

McIntosh Road

From South of US 92 to North of I-4

Project Development & Environment (PD&E) Study

Noise Study Report

McIntosh Road from South of US 92 to North of I-4 PD&E Study

Hillsborough County, Florida

Work Program Item Segment No. 447157-1-32-01

ETDM Project No. 14469

Hillsborough County, Florida



Florida Department of Transportation

District Seven

In cooperation with



**Hillsborough
County Florida**

Hillsborough County, Public Works Department

August 2024

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

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Prepared for:



Florida Department of Transportation

District Seven

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August 2024

EXECUTIVE SUMMARY

The Florida Department of Transportation (FDOT) District 7 is conducting a Project Development and Environment (PD&E) study for the proposed 1.03 miles widening of McIntosh Road from south of United States (US) Highway 92/State Road (SR) 600 to north of Interstate (I) 4 in Hillsborough County. This section of McIntosh Road is within the limits of a heavy freight corridor and is primarily a two-lane facility with unpaved flush shoulders and open drainage within the project limits. The proposed project improvements will include the widening of McIntosh Road to provide a four-lane divided roadway with a shared use path on both sides, with intersection improvements at the I-4 interchange. The I-4 ramps will be improved with additional turn lanes that will be continued for a distance along the ramp and will terminate before reaching the I-4 mainline. The purpose of this project is to address projected capacity needs as well as to improve safety conditions to McIntosh Road within the project area. The project is needed to improve capacity, safety, and system linkage to address a failing level-of-service, high number of crashes exceeding statewide averages for similar facilities, future growth of traffic and a high volume of truck traffic.

This Noise Study Report (NSR) was prepared as part of the widening of McIntosh Road PD&E study and followed the requirements of the PD&E Manual and Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772)—Procedures for Abatement of Highway Traffic Noise and Construction Noise (July 13, 2010). This report presents the results of the noise analysis, which utilized conceptual plans for the proposed project. The objectives of this NSR are to identify noise-sensitive land uses for which there are Noise Abatement Criteria (NAC) and to predict and evaluate the need and effectiveness of noise abatement measures. This NSR will also identify sites that could be impacted by construction noise and vibration. In addition, this NSR will identify traffic noise impact areas to aid in compatible future land use planning adjacent to the corridor.

Future traffic noise levels were predicted with the proposed roadway improvements using the Federal Highway Administration's (FHWA's) Traffic Noise Model (TNM – Version 2.5). Eighty-six noise-sensitive receptors (i.e., discrete representative locations on a property with noise-sensitive land uses) were evaluated representing 17 single-family residences, one school representing four outdoor recreational receptors at Independence Academy, 57 RV sites at the Tampa East RV Resort, six recreational uses for the Tampa East RV Resort, and two outdoor dining areas at restaurants. The residences and the RV site receptors were modeled as Activity Category B. The outdoor school receptors and the recreational uses for the RV park were modeled as Activity Category C. The two restaurants with outdoor seating were modeled as Activity Category E. Seven noise-sensitive receptors were predicted to approach, meet, or exceed the NAC in the Preferred Alternative (2045) scenario, including two residences (that are planned for right-of-way [ROW] acquisition and relocation) and five RV park sites at the Tampa East RV Resort. None of the sites were predicted to experience a substantial increase of 15.0 decibels on the A-weighted decibel scale (dB(A)) or more in traffic noise because of the project.

Two single-family residences (receptors 1-1 and 1-2) were predicted to be impacted but are planned for ROW acquisition and relocation with the construction of the project. A noise barrier was not analyzed in this location because of this.

Barrier 1 was evaluated for the five Tampa East RV Resort sites predicted to be impacted along the eastbound side of I-4 south of Blue Compass RV (receptors 6-41, 6-42, 6-43, 6-44, and 6-45). Barrier 1 was determined to be feasible as it could provide a reduction of 5 dB(A) or greater for those five noise receptors at heights of 20 feet and 22 feet. However, Barrier 1 could not provide a reduction in noise levels of 7 dB(A) for one noise-sensitive receptor for any heights evaluated. Since one or more benefited receptors must achieve a 7 dB(A) noise level reduction, Barrier 1 is not a reasonable option for noise abatement. Further, Barrier 1 is not cost reasonable at any height considered.

Based on the noise analysis performed to date, there are no feasible and reasonable solutions available to mitigate the noise impacts at the locations identified in **Table 3-2** and shown in **Appendix C**.

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Acronyms

AADT	Annual Average Daily Traffic
CFR	Code of Federal Regulations
CNE	Common Noise Environment
dB(A)	Decibels (dB) on the A-weighted scale
ETDM	Efficient Transportation Decision Making
ETAT	Environmental Technical Advisory Team
FDOT	Florida Department of Transportation
FHWA	Federal Highway Administration
FPC	Floodplain Compensation Site
Hr	Hour
I-4	Interstate 4
Leq(h)	Hourly Equivalent Sound Level
LOS	Level of Service
L RTP	Long Range Transportation Plan
Mph	Miles per Hour
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act
NSR	Noise Study Report
OEM	Office of Environmental Management
PD&E	Project Development and Environment
ROW	Right-of-Way
SMF	Stormwater Management Facility
TIP	Transportation Improvement Program
TNM	Traffic Noise Model
TPO	Transportation Planning Organization
US 92	U.S. Highway 92
USGS	United States Geological Survey
VPD	Vehicles per Day

SECTION 1 INTRODUCTION

The objective of the Project Development & Environment (PD&E) study is to assist the Florida Department of Transportation's (FDOT's) Office of Environmental Management (OEM) in reaching a decision on the type, location, and conceptual design of the proposed improvements for the widening of McIntosh Road. This study documents the need for the improvements as well as the procedures utilized to develop and evaluate various improvements, including elements such as proposed typical sections, preliminary horizontal alignments, and intersection enhancement alternatives.

1.1 PROJECT DESCRIPTION

This project consists of widening McIntosh Road from south of United States (US) 92/State Road (SR) 600 to north of Interstate (I) 4, a distance of approximately 1.03 miles in Hillsborough County, Florida. The project will reconstruct McIntosh Road, widen the roadway to accommodate future capacity needs, and include shared use paths on both sides and operational improvements at the I-4 interchange. The project includes the evaluation of stormwater management facilities (SMF) and floodplain compensation (FPC) sites. The project crosses the unincorporated census-designated place of Thonotosassa and provides the neighborhoods near Muck Pond Road and Gore Road access to I-4. Within the project limits, McIntosh Road is currently a two-lane undivided roadway with interspersed segments of 5–6-foot wide sidewalks along both sides of the road. Segments of sidewalk are currently present on the northbound and southbound sides of McIntosh Road throughout the limits of the project. McIntosh Road is functionally classified as a major collector with a posted speed limit of 40 miles per hour (mph) for most of the project extent. The speed limit increases to 45 mph south of US 92. A project location map is shown in **Figure 1-1**.

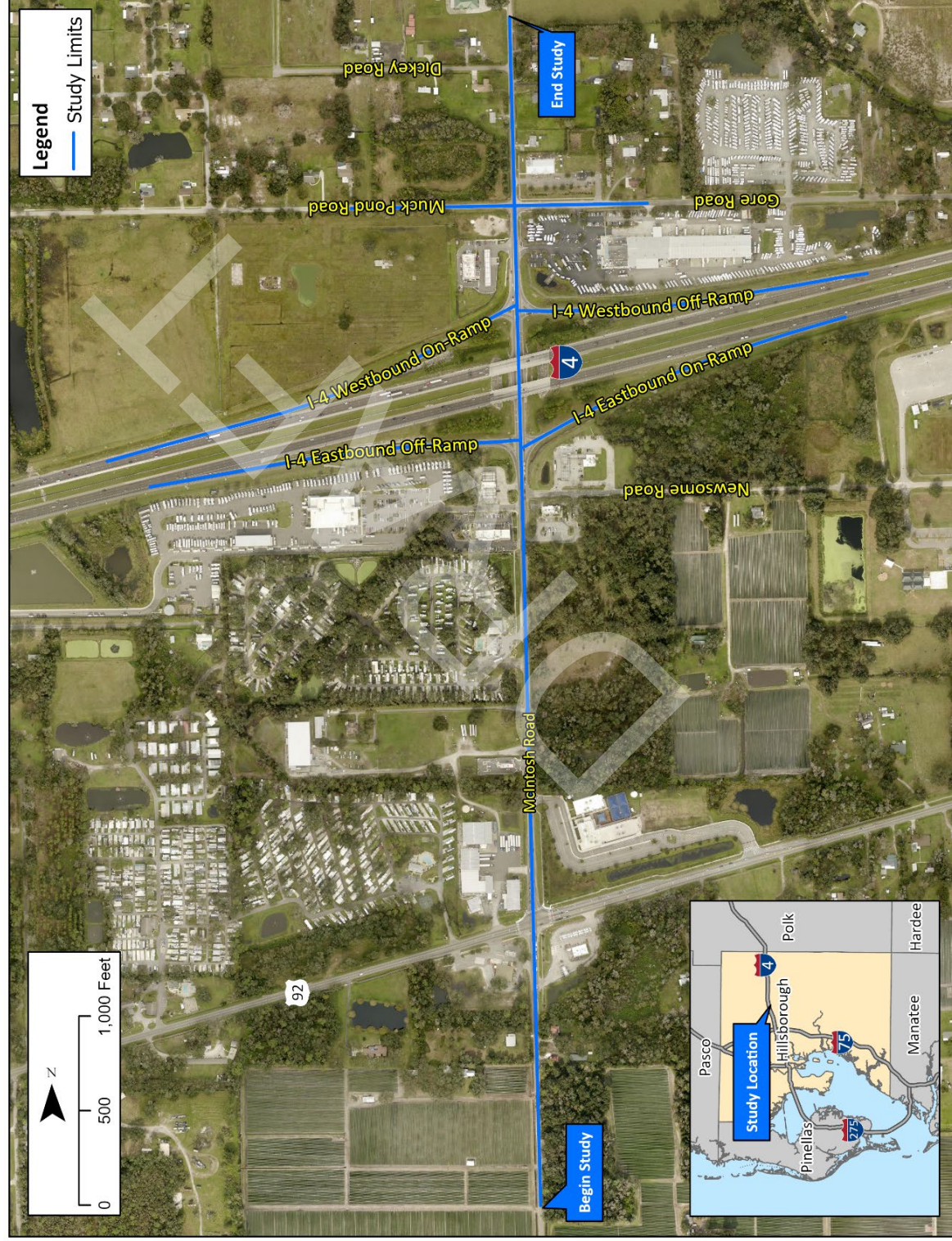
This project was screened through FDOT's Efficient Transportation Decision Making (ETDM) process as ETDM Project No. 14469. The ETDM Programming Screen Summary Report was published on October 15, 2021, containing comments from the Environmental Technical Advisory Team (ETAT) on the project's effects on various natural, physical, and social resources. A Type 2 Categorical Exclusion is the class of action for this PD&E study.

1.2 PROJECT PURPOSE AND NEED

1.2.1 Purpose and Need

The purpose of this project is to address projected capacity needs as well as to improve safety conditions to McIntosh Road within the project area. The project is needed to improve capacity, safety, and system linkage to address a failing level-of-service, high number of crashes exceeding statewide averages for similar facilities, future growth of traffic and a high volume of truck traffic.

Figure 1-1: Project Location Map

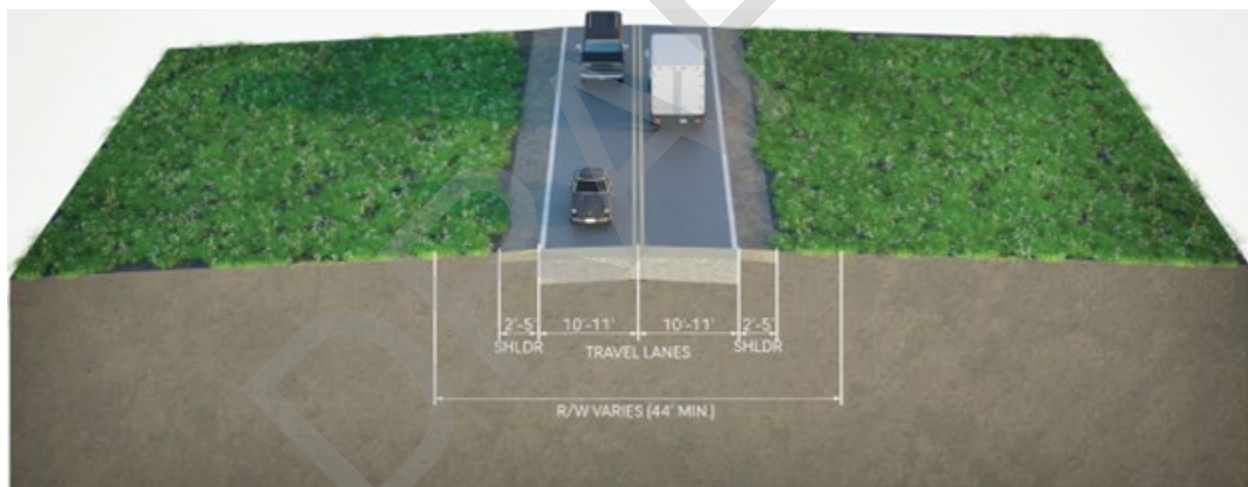


1.3 EXISTING FACILITY AND PROPOSED IMPROVEMENTS

1.3.1 Existing Facility

McIntosh Road in Hillsborough County is a 2-lane undivided local rural roadway. Travel lanes vary from 10 to 11-foot while the unpaved, flush shoulders range from 2 to 5-foot. This segment of McIntosh Road services the connection from south of US 92/SR 600 to north of I-4. McIntosh Road is owned and maintained by Hillsborough County, apart from the I-4 interchange and limited access right-of-way (ROW) from Muck Pond Road to Newsome Road, which are maintained by FDOT. McIntosh Road is classified as a major urban collector with a posted speed limit of 40 mph along most of the project and a 45 mph speed limit near the southern terminus. There are no bicycle lanes, and the existing sidewalk segments are non-continuous. The existing roadway typical section is provided in **Figure 1-2**.

Figure 1-2: Existing McIntosh Road Typical Section



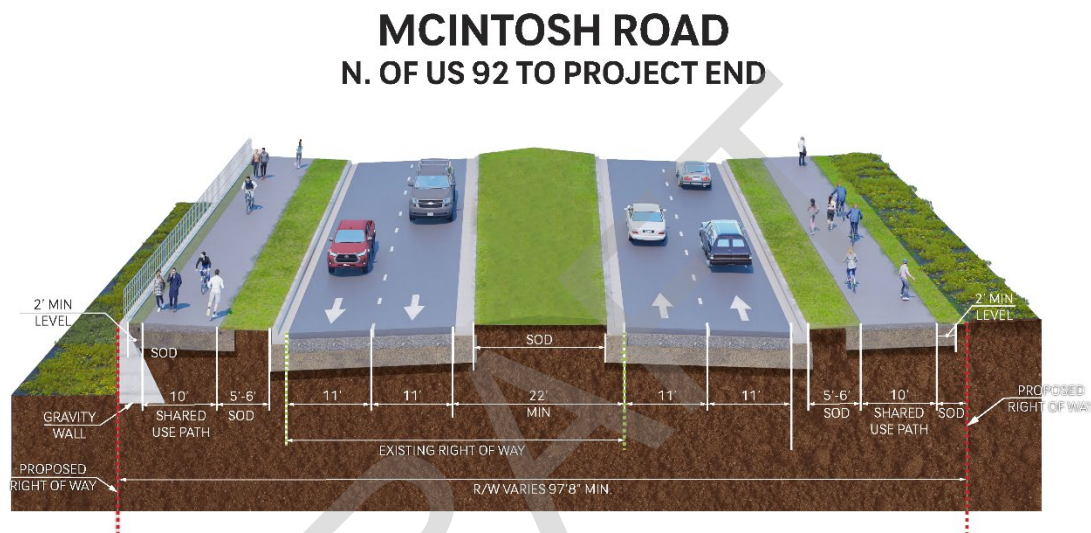
1.3.2 Proposed Improvements

The Preferred Alternative along McIntosh Road consists of a four-lane urban curb and gutter facility within 140-foot wide of ROW with a 35 mph design speed. There will be two (2) 11-foot wide travel lanes in each direction separated by a 22-foot wide raised median. A 10-foot wide shared use path is included in each direction. **Figure 1-3** shows the proposed typical section along McIntosh Road.

The Preferred Alternative includes ramp improvements at I-4 which tie into existing projects (FPID 446133-1, 441084-1, and 443319-1). The limits of the proposed improvements at the eastbound and westbound ramps are from McIntosh Road to the gore areas of I-4, no changes are proposed on the I-4 mainline. The proposed improvements consist of adding turn lanes to each ramp which merge into the existing ramp lanes. Ramp improvements consist of one-way 12-foot wide travel lanes with a 12-foot wide outside shoulder (10-foot paved) and an 8-foot

wide inside shoulder (4-foot paved). The eastbound and westbound on-ramps are proposed to be two-lane, flush-shoulder ramps within a variable width (61-foot minimum) limited access ROW. The eastbound and westbound off-ramps are proposed to be three-lane ramps within a limited access ROW that varies in width (51-foot minimum).

Figure 1-3: Proposed McIntosh Road Typical Section



1.4 REPORT PURPOSE

This Noise Study Report (NSR) presents the assumptions, data, procedures, and results of the traffic noise analysis conducted for proposed improvements to McIntosh Road. The objectives of this NSR are to identify noise-sensitive land uses for which there are Noise Abatement Criteria (NAC) and to predict and evaluate the need and effectiveness of noise abatement measures. This NSR will also identify sites that could be impacted by construction noise and vibration. In addition, this NSR will identify traffic noise impact areas to aid in compatible future land use planning adjacent to the corridor. This report was conducted following Title 23 Code of Federal Regulations Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise* (effective July 13, 2011), using the methodology established by FDOT in the *PD&E Manual, Part 2, Chapter 18* and the *Traffic Noise Modeling and Analysis Practitioners Handbook* (December 2018).

SECTION 2 METHODOLOGY

The traffic noise analysis identifies potential impacts from roadway traffic noise associated with the conceptual designs for the widening of McIntosh Road. The analysis has been prepared per Title 23, Part 772 of the Code of Federal Regulations (23 CFR 772)—*Procedures for Abatement*

of Highway Traffic Noise and Construction Noise (July 13, 2010), FDOT's PD&E Manual Part 2, Chapter 18 (Highway Traffic Noise, July 31, 2024), and FDOT's Traffic Noise Modeling and Analysis Practitioners Handbook (December 2018). The analysis used the Federal Highway Administration's (FHWA's) Traffic Noise Model (TNM), Version 2.5. TNM 2.5 is required to evaluate potential traffic noise impacts for design year conditions with the proposed improvements for which the policies within 23 CFR 772 and the FDOT PD&E Manual are applicable. Conceptual plans for the proposed project were used for this traffic noise analysis, as shown in **Appendix A**.

Potential noise-sensitive receptors were identified utilizing a desktop review of land use data, a field review, and other available resources. The land use review and building permit review were conducted in January 2024.

For properties with uses other than residential, the highway traffic noise methodologies described in FDOT's *A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations* were used to determine receptor placement. This methodology was used for Independence Academy, the recreational uses at the Tampa East RV Resort, and two outdoor dining areas.

2.1 NOISE METRICS

Noise levels are expressed in decibels on the "A"-weighted equivalent sound level (dB(A)). This scale approximates the response characteristics of the human ear to traffic noise. Noise levels in this analysis are based on the equivalent sound level ($L_{eq}(h)$). Levels reported as ($L_{eq}(h)$) are equivalent, which is the steady-state (constant sound) A-weighted sound level with the same acoustic energy as the actual time-varying sound levels during the same time period. The varying sound levels of traffic over the course of a day are represented based on a constant noise level with the same energy content¹.

2.2 TRAFFIC DATA

Noise levels are low when traffic volumes are low and operating conditions are good (LOS A or B) and when traffic is so congested that movement is slow (LOS D, E, or F). For these reasons, highway traffic noise assessments are performed for the condition that would result in the maximum hourly noise level (i.e., LOS C). The traffic volumes used in TNM 2.5 for the 2020 existing condition and future forecast year 2045 scenarios were either the lesser of the forecast demand volumes or the LOS C traffic volumes, depending on the roadway segment, to produce the worst-case traffic noise conditions. The traffic data is provided in **Appendix B** of this NSR.

To be consistent with the existing posted speeds and the project's Project Traffic Analysis Report, the following speed limits were used for TNM modeling for the existing (2020) and No-Build (2045) conditions:

¹ https://www.fhwa.dot.gov/Environment/noise/resources/reviewing_noise_analysis/#toc494123452

- 40 mph on McIntosh Road from north of I-4 to approximately 400 feet south of US 92, and the I-4 on- and off-ramps
- 45 mph on McIntosh Road approximately 400 feet south of US 92 and US 92
- 70 mph on I-4

In coordination with the project's Project Traffic Analysis Report and the roadway design team, the following speed limits were used for TNM modeling for the Preferred Alternative (2045) condition:

- 35 mph on McIntosh Road from north of I-4 to approximately 400 feet south of US 92
- 40 mph on the I-4 on- and off-ramps
- 45 mph on McIntosh Road approximately 400 feet south of US 92 and US 92
- 70 mph on I-4

2.3 NOISE SENSITIVE RECEPTORS AND NOISE ABATEMENT CRITERIA

A receptor is a discrete or representative location of a noise-sensitive area for any of the land use categories defined in the NAC. FHWA has established NAC to evaluate traffic noise. **Table 2-1** shows the FHWA NAC, which is based on a property's activity category. Noise abatement measures are considered if noise levels approach, meet, or exceed the NAC, as required by FHWA. FDOT defines approach as within 1.0 dB(A) of the NAC and considers a substantial increase to be a 15.0 dB(A) or greater increase over the existing noise level as a result of the proposed project. **Table 2-2** shows comparative common indoor and outdoor activity noise levels for comparison.

Table 2-1: FHWA Noise Abatement Criteria

Activity Criteria	Activity $L_{eq(h)}$ ¹		Evaluation Location	Activity Description
	FHWA	FDOT		
A	57	56	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose
B ²	67	66	Exterior	Residential
C ²	67	66	Exterior	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, daycare centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreation areas, Section 4(f) sites, schools, television studios, trails, and trail crossings
D	52	51	Interior	Auditoriums, daycare centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios
E ²	72	71	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A–D or F
F	–	–	–	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing
G	–	–	–	Undeveloped lands that are not permitted
<p>(Based on Table 1 of 23 CFR Part 772 and FDOT's PD&E Manual (dated 7/31/2024))</p> <p>¹ The $L_{eq(h)}$ Activity Criteria values are for impact determination only and are not design standards for noise abatement measures.</p> <p>² Includes undeveloped lands permitted for this activity category.</p> <p>Note: FDOT defines that a substantial noise increase occurs when the existing noise level is predicted to be exceed 15 dB(A) or more as a result of the transportation improvement project. When this occurs, the requirement for abatement consideration will be followed.</p>				

Table 2-2: Typical Noise Levels

Common Outdoor Activities	Noise Level dB(A)	Common Indoor Activities
Jet flyover at 990 feet	110	Rock band
Pneumatic hammer	100	Subway train
Gas lawn mower at 3.3 feet	90	Food blender at 3.3 feet
Downtown area (large city)	80	Garbage disposal at 3.3 feet
Lawnmower at 99 feet	70	Shouting at 3.3 feet
Commercial area	60	Vacuum cleaner at 9.9 feet
Air-conditioning unit	50	Normal speech at 3.3 feet
Babbling brook	40	Clothes dryer at 3.0 feet
Quiet urban (daytime)	30	Large business office
Quiet urban (nighttime)	20	Dishwasher (next room)
	10	Library
	0	Threshold of hearing

Source: FHWA, Common Outdoor and Indoor Noises, March 23, 2021.

2.4 NOISE ABATEMENT MEASURES

Noise abatement measures are considered when traffic noise impacts are predicted. When traffic noise impacts are predicted, the feasibility and reasonableness of providing abatement measures is evaluated. Feasibility is related to the acoustical and engineering components of the abatement measure. Reasonableness relates to the social, economic, and environmental factors of providing the measure. Four potential methods of noise abatement are presented below.

2.4.1 Traffic Management

Traffic management measures can result in reduced vehicle speeds and volumes. These measures can affect the ability of the proposed improvements to accommodate the forecasted traffic volumes.

2.4.2 Alignment Modifications

Altering the horizontal and vertical alignments of the highway can reduce noise levels for noise-sensitive receptors. When the horizontal alignment is moved away or when the vertical alignment is raised or lowered from a noise-sensitive land use, traffic noise levels may be reduced.

2.4.3 Buffer Zones

Buffer zones separate the roadway and noise-sensitive land uses and can minimize or eliminate noise impacts. Given the right-of-way limitations associated with the study corridor, this technique is not a viable choice. However, local planning agencies can use the contour information (discussed in Section 5.0) to promote future compatible land use planning thereby minimizing or avoiding noise impacts at future sensitive land uses.

2.4.4 Noise Barriers

Noise barriers can reduce traffic noise levels by blocking the sound path between vehicles on the roadway and noise-sensitive land uses near the roadway. Other noise abatement measures were considered, but noise barriers were determined to be the only practical abatement option to reduce traffic noise at existing noise-sensitive receptors.

A noise barrier must be continuous and of sufficient length and height to effectively reduce traffic noise. Noise barriers must meet the feasibility and reasonableness requirements established by the FDOT. For a noise barrier to be considered as a potential abatement measure, the barrier must meet the following FDOT requirements:

- **Minimum Noise Reduction Requirements** - A barrier must provide at least a 5 dB(A) reduction in traffic noise for two or more impacted noise-sensitive receptors and meet the FDOT's noise reduction design goal, which includes providing at least a 7 dB(A) reduction for at least one impacted receptor.
- **Cost Effectiveness Criteria** – The current estimated cost to construct noise barriers (i.e., materials and labor) is \$40 per square foot and an approximate area of 1,600 square feet. As stipulated in FDOT's Noise Policy, a barrier should not cost more than \$64,000 per benefited noise-sensitive receptor (a benefited receptor is a receptor that receives at least a 5 dB(A) reduction in noise from a mitigation measure). For special land uses (e.g., the outdoor area of a restaurant/bar), the cost should not be more than \$995,935 per person-hour per square foot (dollars/person-ft²); however, no noise barriers were evaluated for special land uses for this project as no special land uses were predicted to be impacted based on the noise analysis results.

Other factors considered when evaluating noise barriers as a potential noise abatement measure address both the feasibility of the barriers (whether a barrier can physically be constructed, given the site conditions) and the reasonableness of the barriers. Feasibility considerations related to noise barriers include driver/pedestrian sight distance, ingress and egress to/from properties, ROW requirements including access rights and easements for construction and maintenance, impacts to existing/planned utilities, and drainage. The viewpoints of impacted property owners (and renters if applicable) who may or may not, desire a noise barrier, are also considered when evaluating noise barriers as an abatement measure.

The TNM 2.5 accounts for the shielding effect of a noise barrier, the diffraction of sound over a noise barrier, and the effects of the ground between a barrier and a receptor (i.e. sound absorption). The effect of the barrier shielding is referred to as insertion loss (i.e. insertion loss is the difference in sound level before and after the installation of the barrier).

SECTION 3 TRAFFIC NOISE ANALYSIS

3.1 EVALUATED RECEPTORS

Eighty-six receptors were modeled representing 57 RV sites at the Tampa East RV Resort (Activity Category B), six recreational uses at the Tampa East RV Resort (Activity Category C), 17 single-family residences (Activity Category B), four receptors representing the outdoor recreational uses of Independence Academy (Activity Category C), and two outdoor dining areas (Activity Category E). No sites were identified as Activity D, F, or G. The location of each of the noise-sensitive receptors is shown in **Appendix C**. Noise abatement measures were considered if the predicted traffic noise level was 66.0 dB(A) or more for Activity Category B and C and 71.0 dB(A) for Activity Category E or if a substantial increase occurred.

All receptor heights were set at five feet above the ground. No additional building story heights were present in the vicinity of the project. Receptor elevations and other elevations in the study area were obtained using topographic survey results, the United States Geographical Survey (USGS), and Google Earth Pro. The elevation data, proposed concept plans, and existing and proposed project elements are included in TNM 2.5 to predict noise levels for receptors. The resulting noise levels are discussed in the next section of the NSR.

Receptors were grouped into Common Noise Environments (CNEs) which represent areas with similar noise sources. CNE boundaries are depicted in **Appendix C**. Receptor IDs are formatted as CNE #-Receptor # (i.e. Receptor 1-1 is the first receptor in CNE 1). Receptors were grouped into the following CNEs:

- McIntosh Road Northbound
 - CNE 1: Single-family residences south of US 92 and east of McIntosh Road
 - CNE 2: Independence Academy
 - CNE 3: Single-family residences north of Gore Road and east of McIntosh Road

- McIntosh Road Southbound
 - CNE 4: Single-family residences north of Muck Pond Road to north of Dickey Road
 - CNE 5: Dunkin Donuts
 - CNE 6: Tampa East RV Resort McIntosh Road
 - CNE 7: Hungry Howies
 - CNE 8: Tampa East RV Resort US 92 entrance
 - CNE 9: Single-family residences south of US 92 and west of McIntosh Road

3.2 MODEL VALIDATION

Future noise levels with the proposed improvements were modeled using TNM 2.5. The model was used to validate the TNM 2.5 input values and verify that the model accurately predicts the existing traffic noise based on current conditions. Traffic volumes, meteorological data, traffic mix vehicle speeds, background noise, and atmospheric conditions were recorded during each measurement period.

The field measurements conducted for the McIntosh Road NSR were collected following the FHWA's *Measurement of Highway Related Noise*. Field measurements were collected using a SoundPro DL, Type II integrating sound level meter (SLM). The SLM was calibrated before and after the measurement period with a Quest QC-10/QC-20 calibrator.

Field collected data was input into TNM 2.5 to determine if the model could re-create the measured noise levels with the existing roadway. A noise prediction model is validated if existing field measured highway traffic noise levels and predicted highway traffic noise levels for the existing condition are within +/- 3.0 dB(A). Field measurements were collected on January 16, 2024, on the southbound side of McIntosh Road at the Tampa East RV Resort parking lot (approximately station 44+00.00). The SLM was placed approximately 50 feet from the edge of the pavement and five feet above the ground.

The location of the field measurement is depicted on aerials included in **Appendix C**. Three sets of 10-minute measurements were taken for both directions of traffic. Field data sheets are provided in **Appendix D**.

Table 3-1 presents the field measurements and the validation results. As shown, the ability of the model to predict noise levels within ± 3.0 dB(A) for the project was confirmed. Documentation in support of the validation is provided in **Appendix D** of this NSR.

Table 3-1: TNM 2.5 Validation Results

Location	Measurement Period (Time of Day - AM)	Modeled dB(A)	Measured dB(A)	Difference dB(A) [Measured – Modeled]	Validation Achieved
Validation Site- Tampa East RV Community	1 – 7:10-7:20 AM	66.4	65.6	0.8	Yes
	2 – 8:31-8:41 AM	66.8	66.3	0.5	Yes
	3 – 8:50-9:00 AM	66.9	66.6	0.3	Yes

3.3 PREDICTED TRAFFIC NOISE LEVELS

Table 3-2 shows the results of the traffic noise analysis for the proposed project. The results of the analysis indicate that existing (2020) exterior noise levels are estimated to range from 49.4 to 67.1 dB(A), the No-Build (2045) exterior noise levels are predicted to range from 50.3 to 68.6 dB(A), and the Preferred Alternative (2045) exterior noise levels are predicted to range from 50.8 to 68.8 dB(A). With the Preferred Alternative, seven of the evaluated receptors are predicted to be impacted by traffic noise that would approach, meet, or exceed the NAC. Impacted receptors include two residences and five RV sites. Documentation supporting this analysis is provided in **Appendix E**.

Table 3-2: Traffic Noise Analysis Results

Receptor ID*	# of Units	Laeq1h [dB(A)]					Approaches, Meets or Exceeds NAC?
		Existing (2020)	No-Build (2045)	Preferred Alternative (2045)	Difference between Preferred Alternative and Existing	Difference between Existing and No-Build	
1-1 ^R	1	66.8	68.5	68.8	2.0	1.7	Yes
1-2 ^R	1	64.2	66.1	66.4	2.2	1.9	Yes
1-3	1	59.8	62.0	62.0	2.2	2.2	No
2-1	1	53.7	55.3	55.9	2.2	1.6	No
2-2	1	50.7	52.1	52.2	1.5	1.4	No
2-3	1	49.4	50.3	50.8	1.4	0.9	No
2-4	1	54.9	56.6	57.1	2.2	1.7	No
3-1	1	60.3	62.3	61.8	1.5	2.0	No
3-2	1	60.1	62.1	61.8	1.7	2.0	No
3-3	1	57.3	58.7	59.2	1.9	1.4	No
3-4	1	60.7	62.5	62.4	1.7	1.8	No
3-5	1	63.3	65.0	65.1	1.8	1.7	No
4-1	1	56.5	58.3	58.6	2.1	1.8	No
4-2	1	56.3	57.9	58.4	2.1	1.6	No
4-3	1	55.6	57.2	57.8	2.2	1.6	No
4-4	1	56.7	58.1	58.7	2.0	1.4	No
4-5	1	61.0	62.9	62.4	1.4	1.9	No
4-6	1	63.7	65.6	64.3	0.6	1.9	No
5-1	1	67.0	68.6	68.6	1.6	1.6	No
6-1	1	64.1	65.8	65.6	1.5	1.7	No
6-2	1	64.0	65.7	65.3	1.3	1.7	No
6-3	1	63.9	65.6	65.2	1.3	1.7	No
6-4	1	64.2	65.6	64.9	0.7	1.4	No
6-5	1	64.9	66.0	65.0	0.1	1.1	No
6-6	1	65.3	66.2	65.1	-0.2	0.9	No
6-7	1	65.5	66.4	65.1	-0.4	0.9	No
6-8	1	66.0	66.7	65.3	-0.7	0.7	No
6-9	1	66.3	66.9	65.5	-0.8	0.6	No
6-10	1	66.1	66.7	65.2	-0.9	0.6	No
6-11	1	65.7	66.3	64.6	-1.1	0.6	No
6-12	1	63.2	64.8	64.4	1.2	1.6	No
6-13	1	62.9	64.6	64.3	1.4	1.7	No
6-14	1	63.3	64.8	64.3	1.0	1.5	No
6-15	1	62.6	64.2	63.9	1.3	1.6	No

Receptor ID*	# of Units	Laeq1h [dB(A)]					Approaches, Meets or Exceeds NAC?
		Existing (2020)	No-Build (2045)	Preferred Alternative (2045)	Difference between Preferred Alternative and Existing	Difference between Existing and No-Build	
6-16	1	63.5	64.7	64.0	0.5	1.2	No
6-17	1	62.3	63.9	63.7	1.4	1.6	No
6-18	1	63.2	64.4	63.7	0.5	1.2	No
6-19	1	62.3	63.8	63.3	1.0	1.5	No
6-20	1	61.7	63.4	63.1	1.4	1.7	No
6-21	1	61.7	63.3	62.9	1.2	1.6	No
6-22	1	61.5	63.1	62.6	1.1	1.6	No
6-23	1	61.9	63.3	62.8	0.9	1.4	No
6-24	1	61.3	62.8	62.4	1.1	1.5	No
6-25	1	62.0	63.2	62.5	0.5	1.2	No
6-26	1	61.1	62.5	62.1	1.0	1.4	No
6-27	1	60.8	62.3	61.8	1.0	1.5	No
6-28	1	60.7	61.9	61.3	0.6	1.2	No
6-29	1	60.5	61.8	61.2	0.7	1.3	No
6-30	1	60.3	61.5	61.0	0.7	1.2	No
6-31	1	61.9	62.7	61.5	-0.4	0.8	No
6-32	1	67.1	67.4	65.3	-1.8	0.3	No
6-33	1	66.3	66.6	64.3	-2.0	0.3	No
6-34	1	64.3	64.7	62.4	-1.9	0.4	No
6-35	1	62.1	62.7	61.2	-0.9	0.6	No
6-36	1	60.7	61.6	60.7	0.0	0.9	No
6-37	1	60.0	61.1	60.4	0.4	1.1	No
6-38	1	59.4	60.6	60.2	0.8	1.2	No
6-39	1	64.2	66.5	65.8	1.6	2.3	No
6-40	1	64.4	66.6	65.9	1.5	2.2	No
6-41	1	64.6	66.9	66.2	1.6	2.3	Yes
6-42	1	64.6	67.0	66.3	1.7	2.4	Yes
6-43	1	64.7	67.2	66.4	1.7	2.5	Yes
6-44	1	64.6	67.0	66.4	1.8	2.4	Yes
6-45	1	64.5	66.8	66.2	1.7	2.3	Yes
6-46	1	64.3	66.6	65.9	1.6	2.3	No
6-47	1	64.0	66.3	65.7	1.7	2.3	No
6-48	1	63.8	66.0	65.4	1.6	2.2	No
6-49	1	63.4	65.6	65.0	1.6	2.2	No
6-50	1	63.2	65.5	64.9	1.7	2.3	No
7-1 ^R	1	66.6	66.8	64.6	-2.0	0.2	No

Receptor ID*	# of Units	Laeq1h [dB(A)]					Approaches, Meets or Exceeds NAC?
		Existing (2020)	No-Build (2045)	Preferred Alternative (2045)	Difference between Preferred Alternative and Existing	Difference between Existing and No-Build	
8-1	1	56.2	57.6	57.8	1.6	1.4	No
8-2	1	55.8	57.3	57.4	1.6	1.5	No
8-3	1	55.6	57.1	57.2	1.6	1.5	No
8-4	1	55.2	56.9	56.9	1.7	1.7	No
8-5	1	54.3	56.2	56.1	1.8	1.9	No
8-6	1	54.7	56.5	56.4	1.7	1.8	No
8-7	1	54.3	56.3	56.2	1.9	2.0	No
8-8	1	54.5	56.4	56.4	1.9	1.9	No
8-9	1	55.0	56.9	56.9	1.9	1.9	No
8-10	1	55.2	56.8	56.9	1.7	1.6	No
8-11	1	55.3	57.2	57.2	1.9	1.9	No
8-12	1	58.9	60.6	60.8	1.9	1.7	No
8-13	1	58.5	60.4	60.5	2.0	1.9	No
9-1	1	63.9	65.4	63.5	-0.4	1.5	No
9-2	1	55.4	57.5	57.3	1.9	2.1	No
9-3	1	53.9	56.6	56.8	2.9	2.7	No
*Receptor IDs are formatted as CNE #-Receptor # (i.e. Receptor 1-1 is the first receptor in CNE 1. CNEs are defined in section 3.1)							
^Receptors 1-1, 1-2, and 7-1 are planned for ROW acquisition and relocation and are not considered for a noise barrier.							

While the proposed project will reduce the posted speed limit from 40 mph to 35 mph on McIntosh Road, two additional through lanes will be added to address the forecasted traffic demand. A shift in the roadway alignment would result in the need for additional ROW. The acquisition of additional property to provide noise buffers is not feasible due to the high cost and unavailability of vacant land adjacent to noise-sensitive receptors. Noise barriers were determined to be the only viable abatement measure to reduce traffic noise at existing noise-sensitive receptors.

3.4 NOISE BARRIER ANALYSIS

As indicated in the **Table 3-2**, 2045 noise levels in the vicinity of the project are predicted to approach, meet, or exceed the NAC at two residences and five RV sites. The following presents the results of the noise barrier analysis performed to determine whether the implementation of noise barriers would achieve the minimum required insertion loss at a cost deemed reasonable for sites anticipated to experience increased traffic noise due to the proposed enhancements to McIntosh Road. Documentation for the noise barrier analysis is provided in **Appendix F**.

According to *Part 2, Chapter 18 of the PD&E Manual*, a minimum of two impacted sites must achieve a 5 dB(A) or greater for a noise barrier to be considered feasible. There are two single-family residences (receptors 1-1 and 1-2) that are impacted but planned for ROW acquisition and relocation and are not considered for a noise barrier.

Barrier 1

Barrier 1 was evaluated for the five impacted receptors (receptors 6-41, 6-42, 6-43, 6-44, and 6-45) at the Tampa East RV Resort. The predicted traffic noise levels for these five receptors range from 66.2 to 66.4 dB(A) at the part of the RV resort closest to I-4 and the I-4 eastbound off-ramp. The FDOT's publications, *Part 2, Chapter 18 of the PD&E Manual* and the *Traffic Noise Modeling and Analysis Practitioners Handbook*, dated December 2018 were used to determine if a noise barrier could be considered as a potential noise abatement measure. The barrier was evaluated at a length of 2,933 feet beginning approximately 1,150 feet to the west of the I-4 eastbound off ramp to McIntosh Road and ending approximately at the intersection of the I-4 eastbound off ramp and McIntosh Road (approximately station 35+00.00 of McIntosh Road). The barrier was evaluated in two-foot increments from 8 to 22 feet.

At a height of 20 feet, the barrier could reduce predicted traffic noise levels by 5 dB(A) for eight receptors, including the five impacted receptors. At a height of 22 feet, the barrier could reduce predicted traffic noise levels by 5 dB(A) for ten receptors, including the five impacted receptors. The barrier could not reduce predicted traffic noise levels by a minimum of 7 dB(A) for the impacted receptors at any of the evaluated heights. The barrier was also not cost reasonable at any height. Therefore, although feasible, Barrier 1 is not considered to be a reasonable noise abatement measure. The results of the evaluation are provided in **Table 3-3**.

Table 3-3: Barrier Analysis - Barrier 1

Barrier Height (feet)	Barrier Length (feet)	Impacted Receptors with Insertion Loss of [dB(A)]						Number of Benefited Receptors			Total Estimated Cost	Cost Per Benefited Receptor	Cost Reasonable Yes/No
		5-5.9 dB(A)	6-6.9 dB(A)	7-7.9 dB(A)	8-8.9 dB(A)	9-9.9 dB(A)	≥10 dB(A)	Impacted	Other*	Total			
8	2,933	0	0	0	0	0	0	0	0	0	\$938,598	N/A	No
10	2,933	0	0	0	0	0	0	0	0	0	\$1,173,247	N/A	No
12	2,933	0	0	0	0	0	0	0	0	0	\$1,407,896	N/A	No
14	2,933	0	0	0	0	0	0	0	0	0	\$1,642,546	N/A	No
16	2,933	0	0	0	0	0	0	0	0	0	\$1,877,196	N/A	No
18	2,933	0	0	0	0	0	0	0	0	0	\$2,111,845	N/A	No
20	2,933	5	0	0	0	0	0	5	3	8	\$2,346,494	\$293,312	No
22	2,933	0	5	0	0	0	0	5	5	10	\$2,581,144	\$258,114	No

*Receptors that are not impacted but benefit from the noise barrier

SECTION 4 CONCLUSIONS

This NSR has been prepared for the proposed project in accordance with 23 CFR 772 using methodologies established by the FDOT in the *PD&E Manual, Part 2, Chapter 18*. Two residences and five RV sites were predicted to approach, meet, or exceed the NAC in the Preferred Alternative scenario. None of the sites were predicted to experience a substantial increase (15.0 dB(A) or more) in traffic noise as a result of the project. One noise barrier was analyzed for the impacted receptors to determine if noise barriers would provide the minimum required insertion loss (or more) as a feasible and reasonable abatement measure.

Two single-family residences (receptors 1-1 and 1-2) were impacted but are planned for ROW acquisition and relocation and are not considered for a noise barrier.

Barrier 1 was evaluated for the five impacted RV sites (receptors 6-41, 6-42, 6-43, 6-44, and 6-45) at the Tampa East RV Resort adjacent to I-4 and the I-4 eastbound off-ramp located south of the Blue Compass RV dealer. The FDOT publications, *Part 2, Chapter 18 of the PD&E Manual* and the *Traffic Noise Modeling and Analysis Practitioners Handbook*, dated December 2018 were used to determine if a noise barrier could be considered as a potential noise abatement measure. At a height of 20 feet, the barrier could reduce predicted traffic noise levels by 5 dB(A) for eight receptors, including the five impacted receptors. At a height of 22 feet, the barrier could reduce predicted traffic noise levels by 5 dB(A) for ten receptors, including the five impacted receptors. However, the barrier could not provide a reduction in noise levels of 7 dB(A) for any of the impacted receptors at any of the evaluated heights, nor was it cost reasonable at any height. Therefore, a noise barrier is not recommended for further consideration.

Based on the noise analyses performed to date, there are no feasible and reasonable solutions available to mitigate the noise impacts at the locations identified in **Table 3-2** and shown in **Appendix C**.

SECTION 5 LAND-USE CONTROLS

A copy of this NSR, which provides information that can be used to protect future land development from incompatible anticipated traffic noise levels, will be provided to Hillsborough County upon approval of the Type 2 Categorical Exclusion environmental document for this project. Land use controls can be used to minimize the effects of traffic noise in future developments or redevelopment. Residences, hotels, schools, churches, and recreational areas are land uses that are incompatible with traffic noise that exceeds the NAC for their respective Activity Category. To minimize the possibility of additional traffic noise impacts, noise level contours were developed for the future roadway. These contours delineate the distance from the proposed project's edge of pavement where the NAC for each Activity Category (A through E) is anticipated to be approached (within one dB(A) of the NAC) for the design year (2045). The contours do not account for the shielding of noise provided by structures or other topographical

features between the receptor sites and the proposed travel lanes. Future noise-sensitive land uses should be sited beyond the distance of their respective Activity Category.

As shown in **Table 5-1**, the extent of noise levels varies across different segments of the project limits for each of the Activity Categories evaluated.

Table 5-1: Design Year (2045) Noise Impact Contour Distances

Roadway Segment	Activity Category*	NAC for Activity Category (dB(A))	Northbound McIntosh Approximate Distance to Approach within 1 dB(A) of NAC for Activity Category (feet)**	Southbound McIntosh Approximate Distance to Approach within 1 dB(A) of NAC for Activity Category (feet)**
McIntosh Road North of Muck Pond Rd/Gore Road	A	57	>500	>500
	B	67	30	30
	C	67	30	30
	E	72	<20	<20
McIntosh Road Between I-4 eastbound ramps and Hungry Howies	A	57	>500	>500
	B	67	30	30
	C	67	30	30
	E	72	<20	<20
McIntosh Road Between Hungry Howies and US 92	A	57	>500	>500
	B	67	40	20
	C	67	40	20
	E	72	<20	<20
McIntosh Road South of US 92	A	57	300	450
	B	67	30	30
	C	67	30	30
	E	72	<20	<20
*Refer to Table 2-1 for details on Activity Categories				
**Distances are measured from the improved roadways edge of pavement and do not account for any reduction in noise levels that may occur from shielding. These distances should be used for planning purposes only.				

SECTION 6 CONSTRUCTION NOISE AND VIBRATIONS

During the short-term duration of the construction phase of the proposed project, noise may be generated by stationary and mobile construction equipment. Utilizing FDOT's listing of noise and vibration sensitive sites, residences, schools, and motels/hotels (i.e. the Tampa East RV Resort) were identified as potentially sensitive to vibration caused during construction.

The FDOT commits to coordinating with these facilities and any other construction noise and vibration sites identified during the design phase of the project. The use of the FDOT's *Standard*

Specifications for Road and Bridge Construction could minimize or eliminate most of the potential construction noise and vibration. Should unanticipated noise or vibration issues arise during construction, the Project Engineer, in coordination with the District Noise Specialist and the Contractor, will investigate additional methods of addressing the issues.

SECTION 7 COMMUNITY COORDINATION

This section will be completed after the Public Hearing.

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SECTION 8 REFERENCES

Federal Highway Administration. U.S. Department of Transportation. July 13, 2010. Title 23 CFR, Part 772. Procedures for Abatement of Highway Traffic Noise and Construction Noise.

Federal Highway Administration. February 2004. Traffic Noise Model, Version 2.5.

Federal Highway Administration. December 2011. Highway Traffic Noise: Analysis and Abatement Guidance.

Federal Highway Administration. June 1, 2018. Noise Measurement Handbook. FHWA-HEP-18 065.

Florida Department of Transportation. July 31, 2024. Project Development and Environment Manual, Part 2, Chapter 18 – Highway Traffic Noise.

Florida Department of Transportation. January 2024. Structures Design Guidelines, 3.16 Noise Wall Design.

Florida Department of Transportation. December 2018. Traffic Noise Modeling and Analysis Practitioners Handbook.

Florida Department of Transportation. August 2023. Project Traffic Analysis Report – McIntosh Road Project Development & Environment (PD&E) Study.

APPENDIX A. CONCEPT PLANS**APPENDIX B. NOISE MODEL TRAFFIC DATA****APPENDIX C. NOISE-SENSITIVE RECEPTOR SITES****APPENDIX D. NOISE MODEL VALIDATION DATA****APPENDIX E. TNM DATA****APPENDIX F. BARRIER ANALYSIS**

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APPENDIX A Concept Plans

CONTRACT PLANS COMPONENTS
ROADWAY PLANS

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND
ENVIRONMENT STUDY
CONCEPT PLANS

FINANCIAL PROJECT ID 447157-1-32-01
(FEDERAL FUNDS)
HILLSBOROUGH COUNTY (10900031 & 10000622)

MCINTOSH ROAD
ADD LANES AND RECONSTRUCT
FROM S. OF US 92 TO N. OF I-4

INDEX OF ROADWAY PLANS

SHEET NO.	SHEET DESCRIPTION
01	KEY SHEET
02	PROJECT LAYOUT PLAN SHEET
03-13	CONCEPT PLAN SHEETS

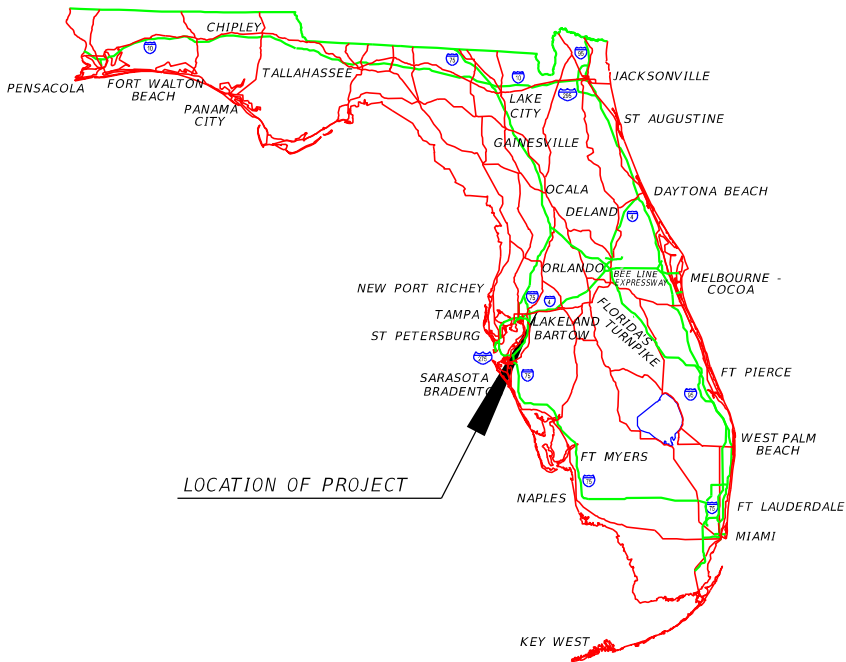
PROJECT LOCATION URL: <https://tinyurl.com/34tuk4p2>

PROJECT LIMITS: BEGIN MP 0.204 - END MP 0.443 (#10900031)
BEGIN MP 0.000 - END MP 0.795 (#10000622)

EXCEPTIONS: NONE

BRIDGE LIMITS: NONE

RAILROAD CROSSING: NONE



GOVERNING STANDARD PLANS:

Florida Department of Transportation, FY 2024-25 Standard Plans for Road and Bridge Construction and applicable Interim Revisions (IRs).

Standard Plans for Road Construction and associated IRs are available at the following website: <http://www.fdot.gov/design/standardplans>

APPLICABLE IRs: N/A

Standard Plans for Bridge Construction are included in the Structures Plans Component

GOVERNING STANDARD SPECIFICATIONS:

Florida Department of Transportation, FY 2024-25 Standard Specifications for Road and Bridge Construction at the following website: <http://www.fdot.gov/programmanagement/Implemented/SpecBooks>

ROADWAY PLANS
ENGINEER OF RECORD:

REJA E. RABBI, P.E.
P.E. LICENSE NUMBER 84637
CDM SMITH
4010 W. BOY SCOUT BLVD. STE. 450
TAMPA, FL 33607
813-281-2900
CONTRACT NO.: CAE10
VENDOR NO.: 04-247365

FDOT PROJECT MANAGER:

CRAIG FOX, P.E.

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Dated 07/29/24

CONSTRUCTION CONTRACT NO.	FISCAL YEAR	SHEET NO.
N/A	27	01

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Dated 07/29/24

LEGEND

--- EXISTING ROW
--- EXISTING LA ROW
--- PROPOSED ROW

PLAN SHEET BOUNDARY
PLAN SHEET NUMBER

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	HILLSBOROUGH	447157-1-32-01

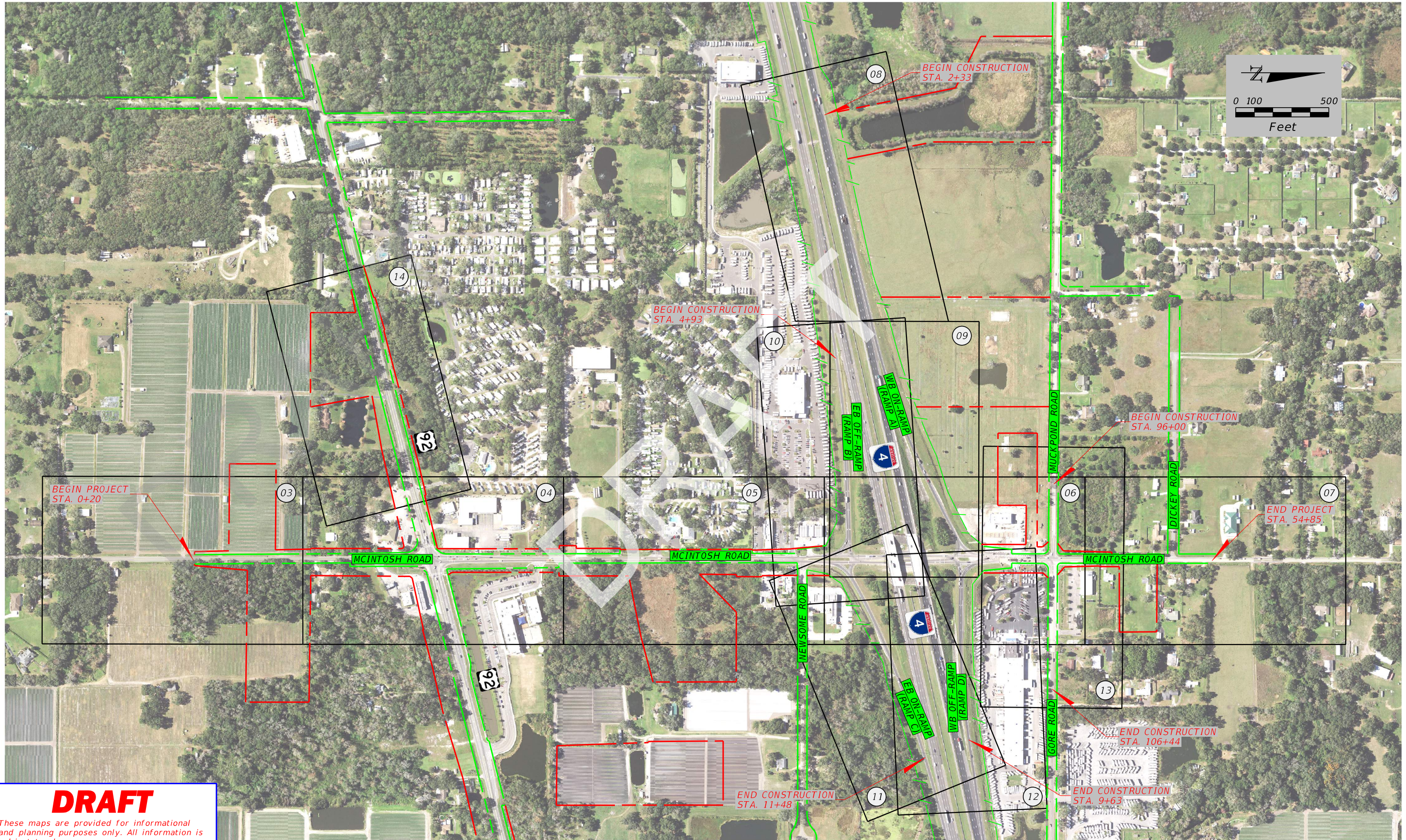
ENGINEER OF RECORD

REJA E. RABBI, P.E.
LICENSE NUMBER: 84637
CDM SMITH
4010 W. BOY SCOUT BLVD. STE. 450
TAMPA, FL 33607

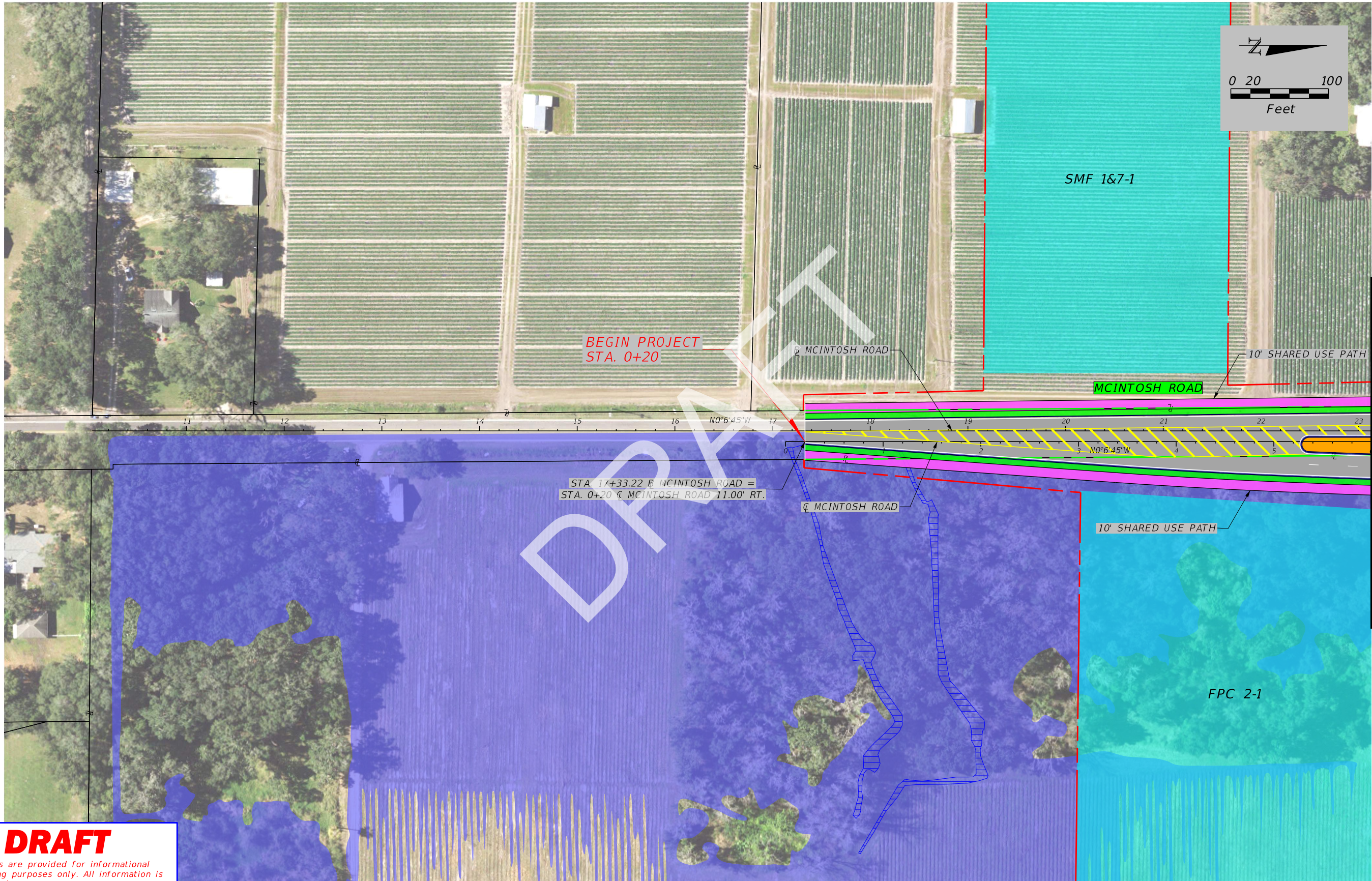
MCINTOSH RD. PD&E STUDY
FROM S. OF US 92 TO N. OF I-4
PREFERRED ALTERNATIVE CONCEPT PLANS

SHEET
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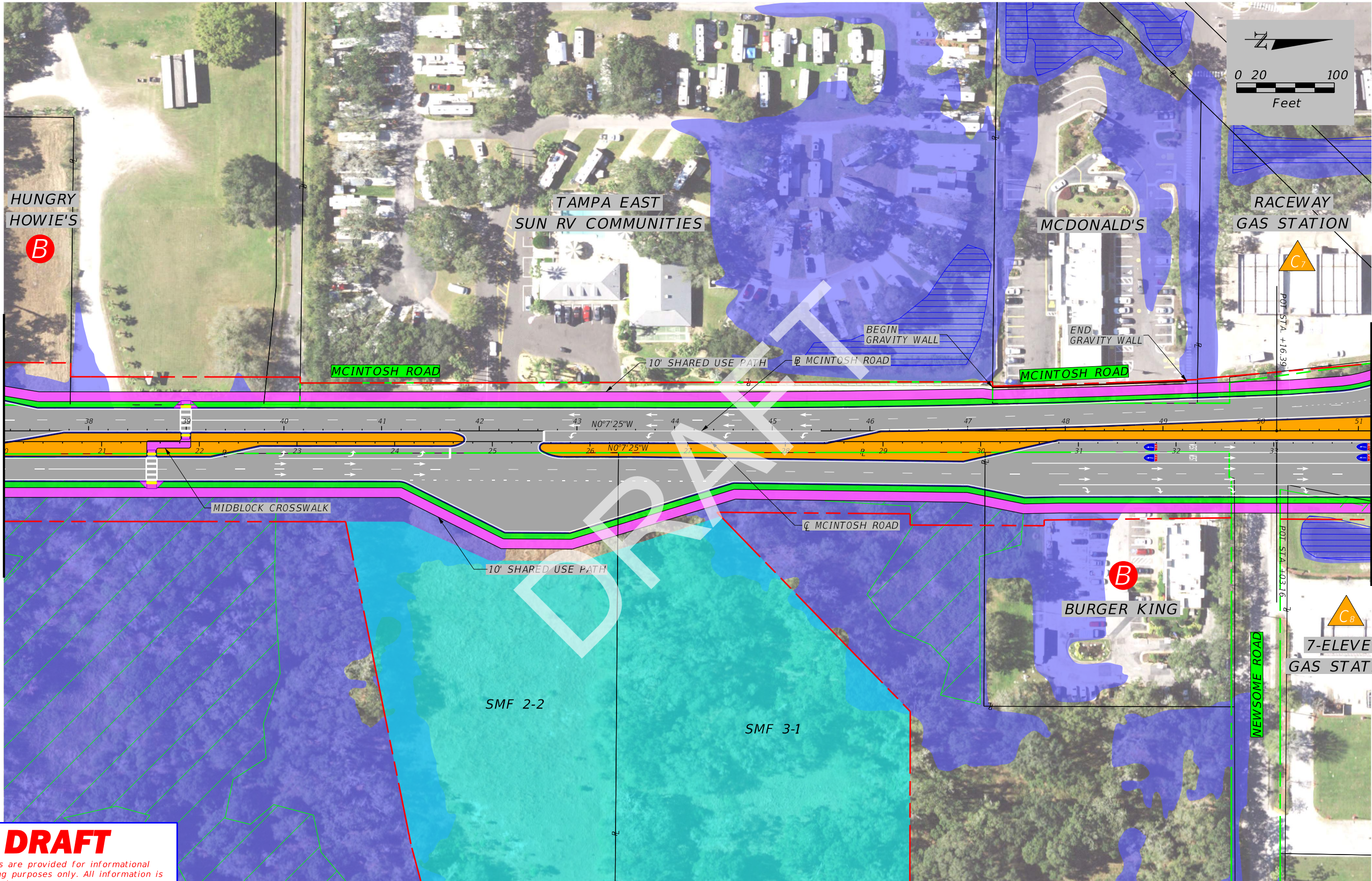
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Dated 07/29/24

LEGEND

	BUSINESS RELOCATION		PREFERRED SMF AND FPC AREA		PROPOSED SHARED USE PATH		EXISTING LA ROW
	RESIDENTIAL RELOCATION		FLOODPLAIN AREAS (HILLS COUNTY STORMWATER MANAGEMENT MODEL)		PROPOSED PAVED SHOULDER		PROPOSED ROW
	POTENTIAL CONTAMINATION SITE		IMPROVEMENTS BY FDOT		PROPOSED TRAFFIC SIGNAL		PROPOSED GRAVITY WALL
	WETLANDS BOUNDARY		PROPOSED SOD		PROPERTY LINE		US 92 IMPROVEMENTS FPID: 447158-1-52-01
	OTHER SURFACE WATERS BOUNDARY		PROPOSED TRAFFIC SEPARATOR		EXISTING ROW		

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ENGINEER OF RECORD	MCINTOSH RD. PD&E STUDY FROM S. OF US 92 TO N. OF I-4 PREFERRED ALTERNATIVE CONCEPT PLANS	SHEET NO.
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	REJA E. RABBI, P.E. LICENSE NUMBER: 84637 CDM SMITH 4010 W. BOY SCOUT BLVD. STE. 450 TAMPA, FL 33607		03
N/A	HILLSBOROUGH	447157-1-32-01			




















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Dated 07/29/24

LEGEND

	BUSINESS RELOCATION		PREFERRED SMF AND FPC AREA		PROPOSED SHARED USE PATH		EXISTING LA ROW
	RESIDENTIAL RELOCATION		FLOODPLAIN AREAS (HILLS COUNTY STORMWATER MANAGEMENT MODEL)		PROPOSED PAVED SHOULDER		PROPOSED ROW
	POTENTIAL CONTAMINATION SITE		IMPROVEMENTS BY FDOT		PROPOSED TRAFFIC SIGNAL		PROPOSED GRAVITY WALL
	WETLANDS BOUNDARY		PROPOSED SOD		PROPERTY LINE		US 92 IMPROVEMENTS FPID: 447158-1-52-01
	OTHER SURFACE WATERS BOUNDARY		PROPOSED TRAFFIC SEPARATOR		EXISTING ROW		

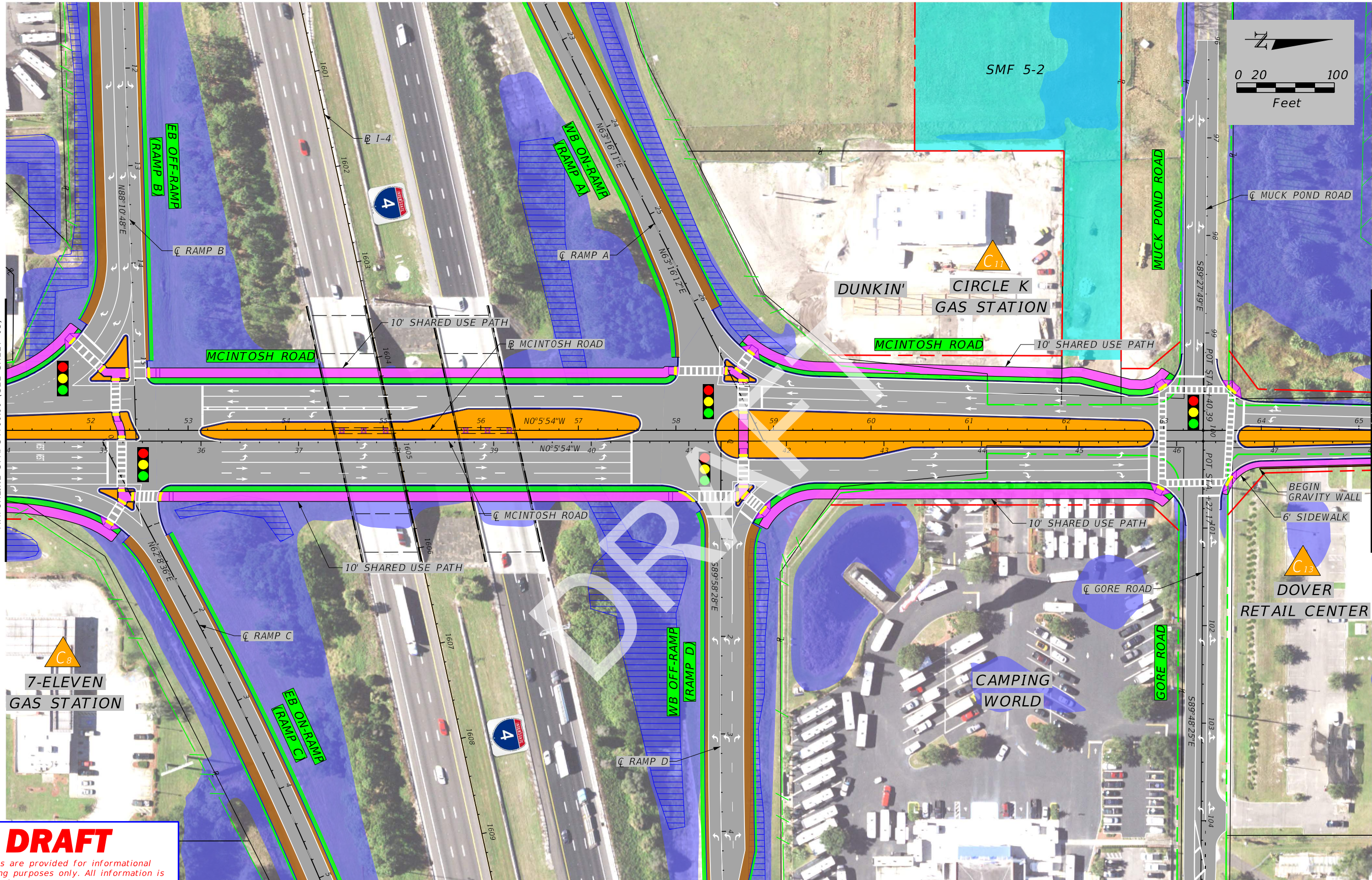
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ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	HILLSBOROUGH	447157-1-32-01

ENGINEER OF RECORD	
REJA E. RABBI, P.E. LICENSE NUMBER: 84637 CDM SMITH 4010 W. BOY SCOUT BLVD. STE. 450 TAMPA, FL 33607	

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Dated 07/29/24

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	BUSINESS RELOCATION		PREFERRED SMF AND FPC AREA		PROPOSED SHARED USE PATH
	RESIDENTIAL RELOCATION		FLOODPLAIN AREAS (HILLS COUNTY STORMWATER MANAGEMENT MODEL)		PROPOSED PAVED SHOULDER
	POTENTIAL CONTAMINATION SITE		IMPROVEMENTS BY FDOT		PROPOSED TRAFFIC SIGNAL
	WETLANDS BOUNDARY		PROPOSED SOD		PROPERTY LINE
	OTHER SURFACE WATERS BOUNDARY		PROPOSED TRAFFIC SEPARATOR		EXISTING ROW
					EXISTING LA ROW
					PROPOSED ROW
					PROPOSED GRAVITY WALL
					US 92 IMPROVEMENTS FPID: 447158-1-52-01

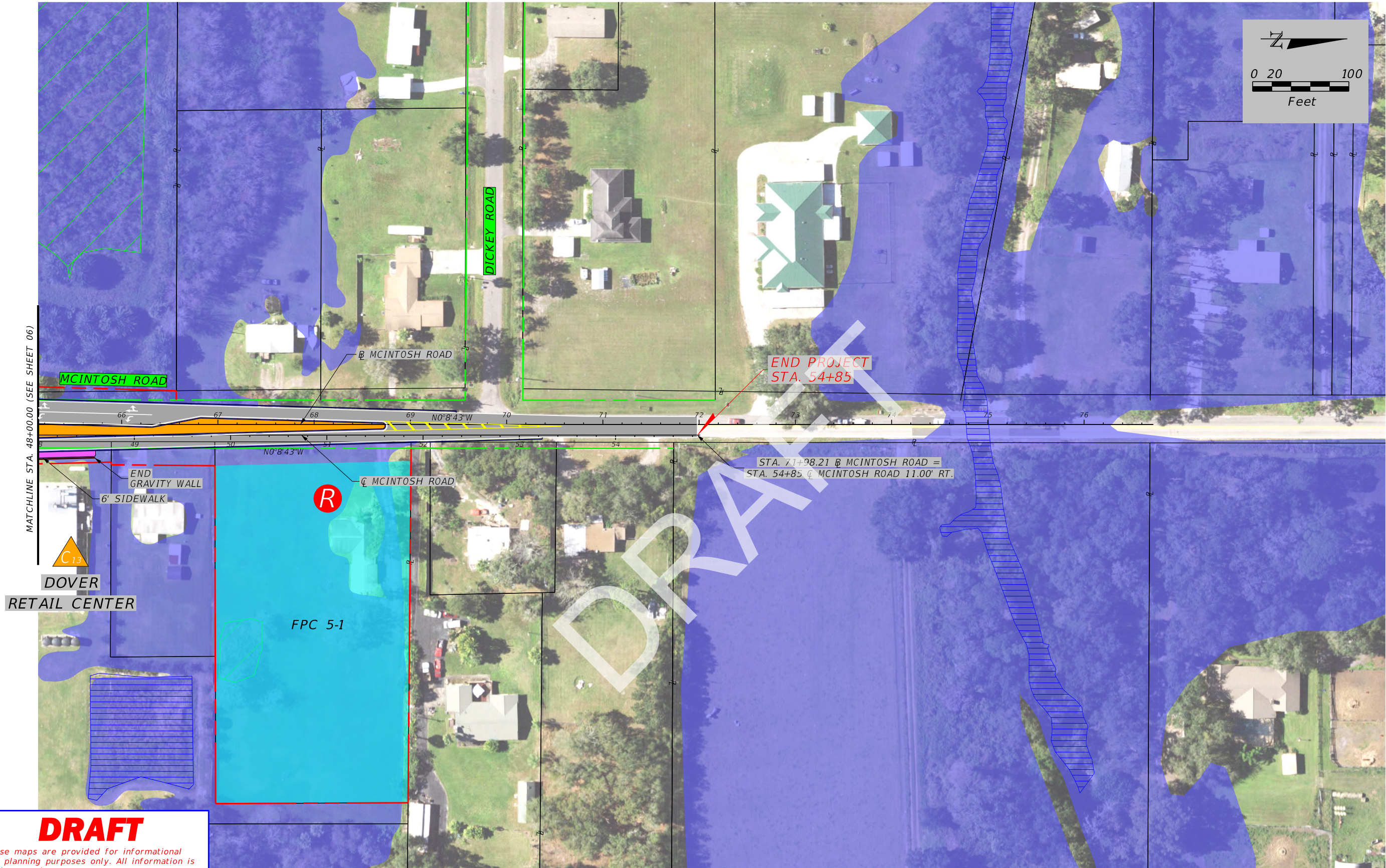
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N/A	HILLSBOROUGH	447157-1-32-01

ENGINEER OF RECORD	
REJA E. RABBI, P.E. LICENSE NUMBER: 84637 CDM SMITH 4010 W. BOY SCOUT BLVD. STE. 450 TAMPA, FL 33607	

MCINTOSH RD. PD&E STUDY	
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PREFERRED ALTERNATIVE CONCEPT PLANS	

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Dated 07/29/24

LEGEND

	BUSINESS RELOCATION		PREFERRED SMF AND FPC AREA		PROPOSED SHARED USE PATH		EXISTING LA ROW
	RESIDENTIAL RELOCATION		FLOODPLAIN AREAS (HILLS COUNTY STORMWATER MANAGEMENT MODEL)		PROPOSED PAVED SHOULDER		PROPOSED ROW
	POTENTIAL CONTAMINATION SITE		IMPROVEMENTS BY FDOT		PROPOSED TRAFFIC SIGNAL		PROPOSED GRAVITY WALL
	WETLANDS BOUNDARY		PROPOSED SOD		PROPERTY LINE		US 92 IMPROVEMENTS FPID: 447158-1-52-01
	OTHER SURFACE WATERS BOUNDARY		PROPOSED TRAFFIC SEPARATOR		EXISTING ROW		

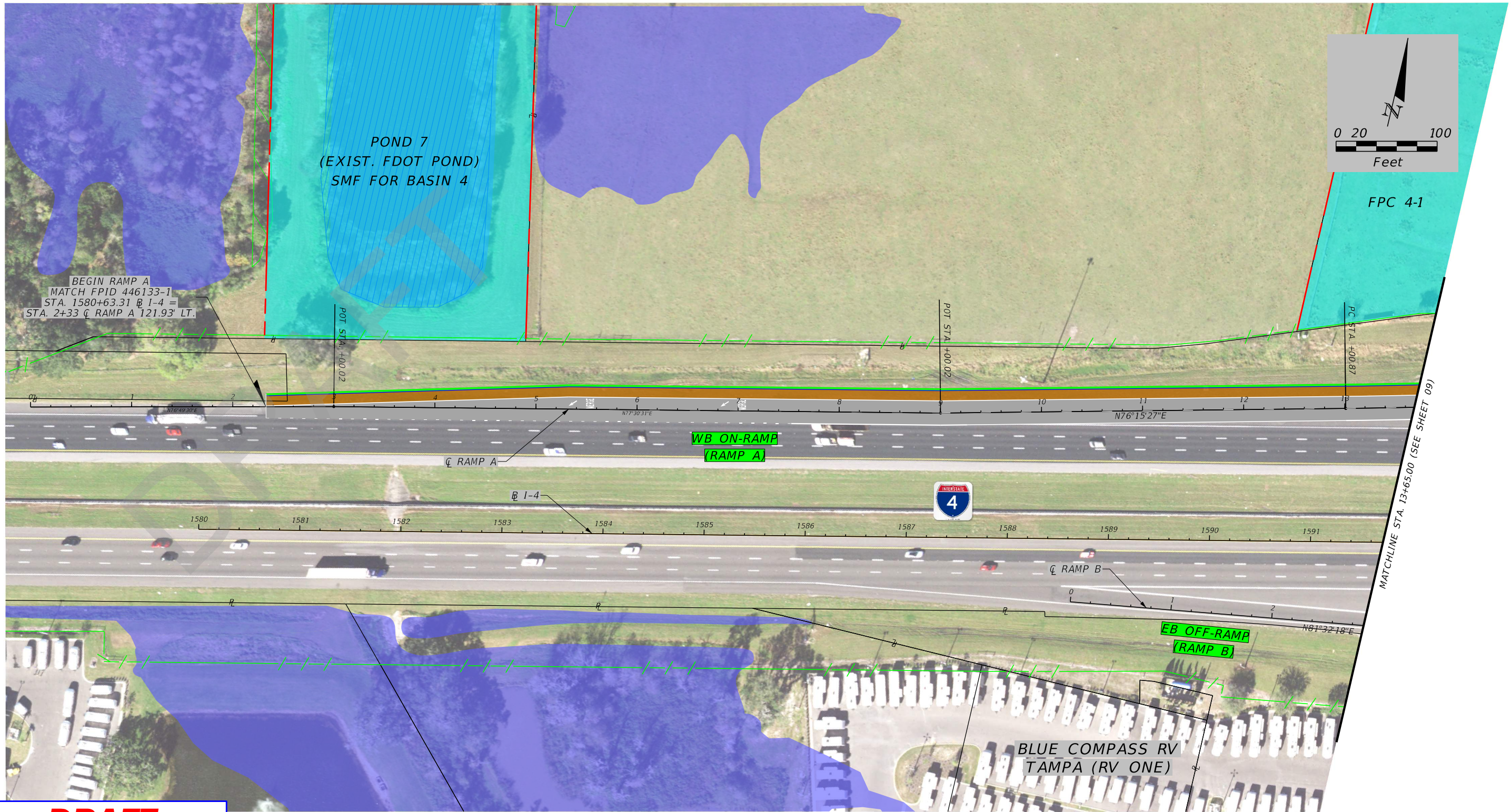
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	HILLSBOROUGH	447157-1-32-01

ENGINEER OF RECORD	
REJA E. RABBI, P.E. LICENSE NUMBER: 84637 CDM SMITH 4010 W. BOY SCOUT BLVD. STE. 450 TAMPA, FL 33607	

MCINTOSH RD. PD&E STUDY	
FROM S. OF US 92 TO N. OF I-4	
PREFERRED ALTERNATIVE CONCEPT PLANS	

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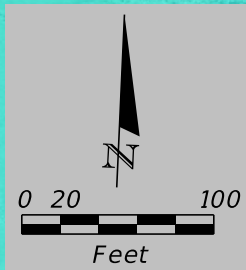
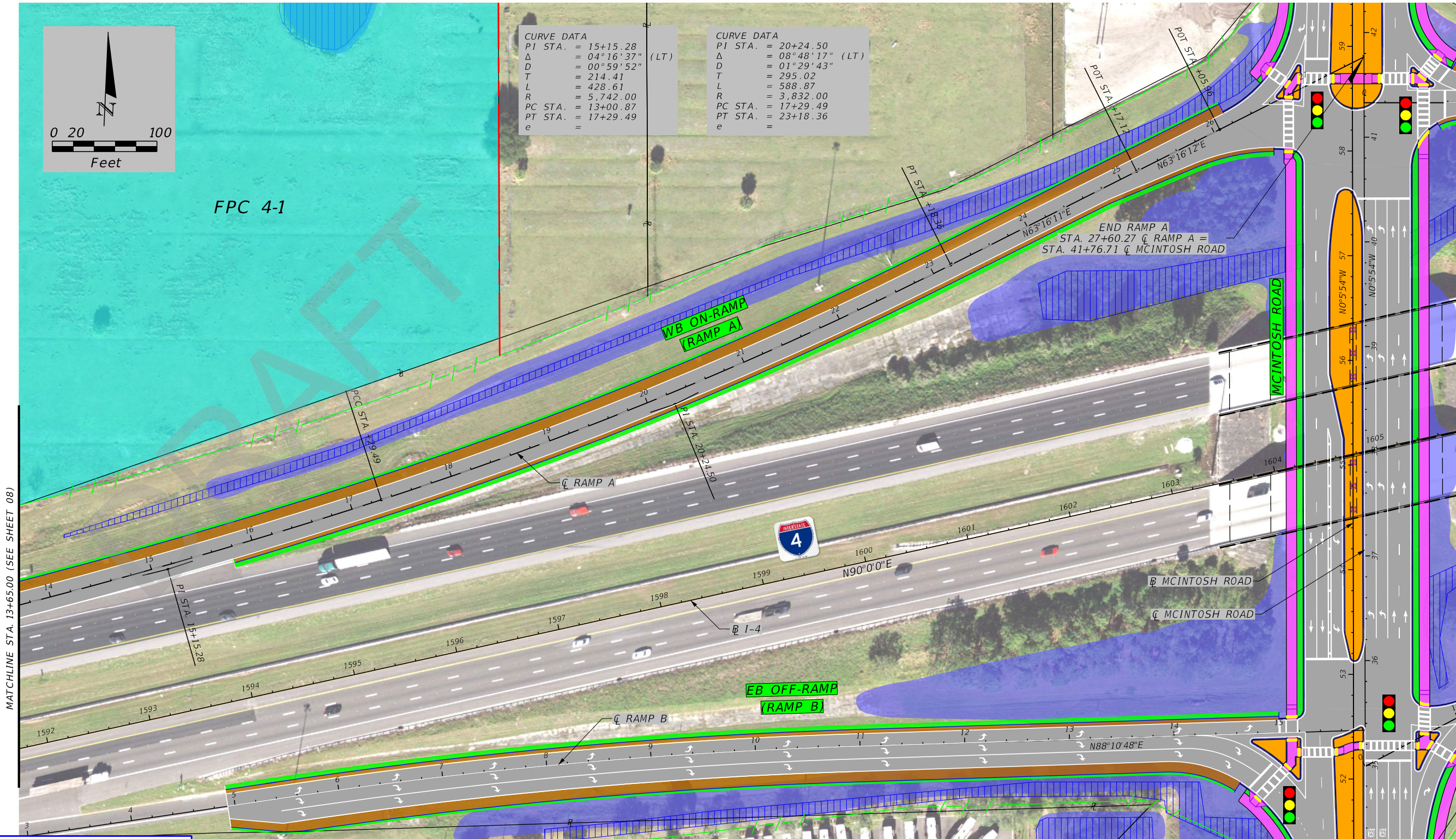
These maps are provided for informational and planning purposes only. All information is subject to change.
Dated 07/29/24

LEGEND

	BUSINESS RELOCATION		PREFERRED SMF AND FPC AREA		PROPOSED SHARED USE PATH		EXISTING LA ROW
	RESIDENTIAL RELOCATION		FLOODPLAIN AREAS (HILLS COUNTY STORMWATER MANAGEMENT MODEL)		PROPOSED PAVED SHOULDER		PROPOSED ROW
	POTENTIAL CONTAMINATION SITE		IMPROVEMENTS BY FDOT		PROPOSED TRAFFIC SIGNAL		PROPOSED GRAVITY WALL
	WETLANDS BOUNDARY		PROPOSED SOD		US 92 IMPROVEMENTS FPID. 447158-1-52-01		PROPERTY LINE
	OTHER SURFACE WATERS BOUNDARY		PROPOSED TRAFFIC SEPARATOR		EXISTING ROW		

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION			ENGINEER OF RECORD	MCINTOSH RD. PD&E STUDY FROM S. OF US 92 TO N. OF I-4 PREFERRED ALTERNATIVE CONCEPT PLANS	SHEET NO.
ROAD NO.	COUNTY	FINANCIAL PROJECT ID	REJA E. RABBI, P.E. LICENSE NUMBER: 84637 CDM SMITH 4010 W. BOY SCOUT BLVD. STE. 450 TAMPA, FL 33607		
N/A	HILLSBOROUGH	447157-1-32-01			08

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PI STA. = 15+15.28
Δ = 04°16'37" (LT)
D = 00°59'52"
T = 214.41
L = 428.61
R = 5,742.00
PC STA. = 13+00.87
PT STA. = 17+29.49
e =

CURVE DATA
PI STA. = 20+24.50
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D = 01°29'43"
T = 295.02
L = 588.87
R = 3,832.00
PC STA. = 17+29.49
PT STA. = 23+18.36
e =

MATCHLINE STA. 13+65.00 (SEE SHEET 08)

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Dated 07/29/24

LEGEND

	BUSINESS RELOCATION		PREFERRED SMF AND FPC AREA		PROPOSED SHARED USE PATH		EXISTING LA ROW
	RESIDENTIAL RELOCATION		FLOODPLAIN AREAS (HILLS COUNTY STORMWATER MANAGEMENT MODEL)		PROPOSED PAVED SHOULDER		PROPOSED ROW
	POTENTIAL CONTAMINATION SITE		IMPROVEMENTS BY FDOT		PROPOSED TRAFFIC SIGNAL		PROPOSED GRAVITY WALL
	WETLANDS BOUNDARY		PROPOSED SOD		PROPERTY LINE		US 92 IMPROVEMENTS FPID: 447158-1-52-01
	OTHER SURFACE WATERS BOUNDARY		PROPOSED TRAFFIC SEPARATOR		EXISTING ROW		

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	HILLSBOROUGH	447157-1-32-01

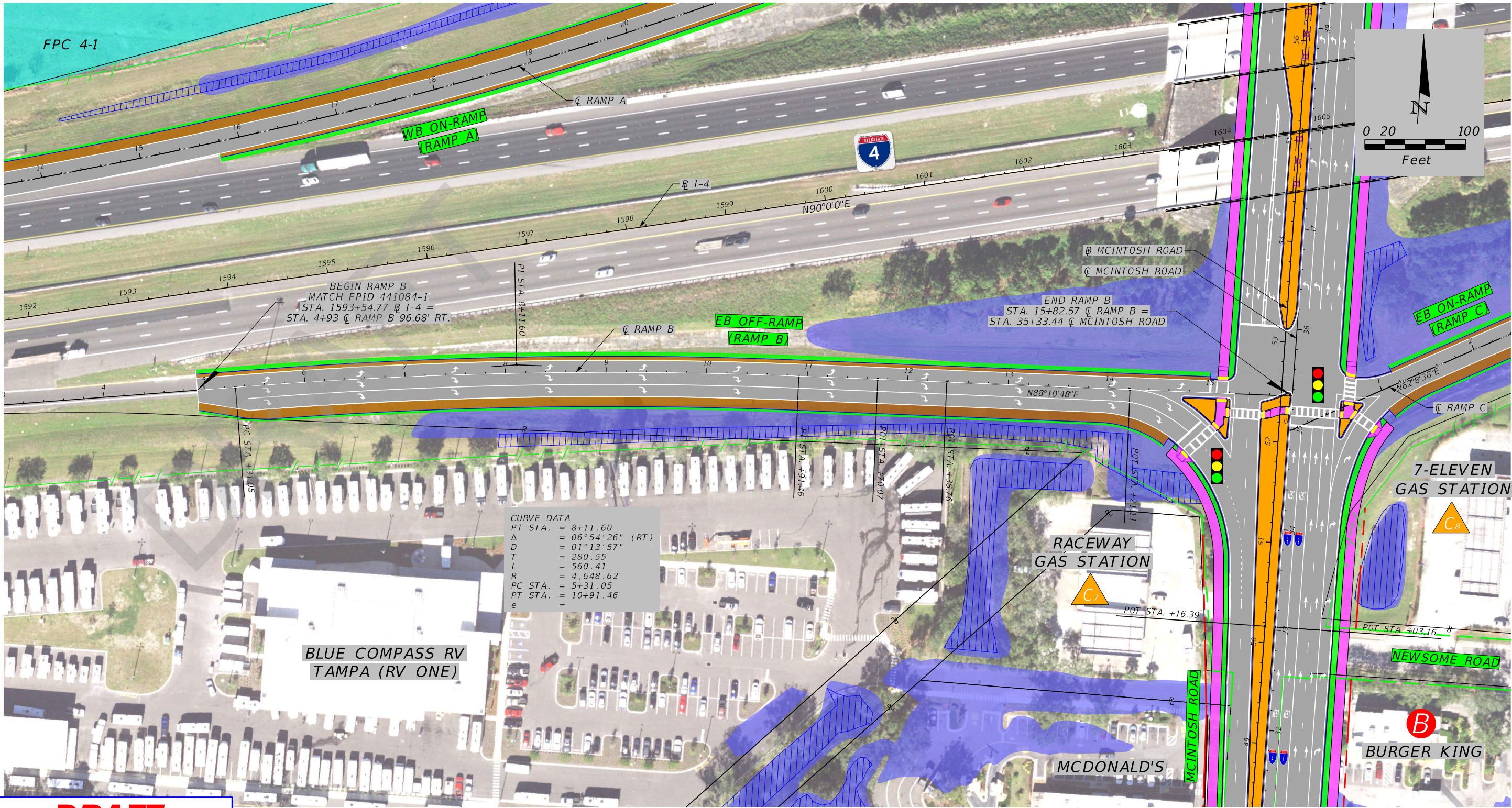
ENGINEER OF RECORD

REJA E. RABBI, P.E.
LICENSE NUMBER: 84637
CDM SMITH
4010 W. BOY SCOUT BLVD. STE. 450
TAMPA, FL 33607

MCINTOSH RD. PD&E STUDY
FROM S. OF US 92 TO N. OF I-4
PREFERRED ALTERNATIVE CONCEPT PLANS

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Dated 07/29/24

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LEGEND

	BUSINESS RELOCATION		PREFERRED SMF AND FPC AREA		PROPOSED SHARED USE PATH		EXISTING LA ROW
	RESIDENTIAL RELOCATION		FLOODPLAIN AREAS (HILLS COUNTY STORMWATER MANAGEMENT MODEL)		PROPOSED PAVED SHOULDER		PROPOSED ROW
	POTENTIAL CONTAMINATION SITE		IMPROVEMENTS BY FDOT		PROPOSED TRAFFIC SIGNAL		PROPOSED GRAVITY WALL
	WETLANDS BOUNDARY		PROPOSED SOD		PROPERTY LINE		US 92 IMPROVEMENTS FPID: 447158-1-52-01
	OTHER SURFACE WATERS BOUNDARY		PROPOSED TRAFFIC SEPARATOR		EXISTING ROW		

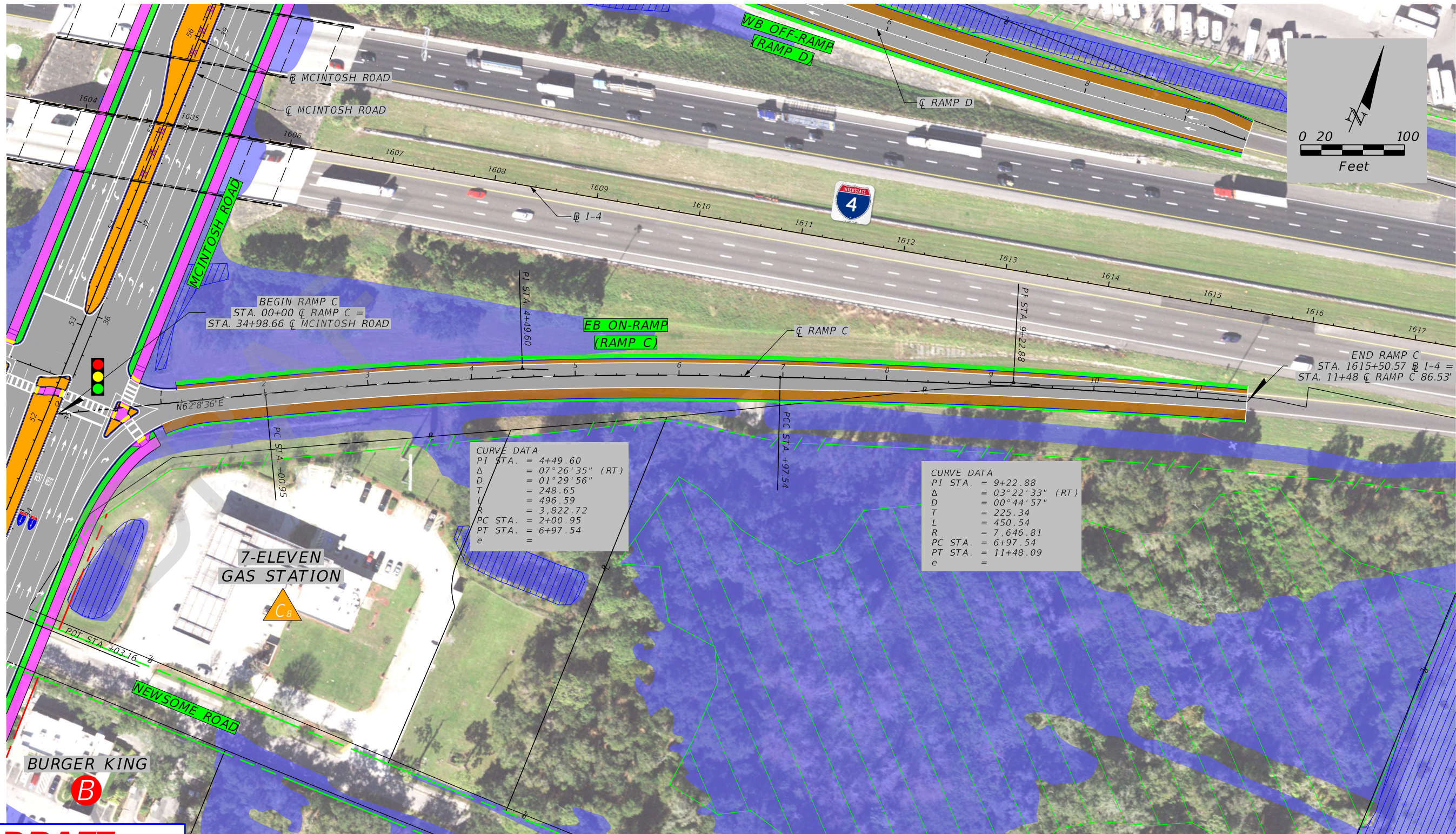
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	HILLSBOROUGH	447157-1-32-01

ENGINEER OF RECORD	
REJA E. RABBI, P.E. LICENSE NUMBER: 84637 CDM SMITH 4010 W. BOY SCOUT BLVD. STE. 450 TAMPA, FL 33607	

MCINTOSH RD. PD&E STUDY	
FROM S. OF US 92 TO N. OF I-4 PREFERRED ALTERNATIVE CONCEPT PLANS	

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Dated 07/29/24

LEGEND

	BUSINESS RELOCATION		PREFERRED SMF AND FPC AREA		PROPOSED SHARED USE PATH		EXISTING LA ROW
	RESIDENTIAL RELOCATION		FLOODPLAIN AREAS (HILLS COUNTY STORMWATER MANAGEMENT MODEL)		PROPOSED PAVED SHOULDER		PROPOSED ROW
	POTENTIAL CONTAMINATION SITE		IMPROVEMENTS BY FDOT		PROPOSED TRAFFIC SIGNAL		PROPOSED GRAVITY WALL
	WETLANDS BOUNDARY		PROPOSED SOD		PROPERTY LINE		US 92 IMPROVEMENTS FPID: 447158-1-52-01
	OTHER SURFACE WATERS BOUNDARY		PROPOSED TRAFFIC SEPARATOR		EXISTING ROW		

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	HILLSBOROUGH	447157-1-32-01

ENGINEER OF RECORD

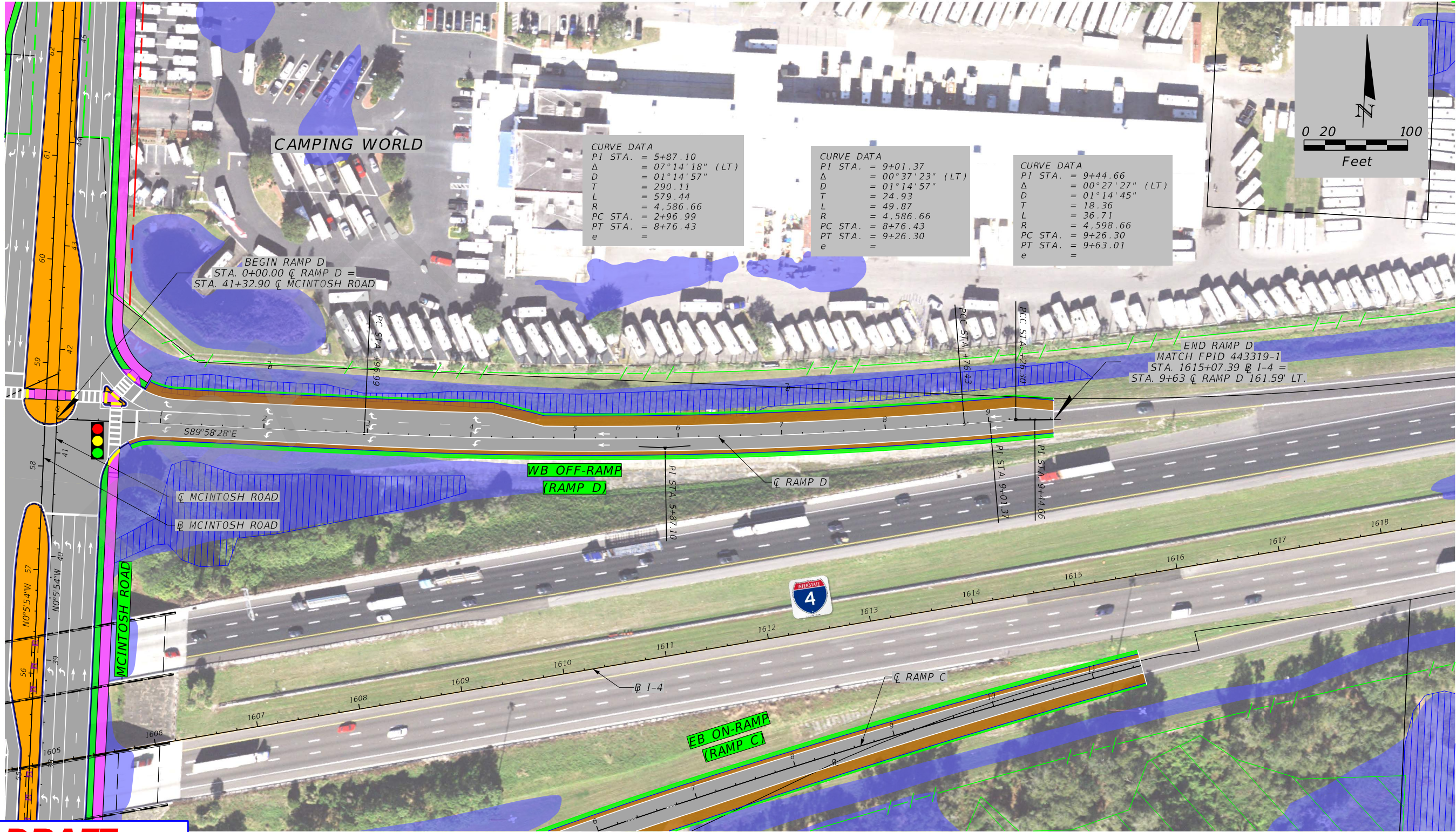
REJA E. RABBI, P.E.
LICENSE NUMBER: 84637
CDM SMITH
4010 W. BOY SCOUT BLVD. STE. 450
TAMPA, FL 33607

MCINTOSH RD. PD&E STUDY
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PREFERRED ALTERNATIVE CONCEPT PLANS

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Dated 07/29/24

LEGEND

- | | | | |
|-------------------------------|---|--------------------------|---|
| BUSINESS RELOCATION | PREFERRED SMF AND FPC AREA | PROPOSED SHARED USE PATH | EXISTING LA ROW |
| RESIDENTIAL RELOCATION | FLOODPLAIN AREAS (HILLS COUNTY STORMWATER MANAGEMENT MODEL) | PROPOSED PAVED SHOULDER | PROPOSED ROW |
| POTENTIAL CONTAMINATION SITE | IMPROVEMENTS BY FDOT | PROPOSED TRAFFIC SIGNAL | PROPOSED GRAVITY WALL |
| WETLANDS BOUNDARY | PROPOSED SOD | PROPERTY LINE | US 92 IMPROVEMENTS FPID: 447158-1-52-01 |
| OTHER SURFACE WATERS BOUNDARY | PROPOSED TRAFFIC SEPARATOR | EXISTING ROW | |

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	HILLSBOROUGH	447157-1-32-01

ENGINEER OF RECORD

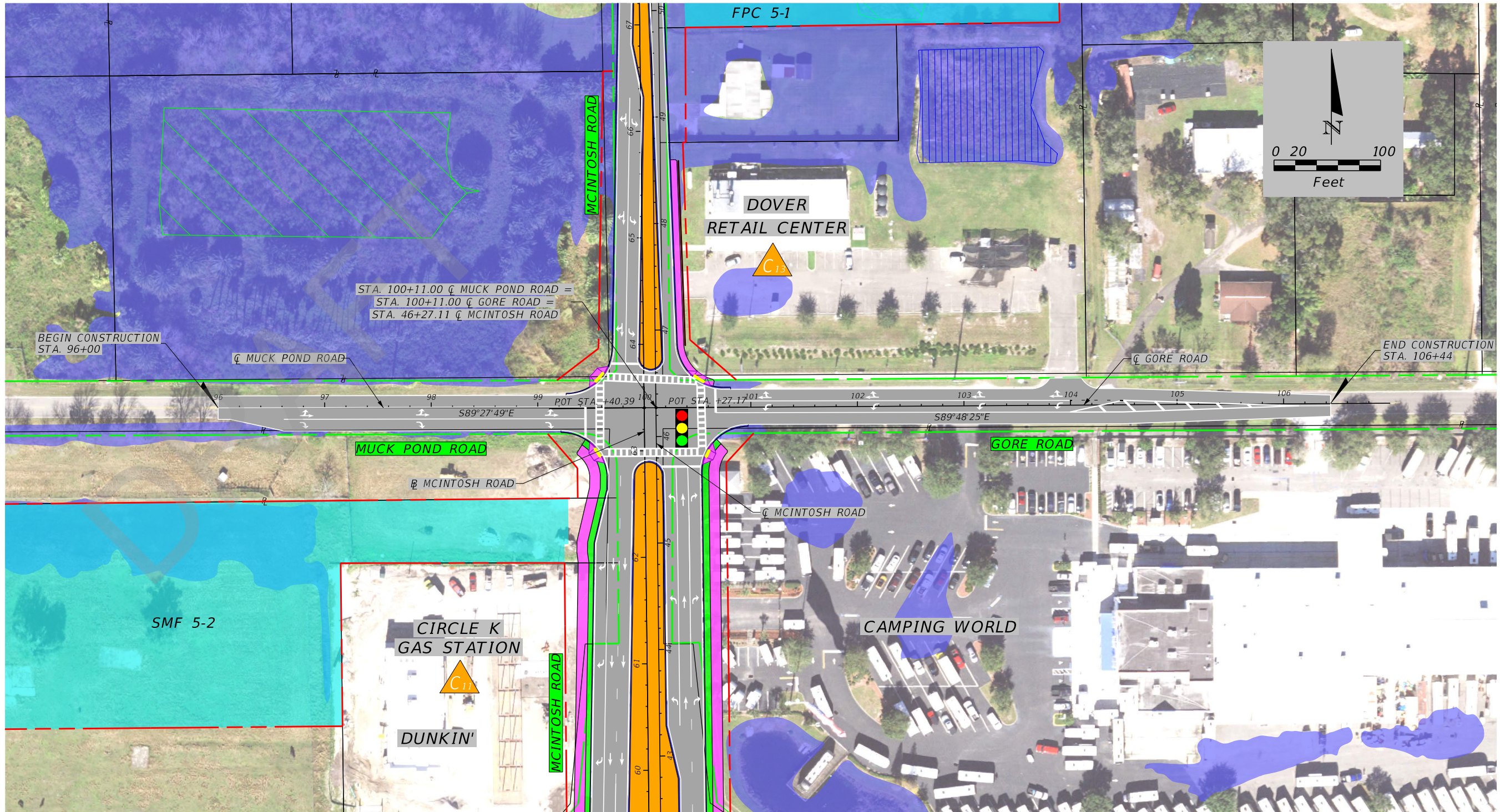
REJA E. RABBI, P.E.
LICENSE NUMBER: 84637
CDM SMITH
4010 W. BOY SCOUT BLVD. STE. 450
TAMPA, FL 33607

MCINTOSH RD. PD&E STUDY
FROM S. OF US 92 TO N. OF I-4
PREFERRED ALTERNATIVE CONCEPT PLANS

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Dated 07/29/24

LEGEND

	BUSINESS RELOCATION		PREFERRED SMF AND FPC AREA		PROPOSED SHARED USE PATH		EXISTING LA ROW
	RESIDENTIAL RELOCATION		FLOODPLAIN AREAS (HILLS COUNTY STORMWATER MANAGEMENT MODEL)		PROPOSED PAVED SHOULDER		PROPOSED ROW
	POTENTIAL CONTAMINATION SITE		IMPROVEMENTS BY FDOT		PROPOSED TRAFFIC SIGNAL		PROPOSED GRAVITY WALL
	WETLANDS BOUNDARY		PROPOSED SOD		PROPERTY LINE		US 92 IMPROVEMENTS FPID: 447158-1-52-01
	OTHER SURFACE WATERS BOUNDARY		PROPOSED TRAFFIC SEPARATOR		EXISTING ROW		

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION		
ROAD NO.	COUNTY	FINANCIAL PROJECT ID
N/A	HILLSBOROUGH	447157-1-32-01

ENGINEER OF RECORD
REJA E. RABBI, P.E. LICENSE NUMBER: 84637 CDM SMITH 4010 W. BOY SCOUT BLVD. STE. 450 TAMPA, FL 33607

MCINTOSH RD. PD&E STUDY
FROM S. OF US 92 TO N. OF I-4
PREFERRED ALTERNATIVE CONCEPT PLANS

SHEET NO.
13

APPENDIX B Noise Model Traffic Data

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: McIntosh Road

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: McIntosh Road south of US-92 (E Hillsborough Avenue)

Section Number:

Mile Post To/From:

Existing Facility

		D =	57.0	%
Year:	2020	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,422	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	990	HT =	3.2	% of Design Hr Volume
Posted Speed:	40 to 45	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

No Build Alternative (Design Year):

		D =	57.0	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,422	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	1,620	HT =	3.2	% of Design Hr Volume
Posted Speed:	40 to 45	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

		D =	57.0	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,260	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	1,620	HT =	3.2	% of Design Hr Volume
Posted Speed:	35	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: McIntosh Road

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: McIntosh Road north of Muckpond/Gore Road

Section Number:

Mile Post To/From:

Existing Facility

		D =	57.0	%
Year:	2020	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,422	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	477	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

No Build Alternative (Design Year):

		D =	57.0	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,422	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	783	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

		D =	57.0	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	630	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	783	HT =	3.2	% of Design Hr Volume
Posted Speed:	35	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: McIntosh Road

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: McIntosh Road north of I-4 to Muckpond/Gore Road

Section Number:

Mile Post To/From:

Existing Facility

		D =	57.0	%
Year:	2020	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,422	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	900	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

No Build Alternative (Design Year):

		D =	57.0	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,422	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	1,485	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

		D =	57.0	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,260	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	1,485	HT =	3.2	% of Design Hr Volume
Posted Speed:	35	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: McIntosh Road

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: McIntosh Road south of I-4 to US-92

Section Number:

Mile Post To/From:

Existing Facility

		D =	57.0	%
Year:	2020	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,422	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	1,890	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

No Build Alternative (Design Year):

		D =	57.0	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,422	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	3,105	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

		D =	57.0	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,260	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	3,105	HT =	3.2	% of Design Hr Volume
Posted Speed:	35	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: McIntosh Road

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: McIntosh Road between I-4 on and off ramps

Section Number:

Mile Post To/From:

Existing Facility

		D =	57.0	%
Year:	2020	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,422	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	1,251	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

No Build Alternative (Design Year):

		D =	57.0	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,422	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	2,178	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

		D =	57.0	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,260	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	2,178	HT =	3.2	% of Design Hr Volume
Posted Speed:	35	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: I-4

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: I-4 eastbound off-ramp

Section Number:

Mile Post To/From:

*Demand volumes were utilized in TNM regardless of whether demand volumes were greater than LOS C

Existing Facility

		D =	N/A	%
Year:	2020	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,188	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	459	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

No Build Alternative (Design Year):

		D =	N/A	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	2,376	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	756	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

		D =	N/A	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	3,564	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	756	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: I-4

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: I-4 eastbound on-ramp

Section Number:

Mile Post To/From:

*Demand volumes were utilized in TNM regardless of whether demand volumes were greater than LOS C

Existing Facility

		D =	N/A	%
Year:	2020	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,188	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	495	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

No Build Alternative (Design Year):

		D =	N/A	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,188	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	810	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

		D =	N/A	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	2,376	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	810	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: I-4

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: I-4 westbound off-ramp

Section Number:

Mile Post To/From:

*Demand volumes were utilized in TNM regardless of whether demand volumes were greater than LOS C

Existing Facility

		D =	N/A	%
Year:	2020	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,188	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	369	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

No Build Alternative (Design Year):

		D =	N/A	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,188	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	603	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

		D =	N/A	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	3,564	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	603	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: I-4

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: I-4 westbound on-ramp

Section Number:

Mile Post To/From:

*Demand volumes were utilized in TNM regardless of whether demand volumes were greater than LOS C

Existing Facility

		D =	N/A	%
Year:	2020	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,188	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	477	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

No Build Alternative (Design Year):

		D =	N/A	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,188	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	783	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

		D =	N/A	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	2,376	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	783	HT =	3.2	% of Design Hr Volume
Posted Speed:	40	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: I-4

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: I-4 east of McIntosh Road

Section Number:

Mile Post To/From:

Existing Facility

		D =	51.1	%
Year:	2020	T24 =	N/A	% of 24 Hr Volume
		Tpeak =	5.0	% of Design Hr Volume
LOS C Peak Hour Volume:	8,865	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	11,610	HT =	3.2	% of Design Hr Volume
Posted Speed:	70	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

No Build Alternative (Design Year):

		D =	51.1	%
Year:	2045	T24 =	N/A	% of 24 Hr Volume
		Tpeak =	5.0	% of Design Hr Volume
LOS C Peak Hour Volume:	14,778	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	17,955	HT =	3.2	% of Design Hr Volume
Posted Speed:	70	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

		D =	51.1	%
Year:	2045	T24 =	N/A	% of 24 Hr Volume
		Tpeak =	5.0	% of Design Hr Volume
LOS C Peak Hour Volume:	14,778	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	17,955	HT =	3.2	% of Design Hr Volume
Posted Speed:	70	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: I-4

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: I-4 west of McIntosh Road

Section Number:

Mile Post To/From:

Existing Facility

		D =	51.1	%
Year:	2020	T24 =	N/A	% of 24 Hr Volume
		Tpeak =	5.0	% of Design Hr Volume
LOS C Peak Hour Volume:	8,865	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	11,682	HT =	3.2	% of Design Hr Volume
Posted Speed:	70	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

No Build Alternative (Design Year):

		D =	51.1	%
Year:	2045	T24 =	N/A	% of 24 Hr Volume
		Tpeak =	5.0	% of Design Hr Volume
LOS C Peak Hour Volume:	14,778	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	18,081	HT =	3.2	% of Design Hr Volume
Posted Speed:	70	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

		D =	51.1	%
Year:	2045	T24 =	N/A	% of 24 Hr Volume
		Tpeak =	5.0	% of Design Hr Volume
LOS C Peak Hour Volume:	14,778	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	18,081	HT =	3.2	% of Design Hr Volume
Posted Speed:	70	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: I-4

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: I-4 between eastbound and westbound ramps

Section Number:

Mile Post To/From:

Existing Facility

Year:	2020	D =	51.1	%
		T24 =	N/A	% of 24 Hr Volume
		Tpeak =	5.0	% of Design Hr Volume
LOS C Peak Hour Volume:	8,865	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	10,746	HT =	3.2	% of Design Hr Volume
Posted Speed:	70	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

No Build Alternative (Design Year):

Year:	2045	D =	51.1	%
		T24 =	N/A	% of 24 Hr Volume
		Tpeak =	5.0	% of Design Hr Volume
LOS C Peak Hour Volume:	14,778	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	16,542	HT =	3.2	% of Design Hr Volume
Posted Speed:	70	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

Year:	2045	D =	51.1	%
		T24 =	N/A	% of 24 Hr Volume
		Tpeak =	5.0	% of Design Hr Volume
LOS C Peak Hour Volume:	14,778	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	16,542	HT =	3.2	% of Design Hr Volume
Posted Speed:	70	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: US-92

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: US-92 west of McIntosh Road

Section Number:

Mile Post To/From:

Existing Facility

Year:	2020	D =	57.0	%
		T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,575	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	945	HT =	3.2	% of Design Hr Volume
Posted Speed:	45	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

No Build Alternative (Design Year):

Year:	2045	D =	57.0	%
		T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	3,618	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	2,115	HT =	3.2	% of Design Hr Volume
Posted Speed:	45	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

Year:	2045	D =	57.0	%
		T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	3,618	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	2,115	HT =	3.2	% of Design Hr Volume
Posted Speed:	45	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Traffic Data for Noise Studies

Federal Aid Number(s):

FPID Number(s): 447157-1-32-01

State/Federal Route No.: N/A

Road Name: US-92

Project Description: PD&E Study for McIntosh Road Improvement

Segment Description: US-92 east of McIntosh Road

Section Number:

Mile Post To/From:

Existing Facility

		D =	57.0	%
Year:	2020	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	1,575	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	1,125	HT =	3.2	% of Design Hr Volume
Posted Speed:	45	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

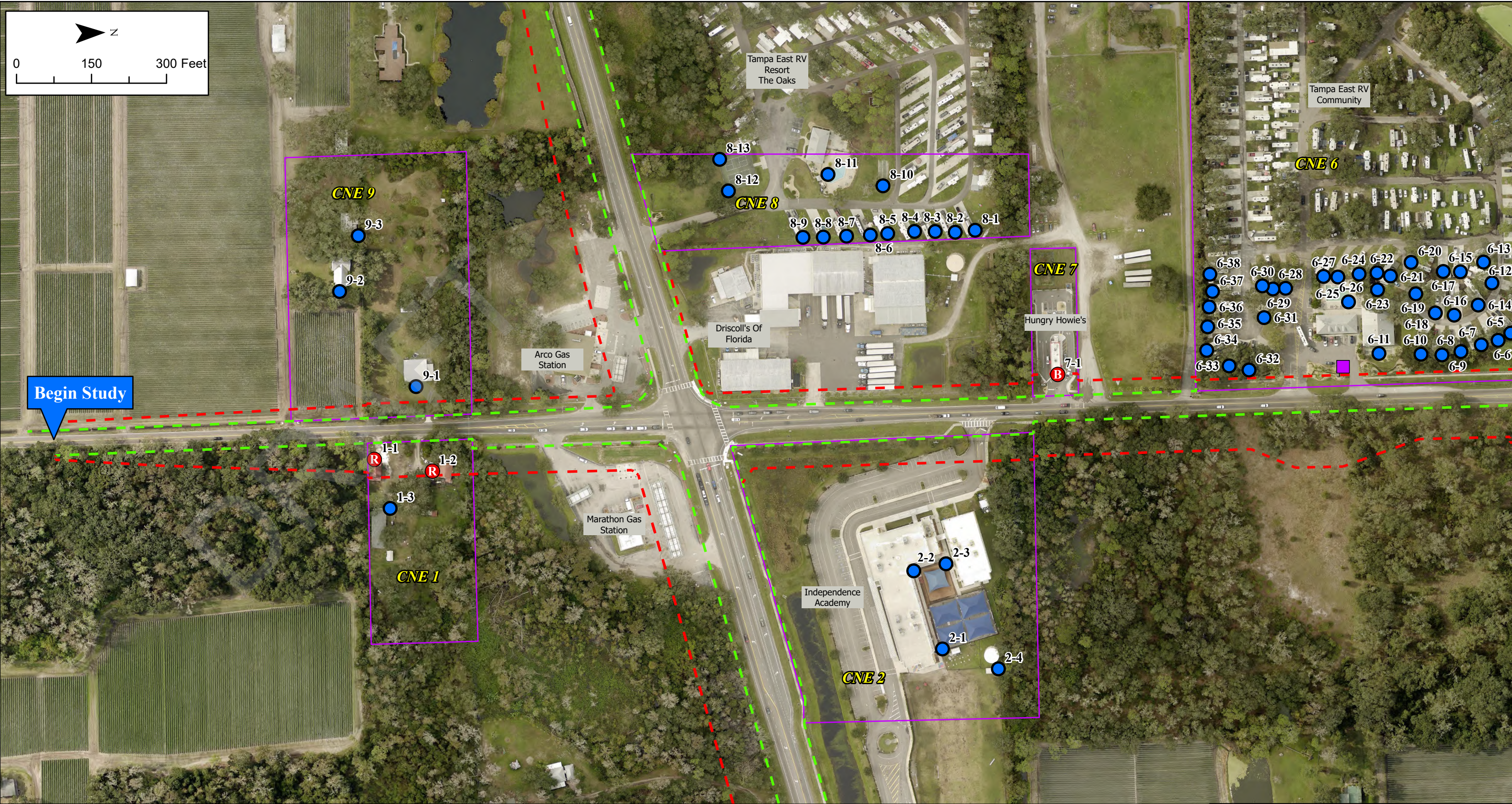
No Build Alternative (Design Year):

		D =	57.0	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	3,618	MT =	1.2	% of Design Hr Volume
Demand Peak Hour Volume:	2,520	HT =	3.4	% of Design Hr Volume
Posted Speed:	45	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

Preferred Alternative (Design Year):

		D =	57.0	%
Year:	2045	T24 =	10.0	% of 24 Hr Volume
		Tpeak =	N/A	% of Design Hr Volume
LOS C Peak Hour Volume:	3,618	MT =	1.4	% of Design Hr Volume
Demand Peak Hour Volume:	2,520	HT =	3.2	% of Design Hr Volume
Posted Speed:	45	B =	0.0	% of Design Hr Volume
		MC =	0.0	% of Design Hr Volume

APPENDIX C Noise Sensitive Receptor Sites



Legend


Relocation Type

- Business
- Residential
- Existing ROW
- Proposed ROW
- Existing Limited Access ROW
- Validation Point

Noise Receptors

- Impacted
- Impacted, Benefited
- Not Impacted
- Not Impacted, Benefited
- Not Impacted, Not Benefited

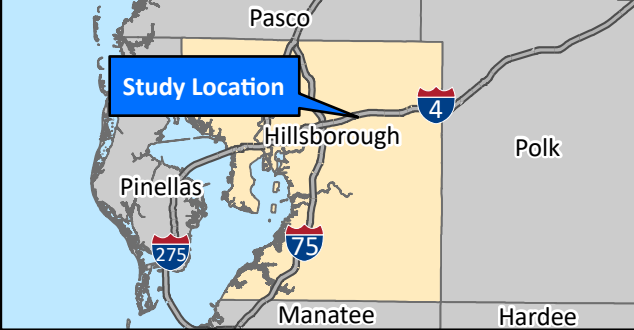
CNE



Appendix C: Noise Sensitive Receptor Map

McIntosh Road PD&E Study
South of US 92 to North of I-4

FPID: 447157-1
Hillsborough County





Legend

Relocation Type

- Business
- Residential
- Existing ROW
- Proposed ROW
- Existing Limited Access ROW
- Validation Point

CNE

Noise Receptors

- Impacted
- Impacted, Benefited
- Not Impacted
- Not Impacted, Benefited
- Not Impacted, Not Benefited

Appendix C: Noise Sensitive Receptor Map







McIntosh Road PD&E Study
South of US 92 to North of I-4


FPID: 447157-1
Hillsborough County








Legend


Relocation Type

-  Business
-  Residential
-  Existing ROW
-  Proposed ROW
-  Existing Limited Access ROW
-  Validation Point

 CNE

Noise Receptors

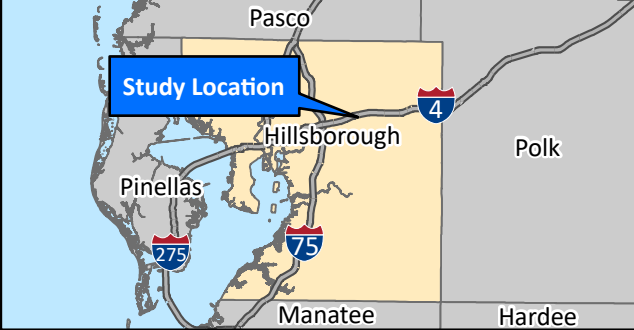
-  Impacted
-  Impacted, Benefited
-  Not Impacted
-  Not Impacted, Benefited
-  Not Impacted, Not Benefited



Appendix C: Noise Sensitive Receptor Map

McIntosh Road PD&E Study
South of US 92 to North of I-4

FPID: 447157-1
Hillsborough County



APPENDIX D Noise Model Validation Data

Observer's Name Roderick Clark

Date 1/16/2024 Monitor Site # Tampa East RV Community

travel lanes 2 Direction of Lanes N/S

Speed limit 40 mph Surface Conditions Wet

Grade 0 Wind Speed 8.0 mph Humidity 96%

Surrounding Land uses Rural residential, RV Park

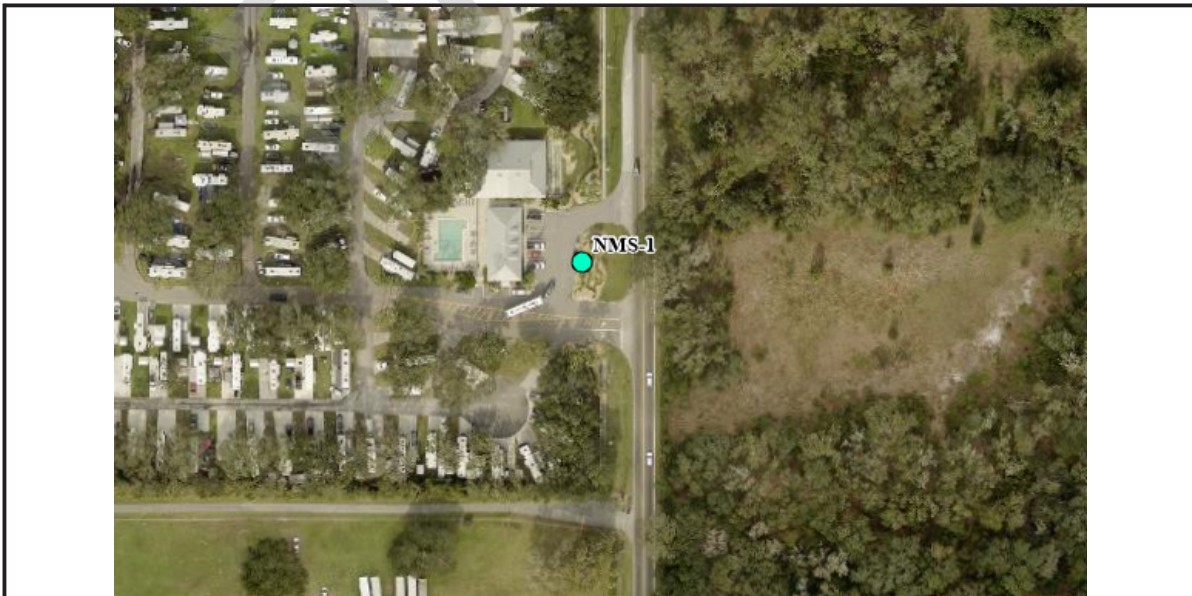
Time monitoring began 7:10 AM Time monitoring ended 7:20 AM

Traffic # (10 min)	Southbound			Northbound		
		Lane			Lane	
Cars	94	# 564	VPH	119	# 714	VPH
Medium Truck	2	# 12	VPH	2	# 12	VPH
Heavy Truck	2	# 12	VPH	4	# 24	VPH
Bus	1	# 6	VPH	2	# 12	VPH
Motorcycle	0	# 0	VPH	0	# 0	VPH
Total	99	# 594	VPH	127	# 762	VPH

VPH (volume per hour) Multiply by 6 to get hourly volumes

Leq Noise Level L(avg) 65.6 dB Distance from Travel Lane 50 ft

Height above roadway 0 ft Height above Ground 5 ft



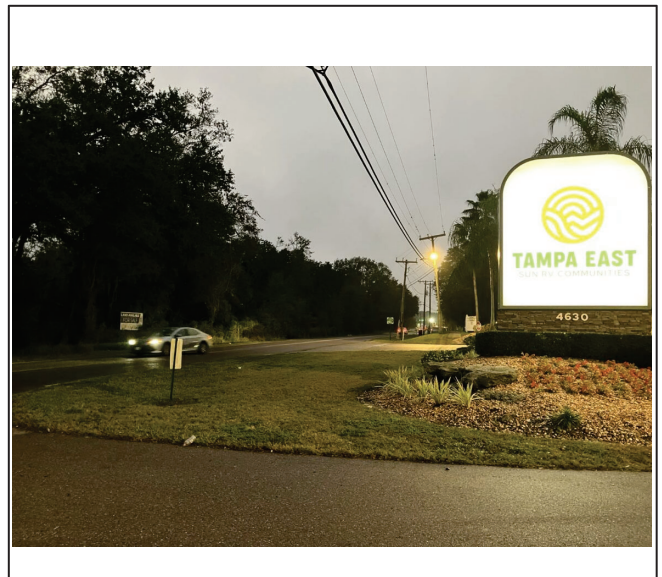
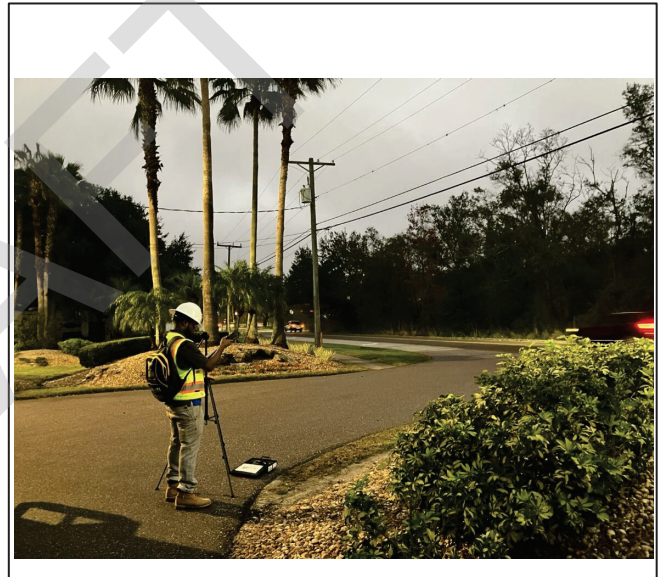
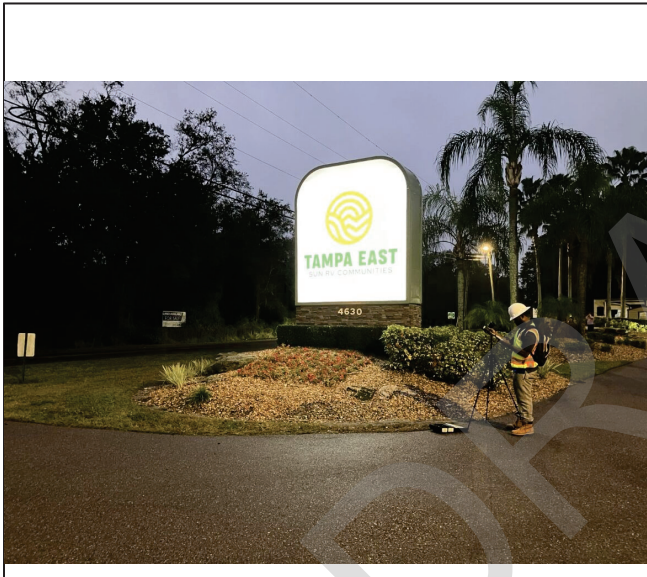
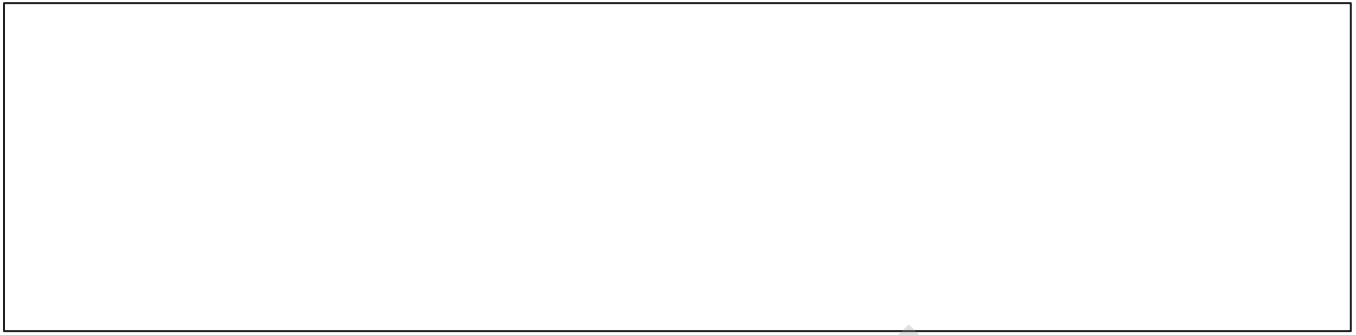
Site Sketch if needed

Background Noise _____

Major Noise Source _____

Unusual Events _____

Comments _____



Observer's Name Roderick Clark

Date 1/16/2024 Monitor Site # Tampa East RV Community

travel lanes 2 Direction of Lanes N/S

Speed limit 40 mph Surface Conditions Wet

Grade 0 Wind Speed 7.0 mph Humidity 100%

Surrounding Land uses Rural residential, RV Park

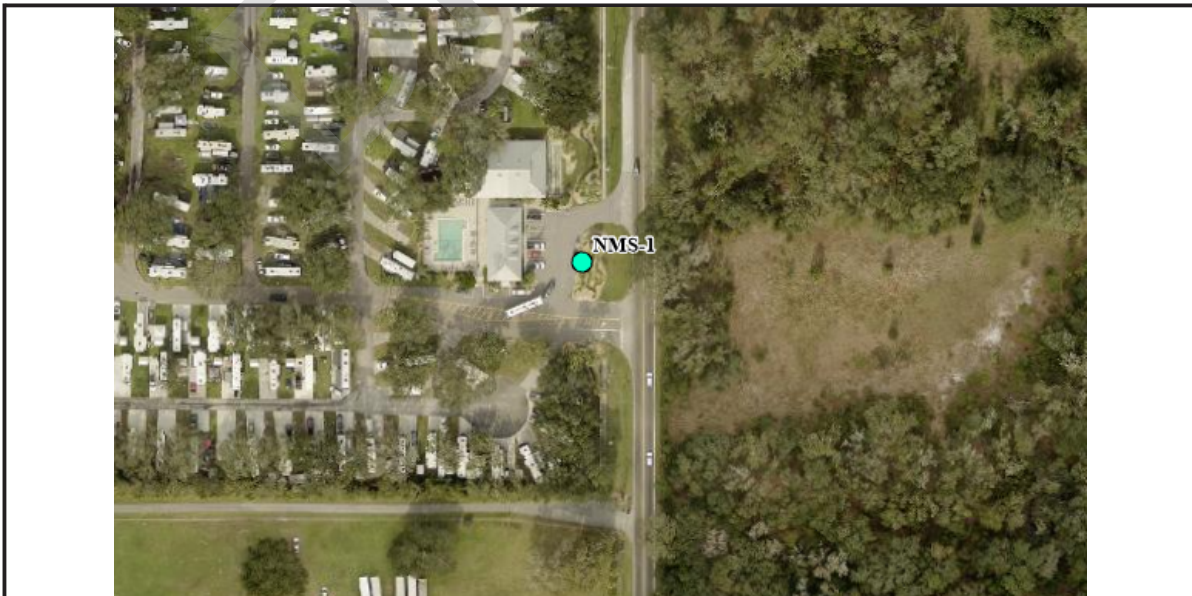
Time monitoring began 8:31 AM Time monitoring ended 8:41 AM

Traffic # (10 min)	Southbound			Northbound		
		Lane			Lane	
Cars	56	# 336	VPH	121	# 726	VPH
Medium Truck	2	# 12	VPH	5	# 30	VPH
Heavy Truck	4	# 24	VPH	5	# 30	VPH
Bus	0	# 0	VPH	2	# 18	VPH
Motorcycle	0	# 0	VPH	3	# 0	VPH
Total	62	# 372	VPH	136	# 804	VPH

VPH (volume per hour) Multiply by 6 to get hourly volumes

Leq Noise Level L(avg) 66.3 dB Distance from Travel Lane 50 ft

Height above roadway 0 ft Height above Ground 5 ft



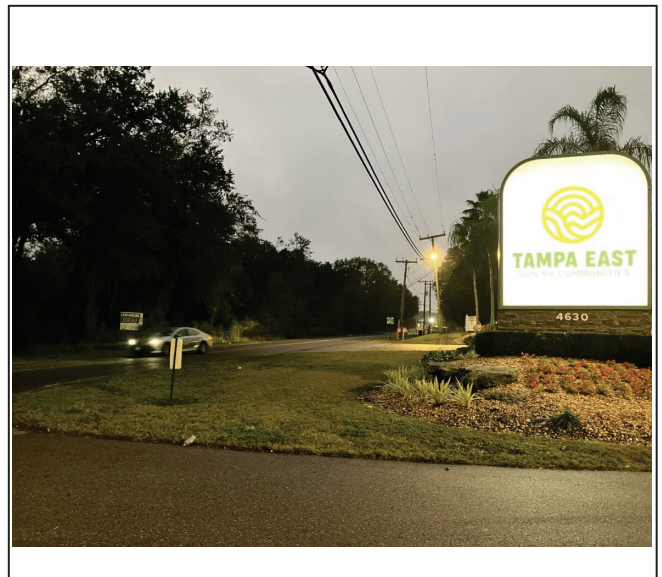
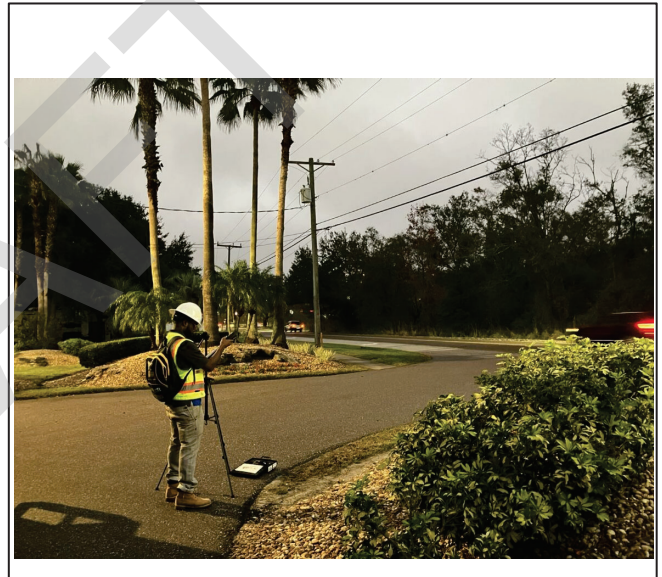
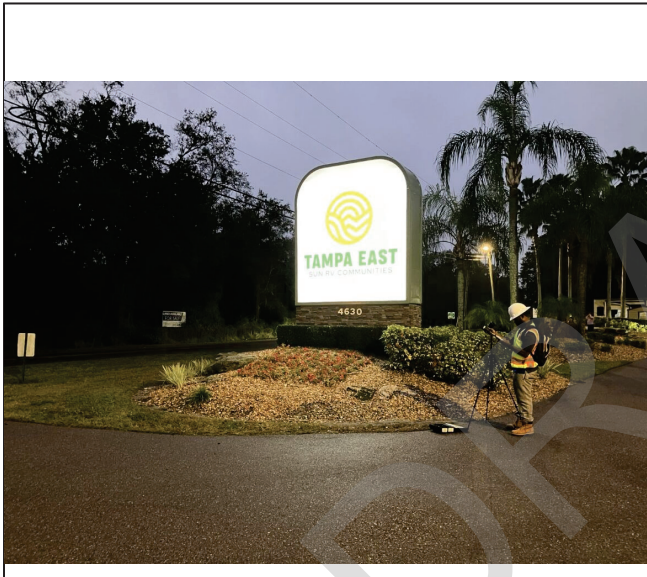
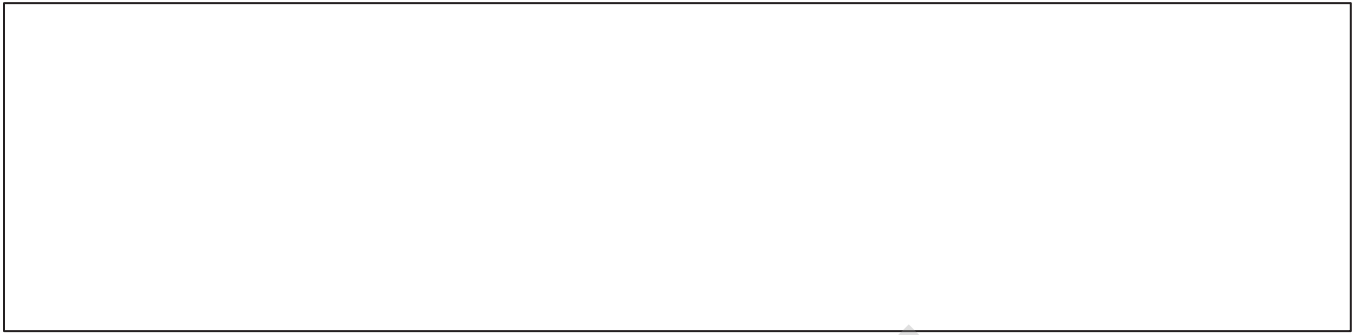
Site Sketch if needed

Background Noise _____

Major Noise Source _____

Unusual Events _____

Comments _____



Observer's Name Roderick Clark

Date 1/16/2024 Monitor Site # Tampa East RV Community

travel lanes 2 Direction of Lanes N/S

Speed limit 40 mph Surface Conditions Wet

Grade 0 Wind Speed 8.0 mph Humidity 100%

Surrounding Land uses Rural residential, RV Park

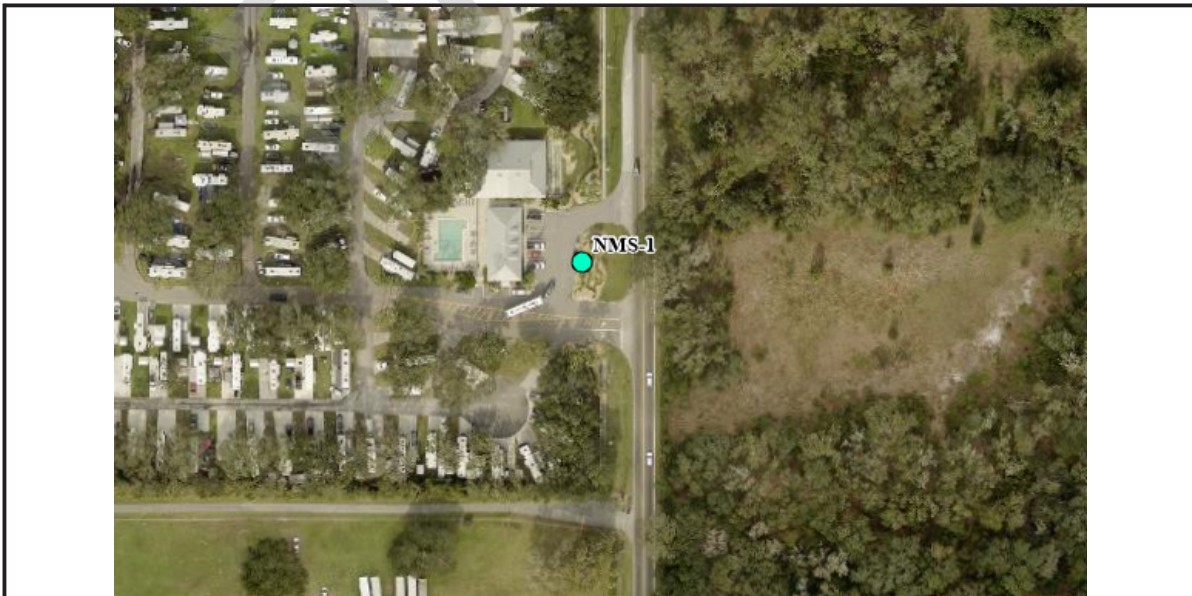
Time monitoring began 8:50 AM Time monitoring ended 9:00 AM

Traffic # (10 min)	Southbound			Northbound		
		Lane			Lane	
Cars	74	# 444	VPH	91	# 546	VPH
Medium Truck	4	# 24	VPH	5	# 30	VPH
Heavy Truck	3	# 18	VPH	6	# 36	VPH
Bus	0	# 0	VPH	2	# 12	VPH
Motorcycle	1	# 6	VPH	0	# 0	VPH
Total	82	# 492	VPH	154	# 616	VPH

VPH (volume per hour) Multiply by 6 to get hourly volumes

Leq Noise Level L(avg) 66.6 dB Distance from Travel Lane 50 ft

Height above roadway 0 ft Height above Ground 5 ft



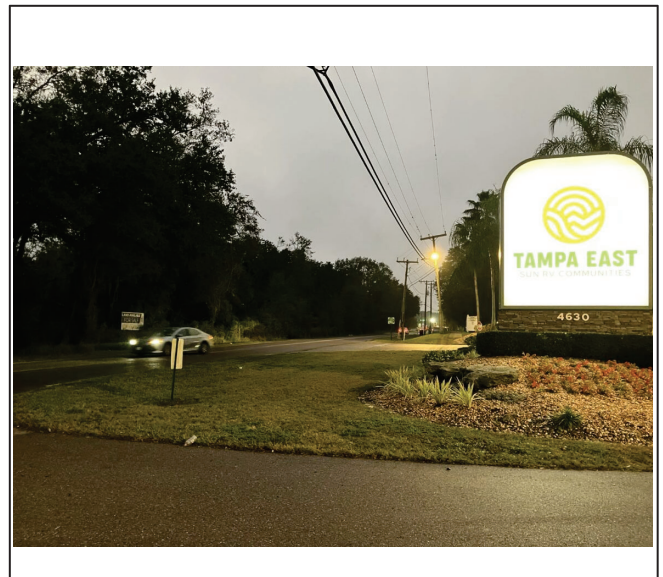
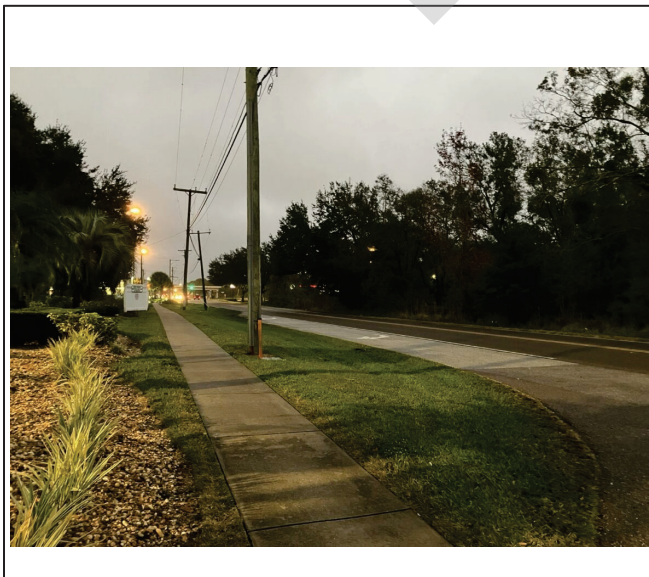
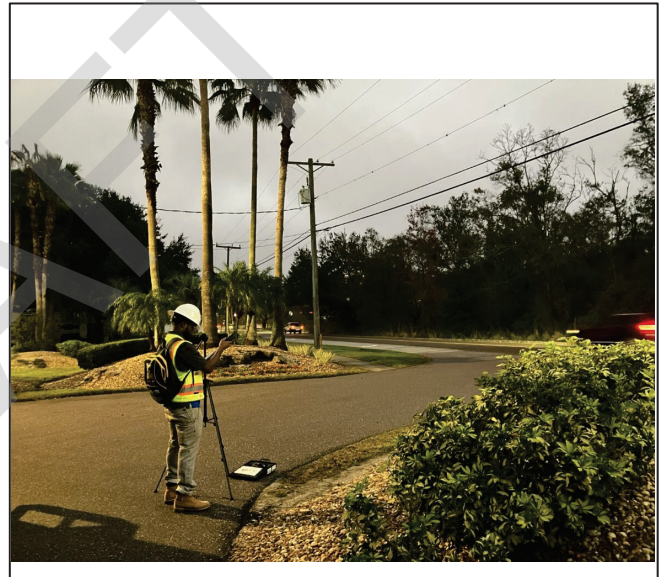
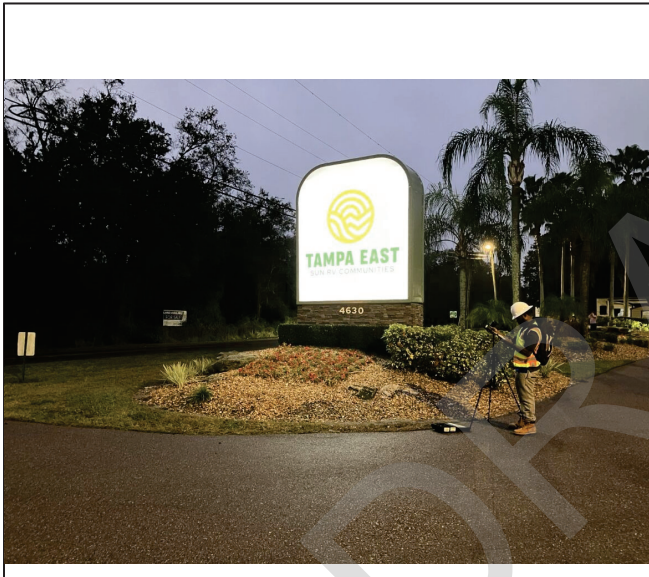
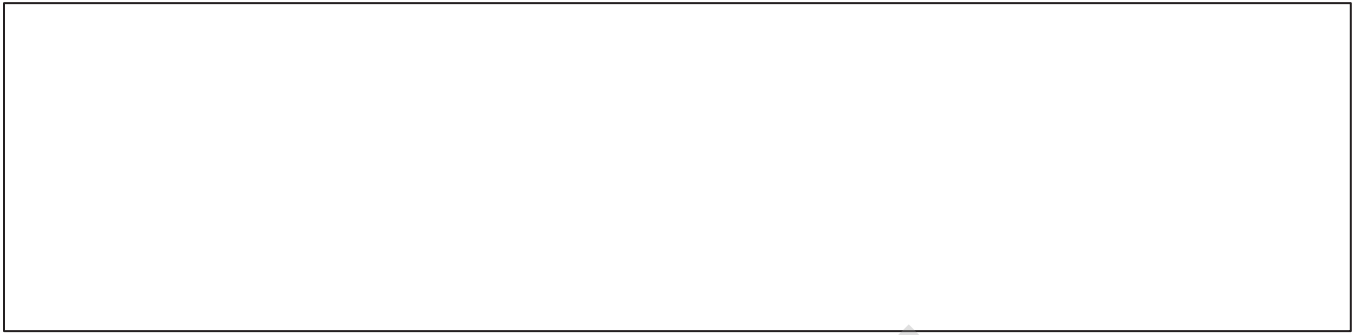
Site Sketch if needed

Background Noise _____

Major Noise Source _____

Unusual Events _____

Comments _____



24 May 2024
TNM 2.5
Calculated with TNM 2.5

FPID: 447157-1-52-01
McIntosh - Validation Run 1/May 2024
INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

68 deg F, 50% RH

Receiver	No.	#DUs	Existing LAeq1h	No Barrier LAeq1h	Increase over existing	Type	With Barrier					
Name				Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB
Tampa East RV Validation Site	136	1	0.0	66.4	66	66.4	15	Snd Lvl	66.4	0.0	7	-7.0
Dwelling Units		# DUs	Noise Reduction									
			Min	Avg	Max							
			dB	dB	dB							
All Selected		87	0.0	0.0	0.0							
All Impacted		1	0.0	0.0	0.0							
All that meet NR Goal		0	0.0	0.0	0.0							

24 May 2024
TNM 2.5
Calculated with TNM 2.5

FPID: 447157-1-52-01
McIntosh - Validation Run 2/May 2024
INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

68 deg F, 50% RH

Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier			Increase over existing			Type	With Barrier		
				LAeq1h Calculated	Crit'n		Calculated	Crit'n Sub'l Inc		Calculated LAeq1h	Noise Reduction		Calculated minus Goal
			dBA	dBA	dBA		dB	dB		dBA	dB	dB	dB
Tampa East RV Validation Site	136	1	0.0	66.8	66		66.8	15	Snd Lvl	66.8	0.0	7	-7.0
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		87	0.0	0.0	0.0								
All Impacted		1	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

24 May 2024
TNM 2.5
Calculated with TNM 2.5

FPID: 447157-1-52-01
McIntosh - Validation Run 3/May 2024
INPUT HEIGHTS

Average pavement type shall be used unless a State highway agency substantiates the use of a different type with approval of FHWA.

Receiver													
Name	No.	#DUs	Existing LAeq1h	No Barrier		Increase over existing			Type	With Barrier			
				LAeq1h Calculated	Crit'n	Calculated	Crit'n Sub'l Inc	Impact	Calculated LAeq1h	Noise Reduction Calculated	Goal	Calculated minus Goal	
			dBA	dBA	dBA	dB	dB		dBA	dB	dB	dB	
Tampa East RV Validation Site	136	1	0.0	66.9	66	66.9	15	Snd Lvl	66.9	0.0	7	-7.0	
Dwelling Units		# DUs	Noise Reduction										
			Min	Avg	Max								
			dB	dB	dB								
All Selected		87	0.0	0.0	0.0								
All Impacted		1	0.0	0.0	0.0								
All that meet NR Goal		0	0.0	0.0	0.0								

APPENDIX E TNM Data

Available for review at District Office

APPENDIX F Barrier Analysis

Available for review at District Office