CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CFX Contract Number: 001844
CFX Project Number: 429-309

EXISTING CONDITIONS TECHNICAL MEMORANDUM

DANIEL WEBSTER WESTERN BELTWAY SR 429 / BINION ROAD INTERCHANGE

PROJECT DEVELOPMENT AND ENVIRONMENT STUDY

Submitted By:

Signature: _____

Gregory S. Seidel, P.E.
The Balmoral Group, LLC
September 30, 2022

the balmoral group

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Appendix

Technical Memorandum written to align with Level 1 PEIR chapter format

1.0 - Project Information

Project Name: State Road (SR) 429/Binion Road Interchange

Projects Limits: The study area runs along the vicinity of South Binion Road and Boy Scout Road at SR 429. Currently, drivers must enter and exit SR 429 by traveling approximately three miles north to just north of US 441 at the SR 429 Connector Road interchange or travel three miles south to the interchange at Ocoee Apopka Road.

County: Orange

Proposed Activity: Evaluating a proposed half interchange (northbound on-ramp and southbound off-ramp) expressway connection from Binion Road to SR 429 to provide enhanced access and mobility to southwest Apopka. Analyze intersection improvements and access management modifications along the proposed interchange.

Responsible Agency: Central Florida Expressway Authority (CFX)

Planning Organization: CFX

Phase: Project Development & Environment (PD&E) Study

Project Contact Information:

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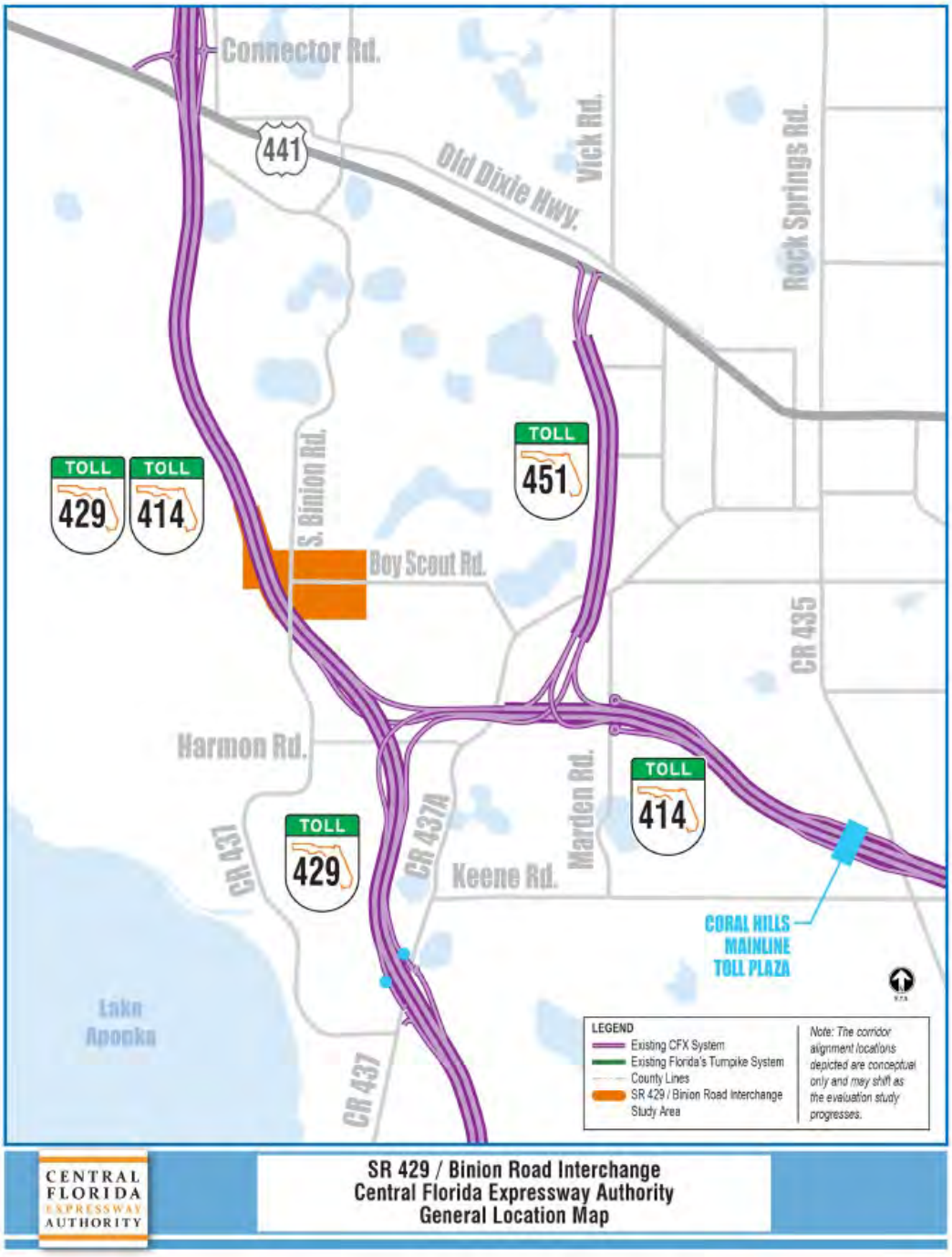
1.0 - Project Location Map



1.0 - Project Background & Description

Background

In August 2022, CFX began a Project Development and Environment (PD&E) Study of the State Road 429/Binion Road Interchange. The study is evaluating a proposed half interchange (northbound on-ramp and southbound off-ramp) expressway connection from Binion Road to SR 429 to provide enhanced access and mobility to southwest Apopka.

Study Description

The study area runs along the vicinity of South Binion Road and Boy Scout Road at SR 429. Currently, drivers must enter and exit SR 429 by traveling approximately three miles north to just north of US 441 at the SR 429 Connector Road interchange or travel three miles south to the interchange at Ocoee Apopka Road. The 6-month study will analyze intersection improvements and access management modifications along the proposed interchange.

Study Goals

The goals of the SR 429/Binion Road Interchange PD&E Study include:

- Identify transportation mobility options and programs that could meet future demand.
- Enhance mobility of the area's growing population and economy by providing additional transportation infrastructure.
- Provide consistency with local plans and policies.
- Promote regional connectivity.

Scope

The CONSULTANT will **analyze the existing facility and conditions** for deficiencies and shall prepare an Existing Conditions Technical Memorandum that documents key engineering and environmental features within the study area.

The CONSULTANT shall **document the existing roadway characteristics** within the project limits. The CONSULTANT will review and document available plans, pavement reports, existing rights-of-way, tax and maintenance maps and other readily available data. This effort should include obtaining the design plans for any adjacent project(s) being advanced by CFX, FDOT District 5, and Orange County. The CONSULTANT should have detailed knowledge of the various projects that make up the overall improvement.

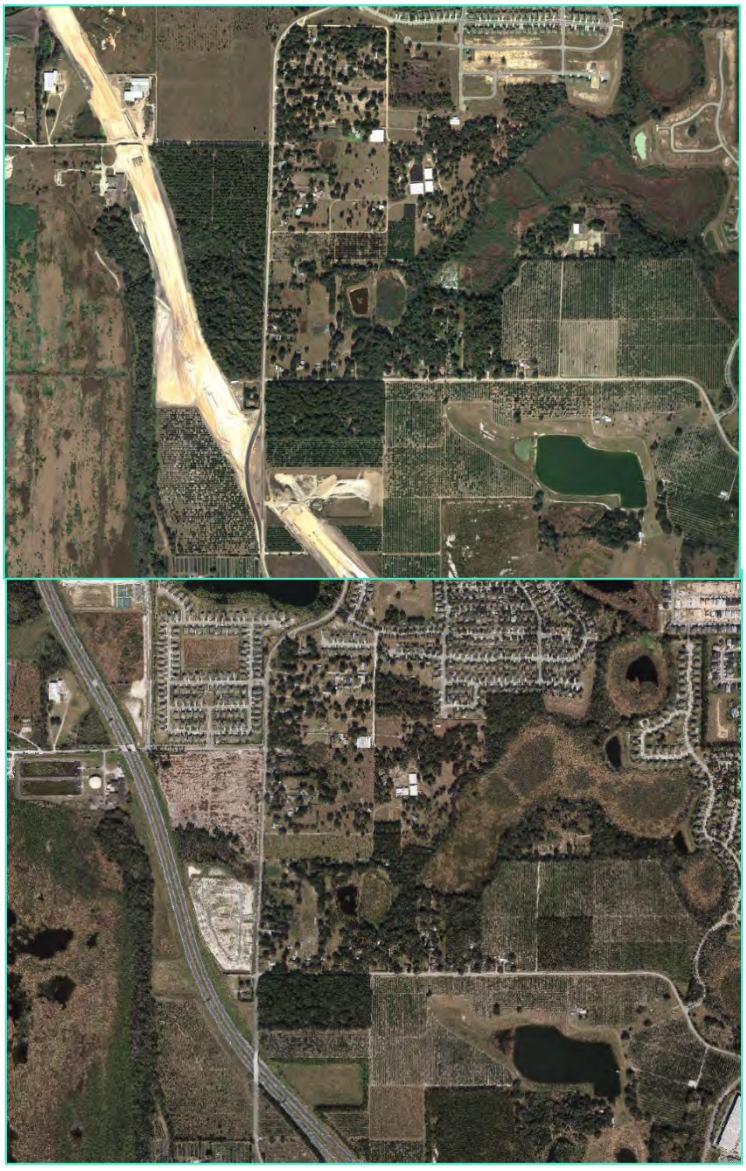
Data shall be provided by all disciplines in the creation of the basic Existing Conditions Technical Memorandum. All data collection and documentation efforts should be performed in accordance with the CFX PD&E Guidance for a Level 1 PEIR.

4.b - Existing Conditions Technical Memorandum Overview

General Existing Conditions of Project Area

The project area, as defined within the PD&E Study, is the location where alternative concepts for a half interchange that would provide access to SR 429 and a new intersection design at Binion Road and Boy Scout Road are being considered. For consistency in studying the existing and anticipated conditions of the area surrounding the PD&E Study Area, a half mile radius of the general existing conditions surrounding the project area are used.

The entirety of the project area falls within the Apopka City limits, except for 2 parcels at the northeast corner of the intersection of Boy Scout Road and S Binion Road. Within the surrounding area, the majority of the land falls within the City of Apopka Corporate Limits, with the remainder of the properties falling within unincorporated Orange County.



The Land Use in this area has slowly changed from primarily larger tracts of land often used for agriculture, to the development of many single-family subdivisions. The rise in population density and subsequent vehicle trips have put stress on the existing roadway network, which consists of mostly rural residential profile. The development of single-family lot subdivisions is likely to continue in the surrounding area, based on current market demand.

These photos show aerial images of the surrounding project area taken in 2012 (top) and in 2022 (bottom). The suburbanization is quite evident, and the pressure for connection to the major highway systems, for urbanized intersections, and for regional multi-modal connectivity is expected to increase.

4.c - Existing Conditions - Roadway

4.c - Existing Conditions - Roadway

Existing Roadway Network

The existing roadway network under evaluation is comprised of two county roads and one limited access facility. The primary roadways in the study area are detailed below:

- SR 429 – six-lane divided expressway providing Orange and Osceola counties with an alternate north-south route to heavily travelled I-4.
- Binion Road (CR 437) – Two-lane, two-way roadway connecting residential subdivisions and single-family homes to other roadway collectors in the area as well as connecting people to US 441 in the north and Ocoee Apopka Road in the South. Binion Road crosses over SR 429 just south of the project limits.
- Boy Scout Road (un-numbered County Road) – Two-lane, two-way roadway connecting residential subdivisions and single-family homes to Binion Road in the west and Ocoee Apopka Road in the east.

Roadway Design Controls

The design controls are functional classification, context classification, and design speed. These three elements establish the geometric and operational characteristics and criteria of the roadway. The functional classification is based on vehicular travel characteristics and the degree of access provided to adjacent properties. Context Classification establishes design criteria based on environmental conditions and the surrounding land use in order to harmonize the roadway characteristics and features with the intended land uses (i.e. existing and planned). Design Speed is a principal design control that regulates the selection of many of the project standards and criteria used for design. Tables 1, 2 and 3 list out the classifications and design speed as determined by the consultant using all available data and documentation.

Table 1 - Roadway Functional Classification

Roadway Name	Urban or Rural	Functional Class	Divided or Undivided
SR 429	Urban	Principal Arterial	Divided
Binion Road	Rural	Collector	Undivided
Boy Scout Road	Rural	Collector	Undivided

Table 2 - Roadway Context Classification

Roadway Name	FDOT Context Class
SR 429	N/A (Limited Access)
Binion Road	C3R Suburban Residential
Boy Scout Road	C3R Suburban Residential

N/A = not applicable; separate criteria for limited access facilities

Table 3 - Roadway Speeds

Roadway Name	Design Speed (mph)	Posted Speed (mph)
SR 429	70	70
Binion Road	60^	55
Boy Scout Road	50^	45

^ Where design speed could not be determined by existing plans, it was assumed to be 5 mph greater than the current posted speed

Access Classification

Under Florida Statutes 335.18 the legislature authorized FDOT to develop rules to administer the "State Highway System Access Management Act". These rules regulate access to the state highway system in order to preserve the functional integrity of the system. FDOT uses seven access classifications numbered one thru seven as defined in Rule 14-97. In general, as the access classification increases so does the number of access points and connections to the facility. On the other hand, speed is inversely related, and as the access classification increases the speed on the facility decreases. Table 4 lists the access classification as determined by the consultant using all available data and documentation.

Table 4. Access Classification

Roadway Name	Access Classification
SR 429	Access Class 1, Area Type 3
Binion Road	Access Class 4
Boy Scout Road	Access Class 4

Existing Roadway Characteristics

The following sections discuss the characteristics of primary roadways in the study area. SR 429 features were determined using CFX 429-153 Contract Plans. Binion Road and Boy Scout Road features were determined using information and measurements collected from site visits and Orange County's Property Appraisers website. Tables 5 through 8 summarize the existing roadway characteristics.

Table 5. Typical Section

Roadway Name	No. of Lanes (Lane Width, ft)	Median Width (ft)	Paved Shldr Width (ft)	Curb and Gutter (Yes or No)	Roadside Ditch/ Swale (Yes or No)	Sidewalk / Shared Use Path (Yes or No)	Bicycle Facility (Yes or No)	Buffer Width (ft)	Right-of-Way Width (ft)
SR 429	6 (12)	64	10	No	Yes	No	No	N/A	357-903
Binion Road	2 (11)	0	0-7^	No	Yes	Yes	No	20-60^	80-120
Boy Scout Road	2 (11)	0	0	No	No	No	No	20	60^

^ Field measurements

Pavement Condition

Table 6. Existing Roadway Pavement Conditions

Roadway Name	Pavement Type	Pavement Condition	Pavement Description
SR 429	Asphalt	Good/Fair	No discernable improvements
Binion Road	Asphalt	Good/Fair	Majority of pavement has been resurfaced and/or widened
Boy Scout Road	Asphalt	Fair/Poor	No discernable improvements.

Horizontal Alignment

Table 7. Horizontal Alignment

Roadway Name	Alignment Straight or Curved	Deflection Angle	No. of Curves	Curve Radius (ft)	Curve Length (ft)	Alignment Description
SR 429	Both	N/A	2	4000’	1994.81’	Superelevated e=0.052
Binion Road	Straight	N/A	0	--	--	Alignment values based on imagery
Boy Scout Road	Straight	N/A	0	--	--	Alignment values based on imagery

Notes: Evaluation limits based on proposed concept

Horizontal stopping sight distance

Based on information collected from the field as well as existing aerial imagery there were no horizontal obstructions to sight distance. There are no known intersection related sight distance issues.

Vertical Alignment

Table 8. Vertical Alignment

Roadway Name	Alignment Flat or Rolling	No. of Curves	Max. Grade (%)	Alignment Description
SR 429	Flat	0	0.7%	Grade based on Contract Plans
Binion Road	Flat	0	3.0%	Grades based on 1-ft contours generated from GIS
Boy Scout Road	Flat	0	1.8%	Grades based on 1-ft contours generated from GIS.

Notes: Evaluation limits based on proposed concept. No points of vertical intersection identified.

Vertical stopping sight distance

Based on information collected from the site visit as well as contours generated from GIS there were no vertical obstructions to sight distance. No intersection sight distance issues have been identified.

Cross Slope & Superelevation

Field measurements of Binion Road cross slopes vary from 0.3% to 7%. Field measurements of Boy Scout Road cross slopes vary from 1.4% to 2.5%. SR 429 is superelevated at 5.2% within the project limits.

Intersections

Only one intersection exists within the study area. Boy Scout Road terminates at Binion Road. Proposed conditions would introduce entrance and exit ramps from SR 429 that would connect with this existing intersection. Traffic control for the proposed condition has yet to be determined. Table 9 lists out the types of intersection configurations and lane types.

Table 9. Intersections

Roadway Name	No. of Intersections	Type of Intersection	Unsignalized Intersections	Traffic Control
SR 429	N/A	N/A	N/A	N/A
Binion Road	1	T Intersection	Boy Scout Road	No control; no left turn storage lane
Boy Scout Road	1	T Intersection	Binion Road	Stop Control; Single lane

Crash Data Analysis

Crash data was reviewed for the primary roads identified. The 2017-2022 crash period was selected due to the irregularity of traffic during 2020 as a result of the pandemic. Crash data was sourced from the Signal4 Analytics database. Crash data was evaluated based on environmental conditions, lighting conditions, road surface conditions, severity and frequency, and weather. The results are located in **Appendix D**.

4.d - Existing Conditions – Drainage

4.d. - Existing Conditions - Drainage

Hydrology

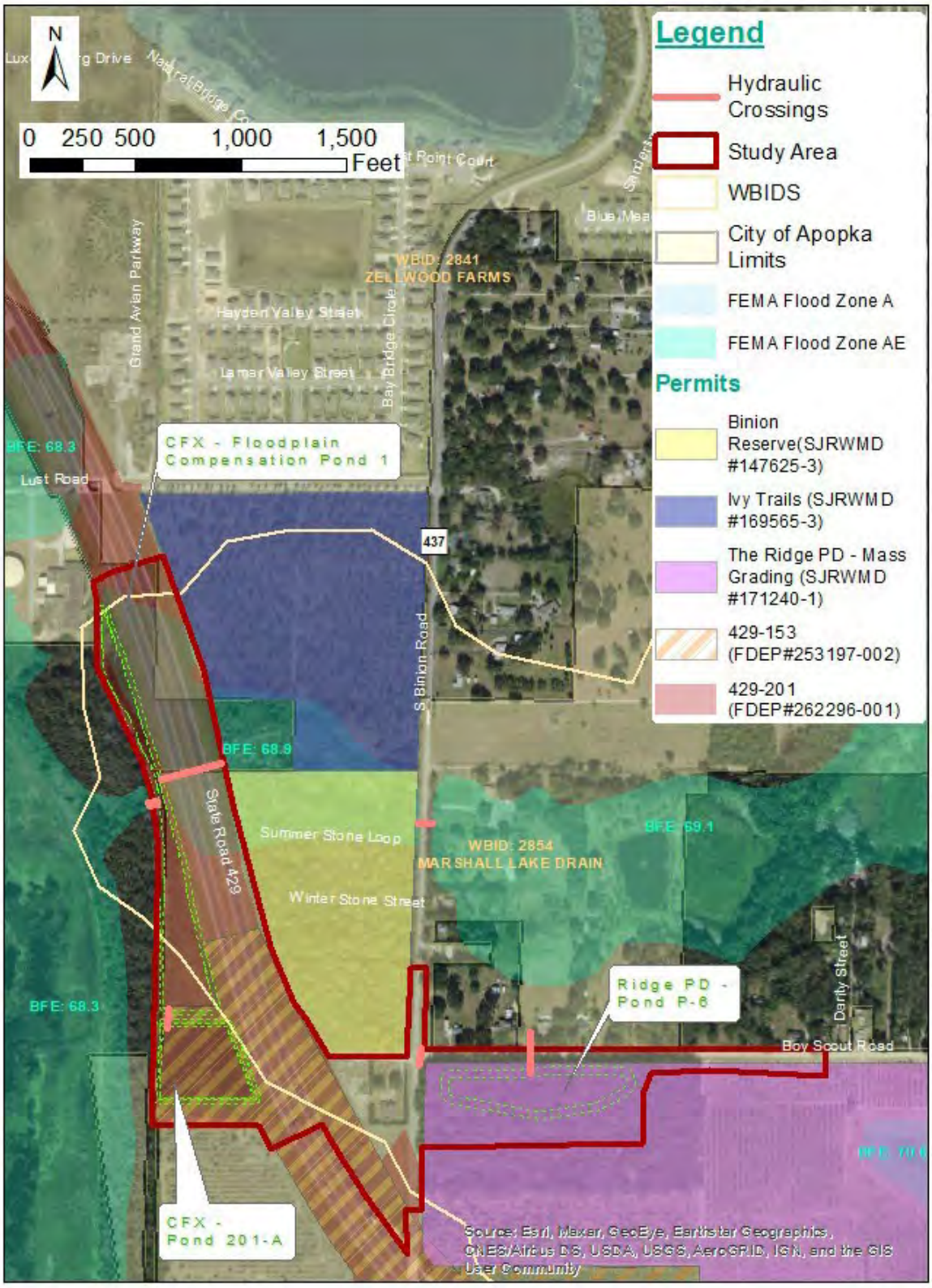
The study area, shown in the following Figure 1, consists of open basins part of the Lake Fuller Outlet and Pumping Station Watershed that are within the jurisdiction of the St. Johns River Water Management District (SJRWMD) and ultimately discharge west to Lake Apopka. The project is located within the Marshall Lake Drain WBID 2854 and Zellwood Farms WBID 2841 neither of which are listed as impaired. The study area is also within the Lake Apopka Hydrologic basin and is required to meet additional criteria related to total phosphorous loads in post development discharge. In lieu of any phosphorous loading criteria the CFX 429-153 project was able to follow Outstanding Florida Water (OFW) criteria and it will need to be verified during the design phase if the same applies for this project. Permitting for this section of SR 429 has historically been coordinated through the Florida Department of Environmental Protection (FDEP).

Along SR 429, the project limits fall within one 32.10 acre (ac) open basin, Basin 201-A. Basin 201-A includes SB and NB SR 429 and extends from south of the Binion Road overpass, to just north of the bridge that goes over Lust Road. Basin 201-A is mainly comprised of open channels and a closed storm sewer system that conveys runoff to Pond 201-A. Pond 201-A discharges north to Floodplain Compensation Pond 1 (FPC-1). Pond 201-A, an online dry retention facility, and FPC- 1 were originally constructed in 2006 as part of the 429 SR 414 (Maitland Boulevard) extension and SR 429 realignment, CFX Project No. 429-201, and permitted under FDEP Permit 262296- 001 for the six-lane condition. Pond 201-A, is proposed to be modified under CFX Project No. 429-153, where SR 429 is proposed to be widened from West Road to SR 414 to the six-lane condition. Pond 201-A was designed but not permitted for the required 4.36 ac-ft for the 8-lane condition and will be constructed to provide 6.64 ac-ft of water quality treatment. As part of the 429-153 project, Pond 201-A is being lowered a foot and underdrain is proposed to help with recovery. Pond 201-A is currently under construction. During a field visit performed September 20, 2022 the existing condition of the outfall structure, and Pond 201-A was unable to be verified and will likely be altered per the construction. The structures and pipes that were outside of the construction zones along SR 429 and Boy Scout Road and that were able to accessed appeared to be in good working condition and are shown in the drainage photo log included in the Appendix.

East of SR 429, west of Binion Road, and south of Boy Scout Road runoff sheet flows northeast along Binion Road and across Boy Scout Road. North of Boy Scout Road and between SR 429 and Binion Road is currently under residential construction for both the Binion Reserve, south of the BFE 68.9 FT NAVD 88 floodplain, and Ivy Trails, north of the same floodplain. Both developments discharge to dry retention treatment ponds that ultimately discharge to the floodplain. The BFE 68.9 FT NAVD 88 floodplain located between SR 429 and Binion Road is upstream of CD-1.

Runoff from Binion Road on the east side sheet flows offsite without treatment to the BFE 69.1 FT NAVD 88 floodplain on the east side of Binion, with the crown of Binion Road being the drainage divide.

Figure 1


N
0 250 500 1,000 1,500
Feet
Legend
Hydraulic Crossings
Study Area
WBIDS
City of Apopka Limits
FEMA Flood Zone A
FEMA Flood Zone AE
Permits
Binion Reserve(SJRWMD #147625-3)
Ivy Trails (SJRWMD #169565-3)
The Ridge PD - Mass Grading (SJRWMD #171240-1)
429-153 (FDEP#253197-002)
429-201 (FDEP#262296-001)
WBID: 2841
ZELLWOOD FARMS
WBID: 2854
MARSHALL LAKE DRAIN
CFX - Floodplain Compensation Pond 1
CFX - Pond 201-A
Ridge PD - Pond P-6
BFE: 68.3
BFE: 68.9
BFE: 69.1
Lust Road
Grand Avian Parkway
Hayden Valley Street
Lamar Valley Street
Bay Bridge Circle
S Binion Road
State Road 429
Summer Stone Loop
Winter Stone Street
Darity Street
Boy Scout Road
437
Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

South and north of Boy Scout Road and east of Binion Road is the location of the planned development of The Ridge PD. The permitted but unconstructed 336.8 ac site consists of seven parcels that will be developed in three phases for residential, multi-family, office, commercial, industrial, and Lake/Recreational land uses. The stormwater system will consist of seven dry retention ponds and two wet detention ponds. Dry retention Pond P-6 is located at the southeast corner of Binion Road and Boy Scout Road and is a potential joint-use treatment facility. See the following **Table 16** for a Summary of the Existing Treatment Facilities.

Table 16. Summary of Existing Treatment Facilities

Treatment Facility	Treatment Method	Treatment Criteria	Basin Area (ac)	Required Treatment (ac-ft)	Provided Treatment (ac-ft)	Discharge Location	Special Criterial	Comments
Pond 201A	On-Line Dry Retention with Underdrain	1.25" Over Impervious Area + 0.5" Over Drainage Basin for On-line	32.10	3.84 for 6-lane condition and 4.36 for future 8-lane condition	6.64	Floodplain Comp 1	Lake Apopka Basin (Additional 50% of on-line TV for OFW)	Permitted under FDEP 262296-001
P-6	Dry Retention	4" Over Drainage Basin for Lake Apopka	29.01	9.67	12.92	Existing Residential home on the north side of Boy Scout Rd – Ultimately the 69.1 BFE FT NAVD 88 floodplain	Lake Apopka Basin	Permitted under SJRWMD 171240-1 (not yet constructed)

Existing FDEP and SJRWMD Permits for the project corridor were researched to obtain stormwater and environmental design information. These are summarized in **Table 17** below.

Table 17. ERP Summary

Project Name	Permit No.	Date Issued	Description
SR 414 (Maitland Blvd) Ext (US 441 to SR 429) & SR 429 Realignment	FDEP 262296-001	12/15/2006	Ponds Designed for the 6-lane condition. Permit covers 429-201, 429-200, 414-210 and 414-211
CFX 429-153: 429 Widening from West Road to SR 414 - Stormwater Conveyance	FDEP 253197-002-EI	6/23/2021	An individual permit that authorized the stormwater conveyance system to route the runoff from two additional lanes to the existing SWMS.
Ivy Trails (Transfer)	SJRWMD 169565-3	7/8/2022	Individual Permit; Currently Under Construction;

Binion Reserve	SJRWMD 147625-3 (Transfer)	---	Pending RAI Response; Individual Permit; Currently Under Construction; 19.2 AC residential, single-family subdivision development
The Ridge PD – Mass Grading	SJRWMD 171240-1	3/1/2022	Individual Permit; Construction and operation of a stormwater management system for a 337.20 AC project

Floodplains

The Federal Emergency Management Agency (FEMA) has determined the 100-year floodplain limits in the vicinity of the project limits in the form of Flood Insurance Rate Maps (FIRM). In Figure 1, the 100-year floodplain limits are presented from Orange County Unincorporated Areas panel 12095C012H and the City of Apopka panel 12095C0120H, both effective 9/24/2021. The 100-year floodplain crosses the SR 429 right-of-way in the location of the cross drain that connects the floodplain on either side of the road. At this location, the existing culvert conveys runoff from east to west to Lake Apopka. On the upstream end of CD-1 the established base flood elevation (BFE) is 68.9 FT NAVD88. The downstream end of CD-1 discharges directly into FPC-1. The same FPC-1 that Pond 201-A discharges to. An 18” and 24” pipe connects FPC-1 to the 100-year floodplain Zone AE on the west side of the project, where the BFE is 68.3 FT NAVD88. FPC-1 is permitted to compensate for the impacts from the 429-201 project where the seasonal high-water level was determined to be 64.00 FT NAVD88 and the BFE at the time was 69.09 FT NAVD88. There are no regulatory floodways within the study corridor.

4.e - Existing Conditions – Utilities & Railroad

4.e - Existing Conditions – Utilities & Railroad

Existing Utilities

Existing utilities noted during site visits follow:

- Binion Road (CR 437)
  - Overhead & Buried Electric (OUC)
  - Overhead utilities (assumed cable and TV)
  - CenturyLink Buried Fiber Optic Cable
  - MCI Buried Fiber Optic Cable
  - Buried gas (assumed Lake Apopka Natural Gas District)
- Boy Scout Road
  - Overhead Electric (assumed OUC)
  - Overhead utilities (assumed cable and TV)
  - Water main (assumed City of Apopka)
  - MCI Buried Fiber Optic Cable

Existing utilities noted from CFX Project No. 429-153 AFC Plans follow:

- Buried Fiber Optic Cable (northbound outside shoulder)

Sunshine Design Ticket Utility Responses:

Utility Coordination from Sunshine Design Ticket (responses below):

- Central Florida Expressway Authority
- CenturyLink
- Charter Communications
- City of Apopka
- Duke Energy
- Lake Apopka Natural Gas
- MCI

Central Florida Expressway Authority

Ongoing Job. Locate technician and excavator have established an agreement on scheduled marking

CenturyLink

No Conflict. Utility is outside of the requested work site

Charter Communications

Clear. No Facilities.

City of Apopka
Active Facilities are present. The member has active facilities within the area described by the noticed demolition. DO NOT demolish until the member notifies you the site is clear

Duke Energy
Clear. No Facilities.

Lake Apopka Natural Gas District
Unmarked. Member does not have accurate information to perform the requested locate. Please contact the utility for further details per 556.105 (7)(a), F.S.

MCI
Clear. No Facilities.

The most up-to-date response status can always be gathered at https://exactix.sunshine811.com/ or by calling 1 - (800) 852 - 8057.

4.f - Existing Conditions - Environmental

4.f - Environmental - Existing Conditions

A review was conducted of existing conditions related to Environmental Resources for the project. Below is a summary of findings.

Wetlands and Other Surface Waters

An assessment of wetlands and surface waters was conducted within the project study area utilizing the 2014 St. Johns River Water Management District (SJRWMD) Florida Land Use Cover and Forms Classification System (FLUCFCS) and the National Wetland Inventory (NWI) GIS datasets. The project study area contains five (5) potential wetlands, primarily adjacent to SR 429 (Figure 3). Due to the hydrologic connections of the onsite wetlands, these wetlands may fall under the jurisdiction of the SJRWMD and FDEP.

Water Resources

There are no aquatic preserves or Outstanding Florida Waters (OFWs) within the project study area. A review was conducted of existing conditions related to natural resources for the project. The project will meet all applicable SJRWMD criteria related to water quality. The project is currently a non-federal action receiving no federal monies; therefore, concurrence from the EPA is not required according to the Safe Drinking Water Act. Best Management Practices (BMPs) to control erosion, sediment release, and storm water runoff to minimize adverse impacts on surface water resources will be implemented during design, permitting and construction. Determination has been made that there are no USACE retained waters (Figure 3)

Wild and Scenic Rivers

There are no wild or scenic rivers within the project study area, thus the proposed project would have no involvement with these resources.

Floodplains

Approximately 23 acres of the ±156-acre project site (14.7%) are classified as being within the Federal Emergency Management Agency (FEMA) Flood Zone AE, within the Special Flood Hazard Areas, where an established Base Flood Elevation (BFE) has been determined (Figure 4). The remaining approximately 133 acres of the project site are classified as being within FEMA Flood Zone X, areas of minimal flood hazard. There are no FEMA Regulatory Floodway within the project study area (**Figure 4**).

Coastal Barrier Resources

The proposed project would have no involvement with coastal barrier resources.

Protected Species and Habitat

A database review of potential species occurring within the project study area and immediate vicinity was conducted. Results of the database review is summarized below.

Based on a review of the U.S. Fish and Wildlife Service (USFWS) Critical Habitat Mapper, there is no USFWS designated critical habitat within the project study area. Areas identified by Florida Fish and Wildlife Conservation Commission (FWC) as Strategic Habitat Conservation Areas (SHCA) are located within the project study area. SHCAs are undeveloped natural areas identified by FWC as areas that could provide potential habitat to native plant and wildlife species and,

therefore, may be considered for acquisition as conservation lands. However, these areas have no regulatory implications and have not been and may never be acquired for conservation.

Based on Florida Natural Areas Inventory (FNAI) and USFWS Information for Planning and Consultation (IPaC) data, no listed plant or wildlife species have been documented near the project site; however, the wood stork (*Mycteria americana*) was listed as likely to occur within one (1) mile of the project site. The project site lies within the Core Foraging Area (CFA) of two(2) active wood stork colonies. The project site also lies within the USFWS consultation area for the Everglade snail kite (*Rostrhamus sociabilis plumbeus*), Florida scrub-jay (*Aphelocoma coerulescens*), sand skink (*Plestiodon reynoldsi*), and Lake Wales Ridge plants. Additional listed species with the potential to occur included the Florida sandhill crane (*Antigone canadensis pratensis*), Florida burrowing owl (*Athene cunicularia floridana*), Audubon's crested caracara (*Caracara cheriway*), eastern indigo snake (*Drymarchon couperi*), red-cockaded woodpecker (*Dryobates borealis*), gopher tortoise (*Gopherus polyphemus*), short-tailed snake (*Lampropeltis extenuata*), eastern black rail (*Laterallus jamaicensis ssp. jamaicensis*), and Everglade snail kite (*Rostrhamus sociabilis plumbeus*).There are no known wading bird rookeries or bald eagle nests within the project study area or within one (1) mile of the project site.

Federal Listed Fauna

Birds

Audubon's Crested Caracara

Audubon's crested caracara (caracara) is listed as threatened by USFWS and FWC. Caracaras are large, boldly patterned raptors, with a crest and unusually long legs. Caracaras are year-round residents in Florida. The species has been reported from the Kissimmee, Caloosahatchee and Upper St. Johns River basins, and the Kissimmee prairie. The crested caracara is strongly associated with open habitats, preferring large expanses of pastures, grasslands, or prairies with numerous shallow ponds and sloughs and single or small clumps of cabbage palms, live oaks, and cypress. The caracara is an opportunistic feeder with a broad diet consisting of carrion and live prey, including invertebrates associated with carrion and dung in pastures. They forage in a wide variety of habitats including pastures, along roads, wetlands and agricultural lands including citrus groves. This species has not been documented within one (1) mile of the project study area.

Eastern Black Rail

The eastern black rail is listed as threatened by the USFWS. Black rails are small blackish-gray birds with bright red eyes that live in a wide range of wetland habitats. Eastern black rail habitat can be tidally or non-tidally influenced, and range in salinity from salty to brackish to freshwater marshes.

This species requires dense overhead cover and soils that are moist to saturated and interspersed with very shallow water. According to FNAI data, the eastern black rail has not been documented within one (1) mile of the project study area.

Everglade Snail Kite

The Everglades snail kite is listed as endangered by USFWS and FWC. This species is a mid-sized raptor that can reach a length of 14.2-15.4 inches. Males are slate gray with red eyes and orange legs, which turn more reddish during breeding season. Females are brown with red eyes and yellow to orange legs, with varying amounts of white streaking on the face, neck, and chest. Snail kites have a highly specific diet, which is made up almost exclusively of apple snails (*Pomacea paludosa*). Snail kites typically prefer large, open, freshwater marshes and shallow lakes (< 4 ft. deep) with a low- density of emergent vegetation and typically nest in low trees or shrubs over water (commonly willow, wax myrtle, pond apple, or buttonbush, but also in non-woody vegetation like cattail or sawgrass).

The project site is located within the USFWS consultation area for the snail kite; however, the species has not been documented within one (1) mile of the project site.

Florida Scrub-Jay

The Florida scrub-jay (scrub-jay) is listed as threatened by USFWS and FWC. Scrub-jays are similar in size and shape to their relative, the blue jay, but they differ strikingly in color pattern and exhibit subtle markings as opposed to the blue jay. They have a pale blue head, nape, wings and tail and are pale gray on the back and belly. The Florida scrub-jay is a non-migratory species and is relatively sedentary and rarely sustains a flight of more than a kilometer. This species prefers low growing oak scrub habitats, including sand pine and scrubby flatwoods. Optimal habitat includes scrub oak with most of the oaks and other shrubs limited to ~3-12 feet in height, interspersed with numerous small patches of bare sand. Fire is a frequent natural event in scrub habitats and serves to maintain the habitat. Fire suppression and development of the habitat has made this species vulnerable to extinction.

The project site is located within the USFWS consultation area for the scrub jay; however, the species has not been documented within one (1) mile of the project site. Surveys may be required to determine presence or absence of the scrub-jay. Coordination with USFWS may be required to address impacts to scrub-jay habitat, if scrub-jays are observed.

Red-Cockaded Woodpecker

The red-cockaded woodpecker (RCW) is listed as endangered by USFWS and FWC. The RCW is a black and white bird that can reach lengths of 9 inches and a weight of 1.8 ounces. RCWs have a large white patch located on their cheek, a black head and neck, a white belly, and a barred black and white back. The red-cockaded, which is only found on the male, consists of a small red streak above the cheek and is rarely visible. RCWs inhabit open, mature pine woodlands that have a diversity of grass and shrub species. Preferred habitat includes longleaf pine flatwoods in north and central Florida and mixed longleaf pine and slash pine in south-central Florida. The RCW creates cavities within the longleaf pine tree and relies on the tree's production of resin to protect them from predators. Development of longleaf pine habitat as well as fire exclusion in this fire-dependent ecosystem has led to a large decrease in populations of RCWs. According to FNAI data, the RCW has not been documented within one (1) mile of the project study area.

Wood Stork

The wood stork is listed as threatened by USFWS and FWC. The wood stork is a large, long legged wading bird that reaches a length of 35-45 inches with a wingspan of 60-65 inches. Wood storks are typically found in marshes, cypress swamps, and mangrove swamps, but their presence in artificial ponds, seasonally flooded roadside or agricultural ditches, and managed impoundments has become common. Wood stork breeding areas extend from South Florida through Georgia and along the coastal areas of South Carolina. Wood storks are known to nest with other wading bird species, including white ibis, tricolored herons, snowy egrets, and great blue herons. Foraging habitat consists of nearly any calm, shallow water area (between 4 and 10 inches) or wetland depression that concentrates fish and is not overgrown with dense, aquatic vegetation. Some examples of foraging habitat include freshwater marshes, stocked ponds, shallow ditches, narrow tidal creeks, shallow tidal pools, and depressional areas of cypress heads and swamp sloughs.

No wood storks have been documented within one (1) mile of the project study area; however, there is suitable foraging habitat within the wetlands in the project study area and the project study area is within the core foraging area of the Lawne Lake and Eagle Nest Park nesting colonies.

Reptiles

Eastern Indigo Snake

The eastern indigo snake is listed as threatened by USFWS and FWC. This species is a very large, stout-bodied, shiny black snake and is widespread but uncommon in Florida. These snakes require large tracts of land for survival and are typically restricted to xeric habitats on pine-oak sandhills.

Indigo snakes forage in hydric habitats, often along wetland ecotones. In south Florida, preferred habitat for the eastern indigo snake includes a diverse assemblage including pine flatwoods, scrubby flatwoods, floodplain edges, sand ridges, dry glades, tropical hammocks, edges of freshwater marshes, muckland fields, coastal dunes, and xeric sandhill communities (*Eastern Indigo Snake Programmatic Effect Determination Key (South Florida) – Revised July 2017*). Eastern indigo snakes are often found in strong association with gopher tortoises, but are also known to use the burrows of armadillos, cotton rats, and land crabs (in coastal areas). No indigo snakes have been documented within one (1) mile of the project study area.

Sand Skink

The sand skink is listed as threatened by USFWS and FWC. The sand skink is a small, slender, grey to light brown lizard with shiny scales that can reach a length of five inches and the bluetail mole skink is a small lizard with a brownish body with a blue tail that can reach five inches in length. Skinks typically inhabit scrub, sandhill, and xeric hammock habitats located along the central ridge of Florida, from Putnam to Highlands County. Skinks are found at elevations above 82 feet and utilize 28 distinct soil types.

The project study area is located within the USFWS Consultation Area for the sand skink and contains suitable soils; however, no sand skinks have been documented within one (1) mile of the project site.

State Listed Fauna

Birds

Florida Burrowing Owl

The Florida burrowing owl is a small, ground-dwelling owl that is listed as threatened by the FWC. This species requires areas of short, herbaceous groundcover such as prairies, sandhills, and farmland. Burrowing owls can be found in ruderal areas such as pastures, airports, ball fields, undeveloped residential parcels, and road rights-of-ways. They often dig their own burrow and line the entrance with decorative materials prior to laying eggs at the bottom of the burrow. According to FNAI data, no individuals of this species have been documented within one (1) mile of the project site.

Florida Sandhill Crane

The Florida sandhill crane is listed as threatened by the FWC. This species a tall grey bird with a red forehead, and long neck and legs. The Florida sandhill crane is non-migratory and inhabits open grasslands, freshwater marshes, swampy edges of lakes and ponds, riverbanks, prairies, pasture lands and occasionally pine savanna throughout the state. Florida sandhill cranes typically start nesting on the margins of marshes and wet grasslands in late December and continue into June. The nests are built by both adults and generally consist of sticks, reeds, grasses and mosses. Sandhill cranes are omnivorous and have been known to feed on seeds, grains, berries, insects, earthworms, mice, small birds, snakes, lizards, frogs, and crayfish.

According to FNAI data, no sandhill cranes have been documented within one (1) mile of the project study area.

Reptiles

Gopher Tortoise

The gopher tortoise is listed as threatened by the FWC and is a candidate species for listing under the ESA by USFWS. This species requires well-drained and loose sandy soils for burrowing and low- growing herbs and grasses for food. These conditions are best found in the sandhill (longleaf pine- xeric oak) community, although tortoises are known to use many other habitats including sand pine scrub, xeric oak hammocks, dry prairies, pine flatwoods, and ruderal sites. Potential suitable habitat is present within the project; however, no gopher tortoises have been documented within one (1) mile of the project study area. If any potentially occupied gopher tortoise burrows are located within 25 feet of project limits of disturbance, an FWC gopher tortoise relocation permit will be required to excavate and relocate the gopher tortoises prior to the start of construction.

Short-tailed Snake

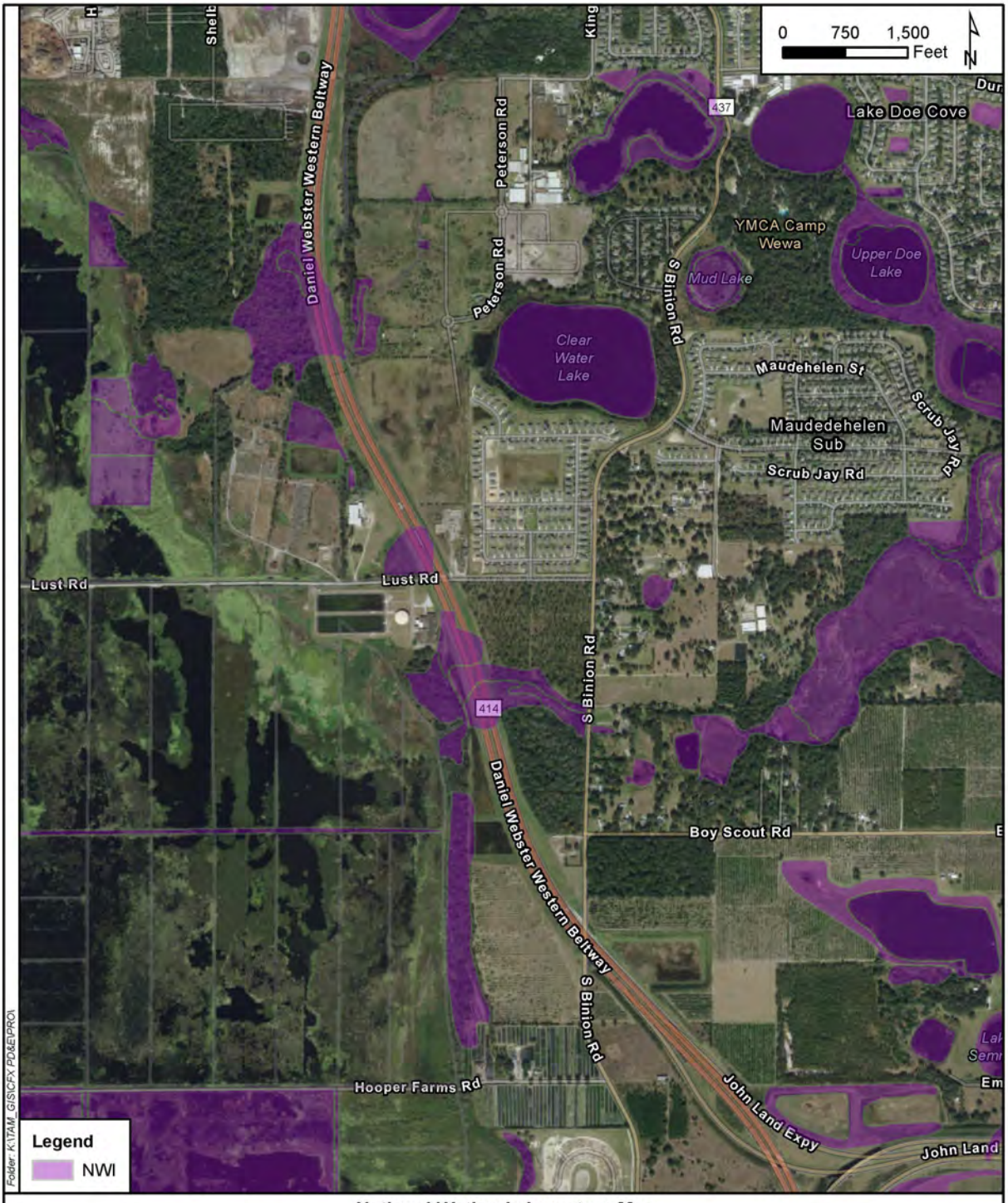
The short-tailed snake is listed as threatened by FWC. This species' preferred habitat is longleaf pine-turkey oak forests, but also occurs in scrub and dry oak hammocks. This species requires dry, loose, and sandy soils for burrowing, as the short-tailed snake spends the majority of its time underground. According to FNAI data, no individuals have been documented within one (1) mile of the project site.

Non-Listed Species

Florida Black Bear

The Florida black bear was removed from the FWC list of state-threatened species in August 2012; however, the Florida black bear remains protected under other rules and regulations, primarily through the Florida Black Bear Conservation Rule 68A-4.009 (F.A.C.) and the FWC Florida Black Bear Management Plan. Based on these regulations, pursuing, hunting, molesting, capturing, killing. or attempting those actions, whether or not such actions result in possession of the bear is unlawful. In addition, Rule 68A-4.009, F.A.C., generally prohibits anyone from possessing, injuring, shooting, wounding, trapping, collecting, or selling bears or their parts or attempting to engage in such actions without prior authorization from FWC. Black Bear Management Units (BMU) have also been established based on the seven geographically distinct bear subpopulations in Florida. The project study area is located within the Central BMU.

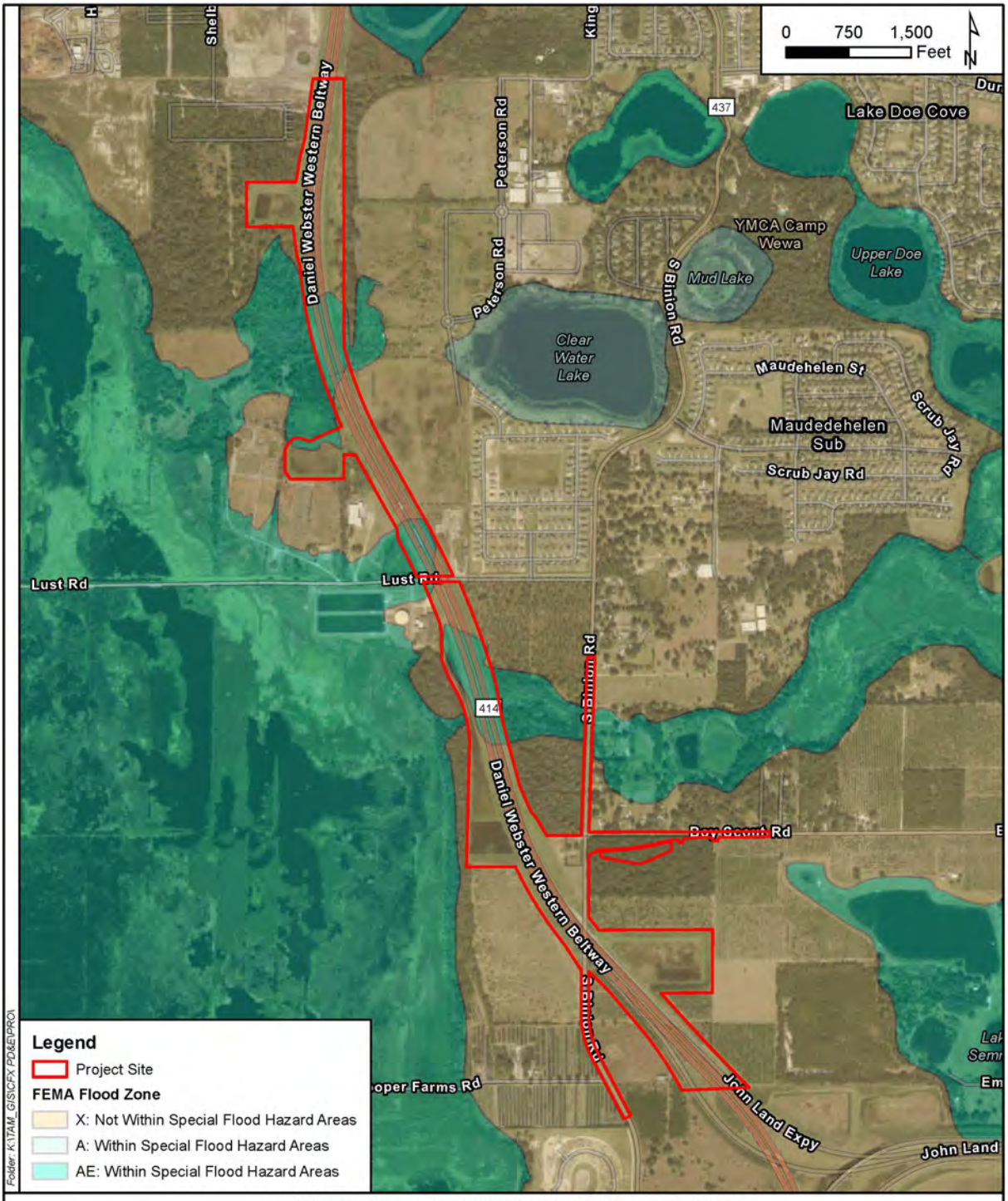
Black bears are adaptable and inhabit a variety of forested habitats including seasonally inundated pine flatwoods, tropical hammocks, hardwood swamps and xeric sand pine-scrub oak communities. Based on a review of GIS databases, there are several black bear observations, nuisance reports, or road kills have been reported within one (1) mile of the project site.



National Wetlands Inventory Map

CFX PD&E - State Road (SR) 429/Binion Road Interchange
Orange County, Florida

1 IN = 1,500 FT	CFX Project Number: 429-309	SEPTEMBER 2022	FIGURE 3



FEMA Flood Map (12095C0120F, Effective 9/25/2009)

CFX PD&E State Road (SR) 429/Binion Road Interchange
Orange County, Florida

1 IN = 1,500 FT	CFX Project Number: 429-309	SEPTEMBER 2022	FIGURE 4

4.g - Structures - Existing Conditions

Existing Structures

There are three existing bridges within the project limits:

- Bridge No. 750731 – Binion Road over SR 429
- Bridge No. 750733 – NB SR 429 over Lust Road
- Bridge No. 750732 – SB SR 429 over Lust Road

Bridge information pertinent to the study was compiled from National Bridge Inventory Data and field verified. A description of each bridge is provided below.

Binion Road over SR 429 (Bridge No. 750731)

The existing bridge was constructed in 2012 and consists of two spans with prestressed concrete girders and a concrete deck superstructure. Span lengths consist of 174.9 feet and 176.5 feet for a total length of 351.4 feet. The vertical clearance over SR 429 is 17.375 feet. The conceptual plans for Ramp D of the new Interchange would provide vertical clearance of 16.5 feet over SR 429. The existing bridge provides two travel lanes with shoulder and sidewalk on each side. The sidewalk is separated from the travel lanes and shoulder by a barrier wall. The total width of the deck from edge to edge is 54.5 feet. The inspection report dated October 2018 states that the bridge has a sufficiency rating of 98.3. The inspection report also indicated that the deck, superstructure, and substructure have an overall rating of Very Good (8 out of 9).

NB SR 429 over Lust Road (Bridge No. 750733)

The existing bridge was constructed in 2012 and consists of a single span with prestressed concrete girders and a concrete deck superstructure. The total length is 78.4 feet. The vertical clearance over Lust Road is 17.25 feet. The existing bridge carries NB traffic on SR 429 with three travel lanes and inside and outside shoulders. The total width of the deck from edge to edge is 59.1 feet. The inspection report dated January 2017 states that the bridge has a sufficiency rating of 97.6. The inspection report also indicated that the deck, superstructure, and substructure have an overall rating of Very Good (8 out of 9).

SB SR 429 over Lust Road (Bridge No. 750732)

The existing bridge was constructed in 2012 and consists of a single span with prestressed concrete girders and a concrete deck superstructure. The total length is 78.4 feet. The vertical clearance over Lust Road is 18.16 feet. The existing bridge carries NB traffic on SR 429 with three travel lanes and inside and outside shoulders. The total width of the deck from edge to edge is 59.1 feet. The inspection report dated January 2017 states that the bridge has a sufficiency rating of 97.6. The inspection report also indicated that the deck and superstructure have an overall rating of Good (7 out of 9) and Very Good (8 out of 9) for the substructure.

4.h. Traffic – Existing Conditions

4.h – Traffic Analysis – Existing Conditions

Traffic

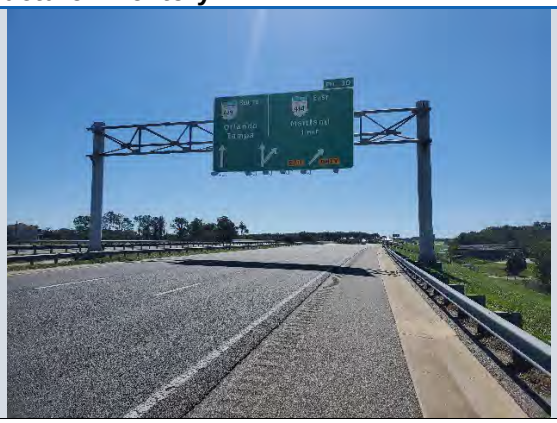
Signalization

As SR 429 is a limited access facility there are no existing signals or intersections located within the study area.

Currently the intersection of Binion Road and Boy Scout Road is a 3-way unsignalized intersection. The intersection is currently controlled by a STOP sign (R1-1) located on the eastern leg on the intersection, Boy Scout Road.

Traffic Signs

Within the study area along SR 429 there is one (1) overhead sign structure (structure no. 75A141) that includes one (1) guide sign that provides advance information for the lane assignment at the approaching SR 414/SR 429 interchange. In addition, there are two (2) existing multi post signs on SR 429. Currently, there are no existing regulator or overhead signs within the vicinity of the project limits along Binion Road.

Existing Overhead Structure Inventory	
Structure No. 75A141	

Traffic – Crash Data

Crash data is provided as **Appendix D**.

4.i - Lighting Existing – Conditions

4.i – Lighting – Existing Conditions

Lighting

Existing roadway lighting located north of the existing S. Binion Road bridge. The existing lighting located along SR 429 within the study area includes ten (10) lighting poles with the following characteristics: 50’ standard light poles with HPS Cobra Heads.

Currently, there is no existing roadway lighting along Binion Road or Boy Scout Road.

4. k - Intelligent Transportation Systems – Existing Conditions

4.k Intelligent Transportation Systems – Existing Conditions

Intelligent Transportation Systems (ITS)

The ITS configuration along SR 429 includes backbone Fiber Optic Cable (FOC) and electrical service wires that are buried on the southbound shoulder for the entire limits of the analysis area. There is a single ITS device located at MM 31.4 that includes closed circuit television (CCTV) and two Microwave Vehicle Detection System (MVDS) devices.

Currently, there are no ITS devices located along Binion Road or Boy Scout Road.

Existing Intelligent Transportation System Inventory		
CCTV 429 – 31.4 **TMS 429 – 31.4** **NB/SB**		

4.I - Geotechnical – Existing Conditions

4.I – Geotechnical – Existing Conditions

Geotechnical

Available documents, including the USGS Quadrangle Map, the Natural Resources Conservation Service Orange County Soil Survey and current plans were reviewed. The following observations were noted:

- Ground surface topography varies from + 115 to +70 feet NGVD in the project area.
- The south portion of the project previously contained citrus groves.
- Citrus groves are currently present southwest of SR 429.
- Near surface soils range from well drained Type A sand soils (soil types 4, 5, 6 and 47) to poorly drained Type D muck soils (soil types 25 and 42).
- The muck soils were likely removed for the SR 429 construction and were present from
- approximately Stations 575 to 585 along SR 429.
- Groundwater depth varies considerably from about + 70 to + 105 feet NGVD.
- Plastic clay layers are present underneath the sands and groundwater generally is perched on top of the relatively impervious clay soils.
- Project location is in a Karst or sinkhole prone environment.
- Geotechnical considerations include exploration for highly compressible organic muck soils, evaluation of variable groundwater conditions and deep Standard Penetration Test (SPT) borings for bridge foundation design.
- Bridges should be supported on a deep driven pile substructure due to Karst environment and likely high Factored Loads required.
- Dry stormwater ponds may be feasible depending on pond location, the presence of the clay confining layer and groundwater levels.
- Plastic and muck subsoil removal may be required depending on final roadway grades.

The Technical Memorandum is provided as **Appendix E.**

Appendix A – Photo Log

SR 429 Interchange with Binion Road – Roadway Photo Log

Pavement Seam at North
end of Binion Road
(facing north)

11ft Sidewalk next to Binion Road
(facing north)

Runoff area along Binion Road
(facing east)

Runoff area along Binion Road
(facing south)

SR 429 Interchange with Binion Road – Roadway Photo Log

Side slope along Binion Road
(facing north)

Binion Road Retention Pond
(facing west)

15” Drop off on Binion Road
(facing east)

Pavement Seam at South
end of Binion Road
(facing south)

SR 429 Interchange with Binion Road – Roadway Photo Log

Construction along Boy Scout Rd
(facing east)

Boy Scout Rd
(facing east)

Bridge Approach on Binion Rd
(facing south)

Guardrail Approach South of
Binion Rd Bridge
(facing south)

SR 429 Interchange with Binion Road – Roadway Photo Log

Guardrail End Transition South of Binion Rd Bridge
(facing north)

5ft Sidewalk along Binion Rd Bridge
(facing north)

Pavement seam and approach slab on South side of Binion Rd Bridge
(facing east)

Pavement seam and approach slab on North side of Binion Rd Bridge
(facing east)

SR 429 Interchange with Binion Road – Roadway Photo Log

Guardrail Connection on Binion Rd Bridge
(facing north)

Guardrail Approach North of
Binion Rd Bridge
(facing south)

Guardrail End Transition North of
Binion Rd Bridge
(facing south)

7ft Paved Shoulder along Binion Rd

SR 429 Interchange with Binion Road – Roadway Photo Log

Retaining wall for Binion Rd Bridge
(facing east)

Binion Rd Bridge
(facing north)

Binion Rd Bridge Underpass
(facing east)

Lust Rd Bridge
(facing west)

SR 429 Interchange with Binion Road – Roadway Photo Log

Retaining wall for Lust Rd Bridge
(facing north)

Gutter behind Retaining Wall
(facing east)

Lust Rd Bridge Underpass
(facing west)

Drainage Inlet under Lust Rd Bridge
(facing north)

SR 429 Interchange with Binion Road – Roadway Photo Log

Lust Rd Bridge
(facing north)

Erosion under Lust Rd Bridge
(facing east)

Pothole in shoulder under Lust Rd Bridge
(facing east)

Retaining Wall Between Travel Lanes of Lust Rd Bridge
(facing south)

MES for side drain along Binion Rd at the Boy Scout Rd Intersection (facing north)

MES for side drain along Binion Rd at the Boy Scout Rd Intersection (facing north)

Side drain pipe along Binion Rd at the Boy Scout Rd Intersection (facing north)

Grate along Binion Rd side drain at the Boy Scout Rd Intersection (facing north)

Grate along Binion Rd side drain at the
Boy Scout Rd Intersection
(facing north)

Ditch along Binion Rd
Standing north of Boy Scout Rd Intersection
(facing north)

MES for side drain along Binion Rd at the
Boy Scout Rd Intersection
(facing south)

Side drain pipe along Binion Rd at the
Boy Scout Rd Intersection
(facing south)

MES for side drain along Binion Rd at the Winterstone St Intersection
(facing south)

Side drain pipe along Binion Rd at the Winterstone St Intersection
(facing south)

Ditch along Binion Rd
North of Winterstone St Intersection
(facing north)

Binion Rd cross drain headwall (left) and inlet along shared-used path (right)
(facing south)

Ponding and Erosion at outfall of shared-used path inlet near Binion Rd cross drain (facing north)

Inlet along Binion Rd cross drain (facing north)

Retention area along SR 429 (facing south)

MES in retention area along SR 429 (facing west)

	
Ponding in SR 429 retention area (facing south)	SR 429 36” cross drain within retention area (facing east)

Appendix B – Traffic Counts

SR 429 data

FLORIDA DEPARTMENT OF TRANSPORTATION
TRANSPORTATION STATISTICS OFFICE
2021 HISTORICAL AADT REPORT

COUNTY: 75 - ORANGE

SITE: 5220 - ON SR-429, 0.025 MILES NORTH OF BINION ROAD HPMS'20

YEAR	AADT	DIRECTION 1	DIRECTION 2	*K FACTOR	D FACTOR	T FACTOR
2021	19300 F	N 9500	S 9800	8.00	53.20	6.20
2020	19700 C	N 9700	S 10000	8.00	53.00	5.50
2019	21000 S	N 10000	S 11000	8.00	52.60	4.10
2018	21000 F	N 10000	S 11000	9.00	53.20	5.80
2017	21000 C	N 10000	S 11000	9.00	52.60	6.20
2016	23500 E	0	0	9.00	52.50	6.00
2015	23000 E	0	0	9.00	53.20	7.20
2014	22500 E				53.20	4.40

AADT FLAGS: C = COMPUTED; E = MANUAL ESTIMATE; F = FIRST YEAR ESTIMATE
S = SECOND YEAR ESTIMATE; T = THIRD YEAR ESTIMATE; R = FOURTH YEAR ESTIMATE
V = FIFTH YEAR ESTIMATE; 6 = SIXTH YEAR ESTIMATE; X = UNKNOWN
*K FACTOR: STARTING WITH YEAR 2011 IS STANDARDK, PRIOR YEARS ARE K30 VALUES

FL Traffic Online

Roadway Count Summary

Start Date	19-Oct-21	Start Time	00:00
Stop Date	20-Oct-21	Stop Time	24:00
County	Orange	Station ID	327
Location	Binion Rd : Boy Scout Rd to Lust Rd (0.12 Miles S. of Lust Rd)		

19-Oct-21 — Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	10	8	4	5	0	7	20	58	58	46	28	31
30	9	3	3	4	5	12	25	61	49	45	39	27
45	2	3	4	0	1	13	35	47	57	36	49	32
00	6	3	5	3	6	17	45	55	56	34	35	34
Hr Total	27	17	16	12	12	49	125	221	220	161	151	124

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	50	34	39	65	63	94	88	49	35	44	17	11
30	39	46	57	62	95	86	83	46	39	23	20	18
45	28	49	43	68	89	86	72	35	32	31	14	12
00	33	40	59	66	88	82	71	49	29	23	15	10
Hr Total	150	169	198	261	335	348	314	179	135	121	66	51

24 Hour Total	3,462				
AM Peak Hour Begins	7:00	AM Peak Volume	221	AM Peak Hour Factor	0.91
PM Peak Hour Begins	16:15	PM Peak Volume	366	PM Peak Hour Factor	0.96

19-Oct-21 — Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	6	07	08	09	10	11
15	5	1	4	2	6	26	42	84	81	47	32	45
30	3	1	3	4	4	23	63	99	65	52	47	42
45	1	4	2	9	11	37	84	95	73	43	47	18
00	4	2	2	5	14	42	100	75	44	40	28	46
Hr Total	13	8	11	20	35	128	289	353	263	182	154	151

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	40	38	36	63	46	75	64	40	29	11	9	9
30	52	27	41	51	64	80	51	33	14	25	14	8
45	39	47	45	62	58	73	60	44	26	12	12	8
00	56	45	50	59	65	57	45	32	25	12	4	9
Hr Total	187	157	172	235	233	285	220	149	94	60	39	34

24 Hour Total	3,472				
AM Peak Hour Begins	6:45	AM Peak Volume	378	AM Peak Hour Factor	0.95
PM Peak Hour Begins	16:45	PM Peak Volume	293	PM Peak Hour Factor	0.92

19-Oct-21 — Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	15	9	8	7	6	33	62	142	139	93	60	76
30	12	4	6	8	9	35	88	160	114	97	86	69
45	3	7	6	9	12	50	119	142	130	79	96	50
00	10	5	7	8	20	59	145	130	100	74	63	80
Hr Total	40	25	27	32	47	177	414	574	483	343	305	275

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	90	72	75	128	109	169	152	89	64	55	26	20
30	91	73	98	113	159	166	134	79	53	48	34	26
45	67	96	88	130	147	159	132	79	58	43	26	20
00	89	85	109	125	153	139	116	81	54	35	19	19
Hr Total	337	326	370	496	568	633	534	328	229	181	105	85

24 Hour Total	6,934				
AM Peak Hour Begins	6:45	AM Peak Volume	589	AM Peak Hour Factor	0.92
PM Peak Hour Begins	16:45	PM Peak Volume	647	PM Peak Hour Factor	0.96

Roadway Count Summary

Start Date	20-Oct-21	Start Time	00:00
Stop Date	21-Oct-21	Stop Time	24:00
County	Orange	Station ID	327
Location	Binion Rd : Boy Scout Rd to Lust Rd (0.12 Miles S. of Lust Rd)		

20-Oct-21 — Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	13	6	6	2	1	8	19	50	47	58	44	39
30	2	3	1	7	7	2	30	54	51	58	35	37
45	6	3	5	4	4	18	34	51	61	29	29	35
00	4	3	5	2	7	30	35	51	46	37	38	37
Hr Total	25	15	17	15	19	58	118	206	205	182	146	148

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	32	41	45	67	71	91	70	55	43	33	17	15
30	44	45	70	68	78	90	80	46	40	33	27	18
45	49	59	75	85	63	82	85	54	35	22	13	12
00	43	52	68	70	81	62	71	42	32	22	22	9
Hr Total	168	197	258	290	293	325	306	197	150	110	79	54

24 Hour Total	3,581				
AM Peak Hour Begins	8:30	AM Peak Volume	223	AM Peak Hour Factor	0.91
PM Peak Hour Begins	16:45	PM Peak Volume	344	PM Peak Hour Factor	0.95

20-Oct-21 — Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	8	2	3	3	3	25	34	106	75	63	38	44
30	5	1	7	5	7	31	60	87	89	47	36	40
45	1	2	1	8	9	30	67	86	65	39	50	38
00	6	0	3	5	10	45	97	87	41	39	38	50
Hr Total	20	5	14	21	29	131	258	366	270	188	162	172

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	60	41	45	56	56	76	50	35	22	13	13	9
30	41	46	54	50	56	83	51	47	28	16	18	7
45	32	54	55	49	61	69	50	42	24	20	8	7
00	43	47	60	67	69	52	49	29	16	10	7	7
Hr Total	176	188	214	222	242	280	200	153	90	59	46	30

24 Hour Total	3,536				
AM Peak Hour Begins	6:45	AM Peak Volume	376	AM Peak Hour Factor	0.89
PM Peak Hour Begins	16:45	PM Peak Volume	297	PM Peak Hour Factor	0.89

20-Oct-21 — Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	21	8	9	5	4	33	53	156	122	121	82	83
30	7	4	8	12	14	33	90	141	140	105	71	77
45	7	5	6	12	13	48	101	137	126	68	79	73
00	10	3	8	7	17	75	132	138	87	76	76	87
Hr Total	45	20	31	36	48	189	376	572	475	370	308	320

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	92	82	90	123	127	167	120	90	65	46	30	24
30	85	91	124	118	134	173	131	93	68	49	45	25
45	81	113	130	134	124	151	135	96	59	42	21	19
00	86	99	128	137	150	114	120	71	48	32	29	16
Hr Total	344	385	472	512	535	605	506	350	240	169	125	84

24 Hour Total	7,117				
AM Peak Hour Begins	7:00	AM Peak Volume	572	AM Peak Hour Factor	0.92
PM Peak Hour Begins	16:45	PM Peak Volume	641	PM Peak Hour Factor	0.93

Roadway Count Summary

Start Date	21-Oct-21	Start Time	00:00
Stop Date	22-Oct-21	Stop Time	24:00
County	Orange	Station ID	327
Location	Binion Rd : Boy Scout Rd to Lust Rd (0.12 Miles S. of Lust Rd)		

21-Oct-21 — Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	13	9	6	6	5	6	22	48	58	41	31	54
30	6	6	1	2	3	14	35	62	51	49	49	43
45	12	1	2	8	2	8	36	50	65	51	38	37
00	4	3	0	4	3	23	45	45	49	32	35	48
Hr Total	35	19	9	20	13	51	138	205	223	173	153	182

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	32	50	55	77	74	90	61	69	38	31	22	13
30	51	47	41	50	78	103	72	62	40	31	21	10
45	42	45	59	74	92	96	64	52	32	25	14	12
00	41	36	56	63	79	77	54	49	25	25	15	13
Hr Total	166	178	211	264	323	366	251	232	135	112	72	48

24 Hour Total	3,579				
AM Peak Hour Begins	8:00	AM Peak Volume	223	AM Peak Hour Factor	0.86
PM Peak Hour Begins	16:45	PM Peak Volume	368	PM Peak Hour Factor	0.89

21-Oct-21 — Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	7	2	1	3	4	24	34	90	72	54	49	48
30	4	5	0	2	12	24	49	94	77	62	31	35
45	1	1	0	11	12	33	75	96	66	57	47	45
00	1	4	3	6	12	48	78	90	59	41	44	33
Hr Total	13	12	4	22	40	129	236	370	274	214	171	161

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	51	36	44	78	53	72	52	37	28	15	13	8
30	47	50	56	53	55	87	48	37	31	20	10	6
45	27	32	36	49	53	66	43	40	29	20	12	5
00	40	50	53	48	81	61	34	36	14	7	8	8
Hr Total	165	168	189	228	242	286	177	150	102	62	43	27

24 Hour Total	3,485				
AM Peak Hour Begins	7:00	AM Peak Volume	370	AM Peak Hour Factor	0.96
PM Peak Hour Begins	16:45	PM Peak Volume	306	PM Peak Hour Factor	0.88

21-Oct-21 — Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	20	11	7	9	9	30	56	138	130	95	80	102
30	10	11	1	4	15	38	84	156	128	111	80	78
45	13	2	2	19	14	41	111	146	131	108	85	82
00	5	7	3	10	15	71	123	135	108	73	79	81
Hr Total	48	31	13	42	53	180	374	575	497	387	324	343

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	83	86	99	155	127	162	113	106	66	46	35	21
30	98	97	97	103	133	190	120	99	71	51	31	16
45	69	77	95	123	145	162	107	92	61	45	26	17
00	81	86	109	111	160	138	88	85	39	32	23	21
Hr Total	331	346	400	492	565	652	428	382	237	174	115	75

24 Hour Total	7,064				
AM Peak Hour Begins	7:00	AM Peak Volume	575	AM Peak Hour Factor	0.92
PM Peak Hour Begins	16:45	PM Peak Volume	674	PM Peak Hour Factor	0.89

Roadway Count Summary

Start Date	19-Oct-21	Start Time	00:00
Stop Date	21-Oct-21	Stop Time	24:00
County	Orange	Station ID	327
Location	Binion Rd : Boy Scout Rd to Lust Rd (0.12 Miles S. of Lust Rd)		

19-Oct-21 — Northbound Volume for Lane 1

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	12	8	5	4	2	7	20	52	54	48	34	41
30	6	4	2	4	5	9	30	59	50	51	41	36
45	7	2	4	4	2	13	35	49	61	39	39	35
00	5	3	3	3	5	23	42	50	50	34	36	40
Hr Total	29	17	14	16	15	53	127	211	216	172	150	151

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	38	42	46	70	69	92	73	58	39	36	19	13
30	45	46	56	60	84	93	78	51	40	29	23	15
45	40	51	59	76	81	88	74	47	33	26	14	12
00	39	43	61	66	83	74	65	47	29	23	17	11
Hr Total	161	181	222	272	317	346	290	203	140	114	72	51

24 Hour Total	3,541				
AM Peak Hour Begins	8:00	AM Peak Volume	216	AM Peak Hour Factor	0.89
PM Peak Hour Begins	16:45	PM Peak Volume	355	PM Peak Hour Factor	0.96

19-Oct-21 — Southbound Volume for Lane 2

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	7	2	3	3	4	25	37	93	76	55	40	46
30	4	2	3	4	8	26	57	93	77	54	38	39
45	1	2	1	9	11	33	75	92	68	46	48	34
00	4	2	3	5	12	45	92	84	48	40	37	43
Hr Total	15	8	10	21	35	129	261	363	269	195	162	161

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	50	38	42	66	52	74	55	37	26	13	12	9
30	47	41	50	51	58	83	50	39	24	20	14	7
45	33	44	45	53	57	69	51	42	26	17	11	7
00	46	47	54	58	72	57	43	32	18	10	6	8
Hr Total	176	171	192	228	239	284	199	151	95	60	43	30

24 Hour Total	3,498				
AM Peak Hour Begins	6:45	AM Peak Volume	371	AM Peak Hour Factor	0.99
PM Peak Hour Begins	16:45	PM Peak Volume	299	PM Peak Hour Factor	0.90

19-Oct-21 — Total Volume for All Lanes

End Time	00	01	02	03	04	05	06	07	08	09	10	11
15	19	9	8	7	6	32	57	145	130	103	74	87
30	10	6	5	8	13	35	87	152	127	104	79	75
45	8	5	5	13	13	46	110	142	129	85	87	68
00	8	5	6	8	17	68	133	134	98	74	73	83
Hr Total	44	25	24	37	49	182	388	574	485	367	312	313

End Time	12	13	14	15	16	17	18	19	20	21	22	23
15	88	80	88	135	121	166	128	95	65	49	30	22
30	91	87	106	111	142	176	128	90	64	49	37	22
45	72	95	104	129	139	157	125	89	59	43	24	19
00	85	90	115	124	154	130	108	79	47	33	24	19
Hr Total	337	352	414	500	556	630	489	353	235	175	115	81

24 Hour Total	7,038				
AM Peak Hour Begins	7:00	AM Peak Volume	574	AM Peak Hour Factor	0.94
PM Peak Hour Begins	16:45	PM Peak Volume	654	PM Peak Hour Factor	0.93

Traffic Station (Orange County Traffic Counts)

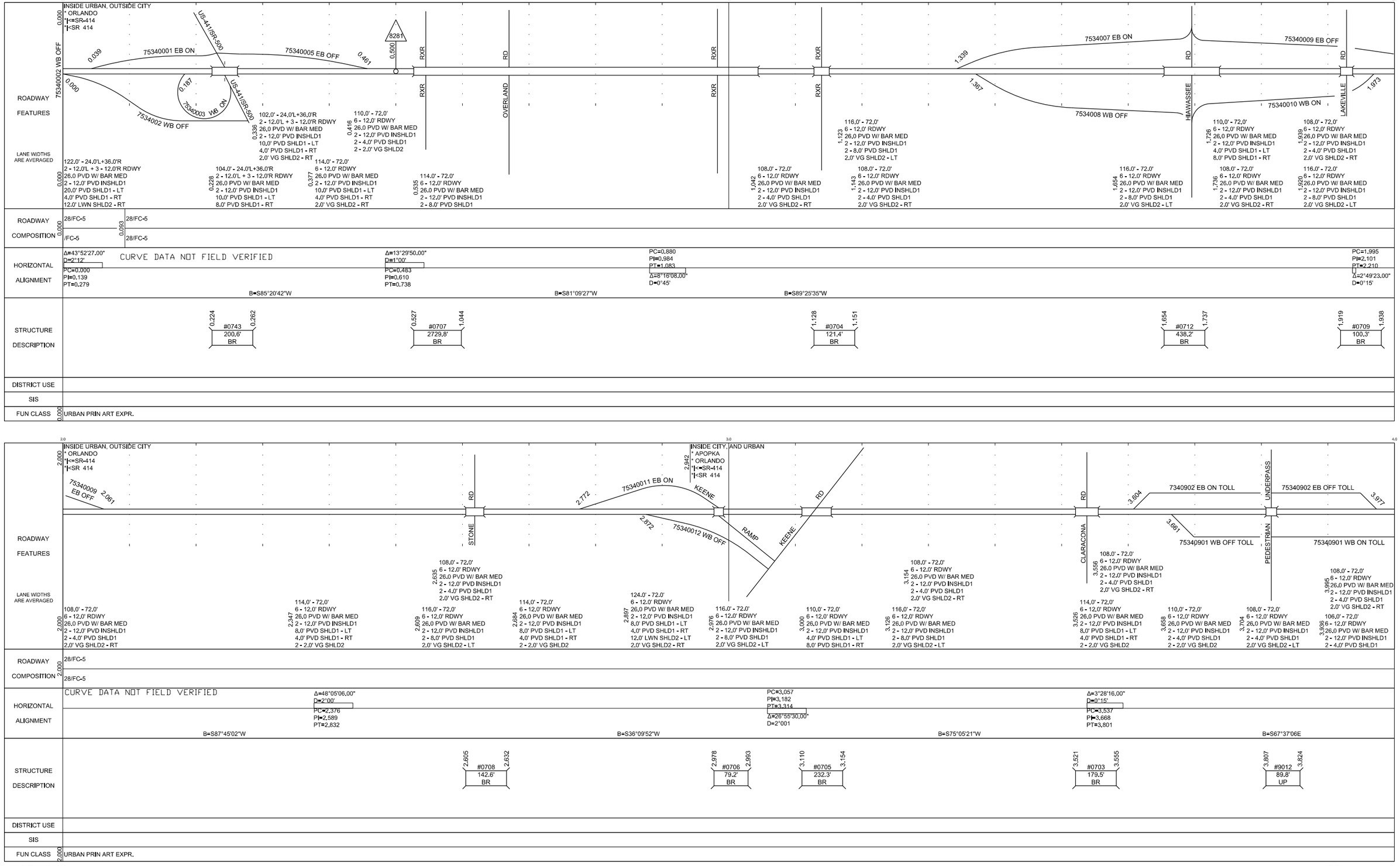
Appendix C – SR 429 Straight Line Diagram

	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	10/30/2019	12/5/2019				
BY	HNTB	HNTB				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02		SR 414/SR 429	ORANGE	05	75340000	1 OF 3

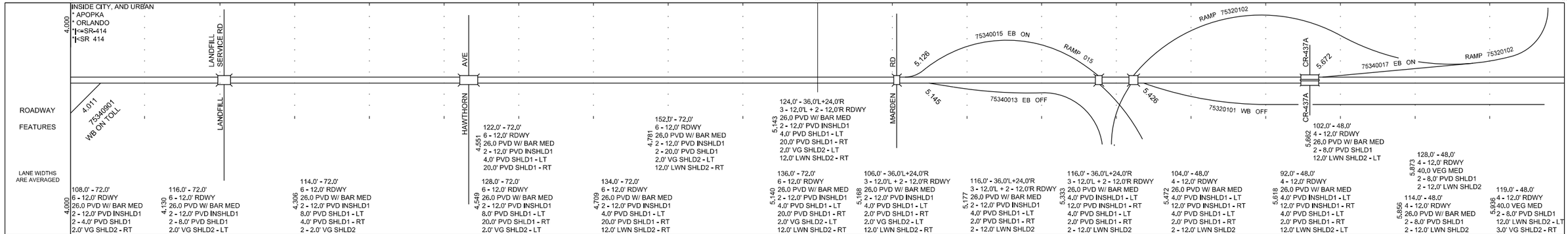


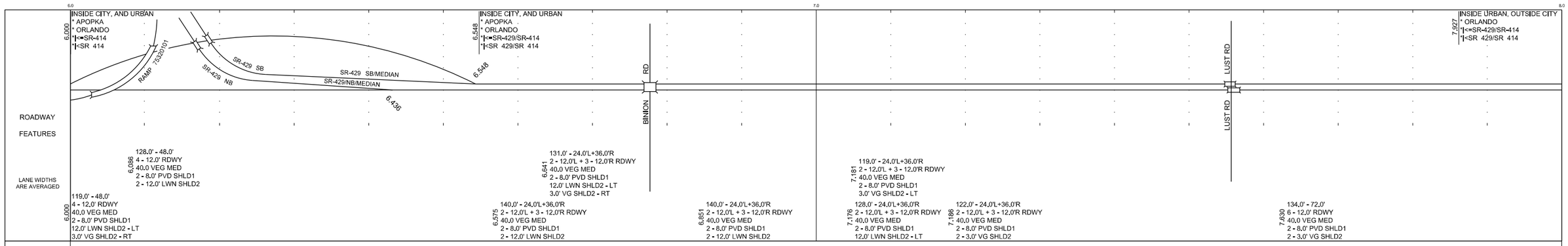
	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	10/30/2019	12/5/2019				
BY	HNTB	HNTB				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02		SR 414/SR 429	ORANGE	05	75340000	2 OF 3





	5 YR INV	SLD REV	BMP	EMP	INV	SLD REV
DATE	10/30/2019	12/5/2019				
BY	HNTB	HNTB				

FLORIDA DEPARTMENT OF TRANSPORTATION

STRAIGHT LINE DIAGRAM OF ROAD INVENTORY

SECTION STATUS	INT. or US ROUTE NO.	STATE ROAD NO.	COUNTY	DISTRICT	ROADWAY ID	SHEET NO:
02		SR 414/SR 429	ORANGE	05	75340000	3 OF 3

8.0 9.0

ROADWAY FEATURES

8.000 INSIDE URBAN, OUTSIDE CITY
* ORLANDO
*|<=SR-429/SR-414
*|<SR 429/SR 414

8.514 INSIDE CITY, AND URBAN
* APOPKA
* ORLANDO
*|<=SR-429/SR-414
*|<SR 429/SR 414

PETERSON RD

PETERSON RD

ELECTRIC RD

GENERAL

US-441

US-441

9.576

9.576

SR-429 CONNECTOR RD

LANE WIDTHS ARE AVERAGED

8.000 134.0' - 72.0'
6 - 12.0' RDWY
40.0 VEG MED
2 - 8.0' PVD SHLD1
2 - 3.0' VG SHLD2

8.096 143.0' - 72.0'
6 - 12.0' RDWY
40.0 VEG MED
2 - 8.0' PVD SHLD1
3.0' VG SHLD2 - LT
12.0' LWN SHLD2 - RT

8.471 134.0' - 72.0'
6 - 12.0' RDWY
40.0 VEG MED
2 - 8.0' PVD SHLD1
2 - 3.0' VG SHLD2

8.456 131.0' - 72.0'
6 - 12.0' RDWY
40.0 VEG MED
2 - 8.0' PVD SHLD1
3.0' VG SHLD2 - LT

8.706 131.0' - 72.0'
6 - 12.0' RDWY
40.0 VEG MED
2 - 8.0' PVD SHLD1
3.0' VG SHLD2 - LT

8.819 119.0' - 36.0'L+24.0'R
3 - 12.0'L + 2 - 12.0'R RDWY
40.0 VEG MED
2 - 8.0' PVD SHLD1
3.0' VG SHLD2 - LT

9.096 116.0' - 36.0'L+24.0'R
3 - 12.0'L + 2 - 12.0'R RDWY
40.0 VEG MED
2 - 8.0' PVD SHLD1

9.485 107.0' - 48.0'
4 - 12.0' RDWY
40.0 VEG MED
2 - 8.0' PVD SHLD1
3.0' VG SHLD2 - LT

9.426 119.0' - 36.0'L+24.0'R
3 - 12.0'L + 2 - 12.0'R RDWY
40.0 VEG MED
2 - 8.0' PVD SHLD1
3.0' VG SHLD2 - LT

END MP: 009.576
NET ROADWAY ID LENGTH: 9.576
STATE MAINTAINED LENGTH: 9.576

ROADWAY COMPOSITION

HORIZONTAL ALIGNMENT

CURVE DATA NOT FIELD VERIFIED
PC=8.234
PI=8.379
PT=8.504
Δ=52°01'18.00"
D=3°38'
B=N38°09'55"E

STRUCTURE DESCRIPTION

8.604 #0734 73.9' BR 8.618
8.607 #0735 68.6' BR 8.620

9.099 #0736 876.5' BR 9.265
9.102 #0737 881.8' BR 9.269

9.304 #0738 417.1' BR 9.383
9.296 #0739 411.8' BR 9.374

DISTRICT USE

SIS

8.000 CORRIDOR CORRIDOR 9.576

FUN CLASS

8.000 URBAN PRIN ART EXPR.

Appendix D – Existing Conditions Traffic Crash Data

TRAFFIC - CRASH DATA

The FDOT Signal Four Analytics database was utilized to obtain additional crash data for the years 2017 through 2022 at the study intersection to verify the trends observed in the primary crash analysis. A total of 10 crashes were analyzed at the intersection location during this period. **Table 1-1** illustrates the predominant crash type for the analysis period is Motor Vehicle in Transportation (2 front to rear, 1 front to front, and 1 sideswipe).

Table 1-1: Binion Rd. Crash Type Comparison

Crash Type	2017-2022	
	Count	Percent (%)
Motor Vehicle in Transport	4	44
Tree	3	33
Other Non-Collision	1	11
Utility Pole	1	11
Pedestrian	1	11

There were no reported fatalities in the 2017 through 2022 analysis period. **Table 1-2** verifies that the majority of crashes had no injuries.

Table 1-2: Binion Rd. Crash Severity Comparison

Crash Severity	2017-2022	
	Count	Percent (%)
No Injury	8	80
Possible Injury	1	10
Non-Incapacitating	1	10
Incapacitating	0	0
Fatal	0	0

During the 2017 through 2022 analysis period most crashes took place during the day and under dry pavement conditions. **Table 1-3** illustrates that the majority of crashes typically occurred on dry pavement with no injuries.

Table 1-3: Binion Rd. Road Surface Condition Comparison

Road Surface Conditions	2017-2022	
	Count	Percent (%)
Wet pavement with no injuries	1	10
Wet pavement with injuries	0	0
Dry pavement with no injuries	7	70
Dry pavement with injuries	2	20

SR 429 Existing Condition Crash Analysis:

The FDOT Signal Four Analytics database was utilized to obtain additional crash data for the years 2017 through 2022 at the study intersection to verify the trends observed in the primary crash analysis. A total of 8 crashes were analyzed at the intersection location during this period. **Table 1-4** illustrates the predominant crash types for the analysis period are Motor Vehicle in Transportation (1 sideswipe and 1 angle), Guardrail Face and Other Non-Collision.

Table 1-4: SR 429 Crash Type Comparison

Crash Type	2017-2022	
	Count	Percent (%)
Motor Vehicle in Transport	2	25
Guardrail Face	2	25
Other Non-Collision	2	25
Utility Pole	1	12.5
Crash Cushion	1	12.5

There were no reported fatalities in the 2017 through 2022 analysis period. **Table 1-5** verifies that the majority of crashes had no injuries.

Table 1-5: SR 429 Crash Severity Comparison

Crash Severity	2017-2022	
	Count	Percent (%)
No Injury	7	87.5
Possible Injury	1	12.5
Non-Incapacitating	0	0
Incapacitating	0	0
Fatal	0	0

During the 2017 through 2022 analysis period most crashes took place during the day and under wet pavement conditions. **Table 1-6** illustrates that the majority of crashes typically occurred on wet pavement with no injuries.

Table 1-6: SR 429 Road Surface Condition Comparison

Road Surface Conditions	2017-2022	
	Count	Percent (%)
Wet pavement with no injuries	5	62.5
Wet pavement with injuries	0	0
Dry pavement with no injuries	2	25
Dry pavement with injuries	1	12.5

State Florida Department of Transportation											Form 750-020-06
COLLISION SUMMARY											TRAFFIC ENGINEERING 10/15
General Information											
Section/Roadway ID:		N/A			State Road:						
Intersecting Route:		Binion Road (CR 437) and Boy Scout Road			Study Period:		2017 to 2022				
Milepost					Data by:		ED				
County		Orange			Date:		Tuesday, October 4, 2022				
No.	**Date**	**Day**	**Time**	**Severity**		**Crash Type**		**Day / Night**	**Wet / Dry**	**Contributing Cause**	
				Fatal	**Injury**						
1	7/10/2017	Monday	2:50 PM	0	0	Front to Rear		Day	Dry	Unknown	
2	9/28/2017	Thursday	10:19 AM	0	0	Sideswipe		Day	Dry	Unknown	
3	3/23/2018	Sunday	7:58 PM	0	1	Off Road		Night	Dry	Unknown	
4	12/13/2018	Thursday	6:10 PM	0	0	Pedestrian		Day	Dry	Unknown	
5	7/22/2019	Monday	8:15 AM	0	1	Front to Front		Day	Dry	Failed To Keep In Lane	
6	6/24/2019	Monday	5:45 PM	0	0	Jack Knife		Day	Dry	Unknown	
7	9/15/2019	Sunday	2:29 PM	0	0	Front to Rear		Day	Dry	Careless Driving	
8	2/22/2020	Saturday	1:50 AM	0	0	Off Road		Night	Dry	Failed To Keep In Lane	
9	9/19/2020	Saturday	10:44 AM	0	0	Off Road		Day	Dry	Unknown	
10	12/21/2021	Tuesday	10:00 AM	0	0	Off Road		Day	Wet	Road Surface Condition	
TOTAL				**0**	**2**						
Total No.	**Fatal**	**Injury**	**PDO**	**Head On**	**Off Road**	**Right Turn**	**Other**	**Unknown**	**Angle**	**Rear End**	**Sideswipe**
10	0	2	0	0	4	0	0	0	0	0	1
Percent	0%	20%	0%	0%	40%	0%	0%	0%	0%	0%	10%
Contrib. Cause	**Day**	**Night**	**Pavement Conditions**			**Improper Passing**	**Ran Red Light**	**Careless Driving**	**Failure to Yield R/W**	**Unknown**	**Failure to keep Proper**
			Wet	**Dry**	**Unknown**						
Total	8	2	1	9	0	0	0	1	0	6	2
Percent	80%	20%	10%	90%	0%	0%	0%	10%	0%	60%	20%
Total Vehicles Entering/ADT:						Collision Rate: PER M.E.V.					

State Florida Department of Transportation											Form 750-020-06
COLLISION SUMMARY											TRAFFIC ENGINEERING 10/15
General Information											
Section/Roadway ID:		N/A			State Road:						
Intersecting Route:		SR 429			Study Period:		2017 to 2022				
Milepost					Data by:		ED				
County		Orange			Date:		Tuesday, October 4, 2022				
No.	**Date**	**Day**	**Time**	**Severity**		**Crash Type**		**Day / Night**	**Wet / Dry**	**Contributing Cause**	
				Fatal	**Injury**						
1	12/27/2019	Thursday	9:16 PM	0	0	Off Road		Night	Wet	Careless Driving	
2	10/11/2019	Friday	8:20 AM	0	0	Other		Day	Dry	Unknown	
3	5/27/2020	Wednesday	9:13 AM	0	0	Off Road		Day	Dry	Careless Driving	
4	8/31/2020	Monday	2:11 PM	0	0	Sideswipe		Day	Wet	Failed To Keep In Lane	
5	9/27/2020	Sunday	8:10 PM	0	0	Angle		Night	Wet	Weather Condition	
6	5/12/2020	Tuesday	10:42 AM	0	1	Guardrail Face		Day	Dry	Failed To Keep In Lane	
7	9/18/2021	Tuesday	5:55 PM	0	0	Guardrail Face		Day	Wet	Careless Driving	
8	2/14/2021	Sunday	3:09 PM	0	0	Other		Day	Wet	Failed To Keep In Lane	
TOTAL				**0**	**1**						
Total No.	**Fatal**	**Injury**	**PDO**	**Head On**	**Off Road**	**Right Turn**	**Other**	**Unknown**	**Angle**	**Rear End**	**Sideswipe**
8	0	1	0	0	2	0	2	0	1	0	1
Percent	0%	13%	0%	0%	25%	0%	25%	0%	13%	0%	13%
Contrib. Cause	**Day**	**Night**	**Pavement Conditions**			**Improper Passing**	**Ran Red Light**	**Careless Driving**	**Weather Condition**	**Unknown**	**Failure to keep Proper**
			Wet	**Dry**	**Unknown**						
Total	6	2	5	3	0	0	0	3	1	1	3
Percent	75%	25%	63%	38%	0%	0%	0%	38%	13%	13%	38%
Total Vehicles Entering/ADT:						Collision Rate: PER M.E.V.					

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

EREZ DAYAN, P.E.
P.E. LICENSE NUMBER 62144
AVANT ENGINEERING GROUP, LLC
1300 MINNESOTA AVENUE, SUITE 201
WINTER PARK, FL 32789

SR 429 INTERCHANGE AT BINION RD.

ROAD NO.	PROJECT NO.
SR 429	429-309

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CRASH DATA

SHEET NO. 67

REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

EREZ DAYAN, P.E.
P.E. LICENSE NUMBER 62144
AVANT ENGINEERING GROUP, LLC
1300 MINNESOTA AVENUE, SUITE 201
WINTER PARK, FL 32789

SR 429 INTERCHANGE AT BINION RD.

ROAD NO.	PROJECT NO.
SR 429	429-309

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

CRASH DATA

SHEET NO. 68

Appendix E – Geotechnical Existing Conditions Technical Memorandum

Geotechnical and Environmental Consultants, Inc.

TECHNICAL MEMORANDUM

September 22, 2022

From: Daniel C. Stanfill, P.E. and Richard P. McCormick, P.G.

To: Bronce Stephenson, MPA
Lead Planner

Subject: Existing Geotechnical Conditions Technical Memorandum
SR 429-BINION ROAD INTERCHANGE PD&E STUDY
CFX 429-309
GEC Project No. 5126GE

Based on TWO 1 under Contract Number 001844 dated July 19, 2022, Geotechnical and Environmental Consultants, Inc. (GEC) is pleased to present this Existing Geotechnical Conditions Memorandum for the CFX SR 429-Binion Road Interchange PD&E study. GEC has reviewed available documents, the USGS Quadrangle Map, the NRCS Orange County Soil Survey and current plans to prepare this Memorandum. **Figure 1**, which is attached, shows the USGS Quadrangle Map and NRCS Soil Survey for the project location. The following observations are noted.

- Ground surface topography varies from + 115 to +70 feet NGVD in the project area (see **Figure 1**).
- The south portion of the project previously contained citrus groves.
- Citrus groves are currently present southwest of SR 429.
- Near surface soils range from well drained Type A sand soils (soil types 4, 5, 6 and 47) to poorly drained Type D muck soils (soil types 25 and 42).
- The muck soils were likely removed for the SR 429 construction and were present from approximately Stations 575 to 585 along SR 429.
- Groundwater depth varies considerably from about + 70 to + 105 feet NGVD.
- Plastic clay layers are present underneath the sands and groundwater generally is perched on top of the relatively impervious clay soils.
- Project location is in a Karst or sinkhole prone environment.
- Geotechnical considerations include exploration for highly compressible organic muck soils, evaluation of variable groundwater conditions and deep Standard Penetration Test (SPT) borings for bridge foundation design.

- Bridges should be supported on a deep driven pile substructure due to Karst environment and likely high Factored Loads required.
- Dry stormwater ponds may be feasible depending on pond location, the presence of the clay confining layer and groundwater levels.
- Plastic and muck subsoil removal may be required depending on final roadway grades.

USE OF THIS MEMORANDUM

GEC has prepared this memorandum for the exclusive use of our client, The Balmoral Group and CFX and for application to our client's project. GEC will not be held responsible for any other party's interpretation or use of this report's data or recommendations without our written authorization.

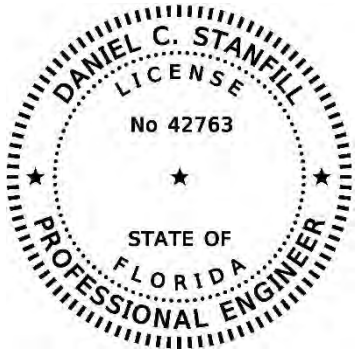
GEC has performed the services described in this report in a manner consistent with that level of care and skill ordinarily exercised by members of our profession currently practicing in Central Florida. No other representation is made or implied in this document.

The conclusions and recommendations should be disregarded if the final project design differs from the project description in this report. If such changes are contemplated, GEC should be retained to review the new plans to assess the applicability of this report in light of proposed changes.

We appreciate the opportunity to work with The Balmoral Group and CFX on this project. If you have any questions concerning this report, or if we may be of further assistance, please contact us.

Sincerely,

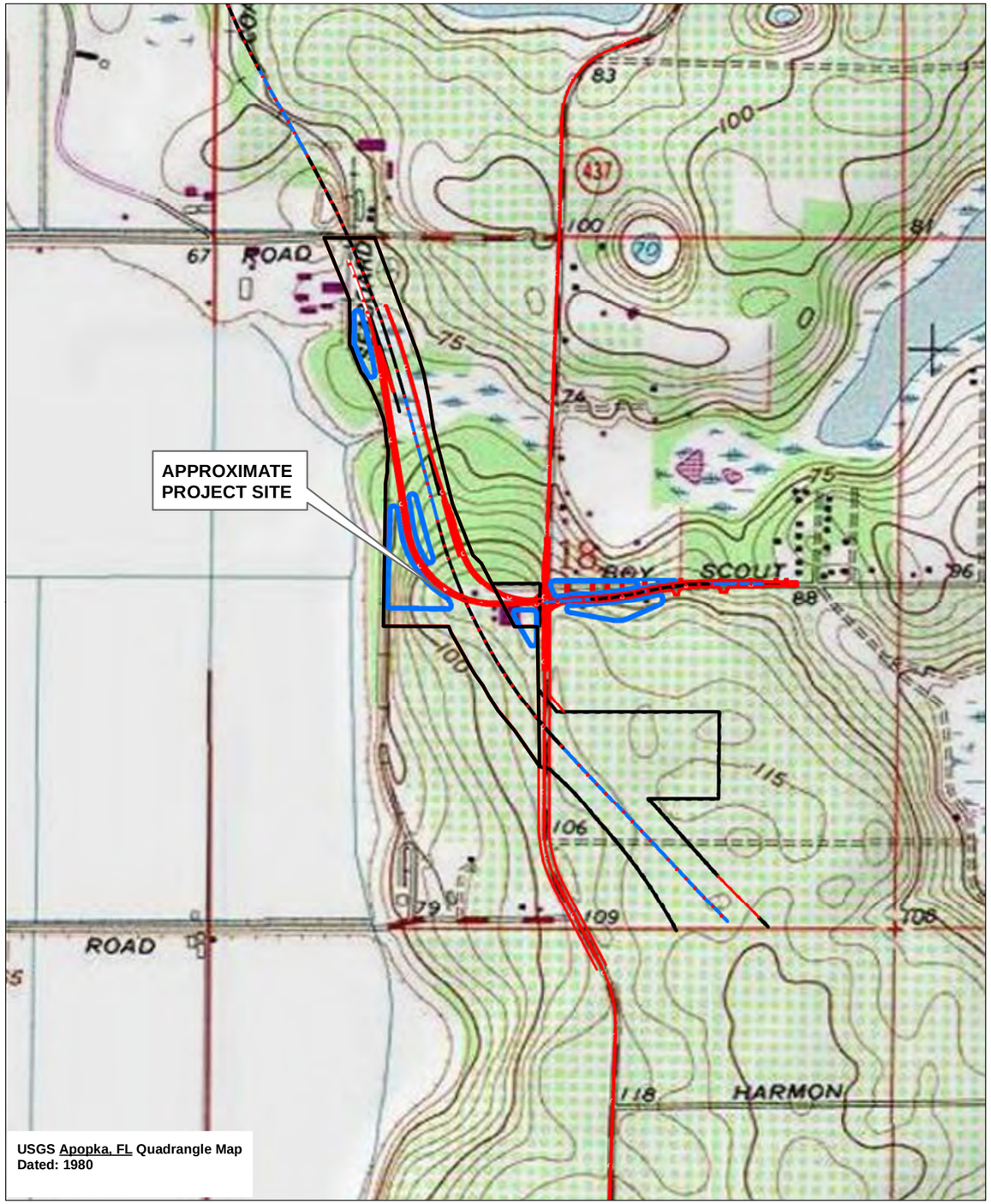
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS, INC.



Richard P. McCormick, P.G.
Chief Geologist
Florida License No. 2096

Daniel C. Stanfill, P.E.
Senior Vice President
Florida License No. 42763

This Report has been digitally signed and sealed by Daniel C. Stanfill, P.E. on the date adjacent to the seal. Printed copies of this document are not considered signed and sealed and the signature must be verified on any electronic copies.



USGS Apopka, FL Quadrangle Map
Dated: 1980

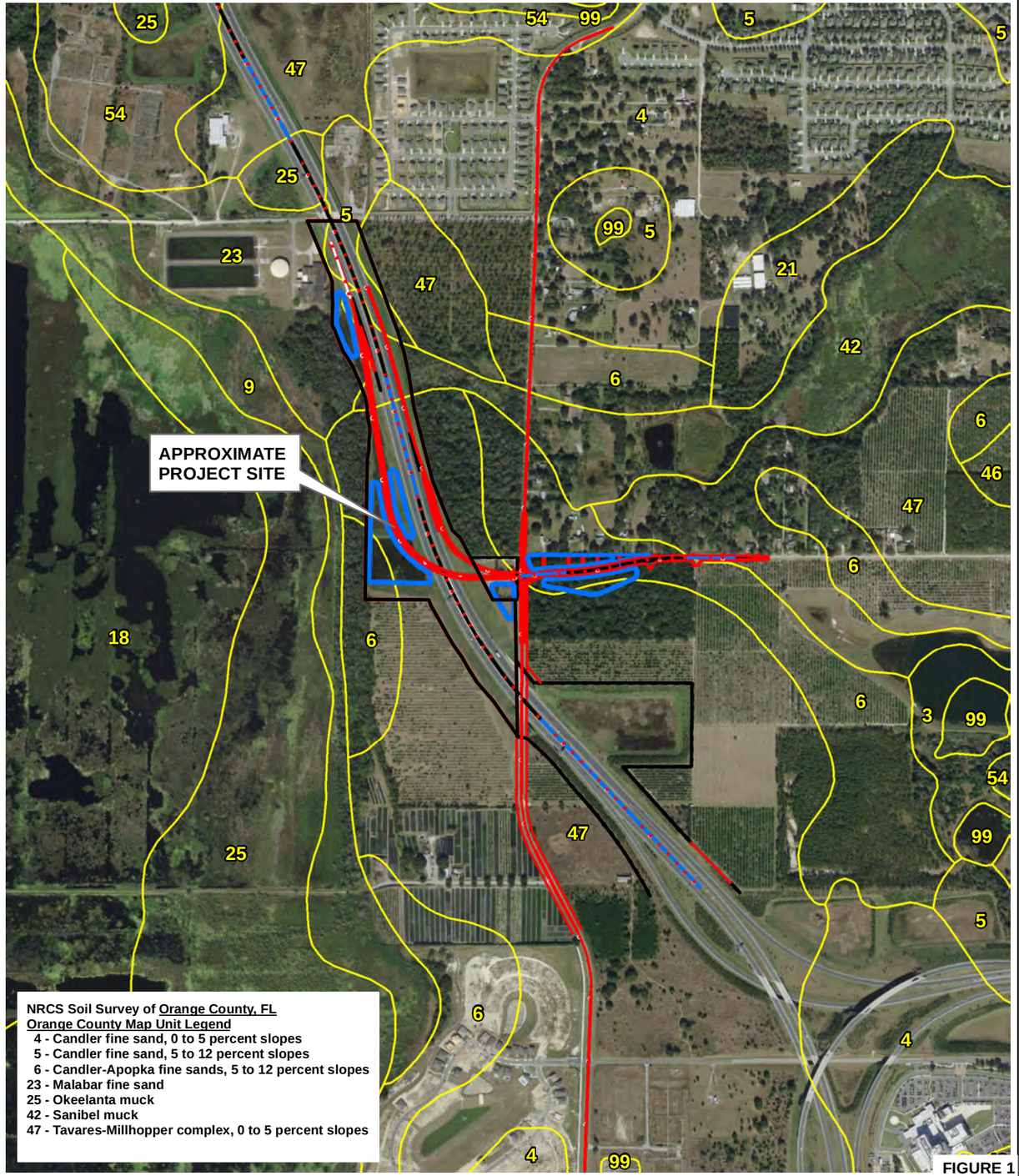


FIGURE 1

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CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ROAD NO.	PROJECT NO.
SR 429	429-309

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

SHEET TITLE: USGS QUADRANGLE AND NRCS SOIL SURVEY MAPS

REF. DWG. NO.:

PROJECT NAME: SR 429 – BINION ROAD INTERCHANGE

SHEET NO.: 72

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