilities at this intersection or anywhere within the I-75 interchange. North Jones Loop Road has a posted speed of 45 mph at this location.



Figure 3-14: I-75 Northbound Ramp Intersection

3.8.4.8 Piper Road Intersection

The Piper Road intersection provides the southern access point to the Punta Gorda Airport and the Enterprise Charlotte Airport Park. North Jones Loop Road has four lanes on the west approach and tapers to a two-lane undivided rural roadway 400 ft east of the intersection. Piper Road is stop sign controlled, and North Jones Loop Road is not controlled, as shown in **Figure 3-15**. Piper Road has two northbound and southbound lanes, plus a striped out right turn lane approaching North Jones Loop Road. The eastbound left-turn lane has a 125 ft storage lane plus a 175 ft taper. A sidewalk is provided on the east side of Piper Road, but no crosswalks are present. North Jones Loop Road has a posted speed of 45 mph at this location.

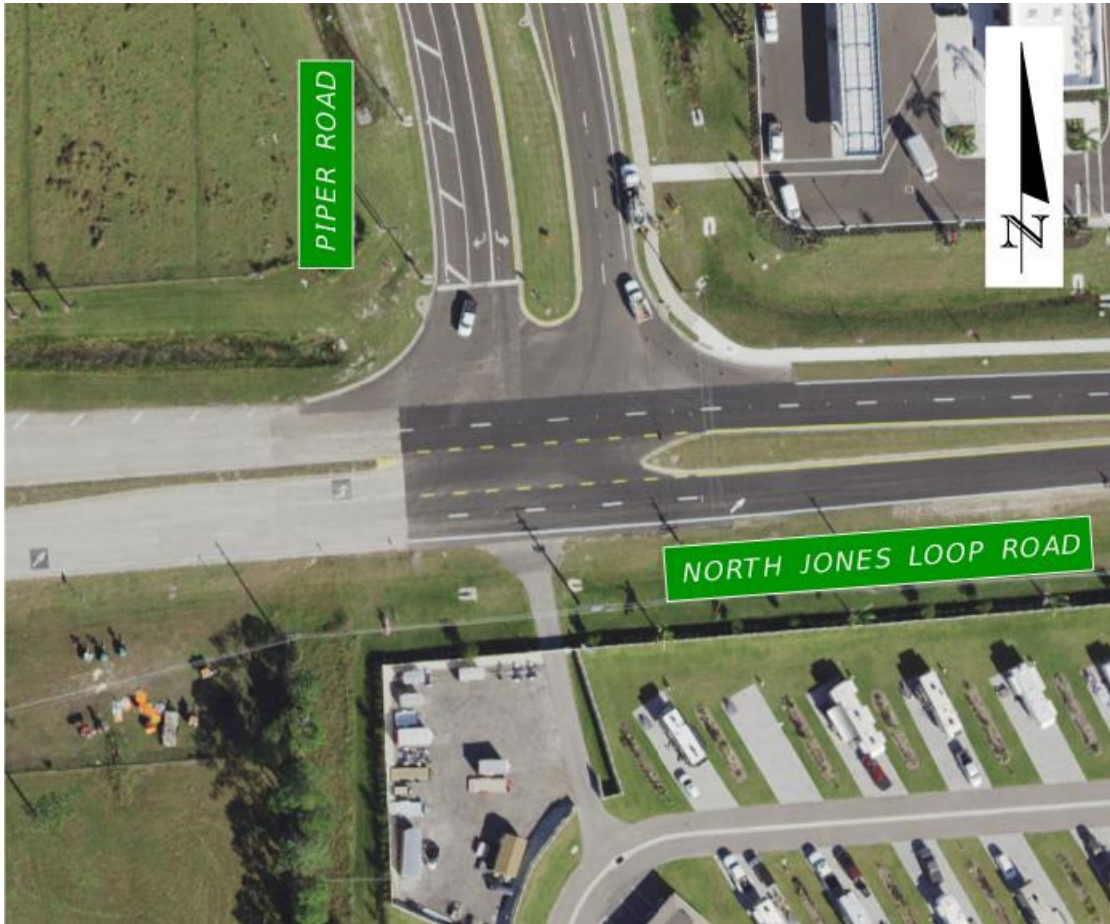


Figure 3-15: Piper Road Intersection

3.8.5 Typical Sections

North Jones Loop Road is a four-lane divided rural roadway from Burnt Store Road to Piper Road.

- The section west of Taylor Road was constructed in 1993.
- The section from Taylor Road to I-75 widened to a 4-lane divided roadway in 1993.
- The section through the I-75 Interchange had 12 ft (10 ft paved) shoulders added in 2017.

Most cross streets have a two or three-lane typical section with minor swales for stormwater collection and conveyance. **Table 3-7** lists the major typical section features for the mainline roadway and cross streets.

Table 3-7: Existing Typical Section Features

Roadway	Segment	Travel Lanes	Outside Shoulder Total (paved)	Inside Shoulder Total (paved)	Median	Drainage	Sidewalk	Right-of-Way
North Jones Loop Road	Burnt Store Rd To Taylor Rd	4–12 ft	8 ft (4 ft)	6 ft (1 ft)	22 ft Depressed	Linear Conveyance and Treatment Swales with Ditch Blocks	5 ft	170 ft
North Jones Loop Road	Taylor Rd to I-75 SB ramps	4–12 ft	8 ft (4 ft)	N/A	22 ft raised Type E curb	Dual Swales:- Linear Treatment Swales before overflowing to Linear Conveyance Swales	5 ft (N/A - E of Mac Drive)	200 ft
North Jones Loop Road	I-75 SB Ramps to NB Ramps	4–12 ft with 12' aux. lanes	12 ft (10-12 ft) underbridge	N/A	22 ft raised Type E curb	Linear Swales and Dry Detention Ponds	N/A	190 ft min. at Knights Rd
North Jones Loop Road	NB Ramps to Piper Rd	4–12 ft with 12' aux. lanes	8 ft (4 ft)	N/A	22 ft raised Type E curb	Linear conveyance Swales and Dry Detention Ponds	N/A	190 ft
Burnt Store Road	Cross Street	2-12 ft	4 ft	N/A	N/A	Linear Conveyance Swales	N/A	60 ft
Glasgow Avenue	Cross Street	16 ft wide pavement	N/A	N/A	N/A	Linear Conveyance Swales	N/A	50 ft
Indian Springs Cemetery Road	Cross Street	16 ft wide pavement	N/A	N/A	N/A	Linear Conveyance Swales	N/A	66 ft
Taylor Road	Cross Street	2-12 ft	N/A	N/A	12 ft Left Turn lane	Linear Conveyance Swales	5 ft on S.E. corner	90 ft
Springwater Drive	Cross Street	2-12 ft	(12 ft)	N/A	N/A	Closed Conveyance System, Offsite Wet Detention Pond	N/A	80 ft
Mac/Knights Drive	Cross Street	2-12 ft	N/A	N/A	12 ft Left Turn Lane	Linear Conveyance Swales, Offsite Wet Detention Pond	N/A	60 ft
Piper Road	Cross Street	4-12 ft	(4 ft)	N/A	32 ft	Closed Conveyance System, Wet Detention Pond	8 ft on east side	136 ft

3.8.6 Horizontal and Vertical Geometry

The previous project plans were reviewed to define the existing geometry for North Jones Loop Road and identify any deficiencies in the existing alignment relative to the 2022 FDOT Design Manual. **Table 3-8** denotes the reference documents utilized to define existing geometry, **Table 3-9** summarizes the existing horizontal geometry, and **Table 3-10** summarizes the existing vertical geometry.

Table 3-8: Project References for Existing Geometry

Project #	Project Name	Sheet #
08821	North Jones Loop Road Extension	8,9,11 of 24
4010971	Widening of Jones Loop Road and Taylor Road	2 of 9
413042-4-52-01	I-75 Widening from South of North Jones Loop Road to North of US 17	87 (layout) and 368-375 (X.S.) of 761

Table 3-9: Existing Horizontal Geometry

Horizontal Geometric Element	Radius of Curve (feet) FDM Table 210.8.2	Length of Curve (feet) FDM Table 210.8.1	Deflection Angle (Δ) at intersection FDM Table 212.7.1	Design Speed (mph)	e FDM 210.9.2	Meets Criteria?
Curve 1 E of Burnt Store Rd	1,000.00 > 559	444.50 > 400	25° 28' 05" (RT)	45	0.040	Yes
Curve 2 E of Glasgow Ave	1,000.00 > 559	754.80 > 400	43° 14' 48" (RT)	45	0.050	Yes
PI 1 at Taylor Rd	N/A	N/A	0° 07' 31" (LT) at intersection	45	N/A	Yes
Curve 3 W of I-75	3,819.72 > 559	317.78 Min. 400'	4° 46' 00" (LT)	45	NC	No for length of curve

Table 3-10: Existing Vertical Geometry

Vertical Alignment Name	VPI STA & EL	Grade (%) FDM Table 210.10.1 (6% max)	Change in Grade w/o Vertical Curve FDM Table 210.10.2 (0.70% max)	Design Speed (mph)	Meets Criteria?
PGL	VPI Sta. 15+26.94, E.L. 8.37, Begin CL PGL			45	No for grade break at Sta. 16+43.00.
		1.905%			
	Sta. 16+43.00, E.L. 10.58, No V.C.		1.731%		
		0.174%			
	Sta. 19+60.00, E.L. 11.13, No V.C.		0.174%		
		0.000%			
	Sta. 20+56.47, E.L. 11.13, End CL PGL				
PGL LT	Sta. 20+56.47, EL. 11.29, Begin PGL LT			45	Yes
		0.000%			
	Sta. 22+92.79, E.L. 11.29, No V.C.		0.146%		
		-0.146%			
	Sta. 26+00.00, E.L. 10.84, No V.C.		0.301%		
		0.155%			
	Sta. 29+16.95, E.L. 11.33, No V.C.		0.075%		
		0.080%			
	Sta. 35+75.57, E.L. 11.86, No V.C.		0.119%		
		0.199%			
	Sta. 39+11.75, E.L. 12.53, No V.C.		0.001%		
		0.200%			
	Sta. 41+61.75, EL. 13.03, No V.C., End PGL LT				

Table 3-10: Existing Vertical Geometry (continued)

Vertical Alignment Name	VPI STA & EL	Grade (%) FDM Table 210.10.1 (6% max)	Change in Grade w/o Vertical Curve FDM Table 210.10.2 (0.70% max)	Design Speed (mph)	Meets Criteria?
PGL RT	Sta. 20+56.47, EL. 10.96, Begin PGL RT			45	Yes
		0.000%			
	Sta. 22+92.79, E.L. 10.96, No V.C.		0.500%		
		-0.500%			
	Sta. 23+88.79, E.L. 10.48, No V.C.		0.500%		
		0.000%			
	Sta. 26+00.00, E.L. 10.48, No V.C.		0.230%		
		0.230%			
	Sta. 27+72.95, E.L. 10.88, No V.C.		0.499%		
		0.729%			
	Sta. 29+16.95, E.L. 11.93, No V.C.		0.629%		
		0.100%			
	Sta. 36+14.15, E.L. 12.63, No V.C.		0.503%		
		-0.403%			
	Sta. 37+58.15, E.L. 12.05, No V.C.		0.501%		
		0.098%			
	Sta. 39+11.75, E.L. 12.20, No V.C.		0.231%		
		0.329%			
	Sta. 41+61.75, EL. 13.03, No V.C., End PGL RT		0.329%		
PGL LT	Sta. 41+61.75, EL. 13.03, Begin PGL LL			45	Yes
	0.334%				
	Sta. 45+00.00, E.L. 14.16, No V.C.	0.236%			
	0.570%				
	Sta. 50+50.00, E.L. 17.30, No V.C.	0.449%			
	0.121%				
	Sta. 60+79.96, E.L. 18.55, End PGL LL				
	Profile information beyond this point is not available. By inspection, it is a flat profile and is expected to meet the criteria.				

3.8.7 Pavement Conditions

In 2020, Charlotte County paving program completed a resurfacing of North Jones Loop Road. The county resurfacing program provides milling/resurfacing without extensive construction plans. Given this recent resurfacing effort, the pavement is in good condition from the Burnt Store Road intersection through the Mac Drive/Knights Drive intersection. From the Mac Drive/Knights Drive intersection to Piper Road, visual inspection shows the existing pavement in fair condition with extensive cracking and rutting noted.

3.8.8 Drainage

3.8.8.1 Floodplains

The project is located within FEMA Zone X and AE with a 100-year flood elevation of 8. The flood zones were determined from the FEMA Firmettes, Flood Insurance Rate Maps with Community Panel numbers 12015C0263F and 12015C0244F, effective May 5, 2003. Refer to **Appendix G** for FEMA Firm Maps. The portion of the project within FEMA Zone AE is within the mill and resurfacing section and will not require floodplain compensation. Since FEMA Zone X is located outside the 100-year floodplain, floodplain compensation is not required.

3.8.8.2 Soils

Soil information for the project was obtained from the Web Soil Survey provided by the National Resource Conservation Service (NRCS) for the project corridor. Refer to **Appendix G** for Soil Maps which include the following information soil number and name, depth to the water table, frequency of flooding, frequency of ponding, and hydrologic soils group. The Web Soil Survey shows that the pond alternatives and swales are predominately within Myakka Fine Sand, 0 to 2 percent slopes – Poorly drained with a depth to the water table of approximately 12 inches and a hydrologic soil group A/D.

3.8.8.3 Existing Drainage Patterns and Permits

The project's receiving waterbody is Alligator Creek. Alligator Creek is part of the Florida Department of Environmental Protection's identified Outstanding Florida Water (OFW) within the Gasparilla Sound-Charlotte Harbor Aquatic Preserve. The existing roadway falls within eight (8) basins. See **Figure 3-16** for Existing Basin Map for basin limits. Below are the Southwest Florida Water Management District (SWFWMD) permits associated with each basin:

- (Permit 11011) - Basin 1: Seaboard Coast Line (SCL) Railroad crossing to Indian Springs Cemetery Road Roadway – Jones Loop Road is collected and treated in a wet detention ditch with ditch blocks. Runoff within this basin outfalls to an existing southeasterly SCL railroad ditch.
- (Permit 11011) - Basin 2A, 2B: Indian Springs Cemetery Road to Taylor Road – Jones Loop Road runoff is collected and treated in a wet detention ditch with ditch blocks and outfalls north to the Indian Springs Cemetery Road ditch.
- (Permit 11011) - Basin 2C, 2D: Indian Springs Cemetery Road to Taylor Road – Jones Loop Road runoff is collected and treated in a wet detention ditch with ditch blocks and outfalls south to the Indian Springs Cemetery Road ditch.
- (Permit 10971) - Basin 3A, 3B: Taylor Road to Springwater Drive - Parallel retention treatment and conveyance ditches are used to collect and treat runoff from Jones Loop Road and outfalls north to a ditch along Taylor Road.
- Basin 4A: Taylor Road – Unpermitted roadway runoff flows north within the existing ditches.
- Basin 4B: Taylor Road – Unpermitted roadway runoff flows south within the existing ditches.
- Basin 4C: Knights Drive – Unpermitted roadway runoff flows south to Taylor Road.

- (Permit 255) – Basin 5: Indian Springs Center – Runoff from the Indian Springs Center is conveyed via closed conveyance to a wet detention pond for treatment and attenuation.
- (Permit 1154) – Basin 6: McQueen Commercial Park - Runoff from the McQueen Commercial Park is conveyed via ditches to a wet detention pond for treatment and attenuation.
- (Permit 32152, 35560) - Basin 7A, 7C, 7D: Mac Drive to I-75 ramps – Mostly unpermitted roadway runoff which flows north to the existing ditch along the I-75 ramps. There is an existing detention pond located in the northwest quadrant that treats a small amount of runoff along the two-lane westbound ramp.
- (Permit 32152, 35560) - Basin 7B, 7C, 7E: Mac Drive to I-75 ramps – Mostly unpermitted roadway runoff which flows north to the existing ditch along the I-75 ramps. There is an existing detention pond located in the southeast quadrant that treats a small amount of runoff along the two-lane westbound ramp.
- (Permit 24645) - Basin 8A, 8C: Jones Loop Road – Unpermitted roadway runoff is conveyed within the existing ditches and flows to an existing pipe at the Creek RV, which flows under the RV parking lot to Alligator Creek.
- (Permit 32094) - Basin 8C: Piper Road – Runoff from Piper Roadway is conveyed to an existing wet detention pond.

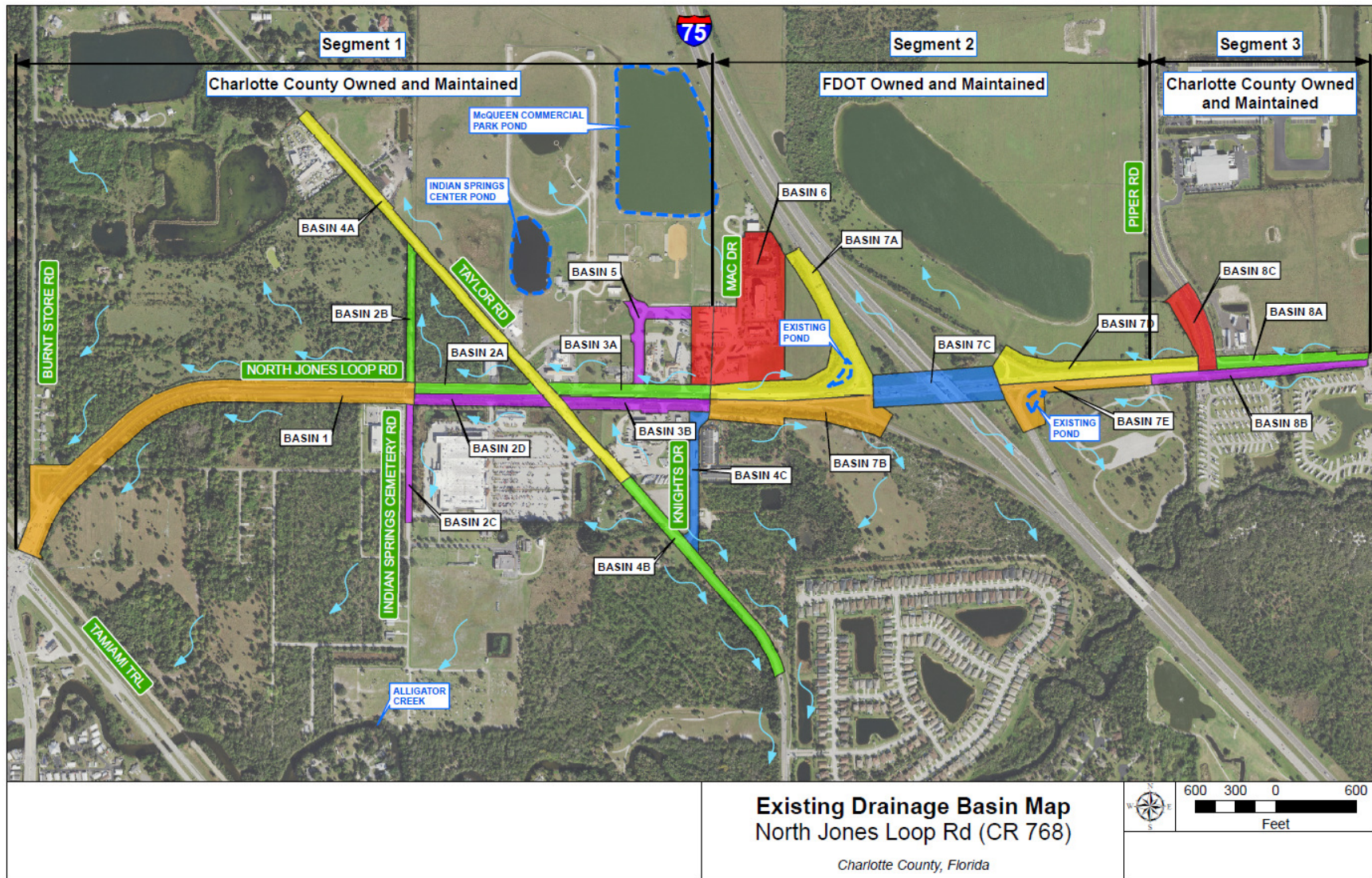


Figure 3-16: Existing Drainage Basin Map

3.8.9 Utilities

Existing utility owners, primary contact persons, and available information on known utilities within the corridor are summarized in **Table 3-11**.

Table 3-11: Existing Utility Information

Utility Agency/Owner's (UAO's)	UAO Contact	Utility Disposition
Black & Veatch - Orlando (Fiber)	Ken Soule Day: (913) 458 - 4667 Alt: (813) 539 - 2274	Waiting for response
Charlotte County Lighting District (Electric)	Andrew Amendola Day: (941) 628 - 9301	Existing signalization, lighting, and fiber optics within 1.25" up to 2" PVC within project limits. Further information about burial depths and location/distance is needed.
Lumen (formerly CenturyLink) (Fiber, Telephone)	Bill McCloud (850) 599 - 1444	Possible transition fiber optic cable(s) at cross street locations with North Jones Loop Road: Indian Springs Cemetery Road going east to Taylor Road, crossing North Jones Loop Road at Taylor Road under pavement from north right-of-way to south right-of-way; possible buried FOC going east from south right-of-way of North Jones Loop Road from Taylor Road to east side of Piper Road approx. 0.93 mi distance. No info. provided on buried telephone presence.
City of Punta Gorda (Water, Sewer, Electric, Fiber, Street Lights)	Steve Adams (941) 575 - 3325	Approximately 10" cast iron water main going East on North Jones Loop Road from Indian Springs Cemetery Road to I-75 under pavement and slightly changing course to the north right-of-way; 16" force main running along the southern EOP of North Jones Loop Road.
Comcast Communications (CATV)	Leonard Newbold Day: (754) 221 - 1254 Alt: (954) 444 - 5113	FOC going east and west along the north EOP at the intersection of North Jones Loop Road & US 41; FOC continues north along the west side of North Jones Loop Road under pavement from a hand hole, and stops at a hand hole at Burnt Store Road.

Table 3-11: Existing Utility Information (continued)

Utility Agency/Owner's (UAO's)	UAO Contact	Utility Disposition
FDOT D1 ITS (Fiber, Electric)	David Burnside Day: (239) 961 - 3310	Fiber optic for I-75 ITS facilities.
Florida Power & Light - Charlotte (Electric)	Joel Bray Day: (386) 586 - 6403	Located within the 200-foot project buffer are two electric power transmission lines and one FPL tower structure. The power lines cross and run parallel to CR 768 (North Jones Loop Road) at different sections of the roadway; streetlights also line the facility. Utility cabinet boxes and pedestrian signals are additionally present at the signalized intersections throughout the corridor.
Crown Castle Fiber (Fiber)	Danny Haskett Day: (786) 610 - 7073 Alt: (786) 246 - 7827	Fiber optic cable(s) in conduit system between two hand holes located at the beginning of the project limits from the intersection of North Jones Loop Road and US 41, going north along the west EOP to the north side of Burnt Store Road where FOC goes aerial approx. 590 ft. in total distance.
Lumen (formerly CenturyLink) (Fiber)	Network Relations Day: (877) 366 - 8344	See detailed information above.
City of Punta Gorda (Fiber, Street Lights)	Art Brewster Day: (941) 575 - 5041 Alt: (941) 628 - 4496	Utility cabinet boxes and pedestrian signals are additionally present at the signalized intersections throughout the corridor.
TECO Peoples Gas Ft Myers (Gas)	Anthony Baublitz Sr. Office: 941-342-4025 Cell: 443-838-7139 AFBaublitz@tecoenergy.com	8" steel, 4" plastic, and 2" plastic gas main in the scope of the project

3.8.10 Lighting

From Burnt Store Road to Mac/Knights Drive, the roadway is illuminated from both sides of the roadway with conventional, downward facing 300 ft \pm 50 ft luminaire spacing. Signalized intersections have lighting on several intersections, and commercial driveways have supplemental lighting. Within the interstate, L/A right-of-way that begins at Mac/Knights Drive and ends at Piper Road, the roadway is illuminated with nine (9) high mast lighting maintained by FDOT, District 1.

3.9 Aesthetics Features

The existing roadway is rural with minimal landscaping or other aesthetic features within the roadway right-of-way. The only landscaping features within the roadway right-of-way within the project limits are trees planted between roadside ditches and sidewalks between Taylor Road and Mac Drive / Knights Drive and palm trees west of Indian Springs Drive.

3.10 Bridges and Structures

One pair of structures carries I-75 over North Jones Loop Road (bridge numbers: 010073, I-75 SB and 010074, I-75 NB). The vertical clearance of I-75 over North Jones Loop Road is 16'-2" per the I-75 construction plans (413042-4-52-01).

4 EXISTING AND FUTURE TRAFFIC CONDITIONS

A Preliminary Traffic Analysis Report (PTAR) was prepared that includes the overview of existing conditions analysis, traffic volumes projection for future year conditions, No-Build analysis, and need for potential roadway widening (up to six lanes) along North Jones Loop Road (CR 768) based on Design Year (2045) volumes. The information provided in the following sections is from the approved PTAR (May 2021), included in **Appendix A**.

4.1 Existing Volumes

Figure 4-1 depicts the study limits that were considered for the traffic analysis. The operational evaluation was performed for the below intersections.

- North Jones Loop Road at US 41 - Signalized
- North Jones Loop Road at Burnt Store Road - One-way Stop Controlled
- North Jones Loop Road at Glasgow Ave - One-way Stop Controlled
- North Jones Loop Road at Indian Springs Cemetery Road - Signalized
- North Jones Loop Road at Taylor Road (CR 765A) - Signalized
- Taylor Road (CR 765A) at Indian Springs Cemetery Road - One-way Stop Controlled
- Taylor Road (CR 765A) at Knights/Mac Drive - One-way Stop Controlled
- North Jones Loop Road at Spring Water Drive - Two-way Stop Controlled
- North Jones Loop Road at Knights/Mac Drive - Signalized
- North Jones Loop Road at I-75 Southbound Ramps - Signalized
- North Jones Loop Road at I-75 Northbound Ramps - Signalized
- North Jones Loop Road at Piper Road - One-way Stop Controlled

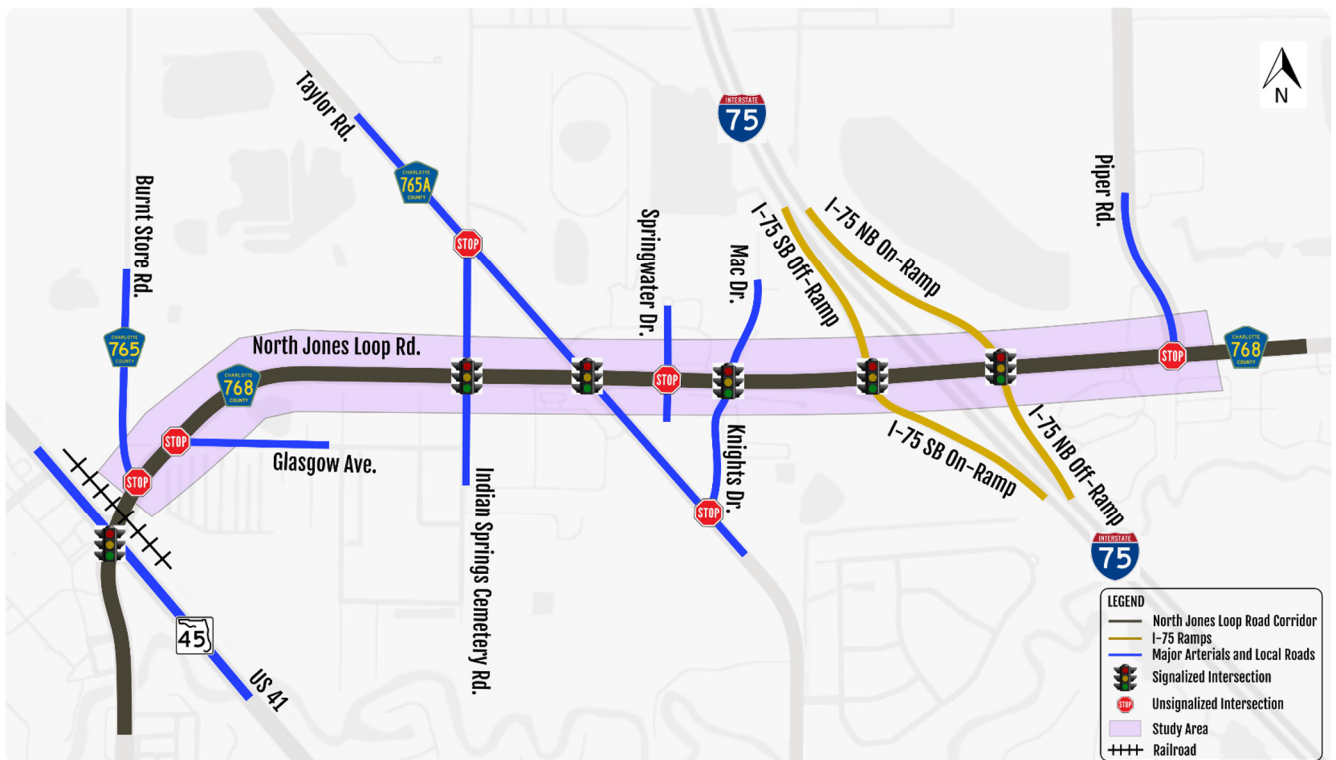


Figure 4-1: Study Area

4.1.1 Existing Annual Average Daily Traffic (AADT)

The Existing Year (2020) AADTs for roadways within the study area were estimated by adjusting daily counts using seasonal and axle adjustment factors. Seasonal Factor (SF) and Axle Correction Factor (ACF) were obtained from Florida Traffic Online (FTO) website. For locations where FTO does not have SF and ACF factors, the below assumptions were made for AADT calculations.

- From FTO, utilized Burnt Store Road SF of 1 for US 41 and North Jones Loop Road. Countywide SF of 0.98 was used for remaining side streets, and I-75 SF of 0.98 was used for I-75 ramps.
- ACF of 1 was used for the locations where the classification tube counts were collected. For side streets, ACF was calculated using truck percentage (T%) ($ACF = 1 - 1/2 * T\%$).
 1. Taylor Road and side streets between US 41 and Taylor Road - Truck percentage from tube count along North Jones Loop Road west of Taylor Road was used.
 2. Side streets between Taylor Road and I-75 - Truck percentage from tube count along North Jones Loop Road east of Taylor Road was used.
 3. Side streets east of I-75 - Truck percentage from tube count along North Jones Loop Road east of I-75 was used.

Due to the COVID-19 situation, to ensure the current traffic volumes did not decline much, the estimated Existing Year (2020) AADTs were compared with the historical AADTs (2019) obtained from FTO and the 2020 AADTs obtained from Charlotte County. The highest AADT of three sources was recommended at each location. The 2019 AADT at I-75 Southbound on-ramp from FTO was an estimate (not an actual count). Therefore, a historical growth rate was applied to the 2018 FTO AADT to calculate the Existing Year (2020) AADT. The comparison of AADTs and recommended AADTs are presented in **Table 4-1**.

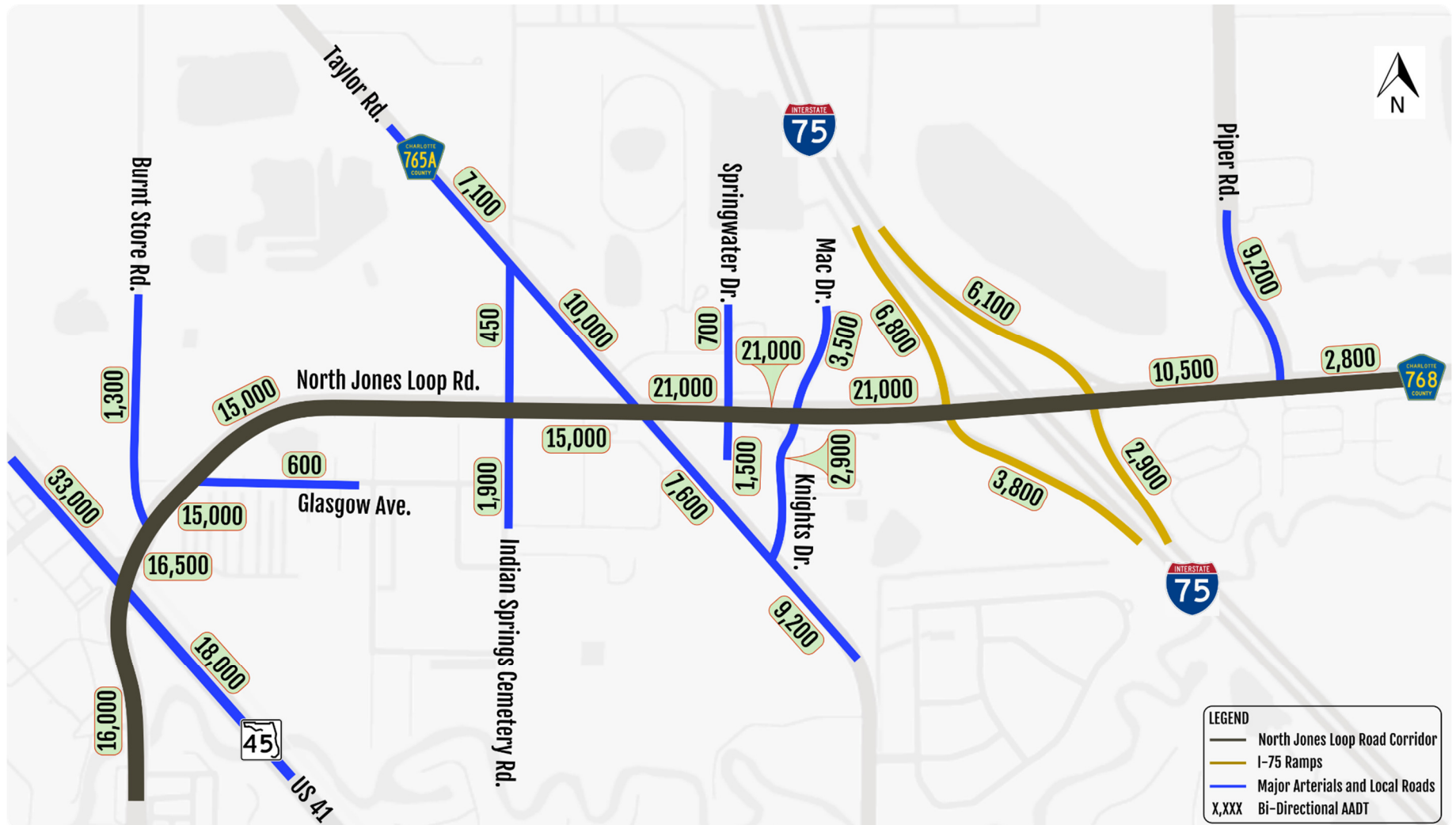
For side streets where tube counts were not collected, the average hourly approach volume from the AM and PM peak hour counts and standard K factor of 9 percent was used to calculate the Existing Year (2020) AADTs. The Existing Year (2020) AADTs are presented in **Figure 4-2**.

Table 4-1: Existing Year (2020) AADTs Comparison

Location	2020 Raw Counts				Seasonal Factor (SF)	Axle Correction Factor (ACF)	Raw AADT (2020)	FTO AADT (2019)	County AADT (2020)	Recommended AADT (2020)
	Day1	Day2	Day3	Average						
North Jones Loop Rd. – Between US 41 & Burnt Store Rd.	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	16293*	16500
North Jones Loop Rd. – W. of Taylor Rd.	12938	13703	13978	13540	1	1	13500	12400	14856	15000
North Jones Loop Rd. – E. of Taylor Rd.	19573	20340	21170	20361	1	1	20500	21000	18540	21000
North Jones Loop Rd. – E. of I-75	8136	8561	11304	9334	1	1	9300	N/A	10710	10500
Burnt Store Rd. – W. of US 41	16834	16777	N/A	16806	1	0.93	15500	15700	16156	16000
US 41 – S. of North Jones Loop Rd.	15971	15959	N/A	15965	1	0.95	15000	15600	17884	18000
US 41 – N. of North Jones Loop Rd.	27763	27312	N/A	27538	1	0.98	27000	29000	32810	33000
Burnt Store Rd. – N. of North Jones Loop Rd.	1356	1308	N/A	1332	1	0.98	1300	N/A	N/A	1300
Glasgow Ave. – S. of North Jones Loop Rd.	631	633	N/A	632	0.98	0.98	600	N/A	N/A	600
Taylor Rd. – N. of Indian Springs Cemetery Rd.	7909	7662	N/A	7786	0.98	0.93	7100	N/A	N/A	7100
Taylor Rd. – N. of North Jones Loop Rd.	9639	9303	N/A	9471	0.98	0.93	8600	N/A	10124	10000
Taylor Rd. – S. of North Jones Loop Rd.	8526	8220	N/A	8373	0.98	0.93	7600	N/A	N/A	7600
Taylor Rd. – S. of Knights Dr.	10167	9981	N/A	10074	0.98	0.93	9200	N/A	8052*	9200
I-75 SB Off-Ramp	7483	7954	N/A	7719	0.98	0.9	6800	6000	N/A	6800
I-75 SB On-Ramp	2987	3801	N/A	3394	0.98	0.9	3000	3800	N/A	3800
I-75 NB On-Ramp	6956	6959	N/A	6958	0.98	0.9	6100	5800	N/A	6800
I-75 NB Off-Ramp	2745	3546	N/A	3146	0.98	0.9	2800	2900	N/A	3800
Piper Rd. – N. of North Jones Loop Rd.	7741	10326	N/A	9034	0.98	0.93	8200	7000	9222	9200
North Jones Loop Rd. – E. of Piper Rd.	3066	3007	N/A	3037	1	0.93	2800	2800	2574*	2800

N/A – Data not available.

* – 2019 AADT from Charlotte County



4.1.2 Existing Turning Movement Counts

The existing counts, including arterial tube counts and intersection turning movement counts (TMCs), were collected for the study area during the week of Tuesday, November 17, 2020, through Thursday, November 19, 2020. The counts included 4-hour peak period TMCs (7:00-9:00 for AM peak period and 16:00-18:00 for PM peak period), seventy-two-hour classification tube counts, and forty-eight-hour tube counts.

For each study intersection, the 4-hour TMCs were used to determine the AM and PM peak hour. After selecting AM and PM peak hours for each intersection, peak hour volumes were balanced along the study corridor to ensure the number of vehicles leaving an upstream intersection equals the number of vehicles received on the corresponding downstream intersection. The balanced TMCs for the Year 2020 are shown in **Figure 4-3**.

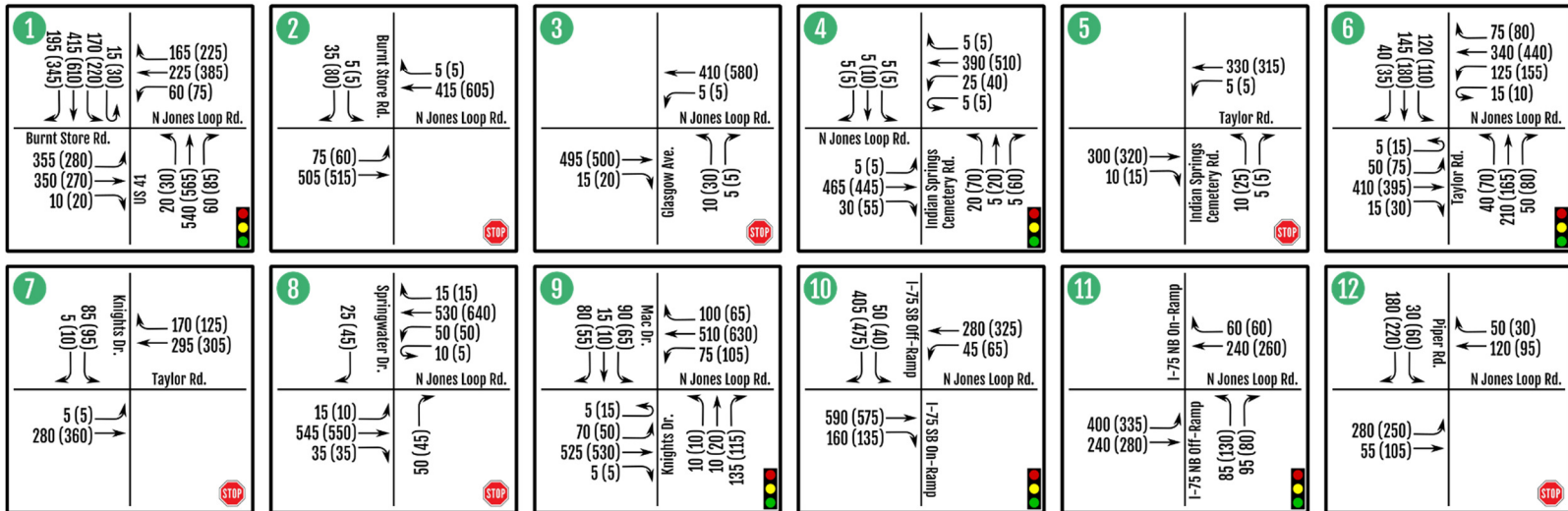
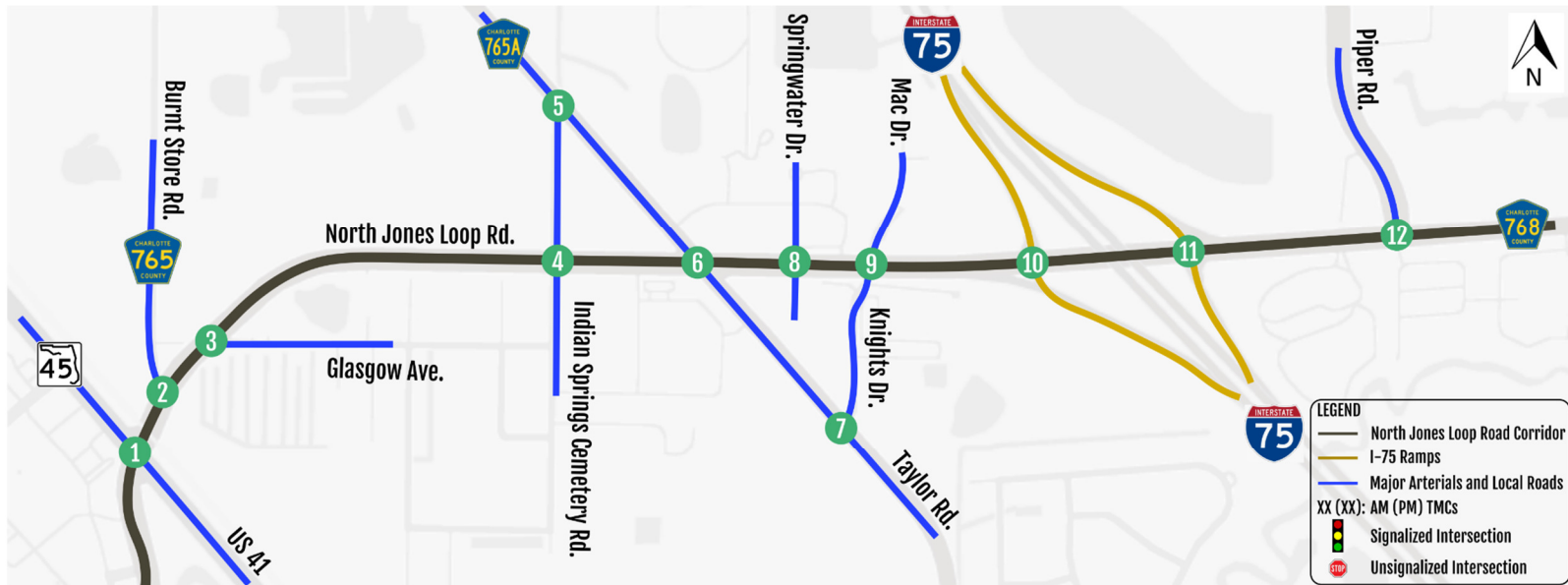


Figure 4-3: Existing Year (2020) TMCs

4.2 Existing Operational Conditions

Existing conditions operational performance was evaluated using Synchro 10, HCM 6th Edition module. As specified in HCM 6th edition, for un-signalized intersections, the worst approach delay was reported as the intersection delay. The field signal timings to evaluate the existing conditions were obtained from the Department and included in the approved PTAR (Appendix C) provided in **Appendix A**. The operational results are summarized in **Table 4-2** and **Table 4-3** for AM and PM peak hours, respectively. Synchro reports are included in the PTAR (Appendix D).

The Synchro analysis results indicate that all study intersections operate at an acceptable level of service (LOS) (LOS D or better) during peak hours. Therefore, the available capacity along the North Jones Loop Road within the study limits is adequate to accommodate the Existing Year (2020) AM and PM peak hour demand.

Table 4-2: Delay and LOS - Existing Year (2020) AM Peak Hour

Intersection	Type of Intersection	MOE	Approach				Intersection
			EB	WB	NB	SB	
US 41 and Burnt Store Rd./ North Jones Loop Rd. ¹	Signalized	Delay (sec/veh)	29.0	30.3	24.4	25.9	27.0
		LOS	D	C	C	C	C
North Jones Loop Rd. and Burnt Store Rd.	Unsignalized	Delay (sec/veh)	1.1	0.0	N/A	12.4	12.4
		LOS	A	A	N/A	B	B
North Jones Loop Rd. and Glasgow Ave.	Unsignalized	Delay (sec/veh)	0.0	0.1	15.1	N/A	15.1
		LOS	A	A	C	N/A	C
North Jones Loop Rd. and Indian Springs Cemetery Rd.	Signalized	Delay (sec/veh)	9.1	3.0	42.7	45.4	8.0
		LOS	A	A	D	D	A
Taylor Rd. and Indian Springs Cemetery Rd.	Unsignalized	Delay (sec/veh)	13.2	N/A	0.2	0.0	0.4
		LOS	B	N/A	A	A	A
North Jones Loop Rd. and Taylor Rd.	Signalized	Delay (sec/veh)	17.6	4.9	41.3	33.3	19.7
		LOS	B	A	D	C	B
Taylor Rd. and Knights. Dr.	Unsignalized	Delay (sec/veh)	N/A	15.3	0.0	0.1	15.3
		LOS	N/A	C	A	A	C
North Jones Loop Rd. and Springwater Dr.	Unsignalized	Delay (sec/veh)	0.2	1.1	10.6	10.5	10.6
		LOS	A	A	B	B	B
North Jones Loop Rd. and Mac/Knights Dr.	Signalized	Delay (sec/veh)	8.6	10.7	52.4	42.2	17.5
		LOS	A	B	D	D	B
North Jones Loop Rd. and I-75 SB Ramps	Signalized	Delay (sec/veh)	12.1	1.0	N/A	38.9	18.4
		LOS	B	A	N/A	D	B
North Jones Loop Rd. and I-75 NB Ramps	Signalized	Delay (sec/veh)	3.7	8.6	43.4	N/A	8.4
		LOS	A	A	D	N/A	A
North Jones Loop Rd. and Piper Rd.	Unsignalized	Delay (sec/veh)	7.2	0.0	N/A	11.7	11.7
		LOS	A	A	N/A	B	B

N/A – Approach does not exist.

¹ The subject intersection is outside the study limits

For unsignalized intersections, the worst approach delay was reported as the intersection delay.

Table 4-3: Delay and LOS - Existing Year (2020) PM Peak Hour

Intersection	Type of Intersection	MOE	Approach				Intersection
			EB	WB	NB	SB	
US 41 and Burnt Store Rd./ North Jones Loop Rd. ¹	Signalized	Delay (sec/veh)	42.0	42.6	27.3	33.4	35.3
		LOS	D	D	C	C	D
North Jones Loop Rd. and Burnt Store Rd.	Unsignalized	Delay (sec/veh)	1.0	0.0	N/A	12.3	12.3
		LOS	A	A	N/A	B	B
North Jones Loop Rd. and Glasgow Ave.	Unsignalized	Delay (sec/veh)	0.0	0.1	17.0	N/A	17.0
		LOS	A	A	C	N/A	C
North Jones Loop Rd. and Indian Springs Cemetery Rd.	Signalized	Delay (sec/veh)	13.6	9.0	44.7	48.0	15.9
		LOS	B	B	D	D	B
Taylor Rd. and Indian Springs Cemetery Rd.	Unsignalized	Delay (sec/veh)	13.0	N/A	0.1	0.0	13.0
		LOS	B	N/A	A	A	B
North Jones Loop Rd. and Taylor Rd.	Signalized	Delay (sec/veh)	17.7	6.4	45.9	44.1	21.6
		LOS	B	A	D	D	C
Taylor Rd. and Knights. Dr.	Unsignalized	Delay (sec/veh)	N/A	19.1	0.0	0.1	19.1
		LOS	N/A	C	A	A	C
North Jones Loop Rd. and Springwater Dr.	Unsignalized	Delay (sec/veh)	0.2	0.8	10.6	11.0	11.0
		LOS	A	A	B	B	B
North Jones Loop Rd. and Mac/Knights Dr.	Signalized	Delay (sec/veh)	8.3	12.0	56.3	44.3	17.1
		LOS	A	B	E	D	B
North Jones Loop Rd. and I-75 SB Ramps	Signalized	Delay (sec/veh)	17.3	2.1	N/A	47.7	23.9
		LOS	B	A	N/A	D	C
North Jones Loop Rd. and I-75 NB Ramps	Signalized	Delay (sec/veh)	4.7	10.1	48.0	N/A	11.7
		LOS	A	B	D	N/A	B
North Jones Loop Rd. and Piper Rd.	Unsignalized	Delay (sec/veh)	5.9	0.0	N/A	12.4	12.4
		LOS	A	A	N/A	B	B

N/A – Approach does not exist.

¹ The subject intersection is outside the study limits

For unsignalized intersections, the worst approach delay was reported as the intersection delay.

4.3 Historical Crash Data Summary

As part of this study, crash data was collected for the five years from 2014-2018, and crash analyses were conducted to identify crash patterns and contributing causes within the study limits. The historical crash data was obtained from the FDOT State Safety Office Map-Based Query Tool (SSOGIS) and Signal Four Analytics. The data obtained from these two databases were compared against each other, and the duplicates were removed. The historical crash data was reviewed to examine crash patterns and assess the existing safety deficiencies of the corridors within the study area. Predictive safety analysis was not performed under this feasibility study. A detailed predictive safety analysis as per HSM methodology will be conducted for various alternatives during the PD&E phase. The summary of the historical crashes for the study area is presented in **Figure 4-4**.

Over the five years (2014 - 2018), a total of 190 crashes, 80 (42 percent) injury crashes, and 110 (58 percent) property damage only (PDO) crashes were reported within the study limits. No fatal crashes occurred during the study period.

One bicycle crash was reported (at the intersection of US 41 and North Jones Loop Road), resulting in an injury during the five years within the study limit. No pedestrian-related crash were reported during the study period.

The predominant crash type was found to be rear-end crashes (38 percent). Rear-end crashes occurring within the peak periods of traffic flow are associated with congestion and high vehicular densities. The high frequency of rear-end crashes can be attributed to the reduced spacing between vehicles and driver behavior, such as distracted driving during peak period congestion. Angle crashes (34 percent) were the second most common crash type followed by sideswipe crashes (15 percent) and other crashes (12 percent). Angle crashes can be attributed to the vehicles that fail to yield while turning left or right at the intersections. Crashes categorized as 'other' mainly were non-junction crashes, including off-road, rollover, and unknown crashes. Side-swipe crashes can be attributed to vehicles changing lanes. These cases can be attributed to congestion as drivers tend to switch lanes frequently attempting to avoid slower-moving lanes.

The historical five-year average number of crashes was found to be 38 crashes per year within the study limits. The year 2018 has the highest number of crashes that exceeds the study area average crashes by 26 percent. The time of the day analysis shows that the most crashes occurred during the AM (8:00 - 12:00), mid-day (12:00 - 16:00), and PM (16:00 - 20:00) peak periods. Also, approximately 3 percent of the total crashes were reported to be alcohol-related. Approximately 77 percent and 23 percent of the total crashes occurred during daylight and nighttime, respectively. Additionally, approximately 13 percent of the crashes occurred on a wet roadway surface condition.

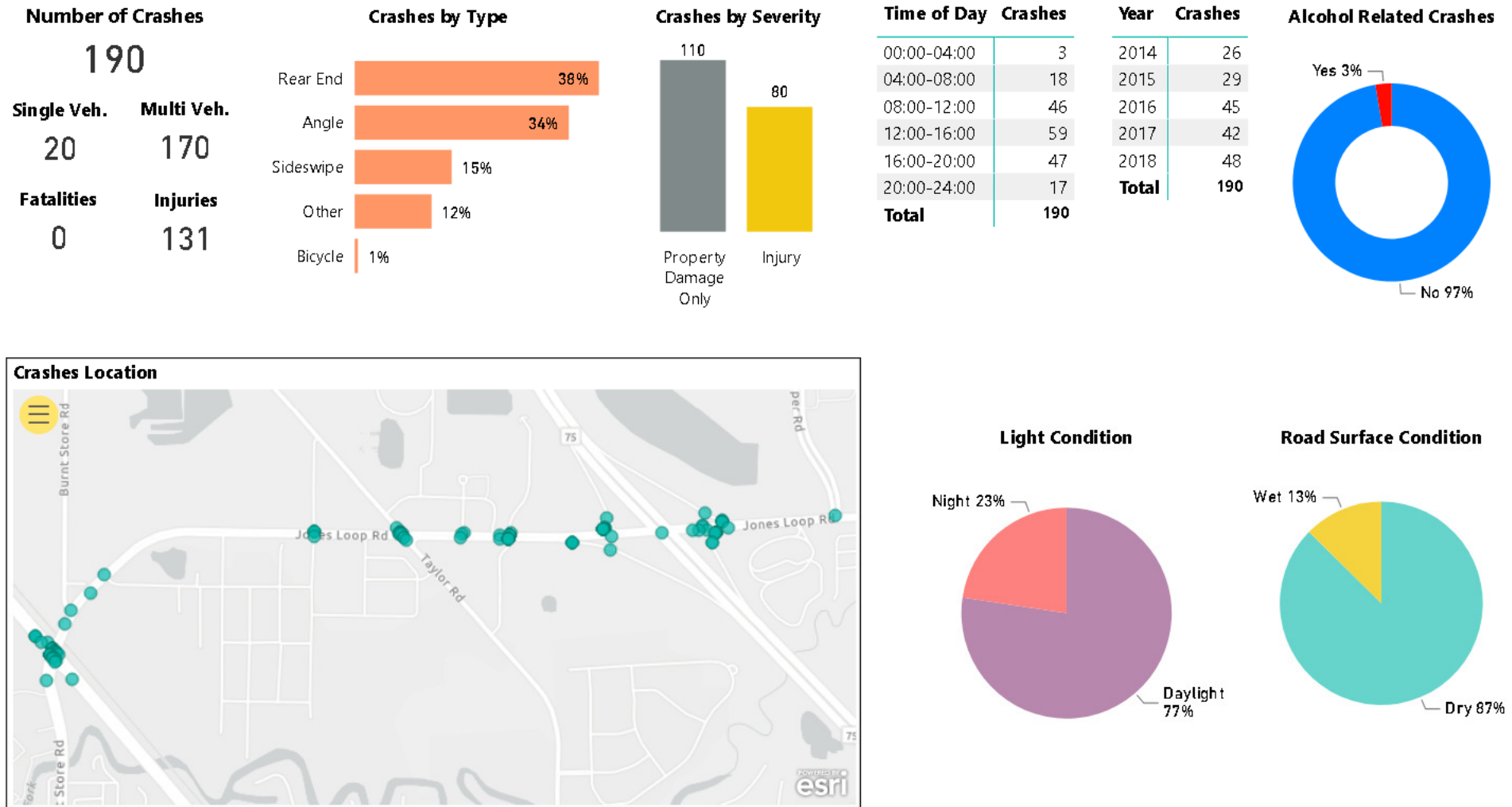


Figure 4-4: Overall Crash Summary (2014-2018)

4.3.1 Intersection Crashes

Any crashes within 250 feet of the intersection, including all approaches, are considered intersection crashes. A total of 186 crashes, out of 190 total crashes within the study area, occurred at intersections along North Jones Loop Road within the study limits. The remaining four crashes occurred outside 250 feet intersection influence area. The intersection crashes by severity and type are presented in **Table 4-4**. Most of the crashes occurred at the intersection of US 41, Mac/Knights Drive, I-75 Southbound Ramps, I-75 Northbound Ramps, and Taylor Road along North Jones Loop Road. Angle, rear-end, and sideswipe are the predominant type of crashes at these intersections.

Table 4-4: Intersection Crash by Severity and Type

Mainline	Intersecting Road	Total	Severity			Type				
			Fatal	Injury	PDO	Angle	Rear-end	Sideswipe	Bicycle	Other
North Jones Loop Rd.	US 41	70	0	32	38	29	24	5	1	11
	Burnt Store Rd.	2	0	0	2	0	0	0	0	2
	Glasgow Ave.	2	0	1	1	0	0	0	0	2
	Indian Spring Cemetery Rd.	5	0	3	2	3	2	0	0	0
	Taylor Rd	23	0	12	11	9	9	4	0	1
	Mac/Knights Dr.	30	0	9	21	4	5	17	0	4
	I-75 SB Ramps	28	0	14	14	6	18	1	0	3
	I-75 NB Ramps	25	0	8	17	11	13	1	0	0
	Piper Rd.	1	0	0	1	1	0	0	0	0

The number of crashes, crash rate, and statewide crash rate for each intersection for the study years is summarized in **Table 4-5**. Two out of nine intersections had a crash rate higher than the statewide average. Also, the intersection of US 41 at North Jones Loop Road had the highest crash rate within the study area.

Table 4-5: Intersection Crash Rates

Mainline	Intersecting Road	Int. Type	Control Type	Number of Crashes ¹						Crash Rate Per MEV	Statewide Average Crash Rate
				2014	2015	2016	2017	2018	Avg.		
North Jones Loop Rd.	US 41	4-leg	Sig.	11	10	15	19	15	14	0.92 ²	0.62
	Burnt Store Rd.	3-leg	Unsig.	0	0	1	1	0	0.4	0.07	0.66
	Glasgow Ave.	3-leg	Unsig.	0	1	0	0	1	0.4	0.07	0.66
	Indian Spring Cemetery Rd.	4-leg	Sig.	0	1	0	0	4	1	0.17	0.62
	Taylor Rd	4-leg	Sig.	3	3	3	6	8	4.6	0.47	0.62
	Mac/Knights Dr.	4-leg	Sig.	5	3	11	5	6	6	0.68 ²	0.62
	I-75 SB Ramps	3-leg	Sig.	3	8	8	2	7	5.6	0.61	1.51
	I-75 NB Ramps	3-leg	Sig.	3	3	6	6	7	5	0.85	1.51
	Piper Rd.	3-leg	Unsig.	0	0	0	1	0	0.2	0.20	0.66

¹Any crashes that occurred within 250 feet of the intersection, including all approaches, are considered intersection crashes.

²crash rates higher than the statewide average crash rate.

4.3.2 Segment Crashes

A total of 83 segment crashes presented in **Figure 4-4** occurred along North Jones Loop Road. Some of these crashes occurred along eastbound and westbound approaches of North Jones Loop Road at various study intersections. The remaining 107 crashes occurred on other approaches at various study intersections. The segment crashes were evaluated by type and severity. **Figure 4-5** and **Figure 4-6** show the segments crash analysis for eastbound and westbound, respectively.

Additionally, crash rates were calculated for each bidirectional segment to compare with the statewide crash rates. The segment crash rates along North Jones Loop Road are presented in **Table 4-6**. The crash rates for all segments within the study area were less than the statewide average crash rate of 7.44 (Obtained from Crash Analysis Reporting System (CARS) database) .

Table 4-6: Segment Crash Rates

Segment	Length (Miles)	AADT	Number of Crashes (2014-2018)	Average Crash Rate per MVMT	Statewide Average Crash Rate
US 41 – Indian Springs Cemetery Rd.	0.68	15500	31	1.61	7.44
Indian Springs Cemetery Rd. – Taylor Rd.	0.20	15000	3	0.55	7.44
Taylor Rd. – Mac/Knights Dr.	0.22	21000	19	2.22	7.44
Mac/Knights Dr. – I-75 SB Ramps	0.23	21000	19	2.20	7.44
I-75 SB Ramps – I-75 NB Ramps	0.19	15750	2	0.37	7.44
I-75 NB Ramps – Piper Rd.	0.29	10500	9	1.60	7.44

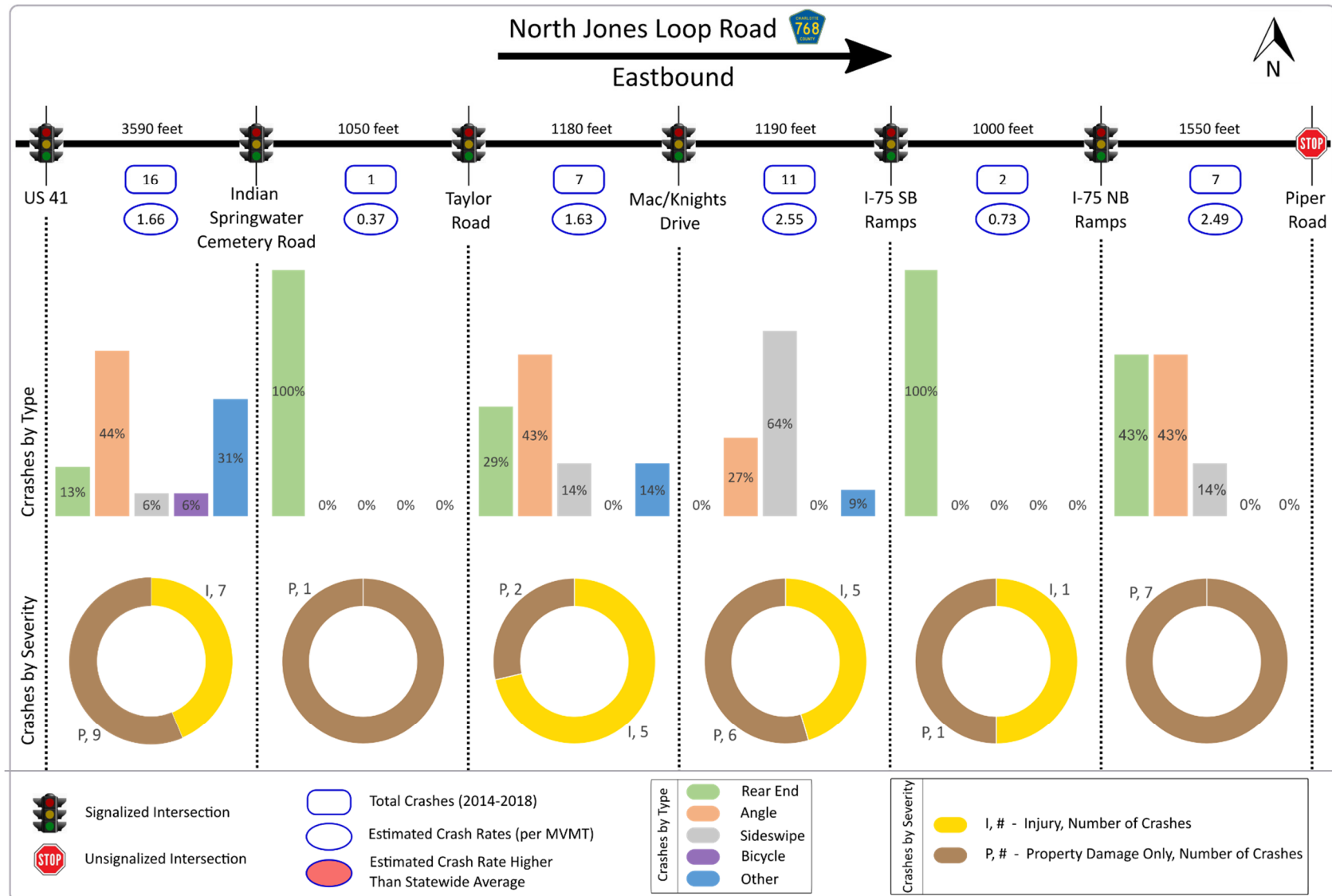


Figure 4-5: Eastbound Crash Summary (2014-2018)

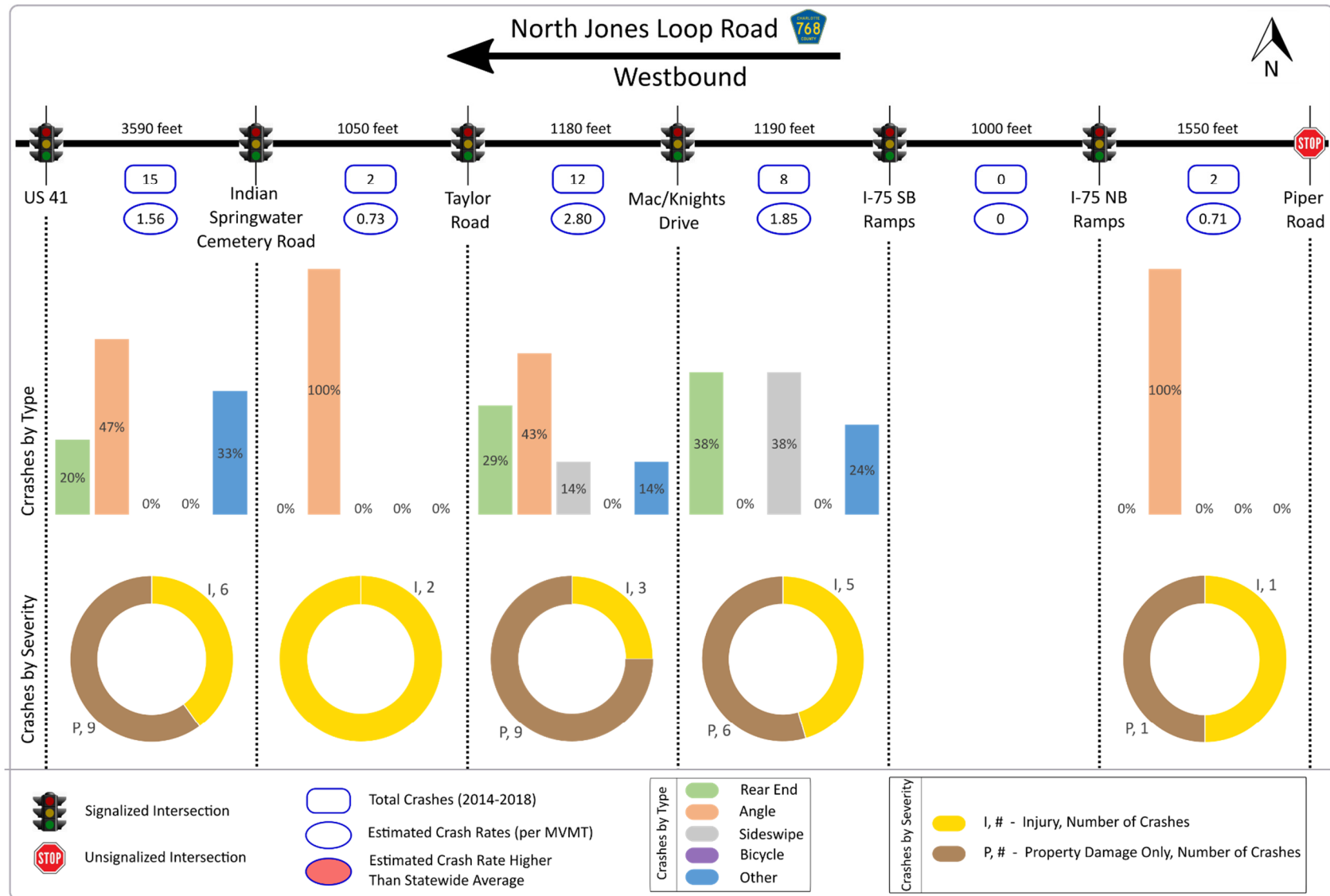


Figure 4-6: Westbound Crash Summary (2014-2018)

4.4 Future Traffic Projection

The growth rate was estimated based on the historical counts, Bureau of Economic and Business Research (BEBR), and the District One Regional Planning Model (D1RPM) volumes. According to the BEBR, the population of Charlotte County is expected to increase by 26 percent, from 184,700 residents in 2020 to 232,500 residents in 2045. The latest adopted D1RPM (Version 1.0.6) with Base Year 2010 and Horizon Year 2040 obtained from the Department were used to forecast the future traffic volumes. The Horizon Year 2040 model was reviewed and verified to ensure all the planned developments anticipated to be built before the year 2040 in the vicinity of the study area were included.

FDOT Trend Analysis Tool was utilized to estimate the growth rate based on historical counts from the FTO and Charlotte County within the study area. The growth rate from Charlotte County historical counts, which included five years of data from 2016 to 2020, was used for locations where FTO data is unavailable. Growth rates with an R-Square value of less than 75 percent were not considered in the calculations. Additionally, growth rates were calculated based on 2010 and 2040 volumes from the D1RPM model at each location.

The BEBR population growth rate based on projected 2020 and 2045 Charlotte County medium population was estimated to be 0.9 percent, which is significantly lower than historical and D1RPM growth rates. Therefore, the BEBR growth rate was not included in the recommended growth rate calculations. However, for the locations where the average growth rate was more than 3 percent, it was averaged with the BEBR growth rate. Growth rate data can be found in the PTAR (Appendix G) included in **Appendix A**.

For the future year traffic projections, different growth rates were used for the various segments of the study area. The overall study area average growth rate of 2.6 percent was applied for minor side street approaches. The summary of growth rate estimation is presented in **Table 4-7**.

The estimated growth rate for different segments within the study area was applied to the Existing Year (2020) AADTs to develop the Opening Year (2025) and Design Year (2045) AADTs. The AADTs for Opening Year (2025) and Design Year (2045) are presented in **Figure 4-7** and **Figure 4-8**, respectively.

Table 4-7: Growth Rate Estimation

Location	Trend Analysis					2010 DIRPM Volume	2040 DIRPM Volume	DIRPM (2010-2040) Exponential Growth Rate	Average Growth Rate	Recommended Growth Rate	BEBR Growth Rate (Medium Population)
	Station ID	FTO		Charlotte County							
		R-Square	Growth Rate	R-Square	Growth Rate						
Bumt Store Rd. – W. of US 41	014171	83.58%	5.4%			11773	21956	2.1%	3.7%	2.3%	
US 41 – N. of North Jones Loop Rd.	010016	0.6% ²	-0.2%		N/A	24289	43048	1.9%	1.9%	1.9%	
US 41 – S. of North Jones Loop Rd.	010021	24.7% ²	-1.6%			12690	30280	2.9%	2.9%	2.9%	
North Jones Loop Rd. – E. of US 41	272 ¹		N/A	95.0%	7.5%	13579	25255	2.1%	4.8%	2.9%	
North Jones Loop Rd. – W. of Taylor Rd.	014273	62.5% ²	5.0%			11555	18146	1.5%	1.5%	1.5%	
North Jones Loop Rd. – E. of Taylor Rd.	014173	91.0%	5.7%		N/A	16569	32268	2.2%	4.0%	2.4%	
North Jones Loop Rd. – E. of I-75	318 ¹		N/A	56.8% ²	3.8%	4806	23318	5.4%	5.4%	3.2%	0.9%
North Jones Loop Rd. – E. of Piper Rd.	014174	30.1% ²	0.6%		N/A	3410	19220	5.9%	5.9%	3.4%	
Taylor Rd. – N. of North Jones Loop Rd.	180 ¹		N/A	56.3% ²	3.0%	3639	11196	3.8%	3.8%	2.4%	
Taylor Rd. – S. of North Jones Loop Rd.	179 ¹		N/A	64.2% ²	1.8%	5037	11963	2.9%	2.9%	2.9%	
I-75 – N. of North Jones Loop Rd.	010350	50.1% ²	1.6%			42287	81744	2.2%	2.2%	2.2%	
I-75 – S. of North Jones Loop Rd.	010034	47.2% ²	1.5%		N/A	36744	74203	2.4%	2.4%	2.4%	
Piper Rd. – N. of North Jones Loop Rd.	014422	58.8% ²	15.5%			1739	10765	6.3%	6.3%	3.6%	

N/A – Data not available.

¹ Charlotte County Station ID.

² R-Square value less than 75%, which were not used for growth rate calculation.

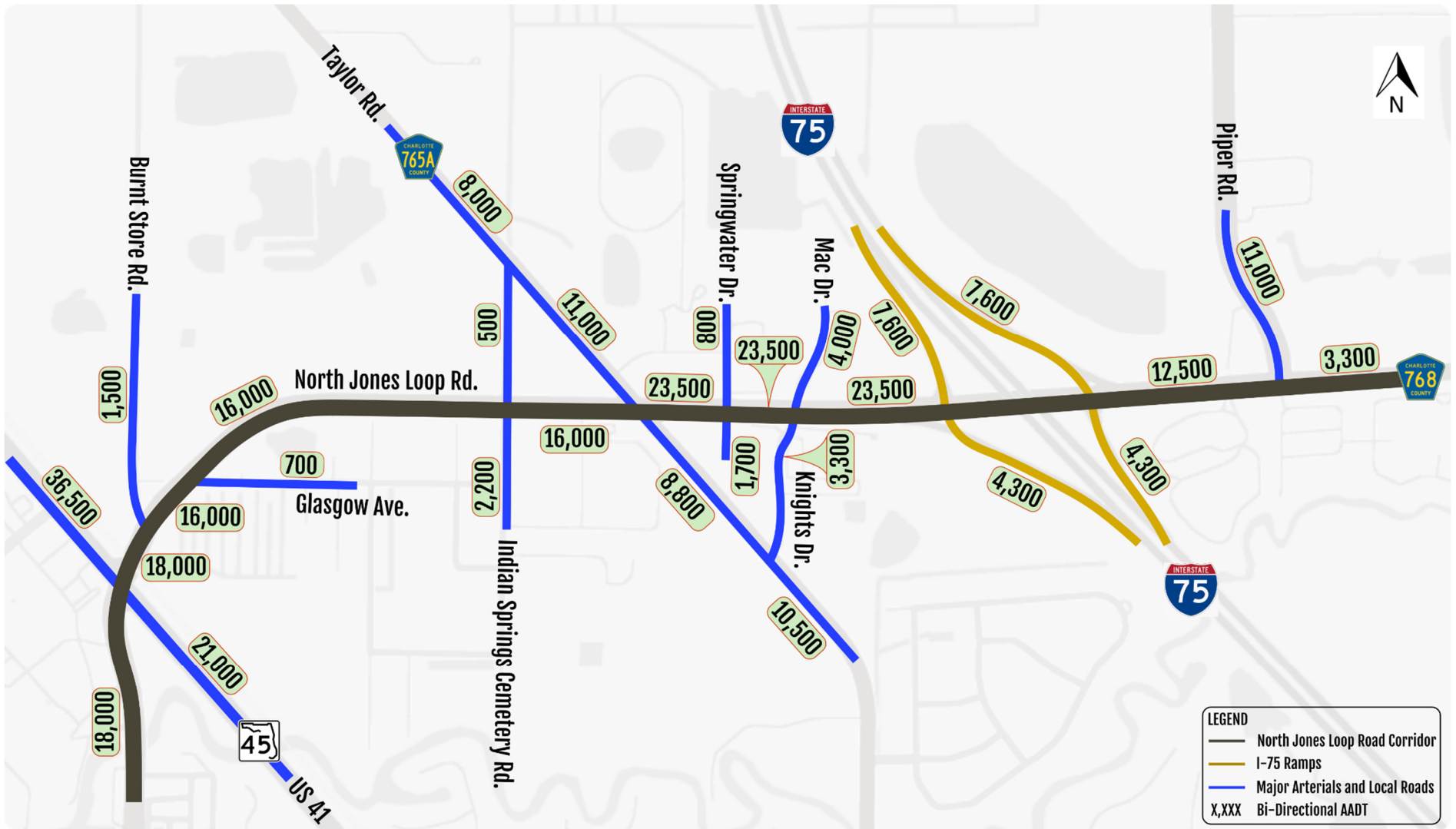
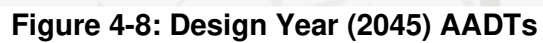


Figure 4-7: Opening Year (2025) AADTs



4.4.1 Future Turning Movement Volumes (TMVs)

TURNS5 was used to develop future year's TMVs for study intersections within the study area. TURNS5 utilizes the Existing Year (2020) TMCs splits, Existing Year (2020) AADTs, Opening Year (2025) AADTs, and Design Year (2045) AADTs to estimate the TMVs for the future years. The estimated TMVs from TURNS5 were balanced for Opening Year (2025) and Design Year (2045). The TMVs for Opening Year (2025) and Design Year (2045) are presented in **Figure 4-9** and **Figure 4-10**, respectively. The TURNS5 input and output results are provided in the PTAR (Appendix H) included in **Appendix A**.

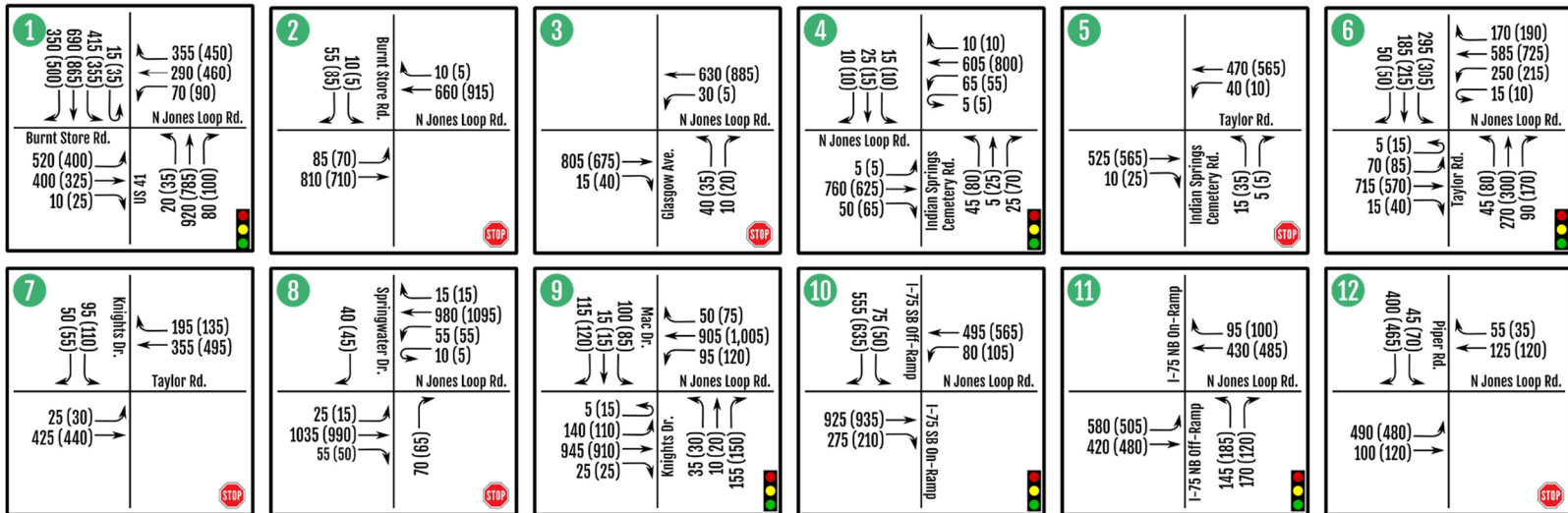
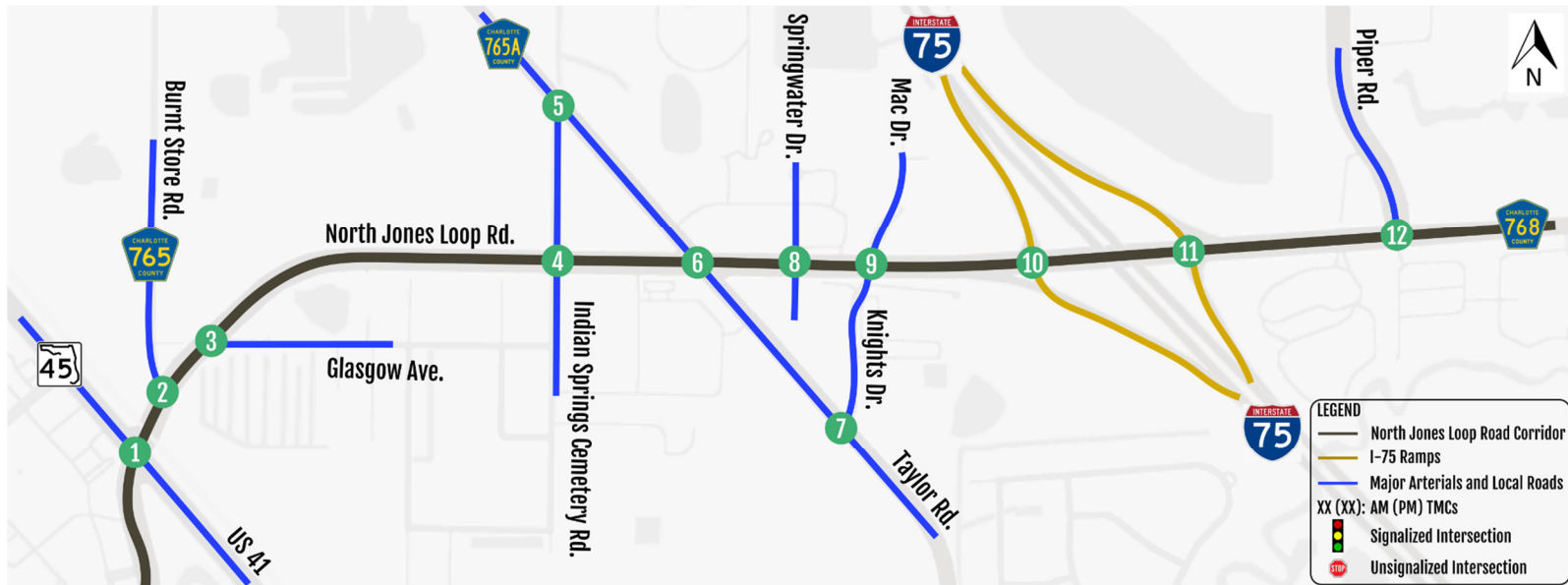


Figure 4-9: Opening Year (2025) TMVs

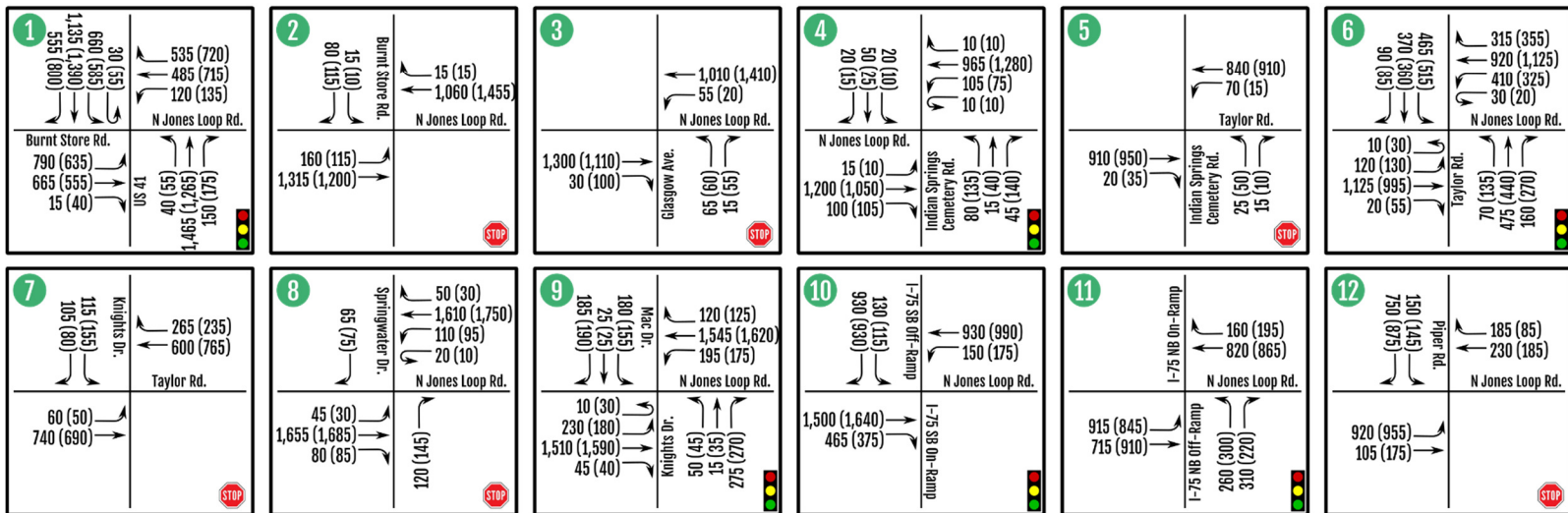
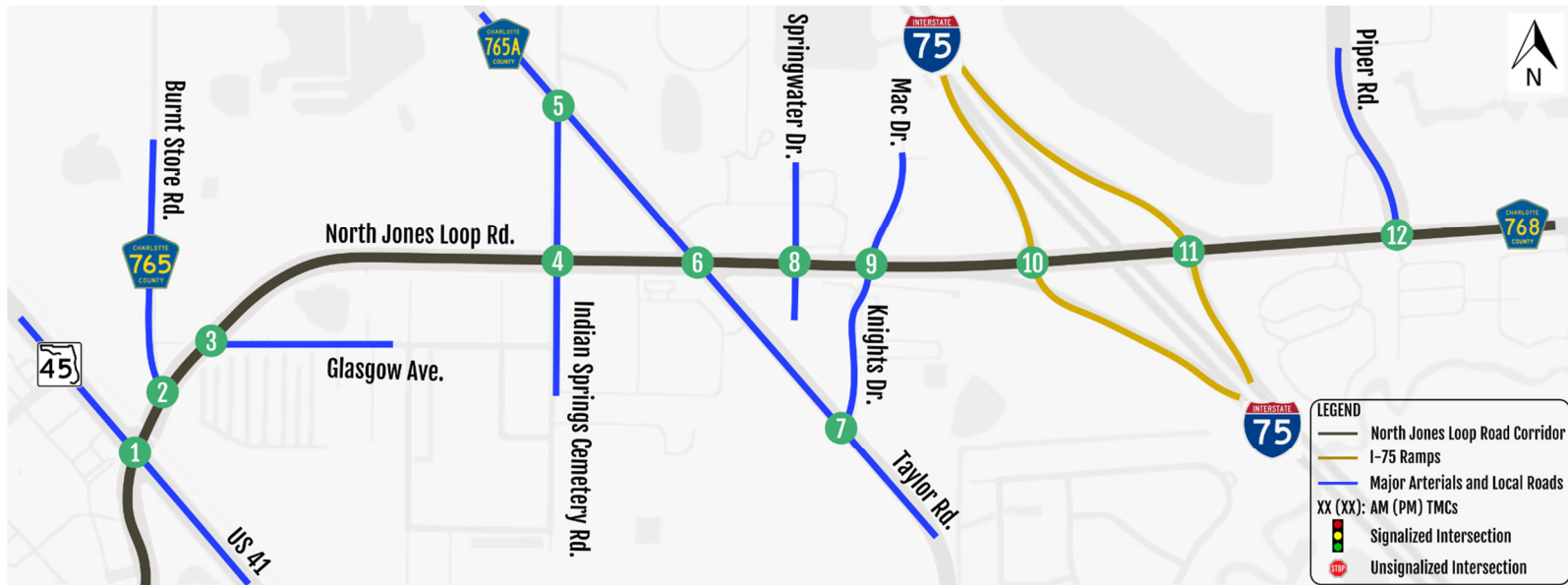


Figure 4-10: Design Year (2045) TMVs

4.5 No-Build Operational Conditions

Operational performance for the No-Build conditions was evaluated using Synchro 10, HCM 6th Edition module. As specified in HCM 6th edition, for unsignalized intersections, the worst approach delay was reported as the intersection delay. The signal timings were not optimized. The field signal timings were used to evaluate the No-Build conditions. The Synchro results for Opening Year (2025) are summarized in **Tables 4-8 and 4-9** for AM and PM peak hours, respectively. **Tables 4-10 and 4-11** present the Synchro results for Design Year (2045) AM and PM peak hours, respectively.

For Opening Year (2025) conditions, the Synchro analysis results indicate that all signalized intersections within the study limits operate at acceptable LOS (LOS D or better) during peak hours. Therefore, the available capacity along the study corridor (North Jones Loop Road) is adequate to accommodate AM and PM peak hour demand.

In the Design Year (2045), with the increase in peak hour volumes, the available capacity along the study corridor (North Jones Loop Road) at signalized intersections between Taylor Road and I-75 ramp terminal is insufficient to accommodate peak hour demand. Therefore, the signalized intersections along this segment fail to operate at acceptable LOS (LOS D or better) during peak hours.

All unsignalized intersections within the study area operate at failing conditions (LOS E or F) during both AM and PM peak hours in Design Year (2045), except the intersection of North Jones Loop Road and Springwater Drive. The unsignalized intersections fail mainly due to significantly high delays on stop-controlled approaches where the traffic is unable to find sufficient gaps to merge onto North Jones Loop Road.

Table 4-8: Delay and LOS - Opening Year (2025) AM Peak Hour

Intersection	Type of Intersection	MOE	Approach				Intersection
			EB	WB	NB	SB	
US 41 and Burnt Store Rd./ North Jones Loop Rd. ¹	Signalized	Delay	46.4	40.8	29.9	66.7	49.7
		LOS	D	D	C	E	D
North Jones Loop Rd. and Burnt Store Rd.	Unsignalized	Delay	0.9	0.0	N/A	21.8	21.8
		LOS	A	A	N/A	C	C
North Jones Loop Rd. and Glasgow Ave.	Unsignalized	Delay	0.0	0.6	44.2	N/A	44.2
		LOS	A	A	E	N/A	E
North Jones Loop Rd. and Indian Springs Cemetery Rd.	Signalized	Delay	17.4	4.9	40.9	42.3	14.0
		LOS	B	A	D	D	B
Taylor Rd. and Indian Springs Cemetery Rd.	Unsignalized	Delay	17.5	N/A	1.0	0.0	17.5
		LOS	C	N/A	A	A	C
North Jones Loop Rd. and Taylor Rd.	Signalized	Delay	22.8	10.3	39.1	36.0	22.4
		LOS	C	B	D	D	C
Taylor Rd. and Knights. Dr.	Unsignalized	Delay	N/A	16.3	0.0	0.6	16.3
		LOS	N/A	C	A	A	C
North Jones Loop Rd. and Springwater Dr.	Unsignalized	Delay	0.2	1.1	14.3	13.5	14.3
		LOS	A	A	B	B	B
North Jones Loop Rd. and Mac/Knights Dr.	Signalized	Delay	13.4	21.1	59.5	43.7	22.8
		LOS	B	C	E	D	C
North Jones Loop Rd. and I-75 SB Ramps	Signalized	Delay	20.3	2.0	N/A	40.2	21.1
		LOS	C	A	N/A	D	C
North Jones Loop Rd. and I-75 NB Ramps	Signalized	Delay	9.8	15.3	44.6	N/A	14.5
		LOS	A	B	D	N/A	B
North Jones Loop Rd. and Piper Rd.	Unsignalized	Delay	8.1	0.0	N/A	19.3	19.3
		LOS	A	A	N/A	C	C

N/A – Approach does not exist.

¹ The subject intersection is outside the study limits

For unsignalized intersections, the worst approach delay was reported as the intersection delay.

Table 4-9: Delay and LOS - Opening Year (2025) PM Peak Hour

Intersection	Type of Intersection	MOE	Approach				Intersection
			EB	WB	NB	SB	
US 41 and Burnt Store Rd./ North Jones Loop Rd. ¹	Signalized	Delay	53.9	66.7	32.3	107.5	75.3
		LOS	D	E	C	F	D
North Jones Loop Rd. and Burnt Store Rd.	Unsignalized	Delay	1.0	0.0	N/A	16.1	16.1
		LOS	A	A	N/A	C	C
North Jones Loop Rd. and Glasgow Ave.	Unsignalized	Delay	0.0	0.1	23.7	N/A	23.7
		LOS	A	A	C	N/A	C
North Jones Loop Rd. and Indian Springs Cemetery Rd.	Signalized	Delay	16.9	29.7	45.8	46.3	26.6
		LOS	B	C	D	D	C
Taylor Rd. and Indian Springs Cemetery Rd.	Unsignalized	Delay	18.1	N/A	0.3	0.0	18.1
		LOS	C	N/A	A	A	C
North Jones Loop Rd. and Taylor Rd.	Signalized	Delay	21.9	15.4	43.2	79.6	33.2
		LOS	C	B	D	E	C
Taylor Rd. and Knights. Dr.	Unsignalized	Delay	N/A	26.2	0.0	0.8	26.2
		LOS	N/A	D	A	A	D
North Jones Loop Rd. and Springwater Dr.	Unsignalized	Delay	0.2	0.8	13.6	14.0	14.0
		LOS	A	A	B	B	B
North Jones Loop Rd. and Mac/Knights Dr.	Signalized	Delay	17.5	41.0	61.4	52.0	34.2
		LOS	C	D	E	D	C
North Jones Loop Rd. and I-75 SB Ramps	Signalized	Delay	26.4	3.3	N/A	65.1	31.2
		LOS	C	A	N/A	E	C
North Jones Loop Rd. and I-75 NB Ramps	Signalized	Delay	7.6	16.6	48.6	N/A	14.8
		LOS	A	B	D	N/A	B
North Jones Loop Rd. and Piper Rd.	Unsignalized	Delay	7.6	0.0	N/A	27.6	27.6
		LOS	A	A	N/A	D	D

N/A – Approach does not exist.

¹ The subject intersection is outside the study limits

For unsignalized intersections, the worst approach delay was reported as the intersection delay.

Table 4-10: Delay and LOS - Design Year (2045) AM Peak Hour

Intersection	Type of Intersection	MOE	Approach				Intersection
			EB	WB	NB	SB	
US 41 and Burnt Store Rd./ North Jones Loop Rd. ¹	Signalized	Delay	292.6	70.3	61.3	226.8	184.9
		LOS	F	E	E	F	F
North Jones Loop Rd. and Burnt Store Rd.	Unsignalized	Delay	1.6	0.0	N/A	514.7	514.7
		LOS	A	A	N/A	F	F
North Jones Loop Rd. and Glasgow Ave.	Unsignalized	Delay	0.0	1.2	1170.9	N/A	1170.9
		LOS	A	A	F	N/A	F
North Jones Loop Rd. and Indian Springs Cemetery Rd.	Signalized	Delay	40.1	12.2	41.3	42.6	28.8
		LOS	D	B	D	D	C
Taylor Rd. and Indian Springs Cemetery Rd.	Unsignalized	Delay	62.1	N/A	2.1	0.0	62.1
		LOS	F	N/A	A	A	F
North Jones Loop Rd. and Taylor Rd.	Signalized	Delay	66.1	148.6	38.7	106.8	102.2
		LOS	E	F	D	F	F
Taylor Rd. and Knights. Dr.	Unsignalized	Delay	N/A	53.2	0.0	1.3	53.2
		LOS	N/A	F	A	A	F
North Jones Loop Rd. and Springwater Dr.	Unsignalized	Delay	0.4	11.5	28.9	22.6	28.9
		LOS	A	B	D	C	D
North Jones Loop Rd. and Mac/Knights Dr.	Signalized	Delay	235.6	381.8	237.5	48.1	281.1
		LOS	F	F	F	D	F
North Jones Loop Rd. and I- 75 SB Ramps	Signalized	Delay	136.5	13.4	N/A	156.3	105.7
		LOS	F	B	N/A	F	F
North Jones Loop Rd. and I- 75 NB Ramps	Signalized	Delay	143.1	39.6	43.1	N/A	102.2
		LOS	F	D	D	N/A	F
North Jones Loop Rd. and Piper Rd.	Unsignalized	Delay	36.4	0.0	N/A	13131.7	13131.7
		LOS	E	A	N/A	F	F

N/A – Approach does not exist.

¹ The subject intersection is outside the study limits

For unsignalized intersections, the worst approach delay was reported as the intersection delay.

Table 4-11: Delay and LOS - Design Year (2045) PM Peak Hour

Intersection	Type of Intersection	MOE	Approach				Intersection
			EB	WB	NB	SB	
US 41 and Burnt Store Rd./ North Jones Loop Rd. ¹	Signalized	Delay	102.4	281.5	48.0	292.5	201.5
		LOS	F	F	D	F	F
North Jones Loop Rd. and Burnt Store Rd.	Unsignalized	Delay	1.6	0.0	N/A	129.6	129.6
		LOS	A	A	N/A	F	F
North Jones Loop Rd. and Glasgow Ave.	Unsignalized	Delay	0.0	0.2	256.1	N/A	256.1
		LOS	A	A	F	N/A	F
North Jones Loop Rd. and Indian Springs Cemetery Rd.	Signalized	Delay	32.2	38.9	52.9	45.8	37.8
		LOS	C	D	D	D	D
Taylor Rd. and Indian Springs Cemetery Rd.	Unsignalized	Delay	45.3	N/A	0.4	0.0	45.3
		LOS	E	N/A	A	A	E
North Jones Loop Rd. and Taylor Rd.	Signalized	Delay	40.5	207.2	41.0	257.7	151.3
		LOS	D	F	D	F	F
Taylor Rd. and Knights. Dr.	Unsignalized	Delay	N/A	308.5	0.0	1.5	308.5
		LOS	N/A	F	A	A	F
North Jones Loop Rd. and Springwater Dr.	Unsignalized	Delay	0.3	5.2	32.9	24.5	32.9
		LOS	A	A	D	C	D
North Jones Loop Rd. and Mac/Knights Dr.	Signalized	Delay	369.7	452.6	194.0	72.4	367.0
		LOS	F	F	F	E	F
North Jones Loop Rd. and I-75 SB Ramps	Signalized	Delay	221.0	22.8	N/A	224.5	162.0
		LOS	F	C	N/A	F	F
North Jones Loop Rd. and I-75 NB Ramps	Signalized	Delay	88.1	66.2	48.3	N/A	78.0
		LOS	F	E	D	N/A	E
North Jones Loop Rd. and Piper Rd.	Unsignalized	Delay	22.6	0.0	N/A	3748.6	3748.6
		LOS	C	A	N/A	F	F

N/A – Approach does not exist.

¹ The subject intersection is outside the study limits

For unsignalized intersections, the worst approach delay was reported as the intersection delay.

5 ALTERNATIVES DEVELOPMENT

As part of this feasibility study, Build alternatives were developed based on the Preliminary Traffic Analysis Report (PTAR) and ICE/SPICE analysis. The information provided in the following sections summarizes design control and criteria, ICE/SPICE analysis, the proposed Build alternatives, safety and traffic analysis of the proposed Build alternatives, and cost estimates for Build alternative.

5.1 Design Control and Criteria

5.1.1 Roadway

Design Controls and Criteria have been summarized in **Tables 5-1 to 5-5** for the roads listed below. North Jones Loop Road and the local roads within the study area are not FDOT facilities. However, some roadways within the study limits have been designated as a part of Florida's Strategic Intermodal System (SIS). The design of SIS roadways is governed by the SIS criteria outlined in the FDOT Design Manual (2022). Non-SIS roadways within the study limits are designed to meet the requirements of the FDOT Manual of Uniform Minimum Standards for Design, Construction, and Maintenance for Streets and Highways (2018) (commonly known as the Florida Greenbook).

- SIS Major Collector, C3C (Suburban Commercial), flush shoulder w/ curbed median typical section, 45 mph design speed
 - North Jones Loop Road from limited access right-of-way (east of Mac and Knights Roads) to Piper Road
- SIS Minor Arterial, C3C (Suburban Commercial), curbed typical section, 45 mph design speed
 - Piper Road from North Jones Loop Road to northern project limit
- Collector, C3C (Suburban Commercial), curbed typical section, 45 mph design speed
 - North Jones Loop Road from Taylor Road to limited access right-of-way (east of Mac and Knights Roads)
 - Taylor Road from North Jones Loop Road to northern project limit
- Minor Arterial, C3C (Suburban Commercial), 45 mph design speed
 - North Jones Loop Road from western project limit (Burnt Store Road) to Taylor Road
 - North Jones Loop Road from Piper Road to eastern project limit
 - Taylor Road from southern project limit to North Jones Loop Road
- Local Road, C3C (Suburban Commercial), curbed typical section, 25 mph design speed
 - Indian Springs Cemetery Road
 - Indian Trail Drive (tie-ins only)
 - Springwater Drive
 - Potential Backage Road (the proposed connection between Springwater Drive and Mac Drive)
 - Mac Drive
 - Knights Drive

**Table 5-1: Design Criteria - North Jones Loop Road
(E. of Mac/Knights Road to Piper Road)**

SIS Major Collector, C3C (Suburban Commercial), flush shoulder w/ curbed median typical section, 45 mph design speed

FDM: 2020 FDOT Design Manual

Design Element - Design Controls	Design Criteria	Source / Notes
Access Classification	Access Class 3: 440' Connection Spacing 1320' Directional Median Opening Spacing 2640' Full Median Opening Spacing	FDM Table 201.4.2 and Rule Chapter 14-97 State Highway System Access Control Classification System, Florida Administrative Code
Design Speed	45 MPH	FDM Table 201.5.1 (C3C SIS facility requires DDE approval)
Posted Speed	45 MPH	FDM Section 201.5.1
Design Vehicle	WB-62FL	FDM Section 201.6.2
Design Element - Cross-Section Elements	Design Criteria	Source / Notes
Minimum Lane Width	11-ft	FDM Table 210.2.1
Minimum Median Width	22-ft	FDM Table 210.3.1
Shoulder Widths without Shoulder Gutter · if applicable	Outside - 5' paved, 10' full Outside Aux - 5' paved, 10' full Inside - 0' paved, 10' full Inside Aux - 0' paved, 8' full	FDM Table 210.4.1
Shoulder Widths with Shoulder Gutter · if applicable	Outside - 8' paved, 15.5' full Outside Aux - 4' paved, 11.5' full	FDM Table 210.4.1
	Inside - 8' paved, 15.5' full Inside Aux - 4' paved, 11.5' full	
Shared-Use Path Width	12' (10' min)	FDM 224.4
Border Width	14-ft	FDM Table 210.7.1
Clear Zone		
· Travel Lanes & Multilane Ramps	24-ft	FDM Table 215.2.1
· Aux. Lanes & Single Lane Ramps	14-ft	

**Table 5-1: Design Criteria - North Jones Loop Road
(E. of Mac/Knights Road to Piper Road) (Continued)**

Design Element - Cross-Section Elements	Design Criteria	Source / Notes
Superelevation	e max = 0.05 ft/ft	
· Transition Ratio	1:200 (2-L) 1:160 (3-L)	FDM Table 210.9.3
Cross Slope (Lane (3 & 4)	0.03 (typical)	FDM Figure 210.2.1
Cross Slope (Outside Shoulder)	0.06 ft/ft	FDM 211.4.2
Cross Slope (Inside Shoulder)	0.05 ft/ft	
Cross Slope (Shared-Use Path)	2% max.	FDM 224.5
Side Slope (Roadway)	1:4 slope	FDM 215.2.2
Sideslope (Shared-Use Path)	2' min of 1:6 max. slope	FDM 224.7
Design Element - Horizontal Geometry	Design Criteria	Source / Notes
Horizontal Curves		
· Max. Curvature with 0.05 Superelevation	10° 15' (0.10 SE Max)	FDM Table 210.9.1
· Min. Radius without Superelevation	6,878 (0.10 SE Max)	
· Length of curve:	675' for 45mph	FDM Table 210.8.1
Max. Deflection without Horizontal Curve	1° 00' 00"	FDM 210.8.1
Max. Deflection Angle through Intersection	3°00' 00"	FDM Table 212.7.1
Design Element - Vertical Geometry	Design Criteria	Source / Notes
Minimum Grade	0.30%	FDM Table 210.10.2
Maximum Grade	6.00%	FDM Table 210.10.1
Maximum Grade (Shared-Use Path and Sidewalk)	5.00%	FDM 222.4 and 224.6
Maximum Change in Grade without a Vertical Curve	0.70%	FDM Table 210.10.2
Crest Vertical Curves		
· Minimum K Value	98	FDM Table 210.10.3
· Minimum Length	135-ft	FDM Table 210.10.4
Sag Vertical Curves		
· Minimum K Value	79	FDM Table 210.10.3
· Minimum Length	135-ft	FDM Table 210.10.4
Stopping Sight Distance	360-ft	FDM Table 210.11.1
Minimum Vertical Clearance	16.5-ft	FDM Table 260.6.1

Table 5-2: Design Criteria – Piper Road***SIS Minor Arterial, C3C (Suburban Commercial), curbed typical section, 45 mph design speed***

FDM: 2020 FDOT Design Manual

Design Element - Design Controls	Design Criteria	Source / Notes
Access Classification	Access Class 3: 440' Connection Spacing 1320' Directional Median Opening Spacing 2640' Full Median Opening Spacing	FDM Table 201.4.2 and Rule Chapter 14-97 State Highway System Access Control Classification System, Florida Administrative Code
Design Speed	45 MPH	FDM Table 201.5.1
Posted Speed	45 MPH	FDM Section 201.5.1
Design Vehicle	WB-62FL	FDM Section 201.6.2
Design Element - Cross-Section Elements	Design Criteria	Source / Notes
Minimum Lane Width	11-ft	FDM Table 210.2.1
Minimum Median Width	22-ft	FDM Table 210.3.1
Shoulder Widths without Shoulder Gutter · if applicable	Outside - 5' paved, 10' full Outside Aux - 5' paved, 10' full	FDM Table 210.4.1
	Inside - 0' paved, 10' full Inside Aux - 0' paved, 8' full	
Shoulder Widths with Shoulder Gutter · if applicable	Outside - 8' paved, 15.5' full Outside Aux - 4' paved, 11.5' full	FDM Table 210.4.1
	Inside - 8' paved, 15.5' full Inside Aux - 4' paved, 11.5' full	
Shared-Use Path Width	12' (10' min)	FDM 224.4
Sidewalk Width	6'	FDM Table 222.2.1
Border Width	14-ft	FDM Table 210.7.1
Clear Zone		FDM Table 215.2.1
· Travel Lanes & Multilane Ramps	24-ft	
· Aux. Lanes & Single Lane Ramps	14-ft	

Table 5-2: Design Criteria – Piper Road (Continued)

Design Element - Cross-Section Elements	Design Criteria	Source / Notes
Superelevation	e max = 0.05 ft/ft	FDM Table 210.9.3
· Transition Ratio	1:200 (2-L)	
Cross Slope (Lanes 1 & 2)	2% (typical)	FDM Figure 210.2.1
Cross Slope (Lane (3 & 4)	3% (typical)	
Cross Slope (Outside Shoulder)	0.06 ft/ft	FDM 211.4.2
Cross Slope (Inside Shoulder)	0.05 ft/ft	
Cross Slope (Shared-Use Path)	2% max.	FDM 224.5
Cross Slope (Sidewalk)	2% max.	FDM 222.2.1.3
Side Slope (Roadway)	1:4 slope	FDM 215.2.2
Sideslope (Shared-Use Path)	2' min of 1:6 max. slope	FDM 224.7
Sideslope (Sidewalk)	2' min of 1:3 max. slope	FDM 222.4
Design Element - Horizontal Geometry	Design Criteria	Source / Notes
Horizontal Curves		
· Max. Curvature with 0.05 Superelevation	10° 15' (0.10 SE Max)	FDM Table 210.9.1
· Min. Radius without Superelevation	6,878 (0.10 SE Max)	
· Length of curve:	675' for 45mph	FDM Table 210.8.1
Max. Deflection without Horizontal Curve	1° 00' 00"	FDM 210.8.1
Max. Deflection Angle through Intersection	3°00' 00"	FDM Table 212.7.1
Superelevation	e max = 0.10 ft/ft	
· Transition Ratio	1:200	FDM Table 210.9.3
Design Element - Vertical Geometry	Design Criteria	Source / Notes
Minimum Grade	0.30%	FDM Table 210.10.2
Maximum Grade	6.00%	FDM Table 210.10.1
Maximum Grade (Shared-Use Path and Sidewalk)	5.00%	FDM 222.4 and 224.6
Maximum Change in Grade without a Vertical Curve	0.70%	FDM Table 210.10.2
Crest Vertical Curves		
· Minimum K Value	98	FDM Table 210.10.3
· Minimum Length	135-ft	FDM Table 210.10.4
Sag Vertical Curves		
· Minimum K Value	79	FDM Table 210.10.3
· Minimum Length	135-ft	FDM Table 210.10.4
Stopping Sight Distance	360-ft	FDM Table 210.11.1
Minimum Vertical Clearance	16.5-ft	FDM Table 260.6.1

Table 5-3: Design Criteria – North Jones Loop Road (BSR to Taylor Road and E. of Piper Road) and Taylor Road (NJLR to South Limit)

Collector, C3C (Suburban Commercial), curbed typical section, 45 mph design speed

FGB: Florida Greenbook, aka 2018 Manual of Uniform Minimum Standards for Design, Construction and Maintenance

Design Element - Design Controls	Design Criteria	Source / Notes
Access Classification Taylor Rd (north of NJLR)	Access Class 3: 440' Connection Spacing 1320' Directional Median Opening Spacing 2640' Full Median Opening Spacing	FGB Chapter 3 – Geometric Design, C.8 Access Control and Rule Chapter 14-97 State Highway System Access Control Classification System, Florida Administrative Code
Access Classification NJLR (Taylor to E of Mac/Knights)	Access Class 5: 245' Connection Spacing 660' Directional Median Opening Spacing 1320' Full Median Opening Spacing	FGB Chapter 3 – Geometric Design, C.8 Access Control and Rule Chapter 14-97 State Highway System Access Control Classification System, Florida Administrative Code
Design Speed	45 MPH	FGB Table 3-1, urban boundary, developed area
Posted Speed	45 MPH	FGB Ch 3.C.1
Design Element - Cross-Section Elements	Design Criteria	Source / Notes
Minimum Lane Width	11-ft	FGB Table 3-20, urban, <=45mph, high % trucks
Minimum Median Width	22-ft	FGB Table 3-23
Shoulder Widths	N/A N/A	FGB Table 3-21
Shared-Use Path Width	10' min. min 5' separation between curb/shoulder	FGB Ch 9.C
Sidewalk Width	5' min. min 5' separation between shoulder point and sidewalk	FGB Ch 8.B
Clear Zone · Travel Lanes & Multilane Ramps · Aux. Lanes & Single Lane Ramps	24-ft 14-ft	FGB Table 4-1

Table 5-3: Design Criteria – North Jones Loop Road (BSR to Taylor Road and E. of Piper Road) and Taylor Road (NJLR to South Limit) (Continued)

Design Element - Cross-Section Elements	Design Criteria	Source / Notes
Lateral Offset	lateral offset 4' (1.5' min.) from curb face to above gnd. hazard)	FGB Table 4-2
Superelevation · Transition Ratio	e max = 0.05 ft/ft 1:200 (2-L) 1:160 (3-L)	Max. NC radius=2083' FGB Ch 3.C.4.c.2 table 3-11 FGB Ch 3.C.4.e Table 3-13
Cross Slope (Lanes 1 & 2)	2% (typical)	FGB Section 3.C.7.b.2
Cross Slope (Lane (3 & 4)	3% (typical)	FGB Section 3.C.7.b.2
Cross Slope (Shared-Use Path)	2% max.	FGB Ch 9.C
Cross Slope (Sidewalk)	2% max.	FGB Ch 8.B
Side Slope (Roadway)	1:4 slope	FGB Ch. 4 B.1.a
Sideslope (Shared-Use Path)	3' (2' min) of 1:6 max. slope	FGB Ch 9.C
Sideslope (Sidewalk)	1' min of 1:6 max. slope	FGB Ch 8.B
Design Element - Horizontal Geometry	Design Criteria	Source / Notes
Horizontal Curves · Max. Curvature with 0.05 Superelevation · Min. Radius with RC · Min. Radius with NC	8° 15' 955 2,083	FGB Table 3-11
· Length of curve:	675' for 45mph	
Max. Deflection without Horizontal Curve	1° 00' 00"	FGB Section 3.C.4.b
Max. Deflection Angle through Intersection	3°00' 00"	FGB Table 3-7
Design Element - Vertical Geometry	Design Criteria	Source / Notes
Minimum Grade	0.30%	FGB Section 3.C.5.b
Maximum Grade	6.00%	FGB Table 3-16 (level, urban arterial)
Maximum Grade (Shared-Use Path and Sidewalk)	5.00%	FGB Ch 8.B and Ch 9.C
Maximum Change in Grade without a Vertical Curve	0.70%	FGB Table 3-17
Crest Vertical Curves · Minimum K Value · Minimum Length	61 135-ft	FGB Table 3-18 FGB Table 3-18
Sag Vertical Curves · Minimum K Value · Minimum Length	79 135-ft	FGB Table 3-18 FGB Table 3-18
Stopping Sight Distance	360-ft	FGB Tables 3-4
Minimum Vertical Clearance	16.5-ft	FGB Section 3.C.7.j.4.(b)

Table 5-4: Design Criteria – North Jones Loop Road (BSR to Taylor Road and E. of Piper Road) and Taylor Road (NJLR to South Limit)

Minor Arterial, C3C (Suburban Commercial), 45 mph design speed

FGB: Florida Greenbook, aka 2018 Manual of Uniform Minimum Standards for Design, Construction and Maintenance

Design Element - Design Controls	Design Criteria for NJLR (Flush Shoulder)	Design Criteria for Taylor (Curbed)	Source / Notes
Access Classification (TBD)	Access Class 3: 440' Connection Spacing 1320' Directional Median Opening Spacing 2640' Full Median Opening Spacing	Access Class 3: 440' Connection Spacing 1320' Directional Median Opening Spacing 2640' Full Median Opening Spacing	FGB Chapter 3 – Geometric Design, C.8 Access Control and Rule Chapter 14-97 State Highway System Access Control Classification System, Florida Administrative Code
Design Speed	45 MPH	45 MPH	FGB Table 3-1, urban boundary, developed area
Posted Speed	40 MPH (Burnt Store Rd to after 2nd curve) 45 MPH (after 2nd curve to Taylor Rd)(EB) 35 MPH (Burnt Store Rd to between curve 1&2) 45 MPH (between curve 1&2 to Taylor Rd)(WB)	40 MPH (Burnt Store Rd to after 2nd curve) 45 MPH (after 2nd curve to Taylor Rd)(EB) 35 MPH (Burnt Store Rd to between curve 1&2) 45 MPH (between curve 1&2 to Taylor Rd)(WB)	FGB Ch 3.C.1
Design Element - Cross-Section Elements	Design Criteria for NJLR (Flush Shoulder)	Design Criteria for Taylor (Curbed)	Source / Notes
Minimum Lane Width	11-ft	11-ft	FGB Table 3-20, urban, <=45mph, high % trucks
Minimum Median Width	22-ft	22-ft	FGB Table 3-23
Shoulder Widths	Outside - 8'	N/A	FGB Table 3-21
	Inside - 4'	N/A	
Shared-Use Path Width	10' min. min 5' separation between curb/shoulder	10' min. min 5' separation between curb/shoulder	FGB Ch 9.C
Sidewalk Width	5' min. min 5' separation between shoulder point and sidewalk	5' min. min 5' separation between shoulder point and sidewalk	FGB Ch 8.B
Clear Zone			FGB Table 4-1
· Travel Lanes & Multilane Ramps	24-ft	24-ft	
· Aux. Lanes & Single Lane Ramps	14-ft	14-ft	

Table 5-4: Design Criteria – North Jones Loop Road (BSR to Taylor Road and E. of Piper Road) and Taylor Road (NJLR to South Limit) (Continued)

Design Element - Cross-Section Elements	Design Criteria for NJLR (Flush Shoulder)	Design Criteria for Taylor (Curbed)	Source / Notes
Lateral Offset	Clear Zone Width	lateral offset 4' (1.5' min.)	FGB Table 4-2
Superelevation	e max = 0.05 ft/ft	e max = 0.05 ft/ft	
· Transition Ratio	1:200	1:200	
Cross Slope (Lanes 1 & 2)	2% (typical)	2% (typical)	FGB Section 3.C.7.b.2
Cross Slope (Lane (3 & 4)	3% (typical)	3% (typical)	FGB Section 3.C.7.b.2
Cross Slope (Shoulder)	min. match outside lane to 6% max. algebraic diff. 7%	N/A	FGB Ch. 3 C.7.c.e and table 3-22
Cross Slope (Shared-Use Path)	2% max.	2% max.	FGB Ch 9.C
Cross Slope (Sidewalk)	2% max.	2% max.	FGB Ch 8.B
Sideslope (Roadway)	1:4 slope	1:4 slope	FGB Ch. 4 B.1.a
Sideslope (Shared-Use Path)	3' (2' min) of 1:6 max. slope	3' (2' min) of 1:6 max. slope	FGB Ch 9.C
Sideslope (Sidewalk)	1' min of 1:6 max. slope	1' min of 1:6 max. slope	FGB Ch 8.B
Design Element - Horizontal Geometry	Design Criteria for NJLR (Flush Shoulder)	Design Criteria for Taylor (Curbed)	Source / Notes
Horizontal Curves			
· Max. Curvature with 0.05 Superelevation	8° 15'	8° 15'	FGB Table 3-11
· Min. Radius with RC	955	955	
· Min. Radius with NC	2,083	2,083	
· Length of curve:	675' for 45mph	675' for 45mph	FGB Table 3-8
Max. Deflection without Horizontal Curve	0°45' 00"	1° 00' 00"	FGB Section 3.C.4.b
Max. Deflection Angle through Intersection	3°00' 00"	3°00' 00"	FGB Table 3-7
Design Element - Vertical Geometry	Design Criteria for NJLR (Flush Shoulder)	Design Criteria for Taylor (Curbed)	Source / Notes
Minimum Grade	0.00%	0.30%	FGB Section 3.C.5.b
Maximum Grade	6.00%	6.00%	FGB Table 3-16 (level, urban arterial)
Maximum Grade (Shared-Use Path and Sidewalk)	5.00%	5.00%	FGB Ch 8.B and Ch 9.C
Maximum Change in Grade without a Vertical Curve	0.70%	0.70%	FGB Table 3-17
Crest Vertical Curves			
· Minimum K Value	61	61	FGB Table 3-18
· Minimum Length	135-ft	135-ft	FGB Table 3-18
Sag Vertical Curves			
· Minimum K Value	79	79	FGB Table 3-18
· Minimum Length	135-ft	135-ft	FGB Table 3-18
Stopping Sight Distance	360-ft	360-ft	FGB Tables 3-4
Minimum Vertical Clearance	16.5-ft	16.5-ft	FGB Section 3.C.7.j.4.(b)

Table 5-5: Design Criteria – Local Roads (Indian Spr. Cemetery Road, Springwater Drive, Mac/Knights Drive, BSR, Glasgow Road)

Local Road, C3C (Suburban Commercial), curbed typical section, 25 mph design speed

FGB: Florida Greenbook, aka 2018 Manual of Uniform Minimum Standards for Design, Construction and Maintenance

Design Element - Design Controls	Design Criteria	Source / Notes
Design Speed	25 MPH	FGB Table 3-1, urban boundary, developed area
Posted Speed	25 MPH	FGB Ch 3.C.1
Design Element - Cross-Section Elements	Design Criteria	Source / Notes
Minimum Lane Width	12-ft preferable (11-ft min.)	FGB Table 3-20, urban, 12' where truck volumes are significant, 11' where right-of-way is constrained
Sidewalk Width	5' min. min 5' separation between shoulder point and sidewalk	FGB Ch 8.B
Clear Zone		
· Travel Lanes & Multilane Ramps	16-ft	FGB Table 4-1
· Aux. Lanes & Single Lane Ramps	10-ft	
Lateral Offset	lateral offset 4' (1.5' min.) from curb face to above gnd. hazard)	FGB Table 4-2
Superelevation	e max = 0.05 ft/ft	Max. NC radius=2083' FGB Ch 3.C.4.c.2 table 3-11
· Transition Ratio	1:100	FGB Ch 3.C.4.e Table 3-13
Cross Slope (Lanes 1 & 2)	2% (typical)	FGB Section 3.C.7.b.2
Cross Slope (Lane (3 & 4)	3% (typical)	FGB Section 3.C.7.b.2
Cross Slope (Sidewalk)	2% max.	FGB Ch 8.B
Sideslope (Roadway)	1:4 slope	FGB Ch. 4 B.1.a
Sideslope (Sidewalk)	1' min of 1:6 max. slope	FGB Ch 8.B
Design Element - Horizontal Geometry	Design Criteria	Source / Notes
Horizontal Curves		
· Min. Radius with 0.05 Superelevation	149'	FGB Table 3-12
· Min. Radius with RC	167'	
· Min. Radius with NC	198'	
· Length of curve:	400' for 25mph	FGB Table 3-8
Max. Deflection without Horizontal Curve	2° 00' 00"	FGB Section 3.C.4.b
Max. Deflection Angle through Intersection	11°00' 00"	FGB Table 3-7

Table 5-5: Design Criteria – Local Roads (Indian Spr. Cemetery Road, Springwater Drive, Mac/Knights Drive, BSR, Glasgow Road) (Continued)

Design Element - Cross-Section Elements	Design Criteria for NJLR (Flush Shoulder)	Design Criteria for Taylor (Curbed)	Source / Notes
Lateral Offset	Clear Zone Width	lateral offset 4' (1.5' min.)	FGB Table 4-2
Superelevation	e max = 0.05 ft/ft	e max = 0.05 ft/ft	
· Transition Ratio	1:200	1:200	
Cross Slope (Lanes 1 & 2)	2% (typical)	2% (typical)	FGB Section 3.C.7.b.2
Cross Slope (Lane (3 & 4)	3% (typical)	3% (typical)	FGB Section 3.C.7.b.2
Cross Slope (Shoulder)	min. match outside lane to 6% max. algebraic diff. 7%	N/A	FGB Ch. 3 C.7.c.e and table 3-22
Cross Slope (Shared-Use Path)	2% max.	2% max.	FGB Ch 9.C
Cross Slope (Sidewalk)	2% max.	2% max.	FGB Ch 8.B
Sideslope (Roadway)	1:4 slope	1:4 slope	FGB Ch. 4 B.1.a
Sideslope (Shared-Use Path)	3' (2' min) of 1:6 max. slope	3' (2' min) of 1:6 max. slope	FGB Ch 9.C
Sideslope (Sidewalk)	1' min of 1:6 max. slope	1' min of 1:6 max. slope	FGB Ch 8.B
Design Element - Horizontal Geometry	Design Criteria for NJLR (Flush Shoulder)	Design Criteria for Taylor (Curbed)	Source / Notes
Horizontal Curves			
· Max. Curvature with 0.05 Superelevation	8° 15'	8° 15'	FGB Table 3-11
· Min. Radius with RC	955	955	
· Min. Radius with NC	2,083	2,083	
· Length of curve:	675' for 45mph	675' for 45mph	FGB Table 3-8
Max. Deflection without Horizontal Curve	0o45' 00"	1o 00' 00"	FGB Section 3.C.4.b
Max. Deflection Angle through Intersection	3o00' 00"	3o00' 00"	FGB Table 3-7
Design Element - Vertical Geometry	Design Criteria for NJLR (Flush Shoulder)	Design Criteria for Taylor (Curbed)	Source / Notes
Minimum Grade	0.00%	0.30%	FGB Section 3.C.5.b
Maximum Grade	6.00%	6.00%	FGB Table 3-16 (level, urban arterial)
Maximum Grade (Shared-Use Path and Sidewalk)	5.00%	5.00%	FGB Ch 8.B and Ch 9.C
Maximum Change in Grade without a Vertical Curve	0.70%	0.70%	FGB Table 3-17
Crest Vertical Curves			
· Minimum K Value	61	61	FGB Table 3-18
· Minimum Length	135-ft	135-ft	FGB Table 3-18
Sag Vertical Curves			
· Minimum K Value	79	79	FGB Table 3-18
· Minimum Length	135-ft	135-ft	FGB Table 3-18
Stopping Sight Distance	360-ft	360-ft	FGB Tables 3-4
Minimum Vertical Clearance	16.5-ft	16.5-ft	FGB Section 3.C.7.j.4.(b)

Table 5-5: Design Criteria – Local Roads (Indian Spr. Cemetery Road, Springwater Drive, Mac/Knights Drive, BSR, Glasgow Road) (Continued)

Design Element - Vertical Geometry	Design Criteria	Source / Notes
Minimum Grade	0.30%	FGB Section 3.C.5.b
Maximum Grade	7.00%	FGB Table 3-16 (level, urban arterial)
Maximum Grade (Sidewalk)	5.00%	FGB Ch 8.B
Maximum Change in Grade without a Vertical Curve	1.10%	FGB Table 3-17
Crest Vertical Curves		
· Minimum K Value	12	FGB Table 3-18
· Minimum Length	75-ft	FGB Table 3-18
Sag Vertical Curves		
· Minimum K Value	26	FGB Table 3-18
· Minimum Length	75-ft	FGB Table 3-18
Stopping Sight Distance	155-ft	FGB Tables 3-4

5.1.2 Drainage

5.1.2.1 Wet Detention Ponds

A pond type of wet detention is selected for design alternatives due to the Seasonal High Ground Water Table (SHGWT) within the project limits. The pond type selection will dictate the water quality and attenuation design criteria.

5.1.2.2 Water Quality

The project is not within an impaired basin for nutrients and will not require a nutrient loading analysis.

Wet detention shall be provided for the first inch (1.0") of runoff from the impervious area from the new and existing impervious based on the SWFWMD ERP Handbook dated June 1, 2018, Part IV-Stormwater Quality, 4.1 Retention and detention criteria, (a) Wet Detention Systems, (1). In addition, basins discharging directly into OFW shall be required to provide an additional 50 percent treatment volume based on the SWFWMD ERP Handbook dated June 1, 2018, Part IV Stormwater Quality, 4.1 Retention and detention criteria, (f) Discharges to Outstanding Florida Waters. Total treatment volume shall be discharged in no less than 120 hours, with no more than one-half the total volume being discharged within the first 60 hours based on the SWFWMD ERP Handbook dated June 1, 2018, Part IV-Stormwater Quality, 4.1 Retention, and detention criteria, (a) Wet Detention Systems, (4). Only the volume available within 36 hours is counted as part of the volume required for water quantity storage based on the SWFWMD ERP Handbook dated June 1, 2018, Part IV-Stormwater Quality, 4.1 Retention and detention criteria, (a) Wet Detention Systems, (5). The project using the criteria found in this section shall meet with reasonable assurance compliance with the state water quality standards referenced in Section 62-330.301(1)(e), Florida Administrative Code.

5.1.2.3 Water Quantity (Attenuation)

The 25-year 24-hour storm shall be used as directed by the FDOT Drainage Design Manual dated January 2022 (refer to Chapter 5 Stormwater Management-5.2 Regulatory Requirements: 5.2.1 Chapter 14-86 Florida Administration Code, 5.2.2 Section 373.4596 Florida Statutes, 5.4.1.2 Watershed with Positive Outlets). The 25-year, 24-hour storm will be used for SWFWMD permitting based on the SWFWMD ERP handbook dated June 1, 2018, Part III-Stormwater Quantity/Flood Control, 3.1 Discharges (b).

5.1.2.4 Wet Detention Pond Facilities Configuration

The proposed ponds shall include a 15-foot maintenance berm width, minimum 1:4 (Vertical: Horizontal) for pond side slopes and tie up/down slopes to existing ground, and a minimum 1-foot freeboard from the inside maintenance berm to the Design High Water (DHW) stage. The treatment volume should not cause the pond level to rise more than 18 inches above the control elevation. The wet detention water quality systems shall be designed so that each SMF has a size of a minimum 100-foot width by the 200-foot length. Wet ponds shall have a minimum permanent pool of 6-feet and a mean depth of 2 to 8 feet.

5.1.2.5 Conveyance

Open channel conveyance systems shall be designed for a 10-year frequency. Closed conveyance systems shall be designed for 3-yr frequency.

5.2 Intersection Control Evaluation (ICE) Analysis

Intersection Control Evaluation (ICE) analysis was conducted for the study intersections along North Jones Loop Road to identify and select appropriate control types for safe and efficient operations for all road users. The ICE analysis technical memorandum was prepared for five (5) study intersections mentioned below, as provided in **Appendix H**.

- North Jones Loop Road at Piper Road – One-way Stop Controlled
- North Jones Loop Road at I-75 Northbound and Southbound Ramps – Signalized
- North Jones Loop Road at Knights/Mac Drive - Signalized
- North Jones Loop Road at Taylor Road (CR 765A) - Signalized
- North Jones Loop Road at Indian Springs Cemetery Road – Signalized

Per FDOT's ICE manual, CAP-X and SPICE analysis was conducted to establish a list of viable traffic control strategies for the study intersections. CAP-X was utilized to perform capacity analysis, and SPICE was used to evaluate the safety performance of the study intersections. The latest version of CAP-X and SPICE tools obtained from the FDOT website were used for the Stage-1 ICE analysis. The CAP-X analysis ranks selected control types for an intersection based on the volume to capacity (V/C) ratio. SPICE analysis utilizes the historical crash data and the predicted crash frequency to rank the intersection control types.

The CAP-X and SPICE analyses were performed for the Opening Year (2025) and Design Year (2045) for both AM and PM peak hours. The summary of ICE analysis for each analyzed intersection is provided below.

5.2.1 North Jones Loop Road and Piper Road - ICE Analysis Summary

The traffic signal and 2-lane roundabout are the only viable control types for the study intersection based on CAP-X analysis. Other control types with V/C less than one are not feasible to implement either because of the proximity of the I-75 northbound ramp intersection or right-of-way/environmental impacts.

The SPICE analysis results indicate that the 1-lane roundabout and two-way stop control ranked 1 and 2. However, the V/C ratio for these control types will be greater than one in the Design Year (2045) conditions. A V/C greater than one could potentially cause longer queues that may eventually extend to the adjacent intersections. Congested conditions could potentially increase rear-end and sideswipe crashes at the study intersections.

The stage-1 of ICE analysis concludes that the traffic signal and 2-lane roundabout are the only viable control type at the study intersection by considering operational, safety, and right-of-way impacts.

5.2.2 North Jones Loop Road and I-75 Ramps - ICE Analysis Summary

The traditional and diverging diamond interchanges are the only viable control types for the study ramp terminal intersection based on CAP-X analysis. Other interchange control types with V/C less than one will not be feasible because these control types will require a significant reconfiguration of the existing interchange geometry.

The SPICE analysis results indicate that the diverging and traditional diamond interchanges control types ranked 1 and 2, respectively. Safety analysis is not performed for Partial Cloverleaf A & B, Displaced Left-Turn, and Single Point Interchange control types as those options are not available in the SPICE analysis.

The stage-1 of ICE analysis concludes that the traditional diamond and diverging diamond are the only viable interchange control types for the study ramp terminal intersections by considering operational, safety, and right-of-way impacts.

5.2.3 North Jones Loop Road and Mac/Knights Drive - ICE Analysis Summary

Based on CAP-X analysis, the traffic signal is the only viable control type for the study intersection. Other control types with V/C less than one are not feasible to implement because of the proximity of the I-75 southbound ramp intersection. In addition, the proposed unconventional control types will require additional right-of-way, leading to other environmental impacts such as historic properties, wetlands, drainage, etc.

The SPICE analysis results indicate that the 1-lane roundabout and 2-lane roundabout are ranked 1 and 3. However, the V/C ratio for these control types will be greater than one in the Design Year (2045) conditions. A V/C greater than one could potentially cause longer queues that may eventually extend to the adjacent intersections. Congested conditions could potentially increase rear-end and sideswipe crashes at the study intersections. Additionally, the median U-turn is ranked 2 in the SPICE analysis. However, the median U-turn is not feasible due to the proximity of the I-75 southbound intersection.

The stage-1 of ICE analysis concludes that the traffic signal is the only viable control type at the study intersection by considering operational, safety, and right-of-way impacts.

5.2.4 North Jones Loop Road and Taylor Road - ICE Analysis Summary

The traffic signal and quadrant roadways (N-W and S-E) are the only viable control types for the study intersection based on CAP-X analysis. Other control types with V/C less than one are not feasible to implement either because of the proximity of the study intersection to other intersections or right-of-way impacts.

The SPICE analysis results indicate that the 1-lane roundabout and 2-lane roundabout are ranked 1 and 4. However, the V/C ratio for these control types will be greater than one in the Design Year (2045) conditions. A V/C greater than one could potentially cause longer queues that may eventually extend to the adjacent intersections. Congested conditions could potentially increase rear-end and sideswipe crashes at the study intersections. Additionally, median U-turn and displaced U-turn are ranked 2 and 3, respectively. However, these control types are not feasible due to the proximity of the study intersection to other intersections and right-of-way impacts.

The stage-1 of ICE analysis concludes that the traffic signal and quadrant roadway are the only viable control types for the study intersection by considering operational, safety, and right-of-way impacts.

5.2.5 North Jones Loop Road and Indian Springs Cemetery Road - ICE Analysis Summary

Based on CAP-X analysis, the traffic signal is the only viable control type for the study intersection. Other control types with V/C less than one are not feasible to implement either because of the proximity of the study intersection to nearby intersections or right-of-way impacts.

The SPICE analysis results indicate that the 1-lane roundabout is ranked 1. However, the V/C ratio for a 1-lane roundabout will be greater than one in the Design Year (2045) conditions. A V/C greater than one could potentially cause longer queues that may eventually extend to the adjacent intersections. Congested conditions could potentially increase rear-end and sideswipe crashes at the study intersections. Additionally, median U-turn and signalized restricted crossing U-turn are ranked 2 and 3, respectively. However, these control types are not feasible due to the proximity of the study intersection to nearby intersections and right-of-way impacts.

The stage-1 of ICE analysis concludes that the traffic signal is the only viable control type at the study intersection by considering operational, safety, and right-of-way impacts.

5.3 Alternatives Description

5.3.1 No Build Alternative

The No-Build Alternative will not provide any additional roadway improvements within the study area, leaving the existing facility unchanged from its present configuration. The existing roadway has a 4-lane divided typical section with a deep ditch and shallow swale and sidewalks on each side of the roadway. The typical section transitions between areas of rural and suburban design within the study area. Mast arm signals are at the North Jones Loop Road intersections with Indian Springs Cemetery Road, Taylor Road, Mac Drive / Knights Drive, and the Interstate off-ramps. The side streets are stop-controlled at the North Jones Loop Road intersections with Burnt Store Road, Glasgow Avenue, Springwater Drive, Indian Trail Drive, and Piper Road.

The current corridor does not have the operational capacity to support the anticipated population growth, planned employment expansion, and economic development initiatives of the county. According to the Bureau of Economic and Business Research (BEBR), the population of Charlotte County is expected to increase by 29 percent, from 187,904 residents in 2020 to 242,500 residents in 2045. Countywide employment is expected to increase by 30 percent from 64,797 workers in 2010 to 84,387 in 2040 per 2040 LRTP. In addition, the current corridor does not support the county's goals for area-wide connectivity of vehicular, bicycle, and pedestrian traffic and its goals to improve emergency evacuation and response times.

5.3.2 Build Alternatives

The study area was separated into three different segments. Build alternatives have been designed and evaluated separately for each segment. Alternatives have been prepared with the intent that any segment can be constructed independently of the others. This approach provides flexibility to the owner agencies to leverage different construction funding sources on separate timelines to maximize the benefit to the traveling public. The three segments for Alternative A and B are shown graphically in **Figure 5-1** and **Figure 5-2**, respectively. The segments and build alternatives are described below, and exhibits showing the build alternatives can be found in **Appendix K**.

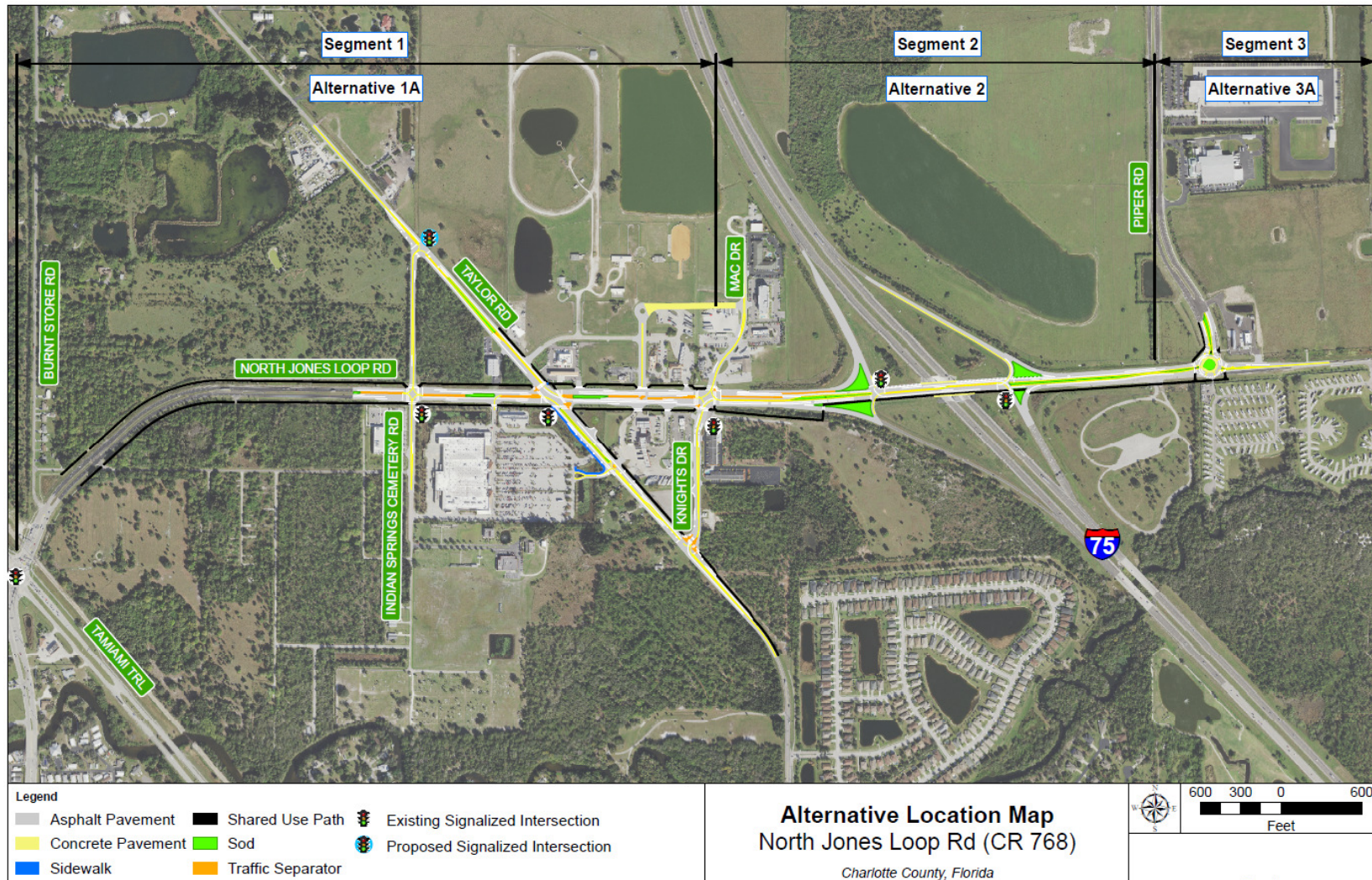


Figure 5-1: Alternative Location Map – Alternative A

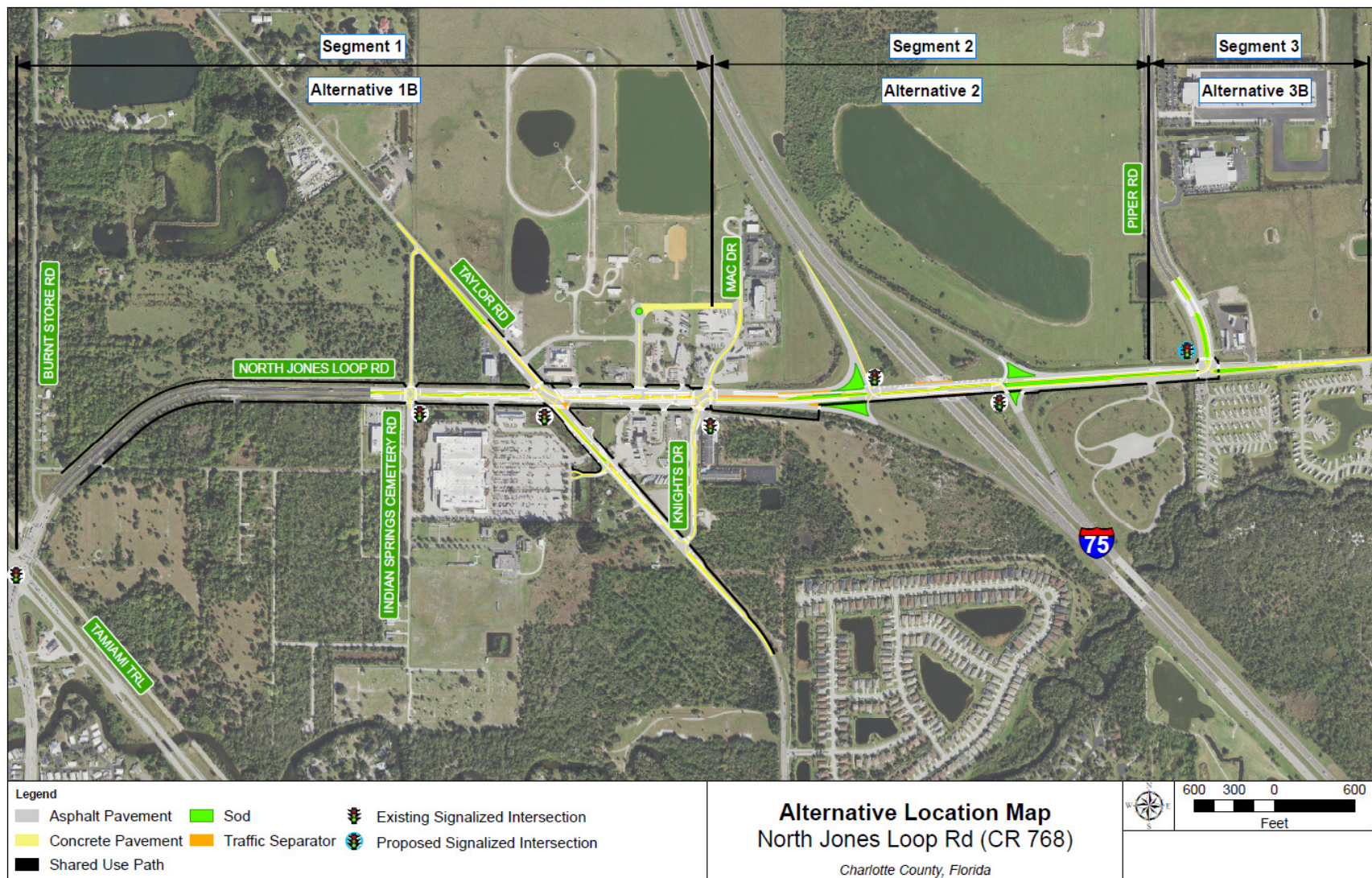


Figure 5-2: Alternative Location Map – Alternative B

5.3.2.1 Segment 1

The first segment extends along North Jones Loop Road from the beginning of the study area at Burnt Store Road (east of US 41) to east of Mac/Knights Drive (to L/A right-of-way). This segment includes the local commercial district between Taylor Road and Mac Drive and represents the area of greatest congestion and highest crash density within the study area. Two build alternatives have been developed for Segment 1, **Alternative 1A** and **Alternative 1B**.

Alternative 1A: Widen North Jones Loop Road from 4 to 6 lanes from Taylor Road to Mac/Knights Drive. Convert existing suburban open drainage typical section to an urban typical section with curb and gutter. Add/extend turn lanes on North Jones Loop Road to provide greater turning capacity at intersections from Indian Springs Cemetery Road to Mac/Knights Drive. Create a quadrant intersection at Taylor Road by widening and adding/expanding turn lanes on both Taylor Road and Indian Springs Cemetery Road. Reconstruct Mac/Knights Drive at the intersection with North Jones Loop Road to improve intersection geometry and widen Mac/Knights Drive to provide additional turn lane capacity at North Jones Loop Road. Construct a new local backage road between Springwater Drive and Mac Drive to improve local traffic circulation. Replace the existing sidewalk with a new shared-use path on both sides of the roadway from Burnt Store Road to Mac/Knights Drive.

Alternative 1B: Widen North Jones Loop Road from 4 to 6 lanes from Taylor Road to Mac/Knights Drive. Convert existing suburban open drainage typical section to an urban typical section with curb and gutter. Add/extend turn lanes on North Jones Loop Road to provide greater turning capacity at intersections from Indian Springs Cemetery Road to Mac/Knights Drive. Widen Taylor Road and expand turn lane capacity on the approaches to North Jones Loop Road. Reconstruct Mac/Knights Drive at the intersection with North Jones Loop Road to improve intersection geometry. Widen Mac/Knights Drive from Taylor Road to North Jones Loop Road and expand turn lane capacity on both approaches to North Jones Loop Road. Construct a new local backage road between Springwater Drive and Mac Drive to improve local traffic circulation. Replace the existing sidewalk with a new shared-use path on both sides of the roadway from Burnt Store Road to Mac/Knights Drive.

5.3.2.2 Segment 2

The second segment extends along North Jones Loop Road from Mac/Knights Drive (from L/A right-of-way) to the west of the Piper Road intersection (to L/A right-of-way). This segment is within the existing FDOT limited access right-of-way and includes both I-75 ramp intersections. One build alternative has been developed for Segment 2, **Alternative 2A**.

Alternative 2A: Widen North Jones Loop Road from 4 to 6 lanes from Mac/Knights Drive to the I-75 northbound ramp intersection. Expand turn lanes on North Jones Loop Road to provide greater turning capacity at Mac/Knights Drive and both interstate ramps. Add physical separation on westbound North Jones Loop Road and widen the southbound I-75 off-ramp to provide physical separation between vehicles traveling westbound on North Jones Loop Road or making westbound to the northbound right at Mac/Knights Drive from those making a westbound to southbound left turn at Mac/Knights drive. Widen the northbound I-75 on-ramp to accept dual eastbound to northbound left turns from North Jones Loop Road. Add a new shared-use path on the south side of the roadway from Mac/Knights Drive to Piper Road.

5.3.2.3 Segment 3

The third segment extends along North Jones Loop Road from west of Piper Road (from L/A right-of-way) to the end of the study area east of Piper Road. This segment is focused on the configuration of the North Jones Loop Road and Piper Road intersection. Two build alternatives have been developed for Segment 3, **Alternative 3A** and **Alternative 3B**.

Alternative 3A: Reconstruct the North Jones Loop Road and Piper Road intersection and approaches as a two-lane roundabout. Add a new shared-use path on the south side of the roadway ending at a crosswalk just east of the intersection. Add crosswalks and shared-use path connections from the shared-use path on the south side of North Jones Loop Road to the existing sidewalk along Piper Road.

Alternative 3B: Add a signal at the North Jones Loop Road and Piper Road intersection. Restripe eastbound North Jones Loop Road approach to provide dual left turns eastbound to northbound. Restripe southbound Piper Road to provide dual right turns and a single left turn. Reconstruct the east side of the intersection to provide a single through lane in each direction and add a westbound to the northbound right turn lane. Add a new shared-use path on the south side of the roadway ending at a crosswalk just east of the intersection. Add crosswalks and shared-use path connections from the shared-use path on the south side of North Jones Loop Road to the existing sidewalk along Piper Road.

5.4 Proposed Drainage

5.4.1 Proposed Improvements

5.4.1.1 Segment 1 (Alternative 1A/1B)

Segment 1 – North Jones Loop Road from Burnt Store Road to Mac/Knights Drive. The shared-use path improvements in Segment 1 for both Alternatives should qualify as being exempt from permitting (62-330-051(10), F.A.C), as the multi-use paths are less than 14 feet. Existing treatment ditches impacted by the shared-used path from Burnt Store Road to Indian Springs Cemetery Road will need to be compensated by ditch regrading.

Existing treatment ditches on Jones Loop Road from Indian Springs Cemetery Road to Mac Drive will be impacted from the proposed turn lanes, roadway widening, and shared-use paths. It is anticipated that these impacts will need to be compensated by providing a pond for both treatment and attenuation. Taylor Road will have an increase in the impervious area due to roadway widening from the Walmart driveway to the Crystal Cay Building and Marine. A pond will be needed to treat and attenuate this increase in runoff. Refer to the Traditional Pond Siting Map for the two pond alternative locations in **Figure 5-1** and **Figure 5-2** for the two pond alternative locations. This will require a SWFWMD individual permit.

Taylor Road south will have an increase in the impervious area due to roadway widening from Creekbridge Drive to the Walmart driveway. There is also an increase in the impervious area due to widening and a turn lane. A pond will be needed to treat and attenuate this increase in runoff. Refer to the Traditional Pond Siting Map in **Figure 5-1** and **Figure 5-2** for the two pond alternative locations. This will require a SWFWMD individual permit.

Springwater Drive will have an increase in the impervious area due to roadway widening and potential backage road. It is anticipated that the existing permitted Indian Springs Center stormwater pond could provide the necessary treatment and attenuation by modifying the existing control structure. A SWFWMD permit modification to permit 255 - Indian Springs Center is anticipated.

Mac Drive will have an increase in the impervious area due to proposed turn lanes, roadway widening, and potential backage road. It is anticipated that the existing permitted McQueen Commercial Park stormwater pond could provide the necessary treatment and attenuation by modifying the existing control structure. A SWFWMD permit modification to permit 1154 - McQueen Commercial Park is anticipated.

Stormwater Management Option 1:

A new 4.25-acre wet detention pond is proposed at the northeast corner of Jones Loop Road and Indian Springs Cemetery Road, which will treat and attenuate runoff from Basins 2A, 3A

and 4D. This pond will outfall to an existing ditch along Indian Springs Cemetery Road which will maintain existing flow patterns.

A new 2.20-acre wet detention pond is proposed on the east side of Taylor Road adjacent to Basin 4B which will treat and attenuate runoff from Basin 4B. This pond will outfall to Taylor Road and maintain existing flow patterns. The proposed pond site will impact 2.20 acres of grazing land.

Stormwater Management Option 2:

A new 4.00-acre wet detention pond is proposed at the northwest corner of Jones Loop Road and Indian Springs Cemetery Road which will treat and attenuate runoff from Basins 2A, 3A and 4D. This pond will outfall to an existing ditch along Indian Springs Cemetery Road which will maintain the existing flow patterns. The proposed pond site will impact 4.00 acres of grazing land.

A new 2.00-acre wet detention pond is proposed on the west side of Taylor Road adjacent to Basin 4B which will treat and attenuate runoff from Basin 4B. This pond will outfall to an existing ditch along Taylor Road which will the maintain existing flow patterns.

See **Figure 5-** and **Figure 5-4** for Pond Location options.

5.4.1.2 Segment 2 (Alternative 2A)

Segment 2 – North Jones Loop Road from Mac/Knights Drive to just west of Piper Road. The proposed improvements in Segment 2 provide additional vehicle capacity to the existing 4-lane section and increases the length of the existing turn lanes. These improvements increase the amount of impervious by 0.60 acres for Alternative 1 and 1.37 acres for Alternative 2. The improvements will impact existing detention areas in the northwest and southeast quadrants of the interchange, requiring modification to provide the current levels of treatment being offered. In addition to the modification of the existing detention areas, the infield areas of the interchange will be used to treat the additional impervious associated with Alternatives 1 and 2 for Segment 2, which will negate the need for additional right-of-way to permit the improvements in Segment 2.

Stormwater Management Option 1:

The northwest and southeast quadrants of the interchange show the modified treatment ponds. These ponds will also treat and attenuate runoff from Basin 7B.

Stormwater Management Option 2:

A new dry detention pond is proposed on the southwest quadrant of the I-75 and Jones Loop Road Interchange which will treat and attenuate runoff from Basin 7B. The northwest and southeast quadrants of the interchange show the modified treatment ponds.

See **Figure 5-** and **Figure 5-4** for Pond Location options.

5.4.1.3 Segment 3 (Alternative 3A/3B)

Segment 3 – Intersection at North Jones Loop Road and Piper Road. There is no proposed pond site for segment 3. The proposed improvements in Segment 3 for both Alternatives should qualify as activities that are exempt from permitting (62-330.051(4), F.A.C.), as the improvements do not add additional capacity or through lanes, the proposed turn lanes are less than ¼ mile. The improvements are necessary to meet current roadway design and safety standards. If additional improvements are proposed, resulting in the denial of an exemption request, the existing stormwater pond approximately 500' north of the intersection on the west side of Piper Road could provide the necessary treatment by modifying the existing control structure. The current proposed improvements in Segment 3 would only add an additional 0.07 acres of impervious for Alternative 2, while Alternative 1 would reduce the amount of impervious by 0.05 acres.

Stormwater Management Option 1:

There is no proposed pond site for segment 3. The proposed improvements in Segment 3 for both Alternatives, 1 and 2, should qualify as activities that are exempt from permitting (62-330.051(4), F.A.C.), as the improvements do not add additional capacity or through lanes, the proposed turn lanes are less than ¼ mile.

Stormwater Management Option 2:

If additional improvements are proposed, resulting in the denial of an exemption request, the existing stormwater pond approximately 500' north of the intersection on the west side of Piper Road could provide the necessary treatment by modifying the existing control structure.

See **Figure 5-** and **Figure 5-4** for Pond Location options.

5.4.2 Pond Sizing Calculations

Preliminary pond sizing calculations are included in **Appendix I**. See **Figure 5-3** and **Figure 5-4** for Pond Location options. The pond location options for each Segment are independent of other segments.

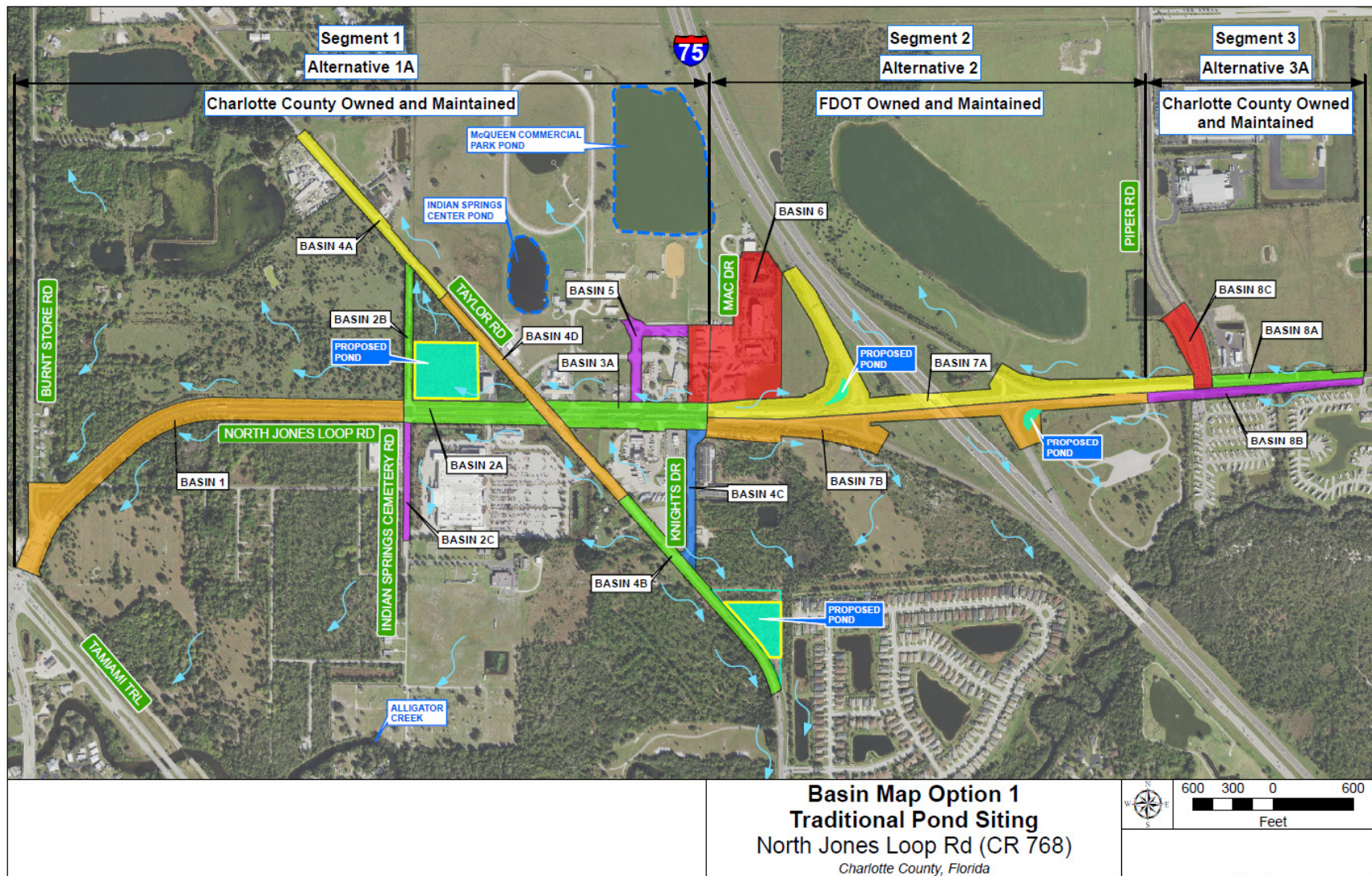


Figure 5-3: Basin Map Option 1 Traditional Pond Siting

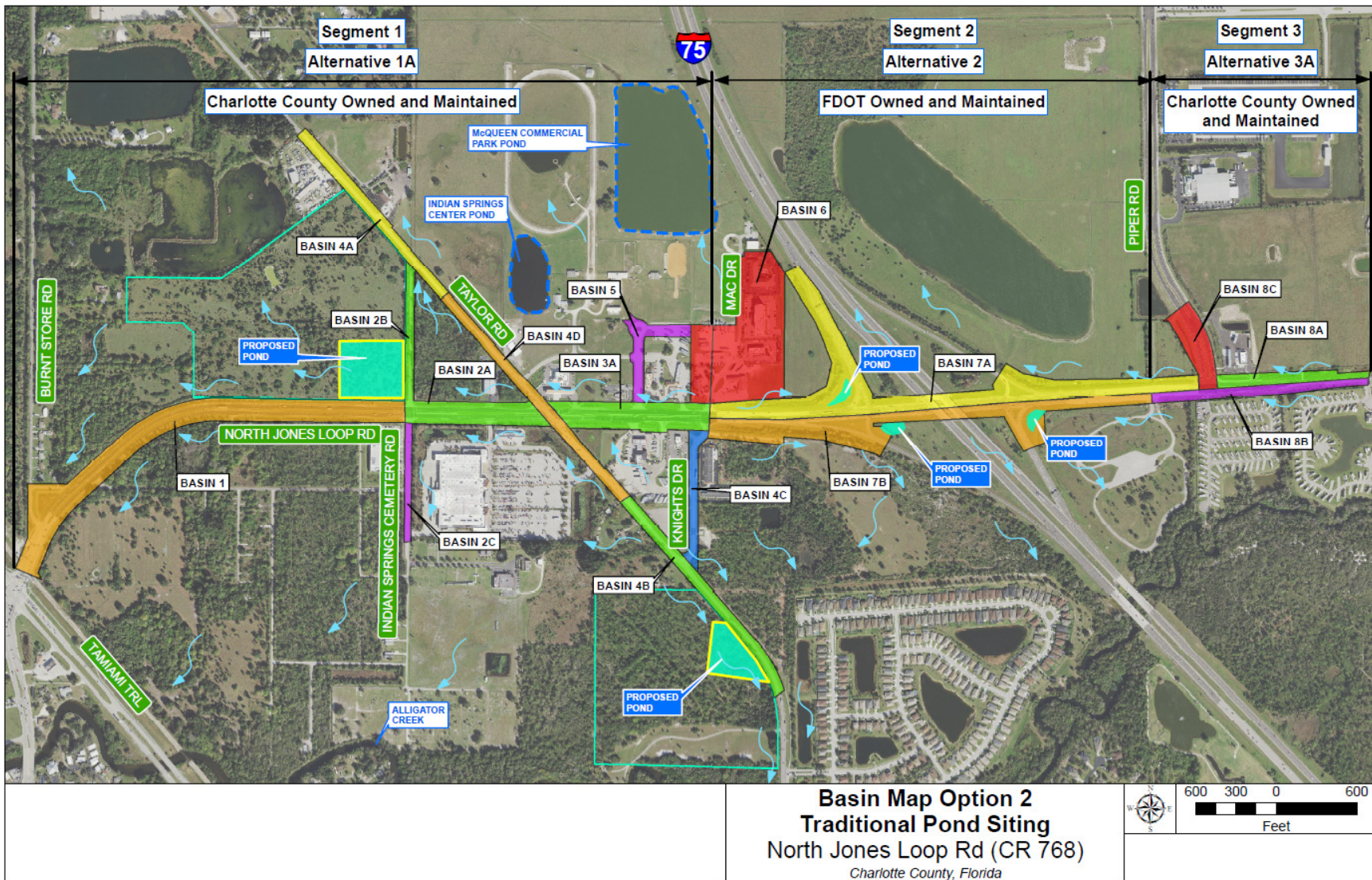


Figure 5-4: Basin Map Option 2 Traditional Pond Siting

5.5 Future Operational Conditions

Operational performance for future conditions was evaluated using Synchro 10 and SIDRA Intersection 7. Traffic operational analysis was performed for the two Build Alternatives. Build Alternative 1 consists of Segment 1A, Segment 2A, and Segment 3A improvements as discussed in Section 5.3.2. Similarly, Build Alternative 2 consists of Segment 1B, Segment 2A, and Segment 3B improvements.

For Build Alternative 1, SIDRA Intersection 7 was used to assess the operational performance at the intersection of North Jones Loop Road and Piper Road, while Synchro 10 was used for the rest of the study intersections for both build alternatives. HCM 6th Edition module was used to obtain the performance reports in both cases. As specified in HCM 6th edition, for unsignalized intersections, the worst approach delay was reported as the intersection delay. For the Build conditions, the cycle times, splits, and offsets were optimized. Synchro 10 and SIDRA Intersection 7 analysis results are presented in **Appendix J**.

5.5.1 Potential Capacity Improvements

This feasibility study intends to determine capacity needs (through lanes required) along the North Jones Loop Road. The Design Year (2045) volumes were utilized to evaluate the number of lanes needed to accommodate future demand. This operational analysis is conducted using the Florida Department of Transportation (FDOT) 2020 Quality/Level of Service Handbook. The maximum service volumes were determined based on the desired LOS D per FDOT's 2020 Quality/Level of Service Handbook. For non-state roadways, the maximum service volumes were reduced by 10 percent. Analysis results are summarized in **Table 5-6** and **Table 5-7**.

The analysis was performed utilizing 2045 AADTs and DDHVs. Based on the results, a 6-lane roadway from Taylor Road to I-75 Southbound Ramp along North Jones Loop Road is required to accommodate future year demand. Additionally, dual eastbound left-turn lanes may be needed at the intersection of North Jones Loop Road and I-75 Northbound Ramp due to heavy left-turn volumes during peak hours. Along Taylor Road, a 4-lane roadway is adequate between Burnt Store Road and South Jones Loop Road to accommodate future demand. It is to be noted that the Taylor Road is proposed to be widened to a 4-lane roadway based on the 2040 LRTP Cost Feasible Plan.

Table 5-6: Potential Lanes Required Based on 2045 AADT

From	To	Existing No. of Lanes	Class ¹	Adopted LOS	Max. Service Volumes ²	2045 AADT	LOS	Potential Lanes Required
Burnt Store Rd.								
US 41	Acline Rd.	4 LD	Class I	D	35820	28500	C	4-Lane
North Jones Loop Rd.								
US 41	Burnt Store Rd.	4 LD	Class I	D	35820	24000	C	4-lane
Burnt Store Rd.	Taylor Rd.	4 LD	Class I	D	35820	22000	C	4-lane
Taylor Rd.	I-75	4 LD	Class I	D	35820	38500	F	6-lane
I-75	Piper Rd.	4 LD	Class I	D	35820	23000	C	4-lane
Piper Rd.	Mandy St.	2 LU	Class II	D	13320	6500	C	2-lane
US 41⁴								
N. Jones Loop Rd.	Acline Rd.	4 LD	Class I	D	39,800	37000	D	4-lane
N. Jones Loop Rd.	Rio Villa Dr.	4 LD	Class I	D	39,800	53000	F	6-lane
Burnt Store Rd.								
N. Jones Loop Rd.	Taylor Rd.	2 LU	Class I	D	15930	2500	C	2-lane
Glasgow Ave.								
N. Jones Loop Rd.	Indian Springs Rd.	2 LU	Class II	D	13320	1100	C	2-lane
Taylor Rd.								
Burnt Store Rd.	Indian Springs Rd.	2 LU	Class I	D	15930	12500	C	4-lane ³
Indian Springs Rd.	N. Jones Loop Rd.	2 LU	Class I	D	15930	18000	F	4-lane
N. Jones Loop Rd.	Knights Dr.	2 LU	Class I	D	15930	15500	D	4-lane ³
Knights Dr.	S. Jones Loop Rd.	2 LU	Class I	D	15930	19000	F	4-lane
Piper Rd.								
N. Jones Loop Rd.	Woodlawn Dr.	4 LD	Class I	D	35820	22000	C	4-lane

¹ Roadway Class is based on FDOT'S 2020 Quality/Level of Service Handbook. Class I - Greater than or equal to 40 MPH & Class II - Less than or equal to 35 MPH.

² Maximum Service Volumes are based on FDOT's 2020 Quality/Level of Service Handbook. 10% volumes are reduced as all the roadways within the study area are non-state roadways.

³ 4-lane section is recommended based on peak hour volumes. Based on the 2040 LRTP Cost Feasible Plan, Taylor Road is proposed to be widened to be a 4-lane section within study limits.

⁴ The subject roadway is not within the study limits.

Table 5-7: Potential Lanes Required Based on 2045 DDHVs

From	To	Existing No. of Lanes	Class ¹	Adopted LOS	Max. Service Volumes ²	Two-Way AM Peak Hour (2045)	Two-Way PM Peak Hour (2045)	Two-Way Max. Peak Hour (2045)	LOS	Potential Lanes Required
Burnt Store Rd.										
US 41	Acline Rd.	4 LD	Class I	D	3222	2550	2800	2800	C	4-Lane
North Jones Loop Rd.										
US 41	Burnt Store Rd.	4 LD	Class I	D	3222	2615	2885	2885	C	4-lane
Burnt Store Rd.	Taylor Rd.	4 LD	Class I	D	3222	2405	2680	2680	C	4-lane
Taylor Rd.	I-75 SB Ramp	4 LD	Class I	D	3222	3825	3935	3935	F	6-lane
I-75 SB Ramp	I-75 NB Ramp	4 LD	Class I	D	3222	2710	2920	2920	C	4-lane ⁴
I-75 NB Ramp	Piper Rd.	4 LD	Class I	D	3222	2005	2190	2190	C	4-lane
Piper Rd.	Mandy St.	2 LU	Class II	D	1197	670	590	670	C	2-lane
US 41⁵										
N. Jones Loop Rd.	Acline Rd.	4 LD	Class I	D	3,580	2925	3060	3060	D	4-lane
N. Jones Loop Rd.	Rio Villa Dr.	4 LD	Class I	D	3,580	5200	5505	5505	F	6-lane
Burnt Store Rd.										
N. Jones Loop Rd.	Taylor Rd.	2 LU	Class I	D	1440	270	255	270	C	2-lane
Glasgow Ave.										
N. Jones Loop Rd.	Indian Springs Rd.	2 LU	Class II	D	1197	165	235	235	C	2-lane
Taylor Rd.										
Burnt Store Rd.	Indian Springs Rd.	2 LU	Class I	D	1440	1795	1940	1940	F	4-lane ³
Indian Springs Rd.	N. Jones Loop Rd.	2 LU	Class I	D	1440	1835	1885	1885	F	4-lane
N. Jones Loop Rd.	Knights Dr.	2 LU	Class I	D	1440	1505	1585	1585	F	4-lane ³
Knights Dr.	S. Jones Loop Rd.	2 LU	Class I	D	1440	1720	1845	1845	F	4-lane
Piper Rd.										
N. Jones Loop Rd.	Woodlawn Dr.	4 LD	Class I	D	3222	2005	2060	2060	C	4-lane

¹ Roadway Class is based on FDOT'S 2020 Quality/Level of Service Handbook. Class I - Greater than or equal to 40 MPH & Class II - Less than or equal to 35 MPH.

² Maximum Service Volumes are based on FDOT'S 2020 Quality/Level of Service Handbook. 10% volumes are reduced as all the roadways within the study area are non-state roadways.

³ Based on the 2040 LRTP Cost Feasible Plan, Taylor Road is proposed to be widened to be a 4-lane section within study limits.

⁴ EBL to I-75 NB has heavy volumes. May need dual left-turn lanes.

⁵ The subject roadway is not within the study limits

5.5.2 Build Operational Conditions

The Opening Year (2025) and Design Year (2045) results are summarized in **Table 5-8** through **Table 5-11** for AM and PM peak hours, respectively. For the Build Alternative 1, the roundabout at the intersection of North Jones Loop Road and Piper Road was evaluated using SIDRA Intersection 7.

For the Opening Year (2025) and Design Year (2045) conditions, the Synchro and SIDRA analysis results indicate that all signalized intersections within the study limits operate at acceptable LOS (LOS D or better) during AM and PM peak hours for both Build Alternatives. Therefore, the available capacity along the study corridor (North Jones Loop Road) is adequate to accommodate the Opening Year (2025) and Design Year (2045) AM and PM peak hour demand.

In Build Alternative 1, a quadrant intersection is introduced and the eastbound and westbound left-turn traffic at the North Jones Loop Road intersection is restricted. The eastbound left-turn traffic is diverted through the upstream intersection (North Jones Loop Road and Indian Springs Cemetery Road intersection) to access Taylor Road. Similarly, the westbound left-turn traffic is diverted through the upstream intersection (North Jones Loop Road and Mac Drive/Knights Drive intersection) to access Taylor Road. Therefore, to accommodate the diverted left-turn traffic, signal control is proposed at the intersection of Taylor Road and Indian Springs Cemetery Road, and at Taylor Road and Knights Drive. For Build Alternative 2, the North Jones Loop Road and Indian Springs Cemetery Road intersection is unsignalized, similar to the No-Build conditions. Therefore, the traffic operations during the peak hours are the same for the No-Build and Build Alternative 2.

With the proposed improvements in the Build Alternative 1, For the Opening Year (2025) and Design Year (2045) conditions, the travel time along the North Jones Loop Road within the study limits will reduce by 11 percent to 68 percent during AM and PM peak hours compared to No-Build Conditions. Similarly, for Build Alternative 2, the travel times will reduce by 15 percent to 69 percent during AM and PM peak hours.

Table 5-8: Intersection Results - Opening Year (2025) AM Peak Hour

Intersection	Intersection Type ¹	MOE	No-Build Alternative	Build Alternative 1	Build Alternative 2
US 41 and Burnt Store Rd./ North Jones Loop Rd. ²	S/S/S	Delay	49.7	49.7	49.7
		LOS	D	D	D
North Jones Loop Rd. and Indian Springs Cemetery Rd.	S/S/S	Delay	14.0	13.6	12.6
		LOS	B	B	B
Taylor Rd. and Indian Springs Cemetery Rd.	U/S/U	Delay	17.5	37.0	17.5
		LOS	C	D	C
North Jones Loop Rd. and Taylor Rd.	S/S/S	Delay	22.4	27.3	18.8
		LOS	C	C	B
Taylor Rd. and Knights. Dr.	U/S/S	Delay	16.3	27.8	10.5
		LOS	C	C	B
North Jones Loop Rd. and Mac/Knights Dr.	S/S/S	Delay	22.8	33.8	21.8
		LOS	C	C	C
North Jones Loop Rd. and I-75 SB Ramps	S/S/S	Delay	21.1	19.9	8.8
		LOS	C	B	A
North Jones Loop Rd. and I-75 NB Ramps	S/S/S	Delay	14.5	19.5	19.5
		LOS	B	B	B
North Jones Loop Rd. and Piper Rd.	U/R/S	Delay	19.3	7.1*	31.3
		LOS	C	A*	C

¹ X/X/X for intersection type in No-Build Alternative/Build Alternative 1/Build Alternative 2

S – Signalized

U – Unsignalized

R – Roundabout

² The subject intersection is outside the study limits

* SIDRA Intersection 7 was used to report results for the subject intersection.

For unsignalized intersections, the worst approach delay was reported as the intersection delay.

Table 5-9: Intersection Results – Opening Year (2025) PM Peak Hour

Intersection	Intersection Type ¹	MOE	No-Build Alternative	Build Alternative 1	Build Alternative 2
US 41 and Burnt Store Rd./ North Jones Loop Rd. ²	S/S/S	Delay	75.3	75.3	75.3
		LOS	E	E	E
North Jones Loop Rd. and Indian Springs Cemetery Rd.	S/S/S	Delay	26.6	12.8	12.7
		LOS	C	B	B
Taylor Rd. and Indian Springs Cemetery Rd.	U/S/U	Delay	18.1	37.0	18.1
		LOS	C	D	C
North Jones Loop Rd. and Taylor Rd.	S/S/S	Delay	33.2	19.6	20.2
		LOS	C	B	C
Taylor Rd. and Knights. Dr.	U/S/S	Delay	26.2	28.8	11.5
		LOS	D	C	B
North Jones Loop Rd. and Mac/Knights Dr.	S/S/S	Delay	34.2	32.4	32.2
		LOS	C	C	C
North Jones Loop Rd. and I-75 SB Ramps	S/S/S	Delay	31.2	19.8	8.4
		LOS	C	B	A
North Jones Loop Rd. and I-75 NB Ramps	S/S/S	Delay	14.8	19.0	19.8
		LOS	B	B	B
North Jones Loop Rd. and Piper Rd.	U/R/S	Delay	27.6	6.0*	32.0
		LOS	D	A*	C

¹ X/X/X for intersection type in No-Build Alternative/Build Alternative 1/Build Alternative 2

S – Signalized

U – Unsignalized

R – Roundabout

² The subject intersection is outside the study limits

* SIDRA Intersection 7 was used to report results for the subject intersection.

For unsignalized intersections, the worst approach delay was reported as the intersection delay.

Table 5-10: Intersection Results - Design Year (2045) AM Peak Hour

Intersection	Intersection Type ¹	MOE	No-Build Alternative	Build Alternative 1	Build Alternative 2
US 41 and Burnt Store Rd./ North Jones Loop Rd. ²	S/S/S	Delay	184.9	184.9	184.9
		LOS	F	F	F
North Jones Loop Rd. and Indian Springs Cemetery Rd.	S/S/S	Delay	28.8	17.6	17.4
		LOS	C	B	B
Taylor Rd. and Indian Springs Cemetery Rd.	U/S/U	Delay	62.1	29.9	62.1
		LOS	F	C	F
North Jones Loop Rd. and Taylor Rd.	S/S/S	Delay	102.2	37.7	53.9
		LOS	F	D	D
Taylor Rd. and Knights. Dr.	U/S/S	Delay	53.2	21.7	12.6
		LOS	F	C	B
North Jones Loop Rd. and Mac/Knights Dr.	S/S/S	Delay	281.1	51.3	36.0
		LOS	F	D	D
North Jones Loop Rd. and I-75 SB Ramps	S/S/S	Delay	105.7	31.8	12.4
		LOS	F	C	B
North Jones Loop Rd. and I-75 NB Ramps	S/S/S	Delay	102.2	24.3	36.3
		LOS	F	C	D
North Jones Loop Rd. and Piper Rd.	U/R/S	Delay	13131.7	19.3*	50.6
		LOS	F	B*	D

¹ X/X/X for intersection type in No-Build Alternative/Build Alternative 1/Build Alternative 2

S – Signalized

U – Unsignalized

R – Roundabout

² The subject intersection is outside the study limits

* SIDRA Intersection 7 was used to report results for the subject intersection.

For unsignalized intersections, the worst approach delay was reported as the intersection delay.

Table 5-11: Intersection Results – Design Year (2045) PM Peak Hour

Intersection	Intersection Type ¹	MOE	No-Build Alternative	Build Alternative 1	Build Alternative 2
US 41 and Burnt Store Rd./ North Jones Loop Rd. ²	S/S/S	Delay	201.5	201.5	201.5
		LOS	F	F	F
North Jones Loop Rd. and Indian Springs Cemetery Rd.	S/S/S	Delay	37.8	14.1	14.6
		LOS	D	B	B
Taylor Rd. and Indian Springs Cemetery Rd.	U/S/U	Delay	45.3	30.4	45.3
		LOS	E	C	E
North Jones Loop Rd. and Taylor Rd.	S/S/S	Delay	151.3	34.9	27.9
		LOS	F	C	C
Taylor Rd. and Knights. Dr.	U/S/S	Delay	308.5	26.4	18.4
		LOS	F	C	B
North Jones Loop Rd. and Mac/Knights Dr.	S/S/S	Delay	367.0	44.3	32.9
		LOS	F	D	C
North Jones Loop Rd. and I-75 SB Ramps	S/S/S	Delay	162.0	27.9	18.0
		LOS	F	C	B
North Jones Loop Rd. and I-75 NB Ramps	S/S/S	Delay	78.0	27.0	27.9
		LOS	E	C	C
North Jones Loop Rd. and Piper Rd.	U/R/S	Delay	3748.6	14.2*	54.5
		LOS	F	B*	D

¹ X/X/X for intersection type in No-Build Alternative/Build Alternative 1/Build Alternative 2

S – Signalized

U – Unsignalized

R – Roundabout

² The subject intersection is outside the study limits

* SIDRA Intersection 7 was used to report results for the subject intersection.

For unsignalized intersections, the worst approach delay was reported as the intersection delay.

Table 5-12: Arterial Performance – Eastbound North Jones Loop Road

Location	Period	MOE	No-Build Alternative	Build Alternative 1	Build Alternative 1 Percent Change	Build Alternative 2	Build Alternative 2 Percent Change
North Jones Loop Rd. from US 41 to Piper Rd.	2025 AM	Travel Time (s)	318.9	283.4	-11%	271.2	-15%
		Average Speed (mph)	21.7	24.5	13%	25.5	18%
	2025 PM	Travel Time (s)	346.4	286.2	-17%	273.2	-21%
		Average Speed (mph)	20.0	24.2	21%	25.3	27%
	2045 AM	Travel Time (s)	1031.6	512.2	-50%	487.4	-53%
		Average Speed (mph)	6.7	13.5	101%	14.2	112%
	2045 PM	Travel Time (s)	1038.3	335.1	-68%	327.2	-69%
		Average Speed (mph)	6.7	20.7	209%	21.1	215%

Table 5-13: Arterial Performance – Westbound North Jones Loop Road

Location	Period	MOE	No-Build Alternative	Build Alternative 1	Build Alternative 1 Percent Change	Build Alternative 2	Build Alternative 2 Percent Change
North Jones Loop Rd. from US 41 to Piper Rd.	2025 AM	Travel Time (s)	366.6	284.9	-22%	283.4	-23%
		Average Speed (mph)	20.8	22.8	10%	23.0	11%
	2025 PM	Travel Time (s)	427.9	305.4	-29%	297.8	-30%
		Average Speed (mph)	17.9	21.3	19%	21.9	22%
	2045 AM	Travel Time (s)	927.4	340.4	-63%	328.0	-65%
		Average Speed (mph)	8.2	19.1	133%	19.9	143%
	2045 PM	Travel Time (s)	1566.1	586.1	-63%	574.1	-63%
		Average Speed (mph)	4.9	11.1	127%	11.3	131%

5.6 Safety Benefits

Based on the historical crash summary, the segment between Taylor Road and I-75 Northbound Ramp terminal intersections experiences high crashes compared to other segments along North Jones Loop Road within the study limits. Rear-end and angle crashes are predominant within this short segment attributed to the congestion experienced during the peak periods. The high volume of business and commercial activity involving both passenger vehicles and trucks was observed during the peak periods within this short segment. Additionally, the signalized intersections at Taylor Road and Mac Drive/Knights Drive experience high crash rates greater than the statewide average. Historical crash analysis reveals a rising trend in the number of crashes. This condition is expected to worsen if no improvements are implemented, given the future growth forecast for the study area.

Implementing additional capacity along the study corridor will improve the existing safety condition by reducing congestion, which will mitigate the predominant crash types (rear end and angle crashes). The added capacity will also help alleviate crashes attributed to access management by providing more gaps for the driveway traffic. Additionally, through coordination with adjacent property owners, implementing access management safety countermeasures between Taylor Road and I-75, such as increased connection spacing and improved driveway circulation, will have more safety benefits. An additional lane constructed within the I-75 interchange will accommodate eastbound dual left-turn lanes, which may reduce rear-end and angle crashes currently experienced at this intersection.

From the SPICE analysis, the predicted total crashes (2025 -2045) at the signalized study intersections for No-Build and Build Alternatives are summarized in **Table 5-14**. For Build Alternative 1, the North Jones Loop Road and Taylor Road intersection will have a 12 percent reduction in total crashes compared to the No-Build Alternative. At the North Jones Loop Road and Piper Road intersection both Build Alternatives have an increase in total crashes as compared to the existing stop-controlled configuration. However, the stop-controlled configuration is not operationally feasible. When comparing the two Build Alternatives, the roundabout in Build Alternative 1 has less predicted injury/fatality crashes than the signal in Build Alternative 2.

The feasibility phase of this study will screen the potential alternatives and geometric features to be evaluated in detail during the next phase. A detailed safety analysis as per HSM methodology will be conducted for various alternatives during the next phase.

Table 5-14: Predicted Total Crashes (2025 – 2045) for No-Build & Build Alternatives – SPICE Analysis

Intersection	Intersection Type ¹	No-Build Alternative	Build Alternative 1	Build Alternative 1 Percent Change	Build Alternative 2	Build Alternative 2 Percent Change
North Jones Loop Rd. and Indian Springs Cemetery Rd.	S/S/S	72.3	72.3	0%	72.3	0%
North Jones Loop Rd. and Taylor Rd.	S/S ² /S	178.3	156.9	-12%	178.3	0%
North Jones Loop Rd. and Mac/Knights Dr.	S/S/S	197.3	197.3	0%	197.3	0%
North Jones Loop Rd. and I-75	S/S/S	431.1	431.1	0%	431.1	0%
North Jones Loop Rd. and Piper Rd.	U/R/S	38.9	226.7	483%	156.1	302%

¹ X/X/X for intersection type in No-Build Alternative/Build Alternative 1/Build Alternative 2

S – Signalized

S² – Signalized Quadrant Intersection

U – Unsignalized

R – Roundabout

5.7 Cost Estimates for Proposed Alternatives

Conceptual construction cost estimates were prepared for both build alternatives. The estimates were prepared using a similar approach to that of the FDOT Long Range Estimating application. To aid in identifying and comparing the cost differences, the project was broken into three segments for cost estimating. Segment 1 is from the beginning project through North Jones Loop Road and Mac/Knights Drive. This segment includes all work on intersecting streets, including Taylor Road, Indian Springs Cemetery Road, Mac/Knights Drive, and other service roads. Segment 2 is within the FDOT L/A right-of-way from Mac/Knights Drive to the west of the North Jones Loop Road and Piper Road Intersection. Segment 3 is from west of the North Jones Loop Road and Piper Road intersection to the end of the project, including all construction on Piper Road. The conceptual cost estimates for each alternative, by segment, are summarized below. Note that construction costs for Segment 2 and 3 are very similar for both alternatives as most of the differences between the alternatives are found in Segment 1. The right-of-way cost and construction cost for the three segments are provided in **Table 5-15**. The detailed cost estimation for the three segments is provided in **Appendix K**.

Table 5-15: Cost Estimates for Proposed Alternatives

Segment	Build Alternative 1 Cost		Build Alternative 2 Cost	
	Right-of-Way	Construction	Right-of-Way	Construction
Segment 1	TBD	\$17,898,225.55	TBD	\$16,458,371.17
Segment 2	\$0	\$8,452,399.69	\$0	\$8,452,399.69
Segment 3	\$65,000.00	\$2,815,858.52	\$0	\$2,300,080.20

5.8 Evaluation Matrix

A qualitative analysis was conducted to determine the advantages and disadvantages of the No-Build and Build Alternatives. Each alternative was evaluated in relation to engineering, socioeconomic, environmental criteria, and various cost factors. The comparative Alternative Evaluation Matrix is presented in **Table 5-16** through **Table 5-18**.

Table 5-16: Evaluation Matrix – Segment 1– North Jones Loop Road from Burnt Store Road to Mac/Knights Drive.

EVALUATION CATEGORY	Alternatives		
	No-Build	Build 1A	Build 1B
Project Length	1.81 miles		
ENGINEERING			
Functional Relationship with Transportation Network	It does not meet the objectives of the Charlotte County-Punta Gorda MPO 2040 Long Range Transportation Plan (LRTP)	Meets the Charlotte County-Punta Gorda MPO 2040 LRTP	Same as Build Alternative 1A
Traffic Operation	Several signalized intersections within the study limits fail to operate at an acceptable LOS D or better	All signalized intersections operate at an acceptable LOS D or better	The signalized intersections along the study corridor operate at an acceptable LOS D or better
Vehicle Safety	With increased traffic on North Jones Loop Road, the potential for an increase in crashes is higher	Proposed improvements (through lane in both travel direction) along the study corridor will improve the existing safety condition by reducing congestion, which will mitigate the predominant crash types (Rear end and angle crashes) in the study area. In addition, the North Jones Loop Road and Taylor Road intersection could experience a 12 percent reduction in the total crashes compared to No-Build Conditions.	Proposed improvements(through lane in both travel direction) along the study corridor will improve the existing safety condition by reducing congestion, which will mitigate the predominant crash types (Rear end and angle crashes) in the study area.There are no additional safety benefits at the signalized intersections within this segment.
Pedestrian/Bicycle Facilities	5' sidewalks on either side of North Jones Loop Road from Burnt Store Road to Mac Drive	A shared-use path is proposed on both sides of North Jones Loop Road from Burnt Store Road to Mac/Knight Drive. Along Taylor Road, a shared-use path is proposed on the east side of the roadway from the southern project limits to North Jones Loop Road. A sidewalk is proposed on the west side of Taylor Road from the relocated Walmart Driveway to the shared-use path at North Jones Loop Road. Pedestrians traveling north/south will have a shorter crossing distance since the eastbound and westbound left turns are eliminated from the intersection of North Jones Loop Road and Taylor Road.	Facilities are the same as provided in Build Alternative 1A. However, the quadrant intersection proposed in Alternative 1A shifts northbound and southbound left turning movements from from the Taylor Road intersection to Mac/Knights Drive and Indian Springs Cemetery Road. The skewed Taylor Road geometry makes for a more challenging crossing for pedestrians and bicyclists and the left turns in Alternative 1B present additional conflictin movements for pedestrians and bicyclists at this skewed intersection.
Evacuation	No Improvement	The increase in capacity along North Jones Loop Road will enhance vehicle evacuation from the area	Same as Build Alternative 1A
SOCIO-ECONOMIC			
Potential Relocations of Businesses or Residential	0	0	Same as Build Alternative 1A
Right-of-Way Acquisition (acres)	0	19.8486	19.3022
Community Services/Features	0	0	Same as Build Alternative 1A
Impact to Parks/Recreation Areas	0	0	Same as Build Alternative 1A
ENVIRONMENTAL			
Wetlands	No	Less than 1 acre	Same as Build Alternative 1A
Potential Threatened & Endangered Species Involvement	No	Low	Same as Build Alternative 1A
Number of Potential Contaminated Sites	52	52	Same as Build Alternative 1A
Noise Sensitive Sites	4	4	Same as Build Alternative 1A
Floodplains	0	0	Same as Build Alternative 1A
Farmlands	No Changes	Exempt (Urban Area)	Exempt (Urban Area)
Cultural/Historical	3	21 ¹	Same as Build Alternative 1A
Potential to Encounter Archaeological Sites	Low	Same as No-Build Alternative	Same as No-Build Alternative
COST			
Right-of-Way	\$ 0	TBD	TBD
Construction	\$ 0	\$17,898,225.55	\$16,458,371.17
TOTAL PROJECT COST*	\$ 0	TBD	TBD

¹ 3 historic buildings (all ineligible), 5 historic resource groups (4 ineligible, 1 insufficient info to evaluate), 13 parcels containing pre-1978 buildings (some of these may be previously recorded)

*Total Project Cost does not include final design or construction inpsection

Table 5-17: Evaluation Matrix – Segment 2 – North Jones Loop Road from Mac/Knights Drive to just west of Piper Road.

EVALUATION CATEGORY	Alternatives		
	No-Build	Build 2A	
Project Length	1.81 miles		
ENGINEERING			
Functional Relationship with Transportation Network	It does not meet the objectives of the Charlotte County-Punta Gorda MPO 2040 Long Range Transportation Plan (LRTP)	Meets the Charlotte County-Punta Gorda MPO 2040 LRTP	
Traffic Operation	Ramp terminal intersections fail to operate at an acceptable LOS D or better	Ramp terminal intersections operate at an acceptable LOS D or better	
Vehicle Safety	With increased traffic on North Jones Loop Road, the potential for an increase in crashes is higher	Proposed improvements along the study corridor will improve the existing safety condition by reducing congestion, which will mitigate the predominant crash types (Rear end and angle crashes) in the study area.	
Pedestrian/Bicycle Facilities	No sidewalks or trails along North Jones Loop Road..	Proposed shared-use path on the south side of North Jones Loop Road from Mac Drive to Piper Road.	
Evacuation	No Improvement	The increase in capacity along North Jones Loop Road will enhance vehicle evacuation from the area	
SOCIO-ECONOMIC			
Potential Relocations of Businesses or Residential	0	0	
Right-of-Way Acquisition (acres)	0	0	
Community Services/Features	0	0	
Impact to Parks/Recreation Areas	0	0	
ENVIRONMENTAL			
Wetlands	No	Less than 0.5 acre	
Potential Threatened & Endangered Species Involvement	No	Low	
Number of Potential Contaminated Sites	9	9	
Noise Sensitive Sites	2	2	
Floodplains	0	0	
Farmlands	No Changes	Evaluation may be needed for pond sites	
Cultural/Historical	1 ¹	Same as No-Build Alternative	
Potential to Encounter Archaeological Sites	Low	Same as No-Build Alternative	
COST			
Right-of-Way	\$ 0	\$0	
Construction	\$ 0	\$8,452,399.69	
TOTAL PROJECT COST*	\$ 0	\$8,452,399.69	

¹ 1 historic resource group (ineligible)
*Total Project Cost does not include final design or construction inpsection

Table 5-18: Evaluation Matrix – Segment 3 - Improvements at North Jones Loop Road and Piper Road.

EVALUATION CATEGORY	Alternatives		
	No-Build	Build 3A	Build 3B
Project Length	1.81 miles		
ENGINEERING			
Functional Relationship with Transportation Network	It does not meet the objectives of the Charlotte County-Punta Gorda MPO 2040 Long Range Transportation Plan (LRTP)	Meets the Charlotte County-Punta Gorda MPO 2040 LRTP	Same as Build Alternative 3A
Traffic Operation	North Jones Loop Road and Piper Road intersection fail to operate at an acceptable LOS D or better	North Jones Loop Road and Piper Road roundabout intersection operate at LOS B in the Design Year (2045) conditions.	North Jones Loop Road and Piper Road signalized intersection operate at LOS D in the Design Year (2045) conditions.
Vehicle Safety	With increased traffic at the study intersection, the potential for an increase in crashes is higher	The roundabout control alternative for the intersection of North Jones Loop Road and Piper Road is predicted to have less fatality/injury crashes than the signal control alternative.	The signal control alternative for the intersection of North Jones Loop Road and Piper Road is predicted to have more fatality/injury crashes than the roundabout control alternative.
Pedestrian/Bicycle Facilities	No sidewalks or trails along North Jones Loop Road. A 5' sidewalk is present on the east side of Piper Road, north of North Jones Loop Road.	A shared-use path is proposed on the south side of the North Jones Loop Road through the Piper Road intersection. The existing 5' sidewalk on the east side of Piper Road will be maintained. Some bicycle and pedestrian users may be less familiar navigating roundabouts, however, crossing distances are shorter and crashes are typically lower compared to more traditional intersection designs including the signalized intersection proposed in Alternative 3B.	Proposed facilities are the same as Build Alternative 3A, but the intersection at North Jones Loop Road and Piper Road is signalized instead of a roundabout. The addition of a shared-use path and a signalized intersection with crosswalks is expected to improve pedestrian and bicycle safety as compared to the No-Build condition.
Evacuation	No Improvement	The increase in capacity along North Jones Loop Road will enhance vehicle evacuation from the area	Same as Build Alternative 3A
SOCIO-ECONOMIC			
Potential Relocations of Businesses or Residential	0	0	Same as Build Alternative 3A
Right-of-Way Acquisition (acres)	0	0.0419	0
Community Services/Features	0	0	Same as Build Alternative 3A
Impact to Parks/Recreation Areas	0	0	Same as Build Alternative 3A
ENVIRONMENTAL			
Wetlands	No	Less than 0.5 acre	Same as Build Alternative 3A
Potential Threatened & Endangered Species Involvement	No	Low	Same as Build Alternative 3A
Number of Potential Contaminated Sites	15	15	Same as Build Alternative 3A
Noise Sensitive Sites	0	0	Same as Build Alternative 3A
Floodplains	0	0	Same as Build Alternative 3A
Farmlands	No Changes	Evaluation Likely Required	Evaluation Likely Required
Cultural/Historical	1 ¹	Same as No-Build Alternative	Same as No-Build Alternative
Potential to Encounter Archaeological Sites	Low	Low to high (near creek)	Same as Build Alternative 3A
COST			
Right-of-Way	\$ 0	\$65,000.00	\$0
Construction	\$ 0	\$2,815,858.52	\$2,300,080.20
TOTAL PROJECT COST*	\$ 0	\$2,880,858.52	\$2,300,080.20

¹ 1 historic resource group (ineligible)

*Total Project Cost does not include final design or construction inspction

6 PROJECT FEASIBILITY

6.1 Purpose and Need Review

Providing no improvements (i.e. No-Build Alternative) along the corridor does not accommodate projected future travel demand safely and efficiently, resulting in substandard LOS along North Jones Loop Road (especially east of Taylor Road) and increased traffic congestion. The No-Build Alternative will result in reduced economic viability and mobility due to traffic congestion. The Build Alternatives reviewed are considered to be feasible and meet the following needs.

6.1.1 Capacity/Transportation Demand: Maintain Operational Conditions

With the increase in peak hour volumes in future conditions, the available capacity along the study corridor (North Jones Loop Road) at signalized intersections between Taylor Road and I-75 ramp terminal is insufficient to accommodate the peak hour demand. Therefore, the signalized intersections along this segment fail to operate at acceptable LOS (LOS D or better) during peak hours.

For the Opening Year (2025) and Design Year (2045) conditions, the Synchro and SIDRA analysis results indicate that with the reviewed alternatives, the signalized intersections along the study corridor limits operate at acceptable LOS (LOS D or better) during AM and PM peak hours. Therefore, the available capacity along the study corridor (North Jones Loop Road) is adequate to accommodate the Opening Year (2025) and Design Year (2045) AM and PM peak hour demand.

6.1.2 Area Wide Network/System Linkage: Improve Transportation Network Connectivity

The No-Build Alternative does not provide reasonable travel times for freight and commuter traffic to/from I-75 and Punta Gorda International Airport. The reviewed alternatives provide improved travel times for freight and commuter traffic to/from I-75 and Punta Gorda International Airport when compared to the No-Build Alternative. In addition, the No-Build Alternative does not provide pedestrian and bicycle features to accommodate the potential future demand due to projected development along the study corridor and planned shared-use path along Taylor Road. The reviewed alternatives include a shared-use path along both sides of North Jones Loop Road and connect to the planned future shared-use path along Taylor Road.

6.1.3 Safety

With the proposed improvements in the recommended alternative for the Opening Year (2025) and Design Year (2045) conditions, the travel time along the North Jones Loop Road within the study limits will reduce by 15 percent to 69 percent during AM and PM peak hours compared to No-Build Conditions. Therefore, emergency travel times are expected to improve compared to No-Build conditions.

Based on the historical crash summary, the segment between Taylor Road and I-75 Northbound Ramp terminal intersections experiences high crashes compared to other segments along North Jones Loop Road within the study limits. Rear-end and angle crashes are predominant within this short segment attributed to the congestion experienced during the peak periods. Additionally, the signalized intersections at Taylor Road and Mac Drive/Knights Drive experience high crash rates above the statewide average. Historical crash analysis reveals a rising trend in the number of crashes. This condition will only worsen if no improvements are implemented, given the future growth forecast for the study area.

Implementing additional capacity along the study corridor is expected to improve the existing safety condition by reducing congestion in the study area. The added capacity will also help alleviate crashes attributed to access management by providing more gaps for the driveway traffic. Additionally, through coordination with adjacent property owners, implementing access management safety countermeasures alone between Taylor Road and I-75, such as increased connection spacing and improved driveway circulation, will have more safety benefits. An additional lane constructed within the I-75 interchange will

accommodate eastbound dual left-turn lanes, which may reduce rear-end and angle crashes currently experienced at this intersection. SPICE analysis was completed to predict total crashes (2025 -2045) at the signalized study intersections for No-Build and Build Alternatives. For Build Alternative 1, the North Jones Loop Road and Taylor Road intersection will have a 12 percent reduction in total crashes compared to the No-Build Alternative. At the North Jones Loop Road and Piper Road intersection a 483 percent increase in total crashes was predicted for Build Alternative 1 (roundabout) and a 302 percent increase in total crashes was predicted for Build Alternative 2 (signal). Although the roundabout and signal alternatives are predicted to result in more crashes, the relationship between injury/fatal crashes and property damage only crashes is less than the existing stop-controlled configuration. The predicted total crashes for the existing stop-controlled configuration consist of 40 percent injury/fatality crashes. For the roundabout, 19 percent of the total crashes are injury/ fatal crashes while the signal control is 33 percent of the total crashes are injury/fatality crashes.

6.2 Implementation Plan

The study corridor is divided into three segments funded from different sources to implement the proposed improvements. The limits for the three segments are discussed below.

- Segment 1 – The study limits for this segment extend along North Jones Loop Road from the beginning of the study area at Burnt Store Road (east of US 41) to east of Mac/Knights Drive (to L/A right-of-way).
- Segment 2 – The study limits for this segment extend along North Jones Loop Road from Mac/Knights Drive (from L/A right-of-way) to the west of the Piper Road intersection (to L/A right-of-way).
- Segment 3 – The study limits for this segment extend along North Jones Loop Road from west of Piper Road (from L/A right-of-way) to the end of the study area east of Piper Road.

The PD&E phase of the proposed project is included in the Transportation Improvement Program (TIP) under “2020 Highway Project Priorities.” The funding source, right-of-way cost, and construction cost for the three segments are provided in **Table 6-1**.

Table 6-1: Potential Funding Source, Right-of-Way Cost, & Construction Cost

Segment	Area Type	Potential Funding Source	Alternative Cost	
			Right-of-Way	Construction
Segment 1	Urban	Charlotte County	TBD	Approx. \$16.6 - \$17.9 Million
Segment 2	Urban	SIS	\$0	Approx. \$8.5 Million
Segment 3	Urban	Discretionary SIS	\$65,000	Approx. \$2.3 - \$2.8 Million